

Architectural Precast Slip Connection Completion JHA

Worked instructional example

Work and worksite

A qualified crew will complete designated upper bolted slip tie-backs on an already erected architectural precast panel. Permanent gravity supports are accepted and temporary restraints remain. The actual connection design provides out-of-plane restraint while preserving specified in-plane movement before a separate restraint-release decision. This fictional learning example describes planned controls; it records no actual inspection or work authorization.

- Accepted panel gravity support, retained restraints and current tie-back details are identified. The connection design defines movement directions, components, fastening and hold points; no generic clearance or preload is supplied.
- Qualified personnel use protected access. The connection engineer resolves changes or apparent binding; visible slot orientation alone does not demonstrate the designed movement function.
- The architectural precast panel installation link 238120-26 is partial: completion of designated bolted upper slip tie-backs on an already supported panel only. Panel lifting, primary gravity-support installation, drilling, welding, forced movement tests and temporary-restraint removal require separate analyses.

Questions before work

- Which records accept this panel's permanent gravity support and identify the temporary restraints that must remain?
- Which exact design features preserve the specified movement while resisting the assigned out-of-plane action?
- Who verifies the connection engineer's hold points before a separate temporary-restraint release can be considered?

Task Hazard Control

1 Establish the supported panel and connection release

Hazard: An unaccepted gravity support, missing temporary restraint or wrong connection detail can destabilize the panel or create an unintended load path.

Control: Connection lead identifies the panel and obtains accepted permanent gravity-support records, the retained-restraint arrangement and current upper tie-back design. Confirm qualified roles, protected access and the responsible connection engineer's actual hold points. Keep lifting, gravity-support correction and temporary-restraint removal outside this operation; resolve incomplete support evidence before completing connections.

Verification: Lead verifies panel support acceptance and retained restraints before work.

Reasoning: Known supports establish the boundary of this connection operation.

2 Verify the movement detail and interfaces

Hazard: A reversed component, blocked slot or adjacent interface can prevent the intended movement and transmit unintended forces despite an apparently complete bolt assembly.

Control: Qualified crew reviews the exact required movement directions, connection components and interfaces with the current design. Check the designated locations for damage, interference or discrepancies from the protected position. Obtain connection-engineer disposition for conflicts; do not infer the movement function from a visible slot or adapt components to fit an unrevised drawing.

Verification: Lead verifies detail and interface findings before assembly proceeds.

Reasoning: Movement accommodation requires a designed complete connection arrangement.

3 Prepare the designated bolted components

Hazard: Mismatched fasteners, unsupported parts or handling beside an exposed edge can cause dropped objects, falls or an assembly that cannot meet the design.

Control: Crew checks the specified bolts and any designated sleeves, washers and mating components against the current detail and applicable instructions. Stage and support parts from protected access with below-work exclusion maintained. Keep damaged or uncertain components held; do not substitute a standard washer stack, enlarge a slot or disturb the retained temporary restraints to improve access.

Verification: Installer checks component identities, condition and supported handling.

Reasoning: Component identity matters to both movement and restraint.

Complete the work and hand over

4 Assemble and fasten through the specified method

Hazard: Overclamping, incomplete fastening or incorrect orientation can bind the slip interface or leave the panel without its intended permanent lateral restraint.

Control: Qualified installers assemble the designated upper tie-back and complete its specific fastening and locking method, maintaining the accepted support and temporary restraints. Follow the design's actual orientation and clearance requirements and manufacturer instructions where applicable. Hold a fit or fastening result outside those criteria; neither arbitrary loosening nor generic high-strength-bolt tightening can correct a disputed slip detail.

Verification: Installer records prescribed assembly and fastening findings for each tie-back.

Reasoning: Fastening must preserve both intended connection functions.

5 Obtain the connection-engineer hold-point decision

Hazard: An unchecked interface, incomplete connection or assumed freedom of movement can transfer an unready panel to a crew intending to remove temporary restraint.

Control: Connection lead presents the actual required assembly, fastening and interface evidence to the responsible connection engineer or designated verification authority under the accepted process. Keep unresolved connections and temporary restraints held. Use only prescribed verification methods; do not push the panel, loosen selected bolts or apply an improvised movement test to demonstrate a slip function.

Verification: Responsible authority verifies required evidence and records actual disposition.

Reasoning: Improvised tests can change the panel's support condition.

6 Hand over accepted connections and retained restraints

Hazard: A receiving crew may remove restraint too soon or obstruct a movement interface through later work, leaving hidden structural or cladding problems.

Control: Record identified connection findings and the actual acceptance disposition. Transfer retained-restraint control, unresolved issues and protected movement interfaces to the receiving lead. Keep temporary-restraint removal subject to its separate engineered release and planned operation. Communicate requirements affecting later sealing, adjacent construction and maintenance so those tasks do not inadvertently defeat the accepted connection function.

Verification: Receiving lead confirms status, restraint ownership and remaining interface holds.

Reasoning: Connection completion alone does not authorize temporary-restraint removal.

Pause and reassess

- Panel support acceptance, retained temporary restraint, current movement detail or responsible verification authority cannot be confirmed.
- Components, orientation, fastening, fit or an adjacent interface differ from the actual designed slip connection.
- Protected access is lost, support is disturbed or verification would require unplanned loosening, panel movement, drilling or welding.

Improve the controls

Needs improvement: A slotted hole means the connection can slide.

More useful: Verify the whole designed component and interface arrangement through the connection engineer's actual requirements and hold points.

Needs improvement: Leave the bolt loose so the panel can move.

More useful: Complete the exact specified fastening and locking detail that provides both out-of-plane restraint and the required movement function.

Decisions that change the analysis

Can the ordinary structural steel bolting example govern these upper tie-backs?

It cannot supply this connection's movement criteria. Ordinary bolted load-transfer work does not establish the required slip interface, component arrangement or potential binding conditions. Use the actual architectural connection design and responsible engineer's verification process. A generic torque, loose fastener or field push test is not a substitute; retained restraints remain until their separate release.

What must the crew record for actual use?

Record panel and connection identities, current drawings, accepted gravity support, retained restraints and qualified roles. Document actual component, orientation, interface and fastening findings and engineer-directed dispositions. Identify held locations, receiving lead, protected movement interfaces and separate restraint-release requirements; invent no inspection or support release.

Training needs

- Connection-detail instruction for qualified installers on the actual movement-accommodating components, orientation, fastening and required verification evidence.
- Instruction on protected panel access, retained temporary stability, safe component handling and escalation of interference or apparent binding without loosening or moving the panel.

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

References and adaptation

PCI DN-21 Architectural Precast Concrete Connections: Ascent Winter 2011 design guidance

https://www.pci.org/common/uploaded%20files/PCI/Publications/Ascent/2011/Ascent_Winter_2011.pdf

PCI Building Engineering Resources: Connections and project engineering

https://www.pci.org/PCIMS/PCI/Design_Resources/Building_Engineering_Resources/Connections.aspx

OSHA 1926.704 Precast concrete support requirements

<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.704>

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.