Greenpiling	CFA PILING INFORMATION				
	Project Name:		Plan No.	Revision	Sheet No.
	Location:	Burnt Mills Academy - Harlow		0	
	Type of Piling Activity:	CFA Piling	Proj No.	P24-2100	
			Preparation Date:	22/012024	

OUTLINE INFORMATION

It is proposed to install CFA piles to support the foundations for the proposed structures to the above building.

The following major plant will be used per rig unit:

(i) Casagrande B175/B200 piling machine or similar (sketch attached), C/W tools.
(ii) Concrete Pump and Agitator drum (sketched attached).
(iii) Compressor / MEWP
(iv) 360^{o} Excavator and Driver (*supplied by Main Contractor/groundworker*).

The works will be carried out and monitored in accordance with the requirements of the contract, specification and drawings (as contained within the contract documentation, drawing registers etc.). Should the standard required be below that within the FPS Specification, British Standards (where applicable) or established practice then these shall be implemented.

Working hours will be 7.30am to 6.00pm Monday to Friday. Maintenance may be carried out outside normal working hours if sufficient notice and approval has been obtained.

All Green Piling plant operators and banksmen are suitably qualified to an approved recognized standard, for example CITB or CTA, and experienced. A full-time working foreman will supervise the works.

All plant and equipment will have current test certificates in accordance with the relevant statutory regulation, copies will be forward to the main contractor as soon as practical.

Site Practicalities

The piling rig will be delivered on a low-loader.

If there is insufficient space within the piling area to unload the rig we would require the protection of adjacent roads and kerbs, by plywood sheeting etc.

Ancillary equipment, such as the concrete pump and agitator drum will be delivered on a 40ft articulated vehicles, and unloaded by using a hiab or crane.

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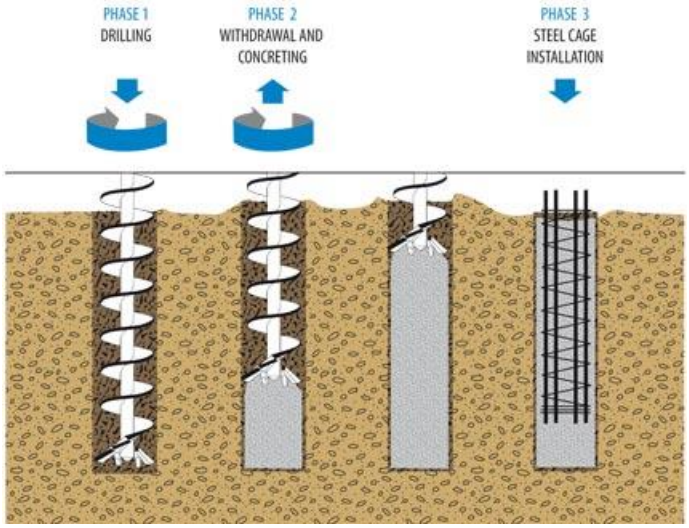
CONTROL MEASURES

Main Contractor / Groundworker will be responsible for:

- Providing a suitably designed, constructed and maintained working platform for the duration of the contract. The Green Piling Platform Certificate shall be signed by an authorised person from LNCER Scott to confirm that the installed platform is capable of providing a stable base for the rig deployed to site.
- The location, identification and marking of underground services within the working area, and taking the necessary precautions to protect and avoid them.
- Advise on known or likely ground contamination.
- The removal of underground obstructions.
- Protection of public/ third parties from concrete/ falling spoil going beyond the site boundary. If public footpaths or parking areas are adjacent to the piling area, then additional precautions should be employed (e.g. Watching/ diversions/ protection).
- Protection of access route, including the road pavement areas
- Wheel and road cleaning
- Mains pressure water supply to location in close proximity to pump and drum setup.
- 24hour mains electricity (required for heating cube curing tank).
- Welfare facilities, including drying room.
- Excavator (tracked 13 Ton 360-degree type m/c) with driver.
- Bore spoil clearance and removal.
- Gaining approvals and arranging for the relevant inspecting authorities to inspect the piling works.

CFA Pile Construction Method

Phase 1	Continuous Flight Auger (CFA) piles are formed by screwing a continuously flighted auger into the ground to the required depth.
Phase 2	As the auger is withdrawn from the ground concrete is then pumped under pressure down the hollow stem of the auger to the bottom of the bore. The auger is progressively withdrawn bringing soils with it to the surface.
Phase 3	When the auger and soil are finally removed, a reinforcement cage is placed in the fluid concrete pile.



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METHOD STATEMENT - BEARING PILES (CFA)

1. Prior to the establishment of the piling rig ensure that there are no overhead obstructions, that the working surface is suitable for the rig and delivery wagons to operate safely, and that there are no underground services within the piling area.
2. Before commencing piling operations, it should be ensured that:

2.1. A pile layout drawing relating to that particular base is available for study.

2.2. All relevant permits to work are in place.

2.3. The client has been made aware of our intention to commence piling.

3. Where applicable, prior to the installation of contract piles a limited number of trial bores are carried out across the site to endeavour to visually compare the anticipated soils strata horizons with the borehole information and hence confirm the calculated design length
4. The rig should be established at the required piling position with the auger gates closed and reference positions marked.
5. Mast verticality shall be checked in both directions using a suitable spirit level. The mast foot shall be then lowered to the ground and any further minor adjustments made as necessary. The setting out pin shall then be removed, the auger bung inserted to prevent ingress of soil and/or water and the auger lowered to the ground. The rig instrumentation shall then be reset in accordance with the operating instructions.
6. When the rig is correctly set up the auger shall be rotated into the ground until the required depth is reached. The auger gates should be kept closed until the auger has penetrated at least 2m into the ground. The position of the auger shall be checked against the reference pins and any deviation caused by underground obstructions shall be reported to the Main Contractor. At all times when the piling rig is active a 2-metre exclusion zone shall be maintained around the auger by the banksman.
7. The rate of auger penetration shall be monitored to ensure that there is no lateral ingress of soil and excessive flighting of material. If this is suspected boring must cease immediately and instructions sought. On reaching the required depth the Rig Operator shall signal to the Pump Operator to commence pumping. The Foreman shall ensure that the concrete meets the specified requirements shown on the Project Quality Plan/Instruction Sheet.
8. The concrete is delivered to site in Ready Mixed trucks from supplier. The slump is checked for each load delivered to ensure the slump is not outside the limits of 130mm to 230mm. If the site layout and economics allow concrete is then placed in a storage drum and constantly rotated.
9. One set of four test cubes are taken daily, or for every 50m3 of concrete placed. The cubes are tested independently by a NAMAS accredited laboratory, 1 cube is tested at 7days, 2 cubes at 28 days and 1 cube kept spare. Curing will be in tanks initially on site with transfer to the laboratory as soon as practical. Results will be submitted to the Main Contractor.
10. The auger shall not be raised until either the specified precharged volume of concrete has been pumped through the auger or a positive pressure registers on the instrumentation. As soon as one of the above criteria has been met the auger shall be raised approximately 100mm to allow the bung to blow and shall be slowly extracted when concrete flow has been established. The speed of extraction shall be controlled with reference to the oversupply of concrete as registered on the rig instrumentation. During pile installation and prior to the extraction of the auger, the concrete is discharged into the concrete pump and pumped under pressure through 100mm diameter tubes, to the base of the auger. Should exceptionally high concrete pressure be generated, causing a risk of a blockage or auger jamming, the Rig Operator shall bring this to the attention of the Foreman who in turn shall inform the Contract Management when reduced oversupply may be used

11. If during boring groundwater is struck which is under pressure sufficient to cause the groundwater to rise up the bore and emanate at ground level boring shall immediately cease and the Main Contractor shall be informed.
12. During construction of the pile the Banksman shall direct the attendant excavator to clear all spoil arising. At no time, should loose material remain on flight at height and auger cleaner equipment should be used as necessary.
13. When the base of the auger is at ground level the Rig Operator shall signal the Pump Operator to cease pumping
14. If blockage or disruption to concrete supply occurs during concreting the pile will be re-bored and re-concreted immediately.
15. The auger shall be closed and the rig reversed off the pile position. The pile head shall be cleared of spoil by the excavator and located by the Banksman who shall scoop out any contaminated concrete.
16. The Foreman shall check that the pre-fabricated reinforcement cage (c.w. plastic spacers complies with the specification and design and the reinforcement shall be placed into the pile at the required level. Care shall be taken to ensure that no contamination is pushed into the concrete by the reinforcement. The reinforcement shall generally be pushed in manually but the assistance of the attendant excavator may be utilised for the final metre or so provided that no deformation of the reinforcement occurs. The top of the reinforcement cage will generally be set at piling platform level. If the reinforcement projects above platform level plastic safety caps will be placed on all bars.
17. On completion of the pile the Foreman shall visibly inspect the work for possible defects including the level of the concrete and reinforcement. Where practical the reinforcement shall be shaken to assist consolidation of the concrete at cut off level and to ensure the top of the reinforcement is central to the pile bore. If any cage does not achieve the required depth or cover it shall be immediately removed from the wet concrete and a replacement cage installed with the pile re-bored if necessary.
18. The crawler mounted piling rig then moves to the next pile position in the agreed economical sequence. This shall be a sufficient distance, generally taken as 3 pile diameters, although this is reviewed dependent on actual conditions encountered, away from adjacent, recently formed piles, so as not to induce concrete flow from, and /or damage to any of those piles
19. When moving the rig the trailing concrete hose may be lifted by the attendant excavator to avoid dragging/snagging on the ground or other objects. During this activity, the excavator must be controlled by a banksman who will ensure that an adequate exclusion zone is maintained around the excavator and machine. If the banksman has to manually assist with moving the hose he must instruct the excavator operator to stop while he handles the hose where there is any danger to himself if the hose moves. Under no circumstances should the banksman or any other person attempt to move the hose if it is twisted and under pressure or under tension. In this case the machine should be used to release any twist or tension.
20. Washout of concrete equipment shall be to area provided by Main Contractor in accordance with MWRP-RPS-107 EA “Concrete Washwaters”.
21. Where underground or overhead services are present these will be located, exposed and protected by the Main Contractor.
22. The Foreman shall instruct the Rig Operator the required pile sizes, number and depths as per the piling drawings. The Rig Operator shall maintain a record of all piles constructed, noting their

number, diameter and depth. This record shall be transferred by the Foreman to the Piling Record Sheet. This sheet shall be submitted to the Main Contractor for signature as a record of work carried out.

No personnel should be within the working radius of the rig without a safety helmet or ear defenders. Within 10 meters of the pump the average noise level exceeds 80 dB (A). Exclusion zone to be created and maintained by Principal Contractor for second action level at 5m from concrete pump.

Further Method Statements will be provided within Green Pilings proposed site Safety Plan to cover the following activities;

- DISMOUNTING FROM LOW LOADER
- ERECTING PILING RIG
- UNLOADING BY LORRY MOUNTED CRANE GRAB OR EXCAVATOR
- WORKING AT HEIGHT ERECTING RIG
- REFUELLING
- MOVEMENT OF PILING RIG
- CONSTRUCTION MONITORING
- STEEL FIXING LOOSE REINFORCING BARS
- CLEANING UNBLOCKING CONCRETE HOSES
- INTEGRITY TESTING
- LIFT PLAN USING EXCAVATOR

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PHOTOS - TRANSPORT

Artic hiab

Low loader

40ft flat with side pins

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PHOTOS – TYPICAL SITE SETUP

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EQUIPMENT DETAILS - CASAGRANDE B200xp CFA28

DRILLLING PERFORMANCE	
Max pile diameter	1000 mm
Max pile depth	26.8 m
Max extraction force Nominal / Effective	780/ 660 kN
Pull-down winch force (optional)	86 kN
ROTARY TABLE	
Nominal torque	210 kNm
Maximum drilling speed	34 rpm
WEIGHT AND DIMENSIONS	
Transport width	2500 mm
Transport height	3355 mm
Operating weight	705000 Kg
Transport weight	66500 Kg
UNDERCARRIAGE	
Overall length	5190 mm
Track shoe width	800 mm
Overall width (extracted)	3900 mm
Overall width (retracted)	2500 mm