

1. General Notes

All structural engineering drawings are to be read with the specification and with all relevant architect's and service engineer's drawings and specifications.

Do not scale from any structural engineer's drawing. All dimensions are in millimetres and levels in metres.

All water and damp proofing works to be to architect's details. Where drawings show waterproof or damp proof membranes, they are simply intended to indicate their position in relation to the structure. The membranes have been designed, specified and detailed by the architect or the manufacturers and are to be installed as shown on their drawings.

All fire protection and finishes are to the architect's details unless specifically noted otherwise.

All floor separation details and acoustic isolation are to the architect's details.

All external works, landscaping, paving etc. are to the architect's details.

Typically, all non-loadbearing partitions are omitted for clarity. Refer to the architect's drawings for details.

Abbreviations:-
CA - Contract Administrator
CJ - Construction Joint
crs - centres
EGL - Existing Ground Level
FFL - Finished Floor Level
max - maximum
min - minimum
MC - Mass Concrete
MJ - Movement Joint
MS - Mild Steel
NTS - Not To Scale
PC- Precast Concrete
RC - Reinforced Concrete
SOP - Setting Out Point
SSL - Structural Slab Level
TOC - Top of concrete
TOS - Top of steel
TOW - Top of wall
typ - typical
UNO - Unless Noted Otherwise
u/s - underside
ø - diameter

The contractor is to ensure that all construction products used have the appropriate CE accreditation, including marking and/or paperwork confirming the same.

Checking - The engineer's comments on sub-contractors drawings will centre on compliance with the design intent and exclude dimensional checks.

Existing building is listed. All proposed works are to be agree with local building authority and English heritage prior to works commencing.

Reference made to British standard specification codes of practice or other documents shall be taken to the current edition, unless another edition is specifically referred to

Contractor shall verify all site dimensions and existing details, setting out dimensions and levels with the architect. Engineer to be informed of any discrepancies before proceeding with work.

For setting out of all services intakes, RWP's, SVP's etc refer to relevant architect's and M&E detail drawings.

Where ACad/BIM or RVT files of the drawing are issued, they are provided for the convenience of others and shall not be unused for construction purposes or relied upon for accuracy or completeness

TEMPORARY WORKS:
The contractor is responsible for the design, installation and maintenance of all necessary temporary works to ensure the strength and stability of the building throughout the course of the works.
Including the verification of existing/permanent structure subjected to loads from any aspects of the temporary works

The contractor should confirm details of the person responsible for all temporary works design (called the 'temporary works designer / co-ordinator') when returning the tender.

Full design details (drawings and calculations) are required for comment by the Engineer for all temporary support systems. Three copies of all details for comment are to be issued allowing ten working days for preparation of comments by the Engineer.

All demolition / proposed works shall be undertaken in accordance with all current Health and Safety legislation by suitability qualified and experienced individuals

The contractor shall, at the outset, establish with the local authority their requirements for inspecting the works and adhere to these.

It is the Contractor's responsibility to identify all below ground services prior to carrying out the works. The Contractors must advise the design team of any clashes of existing services and proposed works at the earliest opportunity

TEMPORARY WORKS:
Stability of all excavations are the responsibility of the contractor, including any impact on surrounding structures/highways/utilities. Contractor is to develop detailed method statements to address the risk of deep excavations and possible perched ground water.

SERVICE NOTES:
The contractor shall be responsible for the diversion of the below ground services within the works zone and the protection of all below ground services within the zone of influence of the works. It is the contractors responsibility to identify all services with the various undertakers and confirm their locations to the design team prior to undertaking any work

EXISTING STRUCTURE:
The existing structural information shown on these drawings is based on visual inspection of the building and upon limited opening up works. All details of the existing construction are subject to confirmation by the Contractor during the works on site. No materials are to be ordered until the relevant details and conditions are confirmed by the Contractor on site.

All dimensions and levels are to be checked on site by the Contractor to their Sub-Contractor prior to preparing any working drawings or commencing on site

The Contractor must advise the Architect of ANY discrepancies between the contract drawings and site conditions/dimensions/levels at the earliest opportunity

CONTRACTOR DESIGN:

- The contractor is responsible for the design and installation of the following elements
- All temporary works
 - All steel connections (see section 7 STEEL notes)
 - Engineered timber, timber connections and secondary timber elements
 - RC drawings and bending schedules
 - All cladding design, including design of masonry façades, and all fixings and framework required to connect the cladding back to the primary structure
 - Masonry support steelwork, both vertically (e.g. shelf angles, lintels) and laterally (e.g. windposts) and the fixings back to primary structure
 - Architectural metalwork including handrails, balustrades and their associated fixings
 - All staircase design including all structure required to support stair off primary structural frame
 - Secondary steelwork/general metalwork, including all framing / supports / connections/fixing design into substrates for all non-structural secondary items including the following:
 - * Access ladders / walkways
 - * Builders work / supports to services
 - * Lift equipment, guiderails, lifting hooks
 - * Cleaning cradles
 - * Ceilings
 - Glazing design including all associated framework/fixings back to primary structure, including full height glazing, windows, roof lights and balustrades
 - Non-load bearing walls / partitions
 - Louvre design and fixings back to the primary structure
 - Identification, design and specification of any timber repair requirements
 - Lift design and associated secondary structure/fixings back to primary elements.

DESIGN CALCULATIONS:
A full set of indexed and referenced calculations for all sub-contractor design items, are to be submitted. To the engineer for review prior to fabrication commencing. Contractor is responsible for making all relevant submissions to building control for their design items . Calculations to include:
• Design philosophy including disproportionate collapse
• Loading assessment, including check for wind funneling
• Overall stability assessment
• Base reactions from the superstructure to the foundations
• Element designs for all of the superstructure, including manual verification of computer calculations. Racking panels loadbearing walls & cripple studs lintels joists and trimmers stairs
• Connection designs for all elements

2. Foundations

1. All existing foundations and underground obstructions within the foundation areas are to be removed to avoid hardspots developing under the new works. Live services are to be identified, protected, redirected or terminated as required.
2. Unless noted otherwise, all soil arisings generated during the installation of the proposed works are the contractors property and should be removed from site unless agreed otherwise with the deisgn team.
3. No excavation shall encroach below a 30 degree sloping line extended down from the bottom edge of any foundation unless otherwise agreed with the engineer. Where it is necessary for excavations to extend beneath the line, with the Engineer's permission, that part of the excavation below the sloping line is to be backfilled with mass concrete.
4. Reference to be made to Workspace investigation report, issued November 2023, for results of trial pit investigations to existing footings.
5. In line with DeltaSimons ground investigation report 16-0149.01 (addressing neighbouring Crusader Mill development, dated October 2017 and provided by the client for reference) there is a known risk of contamination. Any landscape design or below ground works/excavations are to take account of the recommendations in this report and the contractor is to have a suitable contamination discovery action method statement prepared.
6. All below ground works to be in accordance with BS 8004 of practice for foundations.
7. No excavation material may be used in the permanent works without prior approval from the engineer.
8. Any additional soft spots or unsuitable soils, as defined by the SI, found below the foundations to be removed and back filled with compacted 6F2 material or similar approved
9. All works to be in accordance with HSE guidance note 'HSG47: avoiding danger from underground services'.
10. If ground observed to be unstable during excavation; excavation support to be provided by contractor.

Site falls within an intermediate radon risk category (between 5-10% of homes at or above action level) as defined by UK Health Security Agency Interactive Mapping. As per BRE Report 211, basic protective measures are required. Refer to Architect for any membrane specification/extends. No site specific intrusive ground investigations have been completed to asses the presence of any other ground gasses.

3. Loading

IMPOSED LOADING:

Structural floors have been designed to carry the following uniformly distributed imposed loads in accordance with BS EN 1991-1-1:

Floor level	Imposed load (kN/m²)	Partition load (kN/m²)
Ground (retail)	4.0	
Ground (Bin Store)	5.0	
Ground (Office)	3.0	0.5
First - Fourth (office)	2.5	0.5
Roof	0.6	
Flat Roof subject to plant	2.5kN/m2 MAX	

WIND LOADING:

The global wind load used for the design of the stability system has been calculated using BS EN 1991-1-4.

The fundamental value of basic wind velocity (vb0) for the site is 22.5ms⁻¹.

The following factors from BS EN 1991-1-4 and the UK National Annex have been utilised in the generating the basic wind velocity (vb):
cdir = (1.0)
cseason = (1.0)

Cladding and roofing designers are to utilise BS EN 1991-1-4 to determine pressure coefficients and localised wind pressures for sheeting/glazing façade/masonry supports fixing to structure.

SNOW LOADING:

General snow loading has been included in roof design loadings UNO additional allowance should be made for heaping in accordance with BS EN 1991-1-3.

4. Concrete

IN SITU

Concrete to be in accordance with the specification, BS 8500: Part 2 and BS EN 206.

Concrete Elements	Grade	Cover exposed to ground water or weather (mm)	Cover not exposed to ground water or weather (mm)	Cement Replacement
Blinding	GEN1	75	50	70%
MC	GEN3	75	50	70%
RC	RC32/40	75	50	70%
Substructure				
RC Superstructure	RC32/40	50	40	50%

- Concrete finishes to be as follows:
- All formed surfaces to be Ordinary to BS EN 13670 and in accordance with the National Structural Concrete Specification (NSCS) unless noted otherwise
 - All unformed surfaces to be Basic to BS EN 13670 and in accordance with the NSCS unless noted otherwise

5. Masonry

All loadbearing blockwork is to have a minimum characteristic strength of 7.0N/mm2 U.N.O. Refer to layouts and details.
All loadbearing brickwork is to have a minimum characteristic strength of 20N/mm2 U.N.O. Refer to layouts and details.

Refer to the architect's drawings and specification for setting out of masonry, mortar types, coursing and bonding requirements and jointing details.

Lintels to be typically 100 wide with multiple lintels supplied to suit width of wall. All lintels to have minimum 150mm bearing at supports, unless noted otherwise. Lintels to be supplied by Robslee or a similar approved manufacturer.

All new non-loadbearing masonry walls are to be fixed to adjoining new or existing masonry using 'Furfix' wall starters or similar approved. Head restraint to be provided by sleeved ties or galvanised MS angles fixed to the soffit.

New loadbearing masonry walls are to be fully toothed and bonded into existing masonry. Edges of all new openings are to be made good using fully bonded new brickwork.

Where new brickwork is to be stitched into existing, cut out brickwork, to the depth shown, where cracked and as indicated on the drawings or specified by the engineer. Stitch in new brickwork to match existing set in 1:1.6 mortar. New brickwork is to be toothed into the existing providing as many fully bonded stretchers as possible. Ensure that the new brickwork is completed such that all voids within the depth of the wall are filled completely with mortar.

Brickwork below and within 150mm of ground level to be laid in mortar using sulphate-resisting cement.

Where directed on site or indicated on the drawings, buried timber set in the thickness of brick walls is to be cut out and the resulting voids infilled with solid brickwork set in 1:1.6 mortar.

Pockets for padstones etc. in party walls to be formed by carefully removing stretchers and snapping off headers where required.

6. Steel

All steelwork to be grade S355 UNO to BS EN 10025-2 and in accordance with the current edition of the National Structural Steelwork Specification (NSSS) CE Marking Version and structural engineer's specification and BS EN 1993. All Open sections and plates are to be to BS EN 10025-1. All Hollow sections (RHS / SHS / CHS / OHS) are to be "Celsius 355" sections by TATA or equivalently graded to BS EN 10210-1.

The Execution Class of the Steel Structure is EXC2 uno

Setting out of steelwork is shown to the centre of symmetric sections and to the back face of PFCs and RSAs.

The steelwork fabricator shall produce and submit two copies of dimensioned fabrication drawings to the engineer. The engineer requires ten working days to comment. The engineer's comments on drawings will centre on compliance with the design intent and exclude dimensional checks.

The fabricator is to complete the design, drawings and calculations of all connections, using design connection forces given by the engineer. All steelwork connections to existing or new, steel or concrete are to be contractor designed.

All bolted connections are to include a minimum of 2No M16 bolts per member unless specifically indicated otherwise

All bolts are to be grade 8.8 sheradized to BS 7371-8, class 30. All bolts, nuts and washers are to be to in line with the requirements of the NSSS CE Marking version. Washers are to be placed beneath the rotated item.

All welds to be minimum 6mm leg length continuous fillet welds unless specifically noted otherwise. All full and partial penetration welds to be ground down smooth.

All splices are to be designed for full strength and such that the connection does not increase the overall depth of the section unless otherwise noted on the drawings or agreed with the engineer.

For steel sheet roofs the contractor is to detail all trimmer purlins required at penetrations, hips and valleys.

For paint finishes refer to table below (Sherwin-Williams Paints or similar approved):

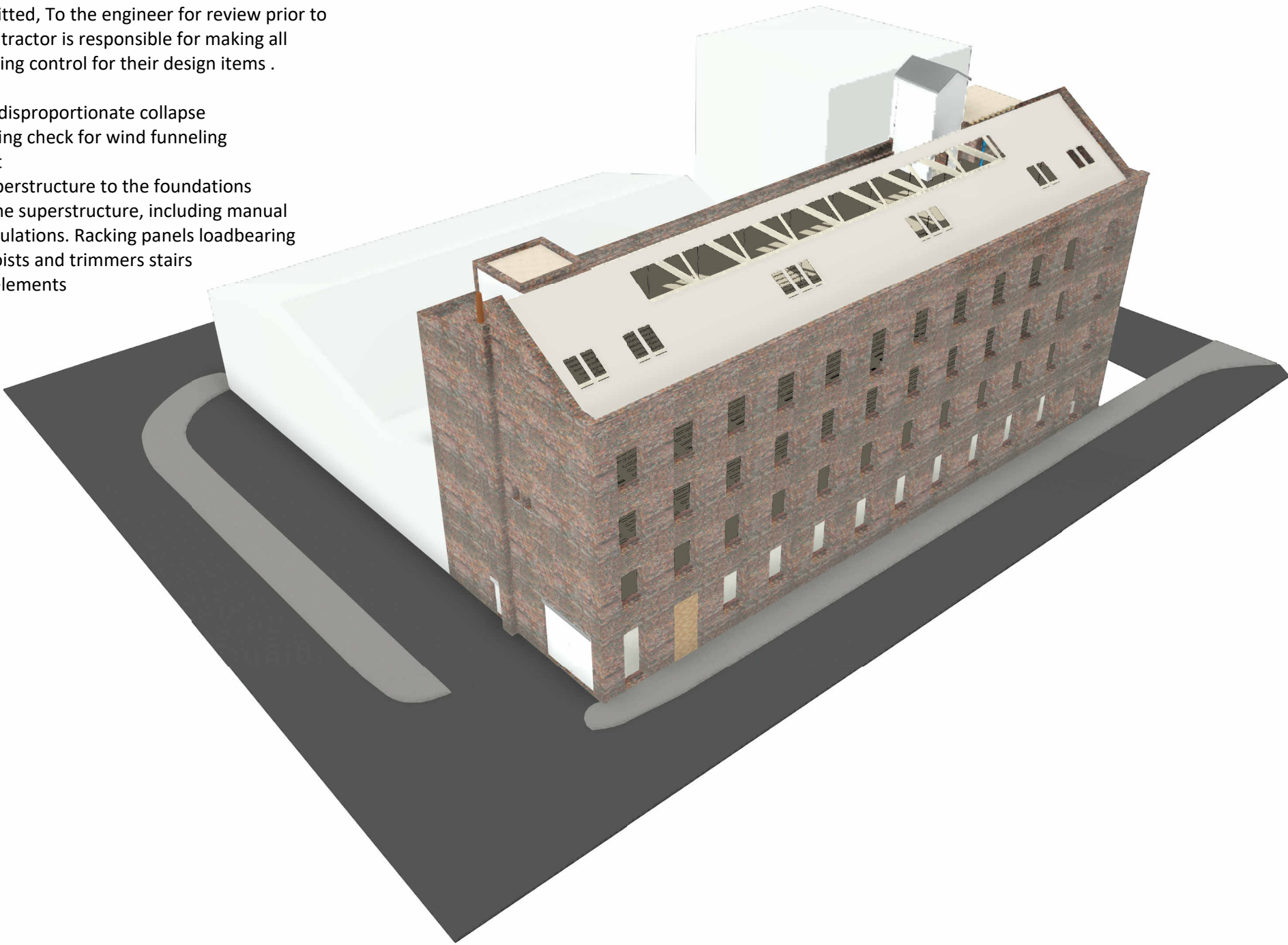
Steel elements / exposure / locations	Paint system
Within Cavity	Macropoxy® C400V3 Zinc Phosphate primer to 175 microns
Internal	Macropoxy® C400V3 Zinc Phosphate primer to 75 microns
External	Hot dip galvanised to 85 microns
Exposed steel in pool area	Macropoxy® C425 to 250 microns
Within unheated spaces + internal plantrooms	Macropoxy® C400V3 Zinc Phosphate primer to 125 microns

7. Contractors Design

TEMPORARY WORKS:
Stability of all excavations are the responsibility of the contractor, including any impact on surrounding structures/highways/utilities. Contractor is to develop detailed method statements to address the risk of deep excavations and possible perched ground water.

SERVICE NOTES:
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DESIGN CALCULATIONS:
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• Design philosphy including disproportionate collapse
• Loading assessment, including check for wind funneling
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• Connection designs for all elements



8. Timber

All timber members are to be grade C16 to BS EN 338 unless noted otherwise. Timber to be pressure-impregnated with preservative and cut ends brush treated.

Joists marked DJ are to be doubled joists, TJ are to be triple joists, bolted together using M12 grade 8.8 bolts at 600mm centres along span. Joists to be doubled-up under all partition walls parallel with span, or with solid blocking under where perpendicular.

All bolts into timber are to have 50sq x 3 thick MS washers below nut.

Solid blocking or herringbone strutting is to be provided between all timber joists or rafters as follows:

- 2.5m to 4.5m span: midspan and at each end support
- Spans longer than 4.5m: two rows equally spaced in span and at end supports
- Outer joists or rafters to be blocked solidly to perimeter walls.

Wall plates for roofs are to be tied down using 1200 long 30 x 2.5 galvanized MS straps at 1200 crs with 100 bob end. Straps are to be nailed to the top plate and plugged and screwed to the internal face of the wall. Refer to typical details.

Lateral restraint straps for floors are to be minimum 1200 long 30 x 5 galvanized MS straps at 1200 crs with 150 bob end. Straps perpendicular to joists to be nailed to tops of three joists + solid blocking infill using 5 No. 75 long, 3.8Ø nails. Straps parallel to joists are to be let-in to the top of the joists and nailed in place using 6 No. 50 long, 3.4Ø nails. Refer to typical details.

Composite ply layers to timber floors/roofs to be glued and screwed in accordance with BS EN 315 using min 50mm long galvanised screws @ 400crs. Laps in plywood to be staggered across floor area. Where joists supporting ply decking sit within the depth of steel beams the level of the top of the joists should be a minimum of 10mm above the level of the top of the steel to allow for shrinkage of the timber.

NOTCHES/HOLES IN TIMBER:

Notches / holes in timber should be avoided if possible. The contractor is to submit proposals for any holes and notches to the structural engineer for confirmation prior to works commencing on site, and allow for visual inspection by the engineer of any existing joists.

The following provides guidance on typical preferred locations of proposed holes/notches in new joists. These will be subject to review and confirmation by the structural engineer that they are applicable for each specific location:

- Notches:
- Minimum 100mm spacing:
 - Depth (maximum): 0.125 x joist depth.
 - Distance from supports: Between 0.07 and 0.25 x span
- Holes (Locate at centre of joist):
- Diameter (maximum): 0.25 x joist depth.
 - Centres (minimum): 3 x diameter of largest hole.
- Distance from supports: Between 0.25 and 0.4 of span.

Sustainability

All timber and wood based products for either temporary or permanent inclusion in the works must be from legal and sustainable sources, as defined by the UK government Central Point of Expertise on Timber (CPET), and delivered to site with full chain of custody.

Chain of custody schemes recognised as meeting the above include:

- Program for the Endorsement of Forest Certification (PEFC)
- Forest Stewardship Council (FSC)
- Grown in Britain (GiB)

9. Builders Work Notes

Holes less than 300mm square are generally not shown on structural drawings. Refer to services engineer's / sub-contractor's drawings.

All holes including those not shown on structural drawings must be agreed with the engineer.

Holes in slabs which have been cast:
All builderswork proposals to be submitted to the structural engineer for checking prior to works commencing on site. Generally reinforcement and embedded structural steelwork will not be permitted to be cut, and holes greater than 300mm wide will generally not be allowed. Contractor to allow for scanning and exposing all areas in the vicinity of proposed builderswork to identify, locate, and avoid cutting reinforcement. Contractor to assume all openings are to be cored/saw cut.

No builder's work openings are to be cut without first obtaining agreement to proceed from the CA.

Openings in beams and load bearing walls will generally not be allowed, unless approved by the engineer.

Infilling of openings around services to architect's or services engineer's requirements. Where a load bearing infill is required this is to be designed by the contractor. Details to be submitted to the CA for comment.

Concrete plinths are to be provided to act as bases for mechanical plant where required by services engineer. Dimensions of plinths are to suit the mechanical plant used. Drawings are to be submitted to the structural engineer for checking of plant weights on floors.

10. Health And Safety

The key construction stage health and safety hazards on this project which are considered to be unusual, abnormal or unexpected to a competent contractor carrying out work of this nature are:

Hazard	Activity
Timber Repairs	A timber & damp survey has been carried out by specialist contractors TRACE. Refer to TRACE report for areas of damaged timber, along with repair requirements
Ground Conditions	Unknown ground conditions below out-building noted for demolition. Risk of contamination to be accounted for in construction stage and responsible disposal of any material
Possible presence of asbestos	Considering age and type of building, risk of historic asbestos in building fabric. Contractor to be provided evidence (records and/or survey) by client confirming absence
Historic Structure	It is likely that areas in poor condition with be found during the work. Contractor to inform engineer of any findings
Existing Lift Shaft	As the existing shaft is to be reused, the condition and suitability of the shaft should be confirmed by the chosen lift subcontractor. Pull out testing may be required to confirm guide loadings
Historic Structure	It is assumed that the existing lift pit will be reused. Lift subcontractors to confirm the existing pit is suitable

P2	01.12.23	JMD	SD	Draft Stage 4 Issue	
P1	24.04.23	JMD	SD	Stage 3 Issue	
Rev	Date	By	Eng	Amendment	

**HEYNE
TILLET
STEEL**

STRUCTURAL &
CIVIL ENGINEERS

http://hts.uk.com/

Job Name
Neptune Mill
Manchester, M1 2WQ

Drawing Title
General Notes

Purpose of Issue **Stage 4** Scale at A1 **1 : 1**

Drg No **2909-HTS-XX-ZZ-DR-S-0001**

HTS Job No **2909** Suitability **S1** Rev **P2**