Client:

Originator:

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Work Package Plan for
The Installation of Driven Precast Piles and Steel Tubes
&
The Installation of Precast concrete ground beams

Location: New Mills

Project: Marsh Lane, New Mills

Document Status:			**For Construction / Review**	
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Aarsleff Ground Engineering	**Title**		**Signature**	**Date**
Author; N Humberstone	**Contracts Engineer**			26/10/2017

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1 Scope of Work

1.1 Purpose of Document

The purpose of this Works Execution Plan (WEP) is to define the scope of the works, method of working, and procedures to be implemented by Aarsleff Ground Engineering Ltd (AGE) for the installation of our works.

This WEP will be briefed to all contract staff operatives and other interested parties to advise the nature of work and the risks / hazards involved, in order to execute the works in a controlled and safe manner.

This will be achieved by identifying the risks / hazards associated with the works and the subsequent control measures and risk mitigation, therefore ensuring that the works are carried out in a manner that reduces the risk to operatives, the public, adjacent work forces and other third party assets.

All operations shall be reviewed throughout the project duration to ensure that the works are continuing to be carried out in a safe manner.

1.2 Works Location

Marsh Lane, New Mills

1.3 Description of Works

Precast piling and Precast Ground beam

- Installation of 181no. 178OD driver steel tube pile.
- The preparation of 178OD Steel Tube pile heads
- Installation of precast ground beam

2 Programme

2.1 Programme

The piling programme will be approximately 1 week.

Project Start - 30/10/2017

The Ground beam programme will be approximately 2 weeks.

2.2 Available Working Hours

Monday to Friday	0730-1700 – Noise is limited to 0800-1630
Saturday	----------

The delivery of abnormal loads, rig maintenance or repairs, may be undertaken out of hours and will be agreed in advance with the Client.

3 Task Briefings

Our site activities are broken down into process Task Briefings which follow our sequence of works. These are listed within List of Appendices Section 14 and will be briefed to the appropriate operatives.

TB01	Installation of Driven Precast Piles and Steel Tubes
TB02	Lift Plan – Piling Rig
TB03	Cutting of precast concrete piles
TB04	Pile Caps and remedial works
TB05	Installation of Precast Concrete ground beams
TB06	Crane lift plan

3.1 Methodology

3.1.1 Mobilisation of Plant and Equipment

Suitable vehicular and pedestrian access and egress to and from the working area shall be provided by the Client, prior to the arrival of AGE's plant, equipment and materials on site.

The working platform and access/egress routes shall be designed and constructed to safely support the specified plant, and the extent of the working platform shall be sufficient to allow safe manoeuvring and working space.
Note - This may include the cutting down of piles once installed should it be necessary due to the sequence of piling.
Plant, equipment and materials will be delivered to site as agreed with the Client via the entrance/route detailed above. Piling rigs will be delivered on a low loader.

Mobile plant will be unloaded (driven off) by a trained competent CPCS qualified plant operator onto the working platform.

The PC is responsible for ensuring that suitable arrangements are in place for access of the low loader and other vehicles onto site and where necessary the provision of traffic management and sufficient number of plant and vehicle marshals to control traffic on the highway.

Where it is not possible to unload on site and it becomes necessary to unload on the highway then suitable road protection shall be provided by the PC in accordance with their TM arrangements.

A competent Foreman / Plant Operator will be responsible for the safe rigging of plant and equipment on site in accordance with the manufacturer's instructions.

Upon completion of the rigging and when satisfied the equipment is safe, a functional check shall be completed. Any defects shall be corrected prior to first use.

Any lifting operations required will be planned by a competent Appointed Person and appropriately supervised according to the level of risk. When using the piling rig to carry out lifting operations all AGE Foreman and Piling Rig Attendants are deemed competent to supervise these operations.
Lifting operations are carried out in accordance with Federation of Piling Specialists Code of Industry Best practice.

On Pre-cast piling and Steel tube works, deliveries of the piles and other ancillary equipment are deemed to be 'simple lifts' and as such will generally be off-loaded using the piling rig, in multiple locations across the site, provided with safe access and egress.

3.1.2 Deliveries and Unloading

Upon arrival on site ALL deliveries will report to the PC's representative / gateman and follow any TM instructions given to access the working area where the AGE Foreman will arrange unloading of the delivery.

Once on the working area, any movement of the delivery vehicle shall be under the direction of the AGE personnel.

Any reversing vehicles will be banked at all times from a position of safety. Clear signals will be given to the driver to ensure safety at the rear of the vehicle.

Delivery vehicle fall prevention measures will generally be in line with the below. Where this is not applicable other means of fall prevention will be identified in the respective task briefing.

Typical Example of Vehicle Edge Protection

3.1.3 Setting Out

Responsibility for setting out of individual pile positions is with Aarsleff.

Where steel pins are used, these must be driven into the ground sufficient depth to ensure that they do not present a trip hazard and the movement of plant around site does not disturb them.

Mushroom caps must be fitted to the top of any projecting rebar and setting out pins.

Care must be taken to ensure marked or installed position are not disturbed or damaged, suitable identification or barrier can be used to highlight these areas

Responsibility for the beam setting out is with Aarsleff.

3.1.4 Obstructions and Services

If an obstruction is encountered during installation, an attempt may be made to go through/past the obstruction. If the pile begins to deviate outside of the specified tolerances and/or in the opinion of the Piling Foreman is likely to, installation will cease. The obstruction will be recorded on the AGE works Record Sheet.

The Client shall be informed of the obstruction and the consequence to the pile to enable an instruction to be given to AGE regarding any remedial action required. Should the Client request a replacement pile location AGE Desgin department will be contacted, to comment of possible remedial solutions.

Underground Services - It is an AGE mandatory requirement that a permit to dig / pile be provided by the PC and that it is in place prior to any breaking ground commences, as confirmation that the works area is free from services. This must be completed and signed by a suitably competent person on behalf of the PC and

issued to the AGE Foreman prior to any piling works being carried out. Appropriate supporting information such as service drawings overlaid over the pile layout drawing in a clear understandable / legible format, reports of CAT scans service terminations / diversions etc. shall be attached and issued with the permit.

In the event of services being detected or suspected it will be presumed to be 'live' and immediately brought to the attention of the PC.

Further guidance can be found within HSG47 Avoiding Danger from Underground Services

Overhead Services – where overhead services are present on site or in close proximity to the working area which cannot be diverted or made safe, then it will be the responsibility of the PC to consult the asset owners so that suitable precautions can be implemented.

Further information can be obtained from HSE Guidance Note GS6 'Avoidance of danger from overhead electric power lines'.

Precautions, limitations and protective measures required by the asset owners shall be conveyed to AGE by the PC representative and subsequently transferred into the respective task briefing.

3.1.5 Protection of Existing Structures

Prior to our commencement on site all existing structures within proximity to our works must be adequately protected from our piling works.

Should our plant and equipment need to be unloaded on the road, the PC shall provide suitable ply sheets to lay along the road during the unloading and loading to protect the existing carriageway plus additional steel road plate protection to manholes / inspection chambers etc.

4 Pile Installation Records

Installation records for each pile are completed daily and handed to the PC for signing. Pile reference number, load, section size, length and set are recorded along with as built position in relation to the setting out pin.

Should any works be installed outside agreed tolerances, AGE personnel will accurately establish the tolerances achieved and record it on the Pile Record Sheet together with reasons, and notify the Contracts Engineer.

Internal checks and calculations shall be carried out to determine whether the works as installed are serviceable, with the required factor of safety.

The Client or the Consulting Engineer shall be informed of the results of the checks such that they can instruct any additional works required or accept the works as installed

4.1 Testing

Dynamic load testing is to be carried out over 3% of the piles.

5 Lifting

All our lifting operations will comply with LOLER Regulations 1998 and BS7121 and be carried out in accordance with the project specific lift plan and risk assessment listed in the Appendices and Federation of Piling Specialists Code of Industry Best Practice.

Lifting operations will be planned by a competent Appointed Person and appropriately supervised according to the level of risk.

When using the piling rig to carry out lifting operations all AGE Foreman and Piling Rig Attendants are deemed competent to supervisor these operations.

All AGE lifting accessories and equipment are thoroughly examined in accordance with LOLER at 6 monthly intervals by Bureau Veritas. Copies of relevant Thorough Examination reports are maintained on the provider's website and can be either viewed online or download by the Project Manager / Engineer if a copy is required to be printed.

A lifting accessory colour coded scheme is in operation and only items with the current colouring will be used. Prominently positioned notices on the rig identify the current colour code in place for a given period.

6 Resources

6.1 Work Force

6.1.1 Project Management Team

Our Supervision and management details for works described in this Works Package Plan are, as below.

AGE Project Role	Name	Contact details
Piling/Ground beam Manager	Jody Parkin	07990 007956
Contracts Engineer	N Humberstone	07990006611
STEQS Manager	Robert Speakman	07770 596789
Commercial Manager	Peter Todd	01636 611140

6.1.2 Project Operatives

Project Role / Activity	Name	Certification / Competence Required
Rig Operator / Foreman	Dale Noon	CPCS, CSCS, SSSTS
Piling Rig Attendant		CPCS, CSCS
Precast installation Foreman	TBC	CPCS, CSCS, SSSTS
Precast Installer	TBC	CPCS, CSCS
Precast Installer	TBC	CPCS, CSCS

6.1.3 Operatives Training

Depending on their role, operatives on site will have the following core training -

- CSCS / CPCS Card
- Minimum Site Safety Plus / SSSTS
- Site Induction
- RAMS / Lift Plan Briefings / ITP (briefed as required)

All AGE site inductions and Risk Assessment / Method Statement briefings will be undertaken by the Project Manager (or their appointed delegate). A record of all briefings will be retained on site.

All AGE personnel employed on site are required to make applicable certification available for inspection upon request.

A full record is also kept of the weekly Tool Box Talks (TBT), which are given by the Site Foreman. Additional TBTs are also carried out if a specific and / or unexpected hazard is identified.

6.1.4 Occupational health

All operatives are subject to regular 'safety critical worker (CBH) or 'PTS' (RISQS) health surveillance medicals in accordance with their specific job role and the company matrix.

All operatives are responsible for monitoring and recording exposure times in relation Hand arm Vibration (HAVS)

6.2 Plant / Equipment

The following plant / equipment will be used specifically in relation AGE's works.

Item	*Supplier*
Piling Rig	Aarsleff Ground Engineering
Fuel bowser	Aarsleff Ground Engineering
oxy propane cutting gear	Aarsleff Ground Engineering
Cut off saw	Aarsleff Ground Engineering
Mixer	Aarsleff Ground Engineering
Crane	Hired by Aarsleff Ground Engineering
360 Excavator	Forrest

All items of plant equipment and tools shall be subject to a daily inspection / maintenance regime to ensure they remain fit for use. This will be carried out by the respective operators and appropriate maintenance records maintained.

AGE Plant Department operate a Planned Plant Maintenance (PPM) Scheme.

MEWPs (typically a Z45 type) fitted with all terrain tyres maybe required on occasions to assist the works. These shall be fitted with sky sirens or similar.

Note - Provided a minimum 300mm thick stone platform is laid (minimum thickness in accordance with BR470 Working Platforms for Tracked Plant) there is no bearing capacity issue regarding the use of MEWPS on site and these are suitable for use without any outrigger pads or spreader plates etc.

Only competent IPAF trained operators are permitted to operate the MEWP on site.

6.3 Materials

6.3.1 General materials

Listed below are the materials likely to be associated with our works.

Material	*Storage Arrangements*	*Hazardous*	*COSHH Assessment*
Precast Piles	Designated area within 10m of point of use.	No	No
Steel Tube Piles	Designated area within 10m of point of use.	No	No
Diesel	Double bunded fuel bowser in CSL site compound	Yes	Yes
Greases	Piling Rig	Yes	Yes
Engine Oil	Piling Rig	Yes	Yes
Hydraulic Oil	Pilin Rig	Yes	Yes
Grout	Designated area within 10m of the plots	Yes	Yes
Foam	Vans	Yes	Yes
Petrol	Secure location in Vented Vans	Yes	Yes

COSHH assessments will be available in the site file in accordance with Section 10.

6.4 Attendances

The Principal contractor will provide the necessary attendances in accordance with Aarsleff offer document.

7 Site Specific Control Measures

7.1 Risk Assessment

A Site-Specific risk assessment will be completed for every project and detailed within the list of appendices section 14.

This will be briefed to ALL relevant persons prior to work commencing.

It shall be subject to regular review and be updated accordingly when a change is identified.

7.2 Access Arrangements & Traffic Management

Detail access arrangements – include Site sketch where applicable

AGE will adhere to the Site Traffic Management Plan implemented by the Principal Contractor. A copy should be provided to AGE, along with any revisions, which will then be briefed to the site team.

In addition to the main traffic management plan, AGE will ensure that all vehicles are suitably managed whilst within their area of control and that all drivers are made aware of the Traffic Management Plan and associated routes.

7.3 Working Platform

AGE are a fully audited member of the Federation of Piling Specialists (FPS) and as such have adopted the Federation of Piling Specialists (FPS) Working Platform Certificate as a mandatory requirement for all project sites.

Information for Principal Contractors is available via :http://www.fps.org.uk/fps/platforms/platforms.php

The working platform shall be suitably engineered, firm and level. This shall conform to the Federation of Piling Specialists (FPS) Specification and be designed, prepared and installed in advance of the piling works. The platform shall be regularly checked and maintained for the duration of the piling works.

Plant and equipment details are attached within *Appendix F* with the applicable bearing pressures.

Once the platform is prepared and prior to any loading, a suitably competent person from the Principal Contractor (PC) shall sign and issue a Working Platform Certificate specific to each working area, an example of the Working Platform Certificate is attached (see *Appendix I)*. The Working Platform Certificate shall be in place and issued to our Foreman prior to using the piling rig on site.

The Working Platform Certificate shall confirm the following: -

- Suitability of the platform and access routes to be loaded by specified plant and equipment
- The perimeter / extent of the platform (this should be clearly marked on site)
- The extent of any verification testing which may be required.
- Piling Platform Commencement Levels.

Operation and Maintenance procedure:

- The working platform shall be visually inspected daily by the Foreman and shall be subject to at least one weekly inspection by the PC's Temporary Works Coordinator (TWC).
- The weekly inspection will require the rear of the original Working Platform Certificate to be signed by the PC's TWC.
- Approval must be obtained from the PC TWC prior to any alterations to the piling platform.
- After any alterations to the piling platform, such as excavation for drains, removal of obstructions or after periods of inclement weather, the piling platform must be re-certified with either the re-signed original certificate accordingly or a new certificate.

7.4 Interface Arrangements / Third Parties Affected by the Work

Whilst our works are completed, interface arrangements will be necessary to ensure safety of all persons who may be affected by the activity, members of the public, other contractors, visitors etc.

All AGE traffic, delivery vehicles etc. will adhere to the PC's 'traffic management plan' as instructed at the site entrance.

It is the Client's responsibility to ensure that AGE have an adequate unhindered suitably protected and identified working space, inclusive of the provision, maintenance and management of a nominal 20 metre exclusion zone around our works.

Where works are within 5m of areas accessible by the public then road / footpath closures may be necessary or lookouts provided for the control of traffic/public dependent upon the level of risk identified. Specific measures have been discussed and agreed with the PC and are briefly detailed below and included in the AGE site specific risk assessment.

7.5 Welfare

Suitable and sufficient welfare facilities shall be provided by the PC in accordance AGE attendances document and with regulatory requirements.

7.6 Personal Protective Equipment (PPE)

As a minimum the following items are mandatory articles of PPE required to undertake the activities identified within this method statement.

- Hard hat to EN 397
- Hi Visibility Jacket to EN 471
- Hi Visibility Trousers to EN471
- Steel toe capped boots with mid sole protection
- Eye protection to EN 166 (unless deemed otherwise)
- Gloves (EN 388)

Any PPE which is required in addition or in lieu of the minimum mandatory items will be detailed within the task briefing.

8 Emergency Procedures

Aarsleff Ground Engineering Ltd will work in accordance with the PC's Emergency Preparedness Plan (EPP), A copy of which will be made available on site and briefed to all operatives at the PC's induction.

8.1 Emergency Access and Egress

The PC induction should highlight any project specific fire risks, action to be taken in the event of a fire being discovered, the means of raising the alarm and the location of the Assembly point.

AGE provide suitable Fire Extinguishers for their activities. These will be checked on a regular basis and at least weekly on a formal record to ensure they remain 'fit for use'.

All AGE fire extinguishers are inspected on an annual basis and labelled accordingly

8.2 Nearest Hospital Locations

The nearest Accident & Emergency Department is:-

Steeping Hill Hospital

Poplar Grove
Hazel Grove
Stockport
Cheshire
SK2 7JE

8.3 Reporting Procedures

AGE use a 'Safety Observation / Close Call' reporting system for recording of all quality, environment, health and safety related accidents, incidents and near misses. Accident are recorded in the accident book held with each rig.

These reports are awarded a severity level based on their potential outcome and subsequent investigation carried out. Dependant on severity level these will be local site investigation or detailed investigation carried out by the Health and Safety Professionals or other competent persons.

ALL accidents / incidents are to be reported in a timely manner to the AGE Office and the PC informed ASAP.

9.0 Environmental

9.1 Project Impact Assessment

Prior to commencement of a project the following Environmental Aspects shall be taken into consideration and appropriate controls implemented where necessary to reduce any associated impact.

Where applicable these will be documented with the project specific risk assessment.

- Surrounding ground conditions and topography
- Watercourses, rivers and streams flowing through or near the site
- Local drainage arrangements, manholes, catch pits
- Location of offices, stores and welfare facilities
- Waste disposal
- Maintenance facilities, wheel washes and vehicle cleaning
- Fuel storage, refuelling and drip trays
- Access roads, hard standings and car parks

9.2 Pollution Control

Storage of Liquid in Drums - Oils and COSHH substance drums will be stored within a drip tray capable for holding 25% of the total capacity. The container will be clearly labelled as to the contents.

Storage and Use of Fuel Cans: Ensure that vessels used are appropriate for the fuel and that caps are securely fitted when not in use and they are restrained for transport.

Use of drip trays / bunded bowser is mandatory across the site for items of fuel and COSHH substances.

Spill Control - Spill control kits will be located in the vicinity of fuel stores / refuelling points and on the piling rig.

If a spill occurs on site – this will be contained immediately using spill kits / sand / earth bunds etc. and further leakage will be prevented i.e. close valve, right an up turned oil drum etc.

A check will be made to ensure any spill has not reached any nearby drains, manholes, watercourses or other sensitive areas. If required any pathways will be dammed and any receptors bunded to prevent subsequent contamination

Spills will be reported in accordance with AGE reporting procedures and reported to the PC.

The following information will be included in the report -

- Material involved and pollution properties if applicable
- Location
- Whether it is in danger of entering drainage / watercourses
- Quantity involved
- Reason for spillage / responsibility

Any material used to clean up a spill will be collected and disposed of as hazardous waste

9.3 Working on or Near Water

Where applicable specific measures will be detailed below and within the site-specific risk assessment.

9.4 Waste Management

Responsibility for Waste Management on site will be in accordance with the trade contract.

Where applicable AGE will comply with Section 34 of the Environmental Protection Act (EPA) duty of care.

The EPA places a duty on any person who imports, produces, carries, keeps, treats or disposes of controlled waste or, as a broker has control of such waste, to take measures to: prevent the unauthorised or harmful deposition, treatment or disposal of waste and prevent the escape of the waste from his control or that of any other person

Where applicable AGE will ensure that the transfer is only to an authorised person or to a person authorised for transport purposes.

That there is a written description of the waste that will enable other persons to avoid a contravention of the EPA and to comply with the duty in respect of the escape of waste.

Waste will be segregated and disposed off in accordance with the Clients arrangements as agreed.

9.5 Unexpected Contaminated Land

Where contamination is unexpectedly discovered on a work site the following approach should be taken:

- STOP WORK and immediately notify a Line Manager, the Environmental Manager & the PC;
- Review and revise applicable SSOW and ensure that all appropriate controls are implemented and that site personnel are wearing the correct PPE.

9.6 Pollution Housekeeping

The AGE Foreman will continuously review the condition of the site including welfare facilities on a regular basis, to address any issues that may arise and ensure good housekeeping.

Briefings to our own and any sub-contractor employees will emphasise the need for:

- Good housekeeping to reduce the number of tripping and other hazards on site.
- Removal / storage of tools and equipment when not in use and at the end of each shift.
- Dealing promptly and appropriately with spillages
- Washing hands prior to eating and drinking.

9.7 Noise and Vibration

Noise - All plant will be maintained to prevent excessive noise emissions. All plant used on a temporary basis will be shut down in periods on non-use.

Where applicable, noisy plant will be directed as far away as possible from public areas.

All site based employees will be briefed on the site rules that extend to local residents when entering or leaving or working on the site.

A copy of the noise contours for the rig is included within the listed Appendices.

Vibration – Piling operations cause vibration. However due to the nature of the ground conditions it is not expected that these vibrations will have any serious impact on adjacent structures or the surrounding environment. This may require monitoring.

10.0 Control of Hazardous Substances

AGE produce COSHH assessments using manufacturer's safety data sheets and relevant exposure scenarios. These are available on every project.

A register of hazardous substances expected to be used on site. Will be maintained in the site file.

Substances will be used in accordance with the requirements of the COSHH assessment.

Briefing of COSHH Assessments will be carried out during the AGE induction.

Special emphasis will be placed on briefing unusual or first use substance.

11 Work Permits & Licences

AGE will require the following work permits and licences to carry out the work detailed in this method statement. These will be issued by the PC prior to any works

- Permit to Load Platform – Working Platform Certificate
- Permit to Dig / Pile
- Hot Works permit (where applicable)

12 Monitoring and Compliance

Regular unannounced Safety, Training, Environment and Quality inspections are carried out by the AGE professionally qualified STEQ Team.

In addition, Senior Managers periodically carry out site inspection – target 1 per month per manager to ensure the level of STEQ compliance is maintained to a high standard

Technical, installation and production related monitoring is carried out by the Contracts Engineer on a regular basis.

IMS Audits are carried out across the business in accordance with the AGE Integrated Management System.

Site Foreman complete a weekly 'foreman inspection report'.

12.1 Non-Conforming Product or Service

Where non-conforming products or services are identified then these shall be reported, logged and investigated in line with company procedures in the IMS system.

13 List of Appendices

A	Site Specific Risk Assessment
B	Task Briefing 01: Installation of: Driven Precast Concrete Piles.
C	Lift plan – Telehandler
D	Cutting of precast concrete piles - To Follow
E	Pile Caps and remedial works – To Follow
F	Installation of Precast Concrete ground beams – To Follow
G	Crane lift plan – To Follow
H	
I	

14 Briefing Sheet

Site Location: **16923 – Colne**	
Scope of Works: **Piling and Ground beams**	Works Package Plan ref: **16923 / WPP / 01**

In signing this form, I the undersigned confirm that I have been briefed on all aspects of the forthcoming work and fully understand the method of work and associated risk and that I have been briefed on all COSHH requirements and relevant PPE relating to the task and the site specifics for this project.

NAME	SIGNATURE	Company	DATE

I _____ can confirm that I have briefed the above signed in all aspects of the Works Package Plan, Risk Assessments, Lift Plan, COSHH requirements and the site specifics for this project.

Signed_____ Date _____