Work Package Plan

KG 321399
Astor College, London
Restricted Access Piling

Est. Start Date: TBC
Est. Duration: 5 weeks

					Acceptance by Customer		
Version	Prepared by	Date	Approved by	Date	Required Y/N	Acceptance by	Date
00	SMC	04/08/16					

THINK SAFE

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A Work Package Details

A1 Description of work

Keller Geotechnique (KG) are to be contracted by Galliford Try Building to undertake the installation of 50no 508/450mm concreted SFA mini piles, as part of the extension to Astor College. This work will be undertaken in a single site visit using a Klemm 709-1 (Or similar) diesel operated drilling rig. The drilling operations are principally rotary, to allow both noise and vibration levels to be kept to a minimum.

All 50no mini piles will be installed from the surface of the piling platform, the augers will be progressed until drill strings reach the designed pile toe depth with 1no casing being used to act as a vertical guide and to assist stability near the surface of the Borehole.

KG aims to establish and maintain a systematic and standard method of construction and to assign responsibility for activities involved. To demonstrate, by documentary evidence, that the construction of the works meets all contractual and Specification requirements, these documents will be provided to the Principal Contractor during and as a package at the end of the works.

Materials used will comply with detailed design requirements. One set of four concrete cubes will be sampled per working day during the pile installation period and a cube results summary will be compiled and presented to the Principal Contractor during and as a package at the end of the works.

Pile reinforcement will comply with the design and pile schedule. Pile reinforcement will be installed with the use of a mechanical winch operated by the Drill Rig. All Pile reinforcement will be terminated at PPL.

A2 Planned Sequence of Works

These works will be carried out in one site visit, with mobilisation, demobilisation and all piles being installed during the 5 week proposed period. A more detailed sequence will be agreed with Galliford Try after a meeting between the two contract teams on site.

Please note that the above only proposes a programme based on continuous working over the duration of the proposed scheme of works.

Any change in the planned methodology of the works during this contract will be notified to, discussed and agreed with the client before any new method is put into place on site. It will also be presented in the form of an addendum to, or a revision of this document. This new document will also be briefed out to all KG operatives.

A3 Detailed Method of Construction

Works to be undertaken are for the installation of a total of 50no 508/450mm concreted mini piles founded into the underlying sandy clay strata in accordance with the pile schedule.

The concrete for the piles will be pumped from the designated concrete batching area to each pile position, the location of the batching plant will be provided by the contractor with sufficient space for storage of the concreting equipment. A water source is necessary for the washing out of the concrete plant, along with a washout facility for the collection of waste water.

<u>50no Mini Piles</u>

1. An area for the concrete plant and reinforcement lay down will be planned by the contractor.
2. In carrying out the work the rigs used will be purpose built, hydraulically operated rotary piling rigs. The associated equipment and noise and vibration will be compatible with current legislation. The rig will be a diesel operated Klemm 709-1 (2.4m wide x 5.5m long x 13 tonnes weight with 8.815m long mast. An adequate Piling Platform will be provided by the Principal Contractor. The working platform certificate, which includes the maximum pressures exerted by the aforementioned rig, is available within Appendix E
3. Piles will be set out by the principal contractors engineer. A minimum headroom of 9m is required over each pile location.

4. The mast will be set to vertical using a bubble inclinometer, the driller and attendant spanner man will carry out checks on the mast set up throughout the drilling process, namely at 0.5m, 1m and 2m depths. Visual checks will also be made daily by the driller to check on the condition of the inclinometer. If damaged, it will be destroyed and replaced.
5. First, one metre of temporary casing will be advanced ahead of the augers, (only if ground conditions dictate) from the level of the piling platform, this will act as a vertical guide. From here onwards, the augers will advance, through the made ground, RTDs and clay, until the specified pile toe has been reached.
6. The augers are then withdrawn, with the borehole concreted as the augers are extracted. Once all augers are removed, the temporary casing will be removed and the bore topped up.
7. The reinforcing cage will then be plunged into the fresh concrete. For piles requiring additional GEWI bar reinforcement, the bar will be plunged into the fresh bore first and the cage plunged over the top. All steel is to be terminated at PPL – piles will be built up to the required COL by others upon completion of the piling works where required..
8. If overnight, temperatures are expected to fall below freezing, all concrete and water lines will be blown through with compressed air at the end of each shift.
9. The anticipated volume of spoil per pile is in the order of 3.5m^3, which will need to be removed from the pile position as it arises from the hole by the Contractor's attendant excavator.

Each pile will be reinforced with a 300mm OD 6B20 cage, 4.5m in length including 800mm projection (TBC by an approved design document).

Individual Pile setting out and levelling will be provided by the Contractor's engineer, the level of the top of the pile reinforcement must be checked by the Contractor's engineer after each and every pile is constructed, such that there is opportunity to rectify errors before the pile concrete sets.

Positional and installation tolerances achievable for the proposed drilling rig are as follows:

Rig Type	Klemm 709-1
Pile type	508/450mm concreted piles
Working Rig Dimensions	2.4m wide x 5.5m long x 13 tonnes weight with 8.815m long mast
Headroom (m)	open
Distance from vertical face to centre line of pile – rig normal to face (mm)	500
Distance from vertical face to centre line of pile – rig parallel to face (mm)	1200
Installation tolerance (at PPL/Verticality)	+/- 1 in 75mm

A4 Keller Work Instructions

The Keller Geotechnique Contract Manager is responsible for establishing control processes and procedures to ensure that the preparation, execution and completion of the site work are carried out safely and without incident. The following work instructions will be adhered to:

Drilling with augers and casings - 8.2KG_WI

Restricted Access Piling & Testing – 8.25KG_WI

Concrete cube preparation and testing – 8.16KG_WI

Lifting and installation of pile reinforcement – 8.37KG_WI

All work instructions are made available within appendix D of this document.

A5 Mix Design

Concrete will be batched off site, Characteristic C28/35, DC2, S4 mix with maximum 10mm aggregate. Once on site, it will be stored within an agi tank and pumped to the bore locations.

One set of 4no grout cubes per working day will be taken during the pile installation period. These will be tested, 1no at 7 days, 2no at 28 days and a spare.

A6 Control of Activity Risks

Risk Identified	Controls Specified	Tasks where risk needs to be briefed			
		Mob	Pile installation	Demob	Comments
Damage to existing structure from piling rig	All rig movements to be supervised by a trained and competent banksman.		x		
Concreting	Controls as specified in KG_HA02 - Appendix B		X		
Drilling	Controls as specified in KG_HA04 Drilling Appendix B		X		
Lifting and installation of Pile reinforcement	Controls as specified in KG_HA11 Lifting and installation of pile reinforcement Appendix B		X		
First Aid Hazard Assessment	Controls as specified in KL_HA05 First Aid Hazard Assessment Appendix B	X	X	X	
Air Compressors	Controls as specified in KL_HA16 Air Compressors Appendix B		X		
Loading and Unloading of plant and equipment	Controls as specified in KL_HA18 Loading and Unloading of plant, equipment, etc. Appendix B	X		X	
Restricted Access Piling & Testing	Controls as specified in 8.25KG_WI Appendix D		X		
Manual Handling of Augers and casing	Controls as specified in KG_MHA03 Augers and Casing Appendix B	X	X	X	
Manual Handling reinforcement cages	Controls as specified in KG_MHA08 Reinforcement cages for mini piling Appendix B	X	X		

A7 Resources

Plant & Equipment:

Klemm 709-1
PM55 Concrete pump
1no blow out chamber
7m Telehandler
6m³ Agi Tank
1no double bunded diesel bowser
1no Jet wash
Various small tools, miscellaneous concrete/air hoses and site tool box
Water supply (by Principal Contractor)
Attendant excavator for muck away (by Principal Contractor)

Labour - 1no Supervisor
1no Driller
2no Spanner Men
1no Concrete pump operative
Visiting Engineer/ Manager
Visiting Health and Safety officer

All site personnel will have as a minimum a CSCS card and where applicable a CPCS card.

The Contracts Engineer or Works Manager will brief the supervisor on this WPP before any works commence, following this it is the responsibility of the Keller works supervisor to ensure all site operatives have been fully briefed and any new workers that arrive are also fully briefed on the WPP prior to starting work – see Appendix I Record of WPP Briefing Sheet. To ensure all workers fully understand what is being briefed to them, the supervisor conducting the briefing will engage the workers with questions relating to the works.

A8 Permits

Prior to work commencing, the following permit must be issued by the Principal Contractor to the Keller works supervisor:

- Working Platform Certificate must be obtained before loading the working platform, renewed weekly and following any reinstatement of the platform, such as following removal of obstructions. Refer to Appendix E for template. The signed working platform certificate must be produced on site and a copy sent to Keller before work commences.
- Permit to dig – issued by Principal Contractor to the piling supervisor, confirming no services in the area. Refer to Appendix G.
- Hot works permit – (when applicable) - for the use of welding equipment, abrasive wheels or cutting pile reinforcement bar. Refer to Appendix H.

A9 Site Hours

Monday to Thursday: 07:30 hours to 18:00 hours

Friday: 07:30 hours to 15:30 hours

A10 Key Personnel and contacts

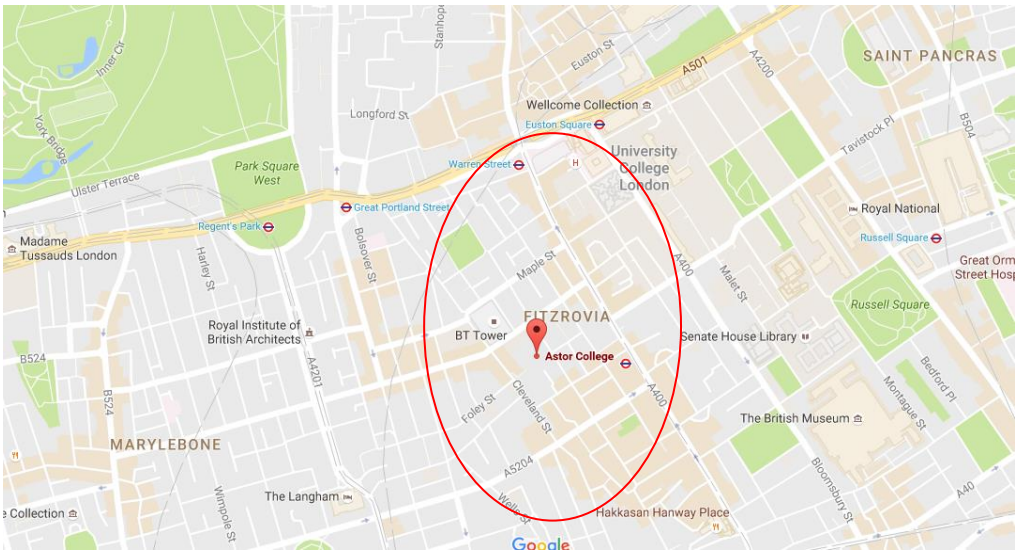
Name	Position	Contact
Richard Hayman-Joyce	General Manager	07748 106071
Tom Fuller	Contracts Engineer	07872 456225
Eddie Donaghy	Construction Manager	07717 342663
Glyn Evans	NWE HSEQ Manager	07909 990639
TBC	Site Supervisor	TBC

Site Details

The Site Address is:

Astor College, Charlotte Street, London. W1T 4QB

It is shown on the Map below.



B1 Access

The drill rig will be transported to site (via Charlotte Street) on a step frame, being tracked off within the site compound and on to the drilling location/Piling Platform – A Piling Platform Certificate along with a Permit to Dig/Break Ground must have been prepared and signed off prior to rig being tracked into the piling area. The rest of the plant mobilisation will take place through the site entrance.

The Principal Contractor will be responsible for the traffic management and for providing safe access/egress from/to the site entrance for deliveries and KG operatives as necessary throughout the site works including the mobilisation and demobilisation periods. These systems will be briefed to all KG employees and the site supervisor will ensure these are adhered to throughout the works.

B2 Site Layout

A centralised area for the siting of the concrete batching plant, system and associated materials will be required for the piling operations. Concrete will be pumped from this batching plant location to the individual pile locations. It is anticipated that one inter-site move will be required between the Primary and Secondary Piling Areas. An on-site storage area will be used for the storage of the pile reinforcement.

Throughout the K.G. piling works, exclusion zones will be maintained from the piling works and the other works taking place on site, this will be done with co-operation from the main contractor who will provide clearly defined access routes around site, ensuring that other trades on site that are not involved in the piling works will be kept away from KG operations. As the piling works will follow a planned sequence agreed with the Principal Contractor supervisor, access routes may need to change as necessary to allow room/access for the drilling rig to access certain pile positions.

A suitable wash out bund will be provided by the contractor for disposal of waste concrete and wash out produced during piling operations and from washing out upon completion of the concreting operations each shift. It is the responsibility of the ground works contractor to maintain / empty this bund as the works proceed. An adequate water supply will also be available for the duration of the works.

All setting out is to be carried out by the contractor's site engineer. KG is to be made aware of any services on site which may be encountered during the drilling operations. Any existing services are to be diverted or made redundant prior to the permit to dig being signed and works commencing.

The site reference and platform levels will be advised and confirmed by the contractor prior to work commencing on site. Where possible the PPL will be rationalised to the same level. Access to each pile position will give a clearance of 500mm from any vertical face to the pile centre line.

The pile sequence should be agreed prior to any work commencing on site to ensure all parties are aware and in agreement of the sequence.

B3 Control of Site Hazards

Hazard	Controls Specified	Tasks where hazard needs to be briefed				
		Mob	Pile installation	Demob		Comments
Loading and unloading of Lorries	Controls as specified in KL_HA02 Loading and unloading of Lorries	X		X		
Protection of the public	Controls as specified in KL_HA06 Protection of the public	X	X	X		
Site establishment	Controls as specified in KL_HA07 Site establishment	X				
Open Excavations	Piles to be covered immediately with metal plates or similar following construction.	X	X	X		
Moving Plant – plant strikes	Rigs to be banked at all times by trained and competent banks man, pedestrian walkways to be adhered to	X	X	X		
Rotating Machine Parts	Any Site workers not involved in the piling operation should remain outside of the work area. Rig Guards to be used at all times.		X			
Overhead Electricity Cables / Pylon	Have overhead lines switched off if possible or maintain safe distances from the lines or pylon to plant and equipment		X			

All KG operatives will attend the project specific, safety induction talk from the principal contractor prior to works commencing. The emergency procedures for the works will be discussed and highlighted at this induction along with any site specific hazards and emergency procedures, such as the fire safety plan which is put in place by the Principal contractor.

Once inducted, and before any work commences, any change in conditions will be recorded by the site supervisor on the 'Site hazard assessment' form. This document will be updated and made available to the client at regular intervals throughout the job.

B4 Communication & Contact Details (Galliford Try)

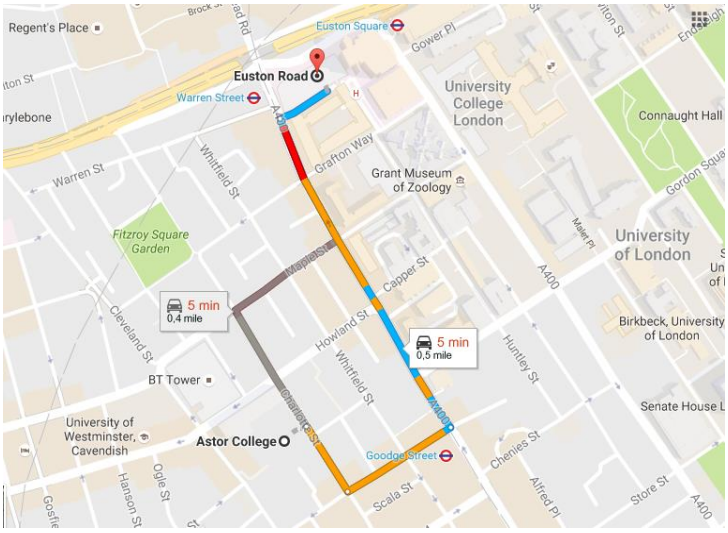
Name	Position	Contact
TBC		

B5 Emergency Arrangements

For emergency contact details please see below.

First Aid equipment is located in both the site supervisor's site office and the stores unit. The KG first aider on site is the site supervisor.

The nearest A&E hospital is: University College Hospital, 235 Euston Road, London. NW1 2BU.



All accidents/incidents or near misses to be reported to Principal Contractor supervision immediately and recorded in the accident book, all personnel are to be briefed on this Principal Contractor induction.

B6 Welfare

All Welfare including site office and drying room is to be provided for the duration of the works by the Principal Contractor. Security is also to be provided, including a secure locked compound for the safe storing of all plant, equipment & materials for when not in use. Note - Site water supply is final effluent, therefore not suitable for drinking water. Ensure hands are washed prior to eating and drinking.

B7 Interfaces

It is essential to maintain good public relations and minimise the impact, disturbance and inconvenience of the works. The site and surrounding roads must therefore be kept in a clean and tidy condition, and external noise emissions kept to a minimum. Acoustic noise reduction barriers can be supplied if requested, at a cost.

C Briefing

C1 Briefing Arrangements

The basic documentation for managing the operations comprises this Method Statement, the associated Risk Assessments, Tool-Box-Talks and Start of Shift Briefings. Each member of KG's staff and visitors will be briefed on these documents prior to accessing the site. Records of these briefings will be kept by the KG supervisor on site, with a copy sent back for records at the main office.

C2 COSHH

The Control of Substances Hazardous to Health Regulations, 1999, (C.O.S.H.H. Regulations), require that an assessment is undertaken of health risks created by work involving substances hazardous to health. The risk assessments of substances are included in the task assessments. These refer to the use of chemicals on site and state that the precautions to be taken are recorded on a Substance C.O.S.H.H. Record. The Substance Identification Record is based on information obtained from a data sheet received from the substance supplier.

SC.O.S.H.H Assessments for all substances used on the site can be found in Appendix C.

The following COSHH assessments are also to be followed:

COSHH Assessment – Oils & Greases

COSHH Assessment – Concrete

COSHH Assessment – Gas Oil

COSHH Assessment – Readily Biodegradable oils including Q8 Holbin 46

COSHH Assessment – Petroleum Spirit

C3 P.P.E.

PPE will be worn by all Keller Geotechnique employees in the required areas on site so as to comply with the site rules of the main contractor, this will include (where applicable): -

- Safety helmets
- Protective clothing to suit site specific requirements
- Safety footwear (toe and mid-sole protection)
- Gloves (mandatory on Keller sites)
- Reflective vests/overall, jackets and trousers
- Eye protection (mandatory on Keller sites)
- Grout mix operative to wear appropriate face fitted dust mask.

Appendix A – Keller HSEQ Policy

To be made available to the principal Contractor upon request. A copy will be kept in the site supervisor's health and safety file.

Appendix B – Site Hazard Assessment

To be made available to the principal Contractor upon request. A copy will be kept in the site supervisor's health and safety file.

Appendix C – COSHH Data Sheets

To be made available to the principal Contractor upon request. A copy will be kept in the site supervisor's health and safety file.

Appendix D – Keller Work Instructions

To be made available to the principal Contractor upon request. A copy will be kept in the site supervisor's health and safety file.

Appendix E – Working Platform Certificate

Working Platform Certificate (FPS/WPC/4b)

Project Name	**321399 – Astor College**
Work area covered by this certificate	

(A sketch or marked up pile layout drawing may be attached to this certificate. Include haul roads and gridlines.)

Part 1 – WORKING PLATFORM DESIGN

Equipment to be used on site.	**Klemm 709-1**
Maximum plant loading	**171kPa (While extracting)**

(Note: BR470 'Working Platforms for Tracked Plant: Good practice guide to the design, installation, maintenance and repair of ground-supported platforms' is available from IHS BRE Press – Tel 01344 328 038)

Designer Name			Tel No.
Designer Organisation			
Is Testing Specified?	Yes / No	If 'Yes' Give Details:	

Part 2 – VERIFICATION BY PRINCIPAL CONTRACTOR

The working platform detailed above has been designed, installed to the design and, if specified, tested to safely support the equipment detailed in Part 1 above. The limits of the platform have been clearly identified on site as necessary.

The working platform will be REGULARLY INSPECTED, MAINTAINED, MODIFIED, REPAIRED, and REINSTATED to the as-designed condition after any excavation or damage, throughout the period when the equipment is on the site. A completed copy of this certificate signed by an authorised person from the Principal Contractor shall be given to each user of the working platform prior to commencement of any works on site.

Name & Position		Date
Organisation		Signature

The HSE has worked closely with the FPS to develop this initiative and supports the principle of reducing accidents by the certification of properly designed, prepared and maintained working platforms

Working Platform Regular Inspection Log

The working platform has been inspected *prior to handover and provides safe access for people and plant*. All necessary maintenance, modification, repair or re-instatement of the working platform is to the as-designed installed condition. If necessary, a revised Working Platform Layout Drawing has been issued to the specialist contractor.

Date	Organisation	Name & Position	Signature	Comments (include key details of alteration, modification, maintenance, repair, date of next inspection, and whether or not revised drawing issued etc. as appropriate)

Working Platform Certificate (FPS/WPC/4b)

Guidance on working platforms for tracked plant

1. Design

1.1. The HSWA 1974 and CDM Regulations 2007 require the Principal Contractor to appoint competent Designers in respect of Working Platform design. This legislation explains how competence can be assessed by reference to professional qualifications or professional memberships and by reference to practical experience of the design of working platforms. Principal Contractors must be satisfied that a competent Designer has been appointed by them in accordance with the relevant legislation before they complete and sign the WPC.

1.2. The stability of tracked plant is fundamentally dependent upon the provision of a suitable and sufficient working platform. It must be properly designed and installed to a recognised standard. Whilst the same type of rig may be operated by different companies, the design bearing pressures may differ due to the specific operating configuration of the rig and/or any modifications. Details of the plant to be used and bearing pressures will be provided by the specialist contractor in advance of work commencing.

1.3. Working platform design is extremely sensitive to the bearing pressure and type of fill used in the platform. (For example, changing the angle of friction of the fill from 35 degrees to 45 degrees can halve the platform thickness.) It is therefore advised that the Designer may have to adopt conservative/cautious estimates of platform shear strength unless higher values can be demonstrated by testing or with reference to appropriate published data.

1.4. The working platform must be safe for pedestrian access and free draining to prevent the build up of water and slurry. In the case of fine-grained sub-grades, a separation/filter membrane should be installed beneath the platform material to inhibit 'pumping' and infiltration of the fine-grained soils up into the platform material during wet weather (which can impair platform performance and increase maintenance costs).

1.5. Proof testing of the platform can be carried out with a suitably sized circular plate subjected to the maximum design loading. Such testing, as part of an appropriately designed testing regime, should highlight any gross inconsistencies in platform performance. Potentially, significant savings in platform thickness and cost may be realised by adopting a more detailed testing strategy.

1.6. The working platform must have a design life which starts before delivery of the piling equipment and ends on completion of all piling works. This includes load testing, integrity testing, investigation of non conformances and any remedial works.

1.7. The specialist contractor is to advise the Principal Contractor at the earliest practicable opportunity should the specialist contractor become aware of any circumstances relating to the working platform that renders it unsafe.

2. Installation

2.1. The FPS Working Platform Certificate is mandatory for all sites where a rig or attendant plant operates. It must be signed by an authorised representative of the Principal Contractor. This signature confirms that the legal duties required under CDM have been carried out.

2.2. If the working platform is to be constructed or removed in phases while piling works are ongoing, then the extent of the platform must be clearly defined on the certificate and, in accordance with good practice, physically on site. This is particularly important where the platform material is removed from an area previously made available to the specialist contractor.

2.3. The working platform must provide safe access for all plant deliveries, sub-contractors and personnel associated with the specialist operations. Properly designed and installed, the working platform could also provide suitable and safe access for following trades for the whole project.

2.4. Poor definition of the edge of the working platform is a major cause of tracked plant instability. It is good practice that the working platform should extend at least 2m beyond the pile position/edge of the building to ensure sufficient safe working area for the specialists personnel and attendant plant. Where having to work within this 2m zone is unavoidable the Designer is to be informed of the requirement to design the platform for working up to its edge.

2.5. Where access ramps are used to move between working levels these must be of sufficient gradient and width to allow the plant to move safely with the stability constraints of the machine. Ramps must be in a straight line between working areas. Rigs and cranes cannot change direction on ramps. Where a change in direction is required, this must be on a flat level platform.

3. Maintenance, modification, repair and reinstatement

3.1. The working platform must be kept free draining. Water and slurry which is allowed to build up on the working platform can hide such hazards as recently constructed piles, trip hazards, uneven or unstable ground, services and excavations. Slurry can be transferred to work equipment which increases the risk of slips on steps as well as difficult handling of work tools.

3.2. Obstructions encountered during installation of the piling works will generally require excavation to remove them. This can create a 'soft spot' which can result in the rig overturning. It is essential, therefore, that any excavations made in the working platform are reinstated to the designed standard, including any reinforcement and separation filter/membrane.

3.3. The working platform shall be subject to regular inspection by a competent individual appointed by the Principal Contractor (e.g. the Temporary Works Co-ordinator) throughout its design life and after any reinstatement or any works which might have modified it. Any damaged or inadequate areas identified must be reinstated to the designed standard. Following the regular inspection, the Working Platform Regular Inspection Log shall be signed by an authorised representative of the Principal Contractor and issued to the specialist contractor with a layout drawing of the working platform amended as appropriate.

4. Working Platform Layout

4.1 Items that must be included and properly located on the working platform layout drawing and be notified by the Principal Contractor to the specialist contractor would include: detail of platform edges and 2m delineation, trial pits, services or voids, areas of backfilling, known underground basements; areas that are covered by the certificate or permit, test locations (if specified by the Designer of the platform) and any other feature that may affect the safety of operations**.**

Appendix F – Plant Details

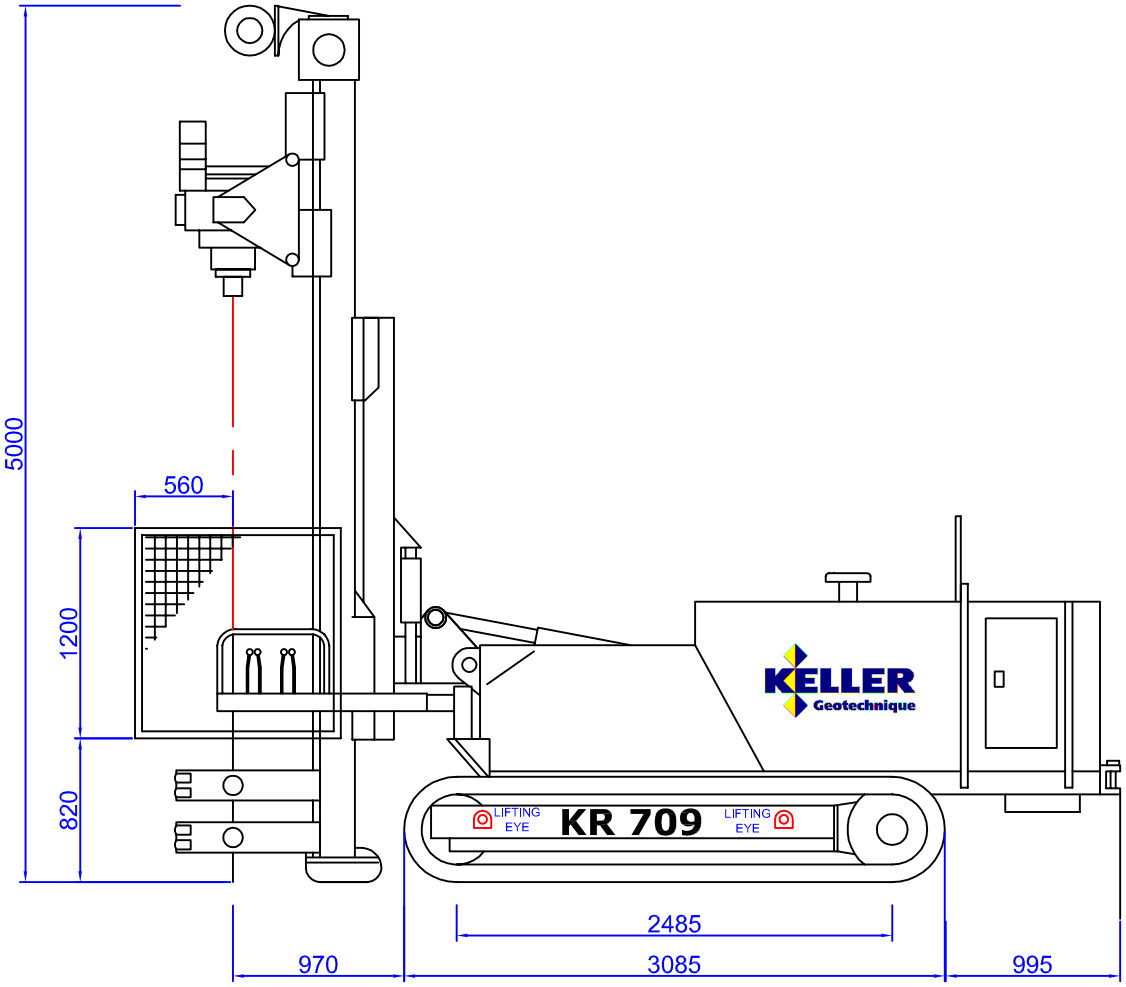
KELLER Geotechnique

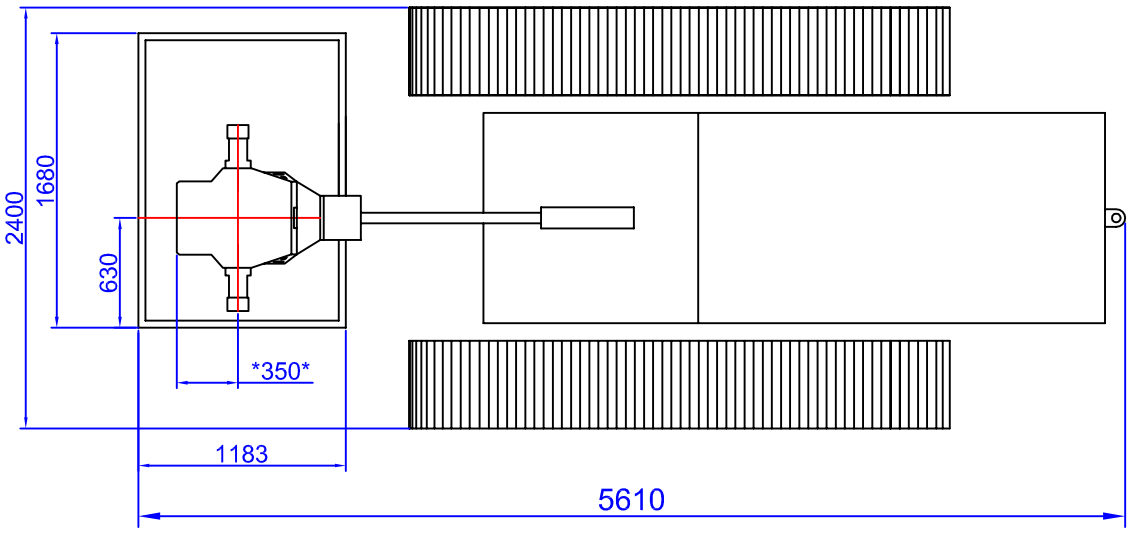
Thorp Arch, Wetherby,
West Yorkshire, England, LS23 7FS
Phone 01937 541118
Email geotechnique@keller.co.uk

Unit 5, Weyside Park
Newman Lane,Alton,GU34 2PJ
Phone 01420 590328
Email geotechnique@keller.co.uk

Ground Floor, 108 Mere Grange
Leaside Road, St Helens, WA9 5GG
Phone 01744 818009
Email geotechnique@keller.co.uk

Tower Business Park,
Derby Road, Clay Cross
Phone 01246 860988
Email geotechnique@keller.co.uk





* DIMENSION* = 430mm IF USING 660mm CASING

Rig Data

Rig Weight	13500Kg
Maximum Pile Diameter	508/660mm
Maximum Pile Length	30m
Drilling Techniques	Rotary Case & Auger Flight Auger DTH Hammer
Power	Diesel
Power Pack Dimensions (mm)	- - -
Power Pack weight	-
Noise Levels	TBC Leq at 5m
Rig Transport Dimensions (mm)	5140L 3155H 2400W
Mast Articulation	
Forward	5°
Back	90°
Side	±15°

Notes

All KG Drilling rigs are equipped with fully interlocked guards in accordance with the PUWER regulations

FPS Platform design

Working Platform Certificate required to operate all KG Drilling Rigs

TITLE
KLEMM KR 709

SCALE	ORIG. SIZE	DRAWN	CHECKED	AUTHORISED
N/A	A4	J.D.T. 09/11/10		

DRAWING NUMBER

REV -

PCP GROUP
International supplier of pumps & hoses

Concrete Pump Specs

Type		SW40 	PM55 	PM70 
Concrete Cylinder Dia	(mm)	152	180	200
Concrete Cylinder Stroke	(mm)	1066	1000	1400
Volume per stroke	(m^3)	0.0193	0.0254	0.0440
" " "	(l)	19.3	25.4	44.0
Output - theorectical	(m^3/hr)	40	55	70
Strokes per m^3 (100%)	(No)	51.7	39.3	22.7
Strokes per m^3 (90%)	(No)	57.4	43.7	25.3
Maximum strokes per hr	(No)	2068	2161	1592
Maximum strokes per min	(No)	34.5	36.0	26.5
Concrete Pressure	(bar)	45	55	70
Hydraulic Pressure	(bar)	155	260	350
Deisel Engine	(kw)	60	60	115
Length	(mm)	4600	4420	6000
Width	(mm)	1500	1520	1800
Height	(mm)	1800	1700	2250
Weight	(kg)	2400	2700	4200

Appendix G – Permit to Dig

PERMIT TO DIG

Contract Name		Permit No:	
Contract Number		Date of Issue:	

MAXIMUM DURATION OF PERMIT MUST NOT EXCEED 7 DAYS FROM DATE OF ISSUE

PART A - Prior to Excavation / Breaking Ground

Has a full CAT scan in all three modes (power, radio and transmitter) been carried out by the Main Contractor **prior** to the issue of this Permit and the results recorded	**Yes / No**	If no then Permit not to be issued
Have utilities drawings been received by the Main Contractor and all relevant information recorded?	**Yes / No**	If no then Permit not to be issued
Have all known/charted services been traced and the positions of all buried cables been clearly identified by the Main Contractor on the surface?	**Yes / No**	If no then Permit not to be issued

There are the following known/charted services in the work location as below (Tick)

Gas		**Drains**		**Electricity (O/H)**		**BT**		**Traffic Signal**		**Other**	
Water		**Sewer**		**Electricity (U/G)**		**Fibre Optic**		**Properties**		**Other**	

If no services indicated within the proposed area of excavation on any statutory drawings or topographical GPR survey, and area has been CAT scanned and proved clear by the Main Contractor, then mechanical excavation can proceed. Go to part B

Have all known services been traced and marked out on the ground by the Main Contractor?	**Yes / No**	If no then Permit not to be issued

If Electricity, gas or unknown services are present then trial holes MUST be dug using safe techniques (No breakers or mechanical equipment) and marked on the drawings to prove exact depth, location and direction.

Have trial holes been done by the Main Contractor prior to this permit?	**Yes / No**	If no then Permit not to be issued

All known/charted services must be shown on the attached sketch(s) or relevant survey drawing, clearly stating the trial hole locations completed by the Main Contractor where required (Gas, Electricity, Unknown etc.)

Insert Sketch and drawing references and attach as required:

PART A Authorisation: Completed by Authorised Main Contractor Representative

If electricity or Gas found to be encased in concrete the service MUST be diverted or isolated before commencing excavation works

Main Contractor Representative: _____ Date: _____

Keller Representative: _____ Date: _____

A copy of this permit must be kept with the supervisor of the activity on site

PART B - Prior to Mechanical Excavation / Digging

Has Part A of this Permit been **fully** completed?	**Yes / No**	If no do not continue
Does the Method Statement cover Keller Plant and is the correct equipment available?	**Yes / No**	If no do not continue
Has machine operator/banksman been briefed on location of known services and digging methodology (**No mechanical excavation within 2m of services to be completed without Written Instruction from Main Contractor)**	**Yes / No**	If no do not continue
Have services been adequately protected/supported and details recorded by Main Contractor?	**Yes / No**	If no do not continue
Have the positions of all buried cables been clearly identified on the surface?	**Yes / No**	If no do not continue
Will the excavation or any other activity infringe the 'Building Support Structure'? If **Yes** consult Design Engineer prior to commencement.	If Yes do not continue	**No**

Excavation by mechanical means may only proceed if:

Known services within immediate area of proposed dig have been fully exposed by safe techniques under direct supervision **OR** there are no identified services shown on survey drawing and nothing has been located with CAT & Genny within 2m either side of excavation line.

PART B Authorisation: Completed by Authorised Main Contractor Representative

Name: _____Signature_____ Date: _____ Time:_____

A copy of this permit must be kept with the supervisor of the activity on site

Permit valid from..... until..... (maximum of 7 days)

Work must be suspended if services are damaged and the Site Manager informed immediately

Issued to Keller Representative

Name: _____Signature_____ Date: _____ Time:_____

Permit Suspension /Completed* (sign here if no further mechanical digging is required)

Name: _____Signature_____ Date: _____ Time:_____

Appendix H – Hot Works

Definition of hot work - work with flame cutting apparatus, oxyacetylene welding apparatus, electric welding apparatus, blow lamps, grinding equipment, any other equipment producing flame, intense heat or sparks, working with bitumen boilers.

Proposed work

Description

Equipment to be used

Location

Permit valid for (Date and Duration):

Special Considerations

Hazard present:	Yes/No (Permit Issuer)	Removed or Controlled	Hazard present:	Yes/No (Permit Issuer)	Removed or Controlled
Combustible solids			Confined space		
Flammable liquids, toxic gases, vapours, chemicals			Work at height		
Combustible building fabric			No segregation of work from others		
Conduction of heat/sparks			Pressure (pipes/vessels discharged and vented)		

State any additional precautions required: ✓ box to denote.

1. Ensure all personnel are Site Inducted ☐
2. Ensure hot work equipment is suitable for use and in good order including gas bottles, welding equipment etc. ☐
3. Check location and means of raising alarm ☐
4. Ensure suitable Fire Extinguishers are available nearby for immediate use ☐
5. Ensure the recipient of this Permit is competent to use Fire Extinguishers ☐
6. Inspect nearby areas and make safe if necessary ☐
7. Remove any combustible material from work area ☐
8. Remove any flammable liquid containers from work area (whether full or empty) ☐
9. Remove any flammable gas containers from work area (whether full or empty) ☐
10. Provide suitable and adequate protections against sparks and hot particles ☐
11. Check atmosphere at the work are with a Gas Monitor before Hot Work commences (if applicable) ☐
12. Ensure there is adequate ventilation in the Hot Work area ☐
13. Wear Fire Resistant clothing and appropriate Personal Protective Equipment (PPE) ☐
14. Re-fuelling of Petrol or Diesel driven equipment must be undertaken at least 6 metres away from the Hot Work area ☐
15. Hot work being undertaken under this Permit must be stopped 30 minutes before the end of the shift. The recipient of this Permit will then monitor the hot work area for the 30 minutes to ensure no combustible material is ignited. ☐
16. Portable LEV provision ☐
17. Fire supervisor / monitor ☐
18. Fire blanket required in addition to extinguisher ☐

Authorisation before work starts

The area is prepared and work may start in line with the conditions of this permit. **Name, Position and Company of Permit Issuer** **Signed** **Date/Time**	I have read and understood the conditions of this permit and will ensure that all workers understand the requirements. **Name, Position and Company of Permit Acceptor** **Acceptance signature** **Date/Time**

If the permit needs to be extended, re-examine work area and complete appropriate section below

Cancellation after work is completed

The above work has/has not been completed and the area is safe for normal working to resume.

Name (Post work inspector)

Signed (Post work inspector)

Date/Time

Signed (Permit Issuer)

Date/Time

THINK SAFE

Daily Inspection Log

Where this hot works permit is valid for more than one day, this section must be completed to record daily post work inspection. Note any permits requiring more than 5 days must be re-raised.

Valid Date	1st day	2nd day	3rd day	4th day	5th day
Date:					
Post work Inspection Carried out by:					
Date/Time					
Signed:					
Approved by					

N.B. Once all boxes completed, a new permit must be issued if the hot work is to continue.

Appendix I – WPP Briefing

Daily Briefing

Duration of Training:	
Tick appropriate box:	
Daily Briefing:	
Tool box Talk:	
M/S Briefing:	X
Induction:	
Other: (Please specify)	

Contract name: Astor College	Training Given By:		
	First aider(s) on Site:		
Contract number: 321399	Date:	MS Reference:	321399 - Astor College RAP WPP - Rev00
		Are All Operatives Breifed on the Above?:	

Yesterdays feedback:

Today's Planned Works:

Future Works:

Site Hazard	Site location	Control Measure

Adjacent works on site/ Third parties affected (Particularly consider the public)

Todays Questions:

1

2

3

4

Any Activity Specific PPE Required?

Permits Required for Work:			Permit to Load:	Yes / No	Ref:
Permit to Dig:	Yes / No	Ref:	Permit to enter:	Yes / No	Ref:
Permit to Lift:	Yes / No	Ref:	Hot works Permit:	Yes / No	Ref:

What you need	What we did

Declaration of Safe Working Area:

Signature:		Date:		Name:	

Name	Signature	Name	Signature