

Site-Built Structural Brick Arch JHA

Worked instructional example

Work and worksite

A masonry crew will build one engineer-designed true structural brick arch over a ground-floor opening in a new low-rise building. Released abutments and separately accepted centering support the specified arch units and surrounding masonry sequence. Work ends with completed masonry protected for strength and loading acceptance; centering easing or removal is separate. This fictional learning example describes planned controls; it records no actual inspection or work authorization.

- The structural design identifies arch geometry, abutment/thrust restraint, unit orientation, mortar, joint arrangement, surrounding masonry sequence and temporary-support/loading criteria.
- Centering is separately designed, erected and accepted; protected work positions, both-side access control and permitted staging loads are released before units are placed.
- Partial bricklaying and structural-wall coverage: no decorative veneer-only arch, precast lintel setting, field arch design, centering fabrication or premature support removal.

Questions before work

- What releases the actual abutments and thrust restraint for this arch and its construction stages?
- How will centering, unit arrangement and joints be checked before the arch is closed?
- Who determines strength/loading acceptance and the separate support-transfer or centering-removal sequence?

Task Hazard Control

1 Release the structural arch package

Hazard: A decorative detail or unverified abutment can be mistaken for an arch capable of carrying structural loads.

Control: Masonry lead matches the opening, arch and surrounding masonry to the engineer-issued detail. Verify abutment and thrust-restraint acceptance and identify current stage/load limits. Refer missing structural criteria or changed geometry before work; a brick technical note is supporting guidance, not this opening's design.

Verification: Lead checks the design identity and actual abutment/restraining construction at release.

Reasoning: A structural arch develops forces in its supports as well as within its brickwork.

2 Accept centering and safe work positions

Hazard: An unstable support or unsafe opening edge can cause falls or collapse before the arch is complete.

Control: Obtain the separate centering acceptance and check the actual profile, contact, restraint and permitted loads against its issued arrangement. Provide protected access and controlled areas on both sides of the opening. Keep stock off unapproved support locations and preserve every required brace throughout masonry construction.

Verification: Responsible lead checks centering status, access and staging before placing the first units.

Reasoning: The unfinished arch relies on temporary support throughout its developing geometry.

3 Lay out units and stage mortar

Hazard: Poor unit spacing or unsuitable materials can create uneven joints; sharp edges and wet mortar expose workers.

Control: Identify the specified units, orientation and mortar system, and set out the released arch layout on the accepted centering. Stage manageable quantities and suitable placement tools from stable positions. Use assessed skin/eye protection and washing arrangements; hold an unresolved unit or joint mismatch instead of cutting a new design on site.

Verification: Masonry lead compares the layout and product identities with the actual detail.

Reasoning: A planned layout identifies fit conflicts before they are locked into a structural assembly.

Complete the work and hand over

4 Build the arch in the issued sequence

Hazard: Unbalanced construction or unfilled structural joints can compromise the arch and overload temporary support.

Control: Place units in the design's stated sequence and orientation while maintaining centering and any required restraint. Form and fully fill the specified joints with the selected mortar, keeping hands outside closing gaps. Check progressing geometry and stage loading; stop for support movement or a joint/shape conflict rather than forcing a unit into place.

Verification: Lead records unit arrangement, joint filling and support response at the planned hold points.

Reasoning: Appearance at the exposed face does not establish complete structural joint filling.

5 Close and complete the designated masonry stage

Hazard: Premature disturbance at closure or loading from adjacent work can damage the newly completed arch.

Control: Complete the specified closing units and designated surrounding masonry under the issued sequence. Inspect geometry, joints and support condition before concealment, maintaining restricted loading and cure protection. Do not ease the centering, wedge the arch or add construction loads unless a separately accepted procedure specifically authorizes that change.

Verification: Designated reviewer checks actual closure and stage-completion findings against the design.

Reasoning: A closed arch ring does not by itself establish sufficient strength for all imposed loads.

6 Protect cure and transfer support restrictions

Hazard: Elapsed time or finished appearance can be misused as authority to remove centering and reopen access.

Control: Protect the arch and surrounding masonry under the actual weather, curing and loading plan. Transfer material, construction and inspection records, unresolved items and the required strength/support-release criteria. Retain centering and boundaries until the responsible acceptance process releases a separate transfer/removal sequence; no common number of days supplies that decision.

Verification: Receiving lead confirms curing/load restrictions and who can authorize support changes.

Reasoning: The construction-stage load path persists until the required structural acceptance is complete.

Pause and reassess

- Arch geometry, abutment restraint, centering or required structural documents differs from the release.
- Units or joints cannot meet the detail, support moves or construction loading exceeds the accepted stage.
- The request introduces field design, a veneer-only detail, early loading, centering easing or support removal.

Improve the controls

Needs improvement: Follow a curved row and remove the timber when it looks finished.

More useful: Use the designed arch and abutments on accepted centering, record the completed masonry stage and retain support until its specified structural release.

Needs improvement: A neat face means the joints are adequate.

More useful: Verify specified unit orientation and full structural joint filling at the construction hold points, including parts that later masonry would conceal.

Decisions that change the analysis

Is this equivalent to installing a precast lintel?

No. The lintel arrives as one designed spanning component and is seated on bearings. This crew constructs an arch whose geometry, filled joints, abutment restraint and temporary centering develop a different load path. A decorative curved veneer course is also not this structural arch.

What must the crew record for actual use?

Record the actual work boundary, equipment and materials, responsible people, applicable criteria, control checks and unresolved actions. Keep changed conditions on hold, communicate restrictions to affected crews and obtain the required project authorization before work.

Training needs

- The actual structural arch detail, centering restrictions, unit/joint layout, closure sequence and construction-stage loading limits.
- Masonry handling and wet-mortar contact protection, safe access around the opening and recognition of movement requiring immediate withdrawal and review.

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

References and adaptation

BIA Technical Note 31 Brick masonry arches

<https://www.gobrick.com/media/file/31-brick-masonry-arches.pdf>

OSHA 1926.706 Masonry construction

<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.706>

OSHA 1926.501 Duty to have fall protection

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

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.