

Mechanically Expanded Concrete Anchor Installation JHA

Worked instructional example

Work and worksite

A trained crew will install specified torque-controlled wedge anchors through an independently supported unloaded mounting plate into accepted holes in a ground-level concrete building foundation. Current design and manufacturer instructions govern component compatibility, driving, actual setting torque and acceptance. New drilling and application of fixture loads are separate operations. This fictional learning example describes planned controls; it records no actual inspection or work authorization.

- The design identifies the actual concrete condition, locations, anchor model, embedment, plate and load purpose. Drilled holes have separate structural and service clearance and actual dimensional acceptance; installation readiness still requires the selected anchor's applicable hole-condition checks.
- The selected wedge-anchor instructions establish component assembly, driving, torque and verification requirements. Required tools and their verification evidence are available; no universal torque, embedment, test load or substitute fastening method is supplied.
- The drilling and dowel-installation connection 238110-06 is partial: mechanical expansion-anchor setting in accepted holes only. Hole drilling, reinforcing-bar dowels, adhesive cure, proof testing, structural design and fixture load application require separate analyses.

Questions before work

- Which actual hole and substrate records match this anchor model and the released design?
- How will the unloaded plate stay independently supported while anchors are driven and set?
- Who verifies the selected setting and acceptance evidence before any fixture loads are applied?

Task Hazard Control

1 Match the design holes and selected anchor

Hazard: A wrong anchor, unsuitable concrete or assumed hole acceptance can leave an apparently complete mounting connection unable to perform its intended function.

Control: Installation lead identifies the plate, concrete area, exact anchor system and current structural detail. Match the accepted hole locations and dimensional records to the specified embedment and substrate requirements. Resolve missing or conflicting evidence before installing anything; an adhesive-dowel release does not establish suitability for this mechanical anchor.

Verification: Lead matches actual design, component identity and hole records before use.

Reasoning: Hole acceptance is tied to a particular anchor and intended connection.

2 Confirm the permitted receiving-hole condition

Hazard: Retained debris, moisture outside product limits or an improvised cleaning method can prevent correct seating and expose workers to airborne dust.

Control: Assigned installer completes the selected system's actual hole-condition checks and any permitted final preparation using the employer's assessed dust controls. Protect nearby people and capture removed material. Hold damage, uncertain depth or an unsuitable condition for responsible disposition; do not enlarge a hole, add resin or adopt another anchor's cleaning exception.

Verification: Installer records required hole-condition findings and unresolved preparation issues.

Reasoning: A drilled hole can be accepted structurally yet still need installation-specific preparation.

3 Support the plate and prepare matched components

Hazard: A shifting plate, mismatched nut or damaged expansion clip can trap hands or undermine the selected anchor's setting process.

Control: Crew retains independent support for the unloaded plate, checks its released alignment and assembles the exact anchor, nut and washer configuration under the applicable instructions. Stage compatible hammer and setting tools from stable access. Reject damage or substitutions and keep hands out of plate movement and closing gaps; do not rely on an unset anchor for support.

Verification: Lead checks plate support, component match and controlled tool positions.

Reasoning: Independent support keeps the receiving fixture stable before the anchors become effective.

Complete the work and hand over

4 Drive anchors through the specified arrangement

Hazard: Uncontrolled hammering, damaged threads or incomplete seating can injure hands and leave an anchor outside the intended installation condition.

Control: Installer uses the selected system's driving method and prescribed component position to place each anchor through the supported plate into its accepted hole. Maintain safe hand positions and eye protection. Stop for unexpected resistance, plate movement or damaged threads; obtain disposition instead of increasing force, trimming an anchor or modifying the hole.

Verification: Installer verifies prescribed seating and condition before setting torque is applied.

Reasoning: Driving and mechanical expansion are separate parts of completing the connection.

5 Set and verify each mechanical anchor

Hazard: Insufficient or excessive installation torque, unsuitable tools or unrecorded anchor movement can produce an unreliable connection despite a tight-looking nut.

Control: Assigned personnel apply the exact selected system's installation torque and verification method with the required suitable tool and tool evidence. Monitor prescribed seating and movement indicators and record identified locations. Keep failed or unverified anchors held for responsible review; neither an impact tool's general setting nor another anchor diameter's value establishes acceptance.

Verification: Lead verifies actual setting findings and required tool evidence at the hold point.

Reasoning: The specified torque activates this anchor's mechanical expansion; appearance alone cannot confirm it.

6 Protect and hand over the unloaded connection

Hazard: Premature fixture loading or later nut disturbance can invalidate the installation condition and hide an unresolved anchor concern.

Control: Keep the supported fixture unloaded until its actual connection acceptance and separate loading decision are obtained. Record installation findings, held locations and component dispositions. Remove tools and dust safely and transfer restrictions to the receiving lead. Any later fastener disturbance or retightening follows the applicable system and project process rather than a casual field adjustment.

Verification: Receiving lead confirms actual connection status and remaining load restrictions.

Reasoning: Anchor installation completion is not permission to apply every planned fixture load.

Pause and reassess

- The selected anchor, actual concrete or accepted-hole evidence does not match the released design.
- Driving, seating, threads, plate support or observed anchor response differs from the system instructions.
- The actual setting criterion, suitable tool evidence or required connection verification cannot be established.

Improve the controls

Needs improvement: The hole is drilled; any anchor will fit.

More useful: Match the exact anchor and design to accepted hole dimensions, substrate and installation-condition evidence.

Needs improvement: The impact wrench stopped, so mark it accepted.

More useful: Assigned personnel apply and verify the selected anchor's actual setting method and required torque evidence.

Decisions that change the analysis

Can resin or a larger anchor be used when a wedge anchor does not seat correctly?

No substitution is authorized by this installation plan. Keep that location held and obtain the responsible design and manufacturer disposition. An unsuitable hole or anchor condition cannot be corrected by adding adhesive, increasing torque or changing diameter without an accepted revised detail. Any new drilling or proof test is a separate planned operation.

What must the crew record for actual use?

Record plate and anchor locations, current design and product instructions, actual substrate and hole-acceptance basis, component identity, prescribed seating and setting findings and required tool evidence. Identify held anchors, accepted dispositions, receiving lead and separate fixture-loading requirements; do not pre-enter favorable installation results.

Training needs

- Selected wedge-anchor installation instruction on component identity, hole readiness, supported driving, actual setting torque and required verification.
- Instruction on hammer and wrench reaction paths, dust-controlled permitted hole preparation, damaged-anchor reporting and the separate fixture-load hold.

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

References and adaptation

Simpson Strong-Tie Anchor Anatomy 101: torque-controlled Strong-Bolt 2 wedge anchors
<https://seblog.strongtie.com/2025/08/anchor-anatomy-101-strong-bolt-2-expansion-anchor/>

Simpson Strong-Tie Strong-Bolt 2 product and installation-document access
<https://www.strongtie.com/products/anchoring-systems/strong-bolt2>

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

References reviewed October 12, 2026. Use actual equipment and product instructions, project design and site requirements. This original draft supplies no fabricated inspection, signature or approval.