



Phase IV Validation Completion Report

At

Victory Street,
Manchester

Client: One Manchester Limited

Reference: 30669-SUT-ZZ-00-RP-G-704-0001

Date: February 2022

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SUTCLIFFE INVESTIGATIONS

Phase IV Remediation & Validation Strategy Proposals

Document Control Sheet

Report Reference: 30669-SUT-ZZ-00-RP-G-704-0001

Issue: P01 Date: February 2022

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P01	February 2022	Final Report	ED	DB	WGB
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1 Introduction

1.1 Terms of Reference

Sutcliffe Investigations have carried out remediation validation works on behalf of Eastlands Homes in order to enable contaminated land conditions to be removed at land at the Victory Street, Manchester, M14 5WP.

The present document outlines Sutcliffe Investigations validation works including:

-  Gas Membrane Validation
-  Topsoil Sampling
-  Depth Validation

1.2 Previous Works

This report should be read in conjunction with:

-  Phase I Preliminary Risk Assessment for Victory Street, Manchester (February 2020).
-  Phase II Interpretative Ground Assessment at Victory Street, Manchester (May 2020).
-  Phase III Remediation Validation Proposals at Victory Street, Manchester (October 2020).

Based on the findings of the ground assessment, Elevated levels of Lead, Benzo(b)fluoranthene, Benzo(a)pyrene and Dibenzo(ah)anthracene all indicate the presence of site wide contamination that will require remediation to be safe for Human Health.

Statistical analysis carried out indicated site wide contamination and therefore the need for site wide remediation. This will comprise a 600m site strip to remove the contaminated material a reduce site levels to allow for a 600mm clean capping system to be emplaced in all soft landscaping (garden) areas as part of the development works, this will be formed of a minimum 150-200mm topsoil and 400-450mm subsoil. This will break any remaining potential contaminant linkages.

Levels beneath proposed areas of hardstanding will be as dictated by the adopted foundation solution.

Based on the quantitative and qualitative assessment of the risk associated with ground gas the site should be classified as Amber 1 under the NHBC Traffic light system. This classifies the site as having a low to intermediate gas regime identified, which requires low to intermediate level gas protection measures.

1.3 Objectives

Therefore, the aim of this document is to provide evidence that methodologies and protocols have been adhered to as detailed within the Phase III Remediation and Validation Proposals, dated October 2020, thus ensuring risks to identified receptors have been

mitigated. This principally relates to the imported topsoil material for garden areas and the gas membrane installation in all plots.

1.4 Development Proposal

The proposal layout is for the construction of residential properties with private gardens and associated infrastructure. A plan detailing the proposed development schematic is presented as Drawing Ref: *18-042 1003 A - Proposed Site Layout*.

1.5 Site Location, Topography and Description

The site is located on land at the located at Victory Street, Manchester, M14 5WP. Site details are summarised in the table below.

Table 1.1: Summary of Site Description

Detail	Remarks
Location	3.33km south east from Manchester City Centre
Grid Reference	E385060, N395080
Area	0.07ha
Current Access	Site is accessed via Victory Street to the east of the site
Topography	The site topography is noted to be relatively flat
Surrounding Land Uses	The surrounding area comprises of recreational ground and a school, residential dwellings with some local amenities and religious facilities

2 Risk Assessment (Pre-Remedial Works)

2.1 Long Term Human Health

Following intrusive site investigation works completed by Sutcliffe Investigations (*reported in January 2020*) analytical results indicated that there were site wide elevated concentrations of contamination on site that would represent a risk to identified receptors (site end & adjacent users, construction workers & controlled waters).

A copy of the analytical certification results and screening spreadsheet are presented as *Appendix A*.

A full assessment of risks to long term human health is presented in Sutcliffe's "*Phase II Geotechnical and Environmental Assessment – May 2020*".

2.2 Ground Gas Risk Assessment

Based on the results of the gas monitoring and due to elevated CO₂ readings, an Amber 1 classification is recommended for the site, as such as gas membrane will be required as part of the ground floor design in all the new houses on site.

A full assessment of risks associated with ground gas is presented in Sutcliffe's "*Phase II Geotechnical and Environmental Assessment – May 2020*".

2.3 Controlled Waters

Exceedances of DWS and EQS screening criteria are not considered significant given the likely depth to groundwater, effects of natural attenuation, lack of nearby groundwater abstractions and the absence of any surface water courses that could be in continuity with ground water beneath the site.

A full assessment of risks to controlled waters is presented in Sutcliffe's "*Phase II Geotechnical and Environmental Assessment – May 2020*".

3 Remediation Works

3.1 Introduction

Based on the findings of the ground assessment, completed for the site (reported in May 2020), and with the exception of risks to receptors (construction workers & adjacent site users) associated with the site wide contamination, in addition to risks associated with ground gas, no other source-pathway-receptor linkages have been identified.

The site wide contamination was removed to achieve formation levels and a clean 600mm capping system was installed in all soft landscaping (garden) areas. In regard to ground gas risks, validated protection measures have been installed.

3.2 Remedial Works

Imported Material

Approximately 150m³ of clean topsoil was imported onto site for the garden areas. A recommended depth of 150mm was emplaced in all plots to create a suitable growth medium, along with 450mm subsoil to ensure a total capping system of 600mm was emplaced.

Depth validation was carried out and it was noted that a total depth of 600mm was emplaced on site, comprising 450mm subsoil overlain with 150mm topsoil material.

A photographic log for the depth validation is presented as *Appendix B*.

Consignment notes for imported topsoil and subsoil material are presented as *Appendix C*.

Sampling was undertaken to ensure the material was suitable and “fit for purpose” at a sampling rate of 1 sample per 50m³ of material. Therefore 3No. samples were recovered from the material on site, as a minimum requirement, and sampled against the following guidance values:

-  LQM Suitable 4 Use Levels (S4ULs).
-  ATRISK Soil Screening Values (SSVs) and CL:AIRE Generic Assessment Criteria (GACs) - Cyanide
-  Category 4 Screening Values – Lead

The chemical results for the topsoil were compared against the relevant GACs for residential (with plant uptake) at 5% soil organic matter (SOM). No elevated levels of contamination or Asbestos have been identified.

The analytical results certificates and screening spreadsheet are presented in *Appendix D*.

Gas Protection Measures

A gas membrane was required for the new development and required to meet an Amber 1 classification. This required low-level gas protection measures, comprising a membrane

and ventilated sub-floor void to create a permeability contrast to limit the ingress of gas into buildings.

Foundation design drawings are presented in *Appendix E*.

Validation of the membrane installation was carried out by MEC Environmental for all 4 plots to ensure the installation was carried out to the correct standard.

A copy of the MEC Environmental Ltd Gas Membrane Installation Validation Report is presented as *Appendix F*.

Site Variations

No variations have been noted on site during the course of the remediation works.

4 Conclusions

Sutcliffe Investigations can confirm site works have been carried out on site as detailed in this report. A suitable gas membrane has been installed in plots and imported topsoil and subsoil for use in garden areas has been sampled and validated and Sutcliffe can confirm that the material is suitable for its proposed use on site.

Sutcliffe can confirm that the site does not pose a significant risk to identified receptors (site users, construction works, adjacent site users & controlled waters).

Appendix A – Analytical Certificates & Screening Tables (Phase II Ground Investigation Report)

FINAL ANALYTICAL TEST REPORT SUPPLEMENT TO TEST REPORT 20/00975/2

Amendments: Request for Additional Analysis

Envirolab Job Number: 20/00975
Issue Number: 3

Date: 21 April, 2020

Client: Sutcliffe
18-20 Harrington Street
Liverpool
L2 9QA

Project Manager: Sara Hale; Adrian Lewis; David Bowen; Alex Tosh
Project Name: Victory Street, Manchester
Project Ref: 30669LG
Order No: 7969
Date Samples Received: 29/01/20
Date Instructions Received: 31/01/20
Date Analysis Completed: 21/04/20

Prepared by:



Holly Neary-King
Administration & Client Services Supervisor

Approved by:



John Gustafson
Managing Director

Envirolab Job Number: 20/00975

Client Project Name: Victory Street, Manchester

Client Project Ref: 30669LG

Lab Sample ID	20/00975/1	20/00975/2	20/00975/3	20/00975/4	20/00975/5	20/00975/7	20/00975/8	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS101	WS102	WS103	WS104	WS101	WS103	WS104			
Depth to Top	1.00	1.00	2.00	1.00	0.20	0.20	0.30			
Depth To Bottom	2.00	2.00	3.00	2.00	0.70	0.60	0.60			
Date Sampled	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20			
Sample Type	Soil - U	Soil - U	Soil - U	Soil - U	Soil	Soil	Soil			
Sample Matrix Code					4AB	4ABE	4AB			
% Moisture at <40C _A	-	-	-	-	17.0	15.9	16.1	% w/w	0.1	A-T-044
% Stones >10mm _A	-	-	-	-	12.1	22.3	3.1	% w/w	0.1	A-T-044
pH _D ^{M#}	-	-	-	-	8.13	8.27	8.54	pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	-	-	-	-	0.04	<0.01	<0.01	g/l	0.01	A-T-026s
Sulphate (acid soluble) _D ^{M#}	-	-	-	-	920	710	800	mg/kg	200	A-T-028s
Cyanide (total) _A ^{M#}	-	-	-	-	<1	<1	1	mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC _A	-	-	-	-	<0.2	<0.2	<0.2	mg/kg	0.2	A-T-050s
Sulphide _A	-	-	-	-	<5	<5	110	mg/kg	5	A-T-S2-s
Sulphur (elemental) _D ^{M#}	-	-	-	-	31	10	<5	mg/kg	5	A-T-029s
Organic matter _D ^{M#}	-	-	-	-	10.0	4.8	4.7	% w/w	0.1	A-T-032 OM
Arsenic _D ^{M#}	-	-	-	-	25	11	10	mg/kg	1	A-T-024s
Boron (water soluble) _D ^{M#}	-	-	-	-	<1.0	1.1	<1.0	mg/kg	1	A-T-027s
Cadmium _D ^{M#}	-	-	-	-	1.5	1.1	0.6	mg/kg	0.5	A-T-024s
Copper _D ^{M#}	-	-	-	-	107	69	25	mg/kg	1	A-T-024s
Chromium _D ^{M#}	-	-	-	-	29	26	19	mg/kg	1	A-T-024s
Chromium (hexavalent) _D	-	-	-	-	<1	<1	<1	mg/kg	1	A-T-040s
Chromium (trivalent)	-	-	-	-	29	26	19	mg/kg	1	Calc
Lead _D ^{M#}	-	-	-	-	620	357	842	mg/kg	1	A-T-024s
Mercury _D	-	-	-	-	0.76	0.99	0.45	mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	-	-	-	-	26	19	14	mg/kg	1	A-T-024s
Selenium _D ^{M#}	-	-	-	-	2	<1	<1	mg/kg	1	A-T-024s
Zinc _D ^{M#}	-	-	-	-	410	217	106	mg/kg	5	A-T-024s
Leachate Prep NRA (10:1) _A	-	-	-	-	*	*	*			A-T-001
pH (leachable) _A [#]	-	-	-	-	7.69	7.69	7.88	pH	0.01	A-T-031w
Sulphate (leachable) _A [#]	-	-	-	-	8.54	25.26	<1.00	mg/l	1	A-T-026w
Cyanide (total) (leachable) _A [#]	-	-	-	-	<0.005	<0.005	<0.005	mg/l	0.005	A-T-042wTCN
Phenols (total by HPLC) (leachable) _A	-	-	-	-	<0.01	<0.01	<0.01	mg/l	0.01	A-T-050w
Sulphide (leachable) _A	-	-	-	-	<0.1	0.5	<0.1	mg/l	0.1	A-T-S2-w
DOC (leachable) _A [#]	-	-	-	-	4.7	3.8	3.6	mg/l	0.2	A-T-032w
Arsenic (leachable) _A [#]	-	-	-	-	12	2	4	µg/l	1	A-T-025w
Boron (leachable) _A [#]	-	-	-	-	18	32	<10	µg/l	10	A-T-025w
Cadmium (leachable) _A [#]	-	-	-	-	<1	<1	<1	µg/l	1	A-T-025w
Copper (leachable) _A [#]	-	-	-	-	30	15	9	µg/l	1	A-T-025w

Envirolab Job Number: 20/00975

Client Project Name: Victory Street, Manchester

Client Project Ref: 30669LG

Lab Sample ID	20/00975/1	20/00975/2	20/00975/3	20/00975/4	20/00975/5	20/00975/7	20/00975/8	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS101	WS102	WS103	WS104	WS101	WS103	WS104			
Depth to Top	1.00	1.00	2.00	1.00	0.20	0.20	0.30			
Depth To Bottom	2.00	2.00	3.00	2.00	0.70	0.60	0.60			
Date Sampled	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20			
Sample Type	Soil - U	Soil - U	Soil - U	Soil - U	Soil	Soil	Soil			
Sample Matrix Code					4AB	4ABE	4AB			
Chromium (leachable) _A [#]	-	-	-	-	1	2	12	µg/l	1	A-T-025w
Chromium (hexavalent) (leachable) _A	-	-	-	-	<0.05	<0.05	<0.05	mg/l	0.05	A-T-040w
Chromium (trivalent) (leachable)	-	-	-	-	<0.05	<0.05	<0.05	mg/l	0.05	Calc
Lead (leachable) _A [#]	-	-	-	-	141	39	266	µg/l	1	A-T-025w
Mercury (leachable) _A [#]	-	-	-	-	<0.1	<0.1	<0.1	µg/l	0.1	A-T-025w
Nickel (leachable) _A [#]	-	-	-	-	2	2	1	µg/l	1	A-T-025w
Selenium (leachable) _A [#]	-	-	-	-	<1	<1	<1	µg/l	1	A-T-025w
Sulphur (elemental/free) (leachable) _A	-	-	-	-	<0.1	<0.1	<0.1	mg/l	0.1	A-T-029w
Zinc (leachable) _A [#]	-	-	-	-	64	27	12	µg/l	1	A-T-025w
1.01 % Moisture BS1377 1990 pt2 cl3.2 _A [#]	Appended	Appended	-	Appended	-	-	-		0.1	Subcon SS
1.02 Atterburg 4Pt BS1377 1990 pt2 cl4.4,5.3+5.4 _A [#]	Appended	Appended	-	Appended	-	-	-		1	Subcon SS
1.10a PSD (Grading/63um/sand fraction/wet sieve) BS1377 pt 2 1990 cl 9.2 _A [#]	-	-	Appended	-	-	-	-		0.1	Subcon SS
1.11 Soil Suction, Filter Paper Method (Desiccation) BRE IP4/93 _A	-	-	US	-	-	-	-	N/A		Subcon SS
5.02c QUT Multistage (mm supplied) BS1377 1990 pt7 cl9 _A [#]	Appended	Appended	-	Appended	-	-	-			Subcon SS
TPH total (>C6-C40) (leachable) _A	-	-	-	-	<80	<80	<80	µg/l	80	A-T-007w

Envirolab Job Number: 20/00975

Client Project Name: Victory Street, Manchester

Client Project Ref: 30669LG

Lab Sample ID	20/00975/1	20/00975/2	20/00975/3	20/00975/4	20/00975/5	20/00975/7	20/00975/8	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS101	WS102	WS103	WS104	WS101	WS103	WS104			
Depth to Top	1.00	1.00	2.00	1.00	0.20	0.20	0.30			
Depth To Bottom	2.00	2.00	3.00	2.00	0.70	0.60	0.60			
Date Sampled	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20			
Sample Type	Soil - U	Soil - U	Soil - U	Soil - U	Soil	Soil	Soil			
Sample Matrix Code					4AB	4ABE	4AB			
Asbestos in Soil (inc. matrix)										
Asbestos in soil [#]	-	-	-	-	NAD	NAD	NAD			A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _D	-	-	-	-	N/A	N/A	N/A			A-T-045

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Lab Sample ID	20/00975/1	20/00975/2	20/00975/3	20/00975/4	20/00975/5	20/00975/7	20/00975/8	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS101	WS102	WS103	WS104	WS101	WS103	WS104			
Depth to Top	1.00	1.00	2.00	1.00	0.20	0.20	0.30			
Depth To Bottom	2.00	2.00	3.00	2.00	0.70	0.60	0.60			
Date Sampled	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20			
Sample Type	Soil - U	Soil - U	Soil - U	Soil - U	Soil	Soil	Soil			
Sample Matrix Code					4AB	4ABE	4AB			
PAH-16MS										
Acenaphthene _A ^{M#}	-	-	-	-	1.41	0.22	0.07	mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	-	-	-	-	0.11	0.03	0.02	mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	-	-	-	-	2.35	0.36	0.20	mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	-	-	-	-	6.36	1.48	0.95	mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	-	-	-	-	5.53	1.33	0.81	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	-	-	-	-	6.41	1.65	1.02	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	-	-	-	-	2.22	0.61	0.44	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	-	-	-	-	2.28	0.52	0.33	mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	-	-	-	-	6.23	1.54	1.02	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	-	-	-	-	0.57	0.16	0.10	mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	-	-	-	-	14.6	3.00	1.78	mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	-	-	-	-	1.16	0.15	0.06	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	-	-	-	-	2.67	0.72	0.47	mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	-	-	-	-	0.48	0.05	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	-	-	-	-	11.2	1.86	1.02	mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	-	-	-	-	13.5	2.80	1.73	mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{M#}	-	-	-	-	77.1	16.5	10	mg/kg	0.01	A-T-019s

Envirolab Job Number: 20/00975

Client Project Name: Victory Street, Manchester

Client Project Ref: 30669LG

Lab Sample ID	20/00975/1	20/00975/2	20/00975/3	20/00975/4	20/00975/5	20/00975/7	20/00975/8	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS101	WS102	WS103	WS104	WS101	WS103	WS104			
Depth to Top	1.00	1.00	2.00	1.00	0.20	0.20	0.30			
Depth To Bottom	2.00	2.00	3.00	2.00	0.70	0.60	0.60			
Date Sampled	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20			
Sample Type	Soil - U	Soil - U	Soil - U	Soil - U	Soil	Soil	Soil			
Sample Matrix Code					4AB	4ABE	4AB			
PAH-16MS (leachable)										
Acenaphthene (leachable) _A	-	-	-	-	0.14	0.17	0.09	µg/l	0.01	A-T-019w
Acenaphthylene (leachable) _A	-	-	-	-	<0.01	0.03	<0.01	µg/l	0.01	A-T-019w
Anthracene (leachable) _A	-	-	-	-	0.06	0.03	0.04	µg/l	0.01	A-T-019w
Benzo(a)anthracene (leachable) _A	-	-	-	-	0.05	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(a)pyrene (leachable) _A	-	-	-	-	0.03	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(b)fluoranthene (leachable) _A	-	-	-	-	0.05	<0.01	0.02	µg/l	0.01	A-T-019w
Benzo(ghi)perylene (leachable) _A	-	-	-	-	0.03	<0.01	<0.01	µg/l	0.01	A-T-019w
Benzo(k)fluoranthene (leachable) _A	-	-	-	-	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Chrysene (leachable) _A	-	-	-	-	0.07	<0.01	0.03	µg/l	0.01	A-T-019w
Dibenzo(ah)anthracene (leachable) _A	-	-	-	-	<0.01	<0.01	<0.01	µg/l	0.01	A-T-019w
Fluoranthene (leachable) _A	-	-	-	-	0.17	0.07	0.09	µg/l	0.01	A-T-019w
Fluorene (leachable) _A	-	-	-	-	0.10	0.14	0.10	µg/l	0.01	A-T-019w
Indeno(123-cd)pyrene (leachable) _A	-	-	-	-	0.03	<0.01	<0.01	µg/l	0.01	A-T-019w
Naphthalene (leachable) _A	-	-	-	-	0.07	0.30	0.05	µg/l	0.01	A-T-019w
Phenanthrene (leachable) _A	-	-	-	-	0.32	0.23	0.24	µg/l	0.01	A-T-019w
Pyrene (leachable) _A	-	-	-	-	0.15	0.05	0.07	µg/l	0.01	A-T-019w
Total PAH-16MS (leachable) _A	-	-	-	-	1.27	1.02	0.73	µg/l	0.01	A-T-019w

Envirolab Job Number: 20/00975

Client Project Name: Victory Street, Manchester

Client Project Ref: 30669LG

Lab Sample ID	20/00975/1	20/00975/2	20/00975/3	20/00975/4	20/00975/5	20/00975/7	20/00975/8	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS101	WS102	WS103	WS104	WS101	WS103	WS104			
Depth to Top	1.00	1.00	2.00	1.00	0.20	0.20	0.30			
Depth To Bottom	2.00	2.00	3.00	2.00	0.70	0.60	0.60			
Date Sampled	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20	28-Jan-20			
Sample Type	Soil - U	Soil - U	Soil - U	Soil - U	Soil	Soil	Soil			
Sample Matrix Code					4AB	4ABE	4AB			
TPH UKCWG										
Ali >C5-C6 _A [#]	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8 _A [#]	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10 _A	-	-	-	-	<1	<5	<1	mg/kg	1	A-T-055s
Ali >C10-C12 _A ^{M#}	-	-	-	-	<1	<5	<1	mg/kg	1	A-T-055s
Ali >C12-C16 _A ^{M#}	-	-	-	-	3	<5	1	mg/kg	1	A-T-055s
Ali >C16-C21 _A ^{M#}	-	-	-	-	4	<5	2	mg/kg	1	A-T-055s
Ali >C21-C35 _A	-	-	-	-	35	639	16	mg/kg	1	A-T-055s
Ali >C35-C44 _A	-	-	-	-	14	<5	5	mg/kg	1	A-T-055s
Total Aliphatics _A	-	-	-	-	56	639	24	mg/kg	1	A-T-055s
Aro >C5-C7 _A [#]	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8 _A [#]	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10 _A	-	-	-	-	3	<5	2	mg/kg	1	A-T-055s
Aro >C10-C12 _A ^{M#}	-	-	-	-	6	<5	2	mg/kg	1	A-T-055s
Aro >C12-C16 _A	-	-	-	-	33	6	9	mg/kg	1	A-T-055s
Aro >C16-C21 _A ^{M#}	-	-	-	-	101	35	23	mg/kg	1	A-T-055s
Aro >C21-C35 _A ^{M#}	-	-	-	-	452	353	110	mg/kg	1	A-T-055s
Aro >C35-C44 _A	-	-	-	-	24	16	10	mg/kg	1	A-T-055s
Total Aromatics _A	-	-	-	-	621	410	158	mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C44) _A	-	-	-	-	677	1050	184	mg/kg	1	A-T-055s
BTEX - Benzene _A [#]	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene _A [#]	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene _A [#]	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene _A [#]	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene _A [#]	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s
MTBE _A [#]	-	-	-	-	<0.01	<0.01	<0.01	mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Sutcliffe, 18-20 Harrington Street, Liverpool, L2 9QA

Project No: 20/00975

Project: Victory Street, Manchester

Date Received: 31/01/2020 (am)

Clients Project No: 30669LG

Cool Box Temperatures (°C): 8.8

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

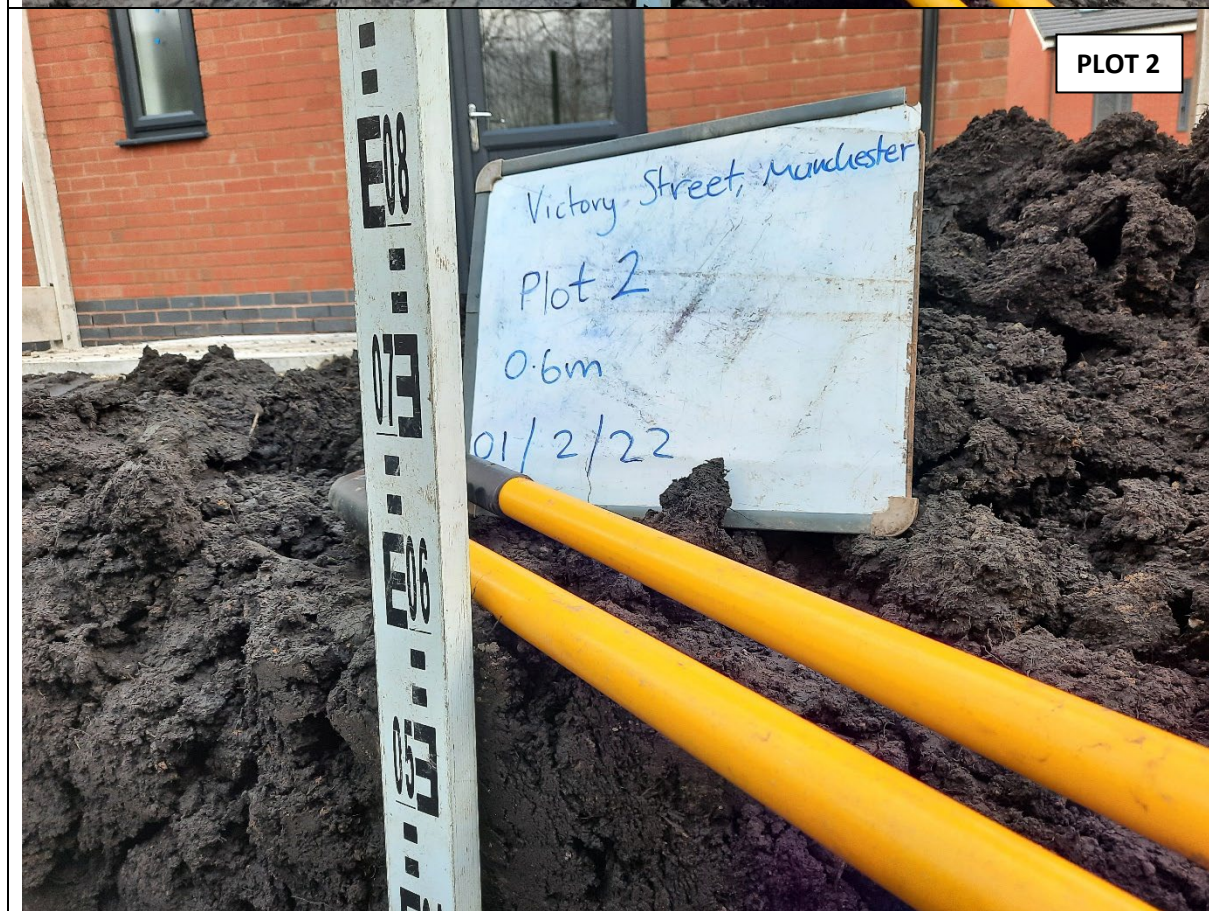


Job Name:	Victory Street, Manchester
Job Number:	30669LG

		ATKINS REVISED 31/03/11, CATEGORY 4 - APRIL 2014, LQM JAN 2015					WS101	WS103	WS104
		RESIDENTIAL WITH PLANT UPTAKE					0.20	0.20	0.30
							0.70	0.60	0.60
							28-Jan-20	28-Jan-20	28-Jan-20
Contaminant	Units	Category 4 Screening Values (6%)	Atkins Atrisk	LQM			Soil	Soil	Soil
				SOM 1%	SOM 2.5%	SOM 5%			
Arsenic (Total)	mg/kg	37			37		25	11	10
Boron (Soluble)	mg/kg				290		<1.0	1.1	<1.0
Cadmium (Total)	mg/kg	26			11		1.5	1.1	0.6
Chromium III	mg/kg				910		29	26	19
Chromium VI	mg/kg	21			6		<1	<1	<1
Copper (Total)	mg/kg				2400		107	69	25
Lead (Total)	mg/kg	200					620	357	842
Mercury (Total)	mg/kg				40		0.76	0.99	0.45
Nickel (Total)	mg/kg				180		26	19	14
Selenium (Total)	mg/kg				250		2	<1	<1
Zinc (Total)	mg/kg				3700		410	217	106
Cyanide (Total)	mg/kg		34				<0.005	<0.005	<0.005
Phenols (Total)	mg/kg			280	550	1100	<0.2	<0.2	<0.2
Organic matter	%						10	4.8	4.7
Sulphate (Acid Soluble)	mg/kg						920	710	800
Sulphate as Water Soluble	g/l						0.04	<0.01	<0.01
Sulphide	mg/kg						<5	<5	110
pH	pH units						8.13	8.27	8.54
Sulphur (Elemental)	mg/kg						31	10	<5
Asbestos							NAD	NAD	NAD
>> TPH SUITE <<									
TPH (Total)									
Total Aliphatic									
>C5 to C6 aliphatic	mg/kg			42	78	160	<0.01	<0.01	<0.01
>C6 to C8 aliphatic	mg/kg			100	230	530	<0.01	<0.01	<0.01
>C8 to C10 aliphatic	mg/kg			27	65	150	<1	<5	<1
>C10 to C12 aliphatic	mg/kg			130	330	760	<1	<5	<1
>C12 to C16 aliphatic	mg/kg			1100	2400	4300	3	<5	1
>C16 to C35 aliphatic	mg/kg			65000	92000	110000	39	639	29
>C35 to C44 aliphatic	mg/kg			65000	92000	110000	14	<5	5
Total Aromatic									
>C5 to C7 aromatic (Benzene)	mg/kg			70	140	300	<0.01	<0.01	<0.01
>C7 to C8 aromatic (Toluene)	mg/kg			130	290	660	<0.01	<0.01	<0.01
>C8 to C10 aromatic	mg/kg			34	83	190	3	<5	2
>C10 to C12 aromatic	mg/kg			74	180	380	6	<5	2
>C12 to C16 aromatic	mg/kg			140	330	660	33	6	9
>C16 to C21 aromatic	mg/kg			260	540	930	101	35	23
>C21 to C35 aromatic	mg/kg			1100	1500	1700	452	353	110
>C35 to C44 aromatic	mg/kg			1100	1500	1700	24	16	10
>> BTEX SUITE <<									
benzene	mg/kg	0.87		0.87	0.17	0.37	<0.01	<0.01	<0.01
toluene	mg/kg			130	290	660	<0.01	<0.01	<0.01
ethylbenzene	mg/kg			47	110	260	<0.01	<0.01	<0.01
M&P Xylene	mg/kg			56	130	310	<0.01	<0.01	<0.01
O-Xylene	mg/kg			60	140	330	<0.01	<0.01	<0.01
>> PAH SUITE <<									
naphthalene	mg/kg			2.3	5.6	13	0.48	0.05	<0.03
acenaphthylene	mg/kg			170	420	920	0.11	0.03	0.02
acenaphthene	mg/kg			210	510	1100	1.41	0.22	0.07
fluorene	mg/kg			170	400	860	1.16	0.15	0.06
phenanthrene	mg/kg			95	220	440	11.2	1.86	1.02
anthracene	mg/kg			2400	5400	11000	2.35	0.36	0.2
fluoranthene	mg/kg			280	560	890	14.6	3	1.78
pyrene	mg/kg			620	1200	2000	13.5	2.8	1.73
benzo(a)anthracene	mg/kg			7.2	11	13	6.36	1.48	0.95
chrysene	mg/kg			15	22	27	6.23	1.54	1.02
benzo(b)fluoranthene	mg/kg			2.6	3.3	3.7	6.41	1.65	1.02
benzo(k)fluoranthene	mg/kg			77	93	100	2.28	0.52	0.33
benzo(a)pyrene	mg/kg	5		2.2	2.7	3	5.53	1.33	0.81
dibenzo(ah)anthracene	mg/kg			0.24	0.28	0.3	0.57	0.16	0.1
benzo(ghi)perylene	mg/kg			320	340	350	2.22	0.61	0.44
indeno(123cd)pyrene	mg/kg			27	36	41	2.67	0.72	0.47

Appendix B – Depth Validation Photographic Log













Appendix C – Consignment Notes for Imported Topsoil & Subsoil Material



76745

Fox Brothers (Lancashire) Limited

11 Neptune Court, Hallam Way, Whitehills Business Park, Blackpool, FY4 5LZ

Telephone: 01253 893339 Email: info@foxbrothers.co.uk Web: www.foxbrothers.co.uk

Date: 31 JAN 21	Vehicle Reg. No: PN70 EFS	6w	
		8w	
	Driver: M GUMMINS	Grab	
		Artic	

Customer:	R P TYSON
From:	BACUP
To:	VICTORY ST MANCHESTER

Wet		Inert Spoil		Hardcore		Other	
-----	--	----------------	--	----------	--	-------	--

Contaminated Soil	Non-Hazardous		Hazardous	
----------------------	---------------	--	-----------	--

Recycled Aggregate Produced In Accordance with the Wrap Protocol									
Sand		MOT		Topsoil		6F5		Crush	

No. of Loads		Weight in Tonnes	18.5
--------------	--	---------------------	-------------

Extra Notes: TOPSOIL

Site Print: **CHAPPELL** Site Signature: _____

Company Reg. No. 07392244 Company VAT No. 994 834 068 EA Waste Carriers No. CB/DU134035

Part of the Fox Group





76742
51054

Fox Brothers (Lancashire) Limited

11 Neptune Court, Hallam Way, Whitehills Business Park, Blackpool, FY4 5LZ

Telephone: 01253 893339 Email: info@foxbrothers.co.uk Web: www.foxbrothers.co.uk

Date: 31 JAN 21	Vehicle Reg. No: R070 EFS	6w	
		8w	
	Driver: M COMINS	Grab	
		Artic	

Customer:	RP TYSON
From:	BACUP
To:	VICTORY STREET MANCHESTER

Wet		Inert Spoil		Hardcore		Other	
-----	--	-------------	--	----------	--	-------	--

Contaminated Soil	Non-Hazardous		Hazardous	
-------------------	---------------	--	-----------	--

Recycled Aggregate Produced In Accordance with the Wrap Protocol									
Sand		MOT		Topsoil		6F5		Crush	

No. of Loads		Weight in Tonnes	18.5
--------------	--	------------------	------

Extra Notes: TOPSOIL CHAPPELL

Site Print: CHAPPELL Site Signature: _____

Company Reg. No. 07392244 Company VAT No. 994 834 068 EA Waste Carriers No. CB/DU134035

Part of the Fox Group





74462

Fox Brothers (Lancashire) Limited

11 Neptune Court, Hallam Way, Whitehills Business Park, Blackpool, FY4 5LZ

Telephone: 01253 893339 Email: info@foxbrothers.co.uk Web: www.foxbrothers.co.uk

Date: 17 1 22	Vehicle Reg. No: PJ21 OXP	6w	
		8w	
	Driver: MAC	Grab	
		Artic	

Customer:

TYSON

From:

HURTS BACUP

To:

Victory Street MANCHESTER

Wet		Inert Spoil		Hardcore,		Other	
-----	--	----------------	--	-----------	--	-------	--

Contaminated Soil		Non-Hazardous		Hazardous	
----------------------	--	---------------	--	-----------	--

**Recycled Aggregate Produced
in Accordance with the Wrap Protocol**

Sand		MOT		Topsoil		6F5		Crush	
------	--	-----	--	---------	--	-----	--	-------	--

No. of Loads		Weight in Tonnes	
--------------	--	---------------------	--

Extra Notes:

TOP - SOIL

Site Print:

Site Signature:

Part of the Fox Group



Appendix D – Analytical Certificates & Screening Tables (Imported)

FINAL ANALYTICAL TEST REPORT

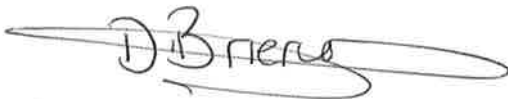
Envirolab Job Number: 22/00368
Issue Number: 1

Date: 26 January, 2022

Client: Sutcliffe
18-20 Harrington Street
Liverpool
L2 9QA

Project Manager: (Use) D Evans; D Bowen; A Tosh; W Baldwin/(Use) Jo
Project Name: Victory Street, Manchester
Project Ref: 30669LG
Order No: 8936
Date Samples Received: 18/01/22
Date Instructions Received: 18/01/22
Date Analysis Completed: 26/01/22

Approved by:



Danielle Brierley
Deputy Client Services Supervisor

Envirolab Job Number: 22/00368

Client Project Name: Victory Street, Manchester

Client Project Ref: 30669LG

Lab Sample ID	22/00368/1	22/00368/2	22/00368/3					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	SP-TS101	SP-TS102	SP-TS103							
Depth to Top	0.10	0.10	0.10							
Depth To Bottom	0.20	0.20	0.20							
Date Sampled	18-Jan-22	18-Jan-22	18-Jan-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6AE	6AE	6AE							
% Moisture at <40C _A	29.2	25.3	30.5					% w/w	0.1	A-T-044
% Stones >10mm _A	5.3	0.9	<0.1					% w/w	0.1	A-T-044
pH _D ^{M#}	7.00	6.24	6.34					pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	0.09	0.02	0.01					g/l	0.01	A-T-026s
Sulphate (acid soluble) _D ^{M#}	1200	590	840					mg/kg	200	A-T-028s
Cyanide (total) _A ^{M#}	<1	<1	<1					mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC _A	<0.2	<0.2	<0.2					mg/kg	0.2	A-T-050s
Sulphide _A	<5	<5	<5					mg/kg	5	A-T-043-s
Sulphur (elemental) _D ^{M#}	<5	<5	<5					mg/kg	5	A-T-029s
Organic matter _D ^{M#}	17.1	11.3	16.5					% w/w	0.1	A-T-032 OM
Arsenic _D ^{M#}	5	3	5					mg/kg	1	A-T-024s
Boron (water soluble) _D	<1.0	<1.0	<1.0					mg/kg	1	A-T-027s
Cadmium _D ^{M#}	0.6	<0.5	0.6					mg/kg	0.5	A-T-024s
Copper _D ^{M#}	23	19	21					mg/kg	1	A-T-024s
Chromium _D ^{M#}	17	15	20					mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1	<1					mg/kg	1	A-T-040s
Chromium (trivalent)	17	15	20					mg/kg	1	Calc
Lead _D ^{M#}	52	44	59					mg/kg	1	A-T-024s
Mercury _D	<0.17	<0.17	<0.17					mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	7	5	7					mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	<1	1					mg/kg	1	A-T-024s
Zinc _D ^{M#}	52	40	61					mg/kg	5	A-T-024s

Envirolab Job Number: 22/00368

Client Project Name: Victory Street, Manchester

Client Project Ref: 30669LG

Lab Sample ID	22/00368/1	22/00368/2	22/00368/3					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	SP-TS101	SP-TS102	SP-TS103							
Depth to Top	0.10	0.10	0.10							
Depth To Bottom	0.20	0.20	0.20							
Date Sampled	18-Jan-22	18-Jan-22	18-Jan-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6AE	6AE	6AE							
Asbestos in Soil (inc. matrix)										
Asbestos in soil _D [#]	NAD	NAD	NAD							A-T-045
Asbestos Matrix (visual) _D	-	-	-							A-T-045
Asbestos Matrix (microscope) _D	-	-	-							A-T-045
Asbestos ACM - Suitable for Water Absorption Test? _D	N/A	N/A	N/A							A-T-045

Envirolab Job Number: 22/00368

Client Project Name: Victory Street, Manchester

Client Project Ref: 30669LG

Lab Sample ID	22/00368/1	22/00368/2	22/00368/3					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	SP-TS101	SP-TS102	SP-TS103							
Depth to Top	0.10	0.10	0.10							
Depth To Bottom	0.20	0.20	0.20							
Date Sampled	18-Jan-22	18-Jan-22	18-Jan-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6AE	6AE	6AE							
PAH-16MS										
Acenaphthene _A ^{M#}	0.03	<0.01	<0.01					mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	0.04	<0.02	<0.02					mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	0.15	<0.04	0.06					mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	0.19	0.07	0.09					mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	0.28	0.11	0.14					mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	0.15	<0.05	0.09					mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	<0.07	<0.07	<0.07					mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	0.24	0.09	0.12					mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	<0.04	<0.04	<0.04					mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	0.35	0.11	0.14					mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	0.03	<0.01	<0.01					mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	0.16	0.07	0.10					mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	<0.03	<0.03	<0.03					mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	0.21	0.04	0.07					mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	0.31	0.09	0.13					mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{M#}	2.14	0.58	0.94					mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/00368

Client Project Name: Victory Street, Manchester

Client Project Ref: 30669LG

Lab Sample ID	22/00368/1	22/00368/2	22/00368/3					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	SP-TS101	SP-TS102	SP-TS103							
Depth to Top	0.10	0.10	0.10							
Depth To Bottom	0.20	0.20	0.20							
Date Sampled	18-Jan-22	18-Jan-22	18-Jan-22							
Sample Type	Soil - ES	Soil - ES	Soil - ES							
Sample Matrix Code	6AE	6AE	6AE							
TPH UKCWG										
Ali >C5-C6 _A [#]	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C6-C8 _A [#]	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Ali >C8-C10 _A	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C10-C12 _A ^{M#}	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C12-C16 _A ^{M#}	<1	<1	<1					mg/kg	1	A-T-055s
Ali >C16-C21 _A ^{M#}	3	3	3					mg/kg	1	A-T-055s
Ali >C21-C35 _A ^{M#}	52	38	56					mg/kg	1	A-T-055s
Ali >C35-C44 _A	8	7	10					mg/kg	1	A-T-055s
Total Aliphatics _A	63	48	69					mg/kg	1	A-T-055s
Aro >C5-C7 _A [#]	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
Aro >C7-C8 _A [#]	<0.01	0.04	0.24					mg/kg	0.01	A-T-022s
Aro >C8-C10 _A	<1	<1	<1					mg/kg	1	A-T-055s
Aro >C10-C12 _A	1	1	3					mg/kg	1	A-T-055s
Aro >C12-C16 _A	4	3	6					mg/kg	1	A-T-055s
Aro >C16-C21 _A ^{M#}	8	5	9					mg/kg	1	A-T-055s
Aro >C21-C35 _A	17	12	19					mg/kg	1	A-T-055s
Aro >C35-C44 _A	4	4	4					mg/kg	1	A-T-055s
Total Aromatics _A	35	25	40					mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C44) _A	98	73	109					mg/kg	1	A-T-055s
BTEX - Benzene _A [#]	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - Toluene _A [#]	<0.01	0.04	0.24					mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene _A [#]	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - m & p Xylene _A [#]	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
BTEX - o Xylene _A [#]	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s
MTBE _A [#]	<0.01	<0.01	<0.01					mg/kg	0.01	A-T-022s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Please contact us if you need any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Sutcliffe, 18-20 Harrington Street, Liverpool, L2 9QA

Project No: 22/00368

Project: Victory Street, Manchester

Date Received: 18/01/2022 (am)

Clients Project No: 30669LG

Cool Box Temperatures (°C): 6.5

Lab Sample ID	22/00368/2	22/00368/3
Client Sample No		
Client Sample ID/Depth	SP-TS102 0.10-0.20m	SP-TS103 0.10-0.20m
Date Sampled	18/01/22	18/01/22
Deviation Code		
F	✓	✓

Key

F Maximum holding time exceeded between sampling date and analysis for analytes listed below

HOLDING TIME EXCEEDANCES

Lab Sample ID	22/00368/2	22/00368/3
Client Sample No		
Client Sample ID/Depth	SP-TS102 0.10-0.20m	SP-TS103 0.10-0.20m
Date Sampled	18/01/22	18/01/22
Sulphide	✓	✓

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

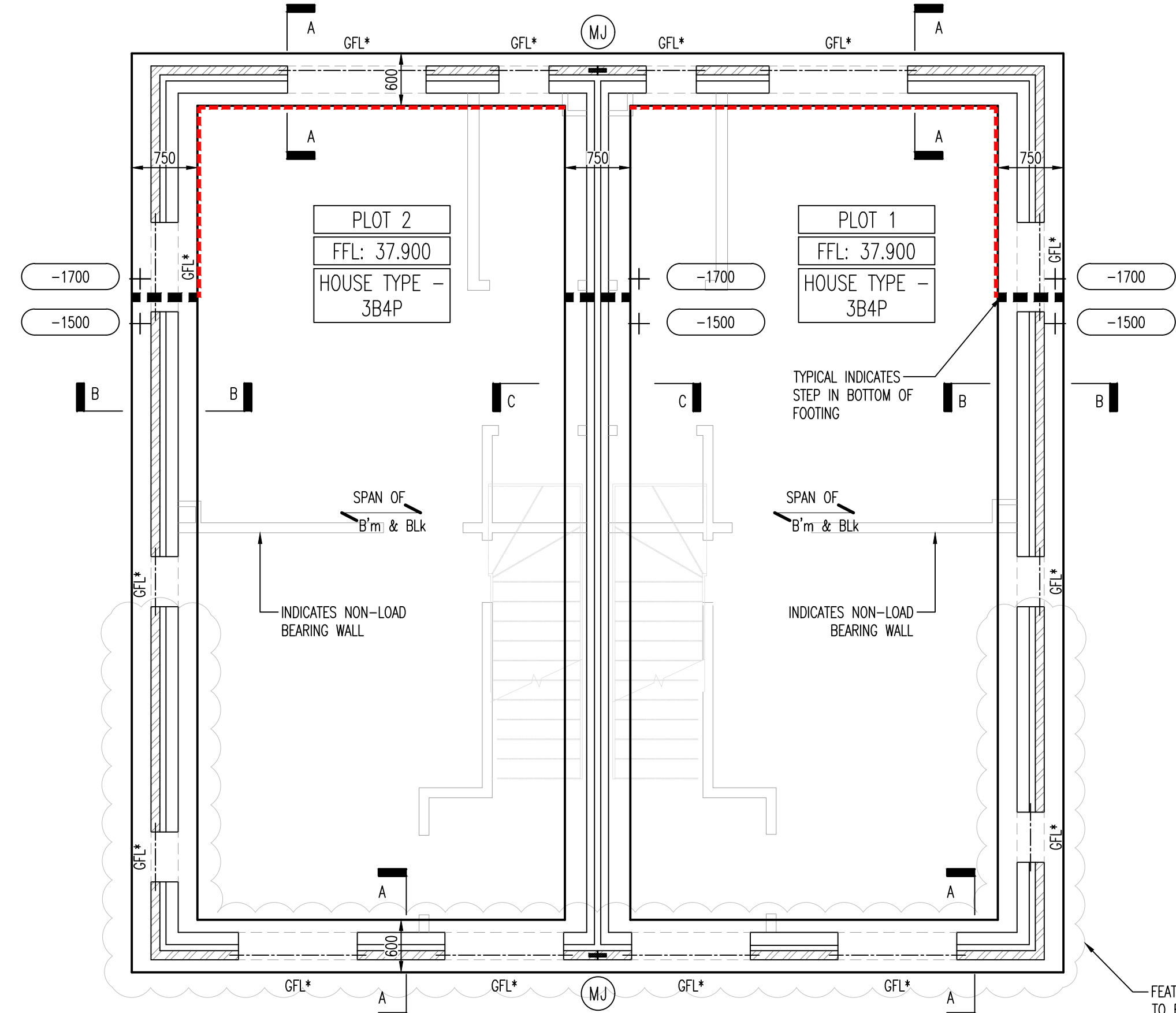
Lab Sample ID	22/00368/1	22/00368/2	22/00368/3
Client Sample No			
Client Sample ID/Depth	SP-TS101 0.10-0.20m	SP-TS102 0.10-0.20m	SP-TS103 0.10-0.20m
Date Sampled	18/01/22	18/01/22	18/01/22
A-T-019s	21/01/2022	21/01/2022	21/01/2022
A-T-022s	21/01/2022	21/01/2022	21/01/2022
A-T-024s	26/01/2022	26/01/2022	26/01/2022
A-T-026s	24/01/2022	24/01/2022	24/01/2022
A-T-027s	26/01/2022	26/01/2022	26/01/2022
A-T-028s	25/01/2022	25/01/2022	25/01/2022
A-T-029s	26/01/2022	26/01/2022	26/01/2022
A-T-031s	25/01/2022	25/01/2022	25/01/2022
A-T-032 OM	21/01/2022	21/01/2022	21/01/2022
A-T-040s	24/01/2022	24/01/2022	24/01/2022
A-T-042sTCN	24/01/2022	24/01/2022	24/01/2022
A-T-043-s	25/01/2022	26/01/2022	26/01/2022
A-T-044	21/01/2022	21/01/2022	21/01/2022
A-T-045	19/01/2022	19/01/2022	19/01/2022
A-T-050s	21/01/2022	21/01/2022	21/01/2022
A-T-055s	21/01/2022	21/01/2022	21/01/2022
Calc	26/01/2022	26/01/2022	26/01/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

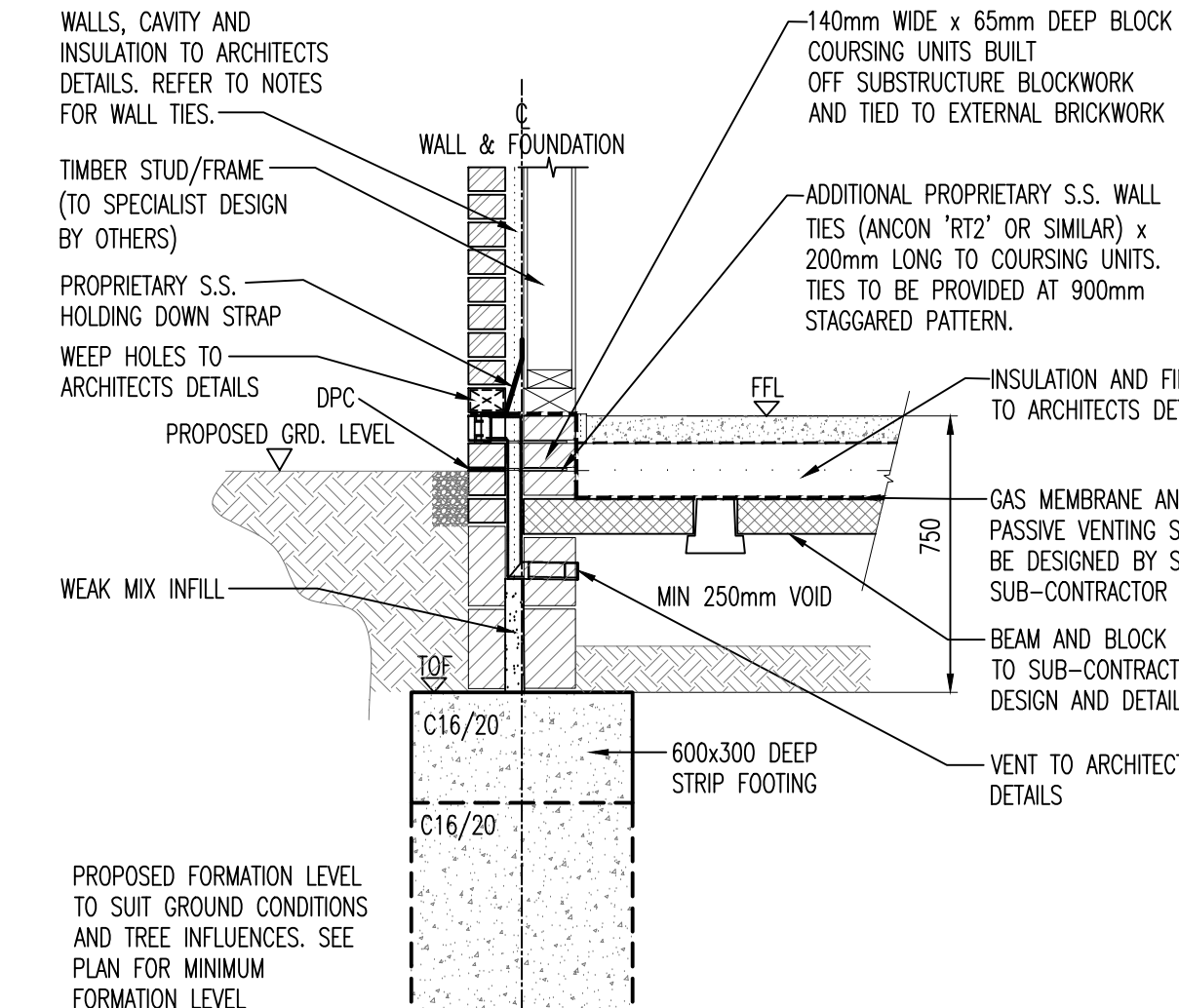
End of Report

		SUTCLIFFE INVESTIGATIONS		Human Health Assessment						
		TEL: 0151 227 3155								
		FAX: 0151 227 3156								
Job Name:		Victory Street, Manchester		Job No.:					30669LG	
Proposed Land Use:		Residential With Plant Uptake		S.O.M.:					5.0	
Above Threshold:			Sample ID:		SP-TS101	SP-TS102	SP-TS103			
Below Limit of Detection:		<0.01	Depth Top (m bgl):		0.10	0.10	0.10			
Not Tested:		n/t	Depth Base (m bgl):		0.20	0.20	0.20			
No Asbestos Detected:		NAD	Date Sampled:		18-Jan-22	18-Jan-22	18-Jan-22			
Contaminant		Units	Threshold Source	Threshold Value	SP-TS101	SP-TS102	SP-TS103			
Metals / Non-Metals / Other Suite	Arsenic (Total)	mg/kg	LQM S4UL	37	5	3	5			
	Boron (Soluble)	mg/kg	LQM S4UL	290	<1.0	<1.0	<1.0			
	Cadmium (Total)	mg/kg	LQM S4UL	11	0.6	<0.5	0.6			
	Chromium III	mg/kg	LQM S4UL	910	17	15	20			
	Chromium VI	mg/kg	LQM S4UL	6	<1	<1	<1			
	Copper (Total)	mg/kg	LQM S4UL	2400	23	19	21			
	Lead (Total)	mg/kg	C4SL	200	52	44	59			
	Mercury (Total)	mg/kg	LQM S4UL	40	<0.17	<0.17	<0.17			
	Nickel (Total)	mg/kg	LQM S4UL	180	7	5	7			
	Selenium (Total)	mg/kg	LQM S4UL	250	<1	<1	1			
	Zinc (Total)	mg/kg	LQM S4UL	3700	52	40	61			
	Cyanide (Total)	mg/kg	ATKINS	34	<1	<1	<1			
	Phenols (Total)	mg/kg	LQM S4UL	1100	<0.2	<0.2	<0.2			
	Organic matter	%	LQM S4UL	N/a	17.1	11.3	16.5			
	Sulphate (Acid Soluble)	mg/kg	LQM S4UL	N/a	1200	590	840			
	Sulphate as Water Soluble	g/l	LQM S4UL	N/a	0.09	0.02	0.01			
	Sulphide	mg/kg	LQM S4UL	N/a	<5	<5	<5			
pH	pH units	LQM S4UL	N/a	7	6.24	6.34				
Sulphur (Elemental)	mg/kg	LQM S4UL	N/a	<5	<5	<5				
Asbestos Suite	Asbestos in soil	N/a	N/a	N/a	NAD	NAD	NAD			
	Asbestos Matrix (microscope)	N/a	N/a	N/a	n/t	n/t	n/t			
	ACM - Suitable for Water Absorption Test?	N/a	N/a	N/a	N/A	N/A	N/A			
	Asbestos in soil % composition	% w/w		0.001	n/t	n/t	n/t			
TPH Suite	TPH (Total)	mg/kg		N/a	98	73	109			
	Total Aliphatic	mg/kg		N/a	63	48	69			
	C5 to C6 aliphatic	mg/kg	LQM S4UL	160	<0.01	<0.01	<0.01			
	C6 to C8 aliphatic	mg/kg	LQM S4UL	530	<0.01	<0.01	<0.01			
	C8 to C10 aliphatic	mg/kg	LQM S4UL	150	<1	<1	<1			
	C10 to C12 aliphatic	mg/kg	LQM S4UL	760	<1	<1	<1			
	C12 to C16 aliphatic	mg/kg	LQM S4UL	4300	<1	<1	<1			
	C16 to C35 aliphatic	mg/kg	LQM S4UL	110000	55	41	59			
	C35 to C44 aliphatic	mg/kg	LQM S4UL	110000	8	7	10			
	Total Aromatic	mg/kg		N/a	35	25	40			
	C5 to C7 aromatic (Benzene)	mg/kg	LQM S4UL	300	<0.01	<0.01	<0.01			
	C7 to C8 aromatic (Toluene)	mg/kg	LQM S4UL	660	<0.01	0.04	0.24			
	C8 to C10 aromatic	mg/kg	LQM S4UL	190	<1	<1	<1			
	C10 to C12 aromatic	mg/kg	LQM S4UL	380	1	1	3			
	C12 to C16 aromatic	mg/kg	LQM S4UL	660	4	3	6			
	C16 to C21 aromatic	mg/kg	LQM S4UL	930	8	5	9			
	C21 to C35 aromatic	mg/kg	LQM S4UL	1700	17	12	19			
C35 to C44 aromatic	mg/kg	LQM S4UL	1700	4	4	4				
Aliphatic + Aromatic EC >44-70	mg/kg	LQM S4UL	N/a	n/t	n/t	n/t				
BTEX Suite	benzene	mg/kg	LQM S4UL	0.37	<0.01	<0.01	<0.01			
	toluene	mg/kg	LQM S4UL	660	<0.01	0.04	0.24			
	ethylbenzene	mg/kg	LQM S4UL	260	<0.01	<0.01	<0.01			
	M&P Xylene	mg/kg	LQM S4UL	310	<0.01	<0.01	<0.01			
	O-Xylene	mg/kg	LQM S4UL	330	<0.01	<0.01	<0.01			
PAH Suite	naphthalene	mg/kg	LQM S4UL	13	<0.03	<0.03	<0.03			
	acenaphthylene	mg/kg	LQM S4UL	920	<0.01	<0.01	<0.01			
	acenaphthene	mg/kg	LQM S4UL	1100	0.03	<0.01	<0.01			
	fluorene	mg/kg	LQM S4UL	860	0.03	<0.01	<0.01			
	phenanthrene	mg/kg	LQM S4UL	440	0.21	0.04	0.07			
	anthracene	mg/kg	LQM S4UL	11000	0.04	<0.02	<0.02			
	fluoranthene	mg/kg	LQM S4UL	890	0.35	0.11	0.14			
	pyrene	mg/kg	LQM S4UL	2000	0.31	0.09	0.13			
	benzo(a)anthracene	mg/kg	LQM S4UL	13	0.15	<0.04	0.06			
	chrysene	mg/kg	LQM S4UL	27	0.24	0.09	0.12			
	benzo(b)fluoranthene	mg/kg	LQM S4UL	3.7	0.28	0.11	0.14			
	benzo(k)fluoranthene	mg/kg	LQM S4UL	100	<0.07	<0.07	<0.07			
	benzo(a)pyrene	mg/kg	LQM S4UL	3	0.19	0.07	0.09			
	dibenzo(ah)anthracene	mg/kg	LQM S4UL	0.3	<0.04	<0.04	<0.04			
	benzo(ghi)perylene	mg/kg	LQM S4UL	350	0.15	<0.05	0.09			
	indeno(123cd)pyrene	mg/kg	LQM S4UL	41	0.16	0.07	0.1			

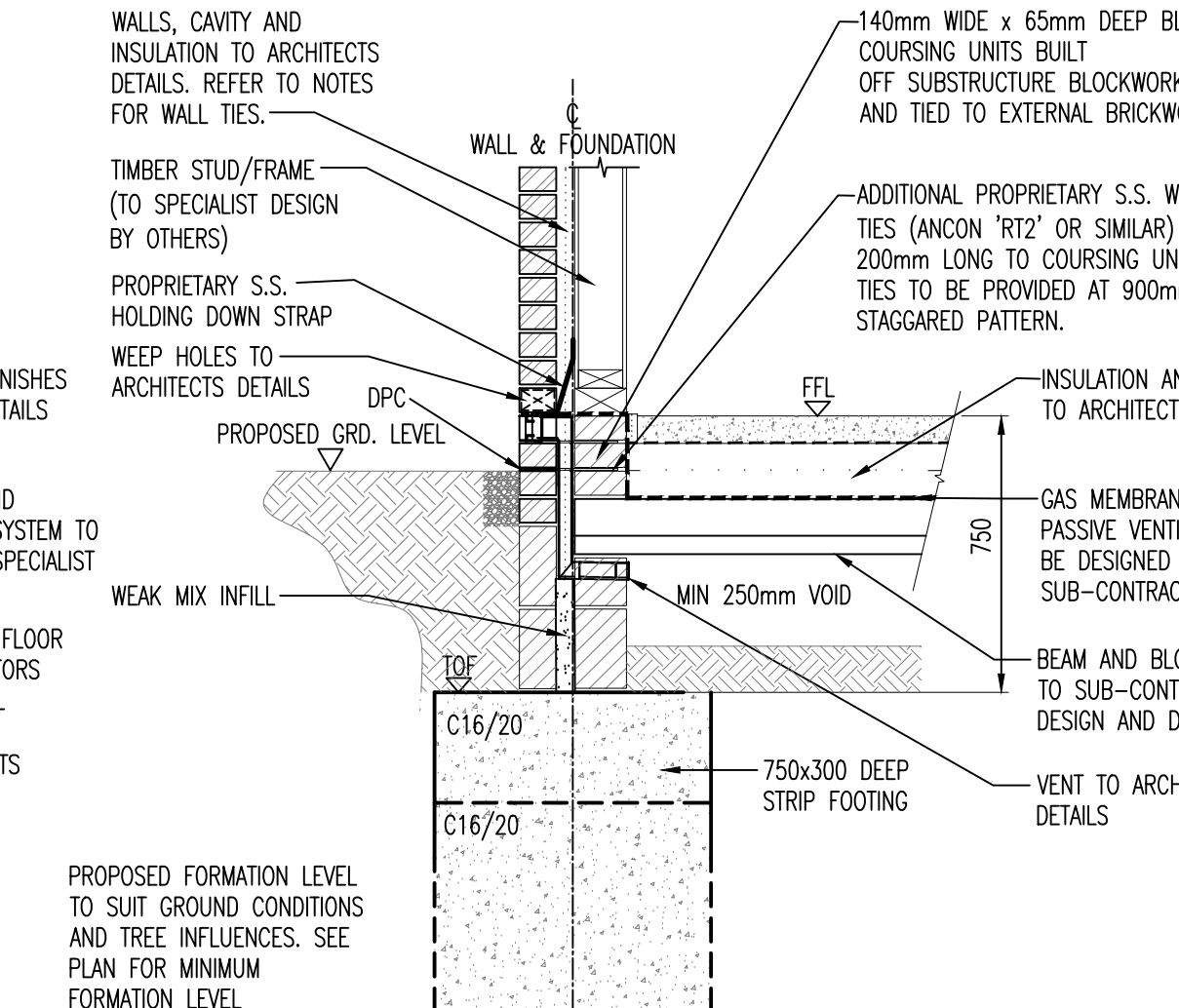
Appendix E – Foundation Design Drawings



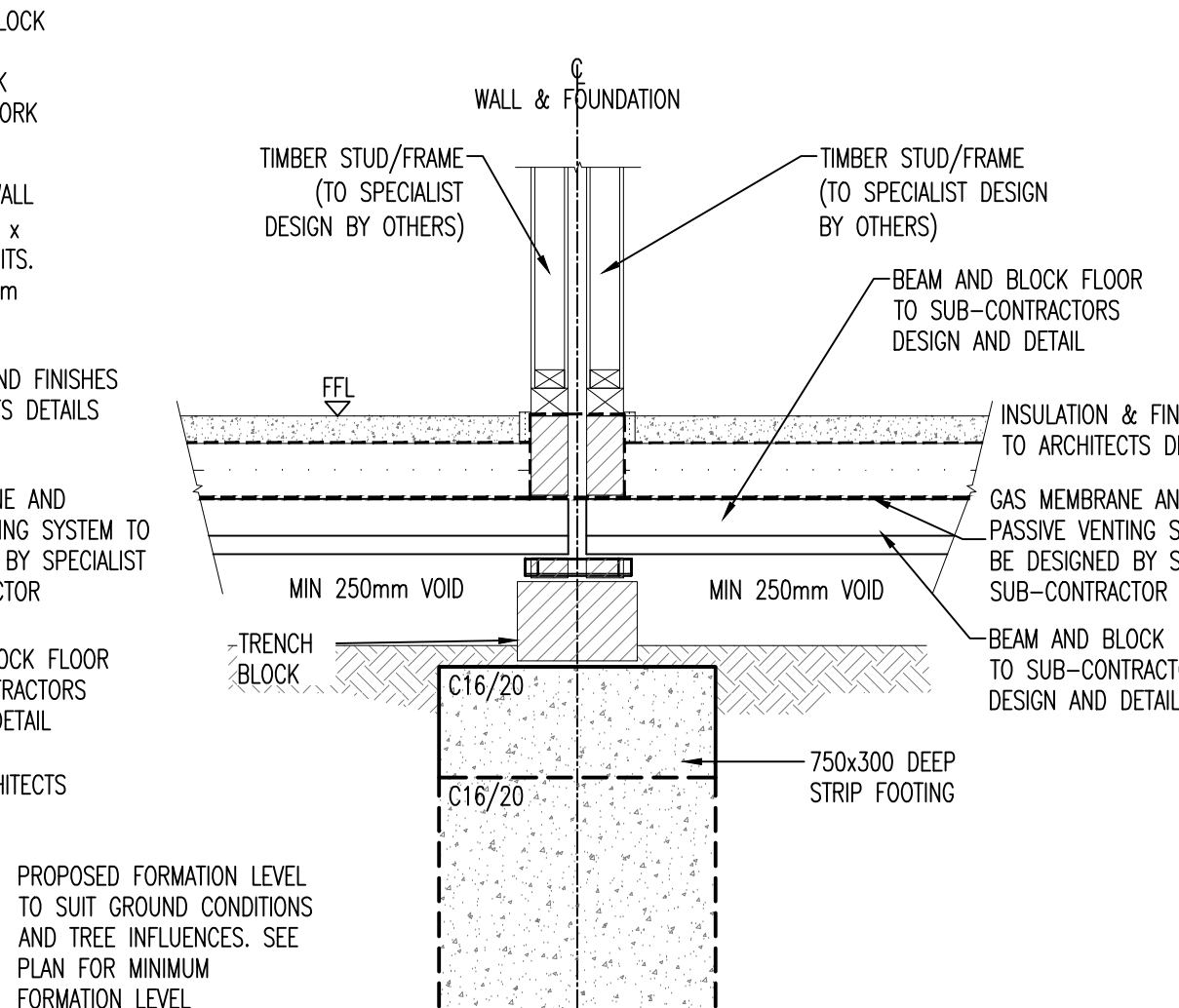
FOUNDATION AND GROUND FLOOR LAYOUT
(SCALE 1:50)



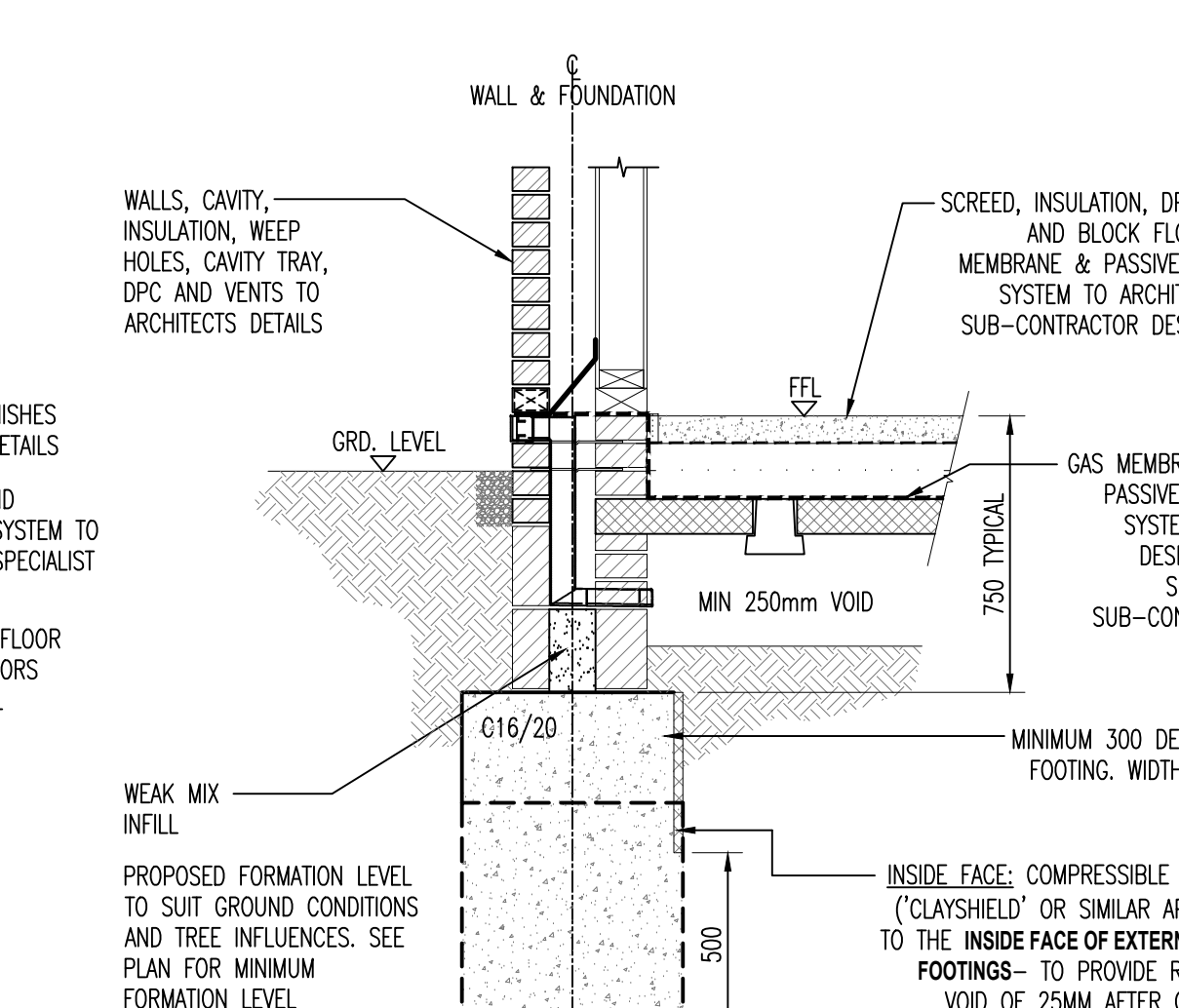
SECTION A-A
(SCALE 1:20)



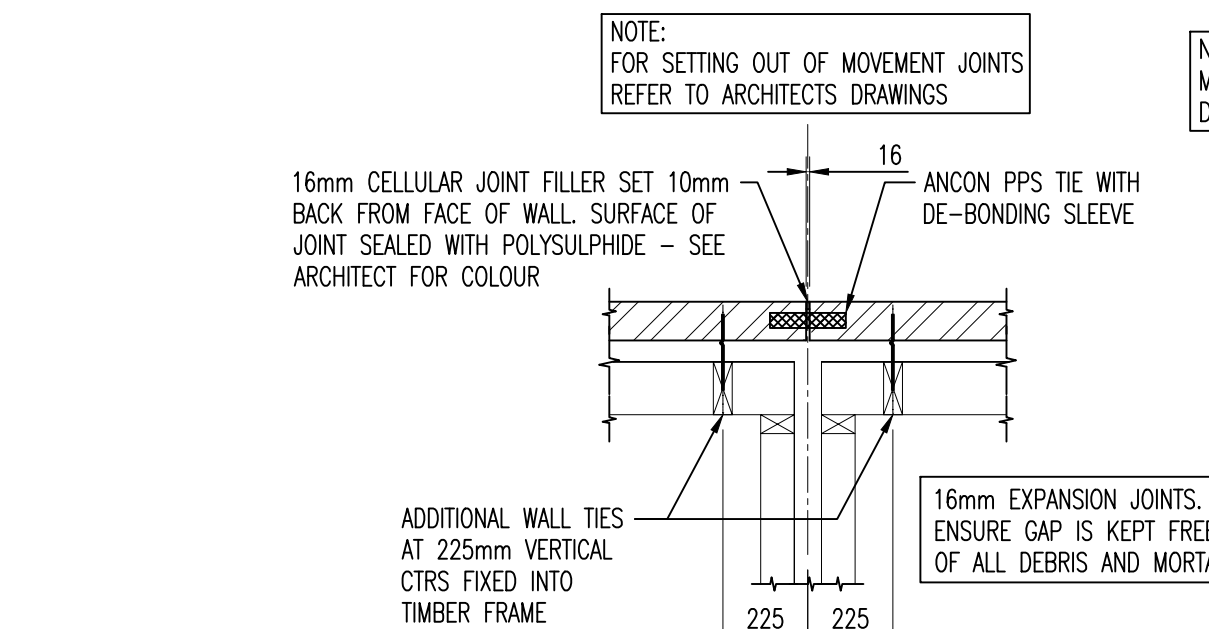
SECTION B-B
(SCALE 1:20)



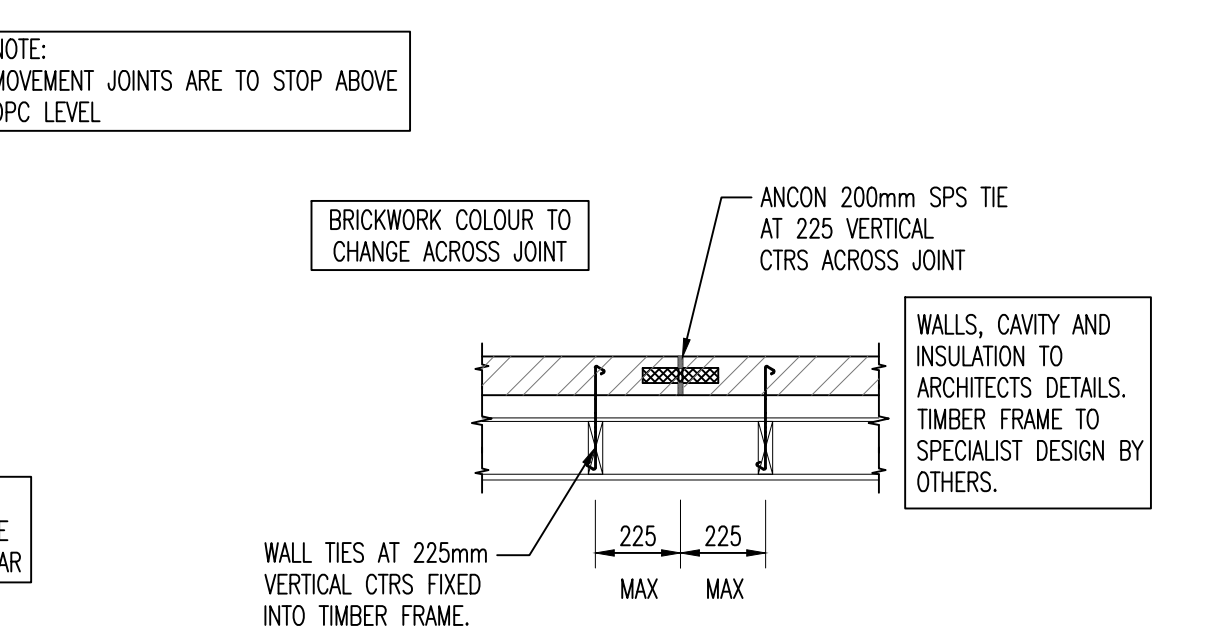
SECTION C-C
(SCALE 1:20)



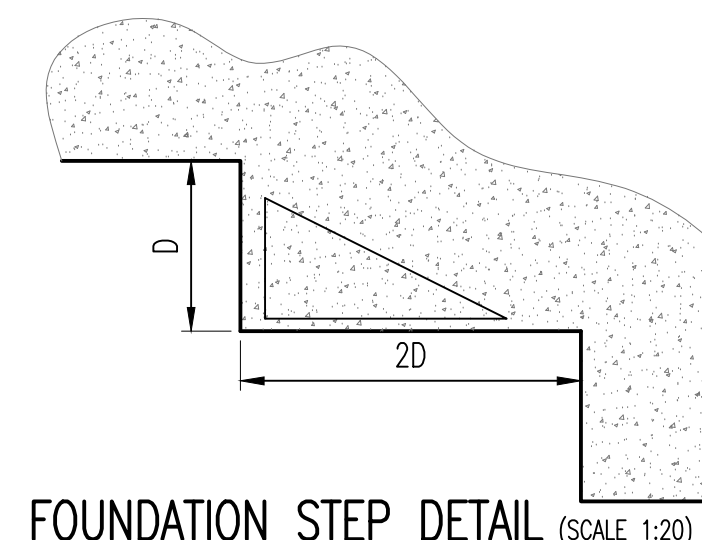
TYPICAL SECTION THROUGH EXTERNAL WALL WITH TYPICAL HEAVE PROTECTION
(SCALE 1:20)



MOVEMENT JOINT DETAIL (M.J.)
(SCALE 1:20)

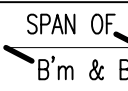


BRICKWORK JOINT DETAIL (B.J.)
(SCALE 1:20)



FOUNDATION STEP DETAIL (SCALE 1:20)

THE CONTRACTOR IS TO BE FULLY RESPONSIBLE FOR ALL TEMPORARY/PERMANENT PROPPING AND SHORING ON THE PROJECT. CONTRACTOR TO ENSURE THAT ALL PARTS OF THE STRUCTURE ARE ADEQUATELY PROPPED PRIOR TO ANY COMMENCEMENT OF WORKS. ADVICE MAY BE SOUGHT FROM A SPECIALIST OR FROM THE ENGINEER.

SPAN OF  DENOTES SPAN OF BEAM & BLOCK FLOOR TO BE DESIGNED BY SPECIALIST MANUFACTURER

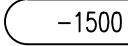
FOR SETTING OUT OF SERVICE PENETRATIONS THROUGH SLAB REFER TO ARCHITECTS DRAWINGS.

NOTE: FOR SETTING OUT OF MOVEMENT JOINTS REFER TO ARCHITECTS DRAWINGS

NOTE:  INDICATES MOVEMENT JOINTS TO BE TAKEN FROM DPC U.N.O.

PC UNIT DEPTHS ARE TO BE TO MANUFACTURERS DESIGN

NOTE: TIMBER FRAME SUPPLIER TO CONFIRM REQUIREMENT AND LOCATION OF INTERNAL LOAD BEARING WALLS, FOUNDATION DESIGN TO BE CONFIRMED UPON RECEIPT OF TIMBER FRAME DRAWINGS. CONTRACTOR TO ALLOW FOR POTENTIAL INTERNAL FOUNDATIONS

 INDICATES MINIMUM DEPTH TO UNDERSIDE OF FOUNDATION (FORMATION) FROM FFL DUE TO TREES. DEPTH TO BE TAKEN FROM EXISTING OR PROPOSED GROUND LEVEL, WHICHEVER IS LOWER.

--- DENOTES COMPRESSIBLE MATERIAL INSIDE FACE (CLAYMASTER OR SIMILAR APPROVED)

CONTRACTOR TO CONSIDER THE TEMPORARY STABILITY OF ALL MASONRY DURING CONSTRUCTION (DESIGN TEMPORARY WORKS BY OTHERS)

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS DRAWINGS.

NOTE: ALL WALLS TO BE POSITIONED CENTRALLY ON GROUND BEAM

 ANY EXISTING FOOTINGS, DRAINS/SERVICES ENCOUNTERED DURING EXCAVATION WORKS TO BE REMOVED LOCALLY TO ALLOW CONSTRUCTION OF NEW FOUNDATIONS AS DETAILED.

 MANUAL HANDLING ISSUES RELATIVE TO BEAM & BLOCK FLOORING.

NOTE: ALL INTERNAL WALLS TO BE TOOTHED INTO EXTERNAL/PARTION WALL OR BUILT INTO USING CATNIC STRONGHOLD SYSTEM OR SIMILAR APPROVED

NOTE: ALL FINISHED FLOOR LEVELS TO BE CONFIRMED BY THE ARCHITECT.

ALL DIMENSIONS, LEVELS AND SETTING OUT TO BE CONFIRMED WITH THE ARCHITECT PRIOR TO CONSTRUCTION.

GFL* LINTEL = FIRST FLOOR LINTEL BY SPECIALIST MANUFACTURER

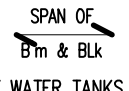
BEAM AND BLOCK FLOORS

PC FLOORING SPECIALIST TO SUBMIT DRAWINGS AND CALCULATIONS TO ENGINEER PRIOR TO MANUFACTURE. (MIN. 5 WORKING DAYS)

PC UNITS TO BE DESIGNED TO CARRY THE FOLLOWING SAFE WORKING LOADS (IN ADDITION TO SELF WEIGHT OF THE UNITS).

PERMANENT LOADS: FINISHES 1.8 kN/m²

VARIABLE LOADS: GENERAL 1.5kN/m² NON LOADBEARING STUD PARTITIONS 1.5kN/m² RUN / 1.0kN/m² BLANKET UNO.

DIRECTION OF SPAN OF PC UNITS INDICATED THUS ON PLANK - 

NOTE: THE STRUCTURAL ENGINEER IS TO BE INFORMED IF ANY WATER TANKS ARE TO BE LOCATED WITHIN THE PLANT ROOM OR ANY OTHER AREAS WITHIN THE BUILDING.

MAIN CONTRACTOR TO CONSIDER TEMPORARY WORKS/PROPPING WHILST INSTALLING PC UNITS ONTO STEELWORK/LINTELS.

MASONRY WALLS TO BE CURED PRIOR TO PLACING PC UNITS UPON THEM.

INFILL BLOCK STRENGTH BETWEEN PRECAST BEAMS TO ACHIEVE SAME OR HIGHER COMPRESSIVE STRENGTH OF SUPPORTING MASONRY WALL.

BEAMS UNDER STAIR LOCATIONS OR PARTITION WALLS TBC BY SUB CONTRACTOR DESIGN I.E. DOUBLED/TRIPLED UP ETC.

GENERAL NOTES

DO NOT SCALE OFF THIS DRAWING

THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT STRUCTURAL AND ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.

ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR / FABRICATOR PRIOR TO COMMENCEMENT OF WORKS.

ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.

ALL WORKS TO BE CARRIED OUT IN STRICT ACCORDANCE WITH THE ENGINEER'S SPECIFICATIONS, RELEVANT BRITISH STANDARDS, STATUTORY HEALTH AND SAFETY/C.D.M. REGULATIONS, RELEVANT CODES OF PRACTICE AND THE CURRENT EDITION OF THE BUILDING REGULATIONS.

FOR FINAL SETTING OUT INFORMATION RELATING TO GRID LINES AND WALL POSITIONS REFER TO THE ARCHITECT'S DRAWINGS.

FOUNDATIONS (TRADITIONAL)

BASED UPON SITE INVESTIGATION RESULTS:

DESIGN SULFATE CLASS: DS-1
AZEC CLASSIFICATION: AC-19
DESIGN CHEMICAL CLASS: DC-1

FOUNDATIONS TO BE TAKEN DOWN TO SUITABLE BEARING STRATA CAPABLE OF BEARING 75kN/m². BEARING STRATA TO BE APPROVED BY THE ENGINEER. IF VARIABLE BEARING STRATA IS ENCOUNTERED ON SITE, ENGINEER TO BE NOTIFIED. FINAL DEPTH OF FOUNDATIONS (& REINFORCEMENT) TO BE AGREED ON SITE WITH LOCAL BUILDING INSPECTOR.

MAIN CONTRACTOR TO ENSURE ALL GROUND EXCAVATIONS ARE STABLE AND SECURELY SHORED AND BRACED. ADVICE ON THIS MATTER MAY BE OBTAINED FROM THE STRUCTURAL ENGINEER.

PLAIN CONCRETE (C16/20)

C16/20 PLAIN CONCRETE USED IN FOUNDATIONS TO HAVE:-

MINIMUM CEMENT CONTENT OF 220 kg/m³
WATER/CEMENT RATIO OF 0.7
MAXIMUM SIZE OF AGGREGATE TO BE 20mm

MAIN CONTRACTOR TO ENSURE ALL GROUND EXCAVATIONS ARE STABLE AND SECURELY SHORED. ADVICE ON THIS MATTER MAY BE OBTAINED FROM THE STRUCTURAL ENGINEER.

MASONRY WALL CONSTRUCTION

OUTER LEAF BRICKWORK TO HAVE A WATER ABSORPTION BETWEEN 7% AND 12% UNLESS NOTED OTHERWISE (U.N.O)

MINIMUM STRENGTH OF BLOCKWORK (U.N.O):-
BELOW GROUND 7.00 N/mm²
ABOVE GROUND 3.50 N/mm²
MORTAR ABOVE GRD TO BE 1:1:6 (iii) / M4
MORTAR BELOW GRD TO BE 1:3 (i) / M12
FOR DETAILS OF ALL BRICKWORK, BLOCKWORK AND WALL CONSTRUCTION REFER TO ARCHITECTS DRAWINGS AND DETAILS.

MOVEMENT JOINTS TO BE:-
BRICKWORK- POSITIONED AT MAX. 12000mm CENTRES

ARCHITECT TO POSITION MOVEMENT JOINTS TO THE APPROVAL OF THE ENGINEER.

TIMBER FRAME WALL TIES (BUILDING HEIGHT < 15m)

WALL TIES TO BE STAINLESS STEEL AND TO COMPLY WITH WITH BS EN 845-1 AND PD-6697.

EXTERNAL CAVITY WALL TIES TO BE TYPE 6. MINIMUM EMBEDMENT DEPTH IN OUTER LEAF MASONRY MORTAR TO BE 50mm AND WALL TIE TO FIX BACK TO INNER LEAF. TIMBER STUD (NOT OSB BOARD). MAX SPACING HORIZONTALLY AND VERTICALLY I.E. 4.4 TIES PER SQ. METRE OF WALL. MINIMUM ADDITIONAL TIES ARE TO BE USED AT JAMBS OF OPENINGS SO AS TO PROVIDE A VERTICAL SPACING NOT GREATER THAN 300mm. WITHIN 150mm OF VERGES AND JAMBS, A TIE IS REQUIRED AT LEAST EVERY 300mm VERTICALLY.

LINTELS (STEEL)

LINTELS SHOWN INDICATIVELY. LINTELS TO BE SUB CONTRACTOR DESIGNED AND INSTALLED TO MANUFACTURER'S DETAILS. POINT LOADS ON LINTELS TO BE AVOIDED UNLESS APPROVED BY MANUFACTURER. MINIMUM BEARING ONTO MASONRY WALLS TO BE 150mm U.N.O.

LINTELS TO BE PROPPED DURING CONSTRUCTION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS

LINTELS (CONCRETE)

LINTELS SHOWN INDICATIVELY. LINTELS TO BE SUB CONTRACTOR DESIGNED AND INSTALLED TO MANUFACTURER'S DETAILS. POINT LOADS ON LINTELS TO BE AVOIDED UNLESS APPROVED BY MANUFACTURER. MINIMUM BEARING ONTO MASONRY WALLS TO BE 150mm U.N.O.

LINTELS TO BE PROPPED DURING CONSTRUCTION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

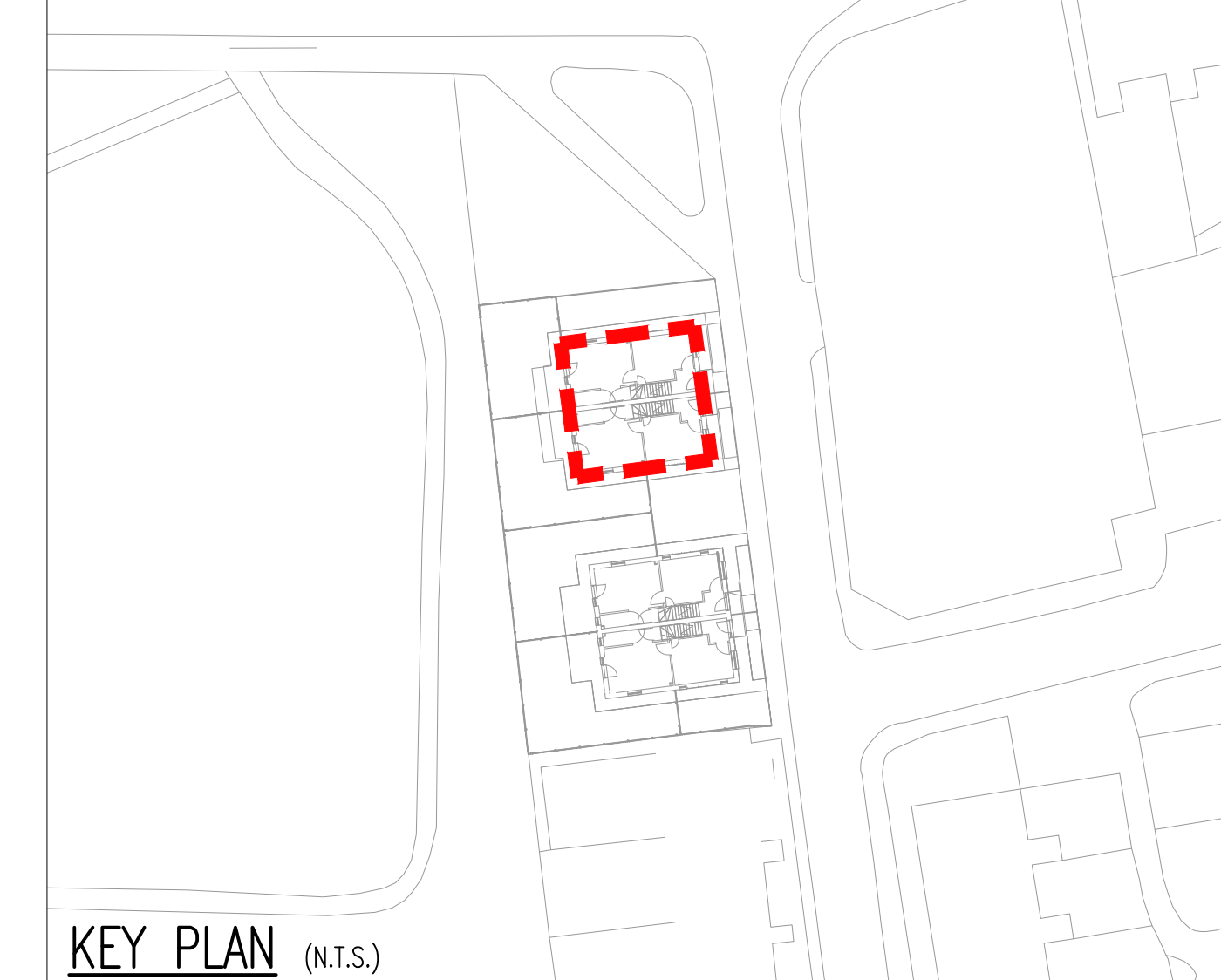
SUBSTRUCTURE LINTELS TO BE A MINIMUM DEPTH OF 140mm.

GAS MEMBRANE

GAS MEMBRANE TO BE PROCTOR GROUP 'PROTECH GM SUPER' (OR SIMILAR APPROVED) INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS TO SATISFY AMBER 1 nBc CLASSIFICATION; ALL TO SPECIALIST DESIGN.

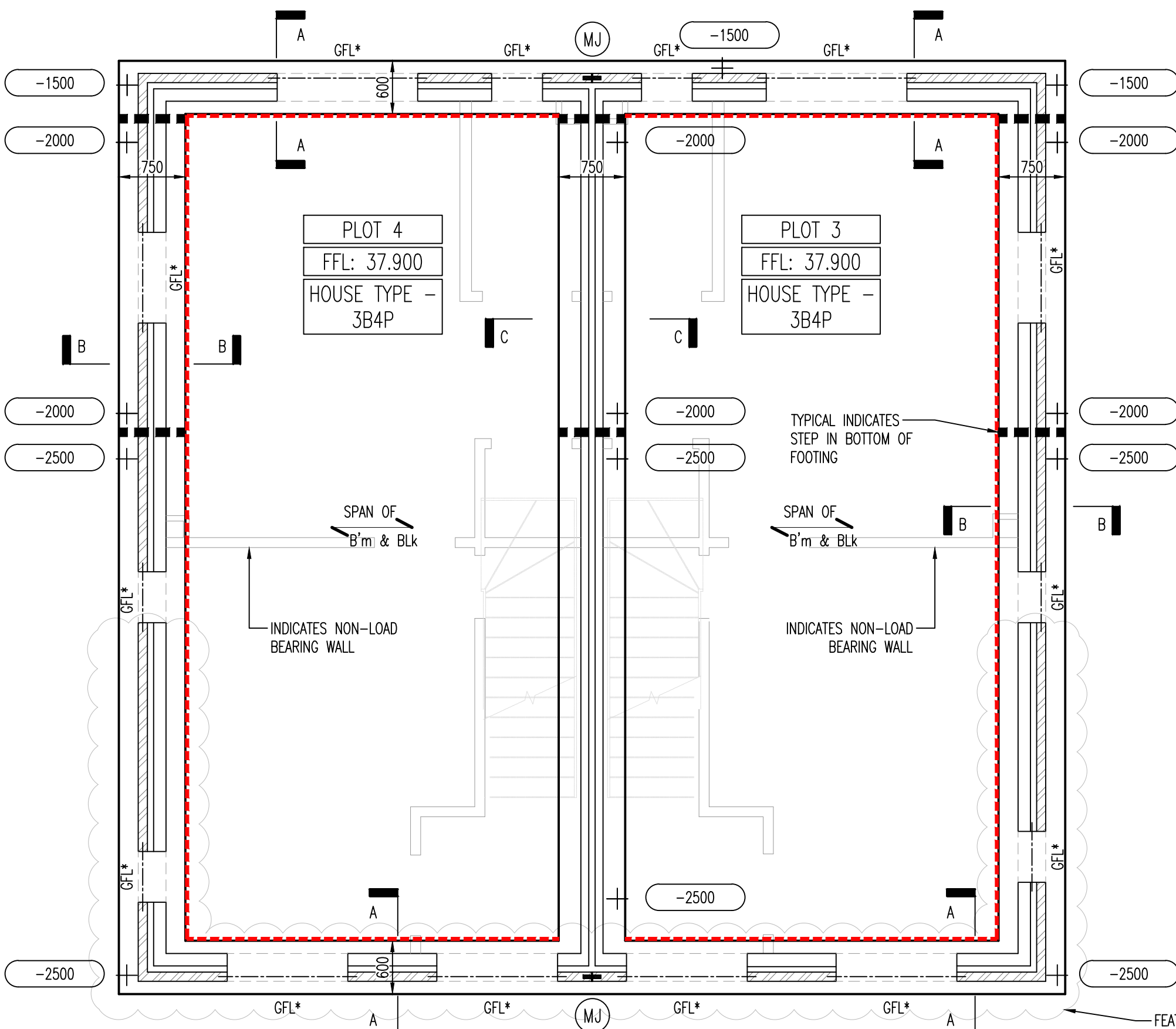
"AS-BUILT" DRAWING

THE INFORMATION PROVIDED ON THESE AS-BUILT DRAWINGS IS TAKEN FROM OUR CONSTRUCTION DRAWINGS AND THE NOTIFICATION FROM SITE THAT NO CHANGES HAVE OCCURRED DURING CONSTRUCTION. ANY NOTIFIED CHANGES HAVE BEEN INCORPORATED. SUTCLIFFE CAN TAKE NO RESPONSIBILITY FOR INFORMATION ON OUR AS-BUILT DRAWINGS IF IT IS FOUND TO DIFFER FROM OUR CONSTRUCTION ISSUE DRAWINGS AND SUTCLIFFE HAVE NOT BEEN NOTIFIED OF ANY CHANGES.

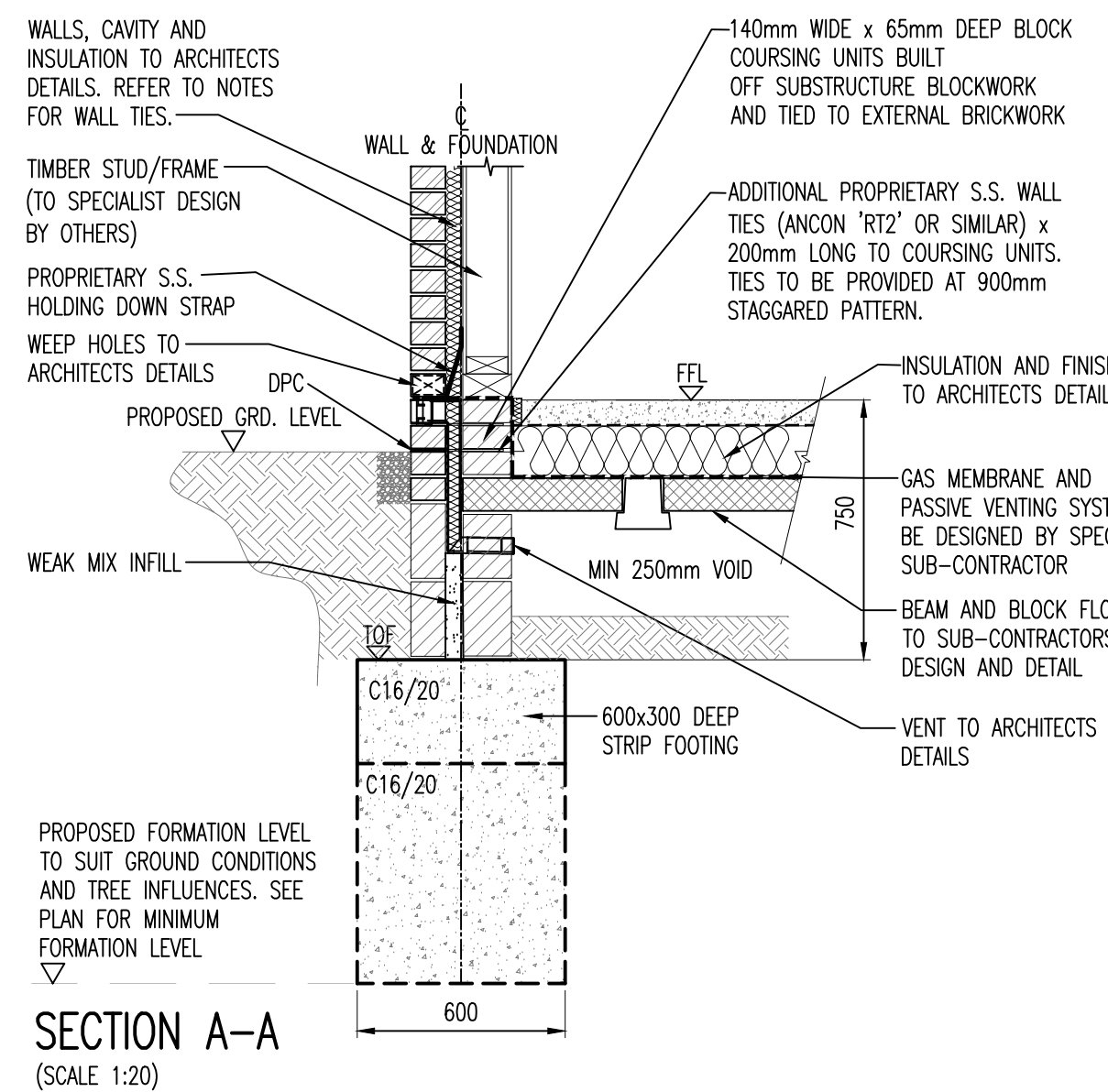


KEY PLAN (N.T.S.)

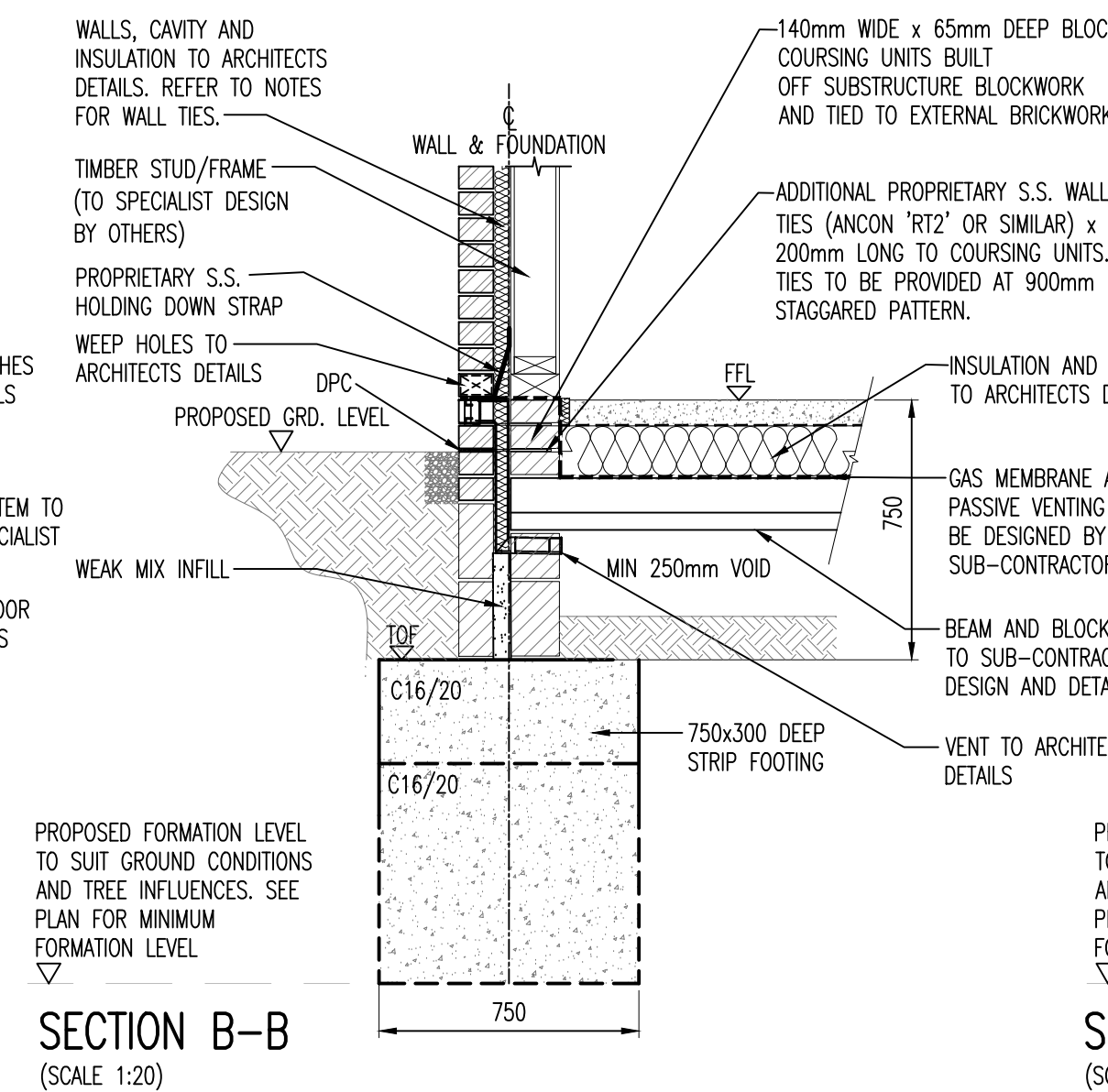
F01	AS-BUILT - FINAL ISSUE	21.07.21	CD	CTV
Rev	Description	Date	By	Chkd
Drawing Status				
AS-BUILT ISSUE				
				
Client RP TYSON CONSTRUCTION				
Project VICTORY STREET RUSHOLME MANCHESTER				
Drawing Title FOUNDATION AND GROUND FLOOR LAYOUT AND DETAILS PLOTS 1&2. HOUSE TYPE - 3B4P				
Date FEB. 2020	Drawn By NG	Checked By CTV		
Scale at A1 AS SHOWN		Project Number 30669		
Sheet Number 30669-SUT-ZZ-B1-DR-S-200-0001				Revision F01



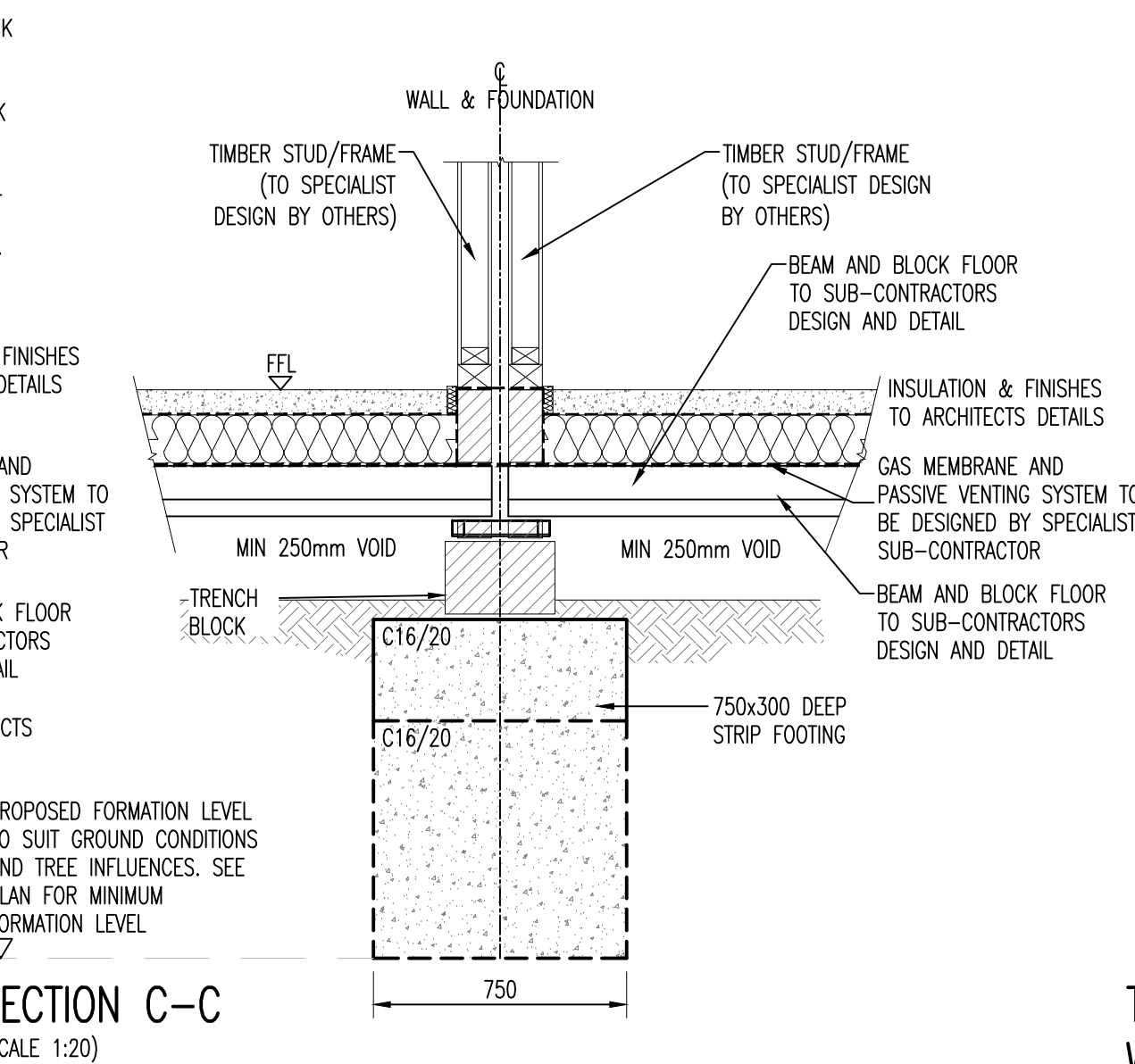
FOUNDATION AND GROUND FLOOR LAYOUT
(SCALE 1:50)



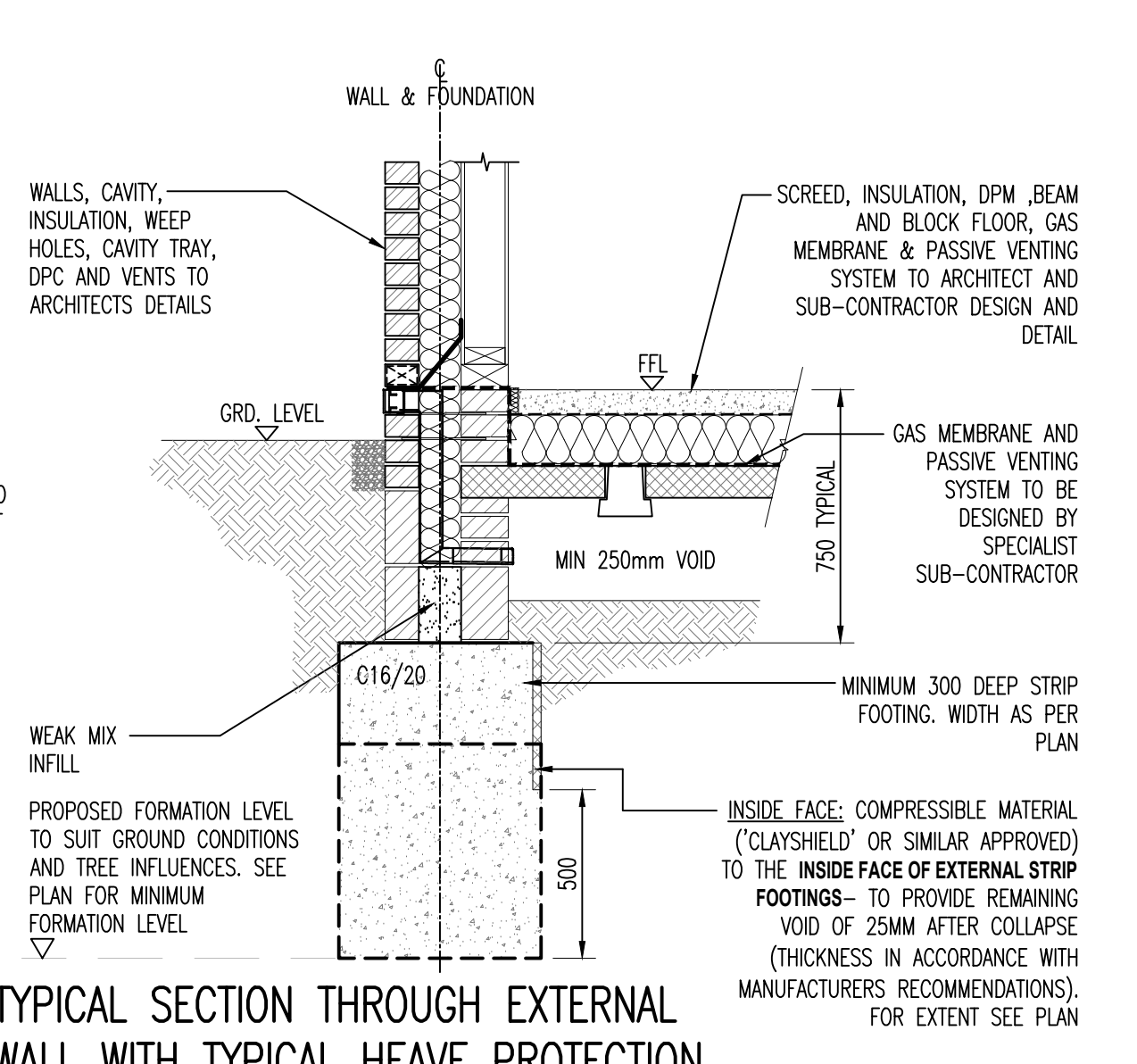
SECTION A-A
(SCALE 1:20)



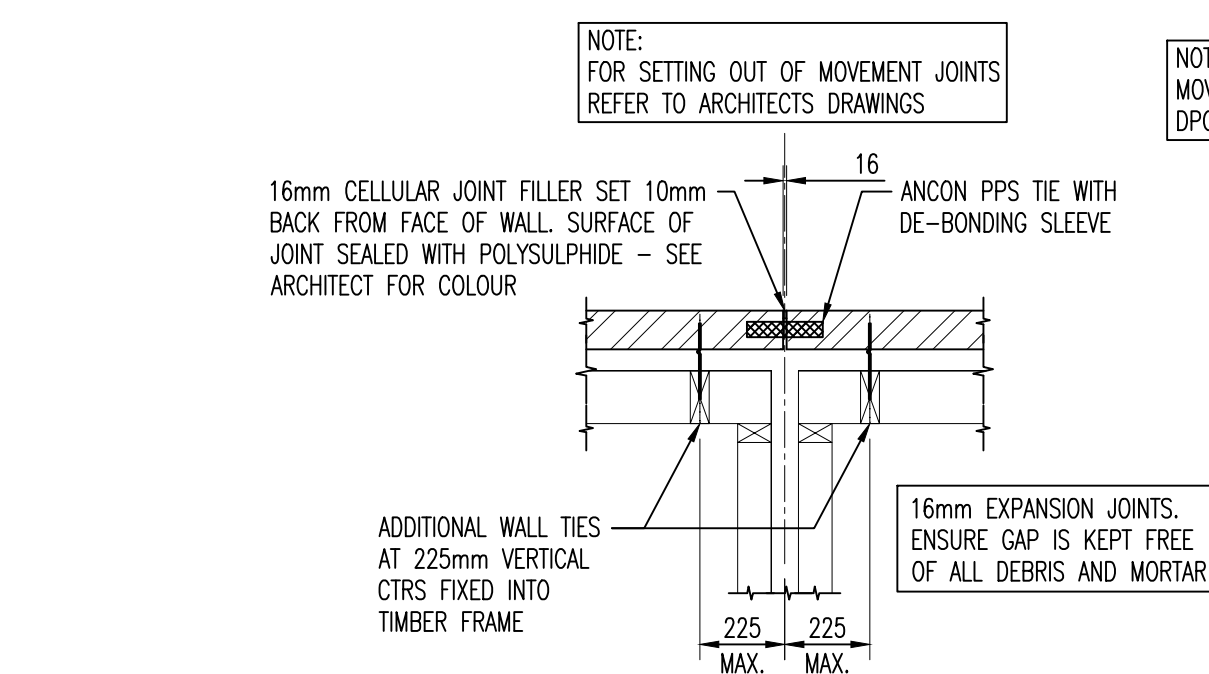
SECTION B-B
(SCALE 1:20)



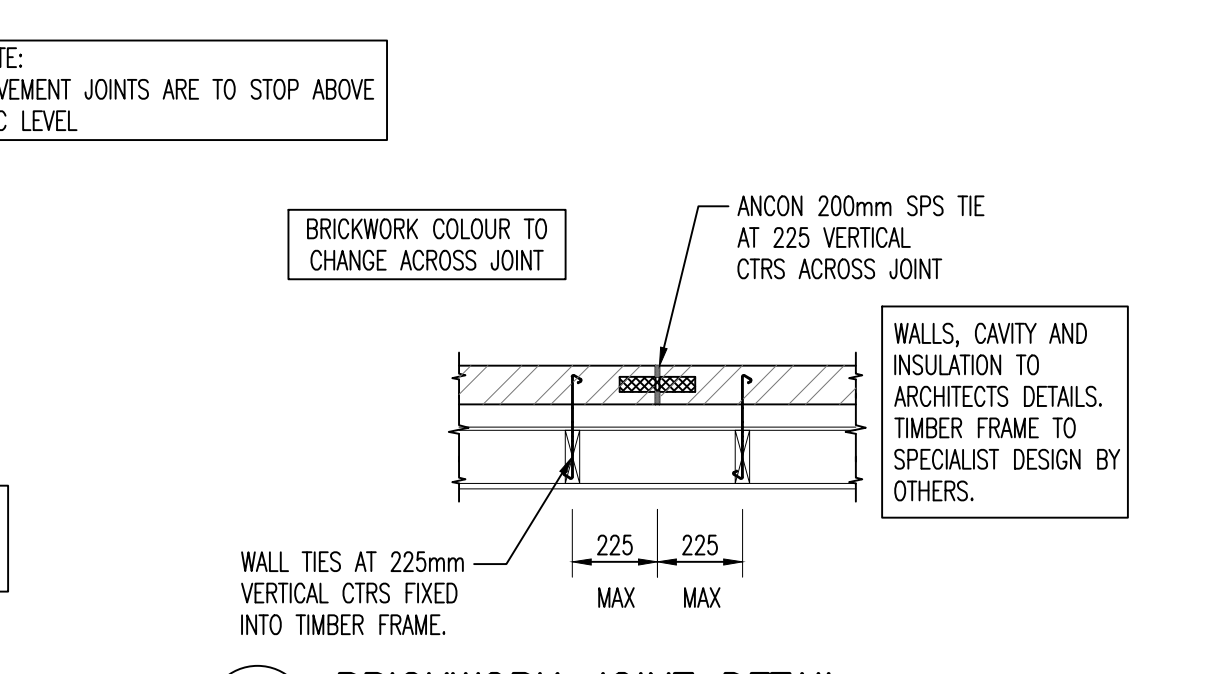
SECTION C-C
(SCALE 1:20)



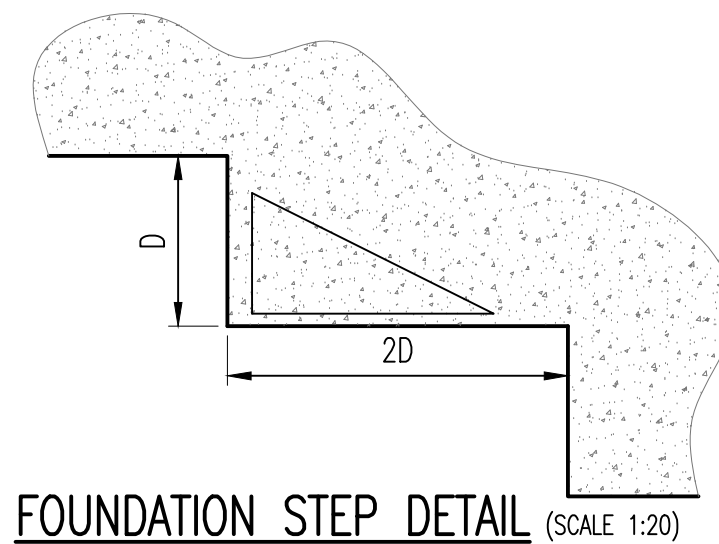
TYPICAL SECTION THROUGH EXTERNAL WALL WITH TYPICAL HEAVE PROTECTION
(SCALE 1:20)



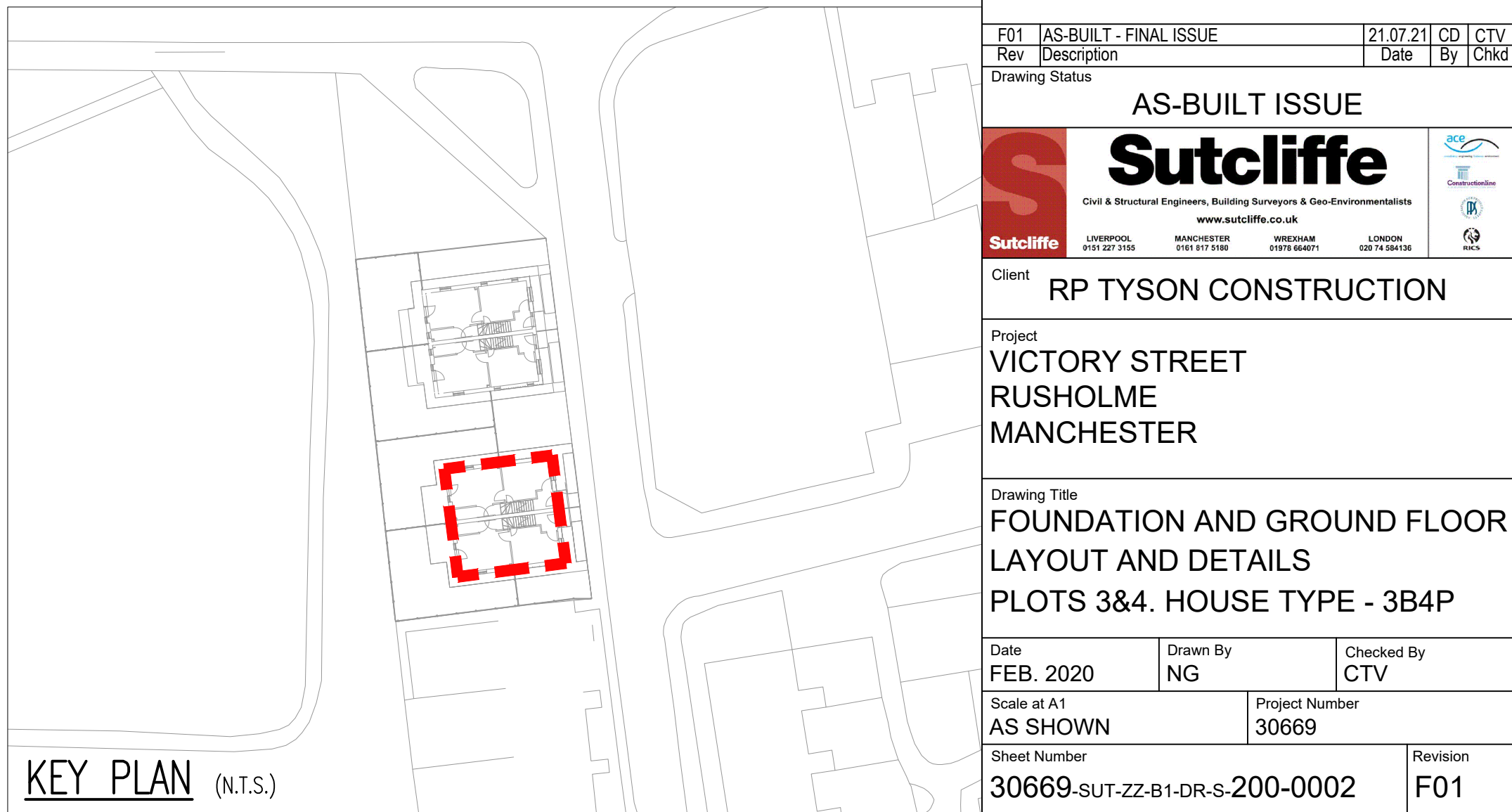
MOVEMENT JOINT DETAIL (MJ)
(SCALE 1:20)



BRICKWORK JOINT DETAIL (BJ)
(SCALE 1:20)



FOUNDATION STEP DETAIL (SCALE 1:20)



KEY PLAN (N.T.S.)

THE CONTRACTOR IS TO BE FULLY RESPONSIBLE FOR ALL TEMPORARY/PERMANENT PROPPING AND SHORING ON THE PROJECT. CONTRACTOR TO ENSURE THAT ALL PARTS OF THE STRUCTURE ARE ADEQUATELY PROPPED PRIOR TO ANY COMMENCEMENT OF WORKS. ADVICE MAY BE SOUGHT FROM A SPECIALIST OR FROM THE ENGINEER.	--- DENOTES COMPRESSIBLE MATERIAL INSIDE FACE (CLAYMASTER OR SIMILAR APPROVED)
SPAN OF B'm & Blk DENOTES SPAN OF BEAM & BLOCK FLOOR TO BE DESIGNED BY SPECIALIST MANUFACTURER	CONTRACTOR TO CONSIDER THE TEMPORARY STABILITY OF ALL MASONRY DURING CONSTRUCTION (DESIGN TEMPORARY WORKS BY OTHERS)
FOR SETTING OUT OF SERVICE PENETRATIONS THROUGH SLAB REFER TO ARCHITECTS DRAWINGS.	THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS DRAWINGS.
NOTE: FOR SETTING OUT OF MOVEMENT JOINTS REFER TO ARCHITECTS DRAWINGS	NOTE: ALL WALLS TO BE POSITIONED CENTRALLY ON GROUND BEAM
NOTE: (MJ) INDICATES MOVEMENT JOINTS TO BE TAKEN FROM DPC U.N.O.	ANY EXISTING FOOTINGS, DRAINS/SERVICES ENCOUNTERED DURING EXCAVATION WORKS TO BE REMOVED LOCALLY TO ALLOW CONSTRUCTION OF NEW FOUNDATIONS AS DETAILED.
PC UNIT DEPTHS ARE TO BE TO MANUFACTURERS DESIGN	MANUAL HANDLING ISSUES RELATIVE TO BEAM & BLOCK FLOORING.
NOTE: TIMBER FRAME SUPPLIER TO CONFIRM REQUIREMENT AND LOCATION OF INTERNAL LOAD BEARING WALLS, FOUNDATION DESIGN TO BE CONFIRMED UPON RECEIPT OF TIMBER FRAME DRAWINGS. CONTRACTOR TO ALLOW FOR POTENTIAL INTERNAL FOUNDATIONS	NOTE: ALL INTERNAL WALLS TO BE TOOTHED INTO EXTERNAL/PARTION WALL OR BUILT INTO USING CATINIC STRONGHOLD SYSTEM OR SIMILAR APPROVED
INDICATES MINIMUM DEPTH TO UNDERSIDE OF FOUNDATION (FORMATION) FROM FFL DUE TO TREES. DEPTH TO BE TAKEN FROM EXISTING OR PROPOSED GROUND LEVEL, WHICHEVER IS LOWER.	NOTE: ALL FINISHED FLOOR LEVELS TO BE CONFIRMED BY THE ARCHITECT.
	ALL DIMENSIONS, LEVELS AND SETTING OUT TO BE CONFIRMED WITH THE ARCHITECT PRIOR TO CONSTRUCTION.
	GFL* LINTEL = FIRST FLOOR LINTEL BY SPECIALIST MANUFACTURER

"AS-BUILT" DRAWING

THE INFORMATION PROVIDED ON THESE AS-BUILT DRAWINGS IS TAKEN FROM OUR CONSTRUCTION DRAWINGS AND THE NOTIFICATION FROM SITE THAT NO CHANGES HAVE OCCURRED DURING CONSTRUCTION. ANY NOTIFIED CHANGES HAVE BEEN INCORPORATED. SUTCLIFFE CAN TAKE NO RESPONSIBILITY FOR INFORMATION ON OUR AS-BUILT DRAWINGS IF IT IS FOUND TO DIFFER FROM OUR CONSTRUCTION ISSUE DRAWINGS AND SUTCLIFFE HAVE NOT BEEN NOTIFIED OF ANY CHANGES.

BEAM AND BLOCK FLOORS	GENERAL NOTES
PC FLOORING SPECIALIST TO SUBMIT DRAWINGS AND CALCULATIONS TO ENGINEER PRIOR TO MANUFACTURE. (MIN. 5 WORKING DAYS)	DO NOT SCALE OFF THIS DRAWING
PC UNITS TO BE DESIGNED TO CARRY THE FOLLOWING SAFE WORKING LOADS (IN ADDITION TO SELF WEIGHT OF THE UNITS).	THIS DRAWING TO READ IN CONJUNCTION WITH ALL RELEVANT STRUCTURAL AND ARCHITECTURAL DRAWINGS AND SPECIFICATIONS.
PERMANENT LOADS: FINISHES	ALL DIMENSIONS TO BE CHECKED ON SITE BY THE CONTRACTOR / FABRICATOR PRIOR TO COMMENCEMENT OF WORKS.
	ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
VARIABLE LOADS: GENERAL	ALL WORKS TO BE CARRIED OUT IN STRICT ACCORDANCE WITH THE ENGINEER'S SPECIFICATIONS, RELEVANT BRITISH STANDARDS, STATUTORY HEALTH AND SAFETY/C.D.M. REGULATIONS, RELEVANT CODES OF PRACTICE AND THE CURRENT EDITION OF THE BUILDING REGULATIONS.
NON LOADBEARING STUD PARTITIONS	FOR FINAL SETTING OUT INFORMATION RELATING TO GRID LINES AND WALL POSITIONS REFER TO THE ARCHITECT'S DRAWINGS.
DIRECTION OF SPAN OF PC UNITS INDICATED THUS ON PLAN	FOUNDATIONS (TRADITIONAL)
NOTE: THE STRUCTURAL ENGINEER IS TO BE INFORMED IF ANY WATER TANKS ARE TO BE LOCATED WITHIN THE PLANT ROOM OR ANY OTHER AREAS WITHIN THE BUILDING.	BASED UPON SITE INVESTIGATION RESULTS:
MAIN CONTRACTOR TO CONSIDER TEMPORARY WORKS/PROPPING WHILST INSTALLING PC UNITS ONTO STEELWORK/LINTELS.	DESIGN SULFATE CLASS: DS-1 ACCE. CLASSIFICATION: AC-19 DESIGN CHEMICAL CLASS: DC-1
MASONRY WALLS TO BE CURED PRIOR TO PLACING PC UNITS UPON THEM.	FOUNDATIONS TO BE TAKEN DOWN TO SUITABLE BEARING STRATA CAPABLE OF BEARING 75kN/m ² . BEARING STRATA TO BE APPROVED BY THE ENGINEER. IF VARIABLE BEARING STRATA IS ENCOUNTERED ON SITE, ENGINEER TO BE NOTIFIED. FINAL DEPTH OF FOUNDATIONS (& REINFORCEMENT) TO BE AGREED ON SITE WITH LOCAL BUILDING INSPECTOR.
INFILL BLOCK STRENGTH BETWEEN PRECAST BEAMS TO ACHIEVE SAME OR HIGHER COMPRESSIVE STRENGTH OF SUPPORTING MASONRY WALL.	MAIN CONTRACTOR TO ENSURE ALL GROUND EXCAVATIONS ARE STABLE AND SECURELY SHORED AND BRACED. ADVICE ON THIS MATTER MAY BE OBTAINED FROM THE STRUCTURAL ENGINEER.
BEAMS UNDER STAIR LOCATIONS OR PARTITION WALLS TBC BY SUB CONTRACTOR DESIGN I.E. DOUBLED/TRIPLED UP ETC.	PLAIN CONCRETE (C16/20)
	C16/20 PLAIN CONCRETE USED IN FOUNDATIONS TO HAVE:- MINIMUM CEMENT CONTENT OF 220 kg/m ³ WATER/CEMENT RATIO OF 0.7 MAXIMUM SIZE OF AGGREGATE TO BE 20mm
	MAIN CONTRACTOR TO ENSURE ALL GROUND EXCAVATIONS ARE STABLE AND SECURELY SHORED. ADVICE ON THIS MATTER MAY BE OBTAINED FROM THE STRUCTURAL ENGINEER.
	MASONRY WALL CONSTRUCTION
	OUTER LEAF BRICKWORK TO HAVE A WATER ABSORPTION BETWEEN 7% AND 12% UNLESS NOTED OTHERWISE (U.N.O.)
	MINIMUM STRENGTH OF BLOCKWORK (U.N.O.): BELOW GROUND 7.00 N/mm ² ABOVE GROUND 3.50 N/mm ² MORTAR ABOVE GRD TO BE 1:1:6 (ii) / M4 MORTAR BELOW GRD TO BE 1:3 (i) / M12 FOR DETAILS OF ALL BRICKWORK, BLOCKWORK AND WALL CONSTRUCTION REFER TO ARCHITECTS DRAWINGS AND DETAILS.
	MOVEMENT JOINTS TO BE:- BRICKWORK- POSITIONED AT MAX. 1200mm CENTRES
	ARCHITECT TO POSITION MOVEMENT JOINTS TO THE APPROVAL OF THE ENGINEER.
	TIMBER FRAME WALL TIES (BUILDING HEIGHT < 15m)
	WALL TIES TO BE STAINLESS STEEL AND TO COMPLY WITH WITH BS EN 845-1 AND PD-6697.
	EXTERNAL CAVITY WALL TIES TO BE TYPE 6. MINIMUM EMBEDMENT DEPTH IN OUTER LEAF MASONRY MORTAR TO BE 50mm AND WALL TIE TO FIX BACK TO INNER LEAF TIMBER STUD (NOT OSB BOARD). MAX SPACING 600mm HORIZONTALLY AND 375mm VERTICALLY I.E. 4.4 TIES PER SQ. METRE OF WALL. MINIMUM ADDITIONAL TIES ARE TO BE USED AT JAMBS OF OPENINGS SO AS TO PROVIDE A VERTICAL SPACING NOT GREATER THAN 300mm. WITHIN 150mm OF VERGES AND JAMBS, A TIE IS REQUIRED AT LEAST EVERY 300mm VERTICALLY.
	LINTELS (STEEL)
	LINTELS SHOWN INDICATIVELY. LINTELS TO BE SUB CONTRACTOR DESIGNED AND INSTALLED TO MANUFACTURER'S DETAILS. POINT LOADS ON LINTELS TO BE AVOIDED UNLESS APPROVED BY MANUFACTURER. MINIMUM BEARING ONTO MASONRY WALLS TO BE 150mm U.N.O.
	LINTELS TO BE PROPPED DURING CONSTRUCTION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS
	LINTELS (CONCRETE)
	LINTELS SHOWN INDICATIVELY. LINTELS TO BE SUB CONTRACTOR DESIGNED AND INSTALLED TO MANUFACTURER'S DETAILS. POINT LOADS ON LINTELS TO BE AVOIDED UNLESS APPROVED BY MANUFACTURER. MINIMUM BEARING ONTO MASONRY WALLS TO BE 150mm U.N.O.
	LINTELS TO BE PROPPED DURING CONSTRUCTION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
	SUBSTRUCTURE LINTELS TO BE A MINIMUM DEPTH OF 140mm.
	GAS MEMBRANE
	GAS MEMBRANE TO BE PROCTOR GROUP 'PROTECH GM SUPER' (OR SIMILAR APPROVED) INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS AND RECOMMENDATIONS TO SATISFY AMBER 1 nBHC CLASSIFICATION; ALL TO SPECIALIST DESIGN.

F01	AS-BUILT - FINAL ISSUE	21.07.21	CD	CTV
Rev	Description	Date	By	Chkd
Drawing Status				
AS-BUILT ISSUE				
				
Client RP TYSON CONSTRUCTION				
Project VICTORY STREET RUSHOLME MANCHESTER				
Drawing Title FOUNDATION AND GROUND FLOOR LAYOUT AND DETAILS PLOTS 3&4. HOUSE TYPE - 3B4P				
Date FEB. 2020	Drawn By NG	Checked By CTV		
Scale at A1 AS SHOWN		Project Number 30669		Revision
Sheet Number 30669-SUT-ZZ-B1-DR-S-200-0002				F01

Appendix F – MEC Environmental Ltd Gas Membrane Installation Validation Report



Gas Membrane Installation
Validation Report
Tyson Construction
Victory Street
Off Claremont Road
Rusholme
Manchester
M14 5AE



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1. INTRODUCTION

1.1 Purpose

NEA Contracts are installing a gas protection membrane to the aforementioned site. MEC Environmental Ltd (MEC) has been appointed by NEA Contracts to carry out independent validation of the installation of the membrane on the site as per our terms of engagement.

The **SOLE** purpose of the works undertaken by MEC Environmental is to provide independent inspections and a factual report as and when requested to assist the client in gaining regulatory approval with regards to the gas membrane installation. This is as per the scope of work section within our term's engagement.

1.2 Limitations

This report is limited to providing lines of evidence to the regulatory authority for the areas components inspected by MEC in support of the discharging of the relevant planning conditions only and cannot be used or relied upon for any other purpose. No professional liability shall be extended to any other parties by MEC, the report should explicitly not be relied on by any future vendor or tenant as proof that the gas protection measures are sufficient for the site and functioning at the time of purchase or start of any tenancy. Gas protection systems are not solely reliant on the gas membrane as points are scored under BS8485 for the floor slab, membrane and venting, these components work collaboratively to provide a gas protection system. This is as per the conditions within our term's engagement.

The report has been provided on the assumption that no damage or works that may have compromised the components and integrity of the gas membrane have been made after our inspections, failure to report any such occurrences will invalidate any liability and render the report and contents invalid. This is as per the conditions within our term's engagement.

This report has been prepared in accordance with the best available practice and the relevant guidance documents listed below of which the author of the report was a contributor and member of the steering committees:

Mallett H, Wilson S, Corban M (2014) "Good practice on the testing and verification of protection systems for buildings against hazardous ground gases". CIRIA Report C735

1.3 Compliance with Regulation 7 of Building Regulations

Regulation 7 of the building regulations requires that building work shall be carried out in a workmanlike manner. Approved document 7 suggests installation can comply with the regulation if workmanship is such that, where relevant, materials are adequately mixed or prepared and applied, used or fixed so as to perform adequately the functions for which they are intended.

A reasonable standard may be demonstrated by:

Compliance with a standard and independent certification - The relevant standard for gas protection measures is BS8485:2015 +A1:2019, Table 7 of the standard requires that gas membranes are verified as per CIRIA C735.

Past experience – The installers qualifications are checked by MEC Environmental to ensure that the installation supervisor holds the NVQ Level 2 in gas membrane installations.

Integrity Testing methods. – are carried out as prescribed in CIRIA C735, unless stated elsewhere
Frequency of Visits – Were a validation plan has not been prepared then the frequency of visits is as per the instructions of the client, This report should be read in conjunction with the installers CQA report.

1.4 Method of Inspection (Per Visit)

All seams and non-seam areas of the available gas membrane were inspected/tested by the Validation Surveyor for identification of defects, protruding and penetrating objects, lack of subgrade support, overheating, holes, blisters, undispersed raw materials, scratches and gouges, and any sign of contamination by foreign matter.

Any portion of the gas membrane exhibiting a flaw or failing a visual inspection/testing was repaired. Several procedures exist for the repair of these areas. The final decision as to the appropriate repair procedure was agreed upon between the Validation Consultant and the Installer at the time of the repair and is noted in the survey sheets.

Major repairs are visually inspected/tested, repairs passing the inspection/testing were considered acceptable. In some cases minor repairs maybe carried out under contractor CQA and photographic evidence supplied to the verifier for inclusion in the report, this approach is in line with CIRIA C735.

1.5 MEC Staff Competency

All site inspections have been carried out by suitably qualified staff as defined in CIRIA C735, the qualification held by all MEC inspection surveyors is either the NVQ Level 4 in gas protection verification or the NVQ Level 2 in gas membrane installation

The author of this report is also a CL:AIRE accredited Specialist in Gas Protection Verification (SGPV) and holds both the NVQ Level 2 in gas membrane installation and the NVQ Level 4 in gas protection verification.

1.6 Conclusion

During our inspections to the completed areas denoted in Appendix 1 (Site Surveys Sheets) we witnessed the installer carrying out the installation in a workmanlike manner, the materials were adequately prepared and applied, used and fixed so as to perform adequately the functions for which they are intended as per Regulation 7 of the building regulations. In instances where 100% of the installation has not been independently tested then this report should be read in conjunction with the gas membrane installers CQA records.

The report assumes that the inspected membrane has not been removed, altered or punctured by follow on trades or operations such as fixings for timber frame sole plates, pipe alterations or the like.

The annulus of any service ducts should be filled with closed cell expanding foam once services such as waterpipes have been installed.

The installers all hold the NVQ Level 2 "Gas membrane Installations" qualification and as such are classed as a qualified and experienced installer. MEC Environmental have checked the CSCS Trade Cards of the installers, which confirms the holder has attained the qualification.



Signed

Date: 24/05/21

Michael Corban S.G.P.V.
Director
MEC Environmental Ltd

Appendix 1- Site Survey Sheets

Housebuilder Name: Tyson Construction		Plot Number: 1, 2, 3, 4	
Site Name: Victory street, off Claremont Road, Rusholme, Manchester.		Detached House	☐
		Semi-Detached	☒
Postcode: M14 5AE	Weather: 12 °C Light rain	Terrace	☐
Installer: NEA		Apartment Block	☐
Surveyor: Keith Barsby		Detached Garage	☐
Date: 24/05/2021		Flat Over Garage	☐
Full Footprint ☒ Perimeter Only ☐ Infill Only ☐ Other ☐ If other, please describe			
Item	Comments		
Sub-floor void	Inspected by MEC ☒	Not Inspected by MEC contractor advised ☐	N/A ☐
	Beam & Block min 150mm ☒ Strips of 25mm Geocomposite ☐ Full Cover of 25mm Geocomposite ☐		
	- The venting has passed inspection and is installed as per the design ☐ - The venting has failed inspection, see notes in defects section ☐		
Ventilation Inlets and Outlets	(Inlet/Outlet Type) Air Bricks ☒ Ventboxes ☐ Not in Place at Time of Inspection ☐		
	Number of Vents: Not in place at the time of our inspection		
Materials used:	Membrane Name: Juta GP1 Gas membrane		
	Self-Adhesive Membrane ☒	Preformed Tophats ☐	
	Double Sided Butyl Tape ☐	Preformed Corners ☐	
	Others Please List: N/A		
Type of Joint	Tape Joint ☐	Auto Weld ☐	Hand Weld ☒ Extrusion Weld ☐
Testing/Inspection	☒ Visual Inspection	☒ Air Lance (ASTM D4437)	☐ Tracer Gas Test
	☒ Probe Test (ASTM D4437)		☐ Dielectric Test (NACE RP0188-99)
Laps, welds and detailing	Have all joints passed testing prior to surveyor leaving site?	☒ Yes	☐ No ☐ N/A
	Have all pipes passed testing prior to surveyor leaving site?	☒ Yes	☐ No ☐ N/A

	Have all corners passed testing prior to surveyor leaving site?	☒ Yes	☐ No	☐ N/A
	Have all acoustic details passed testing prior to surveyor leaving site?	☐ Yes	☐ No	☐ N/A

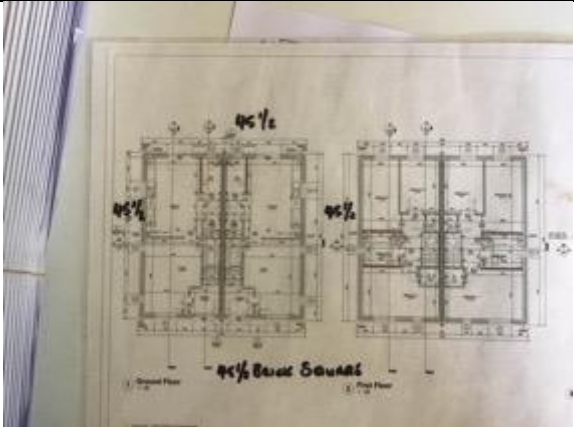
Surveyors Comments

Plots 3 and 4 the external brick/block is not in place and therefore we can't confirm that the cavity has been closed off to the migration of gas.

Result of Inspection The work carried out to date to the Plots has passed inspection but the above information is drawn to the contractors attention

Signed: **Keith Barsby** Date: **24/05/2021**

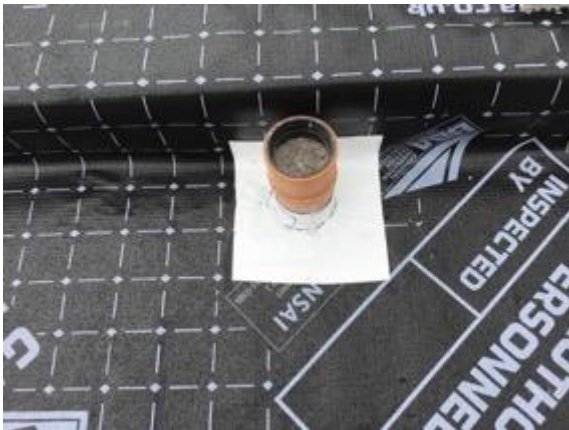
Photographs 24/05/2021

	
Site plan	Plot 1 overview
	
Plot 1 hand welded joint being pick tested	

Plot 1 pipe seal with corner detail and patch repair using SAGM



Plot 2 overview



Plot 2 door threshold using SAGM



Plot 2 pipe seal using SAGM



Plot 3 overview



Plot 3 corner detail using SAGM

Plot 3 hand welded joint being pick tested



Plot 3 corner detail with pipe seal using SAGM



Plot 4 overview



Plot 4 perimeter edge

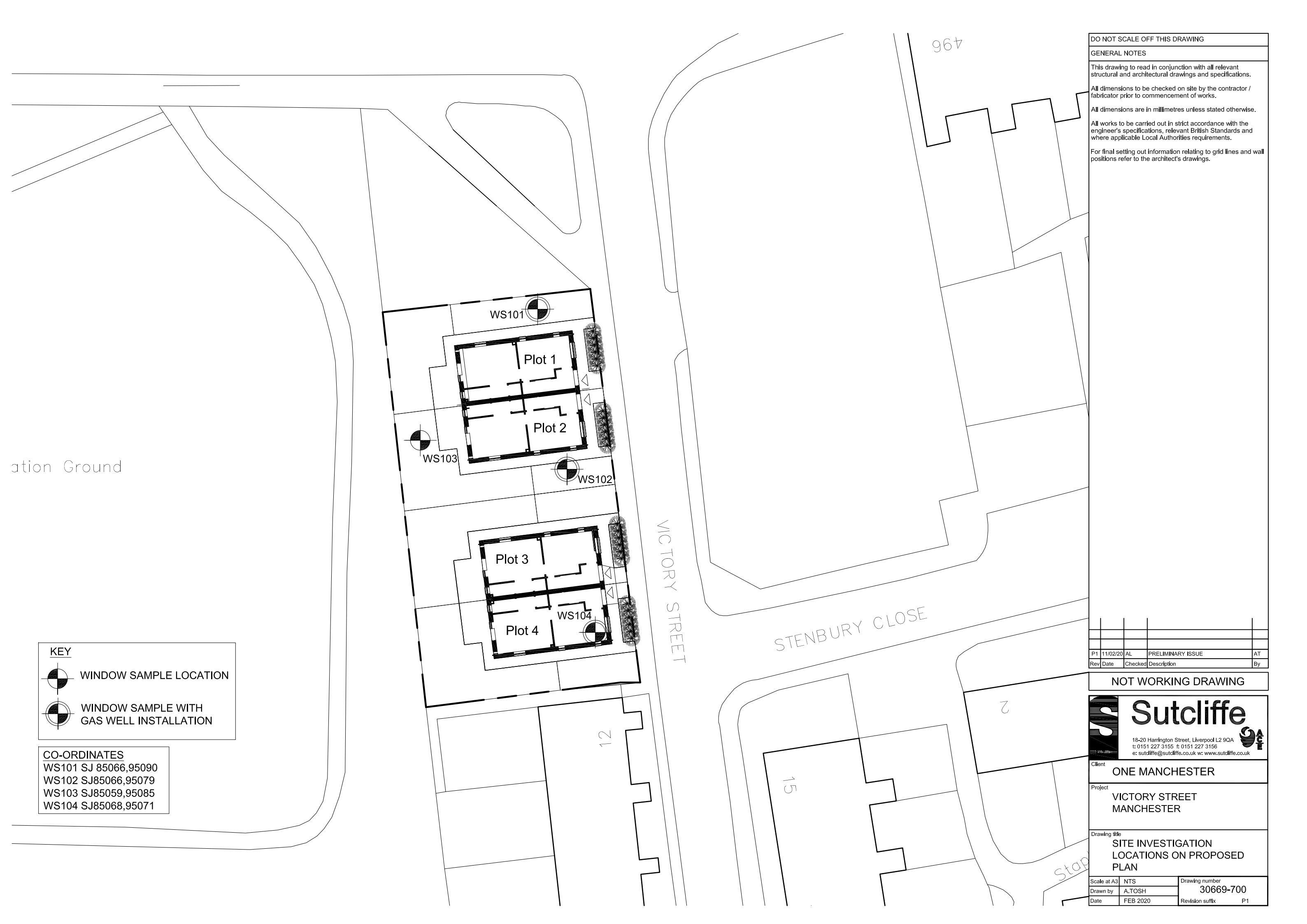


Plot 4 corner detail using SAGM being pick tested



Plot 4 pipe seal using SAGM

Drawing Ref – 30669 - 700 P1



DO NOT SCALE OFF THIS DRAWING

GENERAL NOTES

This drawing to read in conjunction with all relevant structural and architectural drawings and specifications.

All dimensions to be checked on site by the contractor / fabricator prior to commencement of works.

All dimensions are in millimetres unless stated otherwise.

All works to be carried out in strict accordance with the engineer's specifications, relevant British Standards and where applicable Local Authorities requirements.

For final setting out information relating to grid lines and wall positions refer to the architect's drawings.

P1	11/02/20	AL	PRELIMINARY ISSUE	AT	
Rev	Date	Checked	Description	By	

NOT WORKING DRAWING



Sutcliffe

18-20 Harrington Street, Liverpool L2 9QA
t: 0151 227 3155 f: 0151 227 3156
e: sutcliffe@sutcliffe.co.uk w: www.sutcliffe.co.uk

Client

ONE MANCHESTER

Project

VICTORY STREET
MANCHESTER

Drawing title

SITE INVESTIGATION
LOCATIONS ON PROPOSED
PLAN

Scale at A3

NTS

Drawn by

A.TOSH

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