

Wet Mix Shotcrete Wall Application JHA

Worked instructional example

Work and worksite

A specialist crew will apply wet-mix shotcrete to a released ground-level reinforced wall face outdoors using a pump, delivery line and air-assisted nozzle. A separate operator controls the pump. This fictional learning example describes planned controls; it records no actual inspection or work authorization.

- No overhead spraying, confined enclosure, structural repair design or dry-mix guniting is included.
- The actual system instructions determine hose, coupling, nozzle and pressure-control arrangements.
- A task-specific exposure assessment addresses cement, silica, rebound and any accelerator; wet application alone does not settle respiratory protection.

Questions before work

- Who controls the pump and nozzle stop/restart communication?
- How are hoses and couplings supported and restrained for this system?
- Which exposure controls and protection apply to rebound and additives?

Task Hazard Control

1 Release the spray zone

Hazard: Rebound can strike another crew; the receiving reinforcement or access may be unstable.

Control: Foreperson checks the wall and reinforcement release, screens or separates the spray zone and establishes safe nozzle footing and escape access. Stop overlapping work at the receiving face.

Verification: Crew walks the spray boundary and confirms receiving conditions.

Reasoning: Shotcrete produces a wider exposure area than the finished wall.

2 Stage and connect the system

Hazard: A hose coupling can separate or a pressured line can whip.

Control: Assigned personnel install compatible, rated hose and coupling assemblies with the specified restraints and supports. Inspect wear and routing; keep connection points away from access and never substitute unverified fittings.

Verification: System operator verifies the assembly against the actual pump/nozzle instructions.

Reasoning: Pressure equipment needs a matched assembly, not improvised connections.

3 Brief and test communication

Hazard: Unexpected start or air discharge can throw the nozzle or expose a worker to spray.

Control: Agree separate stop and restart signals between nozzleman and pump operator. Conduct the specified startup checks in a cleared area with nozzle control established; anyone may call stop.

Verification: Both operators demonstrate the signals before charging the line.

Reasoning: Distance and noise can make ordinary shouting unreliable.

Complete the work and hand over

4 Apply shotcrete

Hazard: Nozzle reaction, rebound, noise and airborne material can injure the nozzle crew.

Control: Trained nozzleman uses the planned stance and spray sequence; keep helpers outside rebound and hose movement. Apply exposure controls and assessed eye, face, skin, hearing and respiratory protection; keep fresh-air access.

Verification: Lead monitors footing, nozzle response and exposure controls during spraying.

Reasoning: Wet mix can still generate harmful airborne exposures.

5 Respond to a blockage

Hazard: Opening a charged line can release stored pressure violently.

Control: Stop the system, isolate it and relieve and verify pressure under the manufacturer's blockage procedure before any coupling is opened. Restrict the response to assigned trained personnel; never strike or open a pressured connection.

Verification: System operator establishes and verifies the safe state before intervention.

Reasoning: A pump stop does not by itself prove the line is depressurized.

6 Clean and close the work

Hazard: Uncontrolled cleanout or hardened rebound can expose cleanup workers.

Control: Use a separately planned system cleanout method and exclude people from any discharge path. Collect rebound and slurry using wet or appropriate HEPA methods; protect the wall and report hose or coupling defects.

Verification: Foreperson confirms cleanup limits and receiving-area handover.

Reasoning: Cleaning can create different pressure and dust exposures from spraying.

Pause and reassess

- Loss of nozzle control, abnormal pressure or suspected blockage.
- Hose damage, coupling movement or failed communication.
- Airborne exposure, rebound boundary or receiving-wall conditions change.

Improve the controls

Needs improvement: Work carefully and wear PPE.

More useful: Agree separate stop and restart signals between nozzleman and pump operator. Conduct the specified startup checks in a cleared area with nozzle control established; anyone may call stop.

Needs improvement: Check that everything is ready.

More useful: Foreperson checks the wall and reinforcement release, screens or separates the spray zone and establishes safe nozzle footing and escape access. Stop overlapping work at the receiving face.

Decisions that change the analysis

Does wet-mix spraying remove the need to assess silica exposure?

No. Evaluate the actual material, spraying, rebound and cleanup tasks under the employer's silica program. Do not treat a concrete saw's Table 1 control row as the method for shotcrete.

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

- System-specific nozzle and pump operation, stop signals and verified pressure relief.
- Silica and additive hazard instruction, with respiratory-program requirements when protection is needed.

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

References and adaptation

OSHA 1926.702 Concrete equipment and tools

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

OSHA 1926.1153 Respirable crystalline silica

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

ASA Shotcrete hose blockage safety guidance

<https://shotcrete.org/faq-items/im-not-satisfied-with-my-subtrades-blowout-procedures-for-the-shotcrete-lines-im-not-an-expert-in-this-however-the-way-they-are-doing-it-does-not-look-safe-ive-tried-to/>

References reviewed October 9, 2026. Use actual equipment and product instructions, project design and site requirements. This instructional example supplies no actual inspection results, signatures or work approval.