

Engineered Steel Beam Removal JHA

Worked instructional example

Work and worksite

A qualified dismantling and lifting team will remove one identified bolted beam from a surveyed single-story building under an engineer-issued removal and temporary-support plan. Connected loads are isolated or supported through the released sequence before the member's connections are released; a crane lowers the secured beam to prepared laydown. No hot cutting or whole-frame dismantling is included. This fictional learning example describes planned controls; it records no actual inspection or work authorization.

- The written demolition engineering survey, actual member/connection review and responsible engineer's removal sequence establish the remaining structure's stability and the permitted load transfer.
- Utilities, coatings, beam weight, lifting attachments, connection access and the supported receiving/laydown arrangement are resolved before work.
- This is partial structural-steel and precast removal coverage. Multistory demolition, precast removal, torch cutting, unexplained member loads and hazardous-material abatement are excluded.

Questions before work

- What actually carries every connected load when this beam stops carrying it, and who releases that temporary condition?
- How will the member be supported and secured throughout the specified connection-release sequence?
- What change in connection behavior, member movement or support condition requires an immediate stop and engineer review?

Task Hazard Control

1 Release the surveyed member and sequence

Hazard: An apparently redundant beam can carry concealed loads or provide stability to the retained frame.

Control: Dismantling lead obtains written survey evidence and the current engineer-issued removal/load-isolation plan for the identified beam and its connections. Resolve attached services, coatings and connected structure and mark the exact removal limit before any connection is loosened.

Verification: Lead compares the member and attachments with survey and current removal documents.

Reasoning: A new-beam erection detail does not describe the existing load path being removed.

2 Establish the released temporary condition

Hazard: Inadequate support or incomplete load isolation can collapse the retained structure when the beam is released.

Control: Implement the engineered support and connected-load isolation sequence through assigned qualified roles. Complete the specified hold-point review and keep supports protected from interference. Do not substitute crane tension for a temporary structural-support requirement.

Verification: Designated reviewer records actual support and isolation findings before connection work.

Reasoning: The retained structure needs its own stable load path throughout removal.

3 Prepare protected access rigging and laydown

Hazard: Workers can fall or be struck by an uncontrolled beam when the lifting arrangement or receiving area is unready.

Control: Lift team verifies the actual member weight basis, approved attachment arrangement, crane capacity and removal path. Provide released protected connection access and close the affected fall/swing areas. Prepare stable laydown supports and brief the one agreed signaling and stop arrangement.

Verification: Lift lead and access lead check the pick, path, work positions and receiving supports.

Reasoning: Every later release depends on a ready controlled destination and protected worker positions.

Complete the work and hand over

4 Secure the beam and reach the release hold point

Hazard: Unexpected rotation or remaining load can trap workers as connections are approached.

Control: Rig and secure the beam in the specified support condition before connection release. Follow the actual engineered load-transfer hold point with the lifting and dismantling leads; confirm worker positions remain outside pinch and movement paths. Stop for binding, deflection or motion outside the plan.

Verification: Designated roles verify the actual support/rigging condition and authorize the stated next stage.

Reasoning: The safe transfer condition must be demonstrated before the beam becomes disconnected.

5 Release connections in the specified sequence

Hazard: Removing the wrong fastener or forcing a bound connection can cause sudden beam or frame movement.

Control: Qualified crew follows the engineer's connection-release sequence using the selected cold-work tools from protected access. Preserve specified support and restraints; control loose hardware. If a connection will not release as anticipated, stop and obtain a revised technical decision rather than prying, striking or cutting it free.

Verification: Dismantling lead monitors actual connection and support behavior at each release stage.

Reasoning: Resistance can reveal a remaining load or an unrecognized restraint.

6 Lower stabilize and hand over

Hazard: A beam can roll from laydown, and the altered frame can remain unsafe after the lift leaves.

Control: Lift team lowers the disconnected member through the closed path and lands it on the prepared stable supports. Verify stability before rigging release. Record actual retained-frame/support findings, protect exposed work areas and hand over the remaining temporary-support and alteration restrictions to the responsible reviewer.

Verification: Lift lead verifies laydown; reviewer records retained-structure findings and open actions.

Reasoning: Removing the beam completes a lift, not the building's final structural acceptance.

Pause and reassess

- Survey, member weight, attachments or connected loads differ from the released removal assumptions.
- Temporary supports, rigging or the retained structure moves or shows unexpected deflection or loss of contact.
- A connection binds, the release sequence cannot be followed or protected access/communication is lost.

Improve the controls

Needs improvement: Reverse the erection steps.

More useful: Engineer's actual dismantling sequence establishes retained-frame support and load isolation; designated roles verify the release hold point before connections are removed.

Needs improvement: If the bolt binds, force it loose.

More useful: Crew stops for unexpected resistance, preserves the specified support and obtains the responsible engineer's revised decision before proceeding.

Decisions that change the analysis

Can the initial beam-connecting example be used backwards?

No. That resource installs a new member between released columns. Dismantling an existing beam removes a current load path and can uncover attached loads or restraints; it requires a written survey and a released support and removal sequence.

What must the crew record for actual use?

Record the member/connection and survey identity, removal/support revisions, utility/coating findings, connected-load isolation and actual support acceptance, weight/rigging basis, protected access and signaling, stage findings and deviations, stable laydown and retained-frame restrictions.

Training needs

- Project-specific dismantling instruction for the qualified crew, covering load isolation, temporary supports, protected connection access and the specified release hold points.
- Role-specific crane, rigging and signaling instruction for the actual removal lift, including unexpected binding/movement, exclusion boundaries and stable laydown.

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 1926.850 Demolition engineering survey and preparation
<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.850>

OSHA 1926.858 Removal of steel construction
<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.858>

OSHA 1926.1417 Crane operation
<https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.1417>

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.