

Planning and Project Management Services

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8 GROSVENOR GARDENS, LONDON NW11 0HG

METHOD STATEMENT AND RISK ASSESSMENTS

Refer to Site Risk Assessments and Control Measures attached and note specific items as below.

Wall 1 = Side to boundary with 6 Grosvenor Gardens
Wall 2 = Side to boundary with 10 Grosvenor Gardens
Wall 3 = Side backing on to garden
Wall 4 = Side beneath house

Waling 1 = Set about centre of piling – running along all four walls
Waling 2 = Set just above ground level – running along all four walls
Waling 3 = Set 750mm off base (to allow 300mm concrete base + 450mm)
– running along all four walls

Reinforcement = as specified by Martin Redstone Associates drawings 1B, 2B and 3A

Site operative's safety is paramount.

Method

- 1 Set reinforcement to wall 1 and tie
Ensure reinforcement inspected by Building Control
Using RMD formwork supplied (and in accordance with the fixing instructions) commence constructing new formwork. Ensure spacers placed between the sheet piles and ply (placed at the new waling levels) to provide max strength.
Remove waling 3
- 2 Set reinforcement to wall 2 and tie
Ensure reinforcement inspected by Building Control
Using RMD formwork supplied (and in accordance with the fixing instructions) commence constructing new formwork. Ensure spacers placed between the sheet piles and ply (placed at the new waling levels) to provide max strength.
Remove waling 3
- 3 Set reinforcement to wall 3 and tie

Ensure reinforcement inspected by Building Control
Using RMD formwork supplied (and in accordance with the fixing instructions) commence constructing new formwork. Ensure spacers placed between the sheet piles and ply (placed at the new waling levels) to provide max strength.
Remove waling 3

- 4 Ensure formwork and works inspected by Building Control prior to pouring concrete as specified.
- 5 7 days after item 4 concrete poured, repeat setting formwork at higher levels, ensuring the use of spacers to ensure proper weight distribution etc. per items 1, 2, and 3 above.
- 6 Ensure second stage formwork inspected by Building Control prior to second pour.

Site Risk Assessments & Control Measures

Excavations

Site Name & Number				8 Grosvenor Gardens, London NW11 0HG			
Project/Site Manager				Israel Gross			
Method statement required from sub-contractor				Yes ✓			
Contractor's nominated person(s) to implement & monitor control measures on site				Sub-contractor's foreman/supervisor with PPMS's site management maintaining an overview			
Hazard, activity, task assessed				Excavations			
Level of Risk:	H = high	M = medium	L = low	Who could be harmed : ✓ As appropriate			
Type of Risks				H	M	L	
1.	Collapse of sides			✓			Employee ✓
2.	Materials falling on to people in excavations			✓			Contractor ✓
3.	People & plant falling into excavations			✓			Visitors ✓
4.	Contact with live services			✓			Member of the public ✓
5.	Undermining nearby structures			✓			Children ✓
6.	Confined space				✓		
Control Measures							
<ul style="list-style-type: none"> General: Underground services, particularly electricity & gas can be very dangerous. Damage to electricity cables can cause a flash leading to severe burns and or death. Gas leaks can cause fires or an explosion. Damage can result from excavation works or by penetration of the ground for example by a road pin. Underground services may be found in roads, footpaths within buildings, premises & on site. It is therefore always safe to assume that all services are live. Before starting work: make sure all services companies have been contracted & their plans of services for area are on site, it is also important to remember that these plans are not always accurate or indeed some services may not be marked. Use a cable & pie locator to trace electricity cables & metal pipes. Persons using these locators should be trained how to use the particular device & be aware of their limitation in detecting all services. Mark positions of cables & pipes using paint or other water proof marking on the ground. Look for signs of service connection cables or pipes, for example a meter or service connection entry into a house or a street light Hand dig trial holes (as many as necessary) to confirm the position of services in the area of work. This is particularly important if there are plastic pipes which can not be found using a locator. During work: wherever possible hand dig near buried services. Spades & shovels are much safer than picks, power tools, etc Check that any cable which is embedded in concrete & has to be broken out has been made dead before work starts, or that another way of working has been agreed with the cable owner. Watch out for signs of services as work continues. Repeat checks with the cable & pipe locator as the excavation progresses. Backfill around services with fine materials. Do not use flint, bricks, concrete or similar materials. Report any damage to a cable pipe, pipe coatings, etc, even if there is no immediate danger, damage could cause a danger at a later date. Do not attempt repairs. Do not use hand held power tools within 500mm of the marked position of an electricity cable Do not use hand held power tools directly over the marked line of a cable unless you have already found the cable at the position by careful hand digging beneath the surface & it is at a safe depth (at least 300mm) below the bottom of the surface to be broken or physical means have been used to prevent the tool striking it. Do not use a mechanical excavator within 500mm of a gas pipe. If an excavator is used near an electricity cable keep everyone clear of the bucket while it is digging. Do not handle or attempt to alter the position of an exposed service Do not install plant close to an existing service Do not build existing services into a manhole or other structure or encase them in concrete <p>If at any point you suspect a gas leak, evacuate every one from the immediate vicinity, warn others in near by buildings, telephone BG Transco on 0800 111999.</p> <p>Ensure all available information about soil conditions, existing structures that may be effected is available or survey undertaken. Similarly information regarding underground services needs to be collected, although the availability of this information must not stop scanning for services within the excavation areas prior & during excavating. Once this information is in place ensure all necessary equipment, e.g. trench sheet supports, scanner, ladders, props, etc is available on site before work begins.</p> <p>The law no longer specify the depth at which trench/excavation support is required. A risk assessment must be undertaken for all situations. Factors that could cause trench sides to collapse include, wet soil conditions, type of soils (e.g. sand), nearby structures being undermined, traffic or site plant movements, (e.g. dumpers, excavators, etc). All these factors will need to be considered, however it is generally considered to be industry best practice to support trenches/excavations once they reach 1metre regardless of the any site conditions mentioned above.</p>							
Information, Instruction & Training Required							
Inductions & tool box talks							
Further Information e.g. HSE & BSI Guidance & PPMS's Procedures							
HSE: HS (G) 47 avoiding danger for underground services HSE: HS (G) 185 Health & Safety in excavations, be shore be safe							
Person Protective Equipment (PPE)							
Hard hat	✓	Goggles/visor (when using breakers in concrete)				✓	
Safety boots	✓	Dust mask/Respiratory protection, breathing apparatus (possible yes when in confined spaces.)				✓	
Gloves	✓	Overalls (yes if ground is contaminated)				☐	
High visibility jacket/clothing	✓	Safety Harness (when in confined spaces)				✓	
Ear defenders/plugs (when using breakers, working near compressor, etc)	✓						

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Type of Risks				
1. Collapse of sides				Employee ✓
2. Materials falling on to people in excavations				Contractor ✓
3. People & plant falling into excavations				Visitors ✓
4. Contact with live services				Member of the public ✓
5. Undermining nearby structures				Children ✓
6. Confined space				

Control Measures

Excavation collapse: It is accepted best practice that once any excavation reaches 1metre in depth it will need to be supported or battered back if employees are to enter it, however where employees enter an excavation and it will be subject to additional loads, e.g. buildings, traffic, site vehicles, piling, etc the excavation may need to be supported at less than 1 metre. If in doubt an engineer will need to be consulted. There are a number of methods to prevent the sides & ends of excavations from collapsing.

Battering excavation sides: An unsupported excavation will only be safe without support if its sides are battered back sufficiently or if the excavation is in sound rock. Battering back to a safe angle is an acceptable means of preventing instability & is generally considered the safest way of ensuring stability. In granular soils the angle of the slop should be less than the natural angle of repose of the material being excavated. In wet ground a considerable flatter slope will be required, see below.

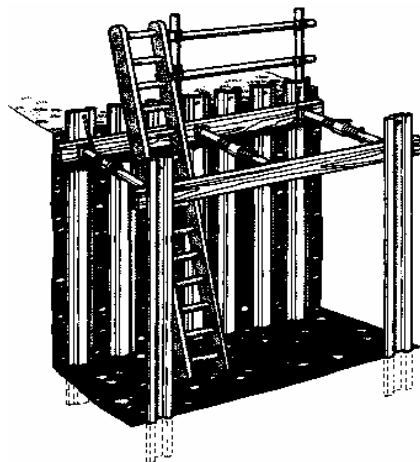
Material	Dry Ground	Wet Ground
Gravel	30 – 40%	10 – 30%
Sand	30 – 35%	10 – 30%
Silt	20 – 40%	5 – 20%
Clay	20 – 45%	10 – 35%
Peat	10 – 45%	5 – 35%

Never work or enter an unsupported excavation, never work ahead of the support. Even in shallow excavations collapses can take place even when the excavation is less than 1 m, therefore if work involves bending or kneeling in the trench it may need to be supported, as one square metre of sand will weigh one tonne (clay is much heavier) which can crush a kneeling worker in a trench.

Traditional trench supports & safe installation: This is either in the form of timber boards supported by timber walings and struts or by steel trench sheeting or sheet piling supported by timber or steel walings and struts.

Open sheeting: A common safe sequence of work is as follows, also see diagramme below:

- (a) Excavate to depth a section of trench the length of a waling;
- (b) Place vertical trench sheets at each end of the trench & drive them into the base of the excavation with the excavator bucket;
- (c) Install a horizontal waling along each side of the excavation about 300 mm below ground level, fitted from the top of the trench sheets;
- (d) Working from a lightweight staging (with guard rails affixed) laid across the trench, insert a strut between the walings at the location of the trench sheets;
- (e) Install the sheets between the walings and the trench sides and drive into the base of the excavation;
- (f) Install intermediate struts as necessary from the lightweight staging & install edge protection as necessary
- (g) Position a ladder into the excavation, secure, and install lower and intermediate walings as required by the design.



Close sheeting: A safe sequence of work is as follows:

- Excavate a section of trench the length of a waling but only deep enough to install the top waling;
- Place vertical trench sheets at each end of the trench and drive them into the base of the excavation with the excavator bucket;
- Install a horizontal waling along each side of the excavation about 300 mm below ground level by hanging it from a trench sheet laid on the ground;
- Working from a lightweight staging (with guard rails affixed) laid across the trench, insert a strut between the walings at the location of the trench sheets;
- Install the sheets between the walings and the trench sides and drive into the base of the excavation;
- Install intermediate struts as necessary from the lightweight staging between the upper waling;
- Excavate the trench to the level of the next waling frame, driving the sheets into the base of the excavation;
- Install the waling frame and intermediate struts by hanging from the one above;
- Repeat steps (g) and (h) as necessary until all waling frames are installed.

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Type of Risks				H	M	L	
1. Collapse of sides				✓		Employee	✓
2. Materials falling on to people in excavations				✓		Contractor	✓
3. People & plant falling into excavations				✓		Visitors	✓
4. Contact with live services				✓		Member of the public	✓
5. Undermining nearby structures				✓		Children	✓
6. Confined space					✓		

Control Measures

Installation of ground support is skilled work which should only be undertaken by those with sufficient training and experience, working under the supervision of a competent person. Other considerations for safe use of traditional support are as follows:

- Support underground services which are exposed by the excavation
- Support ground below the services by cross piling
- Toe-in all timber boards, trench sheeting and sheet piling by driving down to an adequate depth beneath the base level of the excavation, unless there is adequate support by alternative means
- Provide additional struts and walings at changes in cross-section and at stop-ends;
- Support and secure all walings and struts using chains hung from the top of the sheeting, prop from below with puncheons, or otherwise support to resist displacement by forces from any direction;
- Obtain technical specifications for adjustable trench struts from the manufacturer or supplier when designing support systems and install in accordance with the instructions supplied.
- Load trench struts axially and ensure that the ends are supported. Timber packing should be used to prevent struts bearing directly on steel;
- Allow for safe dismantling when planning and constructing the ground support works by using adjustable trench struts rather than solid timber struts and wedges in timbered support systems.

In deep trenches and/or poor ground it may be necessary to drive the sheeting or piling ahead of excavation. As excavation proceeds, support for the sheeting or piling should be erected by people working from within areas of sheeting or piling which have already been supported.

Proprietary systems: The use of proprietary ground support systems offers advantages over traditional systems. Such advantages include:

- The ease and improved safety of installation: operatives can install most
- Proprietary ground support systems without the need to enter the excavation;
- Systems are available to suit a wide range of applications;
- Increased working space for ease of excavation and pipe laying;
- The availability of technical advice on selection, installation and use.

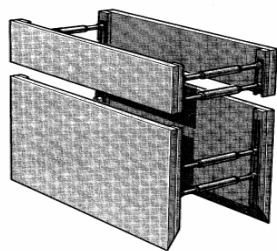
Proprietary ground support equipment always needs to be installed, removed and stored when not in use in accordance with the manufacturer's instructions. The following types of proprietary ground support equipment are available:

Hydraulic waling frames comprise two steel or aluminium beams braced apart by struts containing integral hydraulic rams. They can be used for close or open sheeting applications in trenches and for supporting close sheeting in deep excavations for which frames at various levels may be required

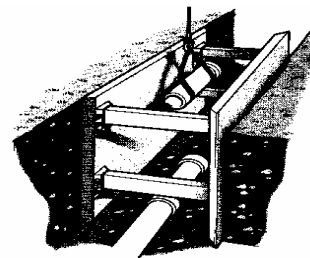
Manhole shores are four-sided adjustable frames with integral hydraulic rams and are intended for supporting excavations for manholes, foundations, small tanks and pits and similar structures. Waling frames and manhole shores should be supplied complete with chains or other means by which they can be hung from the sheeting or from other frames.

Trench boxes consist of modular side panels strutted apart by adjustable struts to suit the width of trench. Their height can be increased by the addition of extension panels. The location of the struts is variable within limits, depending on the ground clearance required. The lower edges of the side panels are tapered to form a cutting edge (see Figure 8). Boxes should be progressively dug in as the excavation work proceeds, or they can be lowered by an excavator or crane into a pre-dug trench. Where more than one box is required due to the depth, the boxes should either remain connected if lowered into a pre-dug trench or be connected/ disconnected at ground level by progressive excavation/backfilling. Install sufficient boxes so that the full depth of the excavation is supported before people enter the excavation. If the excavation is over dug, backfill needs to be placed between the excavation side and the box to prevent both the risk of people falling into the gap and of rotation of the box following ground movement. If required, trench sheets should be positioned at the open ends to prevent material falling inwards. Some configurations of box may be unstable when standing upright on the surface and should be either laid flat or dug in'.

Drag boxes comprise two flat bottomed side panels with tapered cutting edges to their leading ends. They are braced apart by tubular struts, the leading strut being specially strengthened to allow for the dragging of the box by the excavator. As the box is dragged forwards the excavation behind it is left open (see below).



Trench box



Drag box

The use of all box systems is limited to locations which are free of buried obstructions. Boxes provide protection to people working inside them but they do not prevent ground movement as they do not necessarily provide support to excavations.

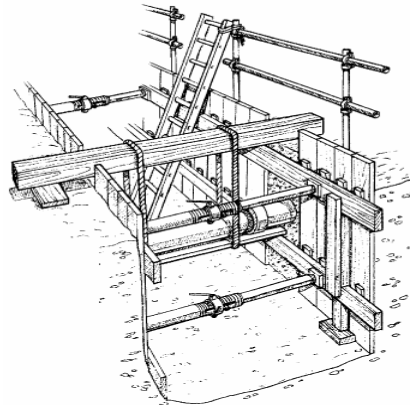
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Type of Risks		H	M	L	
1.	Collapse of sides	✓			Employee ✓
2.	Materials falling on to people in excavations	✓			Contractor ✓
3.	People & plant falling into excavations	✓			Visitors ✓
4.	Contact with live services	✓			Member of the public ✓
5.	Undermining nearby structures	✓			Children ✓
6.	Confined space		✓		

Control Measures

Safe use of proprietary systems: When using proprietary ground support systems always:

- Ensure that workers stay inside the protected area;
- Obtain and follow the manufacturer's instructions for installation and use;
- Train and supervise the people who will use the equipment;
- Use the correct tools for connecting and disconnecting hydraulic hoses and releasing hydraulic pressure in the rams;
- Inspect the equipment before taking it into use;
- Ensure all hydraulic components are pressurised to the manufacturer's recommended working pressure;
- Ensure that the supporting chains or slings are properly used;
- Use additional equipment if required for stop-end protection;
- Regularly inspect the installation & its hydraulic system, if used & carry out remedial or maintenance work to the system in use;
- Take care that equipment is not damaged by plant or by rough handling & replace any that are damaged, using only approved parts;
- Clean, inspect and maintain the equipment following use and store in a stable manner.

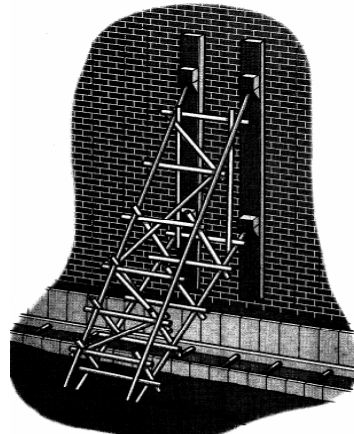
Materials, plant & people falling into excavations: Do not store spoil or other materials close to the sides of excavations, as this will create extra loadings to the sides increasing the risk of collapse. Sides of excavations should provide protection against falling materials, using toe boards where necessary, see below. Where necessary, excavations 2m or more deep, barriers should be provided to prevent people falling into them. In the diagramme below the poling boards extend above the edge of the excavation to act as toe boards & guard rails are provided to prevent falls into the excavation. Safe access is provided by a tied ladder & exposed services are supported.



Keep vehicles away from excavations wherever possible. Use hazard tape, barriers where necessary. Where vehicles have to tip material into the excavation use stop blocks, additionally where vehicles tip material into excavations the sides may require additional support..

Undermining nearby structures: Ensure that foundations & nearby structures & scaffolding footings will not be effected by excavations. Walls may well have shallow foundations, which can be undermined by even small trenches & excavations. In occupied buildings or where there are nearby structures a structural engineer will need to survey the area & structures before excavation begins, to ascertain the type of temporary support, propping, etc, see diagramme below. Where underpinning is taking place additional precautions must be introduced such as support of excavation, the structure being underpinned, piled, etc, and emergency procedures for workers undertaking the work which may be within a confined space. Underpinning is a high risk activity due to the additional loads placed on the excavated area, so increasing the likelihood of collapse of both the excavation (regardless of depth) & the structure being underpinned. This increased risk necessitates detailed risk assessments from both the designer & the subcontractor undertaking the work explaining how all risks will be controlled, most underpinning will need to consider any confined spaces generated by the work.

Shoring a structure with an excavation at its base



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Type of Risks				H	M	L	
1. Collapse of sides				✓			Employee ✓
2. Materials falling on to people in excavations				✓			Contractor ✓
3. People & plant falling into excavations				✓			Visitors ✓
4. Contact with live services				✓			Member of the public ✓
5. Undermining nearby structures				✓			Children ✓
6. Confined space					✓		
Control Measures							
<p>Avoiding underground services: collect together all available information & drawing on existing services. Once on site look around for obvious signs of underground services, e.g. valve covers or patching on hard standing. Use locators to trace any services & mark the ground accordingly. Make sure the person supervising the excavation work has service plans & a scanner & knows how to use them. Everyone carrying out the work should know about safe digging practices & emergency procedures.</p> <p>Access & fumes: Where work requires workers to enter the excavation safe access must be provided, which may include a securely tied ladder. Exhaust fumes can be dangerous, do not site petrol or diesel driven equipment e.g. generators or compressors in or near the edge of excavations, unless fumes can be ducted away or the area can be satisfactorily ventilated. Additionally in deep excavations gases, fumes, etc can pass through surrounding soils & collect in the bottom of trenches, this is a very real hazard on contaminated site. Hazardous gases on contaminated sites include, methane, carbon dioxide, hydrogen sulphide. Where soil investigations show the risk of these gases air tests should be carried out at the start of each shift & a more detailed risk assessment produced for confined spaces, breathing apparatus, permit to work system introduced</p> <p>Protecting the public: . Excavations in public places must be fenced/barriers & signed to warn & prevent pedestrians from falling in. Where children may gain unauthorised access to the site extra precautions may need to be taken, e.g. back filling or covering the excavations.</p> <p>Supervision & inspecting excavations: A competent person must supervise the installation, alteration or removal of excavation support. People working in excavations should be given clear instructions on how to work safely. A competent person must inspect excavations, (using Form EULF: 8 Weekly register of inspection for excavations) at;</p> <ul style="list-style-type: none"> • The start of each shift before work begins • After any event likely to have effected the strength or stability of the excavation • After any accidental fall of rock, earth or other material • A written report should be made using Form EULF: 8 Weekly register of inspection for excavations after the weekly inspection, a copy of this should be held in the site safety folders. 							