

Fast Calc Ltd

Structural Calculation and Details - FAST

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Issued to
David Craddock

70-76 West Street, Havant

Job Number 13377

Issue 1

15/08/2025

NOTES PLEASE READ.

- 1/. Please be aware the lengths and spans used in these calculations are for design purposes only and should **NOT** be used as a basis for ordering materials. All measurements should be checked on site prior to commencement of works and clear spans and bearing lengths should be considered when ordering materials.
- 2/. If the lengths of elements should differ from these calculations by more than 10%, please contact our office.
- 3/. Design responsibility is limited only to those elements of the structure specifically referred to in these calculations. Liability for design is limited to the structural elements included within this document.
- 4/. Steelwork execution clause (BS EN1090-2) . Steelwork to be provided by a company accredited CE compliant to EXC 2 fabricated steel structures and components.
- 5/. The structural design has been reviewed in accordance with the Construction (Design and Management) Regulations, Regulation 11. In addition to the usual risks associated with building works and materials, of which a competent builder should be aware, the following site and work specific health and safety risks have been identified:-
Demolition, excavation drilling and cutting into existing structure or materials should be carried out carefully in case there are any unknown services hidden in the area.
All walls, beams, slabs, floors etc. which are to be demolished or removed should be assessed for any load bearing or stability function, and temporary propping provided as necessary.
- 6/. Building Regulations apply to all works of a structural nature. You should contact your local Building Control Office or other authorised authority before work commences.. If you commence work without Building Control approval you do so at your own risk and we will not accept liability for any requirements, alterations, costs or delays resulting from this.
- 7/. All foundation details must be agreed by building control before commencing work and ordering materials.
- 8/. Where there is significant additional load on existing structural elements, including footings and existing lintels and beams they should be exposed, inspected and assessed for adequacy of condition and load bearing capacity.
- 9/. The property owner is reminded that they may have obligations in respect of health and safety regulations , the party wall act and there may be legal covenants related to extending or altering the property.

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FCL

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Scheme:

20-26 West Street
Havant

Title:

Foundation Plan (sketch)

Sheet: 1

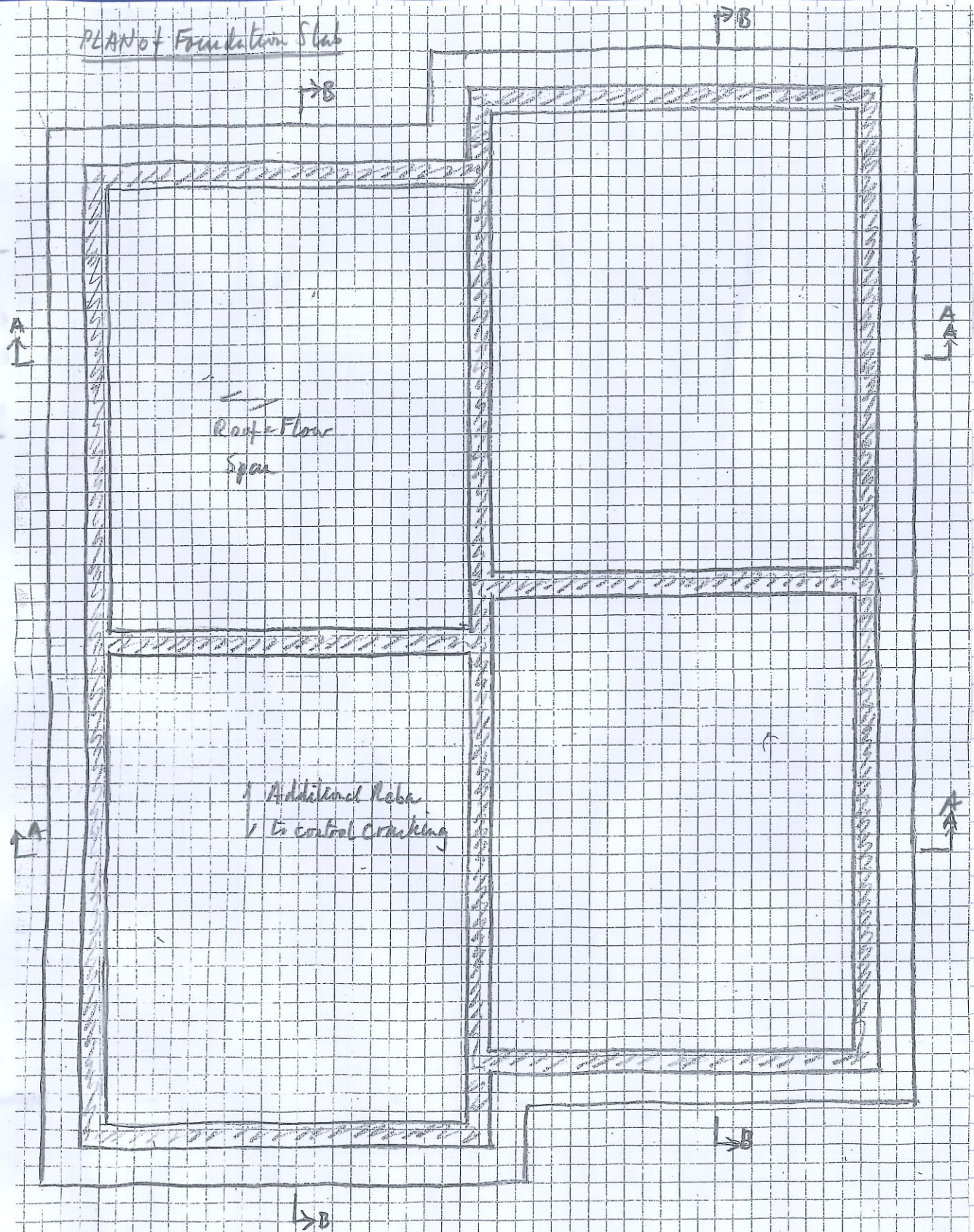
Issue: 1

Job No: 13377

Date: 14/08/25

By: BM

Ck:



Where there is significant additional load on existing structural elements, including footings and existing lintels and beams, they should be exposed, inspected and assessed for adequacy of condition and load bearing capacity

All structural steelwork to be hot finish, minimum S275 unless otherwise stated.

<u>Loadings</u>	<u>kn/m</u>	
	DL	IL
Plenary	3.2	
Floor	0.5	1.5
Roof	1.3	0.3

Note/ RC Slab is designed as "wide strip footing"

Perimeter Wall per metre run (on 1200 wide strip)

Typical unfactored load on Perimeter Wall

$$\approx 3 \times 3.2 + 5.2 \times (0.5 + 1.5) + 5.2 \times (1.3 + 0.3) = 19 \text{ kN}$$

Say 22 kN to allow for partitions etc

$$\text{Pressure under slab} \approx \frac{22}{1.2} = 18.3 \text{ kN/m}^2 \quad (\text{OK})$$

Central Wall per metre run (on 2000 wide strip)

Typical unfactored load on central wall

$$\approx 3 \times 4.8 + 2 \times 5.2 \times (0.5 + 1.5) + 2 \times 5.2 \times (1.3 + 0.3) = 33.1 \text{ kN}$$

Say 40 kN to allow for partition etc

$$\text{Pressure under slab} \approx \frac{40}{2} = 20 \text{ kN/m}^2 \quad (\text{OK})$$

Where there is significant additional load on existing structural elements, including footings and existing lintels and beams, they should be exposed, inspected and assessed for adequacy of condition and load bearing capacity

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Check Bending in the slab (Central Wall support)

$$\text{Max BM (factored)} \approx 20 \times 12^2 / 2 \times 1.5 = 15 \text{ kNm}$$

$$\text{Assume } d = 250 \text{ mm}$$

$$k = \frac{M}{bd \times 35} = \frac{15 \times 10^6}{1000 \times 250^2 \times 35} = 0.007 \quad z = 0.95d = 237 \text{ mm}$$

$$A_{\text{req}} = 15 \times 10^6 / (0.95 \times 460 \times 237) = 145 \text{ mm}^2 \text{ rebar} = \frac{0.13 \times 1000 \times 100}{100} = 390 \text{ mm}^2$$

Use A393 mesh (2 layers)

Check deflection

$$M / bd^2 = \frac{15 \times 10^6}{1000 \times 250^2} = 0.24 \quad f_s = \frac{2 \times 460 \times 390}{786} = 152 \text{ N/mm}^2$$

$$\text{Mod factor} \approx 2 \quad (\text{OK})$$

Check Bending in the slab (edge detail)

$$\text{Max BM (factored)} \approx 18.3 \times 0.6^2 / 2 \times 1.5 = 5.0 \text{ kNm}$$

Use 2 layers A393 mesh.

OK in Bending

Check deflection.

$$M / bd^2 = \frac{5 \times 10^6}{1000 \times 250^2} = 0.1 \quad \text{Mod factor} \approx 2 \quad (\text{OK})$$

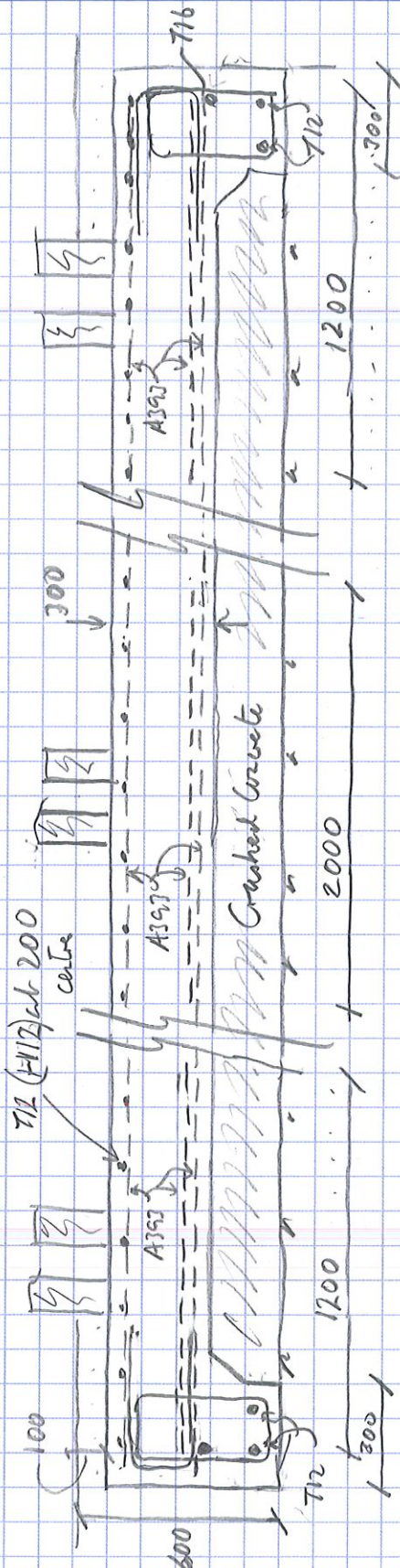
$$\text{Max Shear stress} \approx \frac{40}{2} \times 1.5 \times 10^3 / (1000 \times 250) = 0.12 \text{ N/mm}^2 \quad \text{No shear rebar required}$$

Where there is significant additional load on existing structural elements, including footings and existing lintels and beams, they should be exposed, inspected and assessed for adequacy of condition and load bearing capacity

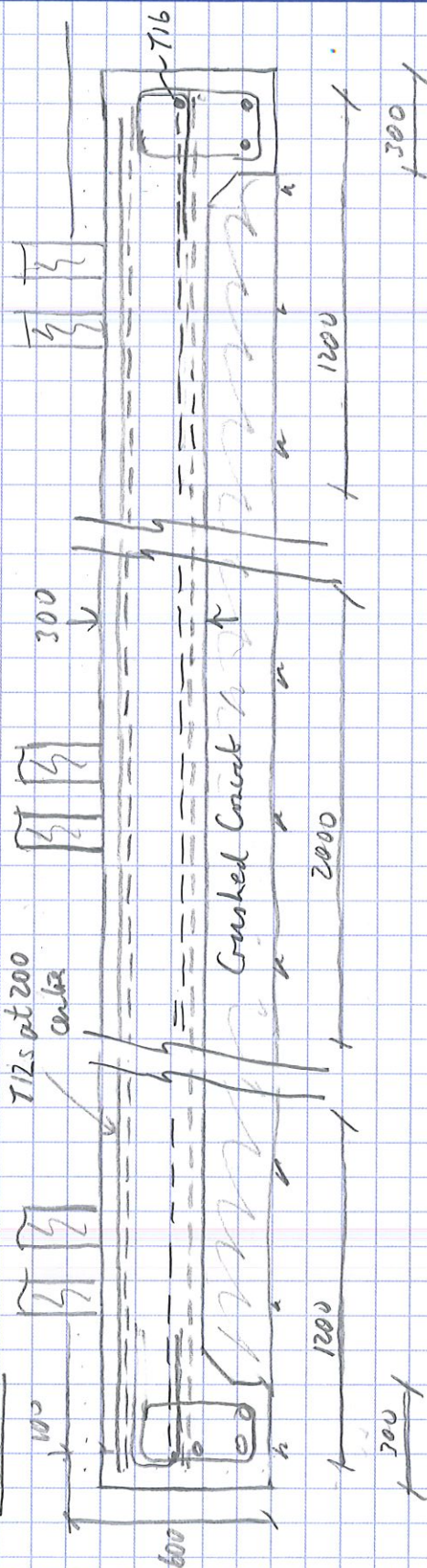
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10113

Section AA



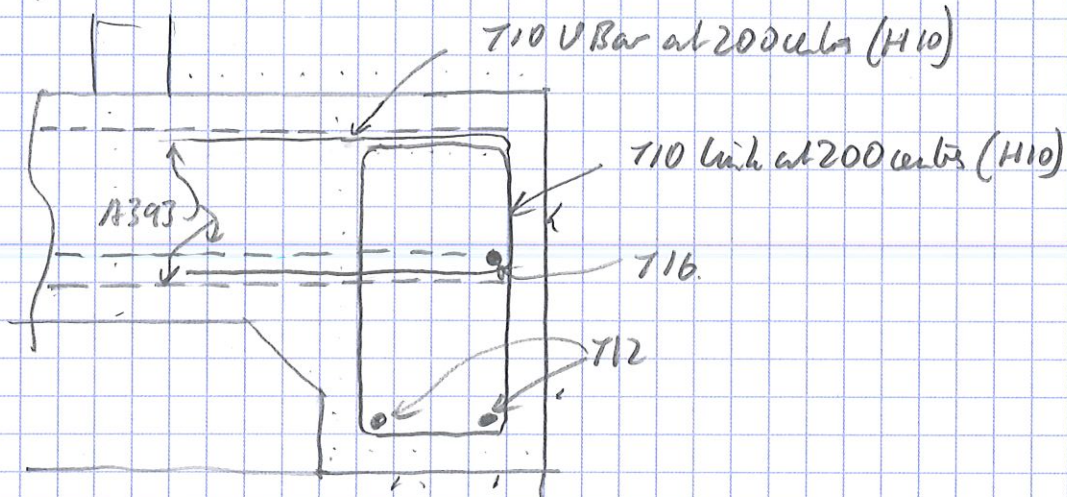
Section BB



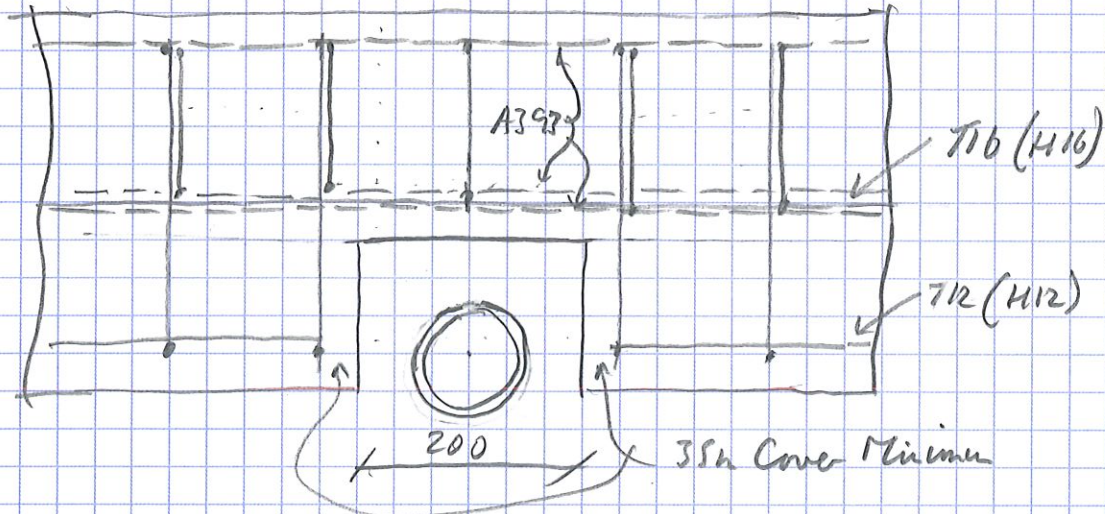
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Edge Detail



Edge detail to Accomodate Drainage



Note/
Use C35 Concrete
Cover to rebar 35mm
Laps to meet 400mm

Where there is significant additional load on existing structural elements, including footings and existing lintels and beams, they should be exposed, inspected and assessed for adequacy of condition and load bearing capacity

All structural steelwork to be hot finish, minimum S275 unless otherwise stated.

[illegible]

Project Foundation Slab 70-76 West Street Havant				Job Ref.	
Section				Sheet no./rev. 3	
Calc. by B	Date 14/08/2025	Chk'd by	Date	App'd by	Date

TEDDS calculation version 1.0.02

Calculate weight of steel reinforcement

Steel bar weights in tonnes by type and size											
Type	6 mm	8 mm	10 mm	12 mm	16 mm	20 mm	25 mm	32 mm	40 mm	50 mm	Total
H	0.000	0.000	0.401	0.943	0.113	0.000	0.000	0.000	0.000	0.000	1.457
Total	0.000	0.000	0.401	0.943	0.113	0.000	0.000	0.000	0.000	0.000	1.457

Total weight of steel is 1.457 tonnes

HEALTH AND SAFETY GUIDANCE

Please note the following is for guidance only and does not abrogate the person/companies involved in this scheme from their legal responsibilities.

Existing Services

All existing services to be located where appropriate using CAT and generator for all live services, and other equipment as necessary for all other services. This must be carried out prior to any works being commenced and certificates for 'clean air' and survey completion documents must be issued by the authority/competent person carrying out the service. These documents must be kept in a file on site and available for inspection by the workforce or HSE should they wish to do so, copies of these documents should also be provided for any sub-contractor who will be working on the site and should be made aware of any potential hazard or risk involved in the task.

Overhead Services will be marked as required by GS6

The guidance on work near overhead cables can be found in the guidance note GS6. The main points are:

1. Plant or equipment should not approach within 15m of power lines measured in a horizontal distance from the line.
2. All overhead lines should be considered to be live unless testing proves otherwise.
3. Precautions (goal posts) must be taken when access routes cross under overhead cables.
4. Consideration must be given to the storage of material under or near overhead lines that the material does not exceed the 15m exclusion distance.

Excavations and Confined Spaces

There is no minimum depth required for excavation support, the HSE have advised:

Any excavation that has ground which could be unstable must be supported by an appropriate ground support system i.e. *trench or drag boxes and preparatory water systems* and installed in accordance with the manufacturers' instructions. Deep excavation should be supported by temporary works systems which should be designed by a competent person from the appropriate equipment provider, the method statements and risk assessments must be provided by the designer in accordance with the Construction (Design & Management) regulations 2015. Installation of the equipment must be carried out supervised by a competent person. Deep excavations can be considered as confined spaces and operatives working in these areas must be trained in confined spaces; safe access and egress and how to use BA escape sets and gas monitoring equipment.

Working at Height

Contractors are to ensure that Scaffolding is erected and maintained by a recognized Scaffolding Company using trained scaffolders, toe boards, hand/guardrails, etc. must be provided. All lifting

and access platforms must be operated by a suitably qualified person (MEWPS). Fall arrest systems i.e. harness must be provided and worn by persons working at height.

Steel Erection & Lifting

Provide adequate crane and lifting jacks for positioning all steelwork. No operatives to stand beneath members being lifted, particular care to be taken when supporting steel on recently built walls. All lifts carried out by crane or jacking systems, must be carried out under the instruction and supervision of a qualified 'Slinger, Signaller'.

Control of Substances Hazardous to Health Regulations 2002

It is every employer's duty to provide assessments under COSHH regulations for their employees, warning them of any dangers involved with substances which could be hazardous to the employee during the course of works being carried out.

Under the Construction (Design & Management) Regulations 2015, it is the client's duty to ensure that any information regarding hazardous substances i.e. ground contamination is contained in the 'Pre-Tender Health & Safety Plan'. Failure to do so may result in prosecution by the Health & Safety Executive of the Client as failing to carry out their duties under the CDM Regulations 2015.

The Contractor or Sub-Contractor will provide COSHH assessments for any hazardous materials to be used or encountered during the course of the works, this assessment should be backed up with the *Safety Data Sheet* which should be supplied by the manufacturer of the goods. The assessments should be included with the Methodology and Associated Risk Assessments and given to the Principle Contractor for the approval prior to works commencing.

Should any substances or hazardous material be suspected during the normal course of the work, the operatives should stop work immediately and report it to his supervisor who must take appropriate action.

Scaffolding

1. All scaffolding and working platforms must be properly constructed in accordance with BS 5973. Tubes and fittings must comply with BS 1139 and boards must comply with BS 2482. Under the Health & Safety at Work Act 1974 and the Management of Health & Safety at Work Regulations 1999 require that a safe place and method of work is provided and maintained, the following points under the Health Safety and Welfare Regulations 1992 with regards to the safe use of scaffolds apply.

Edge protection will be provided. Whenever anyone could fall, the first line of defence is to provide adequate edge protection. It needs to meet minimum legal standards of, or be equivalent to:

- A main guard rail at least 910 mm above the edge
- A toe board at least 150 mm high
- An intermediate guard rail or other barrier so that there is no gap more than 470 mm
- Nets should be provided where there is a danger of dust or debris falling from height onto operatives or the public

2. Scaffolding should be erected, altered and dismantled by qualified Scaffolders only.

3. On completion of the scaffold erection a 'Certificate of Completion' should be issued and the structure inspected by a competent person or representative of the Company.
4. Incomplete scaffold or structures undergoing design modification must display appropriate warning notices and NOT be used until all works completed.
5. All scaffolding should be inspected at least weekly by a competent person or at any time where ground or adverse weather conditions may have affected the integrity of the structure. An inspection record sheet should be completed, and a copy of this report should be kept in a file maintained on site. Any defects must be notified to the scaffold company immediately by telephone and followed up in writing within 24 hours.
6. Safe access and egress must always be provided to each platform level in the form of a ladder which must be suitably positioned and secured with the appropriate 'up-stand' for access to and from the ladder. Material and tools must not be carried by operatives whilst climbing ladders. All materials must be lifted to each platform by mechanical hoist, crane or fork lift under the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER).

Demolition/Temporary Work

1. Full surveys of any building to be demolished and surrounding properties must be carried out and a report in writing (preferably including photographs) must be prepared.
2. Under the Construction (Design & Management) Regulation 2015 ALL demolition work must comply with CDM Regulations and the HSE should be notified on Form F10 (rev) prior to the commencement of any works. The Local Authority and Environmental Offices should also be notified.
3. All Contractors should prepare methodology and Risk Assessments together with any relevant COSHH assessments to the Principal Contractor for approval prior to the commencement of any works. Where the Demolition Company is the PC the methodology etc. should be submitted to the Planning Supervisor for approval by the Client prior to commencement of works on site.
4. All temporary works should be designed by a suitably qualified competent person or the design should be completed by the manufacturer/company supplying the equipment for the temporary works system. The designer has Legal responsibilities under the Construction (Design & Management) Regulations 2015 and must ensure that at the design stage, every effort has been made to reduce, avoid or eliminate any hazard which could cause possible risk to Health, Safety and Welfare of the workers and the public. The Designer must provide a method statement for the installation of the equipment together with the associated risk assessments to the Contractor carrying out the works.
5. Suitably trained operatives, qualified and licensed demolition companies will be employed to carry out demolition works, and copies of certificates must be provided and kept on site for inspection at any time.
6. Under the Lifting Operations and Lifting Equipment Regulations all certificates of lifting equipment and appliances must be inspected by the PC prior to use of equipment and copies kept on site for inspection at any time.