



Piccadilly Warehouse, Manchester.

Client: Beech Holdings

Construction & Methodology Statement

Rev D 10/06/24



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1.0 Piccadilly Warehouse, Bloom St, Manchester. M3 1HH

1.1 Introduction

The report has been issued as part of a Section 73 application submitted to Manchester City Council in June 2024. The report will supersede the previously approved Construction Management Plan prepared by Beech Design + Build. Revised wording for Condition 10 is provided below:

Planning Condition No.10 states:

The construction of the development hereby approved shall comply fully and only with the information within the Construction Management Plan prepared by RWBHO submitted to the City Council as local planning authority in June 2024. In the interest of pedestrian and highway safety, and to ensure that construction works are not prejudicial or a nuisance to adjacent dwellings and properties pursuant to policy DM1 of the Core Strategy.

1.2 Location and description of the project

The application site consists of the existing 11 Bloom Street and 10 Minshall Street Warehouses and associated yard area between. The buildings form the boundary to the pavement edge on all sides apart from the yard area which comprises a hard standing alley between the 2 buildings from Richmond Street to Bloom Street, which has secured gated entrances at both ends. Pedestrian access to 11 Bloom Street is via steps from Bloom Street adjacent the alleyway to a raised entrance. Main entrance to Bloom is at the corner next to the car park. The existing entrance levels within this application is known as the upper ground floor. The site is bound on three sides by streets, namely Minshall Street, Bloom Street and Richmond Street with a car park to the fourth boundary. The scheme involves the proposed repair, refurbishment and new use of 11 Bloom Street and 10 Minshall Street, including the removal of non-original internal partitions and construction of a new single story vertical extension to 11 Bloom Street to provide 80 residential apartments hard landscaping, external lighting, access, servicing and other associated works.

1.3 Project Team

The Project Team for Piccadilly Warehouse project is as follows:

- Beech Holdings Ltd (Client)
- WT Partnership (Employer's agent)
- RWBHO (Principal Contractor)
- Horizon Fletcher Rae (Architect)
- Safer Sphere (Principal Designer)
- TIER UK (Structural Engineers)
- Design Fire Consultants (Fire Engineers)
- Hutton + Rostron (Heritage)
- Hulley and Kirkwood (M+E Engineers)
- Paul Butler Associates (Planning Consultant)
- Quadrant Building Control (Building Control)
- Sandy Brown (Acoustician)

1.3 Indicative Programme

Key dates listed below which are currently indicative and may change marginally:

- Site Set-up & Project Commencement - September 2024
- Demolition Complete
- Mindel House Roofing Works
- Bloom St Extension Works
- Mindel House Fit-out Commencement
- Bloom St Fit-out Commencement
- External Works
- Project Completion

1.4 Site Layout

Please find attached Site Layout / Logistics drawings – Appendix 1

1.5 Working Hours

The project working hours are as such that the construction work will normally take place only between the following hours:

Monday – Friday 7:30am-18:00pm

Saturday 8:30am-14:00pm

Sunday / Bank Holidays No work

1.6 Parking of Vehicles of Site Operatives and Visitors

No parking will be available on site. Russell's management team will make use of surrounding public transport and multi-story car parks.

Site operatives will be encouraged to commute via public transport within close proximity to the site – Piccadilly bus and train station and Metrolink are close by to the development.

2.0 Site Waste Management Plan

The management and disposal of waste generated on the Piccadilly Warehouse Project will be managed in accordance with the Russells Waste Management Policy (please see Appendix 2).

Following selection / confirmation of the relevant sub-contractors & suppliers, we will develop a Site Waste Management Plan. The 'template' for the Piccadilly Warehouse Site Waste Management Plan may be found in Appendix 2.

We will appoint a specific member of the Russells Construction Site Management Team as "Waste Management Co-ordinator".

Refer to Appendix 2 – Site Waste Management Policy & Plan

3.0 Air Quality Plan

The following few paragraphs detail how air pollution will be managed and controlled during the Piccadilly Warehouse works.

Background Definitions:

Statutory Nuisance

Dust, steam, smell or other effluvia from industrial, trade or business premises which are prejudicial to health, are defined as statutory nuisances under Section 79 of the Environmental Protection Act (EPA). In addition, smoke (including soot, ash, grit), fumes and gases from any premises may also be a nuisance. The person responsible (in practice the contractor doing the work in question) can be required, by the local authority, to put a stop to the nuisance through an abatement notice. An aggrieved individual may apply to the magistrates for an abatement order. Breach of a notice or order is a criminal offence.

Clean Air Act

The Act is the main legislative means of control over smoke, grit, dust and fumes, and is generally enforced by local authorities. The main provisions of the Act co-exist with the statutory nuisance provisions of the EPA.

The Act applies to emissions of dark smoke from industrial or trade premises which originate from sources other than chimneys. Demolition has been found to be a trade process, and a bonfire on a demolition site emitting dark smoke could be found to be within the compass of the Act. There are, however, regulations which exempt emissions from the burning of timber and most other waste resulting from demolition of a building or of a site and also emissions from tar, pitch, asphalt or other matter used in connection with surfacing.

Some construction processes on the Piccadilly Warehouse Project may release pollutants into the atmosphere, for example dust. However, there is a clear need to keep them to a minimum to avoid undue nuisance to neighboring areas and the workforce also to ensure that the more dangerous pollutants, for example paint sprays are not released or are at least controlled.

Potential Hazards to Consider on the Piccadilly Warehouse Project include, but are not limited to:

- Brick and silica dust
- Toxic substances in the ground or services
- Cement filler and plaster
- Solvents, glues and paints
- Weed-killers and other similar chemicals
- Fumes from welding
- Sprayed formwork oils
- Sprayed paint and other sealants

Control Measures we will adopt, include:

- CoSHH assessments undertaken prior to certain activities commencing
- Dust from earthmoving and other vehicles on site – damp down using bowsers, or similar solution.
- Wood dust from joinery or other woodworking – use dust extractors on cutters and saws
- Site Standards will ban the use of fires on site as a waste disposal measure
- Securing of all loose materials that could become airborne in high winds
- Where possible, positioning of plant in order to ensure that exhaust fumes or dust etc. are vented away from occupied buildings.

4.0 **Traffic Management plan**

Please refer to Appendix 1

We have engaged with Chevron Ltd. to carry-out key pavement / highways management works.

An application is to be submitted for a closure of:

- Lane and footpath closure on Minshull St, Richmond and Bloom St
- Temporary removal of some road signs, parking bays, bollards etc. on Bloom St and Minshull St

5.0 **Storage of plant & Materials**

Materials will be stored within the site boundary.

Materials will then be transported to the relevant floors via a goods hoist. Due to the tight nature of the project all deliveries will need to be booked in through the Russells site management team to prevent any back log or congestion inside the site boundary/surrounding public highways.

All deliveries of goods & materials for the frame contractors will be through site entrance.

6.0 **Construction methods.**

No works have commenced. Specific RA/MS can be made available on request.

7.0 **Human Impact Management Plan**

On the Piccadilly Warehouse Project, we will manage “Human Impact” in two key ways:

- Environmental Impacts
- Community Plan

We will identify and manage environmental ‘impacts’ and ‘aspects’ throughout the project

The following areas will be considered:

Aspect: The part of Russell’s activities that can interact with the environment.

Impact: The effect on the environment, good or bad, that results from Russells activity

Noise: Under section 60 and 61 of the control of pollution act 1989 permissible levels of environmental noise as agreed with the local authority must be adhered to.

Waste and Resource Use: including minimisation, recycling, disposal, selling ‘waste’, waste streams, compliance, secondary aggregates, timber.

Biodiversity: There are no biodiversity issues on site.

Land Management: Piccadilly Warehouse has been considered during the design and will be managed to ensure no damage or alteration will be caused by the construction of the project to adjacent land / properties.

Community: Russells will liaise with the local community to discuss the impact the project will have on the local environment and local businesses and maintain a good working relationship with the local community & businesses.

We will develop an Aspects and Impacts Register (A&I Register), this will form part of our detailed Health, Safety & Environmental Construction Phase Plan. The Russells Health, Safety & Environmental Advisor or Sustainability Manager will provide support as necessary, throughout the life of the scheme.

Control measures to reduce the risk will be implemented and the risk regularly reassessed to ensure the control measures have, in fact, reduced the risk.

The Piccadilly Warehouse Site Management Team will ensure that the A&I Register is monitored and regularly reviewed (especially when there is a change in work activity or location).

24 hour contact numbers and email address will be displayed on the site entrance so members of the public are able to contact the RWBHO team.

7.1 Community Plan

Russells recognise that we can have a significant impact on the communities in which we operate and by engaging, respecting and understanding our community stakeholders we can make a positive contribution to their environment and quality of life.

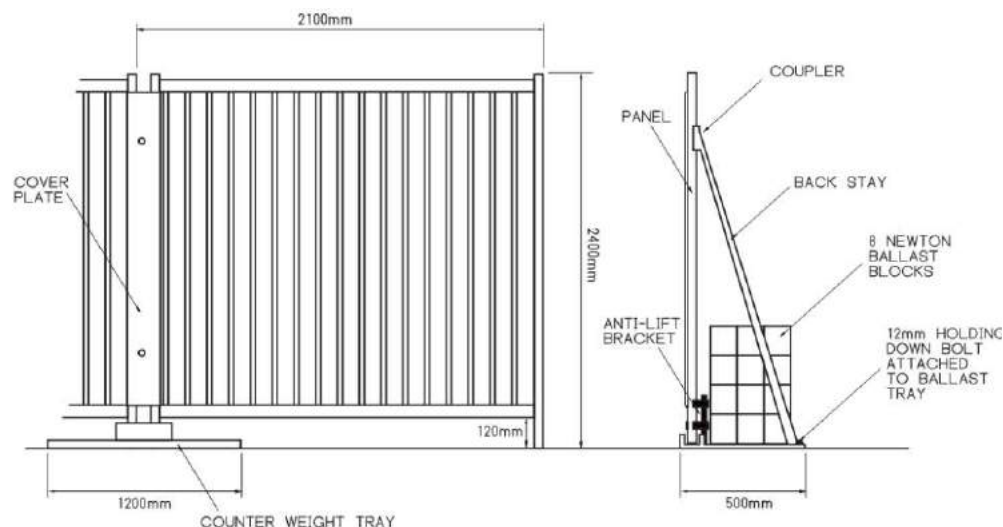
8.0 Hoardings

All areas of the construction site will be clearly demarcated / secure at all times (from non-construction related persons or vehicles), also to keep all construction activities confined within the defined areas.

Metal solid panel hoarding will be used in along the site boundary. Hoarding will be visually inspected daily and a weekly inspection register maintained on site.

A Temporary works design will be completed by our Temporary works design consultant in line with the Russells temporary works policy. See typical hoarding details on the next page:

RWBHO Typical Solid Metal Hoarding:



9.0 Dust & Dirt

Dust will be controlled for the duration of the job by water suppression especially during hot dry days. Road sweepers will be brought to site as required to keep the site clean and dust build up to a minimum.

Water suppression will be used during clean up works to prevent exposure to silica dust to working operatives and people in the nearby vicinity.

The site will be kept clear and tidy at all times throughout the day, operatives will collect all rubbish and ensure all wagons are clean and fit for road use prior to leaving site. Any dirt/rubbish on the nearby roads and footpaths which are the responsibility of Russells will be cleaned.

If necessary, specific mechanical dust extraction and mitigation measures will be used to remove airborne dust.

Facade cleaning operations will not produce significant dust due to the cleaning process using only water. Localised areas of stone repair and replacement will be risk assessed on an individual basis.

Scaffolding surrounding the building will receive a full wrap of Monarflex sheeting that will provide a further barrier to the migration of any airborne contaminants beyond the perimeter of the building.

In addition to the scaffolding, the work to replace the windows will be undertaken in a 'Just-In-Time' approach. This ensures that the existing windows will remain in place until such time as the new windows are ready to be installed. This will further contain dust & dirt to within the building.

Control and mitigation measures as set out in the Redmore Ltd Air Quality Assessment will be adopted as per the appended report with RWBHO comments

10.0 Recycling & Disposal

Due to the tight nature of the project, there is limited space for the storage of waste/recycling skips. We will be storing 'wheelie' type container bins on the ground floor to be loaded from the upper floors and to be cleared from site by the appointed waste management company at regular intervals.

11.0 Cranes

Mobile Cranes (ref Appendix 1)

The list of operations which are currently envisaged to require a mobile crane are:

- New steel members transport
- Vertical material movements
- Delivery and fitting of curtain walling glazing systems

All lift plans will be completed by a trained competent appointed person and covered by a temporary works check certificate in line with the Russell's temporary works policy.

12.0 Scaffolding / Access

External working platforms / access will generally be via a mixture of:

- Hoist
- Scaffold to full perimeter.

Please refer to **Appendix 4** for scaffolding drawings.

13.0

Noise Assessments and Use of Vibrating Tools and Equipment Procedures.

NOISE

Russells Ltd and its sub-contractors will ensure that, where reasonably practicable, nobody on site is exposed to noise in excess of 80dB(A). Where noise levels are suspected to be at or above 80dB(A) the direct employer will be responsible for ensuring a suitable noise assessment is carried out. Suitable hearing protection must be made available to all affected personnel on request. Sub-contractors undertaking work that continuously exceeds the noise level of 85dB(A) hearing protection zones must be set up with clear warning signs positioned.

Completed Workplace Noise Assessments or Sub-contractors equivalent will be filed in the site H&S file.

On completion of the noise assessment Russells Ltd and its sub-contractors will provide relevant information, instruction and training to employees at risk from excessive noise levels.

Suppliers of plant will be required to supply guidance on anticipated noise levels. All compressors, percussion tools & vehicles will be fitted with effective silencers of a type recommended by manufacturers of the compressors, tools or vehicles.

Under Section 60 and 61 of the Control of Pollution Act 1989 permissible levels of environmental noise may have been stated by the local authority, in this instance the levels must be adhered to.

Except where expressly permitted, no operations which are audible at the adjacent noise sensitive buildings shall be carried outside the hours of 08.30 hours to 18.00 hours Monday to Friday and 08.00 hours to 14.00 hours on Saturdays.

USE OF VIBRATING TOOLS AND EQUIPMENT PROCEDURES.

Russells Ltd and its sub-contractors will, through the careful planning and design of the works, take reasonable steps to eliminate the need for vibrating tools and equipment to be used on site. Where this cannot be achieved equipment suppliers will be required to provide adequate information to allow Russells Ltd or its sub-contractors to carry out a suitable risk assessment. Affected personnel will be trained on vibration reduction techniques and, where appropriate, included in a health surveillance scheme.

Completed Vibration Exposure from Powered Hand Tools Assessments will be recorded in Form HS 031 or Sub-contractors equivalent together with a daily record that operatives have not exceeded the 'exposure limit value' while on site. Completed records will be filed in the site H&S filing system. Where applicable evidence of health surveillance should be provided

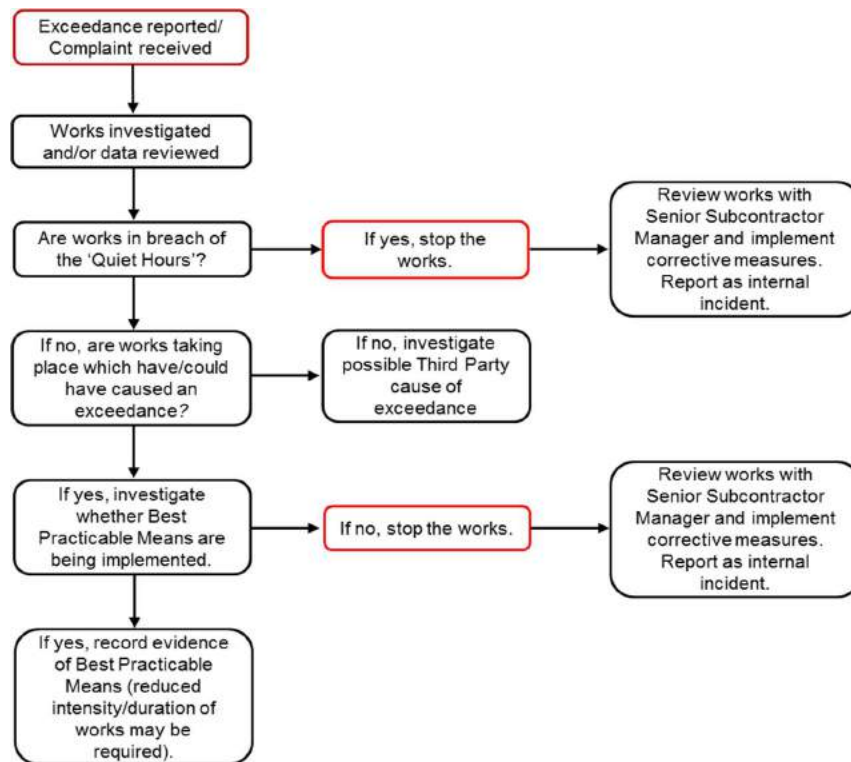
14.0 Consultation & Complaints

Russells manage public relations proactively through liaison with neighbours via newsletters, letters and community meetings. Contact details are provided on the public noticeboard for the public to directly contact us. Any complaints are logged and investigated by Russells with corrective action implemented as required. In the event of a complaint, the complainant should be directed to the most senior member of the Project team on Site. The following details should be taken (if the complainant is willing to provide them):

- Full name
- Address
- Contact telephone number
- Date/Time of the alleged incident
- Description of the complaint
- Location of the alleged incident
- Date/time complaint received

All personal data shall be managed in compliance with the Data Protection Act 2018.

All exceedances and complaints are to be investigated according to the following process



Appendices

Appendix 1

- Logistics plan
- Crane location plan
- Traffic Management plan

Appendix 2

- Site Waste management plan.

Appendix 3

- Environmental Plan

Appendix 4

- Scaffolding drawings

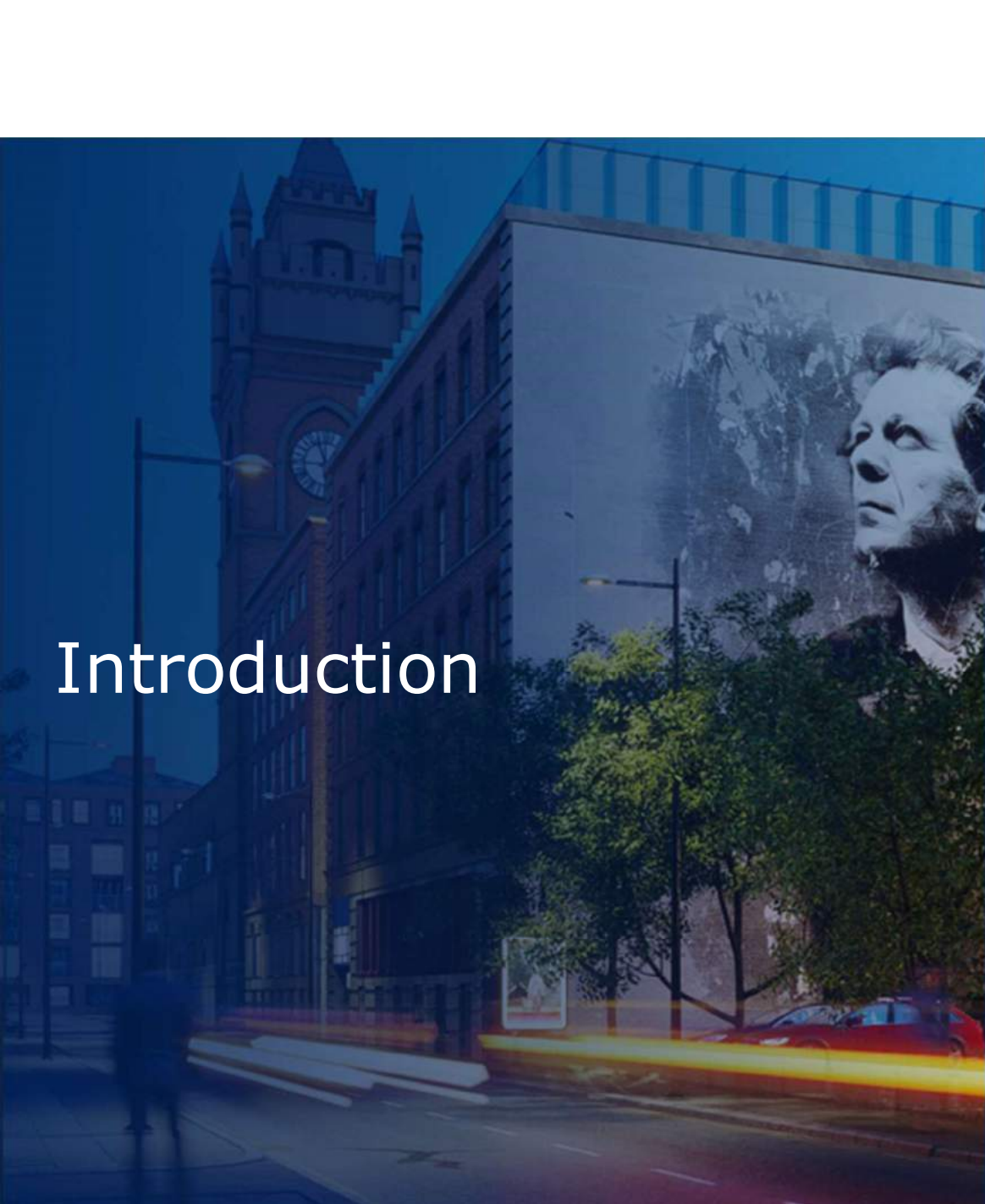
Appendix 1

- *Logistics plan*
- *Crane location plan*
- *Traffic Management plan*



Russell **WBHO**

Piccadilly Warehouse
Manchester
Logistics Plan
Rev: D 23/05/2024



Introduction

- Development of 2No. former 19th Century Warehouse buildings within Manchester City Centre
- Proposal for 80 No Apartments across both buildings. (34 / 46 Split)
- Storage for 88No. Bicycles at Lower ground floor level within the Bloom St building
- Formation of a partially covered yard area between both buildings within the existing alleyway
- Both Buildings are Grade II listed.
- Creation of Single story 5th floor roof top extension to 11 Bloom St
- Refurbishment of Mindel House roof.
- New Sub-Station within 11 Bloom St
- Heritage features to be retained and refurbished

Piccadilly Warehouse location plan

NCP Chorlton St
Chorlton St
Manchester
M1 3FY

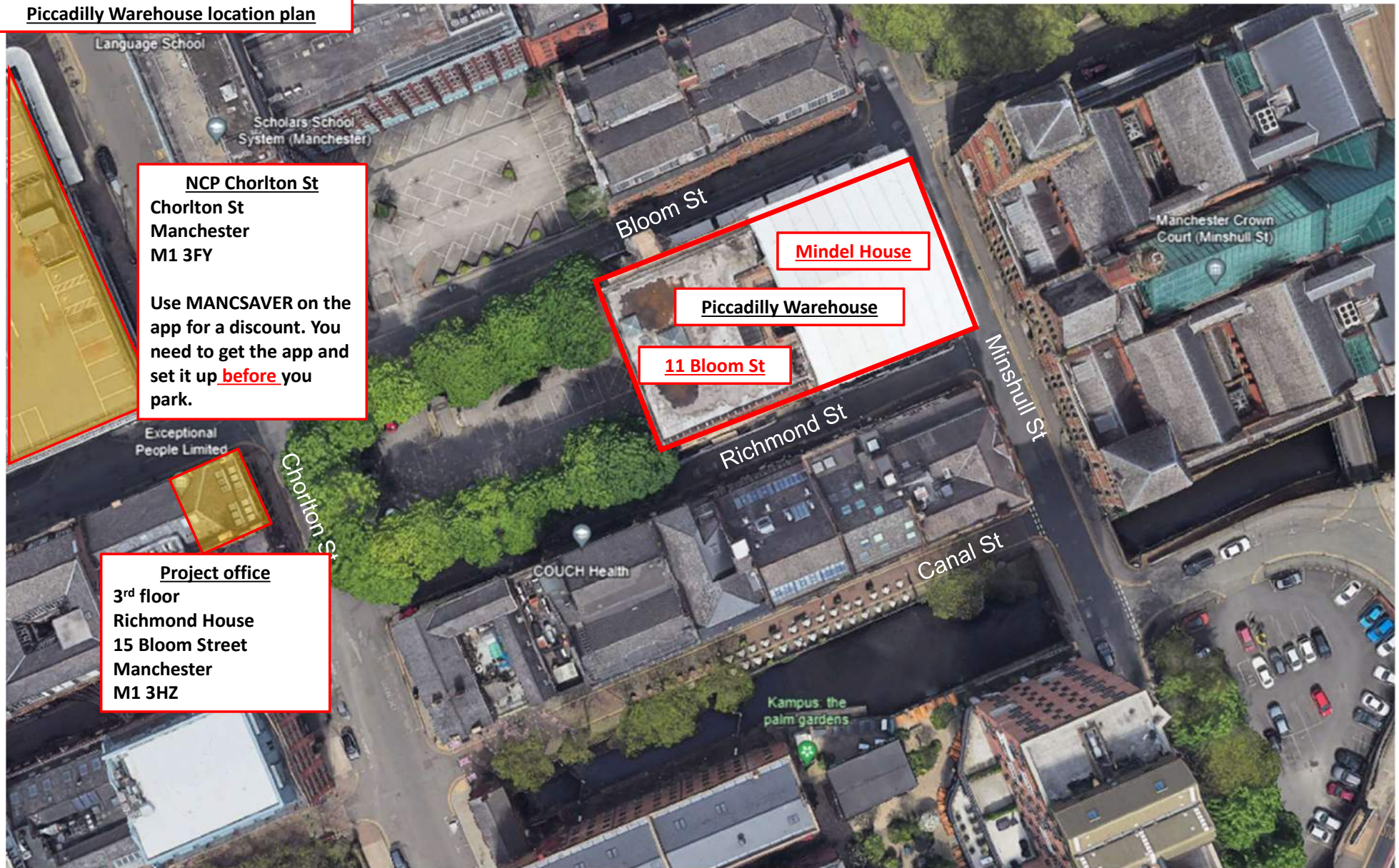
Use MANCSAVER on the app for a discount. You need to get the app and set it up before you park.

Project office
3rd floor
Richmond House
15 Bloom Street
Manchester
M1 3HZ

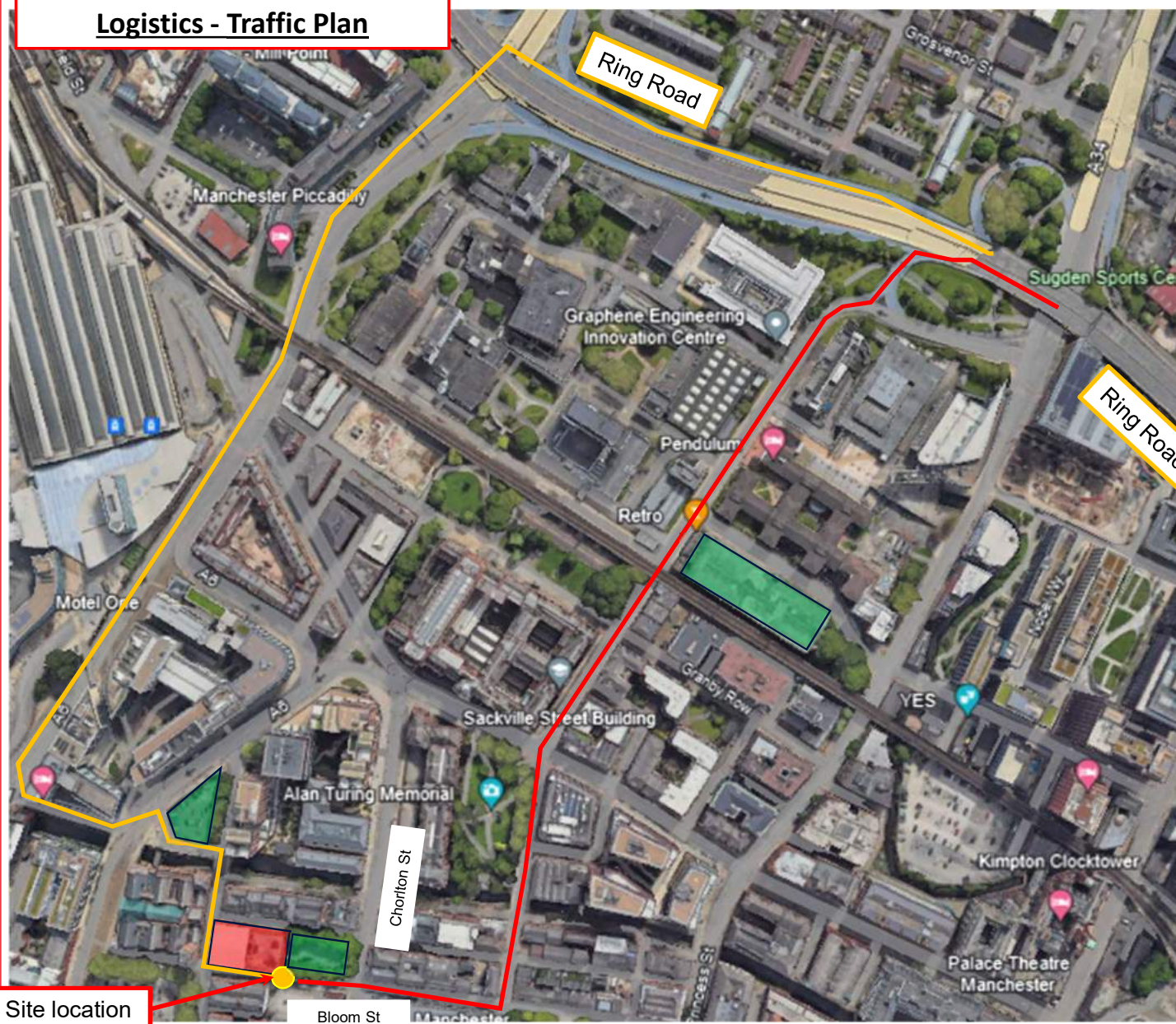
Mindel House

Piccadilly Warehouse

11 Bloom St



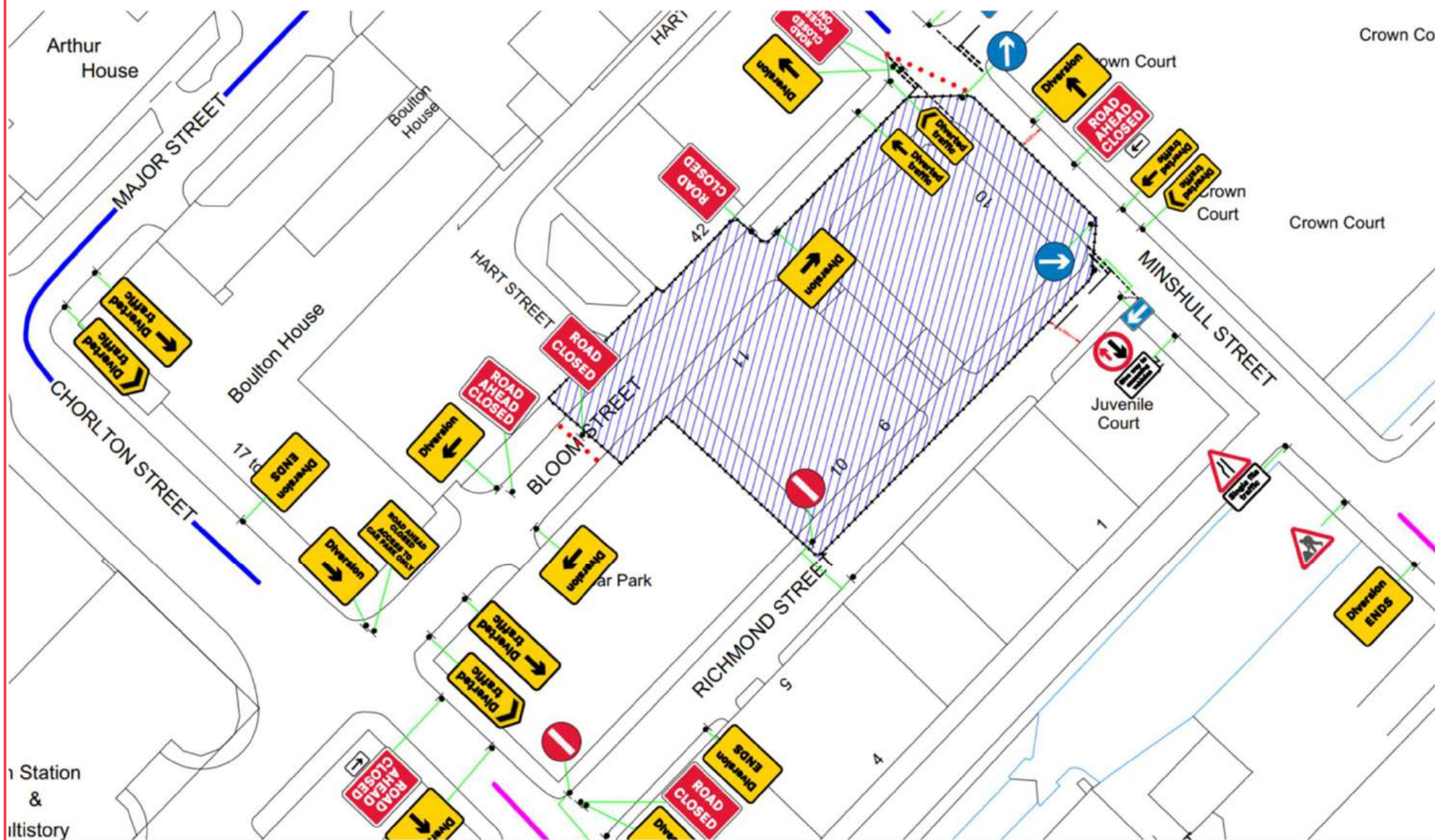
Logistics - Traffic Plan



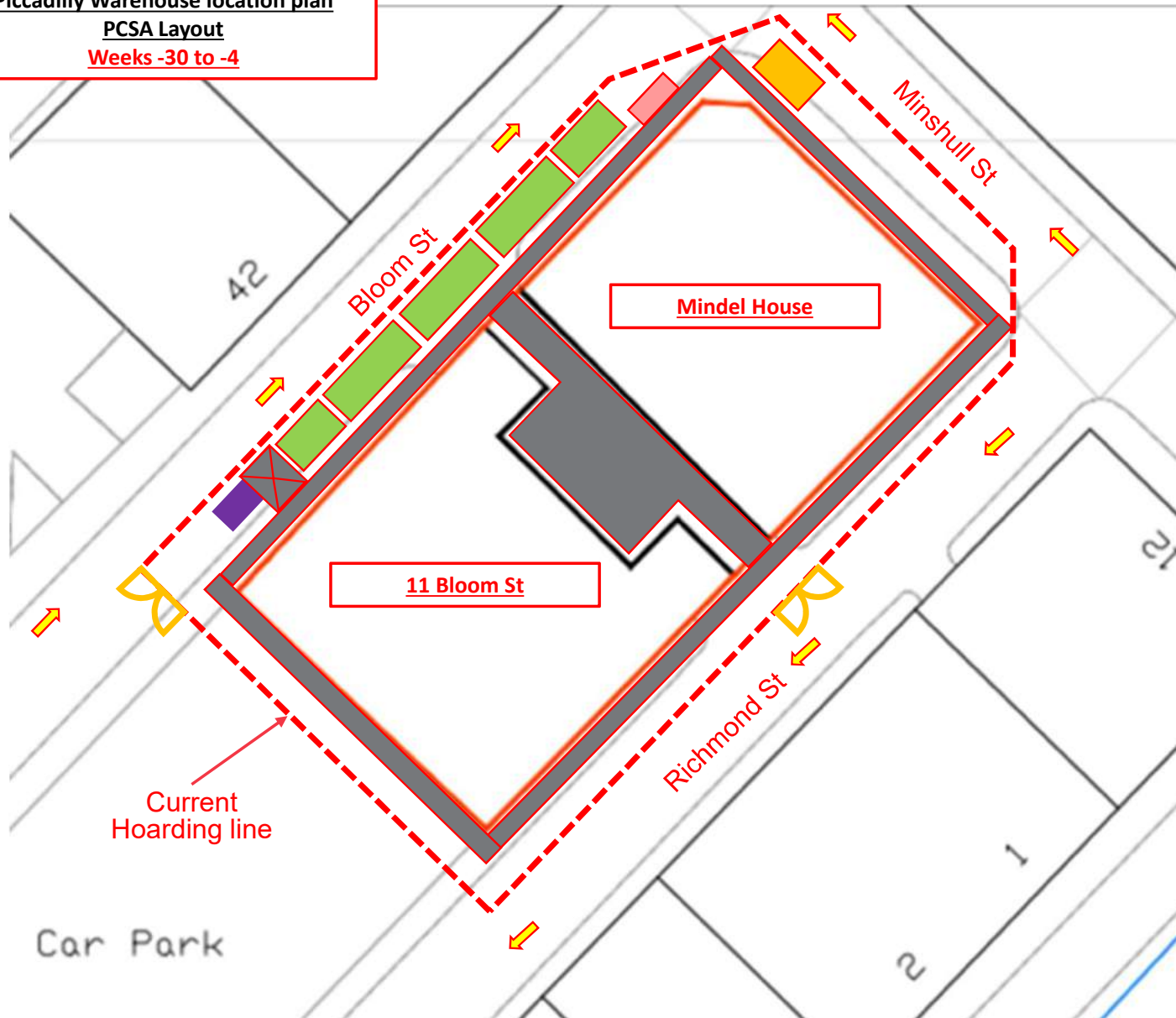
Key

- Route To Site
- Route From Site
- Site location
- Car Parking
NOT FREE
- Delivery location
Bloom Street
- Site Location

Logistics – Traffic Management Plan



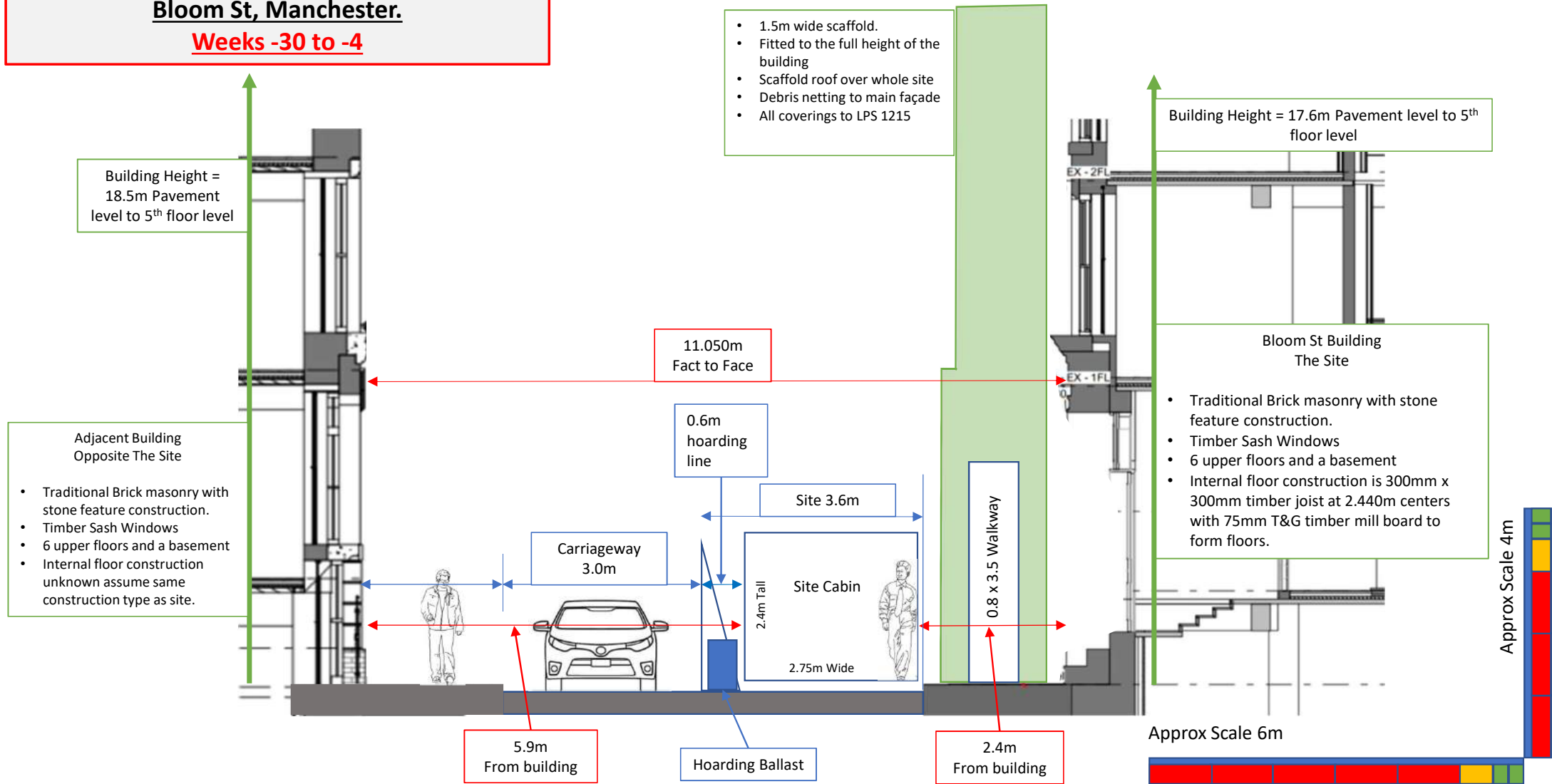
Piccadilly Warehouse location plan
PCSA Layout
Weeks -30 to -4



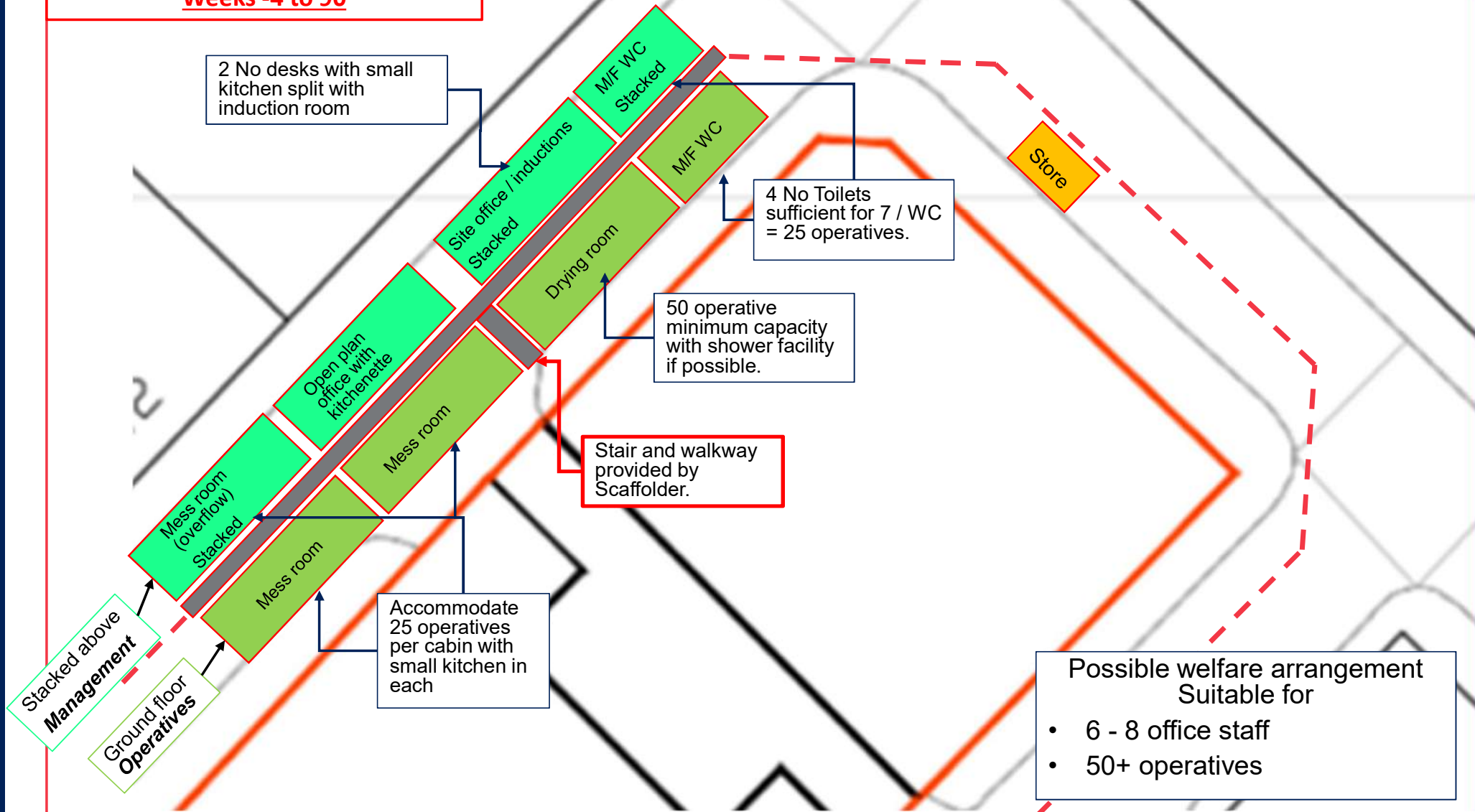
Key

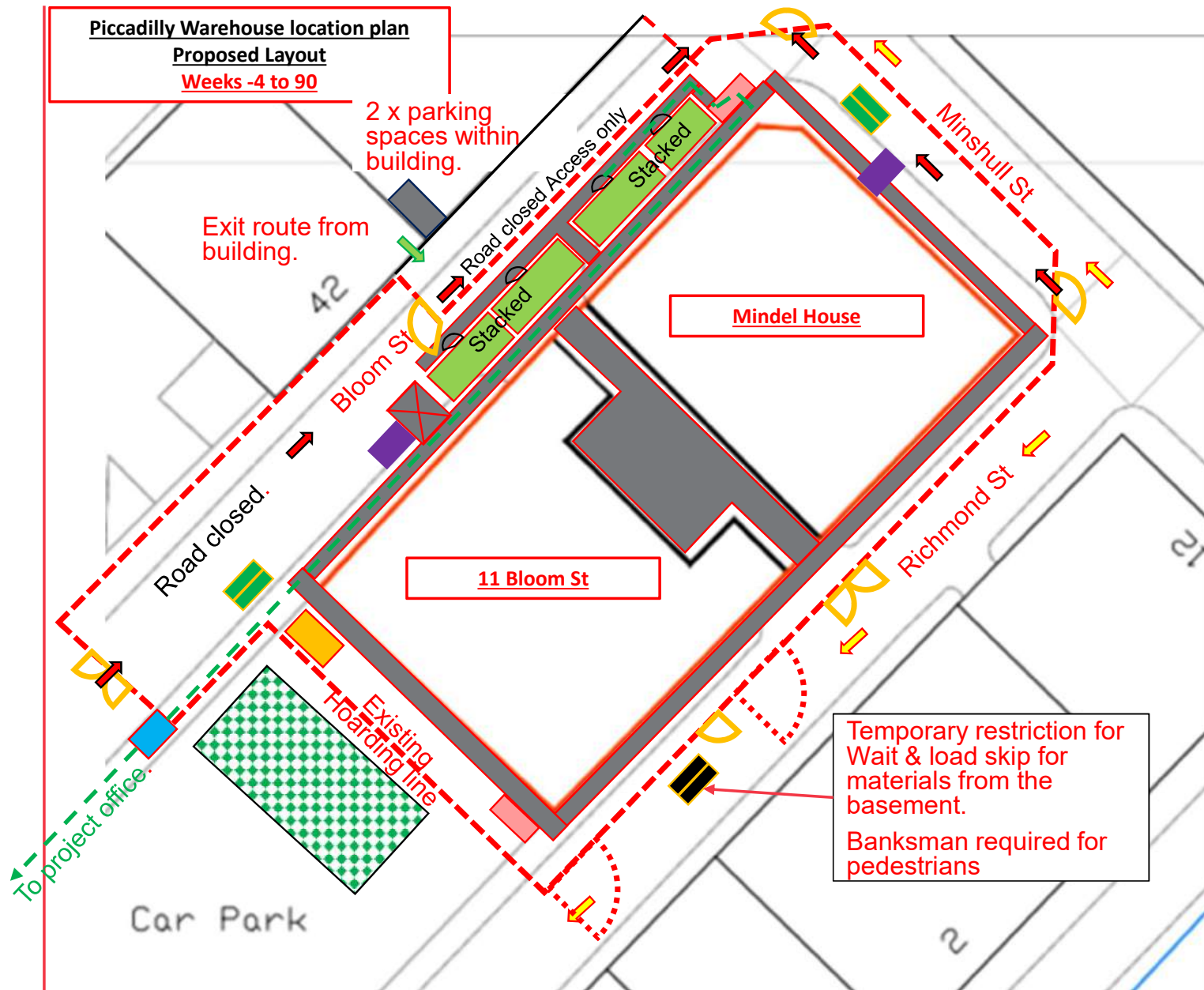
- The site
- - Solid Hoarding
- D Vehicle Gates
- Site welfare
- Site Store
- Hoist
- Scaffold Staircase
- Scaffold Platform
- X Loading Platform
- Highway traffic
- Existing Sub Station

PCSA period Cross section of Hoarding, Site accommodation, Scaffold & Adjacent building
Bloom St, Manchester.
Weeks -30 to -4



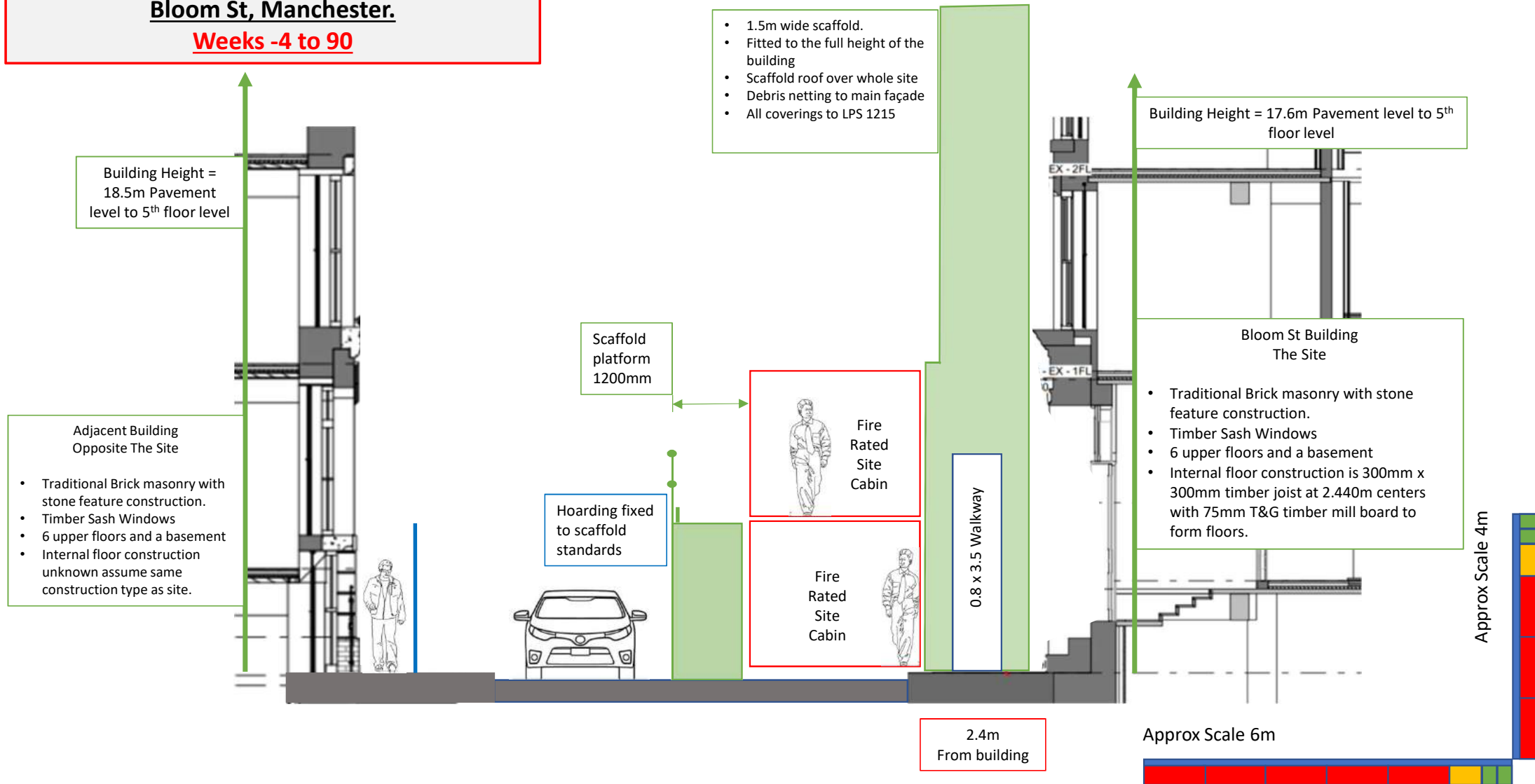
**Main Project Welfare –
Cabin Arrangement**
Weeks -4 to 90





Key	
	The site
	Solid Hoarding
	Vehicle Gates
	Site welfare
	Site Store
	Skip (Wait & Load only)
	Skip
	Hoist (materials)
	Scaffold Staircase
	Loading Platform
	Highway traffic
	Site Traffic
	Existing Sub Station
	Turnstile access
	Pedestrian Access
	Guard Location
	Muster point

Main works - Cross section of Hoarding, Site accommodation, Scaffold & Adjacent building
Bloom St, Manchester.
Weeks -4 to 90



Combined North West Elevation

Mindel House – 34 units

11 Bloom St – 46 units



Combined Ground floor plan

Mindel House – 34 units

11 Bloom St – 46 units

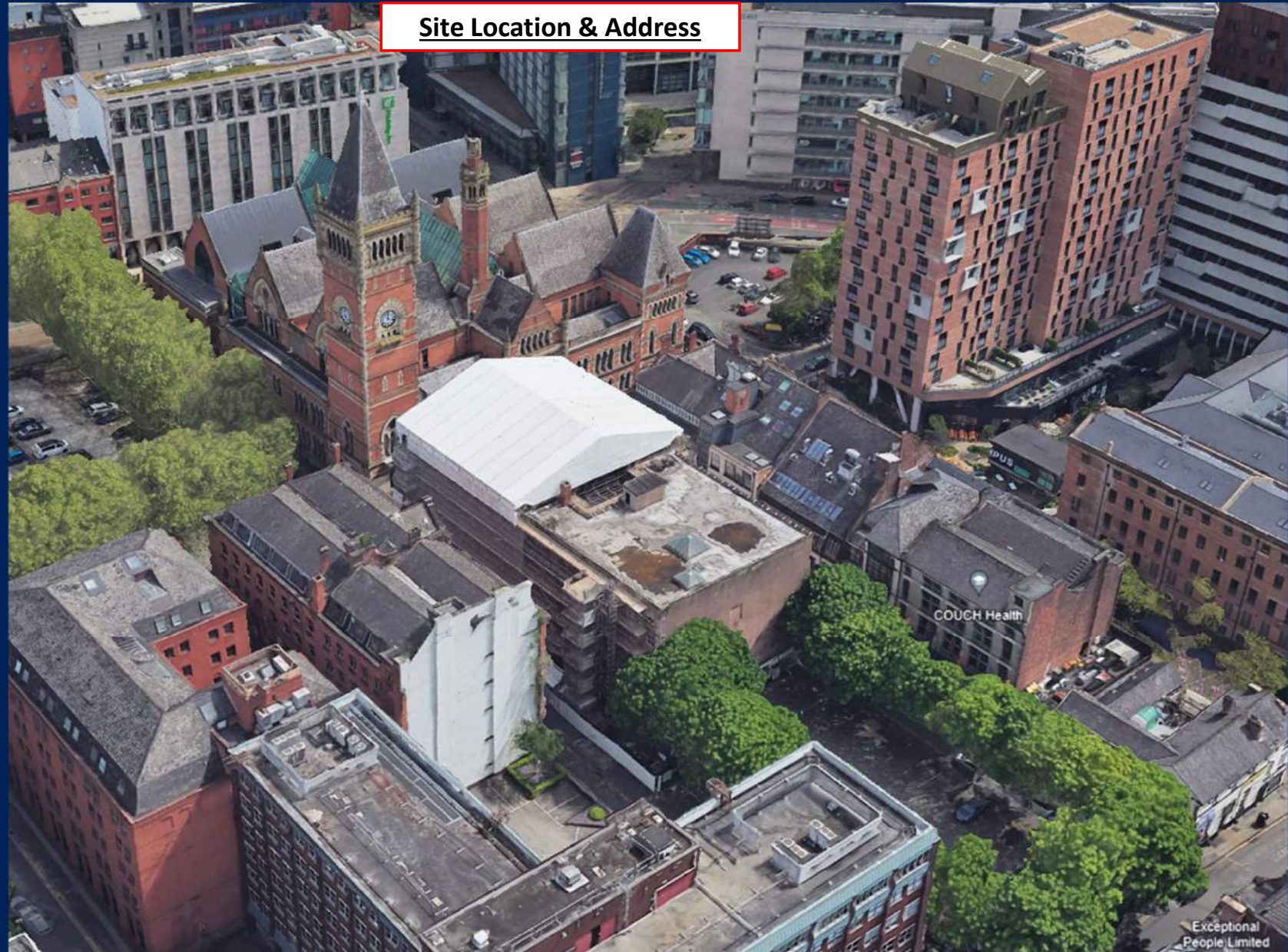


Piccadilly Warehouse

11 Bloom Street
Manchester
M1 3HH

Deliveries to:
Bloom Street
Via Chorlton Street

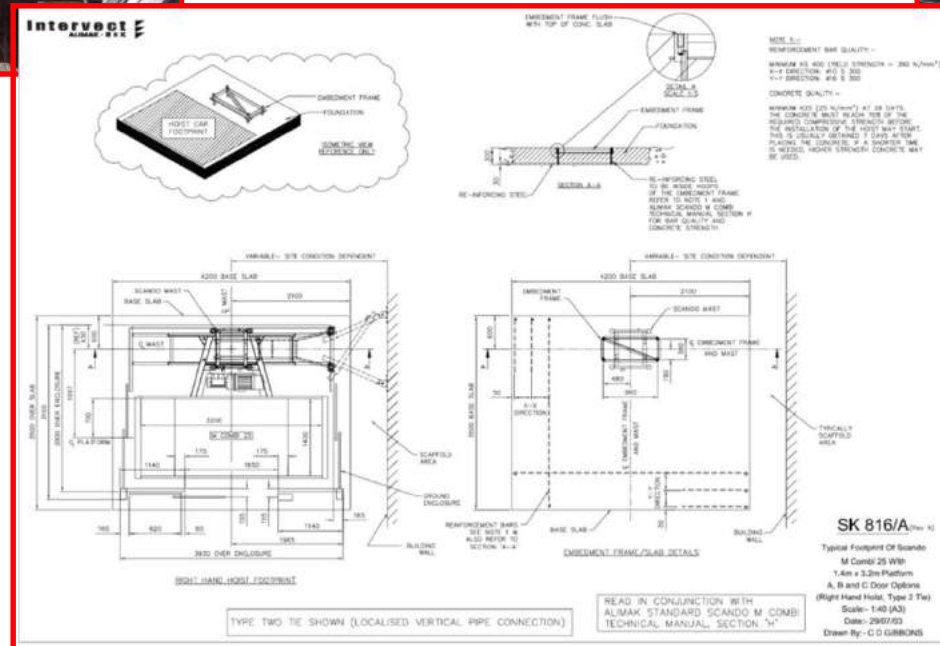
Site Location & Address



Example of Logistics Distribution - HOIST

**VERTICAL DISTRIBUTION
THROUGHOUT THE BUILDING
WILL BE ACHIEVED BY:**

- Installation of a goods hoist to North West corner of the building, using existing window openings to facilitate access.
- Beneficial use of new lifts when installed.



Proposed crane location and slew radius



NOTES: Based upon survey maps with the permission of the controller of Her Majesty's stationery office. © Crown Copyright.

1. (c) Crown Copyright. All rights reserved. 2021. License number 0100031673
2. All traffic management to comply with Chapter 8 or Safety at Street Works and Road Works (A code of Practice).

BILL OF QUANTITIES:

Qty: 1 Ref: 13.9 Schedule 13-9: Temporary Information	
Qty: 5 Ref: 2702 Start of temporary diversion route	
Qty: 3 Ref: 2702 End of temporary diversion route	
Qty: 3 Ref: 2702 Start of temporary diversion route	
Qty: 1 Ref: 2702 Start of temporary diversion route	
Qty: 5 Ref: 2703 Direction of temporary diversion route from junction ahead	
Qty: 1 Ref: 2703 Direction of temporary diversion route from junction ahead	
Qty: 5 Ref: 2704 Direction of temporary diversion route	
Qty: 1 Ref: 2704 Direction of temporary diversion route	
Qty: 1 Ref: 517 Road narrows on one side only ahead - right	
Qty: 1 Ref: 517 Road narrows on one side only ahead - left	
Qty: 2 Ref: 518 Single file traffic	
Qty: 1 Ref: 573 Direction to hazard right	
Qty: 2 Ref: 573 Direction to hazard left	
Qty: 1 Ref: 610 Keep left	
Qty: 1 Ref: 610 Keep right	
Qty: 1 Ref: 615 Priority must be given to oncoming traffic	
Qty: 1 Ref: 615.1 Give way to oncoming vehicles	
Qty: 2 Ref: 616 No entry	
Qty: 1 Ref: 652 One way traffic	
Qty: 2 Ref: 7001 Road works ahead	
Qty: 3 Ref: 7010-FP-13-9 Nature of temporary hazard ahead - Road Closed	
Qty: 4 Ref: 7010.1 Nature of temporary hazard ahead - Road Ahead Closed	
Qty: 1 Ref: 811 Traffic has priority over vehicles from the opposite direction	
Qty: 1 Ref: 811.1 Priority over oncoming vehicles	

SITE DETAILS:

EASTING: 384473 NORTHING: 398002

- Sign
- ▨ Work Site
- Cones
- Diversion Route
- Diversion Route
- Ⓢ Speed Limit
- ↔ Hoarding

Running lane: 3.0m

C	AMENDED AS PER REQUEST	IB	26-Apr-24
B	AMENDED AS PER REQUEST	IB	26-Apr-24
A	FIRST ISSUE FOR APPROVAL	IB	24-Apr-24
REV	DESCRIPTION OF REVISION	BY	DATE

Chevron Traffic Management
Knight House
Arkwright Way
Scunthorpe
DN16 1AD
T: 01652 656291

CLIENT:

Russell WBHO

TRAFFIC MANAGEMENT:

Priority System & One Way System

SITE LOCATION:

8 Minshull St,
City Centre,
Manchester,
M1 3EF

Co-ordinates, Latitude - Longitude:

53.478512,-2.2354287

CLIENT REF:

TBC

DRAWN BY / DATE	CHECKED BY / DATE	APPROVED BY / DATE
IB 24-Apr-24	BC 24-Apr-24	BC 24-Apr-24
SCALE @ A3: NTS	DRAWING NUMBER: TMP-2024-081	

ROAD AHEAD
CLOSED
ACCESS TO
CAR PARK ONLY



Appendix 2

- *Site Waste Management Plan*

PR-EN013 – Site Waste Management Procedure

1. Responsibilities

- a. The requirements for a SWMP is no longer a legal requirement since January 2014, however can be requested by the client or required for BREEAM certification. It is an offence by the principal contractor if the waste produced is not recorded and waste described on the Waste Transfer Notes. In a principal contractor role, RUSSELLS is responsible for:
 - obtaining relevant information from sub-contractors;
 - updating the SWMP as the project progresses;
 - identifying waste removal contractors;
 - keeping the SWMP up to date;
 - ensuring that other sub-contractors know where the SWMP is kept;
 - allowing other sub-contractors and the client access to the SWMP during the project;
 - handing the completed SWMP back to the client at the end of the project, if required/requested
 - keeping a copy of the SWMP for two years.
- b. Ultimate responsibility for achieving the above lies with the business Managing Director. Operational responsibility must be assigned to the Project Lead who will implement Russells areas of responsibility of the SWMP.
- c. This person needs to:
 - negotiate during the tender process to define contractual responsibilities for completion and maintenance of the SWMP;
 - be able to communicate to everyone working on-site and motivate them to follow the SWMP;
 - be able to provide or source the necessary resources and training;
 - have a good knowledge of the contract and the various parties involved.

2. General

- a. The SWMP must identify:
 - the person responsible for waste management on-site;
 - the types of waste that will be generated;
 - waste management options for these waste streams;
 - the use of appropriate and licensed waste management contractors and sites;
 - a plan for monitoring and reporting on the quantity of waste.
- b. To be effective, it is vital that the SWMP is simple and easy to follow, with clear procedures for waste management.
- c. A SWMP involves the following stages:
 - writing the SWMP;
 - assigning responsibility for implementation;
 - identifying likely waste arisings, types and amounts;
 - determining the best waste management methods (on-and off-site) for the different wastes;
 - optimising the supply and procurement of materials;
 - communicating the plan on how it will be implemented;
 - setting up systems to segregate and handle wastes on-site to encourage recovery;
 - making sure the site complies with the Duty of Care;
 - collecting data on waste generated during the project;
 - reviewing and updating the SWMP upon a change in the project, waste management status
 - drawing up recommendations for future projects.

3. Creating the SWMP

- a. The responsibilities for the production of the SWMP must be agreed at the start of the contract. The principal contractor is responsible for its production, implementation and use.
- b. If the SWMP is written at the pre-planning stage to take account of design and waste minimisation issues, then the developer or client or the architect's representative may be responsible, if the client requires a SWMP to be in place at this stage.
- c. If the SWMP is written at the tender stage or at the beginning of the construction phase, then the principal contractor will be largely responsible. The principal contractor may also have to develop and use any SWMP produced by the client. Sub-contractors will need to comply with the principal contractor's SWMP.
- d. It is important that the person or team writing the SWMP has adequate knowledge of waste issues and the construction programme. Ideally, they must also be responsible for implementation of the SWMP.
- e. The writer of the SWMP should be supported by the wider project team, which must be consulted in a partnership approach.
- f. The project team may include:
 - client;
 - design team;
 - regulators;
 - project team members;
 - HSEQ department;
 - sub-contractors (especially the demolition contractor);
 - relevant supply chain organisations,
- g. To ensure the SWMP is completed fully, a SWMP checklist should be used.

4. Making the SWMP work

- a. The SWMP must be:
 - viewed as common practice on-site;
 - embedded within the businesses existing policies and site procedures.
- b. It is essential that the SWMP is supported by the management team and accepted by the project team (including sub-contractors). It is also important that the SWMP is communicated effectively to everyone on-site and be made widely available. Training should be given as required and records kept of this training.

5. Identifying likely waste arising, types and amounts

- a. Knowledge of the types of waste and the estimated amounts arising from each part of the work programme is essential in order to determine:
 - what types/numbers of containers are needed for the different project stages;
 - when best to implement segregation for different waste streams.
- b. Estimates should be recorded using table on the "Waste Data Chart" once the waste types have been identified. Waste can be split into three categories; Demolition, Excavation, Construction.

6. Planning for waste management

- a. The various options for the likely waste generated on-site should follow the waste hierarchy e.g. initially prevent and reduce waste; followed by re-use and recycling (on-and off-site); recovery of energy and finally disposal.
- b. Planning for waste management will help to:
 - decide whether any specialised equipment is required on-site, e.g. a mobile crusher for recycling aggregates;
 - provide advance warning if exemptions or licences are required;
 - plan for the appropriate use of space and containers.
- c. This information can be combined with the waste estimates to set targets for:
 - segregation on-site;
 - recycling of materials;
 - diversion of waste from landfill.

7. Optimising material supply and procurement

- a. The amount of waste generated on-site can be reduced significantly by looking at the way in which materials are procured and supplied to site.
- b. Wastage rates for materials can be reduced through:
 - better ordering systems;
 - less packaging;
 - take-back schemes.
- c. The business individual with the procurement responsibilities may therefore become part of the SWMP process.

8. Communication and training

- a. Communication of the SWMP is essential in order for all Russells' staff, subcontractors and third parties to be aware of their responsibilities. The SWMP can be communicated through means such as site induction, toolbox talks and project review meetings. The SWMP must be held on site and be readily available to all sub-contractors and other third parties.

9. Segregation of materials and waste handling on-site

- a. To promote effective waste management, where practicable, waste materials must be segregated on-site. Information on construction recycling segregation is available in the CIRIA Environmental Good Practice on Site Pocket Book.

10. Working with sub-contractors

- a. All Russells' appointed sub-contractors must segregate the waste they produce where stated in the SWMP.
- b. Where sub-contractors remove their own waste, they must provide a waste transfer note containing the legally required information as per Environmental Protection Act 1990, Section 34; and the necessary certification.

11. Hazardous waste

- a. All hazardous wastes must be segregated in separate skips for disposal.
- b. Hazardous waste skips must have adequate identification signage and be secure.
- c. Avoid contaminating other wastes with hazardous materials (to avoid even higher disposal costs).
- d. Where sub-contractors remove their own waste, they must provide a hazardous waste consignment note containing the legally required information as per The Hazardous Waste (England and Wales) Regulations 2016; and the necessary certification. All 5 section must be completed.
- e. For advice on all aspects of hazardous waste, including the rules governing its transfer off-site and disposal, contact the HSEQ Department.

10. Complying with the Duty of Care

- a. A SWMP must provide a framework to ensure that Russells complies with the Duty of Care requirements. These include:
 - ensuring that all wastes are stored safely and securely;
 - checking that all waste contractors have the appropriate licences;
 - filling out waste transfer notes properly;
 - filling out consignment notes for hazardous waste properly;
 - keeping copies of all waste transfer notes for two years, and hazardous waste consignment notes for three years.
- b. Practical ways for complying with Duty of Care requirements can be obtained from the business Health and Safety Department. Or by information available in the CIRIA Environmental Good Practice on Site Pocket Book.

11. Data collection and analysis

- a. Collection and analysis of data is required to monitor the effectiveness of the SWMP. A designated person is required to collect and report on relevant data at site level.

11.1 Data collection

- a. Data on the waste generated from the project may include:
 - i. type of waste generated on-site;
 - ii. amount of waste generated on-site;
 - iii. segregation rates;
 - iv. re-use on- and off-site, recycling rates and diversion of waste from landfill;
 - v. wastage rates of different materials;
 - vi. costs and savings;
 - vii. waste movements;
 - viii. sources of waste;
 - ix. waste profile over the course of project;
 - x. levels of damaged materials.
- b. The appointed waste management contractor may be able to provide waste data as follows:
 - i. the type of waste generated (broken down by EWC codes);
 - ii. tonnages generated/removed;
 - iii. amounts recycled (typically for the waste facility overall and not per construction site).

11.2 Data analysis, benchmarking and setting targets

- a. Waste generated as part of the project must be analysed to:
 - i. provide feedback about the SWMP to site workers, clients, designers and other members of the project team;
 - ii. monitor performance in minimising waste;
 - iii. set realistic targets within the SWMP;

11.3 Key performance indicators

- a. KPI data can be used to compare performance across projects, against previous projects and - if appropriate - national averages. The two most common are typically:
 - i. volume of waste (m3) per £100,000 of project value;
 - ii. volume of waste (m3) per 100 m2 of project floor area.

12. Updating the SWMP

- a. Once the SWMP is implemented it must be reviewed by the project team to ensure it is:
 - i. being followed;
 - ii. practical and appropriate;
 - iii. amended as necessary.
- b. Whenever waste is removed from the site Russells, as a principal contractor, must record on the site waste management plan
 - i. the identity of the person removing the waste;
 - ii. the types of waste removed; and
 - iii. the site that the waste is being taken to.
- c. At project completion, Russells as principle contractor to sign the SWMP and explain deviations applied, if any.
- d. When any waste is removed the principal contractor must record on the plan
 - i. the identity of the person removing the waste;
 - ii. the waste carrier registration number of the carrier;
 - iii. a copy of, or reference to, the written description of the waste required by section 34 of the Environmental Protection Act 1990; and
 - iv. the site that the waste is being taken to and whether the operator of that site holds a permit under the Waste (England and Wales) Regulation 2011 or is registered under those Regulations as a waste operation exempt from the need for such a permit.
- e. As often as necessary to ensure that the plan accurately reflects the progress of the project, and as a minimum within six months, Russells, as the principal contractor must:
 - i. review the plan;
 - ii. record the types and quantities of waste produced;
 - iii. record the types and quantities of waste that have been—
 - (a) re-used (and whether this was on- or off-site);
 - (b) recycled (and whether this was on- or off-site);
 - (c) sent for another form of recovery (and whether this was on- or off-site);

- (d) sent to landfill; or
- (e) otherwise disposed of; and

- iv. update the plan to reflect the progress of the project.

13. Record Keeping of Waste off Site

The responsible person will be required to create the Waste Transfer Consignment Notes and include an accurate description of waste which will also be described on the Waste Carrier tickets who is removing the waste off site. The Waste Transfer Consignment Notes must be issued as a season ticket for a period of maximum 12 months given that the waste description remains unchanged.

Russells Waste Transfer Notes will be kept electronically for the required 2 years. The responsible person will issue the WTN to the Registered Waste Carrier to complete the WTN by signing the Transferee section.

The waste figures recorded will then be transferred into the SWMP.

The original Waste Carrier tickets are sent into the Russells Head Office and is stored with the invoices and can be pulled up by the Russells Financial Department if requested by a third party. Some of the waste carrier contractors keep records of waste movements electronically which can be accessed by Russells remotely.

14. Applying the lessons learnt

- a. It is important that recommendations and lessons learnt from the implementation of one SWMP can be applied to other sites, throughout the business and throughout Russells.
- b. This can be achieved by various means:
 - i. debrief the client and project team in terms of the successes, targets, recommendations, good and bad practice.
 - ii. Include the SWMP as an agenda item for post-contract reviews.
 - iii. establish benchmarks and new targets based on SWMP experience, aiming for continual improvement.
 - iv. sharing best practice within Russells to improve SWMP efficiency.

15. Further Information Sources

- a. Further free advice on how to reduce the volume of raw materials and other resources used during a construction build is available from Government website - <https://www.gov.uk/waste-legislation-and-regulations>

16. Document retention

- a. Waste Transfer Notes must be retained for a period of two years.

Appendix 3

- *Environmental Plan*

Russell WBHO & Russells Homes



Environmental Policy



POLICY OBJECTIVES

Russells Environmental Management System in time will have developed so that all our key issues pertinent to all our sites will have been addressed.

Our Environmental Management System will be paying particular attention to the following policy objectives.

- Minimise the Environmental impacts of existing activities/processes and to ensure that the implications of any new processes are fully assessed prior to introduction.
- Manage and control effectively and efficiently authorised processes.
- Disposal of wastes, and effluent in a safe and responsible manner.
- Reduce and limit the likelihood of environmental accidents and incidents, by the proper use of risk assessments and action planning.
- To strongly promote control and ownership of environmental issues at departmental levels.
- Provide all necessary training and update training and support to staff in order to ensure that the company is able to fulfil its commitments to the Environmental Policy and sustainable development.
- Introduce and promote programmes, whose aim is to minimise waste.
- Introduce and promote programmes, which minimise energy use through efficient energy management.
- Being considerate to our neighbours whilst conducting our day to day work activities.
- Ensuring continuous improvement in our waste control and management systems, in line with our Health Safety and Environmental Plan.
- Develop systems which promote best environmental practice, covering both design and development.

It is Russells Philosophy to safeguard the environment in which we work and any adjoining environment in order to support sustainable development, whether it be at the Company's construction sites or offices and to ensure the relevant Environmental Health, Safety and Welfare Legislation, associated Codes of Practice and Environmental Standards are complied with.

Contents

- 1 Environmental Policy Amendments and Reviews
- 2 Roles and Responsibilities
- 3 Training and Competence
- 4 Systems Monitoring
- 5 Client Relations
- 6 Energy and Efficiency
- 7 Control of Substances Hazardous to Health (COSHH)
- 8 Waste Management Control
- 9 Noise Control
- 10 Vibration Control
- 11 Dust and Fumes
- 12 Pollution Control
- 13 Ecology
- 14 Emergency Response

1. Environmental Policy Amendments and Reviews

[illegible]

2. Roles & Responsibilities

Management of the system is the responsibility of the **Head of Environmental & ISO** who reports to the Board Member responsible for Environmental issues, John Millward, Construction Director.

The day-to-day management of environmental on site will be the responsibility of the Project Lead who will co-ordinate the on-site labour and ensure the availability of all necessary plant, equipment and materials to allow the environmental controls are in place on site.

At the outset of the project the project team will work with the Client, Principal Designer & relevant Design Professionals to ensure that the design of the project takes and that the appropriate pre-tender documents are issued.

The Health, Safety and Environmental Department will work closely with the Project Lead to ensure that each project is conducted in accordance with the Construction Phase Health, Safety and Environmental Plan and specific legislation.

To avoid duplication, please refer to POL-001 H&S Policy section 3 for the list of responsibilities:

- 2.1. The Board of Directors of Russells
- 2.2. Director with Responsibility for Championing Health, Safety and Environment Matters
- 2.3. Health, Safety & Environmental Managers
- 2.4. The Project Directors / Contracts Managers / Project Lead
- 2.5. The Site Managers / Site Engineers
- 2.6. The Assistant Site Managers / Assistant Site Engineers
- 2.7. Weekly Paid Staff

3. Training and Competence

Training will be provided to the company' employees through attendance at in-house seminars, presentations and the like, to make them aware of the Company's corporate philosophy regarding environmental management and, to ensure their competence in reducing any adverse impact of the Company's activities on the environment. The Company Management undertakes to ensure that this policy is understood, implemented and reviewed at all levels of the organisation, and is committed to the continual improvement of its Environmental Management System in accordance with the requirements of ISO 14001.

All Russell employees will be committed to sustainable development, Environmental Policies and training programmes.

Russells will also educate the following parties on environmental requirements, as and when required:

- All none Russells employees involved in any designing, project or contract work in which Russells is the main contractor.
- Members of the public who may be involved in any way directly or indirectly by Russells project work.

4. Systems Monitoring

We will monitor and update the staff training programme whenever the need is identified.

5. Client Relations

It is an integral part of our approach to fully discuss with clients, the environmental issues, implications and effects of a contract, to ensure full compliance with their Environmental Policies together with the requirements of current relevant legislation and guidelines.

Within our normal construction and operational procedures, the following are examples of measures taken to limit adverse environmental impact:

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- Close liaison with clients, their consultants and local organisations.
- Ensuring the safety of the Public and Site Personnel, not only with regards to Russells operations, but also arising from all sustainable and environmental factors.
- The strict control and demarcation of working areas controlled by the Site managers, Foremen, HS&E Manager and resident Engineer.
- Awareness of and compliance with safe working operational practices involving the Transportation, Handling, Storage and Disposal of Hazardous Chemicals and/or other toxic or harmful substances.
- Appraisal of operational techniques during construction and operation of plant with particular regard to noise, dust, odour, aerosol and emission levels.
- Full compliance with all Health, Safety and Environmental legislations to ensure the efficient and safe execution of a contract.
- Identification to the client of any matter arising throughout a contract which might have environmental implications.

Additionally, where Russells is taking a lead role as a Main Contractor employing Civil Engineering Sub-contractors, particular attention is given to the following:

- Appraisal of working techniques with particular regard to ground vibration.
- Awareness of contaminated materials, their transportation and disposal.
- This list is not exhaustive and there can be many other considerations to be taken into account. A full detailed assessment is carried out for each individual contract.

6. Energy Efficiency

Efficient energy use not only reduces operating costs, but also produces important environmental benefits. The production and use of energy in all its forms is one of man's key impacts on the environment.

Using energy efficiently and thereby reducing unnecessary pollution is recognised as one of the most effective ways of slowing down global warming. Consideration should be given to how energy is used. As far as reasonably practicable, control measures will be implemented to the following areas of operation in order to reduce energy consumption:

- Power & Lighting
- Heating Systems
- Ventilation
- Air Conditioning
- Transport
- Paper

For further details please refer to document reference PR-EN008 – Energy Efficiency and Improvement.

7. Control of Substances Hazardous to Health (COSHH):

If there is a requirement to store and use substances which may be hazardous to health in accordance with the COSHH Regulations, written assessments will be in place for the specific substance. Sub-contractors will require approval prior to bringing any such materials onto the site.

Great care will be taken in handling any such material and substances and the following steps will be implemented:

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- Eliminate the use of hazardous materials and chemicals whenever possible.
- If not presently possible then substitute that material or chemical with a less hazardous one.
- If no substitute is available then ensure that any hazardous material or chemical is used strictly according to its COSHH data sheet and only used to its minimum.

It will be the Company Policy that where practicable the most environmentally friendly chemicals will be used.

Copies of the Manufacturers Safety Data Sheet (MSDS) will NOT be accepted as a COSHH assessment and must therefore not be sent to site with any substance. All COSHH assessments must reflect not only the hazardous natures of the substance but the environment in which it is to be used on site, information on storage, handling, transportation and safe disposal, emergency firefighting & First Aid information must be included with any substances brought onto site.

Emergency spill kits are issued to all construction sites and the site manager will ensure that responsible individuals are trained to the specific spill kit's manufacturers' operating instructions.

For further information, please refer to our PR-HS008 – COSHH Procedure

8. Waste Management Control

Waste materials are produced at Russells Headquarters and construction sites. Our Headquarters main waste stream is paper which is shredded and recycled by an Environmental Agency approved waste contractor. Other waste streams are ink, food waste, cardboard and domestic waste. The general waste is removed by an Environmental Agency approved waste contractor.

Russells and its sub-contractors will ensure that measures are put into place and maintained in order to protect the environment and prevent pollution from occurring.

All waste materials will be stored and disposed of (i.e. appropriate labelled skips provided) in accordance with the procedures / requirements appropriate to the circumstances of the project.

Sub-contractors are responsible for removing their own hazardous waste, e.g. used spill kits, used aerosols etc. Russells can provide a facility for hazardous waste collection if requested by the sub-contractor. Hazardous waste must NOT be placed in any general skip.

Russells and its sub-contractors will ensure that when waste changes hands, a transfer note/ticket is completed, in duplicate, and signed by both parties. A member of Russells Project Management team will complete a Russells waste transfer note which will be kept for a minimum of 2 years. Sub-contractors producing waste and responsible for removing their waste will be required to provide a compliant Waste Transfer Note in accordance with current legislation.

All those who produce or handle wastes from demolition, earthworks and construction activities have legal responsibilities – Duty of Care – for its safe keeping, transport and subsequent recovery or disposal. Failure to comply can result in an unlimited fine.

Duty of Care is a legal requirement under Section 34 of the Environmental Protection Act 1990. Detailed requirements for waste transfer notes are set out in The Waste (England and Wales) Regulations 2011.

A Site waste management plan (company policy albeit not a legal requirement) will be produced and will be reviewed and updated on a regular basis detailing all waste on the project. Copies of all relevant waste carriers' licences, waste management licences and waste transfer notes will be obtained.

Russells and its sub-contractors will ensure that when hazardous waste (as defined in EWC (European Waste Catalogue) code - within parts 2 to 6 of this guide) is removed from site that the following actions take place:

- A consignment note must accompany the waste in accordance and comply with the Hazardous Waste Regulations 2009 (England and Wales) and be completed and signed as dictated by the form
- All hazardous waste consignment notes will be kept for a minimum of 3 years

Waste materials fall into two categories for management, these are:

- Re-use
 - If surplus materials can be used in the permanent works they are classified as materials, which have been re-used. If they are surplus to requirements and need to be removed from site and they can be removed and used in their present form, they can be removed from site for reuse.
 - Where waste is re-used, the appropriate Waste Exemption permit must be applied for.
- Recycle
 - If the surplus material cannot be re-used in its present form but could be used in a different form, it is sent for recycling.
 - Surplus or waste materials arise from either the materials imported to site or from those generated on site.
 - Imported materials are those which are brought to the project for inclusion into the permanent works.
 - Generated materials are those which exist on the project such as topsoil, sub-soil, trees and materials from demolition works etc.
 - All items that are recyclable for example paper, plastics, glass, metals etc. will be identified in the Site Waste Management Plan.

8.1. Segregate

Where possible and site constraints permit, an active programme will be implemented of segregating waste on site into the following main categories:

- Mixed
- Metal
- Wood
- Packaging
- Gypsum

Wherever possible, all non-environmentally safe materials will be eliminated and replaced with environmentally friendly and sustainable materials.

8.2. Site Waste Disposal

All work will produce waste. The Company in its efforts to reduce the unnecessary need to use landfill will follow the following procedures:

- Site Management will ensure that all materials that can be re-used are separated and reused (as many times as possible) where possible.
- All materials that can be recycled are segregated into separate containers/skips, stored and removed by an Environmental Agency approved waste contractor for processing and recycling at an Environmental Agency licenced recycling plant.
- The use of landfill facilities will be kept to a minimum.
- Site Management will keep a record of all waste movement to landfill.
- The Company Health, Safety Environmental Manager will check, as part of their visit, what is being placed into the skips for disposal.
- Plaster board and Gypsum based products are not to be disposed of in general mixed waste skips/containers.

9. Noise Control

Russells and its sub-contractors will ensure that, where reasonably practicable, nobody on site is exposed to noise exceeding occupational action levels in compliance with the Control of Noise at Work Regulations 2005. Noise level requirements will be assessed by following the hierarchy of controls prior to commencement of works. The Health, Safety and Environmental Department will advise the Project team accordingly.

Under Section 60 and 61 of the Control of Pollution Act 1989 permissible levels of environmental noise may have been stated by the local authority, in this instance the levels stated will be adhered to.

On completion of the noise assessment Russells and its sub-contractors will provide relevant information, instruction and training to employees at risk from excessive noise levels.

Noise nuisance pollution will be controlled using the appropriate means to prevent nuisance in accordance with BS.5228 – 2:2009 - Sound suppressed equipment etc.

All Russells directly employed site-based personnel will be issued with suitable hearing protection if and when required.

10. Vibration Control

Russells and its sub-contractors will, through the careful planning and design of the works, take reasonable steps to eliminate the need for vibrating tools and equipment to be used on site. Where this cannot be achieved equipment suppliers will be required to provide adequate information to allow Russells or its sub-contractors to carry out a suitable risk assessment. Affected personnel will be trained on vibration reduction techniques and, where appropriate, included in a health surveillance scheme.

Completed Vibration Exposure from Powered Hand Tools Assessments will be recorded by Russells and its sub-contractors together with a daily record that operatives have not exceeded the 'exposure limit value' while on site.

The Site Management and sub-contractors will select the best tool for the task at hand with strict consideration to the reduction and time in use of the equipment.

11. Dust & Fumes

All operations will be assessed for the generation of dust, particularly silica and suitable safe systems of work will be implemented prior to any work commencing. A hierarchy of controls will be implemented and the effectiveness of control measures will be maintained throughout the duration of the specific activity being carried out. If dust is generated, then suppression or extraction methods will be employed. If, as a last resort, PPE is to be used employing respiratory protection then masks to at least PP3 level of protection must be used. All personnel using respiratory protection must have been face fit tested (a standard requirement for all Russells operatives).

For further information, please refer to our Dust Control Procedure.

12. Pollution Control

A pollution control plan will be implemented on Russells construction projects. At the earliest stage possible a site survey will be carried out through a combination of desktop reviews of plans, site drawings, contract documents and review of local authority information and by a site walkover for a physical check. The desktop survey will identify if any technical surveys will be required, such as noise, ecology and contaminated land surveys, etc. The source-pathway-receptor model will be used to identify the site risks. Suitable pollution prevention measures will be put in place to the following:

- Flooding
- Silt
- Fuel

- Chemicals / COSHH
- Dust
- Fumes
- Noise
- Vibration
- Ecology

13. Ecology

Suitable control measures will be implemented to protect the natural habitat in accordance with current legislation. Control measures identified by specialists, such as Ecologists or Geotechnical Consultants, will be implemented where required on Russells projects.

Russells will comply with any requirements in accordance with The Wildlife & Countryside Act 1981 to protect animals, plants and habitats.

14. Emergency Response

Emergency spill response kits will be made available on all construction sites and located in appropriate areas such as near fuel stores, in mobile bowzers and at refuelling locations. In any pollution event, Russells Head of Environmental must be notified.

Any spillages or pollution incidents should be reported in line with the Accident Reporting Procedure. There is no minimum volume figure above which a spill must be reported.

When an incident threatens which may lead to potential pollution or a prosecution, it is essential that such potential occurrences are properly anticipated and planned for at an early stage and addressed within the Emergency Response Plan (F-HS033).

Appendix 4

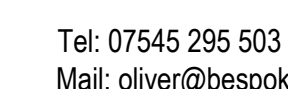
- *Scaffold Drawings*



DRAWING STATUS

APPROVAL DRAWING

SUBJECT TO APPROVAL

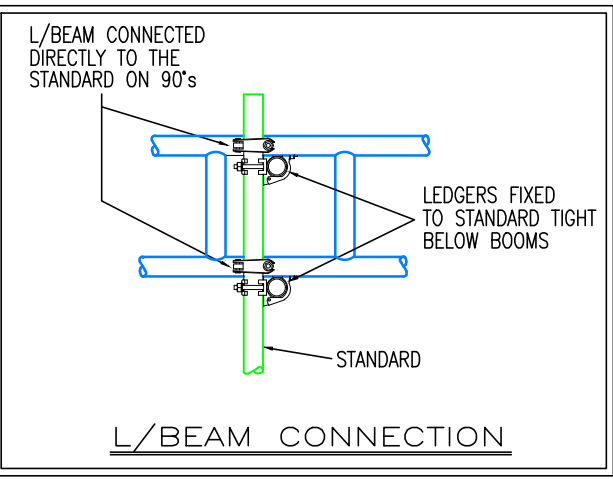
[illegible]

ALL ELEVATIONS REQUIRED TO THE PERIMETER OF THE BUILDING ABOVE THAT AS
DETAILED ON ELEVATION A - A ARE TO FOLLOW THE SAME PARAMETERS AS THIS
DETAIL.
PARAMETERS OF THE DESIGN - AS NOTED IN THE GENERAL NOTES BELOW.

GENERAL NOTE
DUE TO THE NATURE OF THE TEMPORARY ROOF IT CANNOT BE
GUARANTEED TO BE 100% WATERTIGHT

BRACE ALL STANDARDS
UNDER TEMPORARY
ROOF DOWN TO TOP TIE
AS PER SECTION
DETAILS

DENOTES TRANSOM BOARD SUPPORTS
MAX SPACING 1200mm
MAX OVER HANG 150mm



DENOTES STEEL 305mm LADDER BEAM

AT BRIDGED DETAIL
TOP CHORD LACING TUBE AT MAXIMUM 1.00m c/c
BOTTOM CHORD LACING TUBE AT MAXIMUM 2.00m c/c
PLAN BRACE TOP CHORD USING LOAD BEARING COUPLERS AT MAX 1.00m c/c (to match lacing tube)

ANY BACK PROPPING
REQUIREMENT TO BE ADVISED

ATTACH STONNE "D" SHACKLE TO
LEDGER DIRECTLY NEXT TO BRACE
AND SECURE FROM SLIDING
UTILISING A CHECK COUPLER
OR ALTERNATELY "CHOKE" THE
STRAP

DOUBLE RAKERS REQUIRES
PER FRAME ERECTED USING
RIGHT ANGLED COUPLERS

ALL STANDARDS TO SPLICED WITH 2NO SWIVELS ON EITHER SIDE OF THE
SLEEVE COUPLERS IN THE SCAFFOLD FRAMEWORK PRESENT UNDER
THE TEMPORARY ROOF SYSTEM.

ALL COUPLERS WITH THE
EXCEPTION OF BOARD RETAINING
COUPLERS TO BE CLASS B

TIES TO BE POSITIONED AT MINIMUM 4.20m INTERVALS
HORIZONTALLY FROM OUTER STANDARDS OF SCAFFOLD RETURN
AND AT EVERY FLOOR LEVEL

DENOTES DESSA 790mm DEEP
TEMPORARY ROOF SYSTEM
ERECTED IN ACCORDANCE
WITH THE USER MANUALS

ROOF SHEET
DOWN TO TOP TIE

DEBRIS NET THE OUTSIDE OF THE
SCAFFOLD FRAMEWORK FROM TOP TIE
DOWN

750 X 38mm

STAGE 1 OF SCAFFOLD ERECTION TO THIS EXTENT ONLY
SEQUENCING OF TEMPORARY ROOF ERECTION TO BE ADVISED
FURTHER ONCE THE SCAFFOLD DETAILED ONTO THE NEW ROOF
CAN BE CONFIRMED AS ACCEPTABLE
REACTION ONTO THE NEW ROOF TO BE CHECKED AND
CONFIRMED BY THE PERMANENT WORKS DESIGNER PRIOR TO
ERECTION

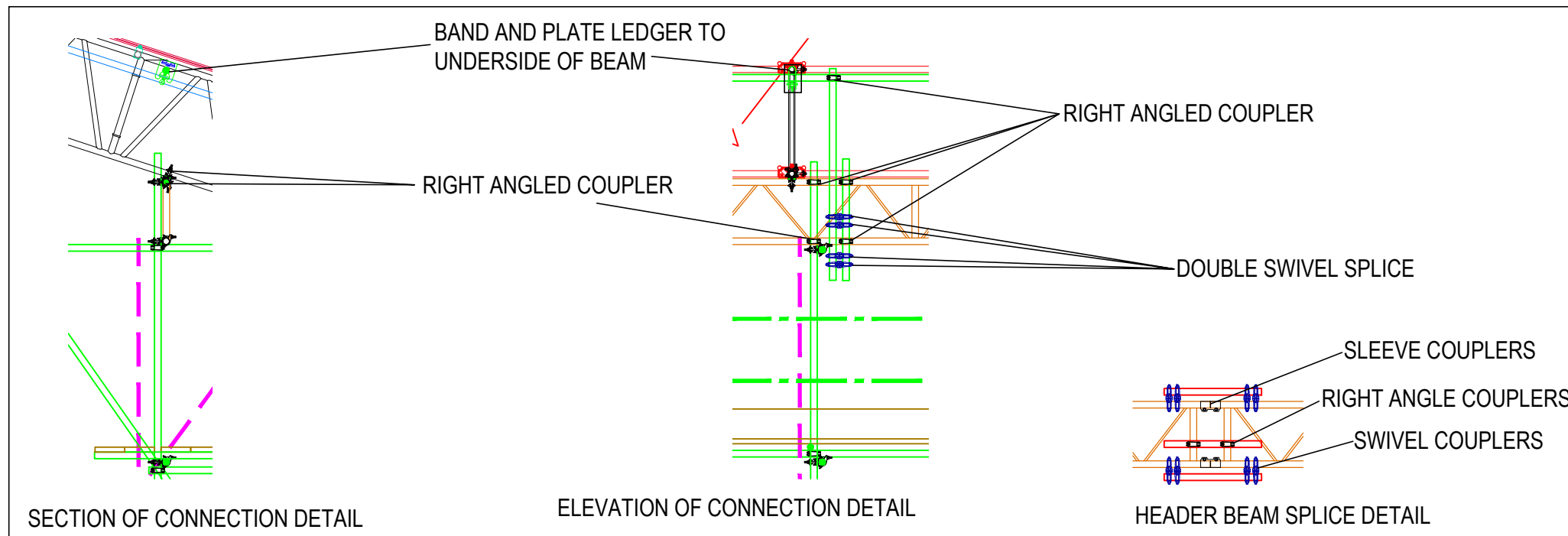
SECTION B - B

LEDGER BRACING REMOVAL - PROCESS TO BE BY SPECIFIC RISK AND
METHODS STATEMENTS DEVELOPED BY SITE MANAGEMENT TEAMS.
MAY ONLY BE REMOVED IN 1NO LIFT AT ANY ONE TIME WHEN WIND
SPEEDS ACTING ON THE STRUCTURE ARE LESS THAN 18mph.
LEDGER BRACING MUST BE REPLACED AT WIND SPEEDS ABOVE 18mph.

SECTION C - C

SECTION D - D

THE OVERALL SCHEME IS COMPRISED OF THE FOLLOWING DRAWING LIST AND ALL DRAWINGS ARE TO BE READ IN
CONJUNCTION WITH EACH OTHER AT ALL TIMES
24-BSD-1001-01-01 - PLAN VIEWS
24-BSD-1001-01-02 - SECTION VIEWS AND NOTES
24-BSD-1001-01-03 - RETENTION SECTIONS
24-BSD-1001-01-04 - ADDITIONAL ELEVATION VIEW G-G ONLY

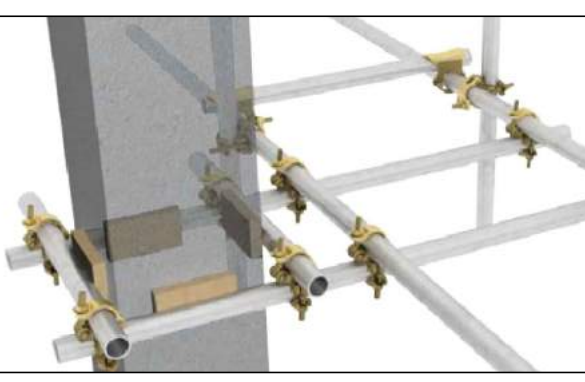


GENERAL NOTE
ALL SCAFFOLDING TO BE ERECTED IN ACCORDANCE WITH
SG04:15, THE NASC'S GUIDE TO PREVENTING FALLS IN
SCAFFOLDING.
SG04 GUARDRAILS MAY HAVE BEEN OMITTED FROM THIS
DRAWING FOR CLARITY HOWEVER THIS DOES NOT GO
AGAINST THE RESPONSIBILITY OF THE SCAFFOLDER TO
COMPLY WITH THIS GUIDANCE.

GENERAL NOTE
THE SCAFFOLD IS TO BE CLAD IN MONARFLEX SHEETING
ERECTION -
MAIN INDEPENDENT FULLY ERECTED AND SHEETED PRIOR TO
ROOF BEING SHEETED
DISMANTLE -
ROOF SHEETS REMOVED BEFORE EXTERNAL SCAFFOLD
SHEETING IS REMOVED.

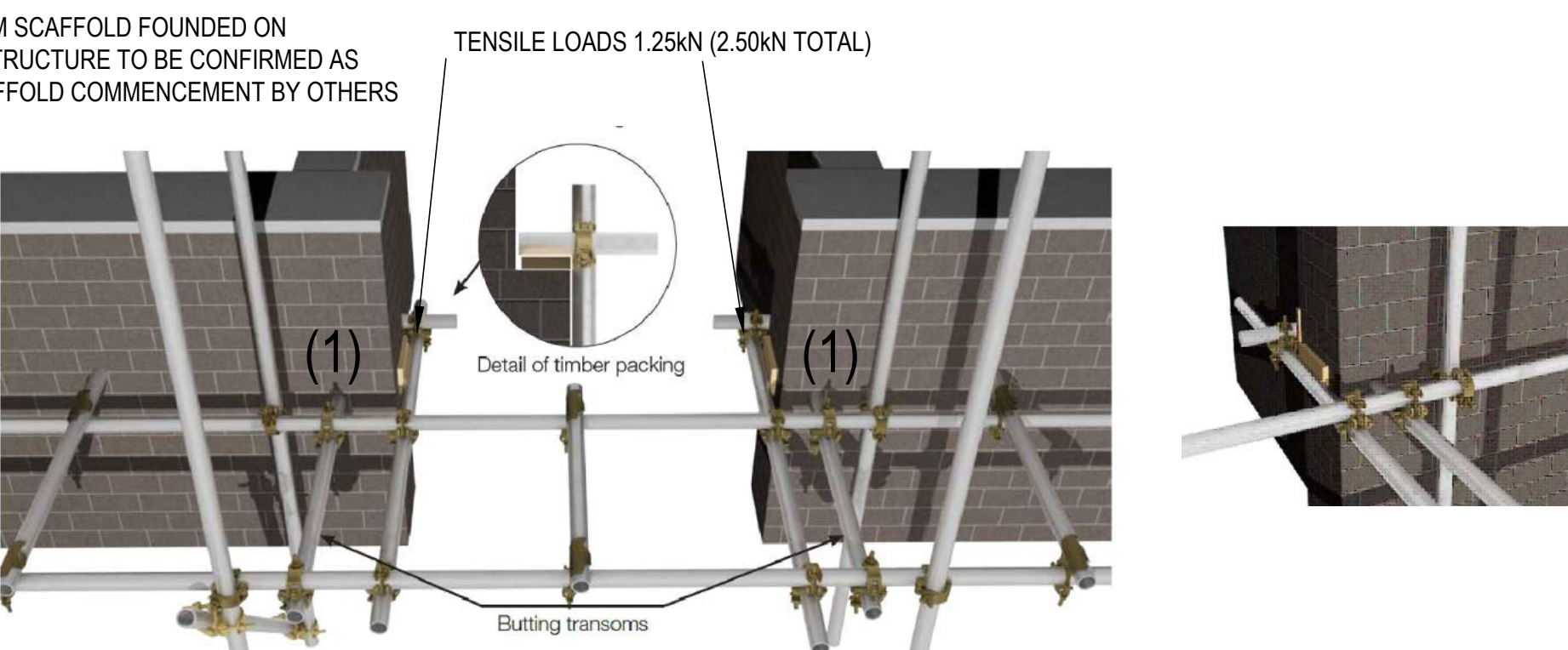
790mm BEAMS PREFERABLY TO BE CONNECTED
TOGETHER USING 3No SPIGOT PINS ON EITHER SIDE OF
JOINT
DESIGNER ACCEPTS 2No SPIGOT PINS ON EITHER SIDE
ACKNOWLEDGING AND ACCEPTING REDUCED CAPACITY OF
BEAM

DENOTES ALUMINIUM 750mm APOLLO X BEAM
AT BRIDGED DETAIL
TOP CHORD LACING TUBE AT MAXIMUM 1.00m c/c
BOTTOM CHORD LACING TUBE AT MAXIMUM 2.00m c/c
PLAN BRACE TOP CHORD USING LOAD BEARING COUPLERS AT MAX 1.00m c/c (to match lacing tube)
SECTION BRACED AT MAX 2.00m c/c (to match every other lacing tube)



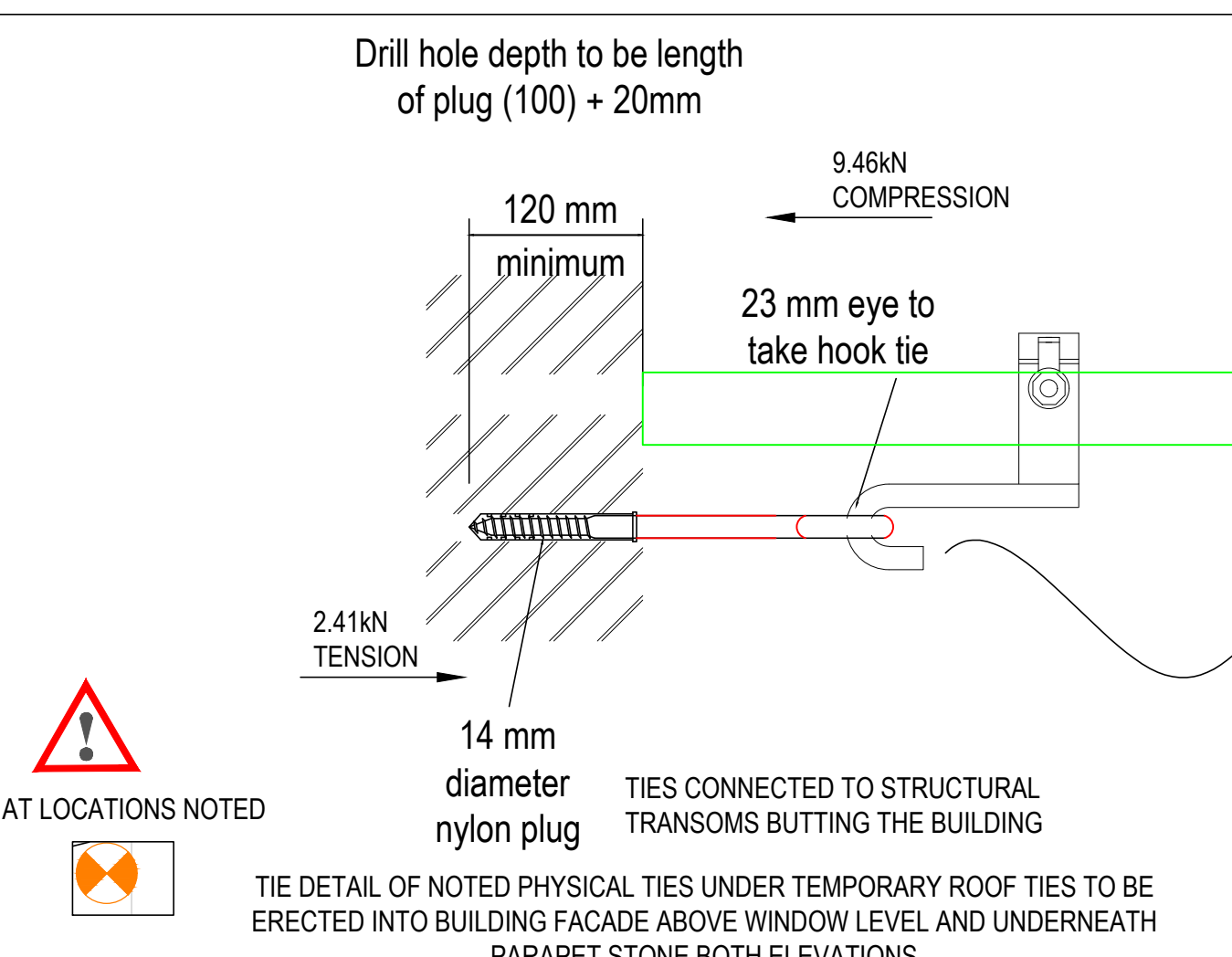
ALTERNATE BOX TIE DETAIL

POSSIBLE SURCHARGE FROM SCAFFOLD FOUNDED ON
PAVEMENT ON BASEMENT STRUCTURE TO BE CONFIRMED AS
ACCEPTABLE PRIOR TO SCAFFOLD COMMENCEMENT BY OTHERS



DETAILS OF OPPOSING LIP TIES
ALL FITTINGS TO BE RIGHT ANGLE COUPLERS AND SUITABLY PACKED AS REQUIRED.
BUTTING TRANSOMS AS NOTED (1) TO BE IN THE LIFTS ABOVE AND BELOW THE TIES AS NOTED ON SECTIONS

TIE TESTING ARRANGEMENT
5 PRELIMINARY TESTS ARE TO BE CARRIED OUT INTO THE
BASE MATERIAL TO ACHIEVE A LOAD OF 7.00kN
IF ALL PRELIMINARY TESTS ACHIEVE THE DESIRED RESULT
THEN THE TEST FREQUENCY OF THE REMAINING TIES
SHOULD BE 1 IN 20 TIES TO ACHIEVE A PROOF TEST LOAD OF
4.38kN.



AT LOCATIONS NOTED

TIE DETAIL OF NOTED PHYSICAL TIES UNDER TEMPORARY ROOF TIES TO BE
ERECTED INTO BUILDING FACADE ABOVE WINDOW LEVEL AND UNDERNEATH
PARAPET STONE BOTH ELEVATIONS

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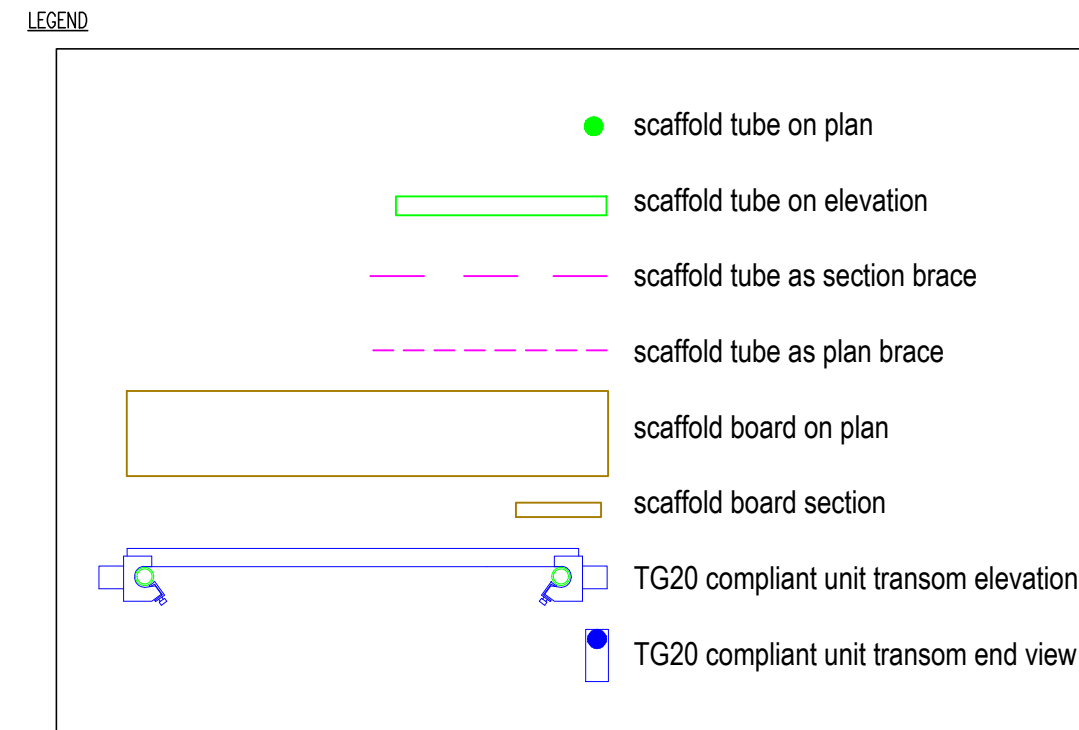
GENERAL NOTES
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approval from Bespoke Scaffold Design Ltd.
4. This drawing is to be read in conjunction with the following Bespoke Scaffold Design Ltd documents ---
Calculation Document Referencing Specific Drawing Number as Below.
5. Bespoke Scaffold Design Ltd Scheme has been prepared from the following information ---
6. Where a temporary structure, designed by Bespoke Scaffold Design Ltd, imposes loads on a permanent structure,
the client must ensure that the permanent structure is of adequate strength to resist such forces.
7. The client is to provide adequate foundations to support the loads imposed by Bespoke Scaffold Design Ltd structure
without adverse settlement or deflection.
8. Maximum force per standard = 27200 kN.
9. The Main Contractor is to assist the Scaffolding Contractor with, and agree, the setting out of Bespoke
Scaffold Design Ltd's temporary structure before erection commences.
10. The client is to ensure that no modifications are made to Bespoke Scaffold Design Ltd's structure without the
written approval of Bespoke Scaffold Design Ltd.
11. No welding, charring or any other load not specified is to be applied to Bespoke Scaffold Design Ltd's structure.
12. No meeting, service setting or any other modification shall be made to a structure produced by Bespoke Scaffold
Design Ltd unless approved and noted by Bespoke Scaffold Design Ltd.

NOTE
1. Client is to permit the scaffolding contractors scaffold to be tied to the permanent structure in accordance with BS
12811 or as indicated on this drawing.
2. Client is to ensure that no ties are removed without the approval of the scaffolding contractor.
3. All ties are to be fixed with load bearing couplers, preferably right angle couplers.
4. Where properly anchors are specified, it is assumed that the permanent structure is of suitable condition to
provide the required resistance of (one day noted) per anchor. Should this prove not to be the case, then an alternative
must be found and may be changed for.
5. Where properly anchors are used, client is to carry out making good.
6. Ties are indicated that (a) on elevation and (b) on section and plan.

DESIGN LOADS
This scaffold has been designed for the following--
Load Classification Table 2.10 T20221 - Load Class 3, Maximum number of working platforms 2No
Maximum U.D.L. Main Platform: 2.00kN/m²
Maximum U.D.L. Second Platform: 1.00kN/m²
Maximum U.D.L. Inside Boards: 0.75kN/m²
Total number of loaded lifts = As shown at floor levels.
The contractor must ensure that the loads allowed for are sufficient for the work being undertaken.

BASES OF DESIGN
This scaffold has been designed in accordance with the following--
NASC T2022 Latest Edition
BS 5975:2019+A1:2011 Code of Practice for Temporary Works Procedures & The Permissible Stress Design of Framework
BS EN 1991-1-3:2003+A1:2010 Snow Loads
BS EN 1991-1-4:2005+A1:2010 Wind Action
MATERIALS
Scaffold Tube as Type 4 Steel Tube to BS EN 362001 or BS 1139-1-1 (as per contract)
Load Bearing Scaffold Fittings to comply with BS EN 742000 Class A as a minimum (unless otherwise stated)
Scaffold Boards to BS 2482:2009 (28mm depth x 225mm width)

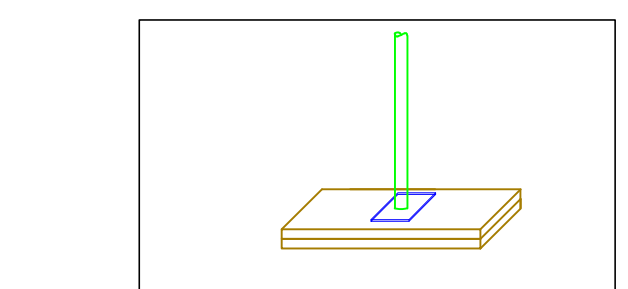
APPROVAL DRAWING
SUBJECT TO APPROVAL



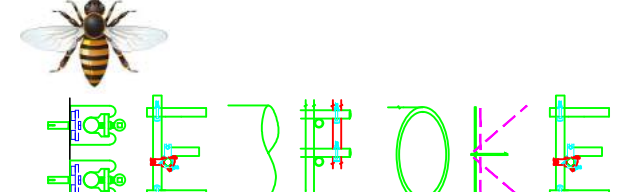
ALTERNATE TIE IF PULL TEST REQUIREMENT
IS NOT ACHIEVABLE
PHYSICALLY TIE THE SCAFFOLD USING AN
RMD 15mm RAPID TIE BAR THROUGH THE
WALL WITHIN A SCAFFOLD TUBE AS
DETAILED. CAPPED WITH THE RMD WAILER
PLATE AT EITHER SIDE.
ALL SCAFFOLD TUBE TO BUTT BUILDING FACE

ADDITIONAL DETAIL
PRIOR TO THE SCAFFOLD BEING ADAPTED AS SECTION D - D
TO ENABLE THE REFURBISHMENT WORKS TO THE PARAPET
TO BE UNDERTAKEN THE SCAFFOLD FRAME IS SECURED INTO
THE TOP OF THE PARAPET STONES WITH A BAND AND PLATE
COUPLER SECURED WITH A 12mm APOLLO BOLT TO AN
EMBEDMENT DEPTH OF 90mm
A CONTINUOUS LEDGER IS TO BE PLACED WITHIN THE BAND
AND PLATE COUPLERS WITH A BRACE ERECTED FROM THIS
LEDGER TO THE LIFT WHERE THE TEMPORARY ROOF IS
ATTACHED.

GENERAL NOTE - MAIN INDEPENDENT SCAFFOLD
BAY SIZES MAY DIFFER THAN THOSE DETAILED
MAX BAY EFFECTIVE SIZE PERMISSIBLE 1.90m
FACADE BRACING DETAILED IS INDICATIVE AND POSITIONS MAY VARY ON SITE
FACADE BRACED TO BE INSTALLED OVER 1BAYS AT EVERY SIXTH BAY.



CONFIRMATION REQUIRED BY CLIENT
THE CLIENT IS TO PROVIDE ADEQUATE FOUNDATIONS
TO SUPPORT THE LOADS IMPOSED BY THE SCAFFOLD
STRUCTURE WITHOUT ADVERSE SETTLEMENT OR
DEFLECTION.

P02	03.6.24	Issued for Comment	PB	OUT
P01	22.5.24	Issued for Comment	PB	OUT
Rev	Date	Description	Checked	Drawn
 SCAFFOLD DESIGN LTD				
7, Penryn Beach East Penryn Bay Llandudno LL30 3NT				
Tel: 07545 295 503 Mail: oliver@bespokescaffolddesign.co.uk				
Job Title Cheshire Scaffolds Ltd - Bloom Street Project				
Drawing Title Perimeter Access Scaffold and Temporary Roof System				
Scale 1:100 @ A0				
Date 22/05/2024				
Drawing Number 24-BSD-1001-01-02				
Drawn OUT				
Checked By PB				

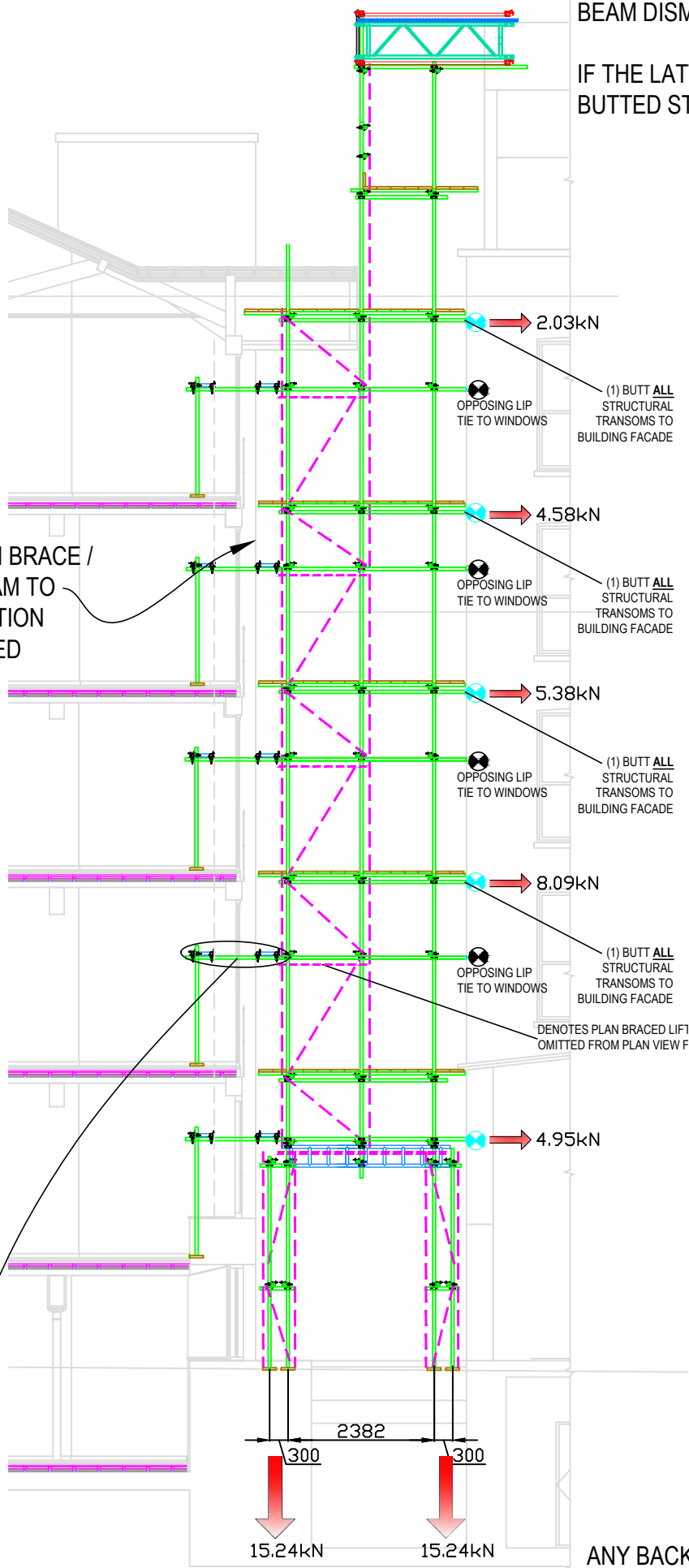
ALL WINDOWS TO BE REMOVED IN EXISTING
FACADE WHILST FACADE RETENTION IS IN SITU

SCAFFOLD INITIALLY ERECTED TIEING EACH OTHER TOGETHER USING 450mm LATTICE BEAMS
LADDER BEAMS TO SECURE EITHER SIDE OF THE WALLS OF MINDEL HOUSE AND SCAFFOLD BUTTED TO
BLOOM HOUSE.

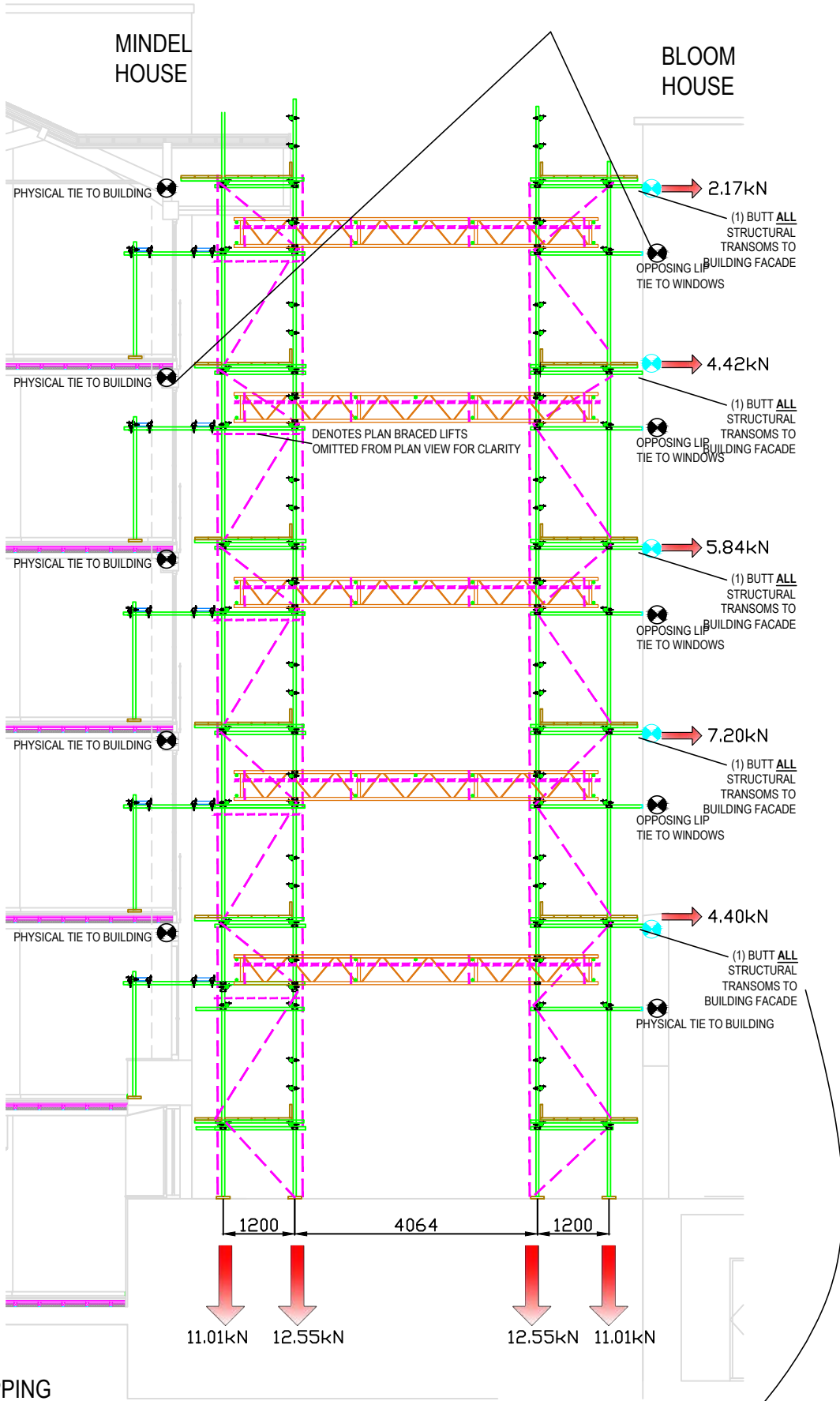
PHYSICAL AND OPPOSING LIP TIES TO BUILDING NOTED ARE REQUIRED PRIOR TO THE 450mm LATTICE
BEAM DISMANTLE

IF THE LATTICE BEAMS REMAIN THE PHYSICAL TIES NOTED ON MINDEL HOUSE MAY BE REPLACED WITH
BUTTED STRUCTURAL TRANSOMS ONCE THE LADDER BEAMS ARE DISMANTLED AND NOT REQUIRED.

DENOTES SECTION BRACE /
FROM LADDER BEAM TO
INSIDE NODE POSITION
THROUGH REMOVED
WINDOWS



SECTION E - E

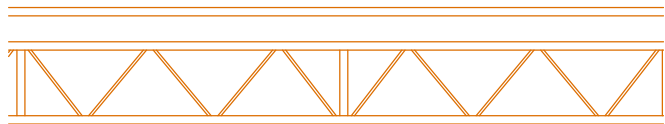
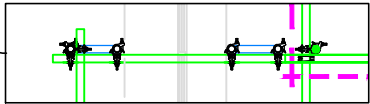


SECTION F - F

ANY BACK PROPPING
REQUIREMENT TO BE ADVISED
AND SPECIFIED BY OTHERS

(1) DENOTES SCAFFOLD STRUCTURAL TRANSOMS TO BE BUTTED TO
THE BUILDING USING APPROPRIATE PROTECTION IF REQUIRED

LADDER BEAMS FIXED TIGHT UP TO THE INSIDE OF THE
EXISTING FACADE SUPPORTED ON THE STRUCTURAL
TRANSOMS ERECTED THROUGH WINDOW POSITIONS
TIMBER PACKERS MAY BE REQUIRED DUE TO WALL
UNEVENNESS



DENOTES ALUMINIUM 450mm LATTICE BEAM

AT BRIDGED DETAIL
TOP CHORD LACING TUBE AT MAXIMUM 1.00m c/c
BOTTOM CHORD LACING TUBE AT MAXIMUM 2.00m c/c
PLAN BRACE TOP CHORD USING LOAD BEARING COUPLERS AT MAX 1.00m c/c (to match lacing tube)
SECTION BRACED AT MAX 2.00m c/c (to match every other lacing tube)



THE DESIGN ASSUMES THAT WORKS WILL TAKE
PLACE 1 FLOOR AT A TIME WITH FULL
COMPLETION PRIOR TO WORKS COMMENCING
ON AN ANOTHER FLOOR.
RESTRAINT PROVIDED AT ALL OTHER FLOORS IS
TO BE MAINTAINED AT ALL TIMES.

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GENERAL NOTES

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the following Bespoke Scaffold Design Ltd documents :-
Calculation Document Referencing Specific Drawing
Number as Below.
- Bespoke Scaffold Design Ltd Scheme has been
prepared from the following information :-
- Where a temporary structure, designed by
Bespoke Scaffold Design Ltd, imposes loads on a
permanent structure, the client must ensure that the
permanent structure is of adequate strength to resist
such forces.
- The client is to provide adequate foundations to
support the loads imposed by Bespoke Scaffold Design
Ltd structure without adverse settlement or deflection.
- Maximum force per standard = 27.50kN
- The Main Contractor is to assist the
Scaffolding Contractor with, and agree, the setting out
of Bespoke Scaffold Design Ltd's temporary structure
before erection commences.
- The client is to ensure that no modifications
are made to Bespoke Scaffold Design Ltd's structure
without the written approval of Bespoke Scaffold Design
Ltd.
- No wedging, strutting or any other load not
specified is to be applied to Bespoke Scaffold Design
Ltd's structure.
- No sheeting, debris netting or any other
materials shall be fixed to a structure provided by
Bespoke Scaffold Design Ltd unless approved and noted
by Bespoke Scaffold Design Ltd

TYPING

- Client is to permit the scaffolding contractors
scaffold to be tied to the permanent structure in
accordance with BS 12811 or as indicated on this
drawing.
- Client is to ensure that no ties are removed
without the approval of the scaffolding contractor.
- All ties are to be fixed with load bearing
couplers, preferably right angle couplers.
- Where propriety anchors are specified, it is
assumed that the permanent structure is of suitable
condition to provide the required restraint of (see dwg
note) per anchor. Should this prove not to be the case,
then an alternative must be found and may be charged
for.
- Where propriety anchors are used, client is to
carry out making good.
- Ties are indicated thus on elevation, section
and plan.

DESIGN LOADS

This scaffold has been designed for the following:-
Load Classification Table 2.10 TG20:21 - Load Class 3,
Maximum number of working platforms 1No
Maximum U.D.L Main Platform: 2.000 kN/m²
Maximum U.D.L Second Platform: 1.00 kN/m²
Maximum U.D.L Inside Boards: 0.75 kN/m²
total number of boarded lifts = 1No.
The contractor must ensure that the loads allowed for
are sufficient for the work being undertaken.

BASIS OF DESIGN

This scaffold has been designed in accordance with
the following:-
NASC TG20 Latest Edition
BS 5975:2019+A1:2011 Code of Practice for
Temporary Works Procedures & The Permissible Stress
Design of Falsework
BS EN 1991-1-3:2003+C1:2010 Snow Loads
BS EN 1991-1-4:2005A1:2010 Wind Actions
MATERIALS
Scaffold Tube as Type 4 Steel Tube to BS EN 39:2001
or BS 1139-1-1 (as new condition)
Load Bearing Scaffold Fittings to comply with BS EN
74:2005 Class A as a minimum (unless otherwise
stated)
Scaffold Boards to BS 2482:2009 (38mm depth x
225mm width)

LEGEND

- scaffold tube on plan
- scaffold tube on elevation
- scaffold tube as section brace
- scaffold tube as plan brace
- scaffold board on plan
- scaffold board section
- TG20 compliant unit transom elevation
- TG20 compliant unit transom end view

DRAWING STATUS

APPROVAL DRAWING
SUBJECT TO APPROVAL



Job Title

Cheshire Scaffolds Ltd - Bloom Street Project

Drawing Title

Perimeter Access Scaffold and Temporary Roof System
Drawing Ending 03 - Retention Area

Scaffold Contractor to arrange to print drawings on correct paper size as indicated.

Scale

1:100 @ A2

Date

22/05/2024

Drawing Number

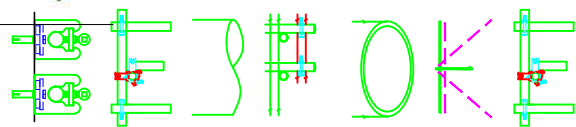
24-BSD-1001-01-03

Drawn By

OJT

Checked By

PB



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Drawing Office

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LL30 3NT

Tel: 07545 295 503

Mail: oliver@bespokescaffolddesign.co.uk

Rev	Date	Description	Checked	Drawn
P02	03.6.24	Updated to Clients Comments	PB	OJT
P01	22.5.24	Issued for Comment	PB	OJT

Job No. 24-BSD-1001.		Drawing No. 01.		
Client: Cheshire Scaffolds.		Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB		
Description: Perimeter Scaffold and Temporary Roof System.				

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7, Penrhyn Beach East

Penrhyn Bay - Llandudno - LL30 3NT

✉ oliver@bespokescaffolddesign.co.uk

Revision	Date	Status	Description
P01	22.5.24	Approval	Issued for Comment
P02	3.6.24	Approval	Updated to Clients Comments

Cheshire Scaffolds
Bloom Street Project
Manchester

Job No. 24-BSD-1001.		Drawing No. 01.	
Client: Cheshire Scaffolds.		Date: 22/05/2024.	
Site: Bloom Street Project		By: OJT	Checked: PB
Description: Perimeter Scaffold and Temporary Roof System.			



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Job No. 24-BSD-1001.		Drawing No. 01.		
Client: Cheshire Scaffolds.		Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB		
Description: Perimeter Scaffold and Temporary Roof System.				
SCAFFOLD DESIGN LTD 7, Penrhyn Beach East Penrhyn Bay - Llandudno - LL30 3NT ✉ oliver@bespokescaffolddesign.co.uk				

Wind pressure in direction 240° and at height above ground, z = 22.0 m,										+
Distance upwind to shore line	50.00 km									
Distance inside town terrain	6.00 km									
From Table NA.1 of NA to BS EN 1991-1-4: 2005+A1:2010										
Directional factor (if unknown taken as 1), C _{dir}										C _{dir} = 1.000
From 4.2 Equ 4.1 of BS EN 1991-1-4: 2005										
Basic wind velocity, V _b	V _b = C _{season} X C _{dir} X C _{prob} X V _{b,0} = 1.00 x 1.00 x 1.00 x 23.45 m/s									23.45 m/s
From 4.5, equ 4.10 of BS EN 1991-1-4: 2005										
Basic velocity pressure, q _b	q _b = 0.613 x v _b ² = 0.613 x 23.45 m/s									336.95 N/m ²
From Fig NA.7 of NA to BS EN 1991-1-4: 2005+A1:2010										
Exposure factor, c _e (z)										c _e (z) = 2.60
From Fig NA.8 of NA to BS EN 1991-1-4: 2005+A1:2010										
Exposure correction factor, c _{e,T} (z)										c _{e,T} (z) = 0.90
From 4.3.1 of BS EN 1991-1-4: 2005										
Orography factor, c _o (z)										c _o (z) = 1.00
From Fig A.NA.2 of NA. to BS EN 1991-1-4: 2005+A1:2010										
Peak Pressure, q _p										
For z < 50m, q _p = c _e (z) x ((c _o (z) + 0.6)/1.6) ² x q _b = 2.6 x ((1 + 0.6)/1.6) ² x 336.95 N/m ²										0.88kN/m ²
"In order to take account of the temporary nature of scaffold structures a statistical factor of 0.7 may be used as a multiplier on the dynamic pressure of the wind, q, in accordance with clause 6.2.7 of BS EN 12811-1"										
Therefore peak pressure =										0.61 kN/m ²

Job No. 24-BSD-1001.	Drawing No. 01.	
Client: Cheshire Scaffolds.	Date: 22/05/2024.	
Site: Bloom Street Project	By: OJT	Checked: PB
Description: Perimeter Scaffold and Temporary Roof System.		



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Penrhyn Bay - Llandudno - LL30 3NT
✉ oliver@bespokescaffolddesign.co.uk

4.0 Calculation of Snow Loads.

For persistent/transient design solutions
from cl 5.2, Equ 5.1 of BS EN 1991-1-3:2003+A1:2015

$$s = \mu_i C_e C_i S_k$$

Where:

Angle of roof, α

$$\alpha = 18^\circ$$

from Table NA.1 of NA to BS EN 1991-1-3:2003+A1:2015

Snow load shape coefficient, μ_i

$$\mu_i = 0.80$$

from Table 5.1 of BS EN 1991-1-3:2003+A1:2015 & cl NA 2.15 of NA to BS EN 1991-1-3:2003+A1:2015

Exposure coefficient, C_e

(Normal topography, recommended for all UK topographies) $C_e = 1.00$

from cl NA 2.16 of NA to BS EN 1991-1-3:2003+A1:2015

Thermal coefficient, C_i

(recommended for all UK roofing materials) $C_i = 1.00$

from cl NA 2.8 of NA to BS EN 1991-1-3:2003+A1:2015

Character ground snow load on ground, S_k

$$s_k = [0.15 + (0.1Z + 0.05)] + \left(\frac{A - 100}{525} \right)$$

from Fig NA.1 of NA to BS EN 1991-1-3:2003+A1:2015

Zone number

$$= \text{Zone 3}$$

Altitude, A:

$$= 42.0 \text{ m}$$

$$\text{Characteristic snow load on ground, } S_k = [0.15 + (0.1 \times 3 + 0.05)] + \left(\frac{42.0 - 100}{525} \right) = 0.39 \text{ kN/m}^2$$

from Note 2, Equ D.1, Annex D of BS EN 1991-1-3:2003+A1:2015

Characteristic snow load on ground return period adjustment, S_n

$$S_n = S_k \left\{ \frac{1 - V' \frac{\sqrt{6}}{\sqrt{n}} [\ln(-\ln(1 - P_n)) + 0.57722]}{(1 + 2.5923V')} \right\}$$

from table 3.1 of BS EN 1991-1-6:2005

Table 3.1 Recommended return periods for the determination of the characteristic values of climatic actions

Duration	Return period (years)
≤ 3 days	2 ^a
≤ 3 months (but > 3 days)	5 ^b
≤ 1 year (but > 3 months)	10
> 1 year	50

^a A nominal duration of three days, to be chosen for short execution phases, corresponds to the extent in time of reliable meteorological predictions for the location of the site. This choice may be kept for a slightly longer execution phase if appropriate organizational measures are taken. The concept of mean return period is generally not appropriate for short term duration.

^b For a nominal duration of up to three months actions may be determined taking into account appropriate seasonal and shorter term meteorological climatic variations. For example, the flood magnitude of a river depends on the period of the year under consideration.

Return Period, n

$$= 10 \text{ years}$$

Annual probability of exceedence, $P_n = 1 \div \text{return period}$

$$= 0.10$$

Variation of annual maximum snow load, V

$$= 0.60$$

Characteristic snow load on ground return period adjustment, S_n

$$= 0.27 \text{ kN/m}^2$$

Snow load on roof

$$= 0.22 \text{ kN/m}^2$$

Job No. 24-BSD-1001.	Drawing No. 01.		 SCAFFOLD DESIGN LTD 7, Penrhyn Beach East Penrhyn Bay - Llandudno - LL30 3NT ✉ oliver@bespokescaffolddesign.co.uk
Client: Cheshire Scaffolds.	Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB	
Description: Perimeter Scaffold and Temporary Roof System.			

5.0 Calculation of Force on Scaffold Ties (Perimeter Access) per 1.90m Bay x 3.20m Floors

Calculate Force on Tie Due to Wind on Each Tie

Calculate for worst condition tie

$F = q_p \times C_{pe} \times A_e \times C_s$, where

q_p = dynamic wind pressure

C_{pe} = The external pressure coefficient

(1.30 for sheeted scaffolds ref clause C14.2.3.4.TG20:13)

A_e = Effective area of scaffold surface.

C_s = The building factor 1.00 compression, 0.25 tension for impermeable facades

The scaffold is to be erected to an existing building therefore use 0.25 for tensile loads

$F_{\text{Compression}} = 0.61 \times 1.3 \times (3.80\text{m} \times 3.20\text{m}) \times 1.00$

$F_{\text{Compression}} = 9.64\text{kN}$

$F_{\text{Tension}} = 0.61 \times 1.3 \times (3.80\text{m} \times 3.20\text{m}) \times 0.25$

$F_{\text{Tension}} = 2.41\text{kN}$

Job No. 24-BSD-1001.		Drawing No. 01.		 SCAFFOLD DESIGN LTD 7, Penrhyn Beach East Penrhyn Bay - Llandudno - LL30 3NT ✉ oliver@bespokescaffolddesign.co.uk
Client: Cheshire Scaffolds.		Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB		
Description: Perimeter Scaffold and Temporary Roof System.				

6.0 Roofing - 750mm Trak DESSA.

Case 1	Self weight of the roofing system and covering				
Roof spacings	maximum average				2.50 m
Load per beam line			=		0.21 kN/m

7.0 Force Coefficients for Walls and Roof .

Structural Factor CsCd					
For framed building with structural walls, less than 100m high & with height less than 4 times in-wind depth CcCd taken as 1					
External Pressures					
Size Effect Factor (for external pressures), $C_s = 1.00$					
Internal Pressures					
Size Effect Factor (for internal pressures), $C_s = 1.00$					
Pressure Coefficients					
External Pressure Coefficients for duopitch roof, C_{pe}					
By linear interpolation of EN 1991-1-4:2005: A1 2010 Table 7.4a					
15°	Roof pitch (Wind Blowing in Front / Rear Direction)				
Zone	F	G	H	I	J
Case 1 (Uplift 0°)	-1.10	-0.80	-0.40	-0.50	-1.30
Ca	1.00				
C_{pe}	-1.10	-0.80	-0.40	-0.50	-1.30
Case 2 (Up / Down 0°)	+0.20	+0.20	+0.20	-0.50	-1.30
Ca	1.00				
C_{pe}	+0.20	+0.20	+0.20	-0.50	-1.30

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Client: Cheshire Scaffolds.	Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB	
Description: Perimeter Scaffold and Temporary Roof System.			

	Wind direction, 90			
Zone	F	G	H	I
Case 3 (Uplift 90°)	-1.60	-1.50	-0.60	-0.40
Ca	1.00			
Cp _e	-1.60	-1.50	-0.60	-0.40
Case 4 (Down 90°)	+0.20	+0.20	+0.20	+0.20
Ca	1.00			
Cp _e	+0.20	+0.20	+0.20	+0.20

External Pressure Coefficient, Cp_e

By linear interpolation of EN 1991-1-4:2005: A1 2010 Table 4a

Front Elevation

h/d = 0.57	Roof pitch (Wind Blowing in Side Direction)				
Zone	A	B	C	D	E
Case 7	-1.20	-0.80	-0.50	+0.74	-0.39
Ca	1.00				
Cp _e	-1.20	-0.80	-0.50	+0.74	-0.39

Side Elevation

h/d = 0.56	Roof pitch (Wind Blowing in Front / Rear Direction)				
Zone	A	B	C	D	E
Case 8	-1.20	-0.80	-0.50	+0.74	-0.38
Ca	1.00				
Cp _e	-1.20	-0.80	-0.50	+0.74	-0.38

Loaded Zones

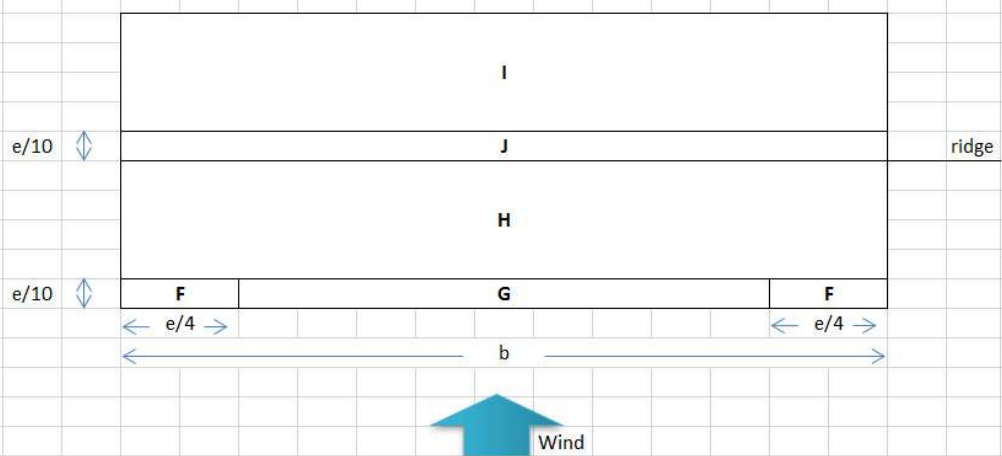
Zones over which the external pressure coefficient is assumed to be constant are defined in EN 1991-1-4:2005, Figure 7.8
Zone Dimensions defined relative to building shape as follows:

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Site: Bloom Street Project	By: OJT	Checked: PB		
Description: Perimeter Scaffold and Temporary Roof System.				

Loaded Zones

Zones over which the external pressure coefficient is assumed to be constant are defined in EN 1991-1-4:2005, Figure 7.8
Zone Dimensions defined relative to building shape as follows:

Case 2 & 3:



$e = b$ or $2h$, whichever is smaller

Crosswind dimension, $b =$ 26.00m

Length of surface parallel to the wind, $d =$ 26.10m

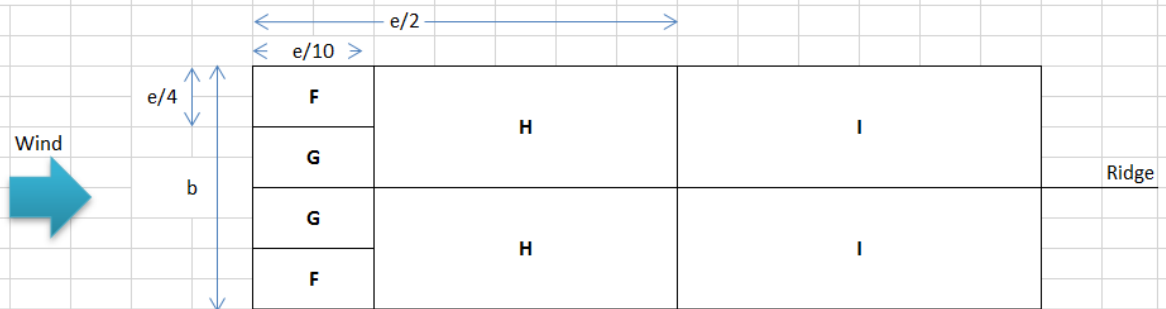
Height of building, $h =$ 24.00m

$e = b =$ 26.00m

or $e = 2h =$ 48.00m

Therefore, $e =$ 26.00m

Case 4 & 5:



$e = b$ or $2h$, whichever is smaller

Crosswind dimension, $b =$ 26.10m

Length of surface parallel to the wind, $d =$ 26.00m

Height of building, $h =$ 24.00m

$e = b =$ 26.10m

or $e = 2h =$ 48.00m

Therefore, $e =$ 26.10m

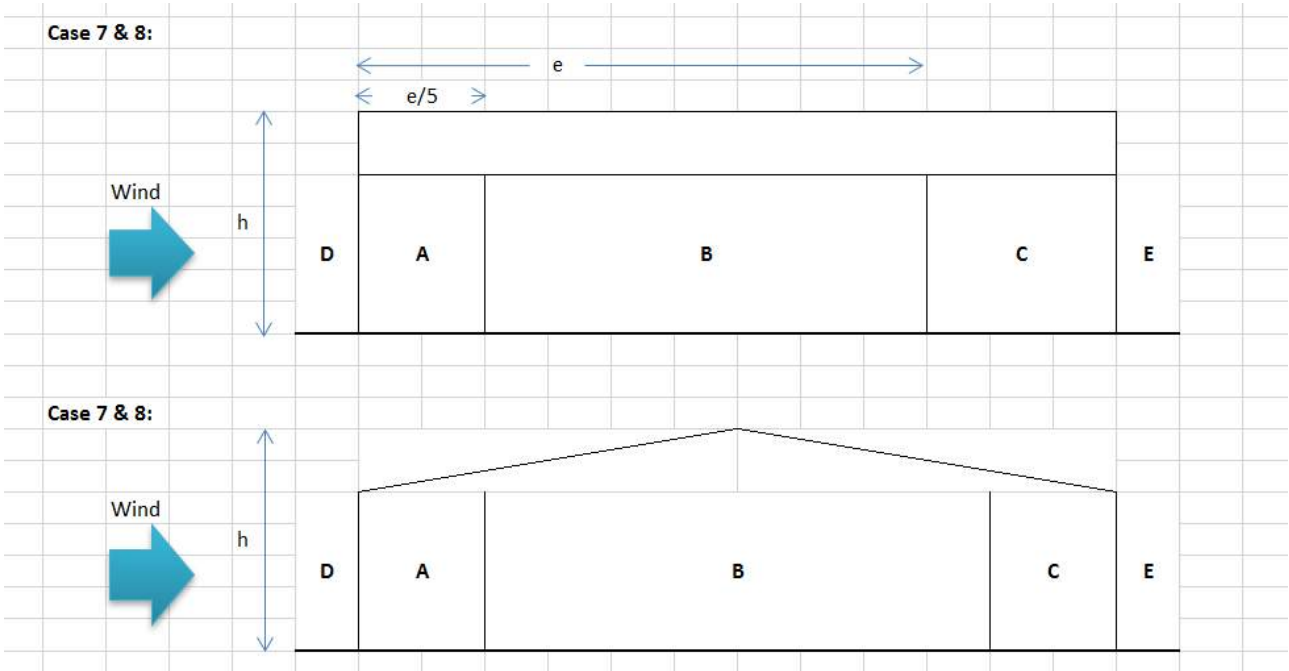
Job No. 24-BSD-1001.		Drawing No. 01.		
Client: Cheshire Scaffolds.		Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB		
Description: Perimeter Scaffold and Temporary Roof System.				

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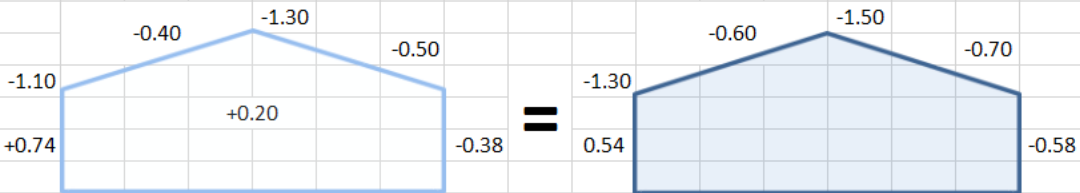


Internal Pressure Coefficient, C_{pi}

In accordance with EN 1991-1-4:2005 equation (7.3) Note 2 where it is not possible or justifiable to calculate the **opening ratio** then C_{pi} should be taken as the more onerous of **+0.2 and -0.3**

	Fig 1	Fig 2	Fig 3	Fig 4
C_a	+0.20	-0.30	+0.20	0.20
C_{pi}	+0.20	-0.30	+0.20	-0.30

Net Pressure Coefficient, $C_p = C_{pe} - C_{pi}$



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Site: Bloom Street Project	By: OJT	Checked: PB	
Description: Perimeter Scaffold and Temporary Roof System.			



Figure 2: Cp for wind at 0° (Side of the building) - Down



Figure 3: Cp for wind at 90° (Front of the building) - Uplift

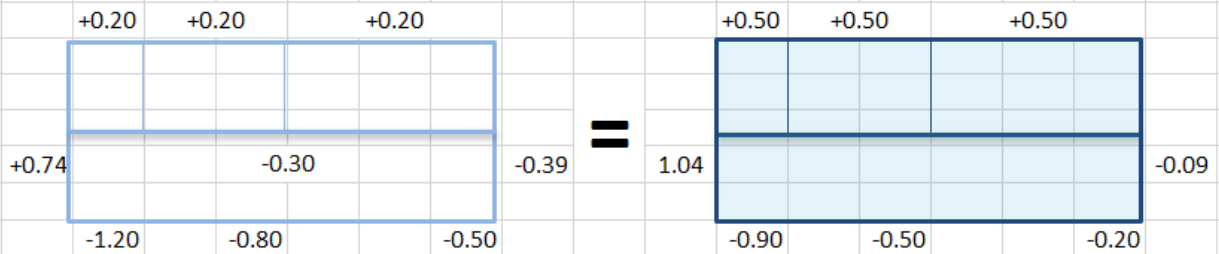


Figure 4: Cp for wind at 90° (Front of the building) - Down

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Description: Perimeter Scaffold and Temporary Roof System.			
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8.0 Loads Acting Roof.

Case 2 Wind load on roof 0 and 180 up					
Roof					
Zone	F	G	H	I	J
C _{pe}	-1.10	-0.80	-0.40	-0.50	-1.30
C _{pi}	+0.20	+0.20	+0.20	+0.20	+0.20
C _{pTot}	-1.30	-1.00	-0.60	-0.70	-1.50
Wind load	0.61 kN/m ²	0.61 kN/m ²	0.61 kN/m ²	0.61 kN/m ²	0.61 kN/m ²
UDL	-0.80kN/m ²	-0.61kN/m ²	-0.37kN/m ²	-0.43kN/m ²	-0.92kN/m ²
Load/beam	-1.99kN/m	-1.53kN/m	-0.92kN/m	-1.07kN/m	-2.30kN/m
Case 3 Wind load on roof 0 and 180 down					
Roof					
Zone	F	G	H	I	J
C _{pe}	+0.20	+0.20	+0.20	-0.50	-1.30
C _{pi}	-0.3	-0.3	-0.3	-0.3	-0.3
C _{pTot}	0.5	0.5	0.5	-0.2	-1
Wind load	0.61 kN/m ²	0.61 kN/m ²	0.61 kN/m ²	0.61 kN/m ²	0.61 kN/m ²
UDL	0.31kN/m ²	0.31kN/m ²	0.31kN/m ²	-0.12kN/m ²	-0.61kN/m ²
Load/beam	0.77kN/m	0.77kN/m	0.77kN/m	-0.31kN/m	-1.53kN/m
Case 4 Wind load on roof 90 up					
Roof					
Zone	F	G	H	I	
C _{pe}	-1.60	-1.50	-0.60	-0.40	
C _{pi}	+0.20	+0.20	+0.20	+0.20	
C _{pTot}	-1.80	-1.70	-0.80	-0.60	
Wind load	0.61 kN/m ²	0.61 kN/m ²	0.61 kN/m ²	0.61 kN/m ²	
UDL	-1.10kN/m ²	-1.04kN/m ²	-0.49kN/m ²	-0.37kN/m ²	
Load/beam	-2.76kN/m	-2.60kN/m	-1.23kN/m	-0.92kN/m	
Case 5 Wind load on roof 90 down					
Roof					
Zone	F	G	H	I	
C _{pe}	+0.20	+0.20	+0.20	+0.20	
C _{pi}	-0.3	-0.3	-0.3	-0.3	
C _{pTot}	0.5	0.5	0.5	0.5	
Wind load	0.61 kN/m ²	0.61 kN/m ²	0.61 kN/m ²	0.61 kN/m ²	
UDL	0.31kN/m ²	0.31kN/m ²	0.31kN/m ²	0.31kN/m ²	
Load/beam	0.77kN/m	0.77kN/m	0.77kN/m	0.77kN/m	
Case 6 Snow on roof					
Snow load	=	0.27 kN/m ²			
Load per beam area	=	0.27 kN/m ²	x	2.50 m	= 0.68kN/m

Job No. 24-BSD-1001.		Drawing No. 01.		
Client: Cheshire Scaffolds.		Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB		
Description: Perimeter Scaffold and Temporary Roof System.				

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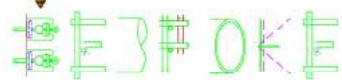
9.0 Combined Loads for Analysis.

From BS EN 1991-1-1 table NAA1.1 presents a reduction factor for load combinations the combination allows for one non leading action to be reduced by 50%										
Load										
Combination										
A	+	SELF WEIGHT	+	Wind UP CASE 2	X	1			X	1
B	+	SELF WEIGHT	+	Wind down - CASE 3	X	1			X	1
C	+	SELF WEIGHT	+	Wind down - CASE 3	X	1	+	SNOW	X	0.5
D	+	SELF WEIGHT	+	Wind down - CASE 3	X	0.5	+	SNOW	X	1
E	+	SELF WEIGHT	+	Wind UP CASE 4	X	1			X	1
F	+	SELF WEIGHT	+	Wind down - CASE 5	X	1			X	1
G	+	SELF WEIGHT	+	Wind down - CASE 5	X	1	+	SNOW	X	0.5
H	+	SELF WEIGHT	+	Wind down - CASE 5	X	0.5	+	SNOW	X	1
J	+	SELF WEIGHT					+	SNOW	X	1

Combined

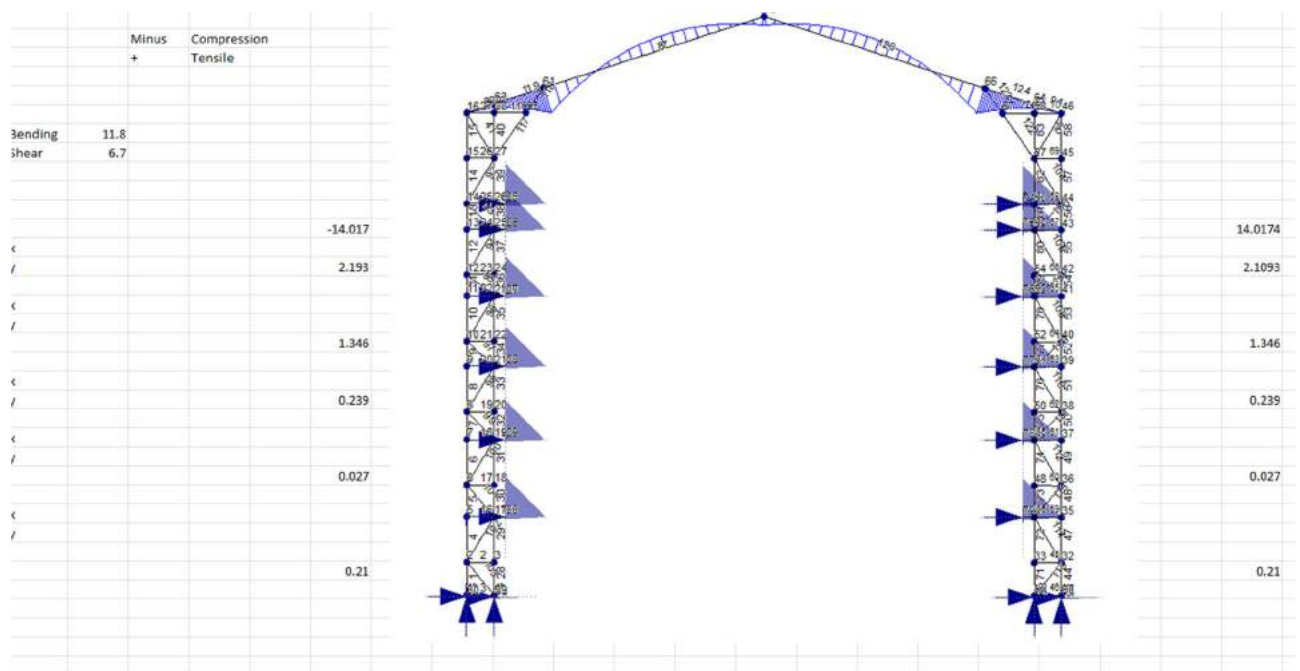
	F	G	H	I	J
A	-1.78	-1.32	-0.71	-0.86	-2.09
B	0.98	0.98	0.98	-0.1	-1.32
C	1.32	1.32	1.32	0.24	-0.98
D	1.275	1.275	1.275	0.735	0.125
E	-2.55	-2.39	-1.02	-0.71	
F	0.98	0.98	0.98	0.98	
G	1.32	1.32	1.32	1.32	
H	1.275	1.275	1.275	1.275	

Zone F Minimal Area
Zone G Minimal Area
Zone J Minimal Area
Zone H Considered

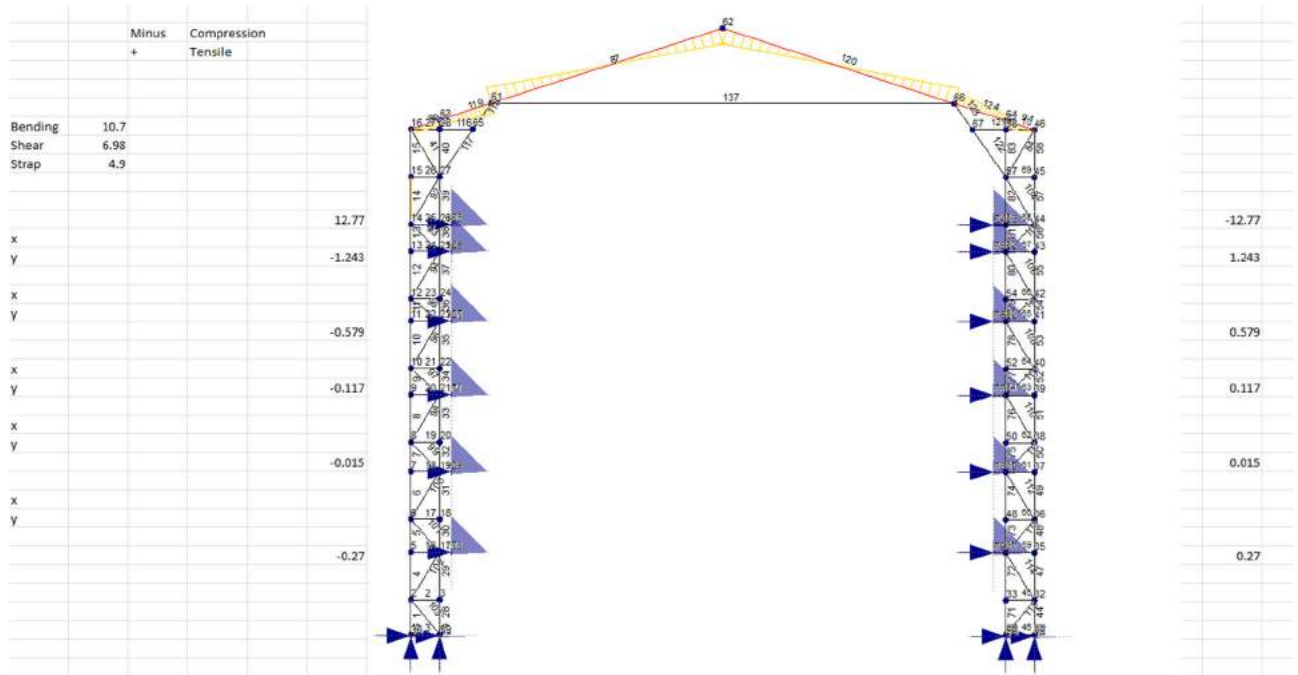
Job No. 24-BSD-1001.		Drawing No. 01.		  SCAFFOLD DESIGN LTD 7, Penrhyn Beach East Penrhyn Bay - Llandudno - LL30 3NT ✉ oliver@bespokescaffolddesign.co.uk
Client: Cheshire Scaffolds.		Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB		
Description: Perimeter Scaffold and Temporary Roof System.				

10.0 Frame Analysis Schematic for Reference.

Example below provides a visual representation of Frame Analysis Performed on Each Load combinations. Worst Conditions Shown



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Client: Cheshire Scaffolds.		Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB		
Description: Perimeter Scaffold and Temporary Roof System.				



11.0 Summary of Reaction from Analysis.

Worst Case Tensile in Tie

$12.77\text{kB} \times 10\text{No Fames} = 127.70\text{kN} / 17\text{Ties} = 7.51\text{kN per tie}$
Supplemented by Window tie Underneath.

Maximum Uplift in worst Case Standard 11.70kN Axial - Accept Splice Detail

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Site: Bloom Street Project	By: OJT	Checked: PB	
Description: Perimeter Scaffold and Temporary Roof System.			



Alternative Tying Systems Ltd
Product Information Document for
Apollobolt shear and tensile loads



Suitable substrates: Concrete, Sandstone, Brick, Concrete, Granite, and Block work.

Often suitable for: Mortar joints where the joints should be 10 mm in height. Suitable performances may be obtained into 12 mm thick joints or into the lower tee section of joints. Contact Apollo technical services for further advise and information.
For scaffolding applications see pages 8 and 9 of our catalogue 2015 edition 1.

On site and in house tests. Summary of performances obtained.

Average failure tensile load performances: 12 mm diameter anchors

Material	Strength / style	Embedment mm	Size mm	Average loads* kN
1. Common Brickwork	Single Skin	90	12 x 100	8-10
2. Weathered Brickwork	Double skin	140	12 x 150	14

Shear load performances: 12 mm diameter anchors

1. Weathered, with facial cracking: assumed to be low density	Double skin	120	12x130	10
2. Solid Brickwork	Double skin	120	12x130	12
3. Engineering Brickwork	Double skin	120	12x130	14
4. Engineering Brickwork	Single skin	90	12x100	13
5. Red stock Georgian brick	Double skin	120	12x130	12
6. Common brick, 1930-1950	Single skin	102	12x130	9

***Apply a factor of safety to all of the above performances.**

For scaffolding applications due to the simplicity of the installation a safety factor of 1.5-2 is often considered suitable.

The performance of an Apollobolt into low density substrates will be enhanced by controlling the position of the top of the thread. When allowed every Apollobolt has 100 mm of thread.

Installing a 130 mm long Apollobolt into brickwork or mortar will mean the closest the thread will be to the face of the substrate will be 20 - 25 mm dependent on bracket thickness.

By positioning the first part of the thread deeper into the hole means that tensile loads are not being applied to the face of the mortar / structure were through weathering it is often at its weakest.

On single skin brickwork 20 -25 mm of the Apollobolt will be inside the cavity.

12.0 Check on Retained Gable of Mindel House

The client has a requirement for a façade retention scaffold to be erected to an area of existing façade on Mindel House on the gable between the 2 buildings. The scaffold is to be erected in tube and fitting utilising the window locations to bridle ladder beams to the brickworks to sandwich the existing façade to the scaffold frameworks.

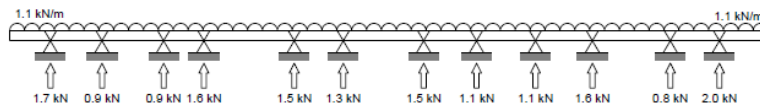
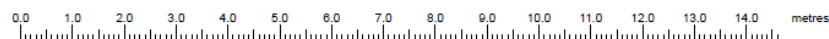
Façade Loads as supplied by the client

Job No. 24-BSD-1001.		Drawing No. 01.		
Client: Cheshire Scaffolds.		Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB		
Description: Perimeter Scaffold and Temporary Roof System.				
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Max of 1(a)-1(b)	
Level	Max. Total UDL at level (+/- kN/m)
6	1.1
5	2.6
4	2.9
3	4.6
2	2.7
1	2.2

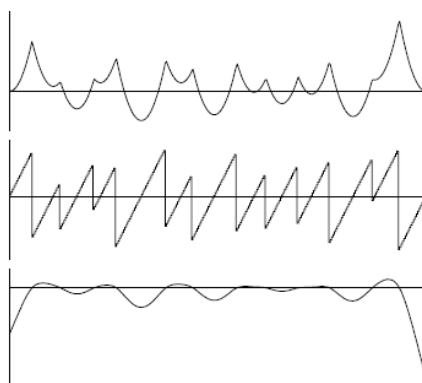
13.0 Check on Ladder Beam as Retention Connections to the Scaffold

Level 6



Section : Ladder Beam

Bending Stiffness, $EI = 4389 \text{ kNm}^2$ Shear Stiffness, $GA = (\text{Not Included})$ Self-Weight, $w = 0.132 \text{ kN/m}$



Bending Moment :

Largest Positive = +0.198 kNm

Largest Negative = -0.474 kNm

Shear Force :

Largest Positive = +1.02 kN

Largest Negative = -0.95 kN

Deflection :

Largest Positive = +0.1 mm

Largest Negative = 0.0 mm

Level 5

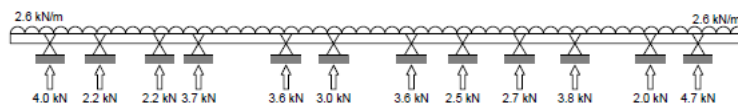
Job No. 24-BSD-1001.		Drawing No. 01.		
Client: Cheshire Scaffolds.		Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB		
Description: Perimeter Scaffold and Temporary Roof System.				

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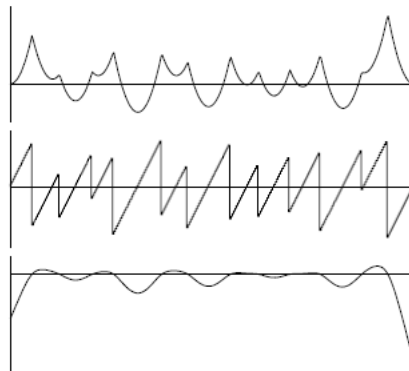
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Section : Ladder Beam
Bending Stiffness, $EI = 4389 \text{ kNm}^2$ Shear Stiffness, $GA = (\text{Not Included})$ Self-Weight, $w = 0.132 \text{ kN/m}$

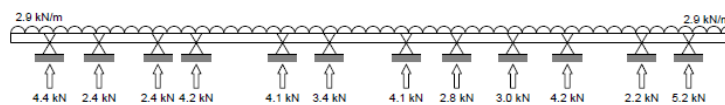


Bending Moment :
Largest Positive = +0.47 kNm
Largest Negative = -1.12 kNm

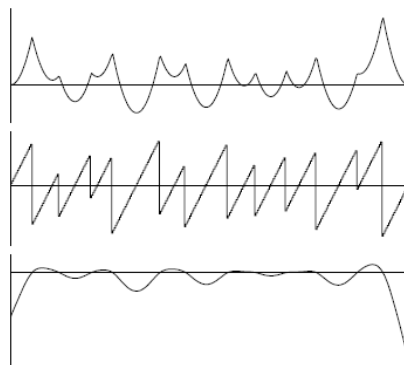
Shear Force :
Largest Positive = +2.41 kN
Largest Negative = -2.24 kN

Deflection :
Largest Positive = +0.1 mm
Largest Negative = 0.0 mm

Level 4



Section : Ladder Beam
Bending Stiffness, $EI = 4389 \text{ kNm}^2$ Shear Stiffness, $GA = (\text{Not Included})$ Self-Weight, $w = 0.132 \text{ kN/m}$



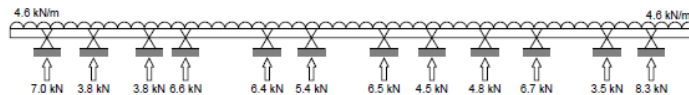
Bending Moment :
Largest Positive = +0.52 kNm
Largest Negative = -1.25 kNm

Shear Force :
Largest Positive = +2.69 kN
Largest Negative = -2.50 kN

Deflection :
Largest Positive = +0.1 mm
Largest Negative = 0.0 mm

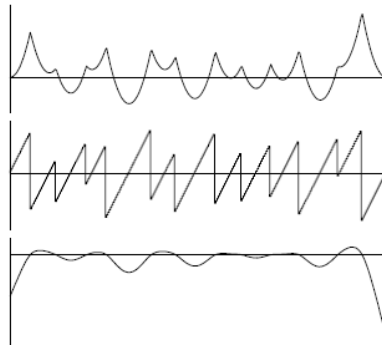
Level 3

Job No. 24-BSD-1001.		Drawing No. 01.		
Client: Cheshire Scaffolds.		Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB		
Description: Perimeter Scaffold and Temporary Roof System.				
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Section : Ladder Beam

Bending Stiffness, $EI = 4389 \text{ kNm}^2$ Shear Stiffness, $GA = (\text{Not Included})$ Self-Weight, $w = 0.132 \text{ kN/m}$

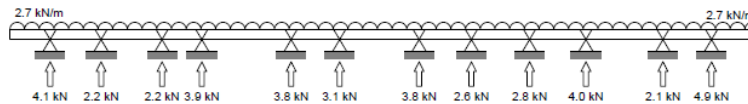


Bending Moment :
 Largest Positive = +0.83 kNm
 Largest Negative = -1.98 kNm

Shear Force :
 Largest Positive = +4.26 kN
 Largest Negative = -3.96 kN

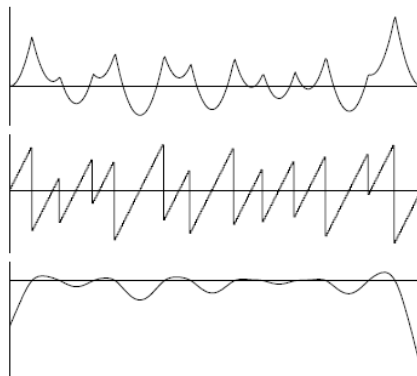
Deflection :
 Largest Positive = +0.2 mm
 Largest Negative = 0.0 mm

Level 2



Section : Ladder Beam

Bending Stiffness, $EI = 4389 \text{ kNm}^2$ Shear Stiffness, $GA = (\text{Not Included})$ Self-Weight, $w = 0.132 \text{ kN/m}$



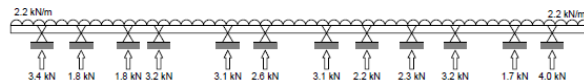
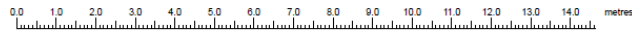
Bending Moment :
 Largest Positive = +0.48 kNm
 Largest Negative = -1.16 kNm

Shear Force :
 Largest Positive = +2.50 kN
 Largest Negative = -2.33 kN

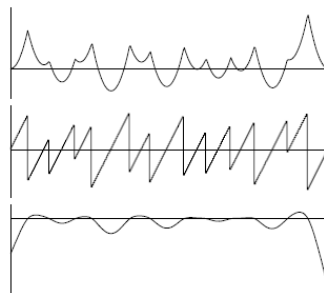
Deflection :
 Largest Positive = +0.1 mm
 Largest Negative = 0.0 mm

Level 1

Job No. 24-BSD-1001.		Drawing No. 01.		
Client: Cheshire Scaffolds.		Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB		
Description: Perimeter Scaffold and Temporary Roof System.				
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Section : Ladder Beam
 Bending Stiffness, $EI = 4389 \text{ kNm}^2$ Shear Stiffness, $GA = (\text{Not Included})$ Self-Weight, $w = 0.132 \text{ kN/m}$



Bending Moment :
 Largest Positive = +0.395 kNm
 Largest Negative = -0.947 kNm

Shear Force :
 Largest Positive = +2.04 kN
 Largest Negative = -1.90 kN

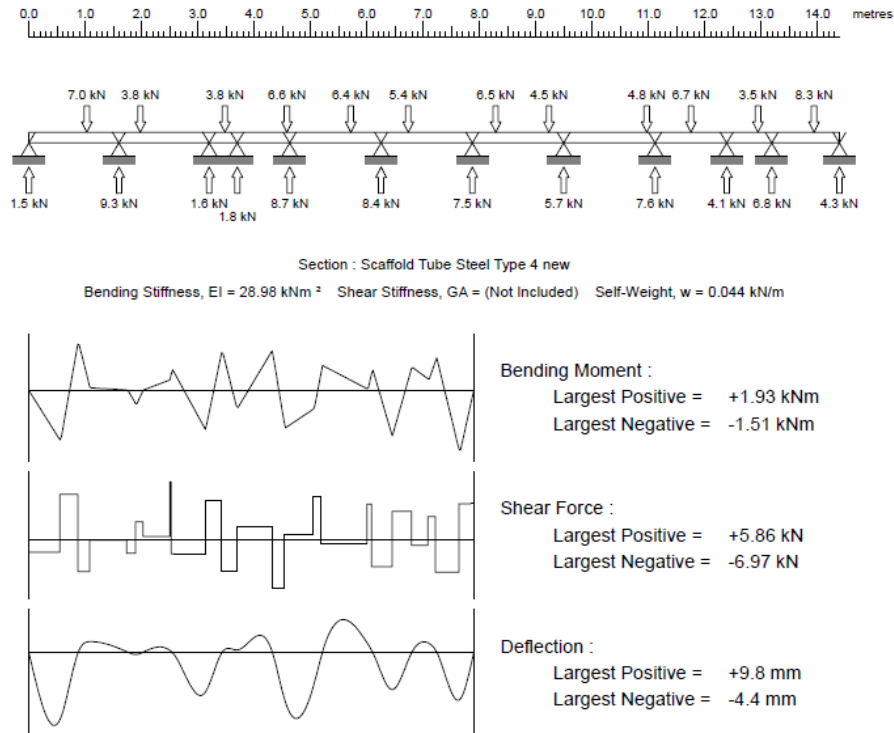
Deflection :
 Largest Positive = +0.1 mm
 Largest Negative = 0.0 mm

Summary	Connection to scaffold	
Level 6	2 kN	
Level 5	4.7 kN	
Level 4	5.2 kN	
Level 3	8.3 kN	
Level 2	4.9 kN	
Level 1	4 kN	
Max Bending	1.98kN.m	
Max Shear	4.26kN	
With reference to Appendix A Accept		

Job No. 24-BSD-1001.	Drawing No. 01.		
Client: Cheshire Scaffolds.	Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB	
Description: Perimeter Scaffold and Temporary Roof System.			
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14.0 Check on Ladder Beam Connected Back to Ledger of Scaffold

Ledger Check - Worst condition level 3 only considered as worst case

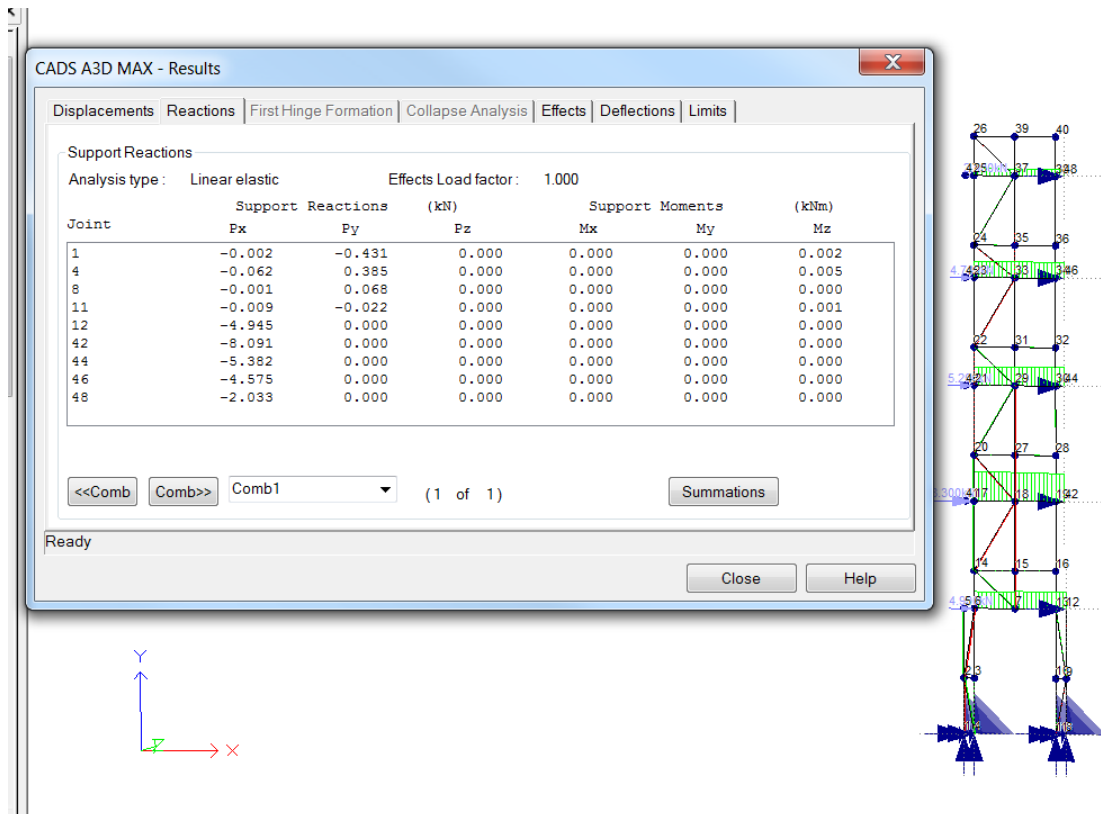


Connected to front and rear Ledger Max allowable 2.24kN.m Accept

Job No. 24-BSD-1001.	Drawing No. 01.		
Client: Cheshire Scaffolds.	Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB	
Description: Perimeter Scaffold and Temporary Roof System.			

15.0 Frame Check - Area 1 at Bloom Street Entrance to Gable

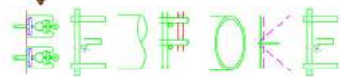
Using the Worst - Case reactions as detailed in section 14



Support	48	Level 6	2.03	kN
	46	Level 5	4.58	kN
	44	Level 4	5.38	kN
	42	Level 3	8.09	kN
	12	Level 2	4.95	kN

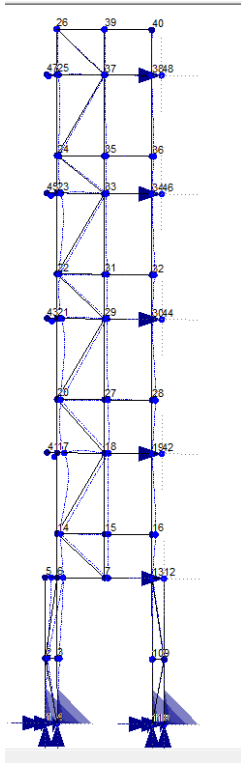
Axial Loads in Braces all < 6.10kN accept
Uplift in Inside Standards < 3.60kN accept joint Sleeves

Job No. 24-BSD-1001.		Drawing No. 01.	
Client: Cheshire Scaffolds.		Date: 22/05/2024.	
Site: Bloom Street Project	By: OJT	Checked: PB	
Description: Perimeter Scaffold and Temporary Roof System.			



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Deflection 0.3mm Accept

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Site: Bloom Street Project	By: OJT	Checked: PB
Description: Perimeter Scaffold and Temporary Roof System.		



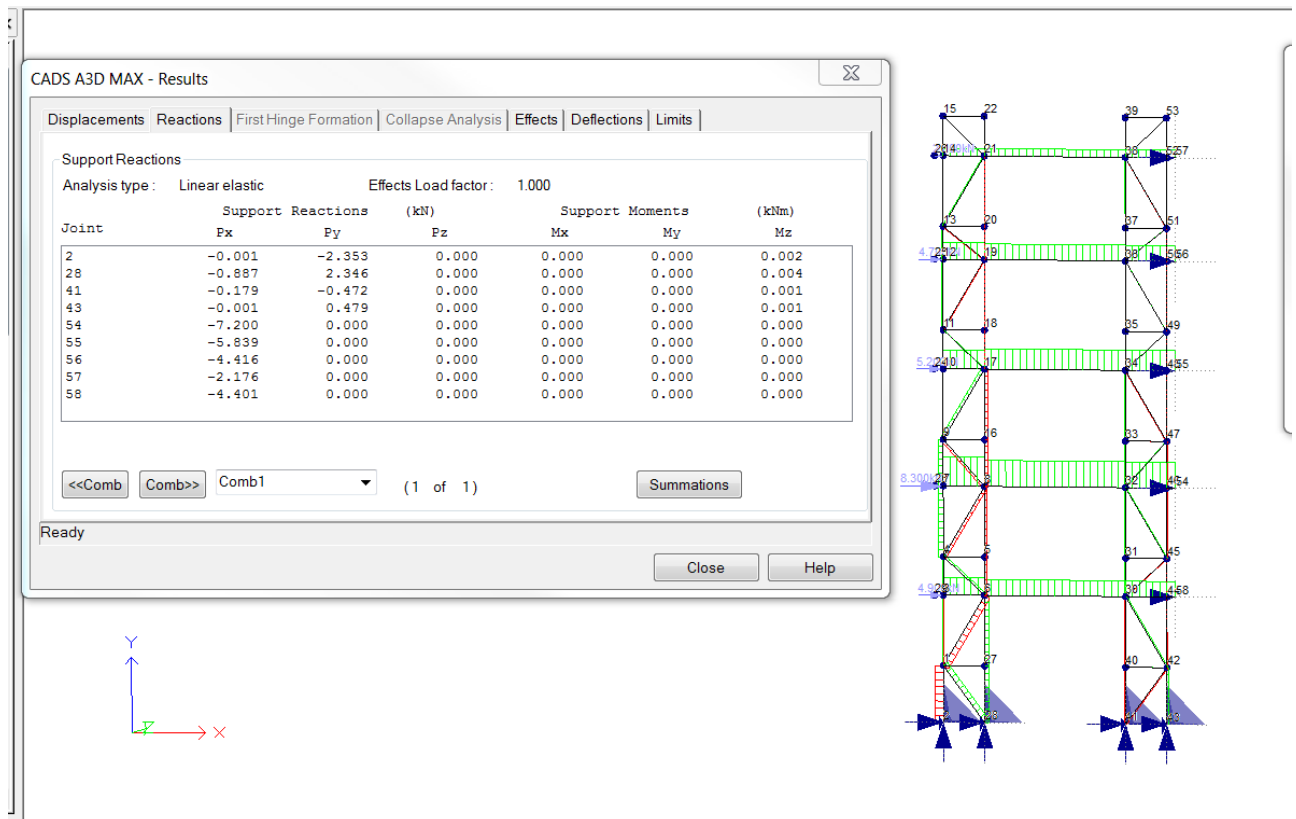
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16.0 Frame Check - Area 2 at Central Area of Gable

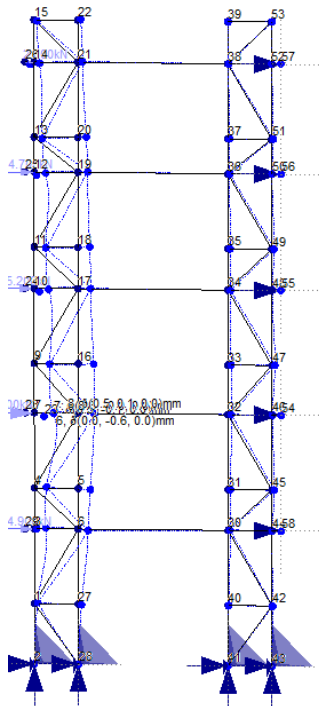


Support	57	Level 6	2.17	kN
	56	Level 5	4.42	kN
	55	Level 4	5.84	kN
	54	Level 3	7.2	kN
	58	Level 2	4.4	kN

Axial Loads in Braces all < 6.10kN accept
Uplift in Inside Standards < 3.60kN accept joint Sleeves

Job No. 24-BSD-1001.	Drawing No. 01.		
Client: Cheshire Scaffolds.	Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB	
Description: Perimeter Scaffold and Temporary Roof System.			

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Deflection 0.5mm Accept

17.0 Check On Beamed Gantry at Base

From Frame Analysis Worst Case Reaction in Standard at Base 9.80kN

Additional Self Weight 10.00kN

19.80kN at Roof Frame

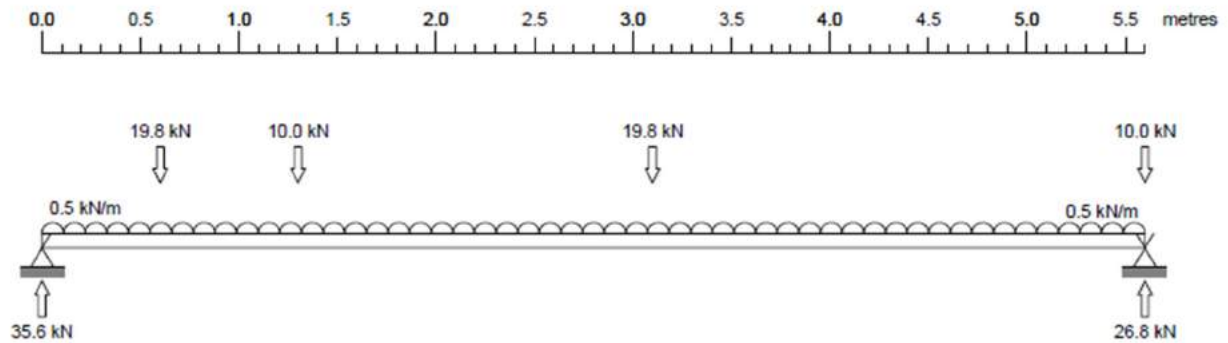
10.00kN at Intermediate Bay

Self Weight of Beams and Lacing Material 0.50kN/m for Double Beam

Check Worst Condition Span

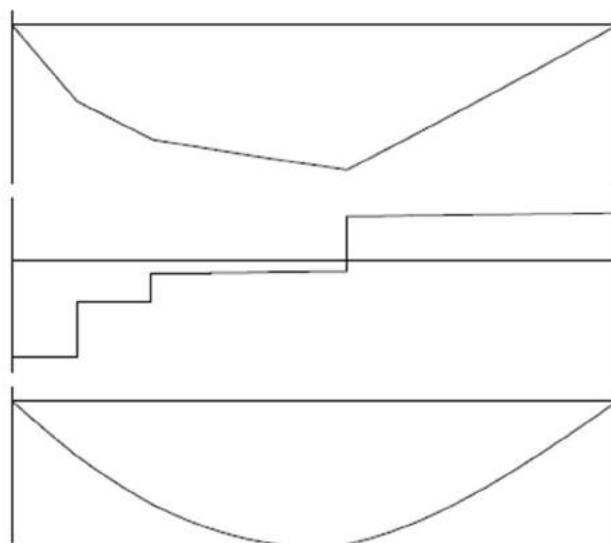
Job No. 24-BSD-1001.		Drawing No. 01.		
Client: Cheshire Scaffolds.		Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB		
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Section : X / Diamond beam

Bending Stiffness, $EI = 14000 \text{ kNm}^2$ Shear Stiffness, $GA = 32542 \text{ kN}$ Self-Weight, $w = 0.070 \text{ kN/m}$



Bending Moment :

Largest Positive = +40.4 kNm

Largest Negative = 0.0 kNm

Shear Force :

Largest Positive = +35.6 kN

Largest Negative = -16.8 kN

Deflection :

Largest Positive = +10.1 mm

Largest Negative = 0.0 mm

From the data contained in appendix A - Accept Beam

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Client: Cheshire Scaffolds.	Date: 22/05/2024.		
Site: Bloom Street Project	By: OJT	Checked: PB	
Description: Perimeter Scaffold and Temporary Roof System.			

Appendix A: Properties of common materials

Reference should always be made to original documentation

Table 1: Safe working loads of common beams			
Item	Bending Moment (kNm)	Shear Force (kN)	Self weight (kN/m)
IIS Unit Beam	27.7	13.2	0.146
IIS Ladder Beam	9.81	10 (7.85)	0.132
1000 Alloy Truss	50 (see graph)	20	0.08
Haki 750 Beam	41.3	30.6	0.08
Haki 450 Beam	15.7	12.7	
X / Diamond Beam	31.67	33.5	0.07
Apollo lattice Beam	15.7	13.9	
RMD SuperSlim	40 (major axis)	80	0.195
Kwikform Soldier	24.5 (6.75 at joint)	60kN at joint	
Alform Beam	10	40	

Table 2: Safe working loads of common couplers			
Scaffold fitting	Slipping load (kN)	Cruciform or bending (kNm)	Self weight (kg)
Mills 90°	12.5		1.3
90° Coupler (class A)	6.1	0.24	DF-1.4, CP-1.3
90° Coupler (class B)	9.1	0.48	
Mills Swivel	6.25		1.2
Swivel Coupler (class A)	6.1		DF-1.4, CP-1.3
Swivel Coupler (class B)	9.1		1.55
Sleeve Coupler (class A)	3.6	0.59	CP-1.3, HF-1.8
Sleeve Coupler (class B)	5.5	0.85	
Coupler hook tie	6.1		0.65

Table 3: Scaffold tube properties (table 17, TG20)			
Tube type / Typical values	Mass (kg/m)	Bending Moment (kNm)	Shear Force (kN)
Type 4 (BS EN 39)	4.37	1.12	29.2
BS 1139:1982	4.37	1	26.1
BS 1139-1.2: 1990 Alloy Tube	1.65	1.33	

Table 4: Properties of scaffold boards (table 18, TG20)			
Scaffold board spec.		Working Bending Moments (kNm)	
		Single board	Load uniform over a minimum of 4 Boards
BS 2482-1			
38 - 1.2	38 * 225	0.48	0.71
38 - 1.5	38 * 225	0.63	1.01
BS 2482 - 2			
	50 * 225	0.8	0.8
	63 * 225	1.3	1.3

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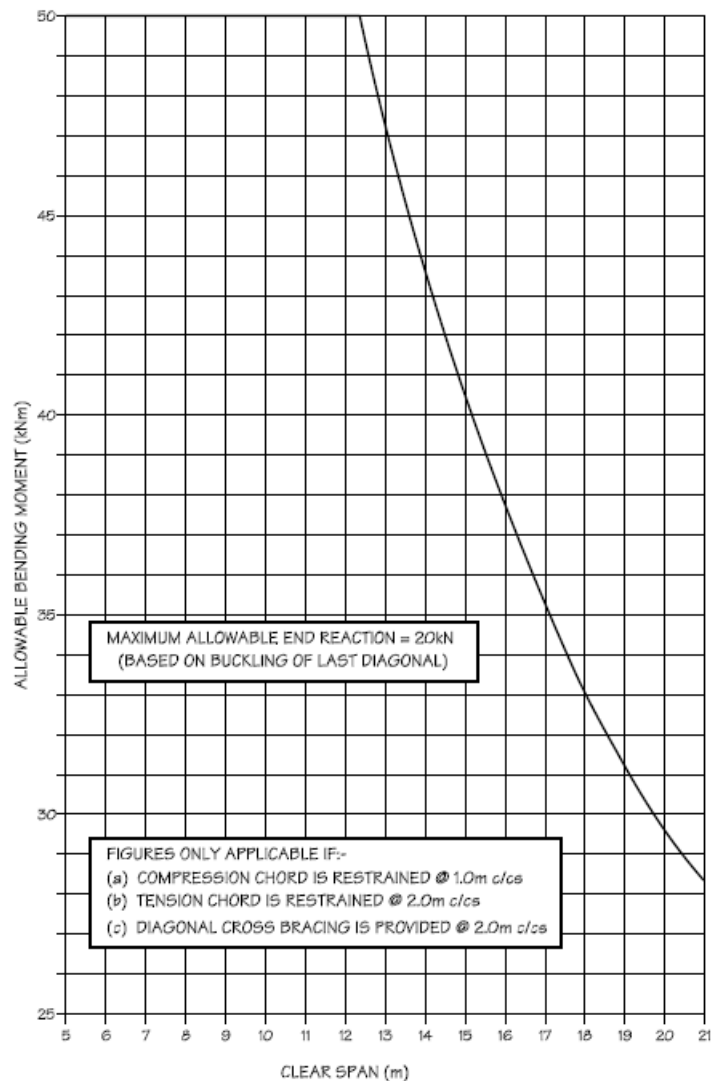
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Table 5: Safe working loads of common ties			
Care should be taken to select the correct plug for the substrate being drilled			
Substrate	Anchor type		
	Hilti HKD (M16)	Self tapping Bolt (14mm)	Plastic plug & Eyebolt
Concrete	6.1kN	6.1kN	6.1kN (70mm plug)
Concrete Block (7N)	N/A	N/A	5kN (70mm plug)
Sandstone	N/A	Advised by supplier	5kN (100 or 135 plug)
Common Brick	N/A	Advised by supplier	4.1kN (70mm plug)
Timber	N/A	N/A	3.5kN (no plug)

1.0m DEEP ALUMINIUM TRUSS STRUCTURAL PROPERTIES ITEMS 7720, 7730 & 7740



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Client: Cheshire Scaffolds.	Date: 22/05/2024.		
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Appendix B: Typical component properties

Item	Young's: kN/mm ²	Permissible bending moment : kNm	M Inertia I _{xx} : cm ⁴	M Inertia I _{yy} : cm ⁴	Permissible shear: kN
Unit Beam	210.0	27.7	8300	27.6	13.2
Ladder Beam	210.0	10.0	2090	27.6	9.81
1m Aluminium Truss	68.9	50 < 12.5m > see graph	24276	29.86	20.0 (max)
Haki 750 Beam	68.9	41.3	17182	33.59	30.6
Haki 450 Beam	68.9	15.7	4488	27.6	12.7
Apollo Beam	68.9	40.0 reduced to 80% (31.6)			33.5
Kwikform Soldier	210.0	24.5 6.75 @ joints	949		60 at joints
RMD SuperSlim	210.0	40 x-x 6.24 y-y	1916	658	
Alform Beam	68.9	10.0	558		450 38 max reaction
Megashore Beam	210.0	102.0 66 @ joint x-x 52 @ joint y-y	5981	4289	450
Ubix 78cm beam	68.9	36.5	16519.9	29.686	30.7
Ubix 45cm beam	68.9	19.6	4953.8	29.686	17.1
Scaffold Tube	210.0	1.12	13.8	13.8	29.2
Scaffold Board		0.48			

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Appendix C: Current codes of practice

BS EN12811-1: Temporary Works Equipment - Part 1: Scaffolds - Performance Requirements and General Design.

NASC: TG20:21 - Guide to Good Practice for Scaffolding with Tube and Fittings.

BS EN 1991-1-4:2005+A1:2010 - General actions - Wind actions

BS EN 1991-1-3:2003 - General actions - Snow loads

BS EN 13374: 2013 - Temporary edge protection systems - Product specification and test methods

BS 5975:2019 + A1:2011 - Code of practice for temporary works procedures and the permissible stress design of falsework

End of Document