Method Statement

Project name:	**Project no:**
Proposed Development:- Willingham Terrace, Camden, London	**PSW1538**

Principal Contractor: (P/C)	**Postcode**
Primus Build **120-128 Moorgate** **London**	**EC2M 6UR**

Method Statement Title:	**Ref no.**	**Category**
Continuous Flight Auger	**KA01**	**1**

DOCUMENT STATUS

Method Statement Validity	**Start Date**	**Expiry Date**
	17/04/2015	17/10/2015

Revision	**Amendment details**	**Details (Name Print and Sign, date)**					
		Prepared by	**Date**	**Checked and approved by**	**Date**	**Reviewed by SHE Advisor**	**Date**
Original	-	Kevin Annison	17/04/15	Steve Bursnell	17/04/15		

All amendments are to be issued to the Site Agent or Project Manager for acknowledgement and approval prior to works commencing. Category 2 method statements must be issued to the SHE Advisor for review.

Method Statement Category:

Category 1	**Low / medium risk:** **Prepared** by Sub-Contractor or Site Staff **Approved** by Site Agent or Project Manager
Category 2	**High risk**: (Demolition, Asbestos, Confined Spaces, Work at Height, Work near Rail, Work on Live Electric's, all work around medium and high pressure gas mains, Significant Environmental Risks etc) **Prepared** by Sub Contractor or Site Staff **Approved** by Site Agent or Project Manager **Accepted** by SHE Advisor

NB: This method statement must be explained to all those affected by the activity and a briefing recorded.

1 OUTLINE OF OPERATION

This Method Statement generally describes the resources allocated to undertake the proposed piling works and the methods employed. Additional details are provided in supporting information.

It must be emphasised that resources and methods other than those referred to below may be used to expedite the works should conditions dictate. Under these circumstances and where appropriate this Method Statement will be revised to reflect any amendments. Notwithstanding this it is always the intention of G M Piling to undertake all work safely and to the requisite standard.

Immediately prior to commencement of the relevant sections of work, a check will be made to ensure that the methodology within this document is applicable to the site circumstances at the time of piling. In the event of subsequent changes please refer to (section 8 Changes to works).

The formation of the pile type proposed at this project is a repetitive process and many aspects are common to different sites.

Piling rigs used by G M Piling comply with The Provision and Use of Work Equipment Regulations (PUWER) 1998 as they apply to rigs in the bored piling industry – G M Piling comply with recent guarding issues i.e. no more than 750mm above piling matt level & top of guarding at 2m.

1.1 Scope of Works

The project requires the construction of piles to transfer the loads from the proposed structure to underlying competent strata.

The scope of the permanent works is defined within the latest revisions of the Contract Specification and Drawings but, in summary, is understood to currently comprise the following:

28 No. 500mm nominal diameter CFA piles c/w a 6m long reinforcement cage comprising 4T16mm diameter main bars.

All steel reinforcement will be installed to a minimum of 40 x diameter of bar above pile cut off level.

A single visit to site by the piling rig is intended.

At present the piles are designed with a Factor of Safety of 3.0 yielding a maximum pile length of 25.80m, measured from the anticipated Piling Platform Level.

Integrity testing will be undertaken on all of the piles in ten visits to the site.

For further information regarding integrity testing refer to section 6.4.

The works will be carried out in accordance with a sequence agreed between G M Piling's Site Supervisor and the Principal Contractors site representative.

1.2 Areas of Responsibility

Under the contract G M Piling will have undertaken to provide suitable personnel, plant and equipment to undertake the work and will purchase materials from accredited sources to ensure that, in so far as we are responsible for elements of the design and construction, a conforming product will be provided.
All GM Piling operatives will sit a full site induction before works commence. If there is no site induction produced by the principal contractor, then the GMP supervisor will inform GMP head office.

All method statements and RAMPS (Risk Assessment & Minimum Performance Standard) provided for works must be read understood
and signed by all operatives, and supervisors before works commence. These must also be passed on to the principal contractor who will then be made aware of the "safe zone" required around the rig, pump and hose line.

GM Piling will not erect the piling rig until the working Platform handover certificate has been completed and signed by the GMP supervisor on site and the principal contractor's site representative the stability of the piling rig is of very high importance, and must fully comply with the design, with no substitute materials used, and depth of material as stated. This design is capable of taking the maximum plant loadings of the piling rig, therefore must be as per drawings provided The Principal contractor will also install a geotextile membrane and an additional 150mm of material as a tell-tale indicator, if this gets reduced during the piling process then

the principal contractor will re-install this as per the design. The principal contractor must also make sure that the amount of steel in the crushed material is to a minimum. Re bar could and will cause damage to the rubber hoses used between the pump and the platform, and could puncture the hose and cause this to burst.
When the piling rig is set and in position, then the GMP supervisor will check for demarcation areas around the working platform, and the pump and hose line. This is known as the piling “safe zone”. This is difficult to mark with physical barriers but there will be signage on site to indicate the safe zone the only people allowed inside this zone during the piling process are the piling crew and the attendant excavator. Barriers will be placed at the front of the rig. Also the rig has a gate guard with full HSE compliance to prevent the auger being touched, if any maintenance is required on the augers they will be stopped rotating before the gate is opened.
, . During the rigging procedure, once the piling rig is erected the augers are connected to the rig via the service line. Once the auger is connected the service line is lowered and the rig ganger will be lifted in the bosuns’ chair with full safety harness to the auger section to install the pins to the joint, the fall arrester is connected to the safety harness, in the event of equipment failure the operative can be safely lowered to the ground manually via the fall arrest system by the second man who will be within operating distance of the fall arrester until this procedure is complete. The GMP Supervisor will also check the platform demarcation area on a regular basis, and the hose line must be checked and deemed as clear before the pump begins to feed the platform. This will then create the “safe zone” around the areas if there was to be a hose failure. Hearing protection is mandatory around the rig and pump, warning signs will be displayed on the rig to protect others.
But it is vitally important that the principal contractor does not allow other trades within 10 meters of the platform.
If there are trades who are working within our demarcation zones, then works will be stopped and the principal contractor will be informed of the conflicting activities. Piling or pumping will then not proceed until the “safe zone” around the rig, pump and hose line has again been achieved.

It must be noted, however, that the contract places obligations upon the Principal Contractor and they are required to reciprocate the commitment of G M Piling to perform satisfactorily where so duty-bound. The satisfactory design and construction of piled foundations is heavily reliant upon suitable/sufficient information being provided by the Principal Contractor on all relevant aspects of the project including, but not limited, to ground conditions, suitable access, attendance’s and facilities. The provision of such attendance’s and facilities as agreed under the contract is not an 'optional extra' - they define the minimum necessary to safely and satisfactorily undertake our operations.

In particular it is noted that on this project G M Piling are responsible for both the design and construction of the individual piles in accordance with the specified pile loads. Responsibility for the overall foundation design remains with principal contractors engineers.

2 PROTECTION OF OTHERS AND EQUIPMENT

It is the policy of G M Piling to conduct its activities with due regard to the health and safety of all its employees, members of the public and all other third parties. G M Piling will work fully in accordance with the Principal Contractors 'Permit to Work' system. Where such a system is not in place G M Piling 'Permit to Work' system will apply and must be completed by the GM Supervisor and Principal Contractors Site Representatives prior to commencement. Whilst either the principal contractors permit system, or our own is being completed by the GMP supervisor, and the principal contractor's representative, then any service drawings or new build marked drawings with existing or new services must be obtained from the principal contractor. Before piling begins, if services have been identified, then these must be marked on site using line marker, and drawings by the GMP supervisor, under the principal contractor's guidance. If there are additional piles to be bored, then again all service drawings must be consulted, and the principal contractor must CAT scan the area and sign over before these works begin.

When the rig is being assembled on site, all hoses and accessories must be checked and logged in the Loler and Puwer registers. All hoses for the contract will be new and date stamped and recorded. The front suspension hose is replaced on a six monthly basis and used as a ground hose thereafter. Any items with visible wear must be taken out of use, and sent back to the GM Piling headquarters. All concrete hoses are to be inspected on a daily basis with a high degree of diligence. If there is visible wear to the hoses and the steel wire is broken (multi strands), then these must be marked on the hose inspection sheet as damaged and taken out of use immediately. At no point must other parties on site be allowed to track or drive over the hoses. If other trades need to gain access over the pipe run at any time, then the principal contractor must ensure they contact the piling supervisor, and the rubber hoses must be protected or bridged, or the hose line broken down to ensure there is no damage to the steel casing of the line. The line can also be dug in when possible. If contractors track or drive over the line, then this will cause damage to the pipe walls, and the hose could then be deemed as damaged and unusable. This in turn could be chargeable to the principal contractor.
No trades at any time should run vehicles over the hose line. If the hose needs to be moved by the excavator it will be done so by attaching a nylon sling to the hose and then to the excavator.

If any person working on behalf of GM Piling is to have an accident on site, then this must be recorded into the Principal contractors on site accident book. We must also inform the GM Piling office, and the safety department. If there is no accident book on site, then we must record these ourselves, using the Carter group accident book, sending copies to head office, and the safety department.

If the piling works are to be undertaken within close proximity of a public highway and footpath, please note that it is the principal contractor's responsibility for providing protection to third parties. We require solid site hoarding to be constructed around the site perimeter to protect the public / third parties from splashes.
Any existing services that may exist within the piling platform and access route to the site will require adequate protection, diversion or removal by the Principal Contractor to prevent any damage from the piling operation. The location and plugging off of all disused pipes or ducts, in order to prevent the entry of pile concrete during construction, is required and will be the responsibility of the Principal Contractor.

All access / egress to the site will be via routes established and maintained by the Principal Contractor to ensure adequate segregation of vehicles and pedestrians at the interface of the entrance. If works need to encroach into pedestrian walkways or vehicle routes on site, then diversions will need to be discussed with the principal contractor and put in place before our works can commence.

Provision of security to safeguard the plant, equipment and materials on the site will be provided by the Principal Contractor.
GM Piling will provide a secure storage container complete with all required signage and ventilation

The following structures/services/rights of way have been identified on the site and will require subsequent review and appropriate action to be taken by the Principal contractor:

- Buried services – water/electric

2.1 STEEL FIXING PILE CAGES

HAZARDS	**RISKS**
Manual Handling	Hand, body and eye injuries
Sharp Edges to cut steel	Cuts
Disc cutter	Inhalation of dust and hazardous fumes
Slips Trips and falls	Muscular skeletal injuries
Loose tying wire	Muscular skeletal injuries
Lifting of pre-fabricated cages	Crush or impact injuries/ dropped or collapsed cages

CONTROL MEASURES

Forklift or mechanical means used to unload and carry Steel as close as
Possible to working area.

Gloves to be worn when handling steel CUTS 5, Correct PPE worn when cutting steel.

All steel fixing operations to be supervised by a competent trained steel fixer.

No SWL on any machine must be exceeded whilst lifting steel bundles or cages.
Any bundles of steel to be lifted by machine must never be lifted by bundle ties.
When carrying steel, make sure bundles are secure, use tag lines at all times
Use mechanical means when possible.
Always wear gloves when handling steel.
Any bundle ties to be disposed of so as not to create tripping hazards.
If the use of disc cutters is required machine to be operated only by trained Appointed personnel, and a hot works permit must be obtained from the Principal Contractor. Ear protection to be used when in use.
Ensure equipment in good order before use.
Discs and wheels to be installed / replaced only by trained operative.
Correct wheel and disc fitted for machine and work. Re-fuelling to be done away from work area, and fuel stored at a safe distance from work area.
Caution to be taken when walking with steel.
Dispose of off cuts, and keep all areas clean and tidy.
Clear away all off cuts of tying wire.
Do not leave rolls of tying wire scattered about work place.
Trained and competent steel fixer must make sure that any steel that has been Pre-fabricated and is to be lifted into place by mechanical means (Crane or forklift) ensure sufficient ties.
When pre fabricating steel, fixers must make sure that if they are using trestles or Temporary stands, that they can take the weight of the finished structure, and that There is no chance of movement whilst pre fabricating.
Also make sure all pre fabricating is segregated from traffic routes and plant movement.

SEQUENCE OF WORKS

Steel Fixers to have full site induction, valid CSCS card, and correct PPE to complete operations. Pile cages to be fixed as
Instructed by Site manager, and as per drawings issued.
Steel to be lifted when possible by mechanical means as close as possible to pre-fabricating area, and pre-fabricated on G M Piling provided trestles.
Once fixed, pile cages will be lifted off trestles and stored in working area, until piling gang are ready to use cages.
The 360 excavator supplied by the ground worker will then come into area and cage will be taken to its required position.
Housekeeping to be to a good standard. All walkways and working areas to be clear of waste material or tripping hazards.
Steel Fixers to clear away any waste material of their own as it is generated.
If works area affected by other trades then works must stop, site manager to be informed. All areas to be left clean and tidy after works have finished.

2.2 THE USE OF AN ENGINEER BY GMP

HAZARDS	**RISKS**
Struck by moving plant or vehicle	Fatal / serious injury
Manual Handling	Strain / back injury
Uneven footing / ground	Low level trip, slip or fall
Falling materials	Head, hand and foot injuries.

CONTROL MEASURES

All activities when possible must be fully segregated. If working around plant, operators must be informed of your presence. Never go into pinch point, or possible Crush zones.
Correct crossing points must be used at all times.
Materials to be handled should be close to the point of lift.
Mechanical assistance to be used where possible.
Kinetic lifting techniques to be employed when manually handling materials.
Good quality gloves to be used by engineer.
Route of carriage of materials or work to be free from tripping hazards / obstructions.
Conditions of ground to be observed before commencement of work e.g. ice, water, dust, oil , mud etc.

SEQUENCE OF WORKS

Engineer to have full site induction, valid CSCS card, and correct PPE to complete operations. Engineer to set out levels, datum points and positions as instructed by Site manager, and as per drawings issued.
Equipment used will be total stations, levels and lasers along with prisms and staff. Also hand tools required for use of marking pins and datum points. All equipment will be calibrated and charging equipment have a valid PAT test.
Assistance for setting out will be provided by Principal Contractor. All drawings will be checked as latest revision, and positions agreed by principal contractor.
Engineer to be made aware of site procedures and emergency actions along with first aid procedures at induction, along with extra training given via tool box talks.
Also plant activities and other works will be made aware to the engineer by Site manager, with plant movement restricted in his working area. Ground workers and piling gang to be aware of engineers movements at all times.
All trailing leads to be kept to a minimum to reduce the risk of trips or falls. All housekeeping to be of a good standard. All walkways and working areas to be clear of waste material or tripping hazards. Engineer to clear away any waste material of their own.
If works area affected by other trades then works must stop, and Site manager informed. All areas to be left clean and tidy after works have finished.

2.1 VISITS FROM SAFETY ADVISORS

GM Piling whilst working on this project will be visited by an internal Safety Advisor. This visit will be to audit the safe systems of work by GM Piling, and also the site and site conditions of the projects. They will highlight both good practice and poor practice by GM Piling, material breaches of legislation, and offer advice and guidance on improving, and achieving best practice whilst on sites. They will also record recommendations to Principal Contractors on sites, and offer guidance if required on improving standards. They will not at any time undertake any other works connected with the piling activity, or the site itself. They are there only to observe, audit and comment, not to undertake any manual work within the site.

All advisors will hold a valid CSCS card, and will make themselves known to the Site Manager, and sign in to the project before they make contact with the GM Piling supervisor. If required by the site management team they will undergo a site induction, either visitors or full, but they will be accompanied by the GM piling supervisor at all times. All advisors are NEBOSH trained, and have a very good understanding of site hazards and risks. All have read the RAMPS and method statements generated by GM Piling, and will adhere to them at all times. If they feel they will not be able to undertake their audit in a safe manner, away from all other trades, then they will contact the site manager and explain their reasons. They will at no point put themselves, or others in any danger through their actions whilst visiting site.

PPE worn will be to GM Piling company policy. This will consist of steel toe cap boots, high visibility vest, gloves, safety glasses and hard hat. This will be worn by all advisors whilst on site.

Whilst walking the site with the GM Piling supervisor they will take photos of items which both cause concern or need improving, or highlight best practice. These will be used in the final audit, with advice given on how to improve in these areas.

The audit consists of categories 1 to 5.

CAT 1, this is where works have been stopped and immediate improvements are required to eliminate danger or a serious breach of legislation.

CAT 2, this is where a work activity or situation requires standards to be improved.

CAT 3, this is where minimum standards of compliance are being obtained, observations recorded need to be acted upon to show improvements.

CAT 4, this is where compliant standards of safety health and environmental controls are being displayed and maintained to an acceptable standard.

CAT 5, this is where best practice, or exemplary standards are being shown and maintained.

All advisors will complete their audit whilst on site in the supervisor’s office, or site canteen, this will include all paperwork generated by GM Piling. If the site is small, with little room the advisor might choose to complete the audit in his car. They will provide 2 copies, 1 for the GM Piling supervisor and 1 for the Principal Contractors Site Manager. The GM Piling

supervisor must make sure items described within the report are rectified in the time given by the Safety Advisor.
The Safety Advisor will then explain the findings on the report to the Principal Contractors Site Manager before he leaves site, highlighting any recommendations for the site itself.
He will then sign out, and leave the site.

3 PERSONNEL INVOLVED

3.1 Principal Parties

The following are the principal parties connected with these works:

Engineer	Clancy Consulting
Principal Contractor	Primus Build
Specialist Geotechnical Sub-Contractor	G M Piling.

3.2 Contract Management

Management of the project will be assigned to the Contracts Manager (office based) and the site work will generally be the responsibility of the Site Foreman appointed to the contract. The site staff are responsible for matters relating to safety and quality together with technical and contractual issues on site, with back up available from the Kings Lynn Office. It is a policy of G M Piling to establish contingency planning for foreseeable events and this is documented in the site procedures.
The site crews have extensive experience of the proposed methods of piling. The Site Supervisor has overall technical responsibility for monitoring the piling and for producing records of the work undertaken.

The following key personnel will have responsibility for this project:
Head office based

General Manager	John Earp
Contracts Manager	Steve Bursnell
Project Engineer	Steve Anderson
Contracts Co-ordinator	Kevin Annison
Piling Supervisors	Paul Mason
	Justin Chapman
	Darren Daniels
	Kirk Barber
	Aaron Middleton
	Dagan Pottle
	Carl Pegg
SHE Advisor	Drew Bickers

Site based

Site Supervisor	To be advised immediately prior to commencement of work on site.

Although G M Piling employs Safety and Quality Managers such aspects are an integral part of the responsibility of the above personnel. In the first instance all queries regarding this contract should be addressed to the Contracts Manager.

3.2 Site Personnel

It is anticipated that the following levels of personnel will be deployed on this project:

3.2.1 GM Piling Personnel

Position	Minimum Proof of Competence
1no. Foreman/Senior Foreman	Site Management Safety Training Scheme or NVQ Level 3 Occupational Work Supervision Qualification
1no. Piling Rig Operator	CSCS/CPCS Piling Rig Qualification
1no. Piling Rig Banks man	CSCS/CPCS Slinger Signaller
1no. Concrete Pump Operator / General Operative	CSCS Construction Site Operative Industry Accreditation

3.2.2 Approved Sub-Contractors

Trade	Minimum Proof of Competence
2no. Steel Fixers	CSCS Construction Site Operative Industry Accreditation
1no. Setting Out Team	CSCS Construction Site Operative Industry Accreditation

4 MATERIALS TO BE USED

It is proposed to use an OPC/PBF/PPFA combination mix with a design sulphate class in accordance with BRE Special Digest 1: 2003 Concrete in Aggressive Ground commensurate with the requirements of the Site Investigation Report however in general a minimum cementitious material content of 340kg/m^3, a characteristic strength of 30N/mm^2 and a target slump of S4. The maximum aggregate size will be 20mm and the maximum free water cement ratio will be 0.50.

A proprietary brand of plasticiser/water reducing admixture will be incorporated into the mix to facilitate pumping.

The ready mix concrete will generally be obtained from a QSRMC accredited source. Relevant certification in the form of mix design certificates will be available if requested, together with details of the source of supply.

Concrete workability and quality control is monitored on site by slump testing with one set of concrete cubes (4 No.) being taken during each days piling. G M Piling will be responsible for the sampling and on site testing and will undertake the slump testing directly. It is proposed that the cubes are tested in accordance with the following regime:

Set of 4no. Cubes
- 1 @ 7 days
- 2 @ 28 days
- 1 held as spare for possible test @ 56 days

The cubes will be tested at a UKAS accredited testing laboratory.

We would note also that the method of placing the concrete in CFA piles through restrictive pipe work is also an effective control of the quality of the supplied concrete.

Reinforcement will be obtained from a CARES accredited source. Relevant certification in the form of a CARES certificate, together with detail of the source of supply is attached in section 11.8 of this method statement.

The reinforcement is maintained in rigid cages suitable for placement in the wet concrete. They will be delivered to site by steel supplier, and will be unloaded by mechanical means. The steel cages will then be pre fabricated in a designated area on site, away from the rig, its pump and hose line. They will be constructed by competent trained steel fixers, using trestles to support bars, with collars then fed over the bars to provide spacing to bars and cover to the piles. The specified cover to the reinforcement will be provided and maintained by the collars with integral spacers or independent link/helical mounted plastic spacers as necessary. Cages will be placed either manually or with mechanical assistance as ground conditions and cage characteristics dictate.

In addition to the Ready Mixed Concrete that is to be used in the construction of the piles the following materials will be used throughout our works and are therefore subject to the control measures outlined in the appended COSHH Assessments.

COSHH Number if applicable	Material
002	Biodegradeble Spill Kits
004	Cement
005	Concrete
008	Derv Fuels
010	Mould Oil
011	Hydraulic Oils
012	Petrol
013	Speed Line Paint
020	WD40
023	Dust- Concrete / Cement
025	Ready Mixed Concrete
042	Chainsaw and Two Stroke Oil
058	Brickclean
059	EP2 Grease
060	Prime a Pump
063	Engine Oil

5 PLANT AND EQUIPMENT

The following principal items of plant and equipment are those that are envisaged for the CFA piling works and that are supplied by G M Piling:-

Plant / equipment	Operator competence required	Inspection/ examination certificates required
1no. CFA Piling Rig	CSCS/CPCS Piling Rig Qualification	- 6 monthly PUWER - 4 yearly insurance certification - GMP Daily/Weekly maintenance checks
1no. Trailer Mounted Concrete Pump	CSCS Construction Site Operative Industry Accreditation	- GMP Daily/Weekly maintenance checks
1no. Static Holding Drum	CSCS Construction Site Operative Industry Accreditation	- GMP Daily/Weekly maintenance checks
1no. Compressor	CSCS Construction Site Operative Industry Accreditation	- GMP Daily/Weekly maintenance checks

All of the piling rigs are hydraulically powered and self-erecting. They are manufactured specifically to install the types of pile envisaged. The rigs and concrete pumps are fitted with a variety of instrumentation in order to assist in the

satisfactory installation of the piles. Welfare and storage units may also be deployed. All fuel will be stored in bunded bowsers.

All plant will be inspected on a daily and weekly basis; this check is recorded on the daily and weekly maintenance checklist, during daily inspections the operator will have to access the top of the piling rig to check rig levels, in this instance the operator will wear a safety harness and clip on during this operation, during these checks another member of site staff will be on the ground should any issues occur. As mentioned is section 1.2

All lifting equipment will be certified in accordance with LOLER and certificates will be available for inspection on site.

The location of static plant and lay down areas will be agreed with the (Principal Contractor's) site representative and the G M Piling foreman.

The principal contractor will be responsible for supplying additional items of plant and or facilities including but not limited to:-

- Full welfare facilities c/w power outlet for heated cube tank.
- Location, protection and or removal of services
- A suitably designed, constructed and maintained platform.
- Full time attendant excavator (13 tonne 360° or similar).
- 4 loads of crush material to construct ramp for agitator where use is possible (refer to section 11.4 in supporting information).
- Spoil removal.
- Wheel washing facilities.
- Water supply.
- Background safety lighting.
- Warn third parties of demarcation areas around rig, pump and hose line.

6 METHODOLOGY

It is the policy of G M Piling to conduct its activities with due regard to the health and safety of all its employees and members and all other third parties. Systems of work are as safe as reasonably practicable and all plant and equipment is maintained in a safe condition and operated in a safe manner.

All persons working in the vicinity of the rig must wear suitable personal protective equipment. It is mandatory for all employees to wear safety helmets (BS EN 50365:2002), safety glasses (Bolle EN 166:2001), safety footwear (EN 150 20345: 2004, safety gloves (EN 388: 2003), overalls/trousers (89/686/EEC); disposable white suits (EN368); rubber gauntlets (EN420-89/686/EEC and high visibility vests whilst on the pile platform. In certain circumstances the noise level (e.g. close to operating plant) may exceed 80 dB (A), at which level it is advisable to wear ear protection. No persons should exceed the second action level of 85dB (A) without using ear protection. Mandatory Signage will be in place where noise levels may exceed 80dB (A) for ear protection to be worn.

Training is considered to be an important part of safety awareness and all site employees undertake periodic training. All operatives are certified, (or are under training) for the operation of items of plant (CPCS schemes or similar). It is the Site Supervisor's responsibility to ensure that all site operatives can safely undertake their allotted task and that induction training is given to all new operatives.

The foreman is required to ascertain that the plant and equipment can be safely used. A record of this is kept on the QMS Pre-Piling Check form (ref S2 / C2 for each site. General reference is made to the Company Safety Manual and the CITB publications 'Safe Start' and 'Safety on Piling Sites'. A Procedure for safety relating specifically to G M Piling method of undertaking CFA piling is appended to this method statement and forms part of the Quality Plan for the contract.

It should be emphasised that it is compulsory that no other personnel should be in the close vicinity of the piling rigs without the specific permission and knowledge of the piling crew. (Refer to the demarcation zones in section 1.2 Areas of responsibility) zones require all other site operatives/personnel to be informed of our activities/undertakings via specific site induction conducted by the Principal Contractor.

Some aspects of site safety are generally beyond the responsibility of G M Piling. In particular the safe access both to and on all areas of the site and the control of concurrent and adjacent work will generally be the responsibility of the principal contractor, who must ensure that suitable access to the site has been provided to allow safe movement of the plant and equipment without damage/injury to persons or property. The pile platform must remain safely trafficable for all operations

throughout the work. The demarcation of other sub contractors who may be working on site is the responsibility of the as mentioned in section 1.2.

6.1 SITE ESTABLISHMENT / DELIVERIES

All access to site will be via Willingham Terrace

The piling rig will be delivered to site on a low-loader and off-loaded onto the site via Willingham Terrace. Subject to site access for low loader. G M Piling will place plywood boards to protect any existing road surface where transferring the rig on to the site.

All additional equipment that is required will be delivered to site on 20ft/28ft rigid or articulated hi-ab wagons and will be off-loaded directly on to the site using the hi-ab unit. In order to off load the wagon safely an inertia reel and safety harness will be used. The reinforcement will be delivered in 900kg bundles and off-loaded using the attendant excavator and certified lifting equipment. It is a requirement that the attendant excavator be fitted with check valves. In order to off load the steel safely the steel will be pre slung also the safe load trailer system may also be used.

The G M Piling Site Foreman will direct routine deliveries of reinforcement and concrete to the intended piling area this being no greater than 25m from the site entrance, all concrete deliveries once at the holding drum will be banked by the concrete pump operator ready for discharge. All concrete deliveries will be fed to the holding drum. This will include situations where the pump is used to fill the holding drum, and also feed the rig. At no time will any concrete be fed to the rig whilst the concrete lorry driver is discharging his load, and directly behind the pump. This will then mean if there is a hose failure, or mechanical failure of the pump, then the driver will be a safe distance away from the pump and hose line.
If the site has been set up so there is no holding drum, and concrete is pumped straight to the rig, then the first 6 meters of hose from the pump will be steel, and not rubber, and the concrete lorry driver must be positioned so he can discharge into the pump, and be clear of any rubber hose sections.

6.2 GROUND CONDITIONS

The CFA method of piling is <u>not</u> quantitative in establishing ground conditions and is not effective in generating samples for strength testing. It is reliant upon good site investigation, which may be supplemented by preliminary testing and trial bores. It

can however, be used qualitatively and the site staff are responsible for monitoring arisings and recording any gross discrepancies that may affect the design.

If the site investigation boreholes have highlighted a variable strata sequence or have not covered all the required piling area a series of trial bores may be carried out initially. These are undertaken as close to the SI borehole locations as possible, in order to calibrate the known, described ground conditions and the bore spoil. It should be noted that the spoil from the auger will be disturbed.

As the project progresses, the material arising from the permanent piles will continue to be monitored for any gross discrepancies.

6.2.1 SETTING OUT ENGINEER

The setting out engineer is to undertake setting out of pile positions and as-built surveys of all pile positions, all setting out is referenced from station information and co-ordinates supplied by the client for each individual project.

A steel setting out pin will be installed into the piling platform at the specified co-ordinates per position, as each pile is installed it will be as-built and recorded. Any issues will be reported to the site supervisor and the appropriate action will be taken.

6.3 PILE CONSTRUCTION

Prior to commencement the level of the pile platform is evaluated to ensure that it is consistent with that envisaged by the design.

A suitable setting out pin must be provided and its position checked immediately prior to commencing the bore if there is any doubt as to the validity of its position. Pile positions must be set out having due regard for the required 1100mm minimum clearance distance where located adjacent to existing buildings or structures.
Where piling activities are being carried out close to fences or hoardings it is the principal contractors responsibility to erect extra height hoarding or high level screens to prevent spoil being able to enter the area on the other side.

Any hazardous areas will be segregated by a physical barrier erected by the principal contractor

Prior to addressing the piling rig to the pile position a visual inspection is made of the clearance from any adjacent structure or protrusion from it Barriers will be strategically placed to form an exclusion zone. If it is not possible to set up over the designated position the rig shall be withdrawn and further instruction sought. All

reasonable skill and care shall be exercised whilst setting up the piling rig to avoid the rig coming into contact with any adjacent structure.

The hollow stem of the auger is sealed by a plug or flap to prevent the ingress of material during augering. At this stage the status of the materials used to form the pile (e.g. the cage and concrete, etc) will be assessed to ensure the pile may be formed immediately on completion of the bore.

Offset pins will be installed and used as a check on the auger position after penetrating a short distance. This ensures that the pile is installed within tolerance of the position of the pin as set out. Any divergence of the auger outside this tolerance will be dealt with at this time. If it is not possible to form the pile within tolerance then appropriate action will be taken (e.g. removal of an obstruction, relocation of the pile position after notification to the designer). In the event that an obstruction is determined to be an existing working foundation the rig will be withdrawn from the position and further instruction sought if the obstruction is “dug out” then the principal Contractor will re-instate the piling platform as per the platform design and then tested to ensure it meets the required criteria. A record is maintained by the rig operator of these checks.

Whilst augering to depth the operator is asked to note any anomalous drilling characteristics and on completion of the bore the depth is checked to ensure that it is compliant with the pile design. Augers will be split and section added to achieve the maximum depth piles on the project.

Visual checks and slump testing of the concrete are used to assess concrete quality. Prior to pumping concrete the auger is raised just sufficiently to allow the auger end closure to be cleared. Extraction of the auger is then controlled with regard to the volume of concrete placed and the pressure within the concrete lines.

All of the masts on the piling rigs are calibrated to allow the pile depth to be visually assessed. The pressure of concrete placement is measured at the top of the auger string and displayed to the rig operator. The volume of concrete is also monitored per pile (and on control piles, per metre of pile) using the strokes of the concrete pump. Site staff are responsible for monitoring control piles at the start of piling and as the contract progresses. This process has been automated by electronic instrumentation allowing all the information to be recorded continuously. These records have validated the existing manual controls listed above. Due to the nature of the piling environment it is not always possible to ensure the 'hard copy information' is available for all piles installed.

The total volume of concrete used to form the pile is recorded and checked to ensure that it is satisfactory in relation to the theoretical volume of the pile bore.

Method Statement

During the extraction of the auger the strata on the auger is observed to ascertain whether there is any gross discrepancy between the strata penetrated and that envisaged by the design.
In the event of a blockage the crew inform the supervisor, the crew will then ascertain where the blockage is by referring to the instrumentation which will inform the operator if the blockage is between the swan neck and the auger tip and/or monitoring the concrete hose to see where the movement is. If the blockage is at the auger tip then a client representative will be alerted and the auger will be rotated backwards and extracted at a speed appropriate to the rotation to leave the spoil in the ground. The supervisor will then decide on the course of action depending on where the blockage is

The piling platform must be provided at such a level as to ensure sound concrete at cut off level. Several factors will dictate how much the pile platform level is to be above the cut off level, the depth of pile, the ground conditions and the nature of the pile platform will be the most important considerations. The concrete in CFA piles is initially brought to the ground level from which the bore was commenced. In the event of the 150mm layer being reduced then the principal; contractor will re-instate the platform as per the platform design

On completion of the concreting the rig is withdrawn from the pile position to permit the spoil to be cleared from the immediate vicinity, the centre of the pile to be located and clean concrete established. The reinforcement cages will have been fabricated in the designated steel fixing area and transferred to an area adjacent to the piling rig manually or preferably by mechanical assistance.

The cage will then be lifted with a single point lift either using the service winch on the piling rig or the attendant excavator from the horizontal to the vertical position. The debonding foam added to the cage reinforcement bars will be a minimum of 100mm to 150mm maximum in tolerance less than the cut off level to ensure debonding foam does not exceed beyond the cut off level. The cage will be carried, in the vertical position, to the pile position and slowly lowered it into the fresh concrete, whilst checking the position and centralising. A lift plan will be completed by the foreman and is available for inspection on site.

Upon reaching the required level the cage is then secured (normally the frictional resistance of the concrete on the rebar will hold the cage).

The level of the cage will be as dictated by the design, cut off levels and reinforcement of the piles but will not be below the surface of the concrete. If the cage projects above piling platform level mushroom caps will be provided to identify the position of the reinforcing bars and to provide protection.

In all cases care must be taken to prevent mechanical damage to recently formed piles. In particular considerable care needs to be taken when excavating around and

trimming the piles. Even minor cracking can lead to difficulties when integrity assessments are undertaken.

Details of the piles built will be recorded on our Daily Pile Record Sheets along with any unforeseen circumstances that may have occurred such as a blockage and submitted to principal contractor for verification and countersignature on a daily basis.

6.4 INTEGRITY TESTING

Integrity testing using Relative Impulse Response methods is often used as an independent method of assessing pile construction (RIR). It is not used to evaluate the pile load bearing capacity nor can it be taken as the sole measure of pile serviceability. Unless it can be positively shown that G M Piling are responsible for an anomalous signal and that such a signal relates to the foundation being unserviceable then any investigatory or remedial work will be paid for by others.

G M Piling's policy is to employ an independent specialist, Environmental Scientifics Group from burton-on Trent, their (LSII) wave Test will be used to undertake integrity testing. A realistic number of visits to the site is allowed for, reflecting where possible the clients testing regime and construction programme.

It is vital that the pile head is accessible and suitably prepared. The pile head must be trimmed to sound concrete to leave an approximately flat surface, perpendicular to the pile axis. It is not necessary to trim to cut off level - it may be advantageous to test at a higher level to allow more piles to be tested per visit to site. All loose debris/surface water is to be cleaned off the pile head. The test cannot be carried out with either ground beam reinforcement or concrete in place. Although a thin layer of blinding can be placed around the pile, it must neither cover the pile nor be greater than 75mm thick. A safe access needs to be provided for the technician to gain access to the pile head. The pile cap / ground beam must be clear of any standing water and no steel should be placed over the piles prior to testing. Approximately three working days notice is required for integrity testing.

Integrity testing of the piles can be adversely affected by any of the following:-

- Cutting down of piles too early. Piles should be allowed to cure for a minimum of seven days prior to trimming/cropping.
- Incorrect use of pile croppers.
- Deterioration of piling mat.
- Stock piling spoil in large quantities-during spoil clearance damage can potentially occur to the reinforcement and / or integrity of the pile if caught by the excavator bucket etc.

Any of the above can impact on the integrity of the piles and any damage to the piles only be realised once the pile has been trimmed and integrity tested.

This will be evident from the integrity test results and highlighted as anomalies due to mechanical damage fractures to the piles.

It is important that the site programme allows time for reporting the pile test results and for any subsequent checks and remedial actions, if any, to be carried out.

7 HAZARDS IDENTIFIED

The following Risk Assessment and Minimum Performance Standard (RAMPS) are applicable to all piling sites and are appended to this document:

Activity	**RAMPS No.**
Piling Rigs	G001
Concrete Pump	G004
Compressor and Pneumatic Power Tools	G008
Static Mixing Drum	G009
Lifting Personnel using Piling Rig Auxiliary Line	G010
Rotating Cutting Equipment- General	G013
Lifting Accessories	G025
Manual Handling	G028
Piling Auger	G034
Refuelling site plant	G039
Slinging of Loads	G042
Use of Lorry Mounted Cranes	G048
Storage of Oils, Diesel and Chemicals	G061
Use of Excavators for Lifting	G069
Installation of Ramps and Barriers for Concrete Trucks	G072

In addition to the hazards detailed within the RAMPS noted above, the following hazards have also been identified and will therefore be subject to the specific control measures shown:

No.	Hazards Identified	Control measures	RAM P No.
1	Access and Egress	Access and Egress to site to be controlled by Primus Build, GMP will bank all deliveries on arrival to site access	
		.	

Additional information	This Risk Assessment details the minimum company requirements Managers, Supervisors, Operatives and Sub contractors must be trained in accordance/comply with SHE Training and Competency matrix. Managers, Supervisors, Operatives and Sub contractors must implement all works in accordance/comply with G M Piling's Operation manual and all guidance provided. Personal Protective Equipment to be worn in accordance with G M Piling's PPE policy
Minimum PPE Additional PPE	Hard hat; High Visibility vests or jackets; Safety boots; Gloves; Safety Glasses; Overalls/trousers, Disposable white suits, Gauntlets.
Training required	All training requirements identified as a result of the Control Measures listed above and those included with the applicable RAMPS has been identified within GMP Training Matrix and carried out prior to the commencement of our works.
Other:	
Comments:	

8 Changes to work

Where any changes to our works, methodology or specific changes to the site conditions are made or necessitated, these are to be fully detailed within this section. Once changes have been made to this section, the additional measures must be re-briefed to all personnel working within the guidelines of this Method Statement and associated documentation.

9 QUALITY CONTROL REQUIREMENTS

Changes to Work Site
Additional Controls
RAMPS Applicable

Reference should be made to the procedures established under the Quality Management System for the construction of piles. These are controlled documents and will not be issued to any other parties. A copy is available on site for inspection, if required and is held by the site foreman.

For each days piling that is carried out a Daily Pile Record Sheet shall be completed. This documentation records the details of the piles constructed during the day including length, volume of concrete used, reinforcement cage and any

anomalies that may have been encountered. This document also provides full traceability for all materials used in each pile. Copies of these records are passed on to the Principal Contractors Site Representatives within 24 hours of each pile being constructed.

10 ENVIRONMENTAL PROTECTION ARRANGEMENTS

G M Piling will work with the Principal Contractor to ensure good environmental protection practice.

All general construction waste will be placed in the designated skips provided by the principal contractor.

The storage of oils, diesel and chemicals will be in accordance with G M Piling's minimum performance standard. Oil and fuel tanks, drums or other containers must be suitable and strong enough to hold the liquid without leaking or bursting. The containers must be positioned away from vehicle traffic to avoid damage from collision. A bund or drip tray must be provided to catch any leaking liquid. The bund must be sufficient to contain 110% of the maximum contents of the container. No fuel is to be stored within 10 metres of a watercourse.

All refuelling of plant will be undertaken with suitable dispensing pumps, funnels and drip trays. Spill kits and absorbent pads will be available on site.

The concrete trucks will be washed out off site. The washing out of the concrete pump and holding drum will create a certain amount of concrete slurry. This material will be contained by the Principal Contractor constructing a bund around the concrete plant. The Principal Contractor will be responsible for removing the concrete washout slurry from site. Any spillages outside the bund will be cleared up as soon as is practical and safe to do so.

A sound level diagram for the piling rig and pump is attached in Appendix. Access within the extent of the first and second action levels will be restricted by the site foreman and appropriate signage will be displayed on the plant. Segregation of the site piling area will be the responsibility of the principal contractor i.e temporary fencing/barriers.

11 EMERGENCY PLANNING

In the event of an emergency on site the Principal Contractor will be informed immediately and the site emergency plan will be followed.

Method Statement

G M Piling site personnel have completed an emergency aid in the workplace for appointed persons course. The Principal Contractor will responsible for providing a trained First Aider. G M Piling will provide a basic First Aid Kit.

The following personnel should be contacted in the event of an emergency

Steve Bursnell	Contracts Manager	01553 817667
Drew Bickers	SHE Advisor	07795 977792
Emergency Contact No. (Out of hours)		07787 554307

12 METHOD STATEMENT BRIEFING RECORD

A Risk Assessment is required for every task where there is an identifiable risk. Once a risk is identified an assessment can be made as to the extent of the risk and what control measures can be put in place to reduce the risk/s so far as is reasonably practicable..

It is a legal requirement (M.H.A.S.A.W. Regs) that risk assessments are carried out, read and understood by all concerned.

If you are unsure of the task, talk to your Supervisor and read your Method Statement, Risk Assessments and Associated COSHH sheets – NO CHOICE!

Additional RAMPs applicable to this site (tick all appropriate)			
	004 Pressure Washers		031 Mobile Scaffold Towers
	009 Driving – Winter ops		033 Office Work
	016 Dumpers		043 Storage & use of LPG & other HFL
	018 Excavations		045 Storage of materials on site
	020 Forklift – Tele handlers		050 Welfare facilities at transient sites
	027 Lone Working		058 Working in public places
	032 Noise vibration		063 Waste types & disposal
	037 Portable elec equip		
	041 Housekeeping		
	046 Traffic Management		
	052 Working near or under overhead power Lines		
	055 Working adj to water		
	065 Loading of plant		
	089 Lifting –slings-Straps-Chains etc.		
	105 Use of ladders & steps		
	116 Mobile storage tanks		
	117 Working off lorry bodies Dec 08		
	092 MEWPS Sept 2008		
	076 360 excavators & backhoe loaders		

Other identified risks
No other significant risk on this contract have been identified, in the case of a risk being identified during the course of this contract, a separate individual risk assessment will be raised.

All risks identified have been briefed to all site personnel.

Signed Site Supervisor: _____

Print Name: _____ **Date:** _____

I confirm that I have read and understood the risk assessments and method statement provided for this contract.

Name (print)	Company	Date	Signature