

NVQ Level 2 Demolition Plant 18 Month SAP- Blended Program

Sector Background

Diamond Drilling & Sawing is a highly specialised activity widely available within the construction industry from the specialist contractors.

A wide range of cutting techniques & equipment using diamond impregnated segments either fitted to a core barrel, steel blade, chain or wire to enable the specialist contractors to carry out alterations by forming openings in or for the removal of concrete structures, buildings, roads & other construction-based products where traditional methods cannot be applied.

There is a shortage of new entrants into the sector and current training provision is by individual employers providing on the job training together with limited supplier product training.

The preferred minimum age for new recruits will be 18 years, however 16/17-year-old recruits are welcomed in accordance with the Management of Health & Safety at Work regulations 1999, section 19.

This sector scheme is designed to be delivered in a modularised manner by a mix of formal instruction off the job, followed by supervised on the job training at employer level with an end assessment. This supervision will be conducted by a competent person and there will be a candidate record book to evidence training received.

The trainee will gain experience, through off the job training sessions, of every aspect of the industry but the scheme provides flexibility through the on the job training elements to suit the employer's core business requirements whilst delivering the NVQ Diploma level 2 outcome after a 18 month training period.

The contents of this course are designed to ensure that the operator can understand the hazards & the safe working practices within this specialised industry, and, upon completion of training, the Apprentice will be able to operate equipment to industry standards of competence.

The course days may not be continuous, but this will allow for a variety of site situations where different types of drilling or sawing can be taught. As the drilling module is the industry 'norm' it is important that this unit is completed first, unless other modules are to be used for up-skilling purposes only.

Training Modules

Modules have been developed to introduce the trainee to the occupational competencies required for the various machines used in the industry.

The modules focus on the use and application of underpinning knowledge and practical skills and will enhance the awareness of safety, security and approved procedures for carrying out drilling & sawing.

The modules are based upon the NVQ Diploma Structure to assist with gaining recognition for CITB accreditation. Any future changes in Standards or legislation will be reflected by modifications to the course structure.

Modules will consist of an initial 2 days Classroom/Workshop and introduces the trainee to blended learning. We will use the on-line one-file portal to provide learning content which includes the modules in video format. Trainees will be monitored that learning has taken place and tasks will be assigned through the progression of the scheme. Sitting alongside the learning portal will be the on-line portfolio for underpinning knowledge and performance criteria for each chosen units that quality assured and accessed by support team such as the assessor, IQA, QA, Centre co-ordinator, Apprenticeship officer and Employer.

Most formal instruction within the modules will be followed by a minimum of 7 non-consecutive days of employer supervised site training and 1-day assessment conducted by training provider assessor.

It is the intention that the employer supervised training element will be conducted by a competent person with a minimum of 2 years' sector experience, understand the training curriculum and hold the relevant CSCS card. The training provider will ensure that suitable instruction & advice is made available to the competent person to ensure quality and consistency throughout the scheme.

It is envisaged that individual modules can also be made available to provide training where existing operatives have skill gaps identified during the NVQ Diploma OSAT Route process.

Module No	Course Modules 18 Month SAP-Blended program	Mandatory Off-Site Instruction	Mandatory courses	On Site Supervised Training & End Module Assessment
8	Concrete Bursting / Hydraulic hand crushing		2 days	7 Days Plus 2 Days Assessment
9	Hydraulic Crunching /Breaking Remote controlled Plant)		3 days	7 Days Plus 1 Day Assessment
10	Wire Sawing		2 days	7 Days Plus 1 Day Assessment
11	Inspecting & Completing user maintenance & inspection		1 day	
	Optional courses			
	Confined Spaces (entry)		1 day	
	IPAF-Scissor/Boom		1 day	
	UKATA Asbestos		½ day	

MODULE 8 **Concrete Bursting**

Introduction

This is a quite new method of controlled demolition. The burster is cylindrical in shape and incorporates pistons that are fitted to the side. As hydraulic pressure is applied, the pistons are pushed out of the cylinder and they themselves exert pressure to the material which cracks as a result of this applied pressure.

The burster has a hydraulic power unit and can be powered by electric, diesel or petrol motors.

It is necessary to drill holes with a diamond drill, the diameter of which will depend on the size of the burster head. The holes are positioned generally in a wave formation and the distance varies depending on the material.

The head is inserted into the hole and the process of pressure application can begin. Steel plates can be used to cover the piston to expand the cracking further.

It is also vital to isolate the slab from the area that remains by means of drilling or sawing to leave a gap before bursting commences.

This module is set out to show safe working practices and industry practices.

Not every company operating in the sector possesses or operates this type of equipment. Hence the apprenticeship scheme includes supervised employer training as an optional element.

<u>Day 1 & 2</u> **Off the job training**

Practical

The Trainee will be able to

- Fit appropriate PPE
- Will have completed the drilling module prior Introduction to types of bursting equipment to exposure to skills in this module piston, plug & feather (splitter)

The Trainee will be able to:

- Set up burster ready for use
- Visual check of all components for safety maintenance
- Connect power supply
- Carry out general maintenance



- Have understanding of diamond drilling from previous module
- Regulations affecting burster usage
- Capabilities of the burster pressures generated to slab & related effects pressure release valve
- Safety Measures isolation & support of material to be burst barriers, signs
- Appropriate PPE goggles, gloves, etc
- Bursting techniques star bursting plates
- Load and unload plant from stores to site
- **Drilling Patterns of holes**
 - Safe working practices, hole diameter correct to burster used
- Reinforcement removal
 - Bolt croppers, angle grinders
- Removal of debris
 - Manual, mechanical
- Power sources
 - Hydraulic
 - Electric
 - · Pneumatic, etc
- Burster set up
 - Pre-check
 - General maintenance
 - Insert burster head
 - Use of burster plates

DAY <u>3 - 5</u> On the job supervised training - Optional

Practical	Knowledge
 The Trainee will be able to Select, draw from stores & safely load equipment onto company transport Locate the work, understand the hazards Isolate the area to be removed Prepare safe area of work, install barriers, signs, etc Select correct equipment, tools & fit PPE Safely off-load equipment ready for use Connect to power source Carry out bursting under the instruction of a trainer Burst in various locations & materials Use angle grinder or bolt croppers to cut reinforcement Measure area & depth 	 Site induction specific to site Company policy employers/ employees On Site Training Apprentice's role Trainers role Supervisory control Completion of contract record sheet/ log book
 The Trainee will be able to: Remove debris & keep area clean & tidy Fill in contract record sheet/ logbook Report problems with equipment Return plant/equipment to stores ready for use 	

DAY

On the job and/or classroom module END ASSESSMENT

1 Day On the job and/or classroom module END ASSESSMENT - Optional

Practical	Knowledge
 The Trainee will be able to Demonstrate the skills learnt by bursting	 Assessment of training Candidate feedback Complete profiling for a NVQ achievement in
OR On the job at an actual Contract through site	Bursting (should achievement be required for
assessment	apprenticeship chosen route) Test Questions on Bursting

MODULE 8 **Hydraulic Crunching**

Introduction

There are two basic types of crunchers – also known as crushers -, namely:

C shaped (crabs claw) and Piston. These are operated by hand or robotic using a 360 tracked machine

Both the claws and piston compress to crush the designated material. They are powered by hydraulics and are driven by either electric, diesel or petrol units.

The crunching process from this type of equipment is silent but has limited depth for crushing.

The equipment can be heavy; therefore, a counterbalance is required.

The latest equipment are mobile types that are operated by remote-control, having the advantage of working at a greater pace and only requiring one operator.

Crushing mainly requires a fully boarded scaffold below the area for support and control of debris.

The advantages are small resulting rubble, no vibration, little noise and no water needed.

Not every company operating in the sector possesses or operates this type of equipment. Hence the apprenticeship scheme includes supervised employer training as an optional element.



DAY On the job supervised training

Practical	Knowledge
 Trainee will be able to Set up cruncher/crusher ready for use Visually check of all components for safety & maintenance Connect power supply Carry out general maintenance 	 Regulations affecting the crusher Types of Crushers Hand-held, mobile Machine operations How they work Location of work Work areas, internal, external Capability of a crusher Crushing power, volume & depths Safety features Pressure release valves,
 Trainee will be able to Load & unload equipment Safe working practices Use a grinder Connect to power units Erect barriers & signs Operate the hand-held crusher Have basic skills in operations 	 Safety controls Barriers, signs, props Loading &unloading Reinforcement removal Angle grinders, bolt croppers, spreader/ shears Hydraulic Power units Diesel, petrol, electric, etc Crushing techniques Safe working- reduce area in correct sequence Removal of debris Manual, mechanical

DAY 3 - 10 On the job supervised training

Practical

Trainee will be able to

- Select, draw from stores & safely load onto company transport
- Locate the works & possible hazards
 - Changes in site conditions, weather & environmental
- Prepare safe area of work- install barriers, signs, props, etc
- Select correct equipment, tools & fit PPE
- Safely off-load equipment
- Connect to power supply
- Carry out crushing under supervision of trainer
- Crush in various locations & Trainee will be able to
- Select, draw from stores & safely load onto company transport
- Locate the works & possible hazards
 - Changes in site conditions, weather & environmental
- Prepare safe area of work- install barriers, signs, props, etc
- Select correct equipment, tools & fit PPE
- Safely off-load equipment
- Connect to power supply
- Carry out crushing under supervision of trainer
- Crush in various locations & various materials
- Use measuring tools
- Remove debris & keep the area clean and tidy
 - Manual, mechanical
- Fill in contract record sheet/ logbook



- Have understanding of
- Site induction
- Specific to site
 - Company Policy and procedures
 - Employers/ employees
- On- Site Instruction and training
 - Apprentice's role
 - Trainer's role
- Supervisory control
- Fill in contract record sheet/ log book

DAY On the job and/or classroom module END ASSESSMENT

MODULE 9 **Hydraulic Remote-Controlled Plant**

Practical	Knowledge
 The Trainee will be able to Demonstrate the skills learnt by crushing a section of concrete OR On the job at an actual Contract through site assessment 	 Assessment of training Candidate feedback Complete profiling for a NVQ achievement in Crushing (should achievement be required for apprenticeship chosen route) Test Questions on Crushing/Crunching

Course aims & benefits:

Designed for those wishing to gain knowledge and understanding of basic operations of remotecontrolled plant used for crushing & breaking.

- The purpose of principle components, controls and terminology
- Pre-Use checks
- Conform to manufacturers requirements
- Establish and connect power supply
- Safety requirements
- Travelling & Manoeuvring
- Setting up for work
- Shutting Down

Explain the requirements for hazards whilst working at height Maintain exclusion Zones Demolish parts of structure Change attachments Comply with method statements

State environmental considerations The advantages are small resulting rubble, no vibration, little noise and no water needed.

Not every company operating in the sector possesses or operates this type of equipment. Hence the apprenticeship scheme includes supervised employer training as

an optional element.



DAY 1 On the job training

Practical	Knowledge
 Trainee will be able to Set up plant ready for use Visually check of all components for safety & maintenance Connect power supply Carry out general maintenance 	 Regulations affecting the crusher/breaker Types of Attachments Crusher Breaker Machine operations How they work Location of work Work areas, internal, external Capability of a crusher Crushing power, volume & depth Safety features Pressure release valves,

DAY 2 On the job training

Practical	Knowledge
 Trainee will be able to Load & unload equipment Safe working practices Use a grinder Connect to power units Erect barriers & signs Operate the remote-controlled crusher & breaker Have basic skills in operations 	 Safety controls Barriers, signs, props Loading &unloading Reinforcement removal Angle grinders, bolt croppers, spreader/shears Crushing / breaking techniques Safe working- reduce area in correct sequence Removal of debris Manual, mechanical

DAY 3 - 10 On the job supervised training - Optional

Practical

Trainee will be able to

- Select, draw from stores & safely load onto company transport
- Locate the works & possible hazards
 - Changes in site conditions, weather & environmental
- Prepare safe area of work- install barriers, signs, props, etc
- Select correct equipment, tools & fit PPE
- Safely off-load equipment
- Connect to power supply
- Carry out crushing under supervision of trainer
- Crush & break in various locations & various materials
- Use measuring tools
- Remove debris & keep the area clean and tidy

1 DAY On the job and/or classroom module END ASSESSMENT

Practical

The Trainee will be able to

 Demonstrate the skills learnt by crushing a section of concrete

OR

 On the job at an actual Contract through site assessment

Knowledge

- Have understanding of
- Site induction
 - Specific to site
 - Company Policy and procedures
 - Employers/ employees
- On- Site Instruction and training
 - Apprentice's role
 - Trainer's role
- Supervisory control
- Fill in contract record sheet/ log book

- Assessment of training
 Candidate feedback
- Complete profiling for a NVQ achievement in Remote controlled plant (should achievement be required for apprenticeship chosen route)
 Test
 - Questions on Crushing/Crunching

MODULE 10 Wire Sawing

Introduction

This is a relatively recent development in the sector. Although there are some wire saws which were purpose made, the machines generally in use in the building industry to-day can be guickly and easily converted from wall/track saws into wire saws.

The method of setting up is similar to that of the track saw but in lieu of the saw blade a grooved pulley wheel of 800mm diameter is fitted which takes and carries the diamond wire.

This wire is passed over any number of small idler pulleys to the surface being cut. The wire is a steel core of strands approx. 6m. diameter of almost any length. It has diamond beads along its length approximately 30mm apart and 10mm diameter.

Theses beads are separated by small springs, plastic or rubber, depending upon the type of wire and the manufacturer.

The wire is positioned over the pulleys and fed through pre-drilled holes in the concrete that is being cut and back over the drive pulley. The wire length can be of almost any length, tailored to the job in guestion and is joined by special crimps.

Sawing is carried out by turning on the power and maintaining a constant speed, whilst applying pressure on the wire by gently applying a steady backward movement along the track.

Not every company operating in the sector possesses or operates this type of equipment. Hence the apprenticeship scheme includes supervised employer training as an optional element.

Off the job training

Practical

The Trainee will be able to

- Load/unload
- Construct ramps Use crimping tools

DAY 2 On the job training

Practical

The Trainee will be able to

- Fit water connection
- Use grease gun
- Carry out general maintenance
- Fit a wire connector
- Use of wire saw
- Have basic skills in operations

Knowledge

- Introduction to types of Wire saws
- Regulations affecting the wire saw
 - PUWER. PPE
- Contract information
 - Job record sheet, method statement
- Types of ramps/transportation
 - Portable
 - Trailer
 - Loading/unloading
- Main critical components
 - Pulleys, etc
- Safety controls/measures
- Removal of debris/water
 - · Wet/dry vacuum cleaners, sand banking, pumps
- Accessories
 - Rotary percussive drill, crimping tool

- Capabilities/characteristics
 - Identify, loads, limitations
- · How machine works
- Hydraulic Power units
 - Diesel, petrol
- Water requirements
 - Hose fitting, bowser, pumps
 - Litres per minute table
- General maintenance
- · Grease points, oil, fuel
- Wire technology
 - Manufacturer methods & types
- Materials
 - Regional aggregates, concrete, stone
- Sawing Techniques
 - Causes of wire twists
- Fitting of wire, pulleys
 - Joint connectors

DAY 3 - 10 On the job supervised training - Optional

Practical	Knowledge
 Select, draw from stores & safely load onto company transport Locate the works, visual check on hazards Prepare safe area of work, install barriers, signs, props, etc Select correct equipment/tools & fit PPE Safely unload equipment Connect to power & water supply Position ready for use & fit pulleys, wire, etc Carry out wire sawing under the instruction on the trainer Wire saw in various locations & materials where possible Use measuring tools Remove debris & keep area clean and tidy 	 Site induction Specific to site Company policy Employers/employees On-site training Apprentices role Trainers role Supervisory control Fill in contract record sheet/log book Understand importance of isolating work area (danger of wire flailing)

DAY

On the job and/or classroom module END ASSESSMENT

Practical	Knowledge
 The Trainee will be able to Demonstrate what they have learnt by wire sawing a section of concrete OR On the job at an actual contract through site assessment 	 Assessment of training Candidate feedback Complete profiling for a NVQ achievement in Wire Sawing (should achievement be required for apprenticeship chosen route) Test Questions on Crushing/Crunching

OPTIONAL UNIT **Confined Spaces**

1-day course delivered at a recognised training centre close to trainee's employer's facility

Practical

- Able to move safely in confined spaces
- Handling & use of harness
- Use of air respirators
- Practical test

OPTIONAL UNIT IPAF Scissor Lift/Boom

1-day course delivered at a recognised training centre close to trainee's employer's facility

Practical

- Able to move safely
- Control plant
- Practical test



Knowledge

- Health and safety/legislation
- Definition of confined spaces
- Hazards
- Preparing equipment
- Accident & emergency procedures
- Methods of communication
- Storage and maintenance
- Inspection
- Written test

- Health and safety
- Movement of plant
- Hazards
- Operation of controls
- Methods of use
- Storage and maintenance
- Inspection
- Safe usage
- End test

Diamond Drilling & Sawing Sector Apprenticeship Scheme Training Provider

Provider:Drilling & Sawing AssociationContact:Joel VinsantAddress:Unit 3,
Brand Street,
Nottingham,
NG2 3GWPhone:0844 879 3452
0115 986 7029Email:dsa@drillandsaw.org.uk
www.drillandsaw.org.ukVeb:www.drillandsaw.org.ukLocationsNottingham
Glasgow
Available
London
TrainingProvisionWonthly programme starts
with a capacity of 10 trainees

Capacity per start.

Completion of an NVQ Diploma requires assessment in either Floor Sawing or Wall Sawing. Therefore, employers may decide not to complete the on-site assessment in both these techniques. This will not affect the issue of an NVQ, and Apprenticeship Certificate PROVIDED ALL Courses attended