

RISK ASSESSMENT

Dismantling of Existing Concrete Structures for the Construction of Foundation / Building

Construction Sector — International Edition

Document Reference: HSE-RA-XXXX-001

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CONTROLLED DOCUMENT — HSE / QUALITY DEPARTMENT

Uncontrolled if printed. Refer to the master document register for the current revision.

1. SCOPE OF ASSESSMENT

This risk assessment covers all activities associated with the dismantling of existing reinforced concrete structures — including foundations, slabs, columns, beams, and walls — to facilitate the construction of a new foundation/building on the same site. It addresses site establishment and access control, isolation of live services, manual and mechanical breaking of concrete, mechanical demolition using excavator-mounted attachments, debris handling and removal, and working-at-height activities associated with dismantling elevated concrete elements. This assessment applies to all direct employees, subcontractors, plant operators, and visitors present within the demolition work area, and shall be read in conjunction with the project-specific method statement, demolition sequence drawings, and site-specific permit-to-work system.

2. DOCUMENT INFORMATION

Field	Details
Document Title	Risk Assessment — Dismantling of Existing Concrete Structures for the Construction of Foundation/Building
Document Reference	HSE-RA-XXX-001
Revision / Date	Rev. 01 — 16 July 2026
Classification	CONTROLLED DOCUMENT — HSE / Quality Department
Industry / Sector	Construction
Edition	International Edition
Applicable Standards	ISO 45001:2018 (Occupational Health & Safety Management), ISO 31000:2018 (Risk Management)
Target Region	Global / Worldwide — most stringent international standard applied where local requirement is absent
Prepared By	HSE Department
Next Review Date	16 July 2027 (or upon change of scope/method statement)

3. APPLICABLE STANDARDS

Standard	Scope & Application
ISO 45001:2018	Occupational Health & Safety Management Systems — provides the framework used in this document for hazard identification, risk assessment, hierarchy of controls, and continual improvement of OH&S performance during demolition works.
ISO 31000:2018	Risk Management — Guidelines — underpins the 5x5 likelihood/severity risk-scoring methodology, risk evaluation criteria, and treatment/monitoring approach applied throughout this risk register.
BS 6187:2011	Code of Practice for Demolition — provides guidance on demolition sequencing, structural stability assessment, and safe methods for dismantling concrete structures.
OSHA 29 CFR 1926 Subpart T	Demolition — U.S. federal requirements for engineering surveys, utility isolation, and safe demolition procedures, referenced where more stringent than local requirements.
ISO 3449:2005 / ISO 5349-1:2001	Earth-moving machinery FOPS certification and mechanical vibration exposure assessment, referenced for plant/equipment and HAVS controls respectively.

4. RISK RATING MATRIX (5x5 LIKELIHOOD x SEVERITY — ISO 31000:2018)

Score (L×S)	Risk Level	Colour	Required Action	Authority for Sign-off
1 – 4	LOW		Acceptable — manage through routine procedures and standard supervision.	Site Supervisor
5 – 9	MEDIUM		Tolerable — implement additional controls; monitor regularly; review if conditions change.	HSE Officer / Site Supervisor
10 – 16	HIGH		Unacceptable without further controls — work must not proceed until risk is reduced through the hierarchy of controls.	Project/HSE Manager
17 – 25	CRITICAL		Intolerable — stop work immediately; escalate to senior management; only proceed with rigorous engineered controls and formal sign-off.	Senior Management / HSE Director

Risk Score = Likelihood (1–5) × Severity (1–5). Likelihood and Severity are each rated on a scale of 1 (rare / negligible) to 5 (almost certain / catastrophic), in accordance with ISO 31000:2018 risk evaluation principles.

5. AUTHORISATION

Role	Name	Signature	Date
Prepared by (HSE Officer)			
Reviewed by (Project/HSE Manager)			
Approved by (Site/Project Director)			
Client / Consultant Representative (if applicable)			

6. RISK REGISTER

No.	Work Area	Activity / Task	Hazard Description	Persons at Risk	Hazard Type	Initial Risk			Risk Level	Control Measures (Hierarchy of Controls)	Residual Risk			Risk Level	Monitoring Required / Frequency	Responsible	Regulatory Ref.
						L	S	R			L	S	R				
1. Site Establishment, Isolation & Access Control																	
1	Site Establishment, Isolation & Access Control	Site set-up, exclusion zone establishment and access control prior to demolition works	Unauthorized entry of site personnel, subcontractors, or members of the public into the demolition exclusion zone, resulting in being struck by falling debris or caught in a structural collapse.	Site workers, subcontractors, visitors, members of the public	Mechanical / Struck-by	4	5	20	CRITICAL	- Install full perimeter hoarding (minimum 2m height) with demolition warning signage and exclusion zone marking around the work area. - Restrict entry to a single controlled access gate operated under a permit-to-work / sign-in system with banksman supervision. - Conduct site induction and toolbox talk for all personnel prior to first entry into the demolition zone.	1	5	5	MEDIUM	Daily site perimeter inspection and access log review — Daily	HSE Officer	ISO 45001:2018 Cl.8.1.2; OSHA 29 CFR 1926.202
2	Site Establishment, Isolation & Access Control	Identification and isolation of live services prior to dismantling	Failure to identify and isolate live electrical, gas, or water services within or below the structure, resulting in electrocution, gas explosion, or uncontrolled flooding during breaking operations.	Demolition operatives, plant operators, utility contractors	Electrical / Chemical / Mechanical	3	5	15	HIGH	- Conduct a full utility survey (ground-penetrating radar scan and as-built drawing review) prior to commencement of any works. - Obtain a permit-to-work supported by written isolation/disconnection certificates from the relevant utility provider. - Physically expose and mark buried services via trial holes before mechanical breaking commences in their vicinity.	1	5	5	MEDIUM	Permit and isolation certificate verification before each shift — Before each work shift	Site Engineer / HSE Officer	ISO 45001:2018 Cl.6.1.2; IEC 60204-1
3	Site Establishment, Isolation & Access Control	Structural stability assessment and demolition sequencing	Uncontrolled or premature structural collapse of the existing or adjacent partially-demolished structure due to an inadequately engineered demolition sequence.	All site personnel, structural engineer, demolition operatives	Structural / Mechanical	3	5	15	HIGH	- Engage a competent structural engineer to prepare a method statement and demolition sequence in accordance with BS 6187:2011. - Carry out an independent structural stability check before, during, and after each demolition phase. - Install temporary propping/shoring to any element left unsupported as a result of partial demolition.	1	5	5	MEDIUM	Structural inspection and sign-off at each demolition phase — Before each demolition phase	Project / Structural Engineer	ISO 45001:2018 Cl.8.1; BS 6187:2011
2. Manual & Mechanical Breaking of Concrete Structures																	
4	Manual & Mechanical Breaking of Concrete Structures	Use of hand-held pneumatic/electric breakers and jackhammers to break concrete elements	Prolonged exposure to hand-transmitted vibration from hand-held breakers causing Hand-Arm Vibration Syndrome (HAVS) and associated musculoskeletal injury.	Demolition operatives	Ergonomic / Physical (Vibration)	4	3	12	HIGH	- Provide low-vibration breakers certified below 2.5 m/s² per ISO 5349-1 and rotate operators to stay within the exposure action value. - Limit continuous trigger time to a maximum of 2 hours per operator through a documented job-rotation schedule. - Provide anti-vibration gloves and enrol exposed operatives in periodic HAVS health surveillance.	2	3	6	MEDIUM	Vibration exposure log review and health surveillance records — Monthly	HSE Officer / Occupational Health Adviser	ISO 5349-1:2001; EU Directive 2002/44/EC
5	Manual & Mechanical Breaking of Concrete Structures	Manual and mechanical breaking causing concrete spalling and fragment ejection	Flying concrete fragments and spalling debris during breaking operations causing eye injury or facial laceration	Demolition operatives, banksman, nearby workers	Mechanical / Physical	4	3	12	HIGH	- Mandate impact-rated safety goggles or face shields (ANSI Z87.1 / EN166) for all personnel within the breaking area. - Install physical debris screens/shields around active breaking operations.	2	3	6	MEDIUM	PPE compliance spot checks — Daily	HSE Officer	EN166:2001; ANSI Z87.1

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						L	S	R			L	S	R				
			to operatives and nearby workers.							Maintain a minimum 3m exclusion distance for non-essential personnel during active concrete breaking.							
6	Manual & Mechanical Breaking of Concrete Structures	Continuous operation of pneumatic breakers and concrete saws	Noise-induced hearing loss resulting from prolonged, unprotected exposure to pneumatic breakers and concrete-cutting saws exceeding 85 dB(A).	Demolition operatives, nearby workers	Physical (Noise)	4	3	12	HIGH	- Conduct noise monitoring in accordance with ISO 9612:2009 and establish designated hearing-protection zones above 85 dB(A). - Provide certified hearing protection (SNR ≥25dB) to all personnel exposed within these zones. - Limit individual exposure duration through work rotation and use quieter equipment where technically feasible.	2	3	6	MEDIUM	Noise dosimetry survey — Quarterly	HSE Officer	ISO 9612:2009; OSHA 29 CFR 1910.95
3. Mechanical Demolition using Excavator-Mounted Breaker/Crusher																	
7	Mechanical Demolition using Excavator-Mounted Breaker/Crusher	Positioning and operation of excavator-mounted breaker/crusher on demolition debris	Overturning of the excavator/breaker rig while operating on unstable or uneven demolition debris terrain, endangering the operator and nearby personnel.	Plant operator, ground crew	Mechanical	3	5	15	HIGH	- Assess ground bearing capacity prior to machine positioning; use steel plates or matting on unstable debris. - Restrict machine travel and operation to an engineer-approved working platform, within manufacturer-specified maximum slope. - Conduct a daily pre-use inspection of machine stability systems (outriggers, tracks) by a competent operator.	1	5	5	MEDIUM	Daily plant pre-use inspection checklist — Daily before use	Plant Operator / Site Supervisor	ISO 45001:2018 Cl.8.1.2; OSHA 29 CFR 1926.600
8	Mechanical Demolition using Excavator-Mounted Breaker/Crusher	Ground personnel working in proximity to operating excavator/breaker	Ground personnel struck by the excavator boom, breaker attachment, or ejected debris while working within the machine's swing radius.	Ground personnel, banksman, demolition operatives	Mechanical / Struck-by	4	4	16	HIGH	- Establish a physically barricaded exclusion zone equal to the full swing radius plus debris throw distance. - Assign a dedicated banksman/signaler maintaining continuous radio communication with the machine operator. - Fit the machine with a 360° camera and proximity-warning system.	1	4	4	LOW	Exclusion zone integrity check — Continuous during operation	Banksman / Site Supervisor	OSHA 29 CFR 1926.601; ISO 45001:2018 Cl.8.1.2
9	Mechanical Demolition using Excavator-Mounted Breaker/Crusher	Breaking of concrete walls/slabs at height above operating machine	Unplanned structural collapse of concrete elements (walls, slabs) onto the excavator operator or nearby workers during breaking operations.	Plant operator, nearby demolition operatives	Structural / Mechanical	3	5	15	HIGH	- Sequence demolition strictly top-down in accordance with the engineered method statement; never undermine unsupported elements. - Fit the excavator cab with a certified Falling Object Protective Structure (FOPS) to ISO 3449. - Maintain continuous supervision by the demolition supervisor for early signs of unplanned movement or cracking.	1	5	5	MEDIUM	Continuous supervisory visual inspection — Continuous during operation	Demolition Supervisor	ISO 3449:2005; BS 6187:2011
4. Debris Handling, Sorting, Loading & Removal																	
10	Debris Handling, Sorting, Loading & Removal	Manual sorting, stacking, and handling of broken concrete debris and reinforcement	Musculoskeletal injury, including back strain, resulting from repetitive manual handling of heavy concrete debris and reinforcement bar sections.	Labourers, demolition operatives	Ergonomic	4	3	12	HIGH	- Mechanize debris handling using excavator grapples or conveyor systems to minimize manual lifting requirements. - Provide manual handling training on safe lifting techniques to all labourers before task commencement. - Limit individual manual lift weight to recommended thresholds (≤25kg per the	2	3	6	MEDIUM	Manual handling practice audit — Weekly	HSE Officer	ISO 11228-1:2021; NIOSH Lifting Equation

No.	Work Area	Activity / Task	Hazard Description	Persons at Risk	Hazard Type	Initial Risk			Risk Level	Control Measures (Hierarchy of Controls)	Residual Risk			Risk Level	Monitoring Required / Frequency	Responsible	Regulatory Ref.
						L	S	R			L	S	R				
										NIOSH lifting equation), using team lifting for heavier loads.							
11	Debris Handling, Sorting, Loading & Removal	Handling and clearing of debris containing exposed reinforcement bar (rebar)	Puncture wounds or lacerations sustained from contact with protruding reinforcement bars exposed within demolished concrete debris.	Labourers, debris sorters	Mechanical / Physical	4	3	12	HIGH	- Cap or bend over all exposed rebar ends immediately upon exposure using proprietary rebar caps or bending tools. - Provide cut-resistant gloves (EN 388) and puncture-resistant safety boots (EN ISO 20345 S3) to all debris handlers. - Conduct daily housekeeping to clear and stack debris, removing hazardous protrusions from walkways and work areas.	2	3	6	MEDIUM	Daily housekeeping and rebar-capping inspection — Daily	Site Supervisor	EN 388:2016; EN ISO 20345:2011
12	Debris Handling, Sorting, Loading & Removal	Loading and haulage of debris using loaders and dump trucks	Ground labourers struck or crushed by moving plant (loaders, dump trucks) during debris loading and haulage operations within the site.	Ground labourers, truck drivers, loader operators	Mechanical	4	4	16	HIGH	- Implement segregated pedestrian and vehicle routes with physical barriers and clear directional signage. - Mandate high-visibility clothing (EN ISO 20471) for all ground personnel working within plant operating areas. - Enforce functioning reversing alarms and camera systems, with banksman-assisted reversing for all haul vehicles.	1	4	4	LOW	Site traffic management plan audit — Weekly	Site Supervisor / HSE Officer	EN ISO 20471:2013; ISO 45001:2018 Cl.8.1.2
13	Debris Handling, Sorting, Loading & Removal	Breaking, loading, and sweeping of concrete debris generating airborne dust	Inhalation of Respirable Crystalline Silica (RCS) dust generated during debris breaking, loading, and sweeping, with long-term risk of silicosis and other respiratory disease.	Demolition operatives, debris handlers, nearby workers	Chemical / Health (Dust)	4	4	16	HIGH	- Apply water-suppression systems continuously during all cutting, breaking, and loading activities generating dust. - Provide fit-tested RPE with an assigned protection factor ≥20 (FFP3/P100) where suppression alone is insufficient. - Conduct periodic air monitoring for respirable crystalline silica and rotate workers to limit individual exposure duration.	2	4	8	MEDIUM	Air quality monitoring and health surveillance review — Monthly	HSE Officer / Occupational Health Adviser	OSHA 29 CFR 1926.1153; ISO 45001:2018 Cl.8.1
5. Working at Height / Edge Protection during Dismantling of Elevated Elements																	
14	Working at Height / Edge Protection during Dismantling of Elevated Elements	Dismantling of elevated concrete slabs, columns, and upper-floor structures	Fall from height during the dismantling of elevated concrete slabs, columns, or upper-floor structural elements lacking adequate edge protection.	Operatives working at height, riggers	Fall from Height	3	5	15	HIGH	- Install engineered edge protection/guardrails compliant with EN 13374:2013 prior to any elevated dismantling work. - Mandate fall-arrest harnesses (EN 361) with anchor points certified to a minimum of 10kN, with 100% tie-off at all times. - Conduct a working-at-height rescue plan review and competency verification before task commencement.	1	5	5	MEDIUM	Height-safety equipment pre-use inspection — Before each shift	HSE Officer / Competent Person	EN 13374:2013; OSHA 29 CFR 1926.501
15	Working at Height / Edge Protection during Dismantling of Elevated Elements	Use of hand tools and handling of materials during elevated dismantling works	Workers or passersby below struck by tools or materials falling from elevated dismantling work areas.	Ground workers, passersby, operatives below elevated works	Mechanical / Struck-by	4	4	16	HIGH	- Install debris netting and catch platforms beneath all elevated work areas prior to work commencement. - Enforce a physically barricaded exclusion zone directly beneath all elevated dismantling activities. - Require tool lanyards/tethering for all hand tools used by operatives working at height.	1	4	4	LOW	Daily inspection of netting, platforms, and exclusion barricades — Daily	Site Supervisor	EN 13374:2013; ISO 45001:2018 Cl.8.1.2