Organisation Banner

Risk Assessment Report

Risk Assessment UID	H/MHC/NAV/26/00001	**Site Name**	Leeper, Suffield Depot, Fleischmanns, Alanreed, Galeville, Rosewood, Bowers, Vinings, Weldona, Cowgill, Fort Myers Beach, Council Bluffs
Risk Assessment Name	Noise and Vibration	**Status**	Publish
Next Revision Date	01-Apr-2027	**Revision Number**	0.0
Approved By	Renard Whatley	**Created On**	27-Mar-2026 02:17:23 AM
Published Date	01-Apr-2026 01:45:32 PM		

Activity: Noise and Vibration

Sub-Activity: Soil Compaction (Roller / Plate Compactor / Jumping Jack)

Hazard

Hazard	Continuous high noise from engine and compaction plate

Risk	Hearing loss, headache, fatigue
Likelyhood	4
Consequences	4
RR	16
Risk Level	High Risk

Control Measures

E - Elimination	• Avoid operating compaction equipment in enclosed or reflective areas where noise amplification occurs. • Do not allow unnecessary personnel to remain near operating compaction machinery. • Suspend operation if noise levels exceed permissible exposure limits and cannot be controlled.
SB – Substitution	• Use low-noise or newer generation compaction equipment with noise reduction features. • Replace diesel-powered compactors with electric or battery-operated models where technically feasible.
EC – Engineering Controls	• Install engine mufflers and acoustic enclosures around compaction equipment. • Maintain equipment regularly to prevent excessive noise from worn-out components. • Provide temporary noise barriers around high-noise zones. • Ensure proper mounting of compaction plates to reduce rattling noise.
AD – Administrative Controls	• Conduct noise level assessment before starting compaction work. • Limit exposure time by rotating operators. • Conduct toolbox talks on hearing hazards and symptoms of hearing damage. • Maintain log of noise monitoring and equipment maintenance. • Implement restricted access zone around operating equipment.
PPE – Personal Protective Equipment	• Ear plugs or ear muffs rated for high industrial noise. • Safety helmet. • Safety shoes with anti-slip sole. • Gloves to improve grip and reduce vibration transmission.

Residual Risk

Likelyhood	3

Consequences	4
Residual RR	12
Risk level	Meduim Risk

Additional Control Measures	NA
Opportunities	NA

Hazard

Hazard	Excessive vibration through ground

Risk	Hand-arm vibration syndrome, operator discomfort
Likelyhood	4
Consequences	3
RR	12
Risk Level	Medium Risk

Control Measures

E - Elimination	• Avoid prolonged continuous operation without rest intervals. • Do not operate equipment on unstable or excessively hard surfaces that increase vibration.
SB – Substitution	• Use vibration-dampened compactors with anti-vibration handles. • Replace older high-vibration equipment with modern low-vibration models. .
EC – Engineering Controls	• Ensure equipment is properly balanced and maintained. • Install vibration isolators or dampers on handles and mounting points. • Provide anti-vibration operator platforms where feasible.
AD – Administrative Controls	• Rotate operators to minimize prolonged exposure. • Conduct training on safe handling techniques and correct grip posture. • Monitor exposure duration as per vibration exposure limits. • Maintain equipment servicing log.
PPE – Personal Protective Equipment	• Anti-vibration gloves. • Safety boots with cushioned sole. • Full-sleeve protective clothing.

Residual Risk

Likelyhood	3
Consequences	3
Residual RR	9
Risk level	Meduim Risk

Additional Control Measures	NA
Opportunities	NA

Hazard

Hazard	Diesel exhaust exposure

Risk	Respiratory irritation
Likelyhood	3

Consequences	3
RR	9
Risk Level	Medium Risk

Control Measures

E – Elimination	• Avoid operating diesel compactors in poorly ventilated areas. • Do not position operators directly in exhaust emission path.
SB – Substitution	• Replace diesel compactor with electric compactor where feasible. • Use low-emission diesel engines compliant with emission standards.
EC – Engineering Controls	• Ensure proper exhaust direction away from operator zone. • Install exhaust filters or emission control devices. • Provide adequate ventilation in semi-enclosed work areas. .
AD – Administrative Controls	• Conduct toolbox talks on diesel exhaust hazards. • Maintain engine in good condition to reduce emissions. • Monitor air quality if working in partially enclosed areas.
PPE – Personal Protective Equipment	• Respiratory mask if ventilation is inadequate. • Safety helmet. • Gloves. • Safety shoes

Residual Risk

Likelyhood	2
Consequences	3
Residual RR	6
Risk Level	Low Risk

Additional Control Measures	NA
Opportunities	NA

Sub-Activity: Drilling (Anchor / Core Drilling / Rock Drilling)

Hazard

Hazard	High noise from drill motor

Risk	Hearing damage, loss of concentration
Likelyhood	4
Consequences	4
RR	16
Risk Level	High Risk

Control Measures

E – Elimination	• Avoid performing drilling activities in confined, echo-prone areas where noise levels can amplify significantly due to sound reflection from walls and slabs. • Do not allow personnel who are not directly involved in drilling operations to remain within the high-noise zone during drilling work. • Stop drilling activity immediately if abnormal noise levels are observed due to mechanical defects or tool malfunction.
SB – Substitution	• Use low-noise drill machines specifically designed with sound-dampening motor housings. • Replace pneumatic rock drills with electric or hydraulic drills that generate comparatively lower noise levels, wherever technically feasible. • Use sharp and properly rated drill bits to reduce friction-generated noise.
EC – Engineering Controls	• Install portable acoustic barriers or temporary soundproof curtains around the drilling zone to reduce noise transmission to nearby workers. • Ensure that drill motors are fitted with manufacturer-approved silencers or mufflers. • Maintain equipment regularly, including lubrication of moving parts, to prevent excessive rattling and vibration noise. • Isolate drilling machine from direct structural contact where feasible to reduce resonance amplification.
AD – Administrative Controls	• Conduct a pre-work noise assessment using a calibrated sound level meter to determine exposure levels. • Implement a job rotation schedule to limit the duration of exposure for each worker. • Conduct regular toolbox talks emphasizing the long-term effects of hearing damage and the importance of hearing protection. • Maintain a documented hearing conservation program including periodic audiometric testing for operators. • Clearly demarcate high-noise zones with signage such as “Hearing Protection Mandatory Area.”
PPE – Personal Protective Equipment	• High Noise Reduction Rating (NRR) ear plugs or ear muffs suitable for industrial drilling noise levels. • Safety helmet with chin strap to ensure protection during vibration exposure. • Safety goggles to protect against debris during drilling. • Full-sleeve protective clothing. • Safety shoes with anti-slip sole.

Residual Risk

Likelyhood	2
Consequences	4
Residual RR	8
Risk Level	Medium Risk

Additional Control Measures	NA
Opportunities	NA

Hazard

Hazard	Hand-arm vibration from drilling tool

Risk	Numbness, wrist injury
Likelyhood	4
Consequences	3
RR	12
Risk Level	Medium Risk

Control Measures

E - Elimination	• Avoid prolonged continuous drilling without scheduled rest intervals. • Do not operate drill equipment that produces excessive vibration due to mechanical wear or imbalance. • Suspend operation if vibration levels exceed recommended exposure limits.
SB – Substitution	• Use anti-vibration drill machines designed with dampening technology. • Replace conventional drill handles with ergonomically designed, vibration-absorbing handles. • Use sharp, properly sized drill bits to reduce vibration caused by friction and resistance.
EC – Engineering Controls	• Ensure regular balancing and maintenance of drill motor and rotating components. • Install vibration dampers or shock absorbers in drill mounting system. • Secure drilling base firmly to reduce recoil and instability. • Provide stable working platforms to prevent additional strain due to imbalance.
AD – Administrative Controls	• Conduct ergonomic training for workers on proper grip techniques and posture. • Implement job rotation to reduce prolonged exposure to vibration. • Maintain records of exposure duration in accordance with vibration exposure guidelines. • Conduct periodic health monitoring for early symptoms of Hand-Arm Vibration Syndrome (HAVS).
PPE – Personal Protective Equipment	• Anti-vibration gloves certified for industrial use. • Wrist support if medically recommended. • Safety helmet. • Safety boots with cushioned sole to absorb transmitted vibration.

Residual Risk

Likelyhood	2
Consequences	3
Residual RR	6
Risk Level	Low Risk

Additional Control Measures	NA
Opportunities	NA

Hazard

Hazard	Dust and flying particles

Risk	Eye irritation, lung exposure
Likelyhood	4
Consequences	4
RR	16
Risk Level	High Risk

Control Measures

E - Elimination	• Avoid dry drilling methods where wet drilling or vacuum-assisted systems can be used. • Do not allow drilling operations to continue if dust suppression system is not functioning properly. • Remove unnecessary personnel from drilling area to minimize exposure.

SB – Substitution	• Use water-assisted drilling systems to suppress airborne dust generation. • Replace conventional drill bits with dust-extraction integrated drill bits. • Use pre-cast anchor points to reduce drilling requirement where feasible.
EC – Engineering Controls	• Install localized dust extraction system connected to drilling equipment. • Provide water spray systems to control dust at source. • Ensure adequate ventilation in indoor or enclosed drilling areas. • Use containment sheets or enclosures to prevent dust spreading to adjacent work areas.
AD – Administrative Controls	• Conduct toolbox talks on silica dust hazards and respiratory protection requirements. • Implement exposure time limitation for workers in high-dust environments. • Maintain housekeeping practices to prevent dust accumulation. • Keep log of dust monitoring if applicable.
PPE – Personal Protective Equipment	• N95 or P100 respirator suitable for fine particulate matter. • Safety goggles with side shields or full-face shield. • Full-sleeve protective coveralls. • Safety gloves. • Safety boots with anti-slip sole.

Residual Risk

Likelyhood	2
Consequences	4
Residual RR	8
Risk level	Medium Risk

Additional Control Measures	NA
Opportunities	NA

Sub-Activity: Concrete Pouring (Boom Placer / Pump / Vibrator Use)

Hazard

Hazard	Noise from vibrator motor and pump

Risk	Hearing fatigue, headache
Likelyhood	3
Consequences	3
RR	9
Risk Level	Medium Risk

Control Measures

E – Elimination	• Avoid operating concrete vibrators and pumps in confined or enclosed areas where sound reflection significantly increases noise intensity. • Do not allow multiple high-noise equipment units to operate simultaneously in close proximity unless absolutely necessary for the operation. • Stop operation immediately if abnormal or excessive noise is detected due to mechanical defects or improper installation.
SB – Substitution	• Use low-noise concrete vibrators and pumps designed with sound-insulated motor housings. • Replace older diesel-driven pumps with electric-driven pumps where power supply is available and technically feasible. • Use properly sized vibrator needles to reduce unnecessary motor strain and excessive noise generation

EC – Engineering Controls	• Install temporary acoustic barriers or sound-absorbing panels around stationary pump units. • Ensure proper lubrication and regular maintenance of pump motors and vibrator shafts to prevent additional noise from wear and tear. • Secure equipment firmly to stable ground to prevent rattling noise caused by vibration movement. • Position pump units at a safe distance from worker rest zones or control stations.
AD – Administrative Controls	• Conduct periodic noise level monitoring using calibrated sound measuring devices. • Implement shift rotation to limit prolonged exposure of workers to continuous motor noise. • Conduct toolbox talks explaining early symptoms of hearing fatigue and hearing loss. • Clearly mark high-noise operational zones with warning signage such as “Hearing Protection Required.” • Maintain maintenance logs to ensure equipment operates within acceptable noise limits
PPE – Personal Protective Equipment	• Industrial-grade ear plugs or ear muffs with appropriate Noise Reduction Rating (NRR). • Safety helmet with chin strap. • Safety goggles to protect against splashes and debris. • Full-sleeve protective clothing. • Safety boots with anti-slip sole.

Residual Risk

Likelyhood	1
Consequences	3
Residual RR	3
Risk level	Low Risk

Additional Control Measures	NA
Opportunities	NA

Hazard

Hazard	Prolonged hand contact with vibrator handle

Risk	Hand-arm vibration, finger numbness
Likelyhood	4
Consequences	3
RR	12
Risk Level	Medium Risk

Control Measures

E – Elimination	• Avoid continuous operation of concrete vibrator for extended periods without scheduled rest breaks. • Do not use vibrator equipment that produces excessive vibration due to mechanical defects or imbalance. • Suspend work if operator experiences numbness, tingling, or discomfort in hands.
SB – Substitution	• Use anti-vibration concrete vibrators equipped with dampened handles. • Replace conventional rigid handles with ergonomically designed grip systems to reduce vibration transmission. • Use shorter-duration vibration techniques to minimize continuous exposure.
EC – Engineering Controls	• Ensure vibrator shaft and motor are properly balanced and maintained. • Install vibration-absorbing materials between handle and motor assembly. • Use stable working platforms to reduce additional strain caused by unstable footing. • Regularly inspect and replace worn bearings that may increase vibration levels.

AD – Administrative Controls	• Rotate operators to reduce prolonged exposure to hand-arm vibration. • Provide ergonomic training on correct gripping techniques and posture. • Monitor vibration exposure duration in accordance with occupational exposure standards. • Maintain health surveillance records for early detection of vibration-related disorders.
PPE – Personal Protective Equipment	• Anti-vibration gloves certified for construction use. • Safety helmet. • Safety boots with cushioned sole. • Full-sleeve protective clothing to reduce minor abrasions.

Residual Risk

Likelyhood	2
Consequences	3
Residual RR	6
Risk Level	Low Risk

Additional Control Measures	NA
Opportunities	NA

Sub-Activity: Pipe Cutting (Grinder / Cutter Machine)

Hazard

Hazard	High-frequency noise from cutting disc

Risk	Hearing loss, tinnitus
Likelyhood	4
Consequences	4
RR	16
Risk Level	High Risk

Control Measures

E – Elimination	• Avoid performing pipe cutting activities in confined or enclosed areas where sound waves reflect and amplify overall noise levels. • Do not allow multiple grinders or cutter machines to operate simultaneously in the same immediate area unless operationally required. • Stop using cutting equipment immediately if abnormal screeching or excessive noise is detected due to damaged disc or mechanical defect. • Remove unnecessary personnel from the cutting zone to eliminate non-essential exposure to high noise levels.
SB – Substitution	• Use low-noise grinder models designed with improved motor insulation and vibration control technology. • Replace worn or unbalanced cutting discs with manufacturer-recommended discs to reduce excess noise generation. • Use pipe cutting machines with enclosed blade systems instead of open high-speed grinders where feasible.

EC – Engineering Controls	• Install temporary sound barriers or acoustic screens around cutting operations when working near other crews. • Ensure grinder guards are properly fitted to reduce noise dispersion. • Maintain cutting discs in good condition and ensure correct RPM rating to prevent excessive vibration noise. • Conduct regular preventive maintenance of motor bearings and rotating parts to prevent rattling noise. • Position cutting activity away from reflective surfaces when possible.
AD – Administrative Controls	• Conduct noise monitoring before and during pipe cutting activities. • Implement exposure time limits and rotate operators to reduce prolonged noise exposure. • Provide training on recognizing early symptoms of hearing damage such as ringing in ears (tinnitus). • Display signage such as “High Noise Area – Hearing Protection Mandatory.” • Maintain equipment inspection and maintenance records.
PPE – Personal Protective Equipment	• High Noise Reduction Rating (NRR) ear plugs or ear muffs. • Safety helmet with chin strap. • Safety goggles or face shield to protect from sparks and debris. • Cut-resistant gloves for safe handling of pipes. • Safety boots with anti-slip sole.

Residual Risk

Likelyhood	2
Consequences	4
Residual RR	8
Risk Level	Medium Risk

Additional Control Measures	NA
Opportunities	NA

Hazard

Hazard	Excessive vibration and recoil

Risk	Wrist/forearm strain
Likelyhood	3
Consequences	3
RR	9
Risk Level	Medium Risk

Control Measures

E – Elimination	• Avoid using grinder machines with excessive recoil or poor balance. • Do not force the cutting disc into the material; allow the machine to cut at its designed speed. • Stop operation if unusual vibration or kickback occurs.
SB – Substitution	• Use anti-vibration grinder models with dampened handles. • Replace standard handles with ergonomically designed grip systems to reduce strain. • Use pipe cutting clamps or stands to secure material instead of manual holding.
EC – Engineering Controls	• Ensure grinder is equipped with anti-vibration side handles. • Secure pipe firmly using mechanical clamps or vices to prevent movement during cutting. • Maintain proper disc alignment and ensure disc is not warped. • Inspect and replace worn-out bearings or motor components that increase vibration.

AD – Administrative Controls	• Rotate operators to reduce prolonged exposure to vibration. • Provide training on proper cutting posture and two-hand operation technique. • Monitor duration of continuous grinder use. • Conduct regular inspection checklist before use.
PPE – Personal Protective Equipment	• Anti-vibration gloves. • Safety helmet. • Safety goggles or full-face shield. • Safety boots.

Residual Risk

Likelyhood	1
Consequences	3
Residual RR	3
Risk Level	Low Risk

Additional Control Measures	NA
Opportunities	NA

Hazard

Hazard	Flying sparks or dust

Risk	Eye injury, burn
Likelyhood	4
Consequences	4
RR	16
Risk Level	High Risk

Control Measures

E – Elimination	• Avoid cutting near flammable materials or combustible substances. • Remove unnecessary materials and debris from cutting area. • Stop operation if spark direction cannot be controlled safely.
SB – Substitution	• Use cold cutting techniques (e.g., pipe cutter) instead of high-speed abrasive cutting when feasible. • Replace damaged cutting discs that produce excessive sparks.
EC – Engineering Controls	• Install spark shields or protective barriers around cutting zone. • Ensure grinder guard is properly installed and positioned. • Provide local exhaust ventilation to control dust dispersion. • Keep fire extinguisher readily available near work area.
AD – Administrative Controls	• Conduct toolbox talk on fire hazards and eye protection importance. • Maintain safe distance from other workers. • Assign fire watch if cutting near combustible environment. • Inspect area for smoldering sparks after completion of work.
PPE – Personal Protective Equipment	• Full-face shield in addition to safety goggles. • Flame-resistant gloves. • Flame-resistant full-sleeve clothing. • Safety boots with heat-resistant sole.

Residual Risk

Likelyhood	2
Consequences	4
Residual RR	8
Risk Level	Medium Risk

Additional Control Measures	NA
Opportunities	NA

Sub-Activity: Chipping (Breaker / Demolition Hammer)

Hazard

Hazard	Extreme noise (>100 dB)

Risk	Permanent hearing loss
Likelyhood	4
Consequences	5
RR	20
Risk Level	High Risk

Control Measures

E – Elimination	• Avoid performing chipping or demolition activities inside enclosed or semi-enclosed structures where sound reflection significantly increases overall decibel levels. • Do not allow unnecessary personnel to remain within the immediate vicinity of the chipping activity during operation. • Suspend operation immediately if the equipment produces abnormal or unusually high noise levels due to mechanical malfunction, loose components, or improper attachment of chisel bits. • Plan demolition sequence in a manner that reduces simultaneous operation of multiple high-noise tools in the same work zone.
SB – Substitution	• Use low-noise hydraulic breakers instead of pneumatic breakers where technically feasible. • Replace older demolition hammers with newer models that are designed with integrated noise-reduction technology and vibration dampening systems. • Use pre-cutting or controlled demolition techniques to reduce the duration and intensity of hammering. .
EC – Engineering Controls	• Install temporary acoustic barriers or portable soundproof panels around the chipping zone to reduce noise transmission to adjacent workers. • Ensure that equipment is properly maintained, lubricated, and fitted with manufacturer-approved noise dampening accessories. • Secure chisel bits tightly and inspect regularly to prevent rattling noise caused by loose fittings. • Position compressor units (if pneumatic tools are used) at a distance from main working crew and use extended air hoses where possible.
AD – Administrative Controls	• Conduct pre-task noise level measurement using calibrated sound level meter. • Implement a hearing conservation program including periodic audiometric testing for workers exposed to high noise levels. • Limit exposure duration by rotating operators and providing scheduled rest intervals. • Conduct toolbox talks emphasizing the irreversible nature of permanent hearing loss. • Clearly mark high-noise zones with signage such as “Danger – High Noise Area – Hearing Protection Mandatory.” • Maintain inspection and maintenance records for demolition equipment.

PPE – Personal Protective Equipment	• High NRR-rated ear plugs in combination with ear muffs (double hearing protection if required). • Safety helmet with chin strap to protect from vibration and falling debris. • Safety goggles , Full-sleeve protective clothing & Safety boots with anti-slip and impact-resistant sole

Residual Risk

Likelyhood	2
Consequences	5
Residual RR	10
Risk Level	Medium Risk

Additional Control Measures	NA
Opportunities	NA

Hazard

Hazard	Hand-arm vibration from long use

Risk	Nerve damage, vibration white finger
Likelyhood	4
Consequences	4
RR	16
Risk Level	High Risk

Control Measures

E – Elimination	• Avoid continuous operation of breaker for extended periods without adequate rest intervals. • Do not use demolition hammers that produce excessive vibration due to worn-out internal components or damaged chisel bits. • Stop work immediately if operator experiences tingling sensation, numbness, or reduced grip strength.
SB – Substitution	• Use anti-vibration demolition hammers equipped with vibration isolation handles. • Replace conventional steel handles with ergonomically designed cushioned grips. • Use remote-controlled demolition equipment for large-scale chipping where feasible.
EC – Engineering Controls	• Ensure regular balancing and servicing of internal piston and striking mechanism. • Install vibration dampening mounts or isolation systems where equipment is mounted. • Keep chisel bits sharp to reduce excessive force and vibration during impact. • Provide stable and even working platforms to prevent additional strain from unstable posture.
AD – Administrative Controls	• Implement job rotation to limit duration of exposure to vibration. • Provide ergonomic training on proper stance and grip techniques. • Monitor vibration exposure levels in accordance with occupational exposure standards. • Maintain health surveillance records to detect early symptoms of Hand-Arm Vibration Syndrome (HAVS). • Encourage workers to report symptoms immediately without fear of penalty.
PPE – Personal Protective Equipment	• Certified anti-vibration gloves. • Safety boots with shock-absorbing soles. • Full-sleeve protective clothing. • Safety helmet and eye protection.

Residual Risk

Likelyhood	2
Consequences	4

Residual RR	8
Risk Level	Medium Risk

Additional Control Measures	NA
Opportunities	NA

Hazard

Hazard	Flying chips and dust

Risk	Eye injury
Likelyhood	4
Consequences	3
RR	12
Risk Level	Medium Risk

Control Measures

E – Elimination	• Avoid dry chipping methods where wet suppression techniques can be applied to reduce dust generation. • Remove loose debris from working surface before starting demolition to prevent secondary flying particles. • Clear the surrounding area of non-essential personnel prior to commencing work.
SB – Substitution	• Use wet chipping techniques with controlled water spray to reduce dust emission. • Replace damaged or worn-out chisel bits that may cause uncontrolled fragment ejection.
EC – Engineering Controls	• Install temporary physical barriers or debris screens around demolition area. • Use local dust extraction systems where feasible. • Ensure proper tool guards are installed and secured. • Maintain adequate lighting to clearly see working surface and reduce accidental fragmentation.
AD – Administrative Controls	• Conduct toolbox talks on eye hazards and proper positioning during chipping. • Maintain safe working distance between operators. • Inspect chisel bits and equipment before each use. • Assign supervisor to monitor safe work practices.
PPE – Personal Protective Equipment	• Safety goggles with side shields or full-face shield. • Dust mask or respirator if dust levels are high. • Safety helmet. • Heavy-duty gloves. • Safety boots with anti-slip sole.

Residual Risk

Likelyhood	2
Consequences	3
Residual RR	6
Risk Level	Low Risk

Additional Control Measures	NA
Opportunities	NA

Sub-Activity: Floor Grinding / Polishing Machine

Hazard

Hazard	Prolonged machine vibration

Risk	Lower back pain, hand fatigue
Likelyhood	4
Consequences	3
RR	12
Risk Level	Medium Risk

Control Measures

E – Elimination	• Avoid operating floor grinding or polishing machines continuously for extended durations without planned rest intervals. • Do not use grinding machines that produce excessive vibration due to worn grinding pads, unbalanced rotating heads, or mechanical defects. • Suspend operation immediately if abnormal shaking, imbalance, or structural instability of the machine is observed. • Remove uneven debris or obstacles from the floor surface before starting grinding to prevent sudden vibration spikes.
SB – Substitution	• Use modern grinding machines equipped with built-in vibration dampening systems and ergonomic handle designs. • Replace rigid metal handles with cushioned, anti-vibration grip systems. • Use self-propelled or ride-on grinding machines for large surface areas to reduce manual handling strain.
EC – Engineering Controls	• Ensure grinding discs or polishing pads are properly balanced and securely fastened before operation. • Maintain machine components, including bearings and rotating assemblies, to prevent vibration caused by wear and tear. • Install vibration isolation mounts between motor and chassis to reduce transmission of vibration to operator handles. • Provide stable and level working surfaces to prevent uneven machine movement.
AD – Administrative Controls	• Implement job rotation to reduce prolonged exposure to vibration. • Provide ergonomic training on correct posture, handle grip, and body positioning during operation. • Monitor duration of exposure in accordance with vibration exposure guidelines. • Conduct regular maintenance inspections and document vibration-related complaints from operators. • Encourage workers to report early symptoms such as numbness, stiffness, or lower back discomfort.
PPE – Personal Protective Equipment	• Anti-vibration gloves suitable for grinding operations. • Safety boots with cushioned and anti-slip soles. • Back support belt if medically recommended. • Full-sleeve protective clothing. • Safety helmet where overhead hazard exists.

Residual Risk

Likelyhood	2
Consequences	3
Residual RR	6
Risk Level	Low Risk

Additional Control Measures	NA
Opportunities	NA

Hazard

Hazard	High-frequency noise (continuous)

Risk	Hearing fatigue, stress
Likelyhood	4
Consequences	4
RR	16
Risk Level	High Risk

Control Measures

E – Elimination	• Avoid operating multiple grinding machines simultaneously in confined areas where sound amplification may occur. • Do not allow non-essential personnel to remain near active grinding operations. • Stop operation immediately if abnormal screeching or excessive noise indicates mechanical malfunction.
SB – Substitution	• Use low-noise motor grinding machines with improved sound insulation technology. • Replace worn grinding pads that may produce excessive friction noise. • Use electric-driven machines instead of diesel-driven units where feasible.
EC – Engineering Controls	• Install temporary acoustic barriers around grinding areas to reduce noise transmission. • Maintain motor components and rotating parts to prevent noise caused by loose fittings or imbalance. • Ensure machine guards are properly fitted to reduce noise dispersion. • Position equipment away from reflective walls where possible.
AD – Administrative Controls	• Conduct periodic noise level assessments. • Implement shift rotation to minimize prolonged exposure. • Conduct toolbox talks on risks of continuous noise exposure and hearing conservation practices. • Clearly display signage: “High Noise Area – Hearing Protection Required.” • Maintain hearing conservation program with periodic audiometric testing.
PPE – Personal Protective Equipment	• Ear plugs or ear muffs with appropriate Noise Reduction Rating. • Safety helmet. • Safety goggles. • Full-sleeve protective clothing. • Safety boots.

Residual Risk

Likelyhood	2
Consequences	4
Residual RR	8
Risk Level	Medium Risk

Additional Control Measure	NA
Opportunities	NA

Hazard

Hazard	Dust generation

Risk	Breathing difficulty
Likelyhood	3
Consequences	4
RR	12
Risk Level	Medium Risk

Control Measures

E – Elimination	• Avoid dry grinding where wet grinding methods can be applied to suppress dust. • Do not operate grinding machines without functional dust collection systems. • Remove accumulated debris before grinding to reduce airborne dust.
SB – Substitution	• Use vacuum-integrated grinding machines designed to capture dust at source. • Replace conventional abrasive pads with low-dust generation pads. • Use water-assisted grinding techniques where technically feasible.
EC – Engineering Controls	• Install local exhaust ventilation systems connected to dust collection units. • Provide industrial vacuum systems for continuous dust removal. • Ensure adequate natural or mechanical ventilation in enclosed areas. • Use physical containment sheets to prevent dust spread to adjacent areas.
AD – Administrative Controls	• Conduct toolbox talks on silica dust hazards and respiratory protection requirements. • Limit exposure time for workers in high-dust environments. • Maintain housekeeping practices including wet sweeping or vacuum cleaning instead of dry sweeping. • Keep dust monitoring records if applicable.
PPE – Personal Protective Equipment	• N95 or higher-grade respirator suitable for fine dust particles. • Safety goggles with side protection. • Full-sleeve protective clothing. • Gloves. • Safety boots with anti-slip sole.

Residual Risk

Likelyhood	1
Consequences	4
Residual RR	4
Risk Level	Low Risk

Additional Control Measure	NA
Opportunities	NA

Sub-Activity: Rebar Cutting / Bending Machine

Hazard

Hazard	Mechanical vibration & motor noise

Risk	Operator hearing loss
Likelyhood	3
Consequences	4
RR	12
Risk Level	Medium Risk

Control Measures

E – Elimination	• Avoid operating rebar cutting or bending machines in enclosed fabrication yards where noise reflection from walls and roofing sheets can amplify sound levels. • Do not allow multiple cutting or bending machines to operate simultaneously in close proximity unless required for production sequencing. • Stop operation immediately if unusual rattling, grinding, or abnormal motor noise is detected due to loose mechanical parts or internal wear. • Remove non-essential personnel from the immediate operating zone to eliminate unnecessary noise exposure.
SB – Substitution	• Use modern rebar cutting and bending machines equipped with low-noise electric motors and vibration-dampening systems. • Replace older mechanical machines with hydraulic-operated systems that operate more smoothly and produce lower vibration levels. • Use properly sharpened cutting blades to reduce motor strain and excessive noise generation.
EC – Engineering Controls	• Install rubber isolation pads or vibration dampers beneath the machine foundation to reduce vibration transmission. • Ensure the machine is firmly anchored to a stable and level base to prevent excessive movement during operation. • Conduct regular lubrication and maintenance of gears, bearings, and rotating components to prevent friction-induced noise. • Install acoustic shields or temporary sound barriers around the fabrication area where feasible.
AD – Administrative Controls	• Conduct periodic noise monitoring to ensure exposure levels remain within permissible limits. • Implement job rotation to limit prolonged exposure of operators to continuous motor noise. • Provide toolbox talks on risks of long-term hearing damage and importance of protective measures. • Maintain documented maintenance schedules and inspection logs. • Display signage.
PPE – Personal Protective Equipment	• Ear plugs or ear muffs with suitable Noise Reduction Rating (NRR). • Safety helmet if overhead hazards exist. • Safety goggles to protect from metal fragments. • Cut-resistant gloves for handling rebar. • Safety boots with steel toe protection.

Residual Risk

Likelyhood	1
Consequences	4
Residual RR	4
Risk Level	Low Risk

Additional Control Measure	NA
Opportunities	NA

Hazard

Hazard	Poor anchoring of machine

Risk	Equipment movement, tip-over
Likelyhood	3
Consequences	4
RR	12
Risk Level	Medium Risk

Control Measures

E-Elimination	• Avoid installing diesel generator sets near worker rest areas, offices, or high-occupancy zones. • Do not operate generator continuously without load management planning to reduce unnecessary runtime. • Stop operation immediately if abnormal engine knocking or excessive sound indicates malfunction.
SB-Substitution	• Use silent-type DG sets equipped with acoustic enclosures. • Replace older high-noise generators with newer low-emission, low-noise models. • Use electric power supply from grid where available instead of continuous DG operation.
EC-Engineering Controls	• Install acoustic enclosure or soundproof canopy around generator. • Provide vibration isolation pads beneath generator base frame. • Ensure exhaust system includes proper mufflers and silencers. • Install generator at adequate distance from main work zones. • Construct dedicated generator room with sound-absorbing wall panels where feasible.
AD-Administrative Controls	• Conduct periodic noise level monitoring. • Restrict access to generator area during operation. • Conduct maintenance as per manufacturer schedule to prevent excessive noise. • Display signage: “High Noise Area – Authorized Personnel Only.” • Implement hearing conservation program for generator operators.
PPE-Personal Protective Equipment	• Ear plugs or ear muffs suitable for engine noise levels. • Safety helmet. • Safety gloves. • Safety boots.

Residual Risk

Likelyhood	1
Consequences	4
Residual RR	4
Risk Level	Low Risk

Additional Control Measure	NA
Opportunities	NA

Sub-Activity: Generator Operation (DG Sets)

Hazard

Hazard	Prolonged engine noise

Risk	Hearing loss, irritation
Likelyhood	4
Consequences	4
RR	16
Risk Level	High Risk

Control Measures

E - Elimination	• Avoid installing diesel generator sets near worker rest areas, offices, or high-occupancy zones. • Do not operate generator continuously without load management planning to reduce unnecessary runtime. • Stop operation immediately if abnormal engine knocking or excessive sound indicates malfunction.
SB-Substitution	• Use silent-type DG sets equipped with acoustic enclosures. • Replace older high-noise generators with newer low-emission, low-noise models. • Use electric power supply from grid where available instead of continuous DG operation.
EC-Engineering Controls	• Install acoustic enclosure or soundproof canopy around generator. • Provide vibration isolation pads beneath generator base frame. • Ensure exhaust system includes proper mufflers and silencers. • Install generator at adequate distance from main work zones. • Construct dedicated generator room with sound-absorbing wall panels where feasible.
AD-Administrative Controls	• Conduct periodic noise level monitoring. • Restrict access to generator area during operation. • Conduct maintenance as per manufacturer schedule to prevent excessive noise. • Display signage: “High Noise Area – Authorized Personnel Only.” • Implement hearing conservation program for generator operators.
PPE-Personal Protective Equipment	• Ear plugs or ear muffs suitable for engine noise levels. • Safety helmet. • Safety gloves. • Safety boots.

Residual Risk

Likelyhood	1
Consequences	4
Residual RR	4
Risk level	Low Risk

Additional Control Measures	NA
Opportunities	NA

Hazard

Hazard	Vibration transmitted through foundation

Risk	Cracks in surrounding structures
Likelyhood	3
Consequences	3
RR	9
Risk Level	Medium Risk

Control Measures

E - Elimination	• Avoid installing generator directly on weak or non-engineered flooring. • Do not operate generator if excessive vibration or abnormal shaking is observed. • Avoid placing generator close to structural columns or load-bearing walls. • Stop operation immediately if new cracks appear in nearby structures.
SB – Substitution	• Use generator with built-in vibration isolation base frame. • Replace rigid mounting system with anti-vibration spring or rubber mounts. • Use low-RPM generator models to reduce vibration intensity.

EC – Engineering Controls	• Provide dedicated reinforced concrete foundation as per design specification. • Install heavy-duty anti-vibration pads between generator and foundation. • Ensure proper alignment of engine and alternator coupling. • Tighten anchor bolts properly to prevent lateral movement. • Use flexible exhaust connections to prevent vibration transfer to structure.
AD – Administrative Controls	• Conduct structural assessment before installation. • Inspect surrounding walls and floors periodically for cracks. • Maintain preventive maintenance schedule to control imbalance. • Keep inspection and monitoring records. • Train maintenance team to identify abnormal vibration. .
PPE – Personal Protective Equipment	• Safety helmet during installation and maintenance. • Safety gloves. • Safety shoes with steel toe. • Hearing protection during operational checks.

Residual Risk

Likelyhood	1
Consequences	3
Residual RR	3
Risk level	Low Risk

Additional Control Measures	NA
Opportunities	NA

Sub-Activity: Concrete Pump Operation / Boom Placer

Hazard

Hazard	Hydraulic motor noise

Risk	Stress, hearing strain
Likelyhood	3
Consequences	4
RR	12
Risk Level	Medium Risk

Control Measures

E - Elimination	• Avoid prolonged exposure to operating concrete pump noise by scheduling shifts. • Stop operation if nearby workers are not adequately protected from noise. • Avoid working near hydraulic motors without proper noise barriers.
SB – Substitution	• Use low-noise hydraulic pumps or electrically powered boom placers where feasible. • Replace older generators/pumps with modern models designed for reduced noise emissions.
EC – Engineering Controls	• Install acoustic enclosures around hydraulic motors. • Use vibration-damping mounts on pumps and hoses. • Maintain equipment regularly to prevent excessive noise due to worn components.
AD – Administrative Controls	• Implement work/rest cycles to limit continuous noise exposure. • Conduct noise monitoring near boom placer operation. • Train operators on noise hazards and hearing protection usage. • Restrict personnel presence near high-noise areas unless necessary.

PPE – Personal Protective Equipment	• Ear plugs or earmuffs with appropriate noise attenuation. • Safety helmet. • Safety gloves. • Safety shoes with anti-slip sole.

Residual Risk

Likelyhood	2
Consequences	4
Residual RR	8
Risk level	Medium Risk

Additional Control Measures	NA
Opportunities	NA

Hazard

Hazard	Vibrations through hoses and chassis

Risk	Muscle fatigue
Likelyhood	3
Consequences	3
RR	9
Risk Level	Medium Risk

Control Measures

E - Elimination	• Avoid prolonged operation without breaks to reduce muscle fatigue. • Stop using hoses with visible damage or kinks to prevent excessive vibration.
SB – Substitution	• Replace rigid hoses with flexible vibration-damping hoses. • Use smaller boom sections where feasible to reduce vibration transmission.
EC – Engineering Controls	• Install vibration isolation mounts on pump chassis and hose connections. • Ensure proper hose routing to minimize operator contact with vibration sources. • Maintain hydraulic pressure and flow within manufacturer-recommended limits to reduce vibration.
AD – Administrative Controls	• Schedule regular breaks to relieve operators from vibration fatigue. • Conduct toolbox talks on correct handling posture. • Rotate operators to reduce continuous exposure.
PPE – Personal Protective Equipment	• Anti-vibration gloves. • Long-sleeve protective clothing. • Safety boots. • Eye protection if vibration causes hose movement or fluid splashes.

Residual Risk

Likelyhood	2
Consequences	3
Residual RR	6
Risk level	Low Risk

Additional Control Measures	NA
Opportunities	NA

Sub-Activity: Metal Cutting / Welding (Mechanical Saw, Grinder)

Hazard

Hazard	High-pitched noise and vibration

Risk	Hearing loss, hand strain
Likelyhood	4
Consequences	4
RR	16
Risk Level	High Risk

Control Measures

E – Elimination	• Avoid prolonged exposure to high-pitched noise from cutting or grinding tools by scheduling work in shifts. • Stop operations if workers nearby are not wearing adequate hearing protection. • Avoid using old or poorly maintained equipment that produces excessive vibration or noise.
SB – Substitution	• Use low-noise and low-vibration cutting/grinding equipment wherever technically feasible. • Replace handheld grinders with bench-mounted tools to reduce direct hand-arm vibration.
EC – Engineering Controls	• Fit vibration-damping handles on grinders and saws. • Install acoustic shields or barriers around noisy equipment. • Maintain cutting discs, motors, and bearings regularly to minimize vibration and noise.
AD – Administrative Controls	• Conduct training sessions and toolbox talks on risks of noise and vibration exposure. • Implement work/rest rotations to reduce continuous exposure. • Conduct regular hearing tests and hand-arm vibration monitoring for operators. • Restrict access to areas where high-noise cutting/grinding is being performed to only necessary personnel.
PPE – Personal Protective Equipment	• Ear plugs or earmuffs with appropriate noise attenuation. • Anti-vibration gloves. • Full-face shield or safety goggles to protect eyes from sparks and debris. • Long-sleeve protective clothing. • Safety boots with reinforced toes and anti-slip soles.

Residual Risk

Likelyhood	2
Consequences	4
Residual RR	8
Risk Level	Medium Risk

Additional Control Measures	NA
Opportunities	NA

Hazard

Hazard	Vibration from cutting handle

Risk	Fatigue, loss of grip control
Likelyhood	3
Consequences	3
RR	9
Risk Level	Medium Risk

Control Measures

E - Elimination	• Avoid prolonged continuous operation without breaks. • Stop using handles or tools that are worn or slippery causing poor grip.
SB – Substitution	• Replace standard handles with ergonomic, vibration-dampening handles. • Use alternative tools or automated machines where possible to reduce hand-arm vibration.
EC – Engineering Controls	• Install vibration-damping mounts and grips. • Adjust tool speed and load according to manufacturer's recommendations to minimize vibration.
AD – Administrative Controls	• Implement operator rotation to limit continuous exposure. • Conduct toolbox talks on proper grip and posture during tool operation. • Maintain a log for exposure duration and incidents of fatigue or numbness.
PPE – Personal Protective Equipment	• Anti-vibration gloves. • Full-sleeve protective clothing. • Safety boots. • Eye protection if sparks or debris are present.

Residual Risk

Likelyhood	2
Consequences	3
Residual RR	6
Risk Level	Low Risk

Additional Control Measures	NA
Opportunities	NA

History

Created On	Created By	Comment	Attachments
01-Apr-2026 01:45:33 PM	Renard Whatley	Published	
27-Mar-2026 02:17:23 AM	Renard Whatley	A new record was created: Hira Type set to 'Noise and Vibration' Hira Status set to 'Submitted' Next Revision Date set to '26-Mar-2027' Revision Number set to '1'	