Crushing Operations

Process manual for crushing arising demolition materials such as floor slabs and block work.

PERSES

Perses Limited
info@perses.org.uk
07595 293058

Crushing Operations

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Crushing

Site Crushing General

- A Banksman wearing a white hard hat and green high-visibility clothing, as per the Build UK standard (Appendix-A), will be posted at the site entrance to protect pedestrians or warn approaching traffic while marshalling wagons or delivery vehicles on and off-site. To ensure the sentries' visibility, the vehicles will be required to turn their headlights on at all times while on site.
- The site supervisor and any roadways will continually monitor site and road conditions will be regularly swept during the course of the working day to maintain cleanliness and to minimise any mess left by vehicles leaving site.
- All deliveries to and from the site, in particular HGVs, will be carefully controlled to minimize disruption to the local environment.
- All materials set aside for crushing must comply with the aggregate WRAP protocol.
- Materials must be inspected pre- and post-process twice daily and documented on the relevant WRAP check sheet.

ENVIRONMENTAL HOLD POINT		
Confirmation that suitable and sufficient dust suppression is in place. **This will typically be in the form of water spray from a 1" or 3" hose / Dust Boss**		
SITE SUPERVISOR/MANAGER	SIGNATURE	DATE

- The 360O demolition rig with bucket attachment will start from one end of the building stockpile and work backwards. Sorting through the stockpile, oversized / munching arising will be stockpiled for further processing. Small loose arising's will be stockpiled in front of stockpile. The stockpile is to be worked back in layers / bays at a time, with the excavator working in front of tracks and not over the side. Small loose arising must be suitable size to go through the crusher.
- To minimise the dust during this phase of the works, water suppression will be used to control the dust. This will be typically done setting a 3" hose up in front of the working face and dampening down. Where practically possible, a small hose with fine mist is to be left to dampen the stockpile down over night.
- Oversized materials will be further processed during the munching phase. Materials are pulverised by jaws fitted to the 360° demolition rig. This phase of the works is to break the concrete down to manageable sizes whilst removing the reinforced steel / rebar. The working area is to be kept damp with the use of fine mist from a water hose.

HOLD POINT		
Confirmation by the site supervisor/manager that the crushing plant is located in a suitable location to allow for vehicle movement.		
SITE SUPERVISOR/MANAGER	SIGNATURE	DATE

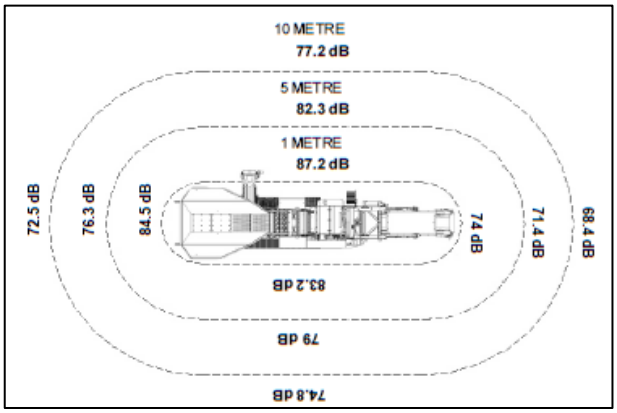
ENVIRONMENTAL HOLD POINT		
Samples will be taken of the crush off the belt every 7 days. The samples will be tested to ensure they comply with the relevant quality protocols.		
SITE SUPERVISOR/MANAGER	SIGNATURE	DATE

- Operatives will stand at a safe distance from the crushing operations.

- Operatives will only access the machine on the maintenance platform when the machine has been isolated and check for blockages.
- All operations will cease when checking is in process.
- Radio communication, visual communication, or air horns will be used to advise the machine operator to stop operations.
- Emissions and dust will be monitored a minimum of three times daily and recorded in the site diary.
- Samples will be taken of the crush off the belt every seven-days. The samples will be tested to ensure they comply with the relevant quality protocols.
- If the crusher has a blockage of any description, the machine will be isolated and a permit to work issued.

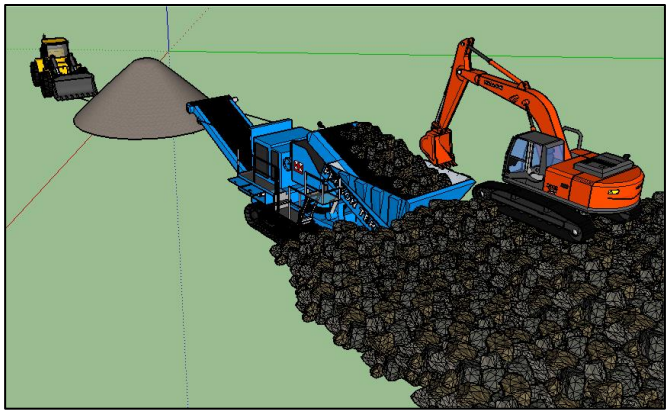
HOLD POINT		
Confirmation that the client or others within close proximity have been made aware of the working start times and proposed duration, so where required the nearby live areas can be notified so that proactive measures and a sympathetic programme can be implemented.		
SITE SUPERVISOR/MANAGER	SIGNATURE	DATE

SAFETY HOLD POINT		
Hearing protection will be required whilst working in close proximity to the crusher. **Please refer to drawing below for typical decibel levels.**		
SITE SUPERVISOR/MANAGER	SIGNATURE	DATE



SAFETY HOLD POINT		
Operatives will stand at a safe distance from the crushing operations. Operatives will only access the machine on the maintenance platform when the machine has been isolated and check for blockages. All operations will cease when checking is in process. Safe access must be maintained to the crusher and excavator for the operators at all times.		
SITE MANAGER	SIGNATURE	DATE
CRUSHER OPERATOR	SIGNATURE	DATE

- A level platform will be made at ground level in front of the stockpile. A bucket width trench will be dug in the middle of the pad (approx. 750mm depth); this will be to catch the fines off the belt. Once the crusher unit has been assembled, it will be tracked onto the platform with tracks straddling the trench. A drop zone will be set up to the side of the stockpile for oversize materials / metal that cannot be processed through the crusher and will need further processing by suitable other 360° demolition rig.
- On delivery of the mobile crushing plant it will be set-up ready for work according to manufacturer guidance.
  - Full discharge conveyor will be hydraulically lowered to correct working angle.
  - Magnetic belt inspected to ensure no damage during transit.
  - All machine guards fitted and secured.
  - All access ladders secured and fitted.
  - The machine will then be tracked onto the constructed pad. Machine will be checked for even levels by use of spirit level to ensure minimum vibration and stability.
  - Crusher engine will be started.
  - Clutch will be engaged to enable the drive belts and jaws to function.
  - Stop / Start switches will be checked to ensure correct operation.
  - 1" water hose to be connected to incoming joint. Ensure that all nozzles / jets are clear of debris to ensure effective dust suppression during the crusher
- After completion of step-up, work will commence as follows.
- The 360° demolition rig with bucket will place itself behind the loading hopper of the crusher at a level that ensures the driver/operator has full uninterrupted view of the crushing plant.



- He will then excavate into the stockpiles, filling the excavator bucket with demolition arising's and deposit as required (slowly) into the feed hopper ensuring even distribution on the feeder tray while at the same time checking for oversized pieces.
- All crushed arising's are then moved from the discharge conveyor; this will usually be carried out by a pneumatic tyre loading shovel. The crushed arising's are then transported to the agreed stockpile location. The material will then either be loaded out into waiting lorries for removal off site.
- Scrap metal from the magnet belt will be cleared on a regular basis and loading into a suitable recycling skip.
- The crusher unit will be moved around site as the works progress depending on the location of the stockpiles to be processed.
- On completion of the works the mobile crushing plant will be dismantled and removed from site.

Stockpiling Materials

- The supervisor will ensure that an exclusion zone is established as per BS: 6187 and National Federation of Demolition Contractors (NFDC) guidance note DRG 110: 2014 to maintain safe working zone around the 360° demolition rig during all works. A trained banksman may be utilised to maintain the said exclusion zone.
- The 360° demolition rig using the riddle bucket will lift the material from the existing stockpile agitating the material through the grill dropping the soils into a new processed pile.
- The 360° demolition rig will create a pile for the reclaimed scrap ahead of removal off site to a registered metal recycler.
- The 360° demolition rig will continue with this method until the existing pile is fully processed and all materials are satisfactorily separated.
- Any other wastes taken off site will be subject to Duty of Care i.e. Waste Transfer Note, detailing description, producer and carrier of waste, will be kept on site and available for inspection.
- Following the completion of the segregation the 360° demolition rig will stockpiling the remaining material leaving the site level ensuring all voids are backfilled.
- Soil stockpiles heights will not exceed 3m in height and will be formed in a uniform shape with a flat top surface. Side slopes will not exceed the angle of repose (as per the guidance in table-1 and figure-1 below) which will have been compacted down by tracking by the 360° demolition rig.

Material	Angle of repose
Very wet clay	15°
Wet clay	18°
Wet sand	25°
Sandy gravel	26° – 27°
Dry earth/dry clay	30°
Damp sand	33° – 34°
Dry sand	35° – 36°
Shingle	40°
Well drained clay/moist earth	45°
Clean gravel in natural deposit	50°

(Table 1)

(Figure 1)

Loading of waste and scrap materials

- All scrap materials arsing from the magnet belt will be loaded into skips and sent directly to a registered waste recycle facility.
- On arrival of transport vehicles, the sentry/banksman will brief the driver on the various activities which are currently ongoing onsite were the driver will ensure the headlights have been turned on if they are not already.
- The vehicle will be directed into position by the banksman using hand signals.
- Once in position, the driver will ensure the vehicle safely secured and vehicles braking system has been locked.
- The driver will place the roll on/off skip in the specified location ready for loading.
- The excavator equip with selector grab attachment will track into position under the direction of the banksman.
- Once into position, the excavator will grab a large quantity of the waste materials, lift from the pile and gently shake the materials.
- This will ensure any loose materials will drop free before loading of the skip commences.
- Once all loose materials have fallen free, the excavator will lift the boom, grab above the height of the skip.
- Once above the excavator will slew above the skip and commence the loading.
- Once the excavator has slewed into the correct position the grab will be carefully lowered into the skip.
- The excavator will then release the grab allowing the materials to position on the base of the skip.
- The excavator will then lift the boom, grab to above the height of the skip and slew clear ready for the next grab of materials.
- This procedure will be carried out throughout the loading of the entire skip or skips.
- No materials to be left protruding above the height of the skip upon completion of loading.
- Before the vehicle leaves site, the driver will ensure the load has been checked before removing the skip from site.
- Skips will only be checked by accessing the skip via the permanently fixed ladder on the skip, at no point will the driver climb onto the skip.
- If any materials require adjustment, this will be done using the excavator and at no point shall operatives climb or access the skips.
- Prior to leaving site a collection note will be issued from the driver, and the site manager
- will sign to say the skip has been collected from site.
- A record of this collection note will be retained and kept within the site file for record purposes.
- The banksman will direct the vehicle from the site and safely onsite the main highway.

Loading Vehicles

- Sentries will be in attendance during vehicle manoeuvres for access/egress.
- The demolition rig will load the arising waste into awaiting vehicles using the bucket.
- Vehicles will leave site and continue down 1-way road as per the traffic management plan to their destination.
- Any wastes taken off site will be subject to Duty of Care i.e. Waste Transfer Note, detailing description, producer and carrier of waste, will be kept on site and available for inspection.
- Following the completion of the segregation the 360° demolition rig will ensure all voids are backfilled leaving the site level.
- Soil stockpiles heights will not exceed 3m in height and will be formed in a uniform shape with a flat top surface. Side slopes will not exceed the angle of repose (as per the guidance in table-1 and figure-1 below) which will have been compacted down by tracking by the 360° demolition rig.

Libraries

Risk assessment Library

- In accordance with the Management of Health and Safety at Work Regulations 1999, made under the Health and Safety at Work Act 1974 all work practices to be encountered during the contract will be assessed and a Risk Assessments based on the findings produced for activities not eliminated by the method of works chosen as defined in the Method Statement.
- A library of Risk Assessments relative to the contract will be attached in conjunction with the specific sections of the Method Statement.
- The Risk Assessments will be updated throughout the contract should conditions change and/or new methods preferred.
- Additional risks may arise during the demolition works which will be assessed and included on the risk assessment.
- **A risk assessment is only as good as those putting the controls into place.**
- **If in doubt stop work immediately and report any issues to the supervisor/manager.**

Name		Name		Name		Name	
Working at Height	✓	Manual Handling	✓	Fire	✓	Hot Works	✓
First Aid	✓	Emergency Procedures	✓				

CoSHH assessment library

- In accordance with the CoSHH Regulations 2002, made under the Health and Safety at Work Act 1974, the health of persons exposed to substances hazardous to health in the workplace will be protected.
- A library of CoSHH assessments will be attached in conjunction with this method statement as indicated in the list below. The substances are those expected to be encountered during the course of the works, but the list is not exhaustive.

Name		Name		Name		Name	
Ultra-Low Diesel	✓	Adblue	✓	Engine Oil	✓	Universal Anti-Freeze	✓
Lubricating Oil	✓	Hydraulic Oil	✓	Grease Lubricant	✓	Lithium Grease	✓
Concrete Dust	✓	Unleaded Petrol	✓	Two-Stroke Oil	✓		

Personal Protective Equipment

SYMBOL	TYPE	STANDARD	WHEN IT SHOULD BE WORN
	Hard hat	BS EN 397 BS EN 812	397: At all times while on site 812: Bump caps for vehicles drivers and fitters
	Safety footwear	BS EN 20345	At all times while on site
	Hi Vis clothing	BS EN 20471	Class-2 required at all times while on site. Class-3 will be required for working near or on a dual-carriageway with a speed of 50MPH or above, motorways, airports, and railways.
	Safety glasses	BS EN166 A BS EN166 B BS EN166 4	At all times while on site. Impact goggle to a category A standard will be required when using an abrasive wheel cutting saw. 166 4: For general protection from dust.
	Gloves	BS EN 420 BS EN 388 BS EN 407 BS EN 511	388: 2.1.2.1 For light duties handling materials 388: 3.3.3.3 For hand demolition works 388: 4.5.4.4 For puncture and cut protection 407 For thermal hazards such as hot works. 511 For cold weather conditions
	Ear defenders	EN 352	When working adjacent to abrasive wheels or breakers, or sources of significant noise output based on the task specific risk assessment
	Harness	BS EN 363	Fall arrest lanyard at all times when working at height
	Overalls	EN 340 EN 381 EN ISO 11612	340: For general working 381: When working with chainsaws 11612: When carrying out hot works
	Half mask	EN 140 EN 143	FPP3 Filter when working with Cat-B asbestos
	Disposable mask	EN 149	FPP2 filter disposable mask for light duties.

Legislation and standards

All works will be carried out in full compliance, where reasonably practicable with the following articles:

Legislation

- ✓ The Health and Safety at Work Act 1974,
- ✓ The Control of Pollution Act, 1974,
- ✓ Environmental Protection Act 1990 (amended Scotland 2001).

Regulations

- ✓ The Health & Safety (First Aid) Regulations 1981,
- ✓ The Road Vehicles (Construction and Use) Regulations 1986,
- ✓ The Personal Protective Equipment Regulations 1992,
- ✓ Workplace Health & Safety Welfare Regulations 1992,
- ✓ The Manual Handling Operations Regulations 1992 (MHR) (As amended 2002),
- ✓ The Health & Safety (Consultation with Employees) Regulations 1996,
- ✓ The Safety Signs and Safety Signals Regulations 1996,
- ✓ The Waste Management (Licensing) Regulations 1998,
- ✓ The Provision and Use of Work Equipment Regulations (PUWER) 1998,
- ✓ The Lifting Operations and Lifting Equipment Regulations (LOLER) 1998,
- ✓ The Management of Health and Safety at Work Regulations (MHSWR) 1999,
- ✓ The Special Waste Amendment (Scotland) Regulations 2004 (& Special Waste Regulations 1996),
- ✓ The Regulatory Reform (Fire Safety) Order 2005,
- ✓ The Control of Vibration at Work Regulations 2005,
- ✓ The Control of Noise at Work Regulation 2005,
- ✓ Working at Height Regulations 2005 (As amended 2007),
- ✓ Control of Substances Hazardous to Health (CoSHH) 2002 (As amended 2013),
- ✓ The Construction (Design and Management) Regulations (CDM) 2015.

British Standards

- ✓ BS 5228-1:2009+A1:2014 Code of practice for noise control on construction and open sites,
- ✓ BS 5228-2:2009+A1:2014 Code of practice for vibration control on construction and open sites,
- ✓ BS 6187:2011 Code of practice for full and partial demolition.

National Federation of Demolition Contractors Guidance

- ✓ DRG 012 - NFDC guidance note for Construction (Design and Management) Regulations (CDM) 2015,
- ✓ DRG 100 - NFDC guidance note for safe use of mobile crushers in demolition,
- ✓ DRG 104 - NFDC guidance note for demolition attachments,
- ✓ DRG 108 - NFDC guidance note for waste and permitting,
- ✓ DRG 109 - NFDC guidance note for DRIDS,
- ✓ DRG 110 - NFDC guidance note for exclusion zones.

Institution of Civil Engineers Guidance

- ✓ The Institute of Civil Engineers Manual of Health and Safety in Construction 2010,
- ✓ The Institute of Civil Engineers Manual of Health and Safety in Construction 2015 (second edition),

Declaration

I HEREBY DECLARE THAT I HAVE READ, FULLY UNDERSTOOD AND AGREE TO COMPLY WITH THIS METHOD STATEMENT.		
Name:	Signature:	Date:

ALTERATIONS TO METHOD STATEMENT:			
Name:	Signature:	Date:	Alterations made/page number:

I HEREBY DECLARE THAT I HAVE READ, FULLY UNDERSTOOD AND AGREE TO COMPLY WITH THIS REVISED METHOD STATEMENT.		
Name:	Signature:	Date: