By Email

Our ref: 16-136.05L

Bill Bird
McCarthy & Stone (Developments) Limited
Development Manager
Aspen House
Wykeham Road
Northminster Business Park
York
YO26 6QW

Arc Environmental Ltd
Solum House
Unit 1 Elliott Court
St Johns Road
Meadowfield
Durham
DH7 8PN

11th July 2018

Dear Bill,

REMEDIATION STRATEGY & INTERIM VALIDATION REPORT

Re: Proposed Retirement Apartments, Harton Centre, 52 Harton Lane, South Shields, Tyne & Wear

Please find attached the following information relating to the 4 no. elements of this report;

I. 'Watching Brief': -
- Photographic records (following the site strip)
- Removal of relic effluent(?) tanks / steel containers (photographic records)
- Removal of buried asbestos sheeting fragments (methodology and correspondence from specialist contractor) (Appendix I)

II. Investigation and decommissioning of underground fuel tanks
- Borehole record sheets (Appendix IV)

III. Hazardous Ground Gas / Vapour Risk Assessment
- Design of vapour protection measures (design drawings and product data sheets) (Appendix II)

IV. Provision of Clean Cover
- Landscape Proposals Drawing (Appendix III)

1.0 Phase 1: Desk Top Study

A Phase 1: Desk Top Study (DTS) Report was completed by Arc Environmental Limited (ARC), project number 16-136, dated March 2016, which indicated a potential risk of site contamination from historical and contemporary uses.

Historically the site was undeveloped from as early as at least c.1862, up until pre-c.1899. After 1899 the site was developed with Harton Laundry & Dye Works which included a rectangular reservoir on the southern portion immediately adjacent to a former ditch / stream. The reservoir feature appeared to have been infilled by around the 1970's/1980's.

1.0 Phase 1: Desk Top Study (Cont'd)

The historical Ordnance Survey maps, Landmark Envirocheck Report and other environmental information revealed that historically the site was undeveloped, from as early as at least c.1862, up until pre-c.1899, after which the site was developed with a Laundry and Dye Works. Most recently the site was occupied by Roundel Kitchens (offices, show room and stores).

On site contaminative issues were highlighted and these are listed below;

- Made ground of unknown type, origin and thickness, generally associated with the historical development of the site
- Residual hydrocarbon / solvent contamination (spills and leakages)
- Volatile vapours from potential hydrocarbon / solvent contamination (spills and leakages)
- Hazardous ground gases from mine workings

The former Laundry was considered likely to have included dry-cleaning, a process of garment cleaning with organic solvents instead of water. Benzene was a common solvent used until the late 19th Century, after which it was replaced with white spirit and benzene (a crude petroleum solvent). In the late 1920's trichloroethylene (TCE) was introduced and became the most popular dry-cleaning solvent then from the 1950's Perchloroethylene was the dominant dry-cleaning solvent used in the UK.

Residues and wastes from dry-cleaning operations were typically stored in metal containers often located outside the building. Wastewater from water / solvent separators and liquid effluents were normally piped into a settling tank and were sometimes treated prior to disposal to a foul sewer. The Laundry and Dye Works premises is likely to have had a fuel oil storage tank for process and premises heating. The Dye Works also relied heavily on the use of organic solvents and other organic compounds. Other potential contaminants included metals, metalloids, inorganic compounds, dyes, pesticides and asbestos.

2.0 Phase 2: Ground Investigation Report and Supplementary Investigation Works

A localised slight hydrocarbon odour was noted within the initial natural deposits directly below the made ground. Except for the localised ash like deposits there was no other visual (staining, dye, etc.) or olfactory (fuels, solvents, etc.) evidence of significant ground contamination.

From the results of the contamination screening carried out on this site and the Level 1 Risk Assessment the shallow soils below the site have been impacted by levels of Arsenic, Polycyclic Aromatic Hydrocarbons (PAH's) and Volatile / Semi-volatile Organic Compounds (VOC's) / SVOC's which exceed the critical concentrations chosen for this site and represent a potential risk towards the end users.

Although elevated levels of potentially leachable contaminants and impacted trapped pockets of perched water have been recorded, the sites hydrogeological setting is such that these are unlikely to represent a risk to controlled waters or adjacent sites.

UST's

2 no. disused underground storage tank (UST) covers were identified on the SE perimeter of the site below a concrete apron. A borehole was positioned close as safely possible to these features although no evidence of hydrocarbons was noted within the borehole. The local petroleum licencing officer (PLO) was contacted for further information regarding any previous decommissioning works, recorded leaks or spillages, pressure tests, etc. although no further data was available.

2.0 Phase 2: Ground Investigation Report and Supplementary Investigation Works (Cont'd)

UST's (Cont'd)

Additional works were completed to investigate the UST's. In the first instance a non-intrusive ground penetrating radar (GPR) survey was completed to try and determine the footprint and orientation of the UST's. In this instance the GPR survey was not successful in identifying a contrast in ground conditions and the footprint / orientation of the UST's could not be identified.

Therefore, 3 no. supplementary boreholes (including 2 no. additional monitoring standpipes supplementing the 5 no. original site wide standpipes) were positioned around the UST's locations (identified at surface by inspection chambers and headworks). The boreholes recorded between c.1.50m and c.1.70m of made ground (disturbed clays) overlying Glacial Till to at least c.4.00m. Copies of the borehole record sheets undertaken around the UST's and attached in Appendix IV.

There was no visual or olfactory evidence of hydrocarbon contamination within the soils (made ground and natural strata) or perched groundwater suggesting that there has been no significant spillages or leaks associated with these UST's.

2 no. HDPE standpipes, with gravel and geo-wrap surround, bentonite seal, gas valve cap and security cover, were installed and a PID survey was undertaken during 2 no. return visits using an Ion Science Photocheck 2000 Photo Ionisation Detector (PID) meter with a 10.6eV lamp, calibrated to isobutylene (standard measurement scale).

The PID measures ionisable vapour concentrations and gives an indication of the presence of volatile organic compounds (VOC's). Negligible levels (≤1ppm) of volatile organic compounds (VOC's) were recorded during the PID survey indicating there is no vapour production below the site associated with lighter fraction hydrocarbons or solvents.

Infilled Reservoir

A series of supplementary boreholes were positioned to delineate its size and extent with demolition type rubble materials were recorded to depths of between c.1.75m and c.3.20m.

Additional Internal Boreholes

In addition, supplementary boreholes were completed internally within former showroom and office corridors there was evidence of some minor ground contamination being present on this site.

Elevated Benzo(a)pyrene, Dibenz(ah)anthracene (PAH's) and Cis-1,2-Dichloroethene, Trichloroethene and Tetrachloroethene (VOC's) were noted. Based on these results the additional areas investigated appeared to have been locally impacted by residual solvent contamination.

3.0 'Watching Brief'

A 'watching brief' was recommended during the groundworks phase as part of the Remediation Strategy to allow for the potential removal of any hydrocarbon / solvent impacted soils below areas previously inaccessible i.e. covered by structures.

During a site visit on 17th October 2017, most of the buildings had been demolished and several new foundations constructed. Following part demolition and removal of floor slabs there was no obvious evidence of significant ground contamination (See Plates 1 to 3).

3.0 'Watching Brief' (Cont'd)



Plate 1 – View looking northwest over new strip footings



Plate 2 – View of UST inspection covers and partially exposed brickwork cradle

T: 0191 378 6380
E: admin@arc-environmental.com
W: www.arc-environmental.com
Registered in England No. 05539784

3.0 'Watching Brief' (Cont'd)



Plate 3 – View looking west of remaining structure & demolition plant

A large excavation was created on the central portion of the site to create a crane base, again there was no obvious evidence of significant ground contamination i.e. staining / malodours (See Plate 4).



Plate 4 – Crane base excavation

3.0 'Watching Brief' (Cont'd)

During a site visit on 23rd November 2017, all the buildings had been demolished. Following demolition and removal of floor slabs there was no obvious evidence of significant ground contamination i.e. staining / malodours (See Plate 5).



Plate 5 – View looking west post demolition

Empty metal tanks were recorded in the northwest portion of the site from below an area of concrete hardstanding which were subsequently removed around 5th December 2017. As previously mentioned (Section 1.0) these tanks may represent former wastewater tanks from water / solvent separators and liquid effluents. There was no visual or olfactory evidence of ground contamination identified below and around these tanks (See Plates 6 & 7).



Plate 6 – Possible wastewater tanks from water / solvent separators and liquid effluents

3.0 'Watching Brief' (Cont'd)



Plate 7 – Brickwork tank surround (possible wastewater tank)

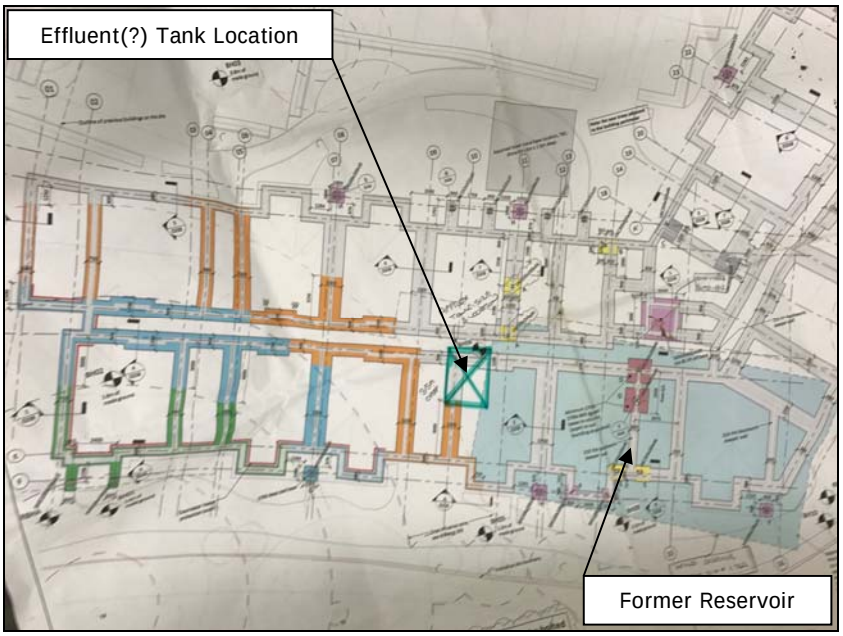


Plate 8 – Suspected effluent tank location

A rectangular metallic tank (effluent tank?) was located by the developer immediately adjacent to the former infilled reservoir (see Plate 8).

Plates 9 & 10 on the following page show the tank being lifted out of the ground and the water filled excavation prior to being pumped out into dedicated containers. Anwen Construction Limited pumped the water from the tank excavation into a settlement tank prior to discharging the treated water into the existing foul drainage network. The tank surround structure was then removed to allow new foundations to be constructed. For further details contact should be made to Anwen Construction Limited.

3.0 'Watching Brief' (Cont'd)



Plate 9 – Removal of suspected effluent tank



Plate 10 – Suspected effluent tank water filled housing (following removal of the tank in Plate 9)

3.0 'Watching Brief' (Cont'd)

It is not uncommon for historical asbestos wastes to be deliberately buried on derelict sites, and during the reduced dig, within the area of the former infilled reservoir, fragments of asbestos sheeting were noted towards the base of the made ground / excavation.

Therefore, specialist asbestos removal contractors (Aastec Limited of Bradford (Asbestos License No: 091705373)) were employed to hand pick the asbestos before removal from site.

A copy of the Asbestos Removal Method Statement produced by Aastec Limited can be seen attached in Appendix I and gives a full description of the works.

The removal took place between 27th and 31st November 2017. Initially the volume of asbestos impacted materials was estimated at up to c.3000kg, however on closer inspection a total of 350kg of asbestos waste was removed from site.

The materials were transported to Gill Demolition located at Progress Works, Hall Lane, Bradford, BD4 7DY, and copies of the consignment notes can be seen attached in Appendix I.

Summary of 'Watching Brief'

Following the inspection of the site (post demolition), except for localised buried asbestos sheeting fragments there was no other evidence of significant ground contamination noted which required further investigation (sampling and screening) or an alternative remediation solution.

4.0 Investigation and decommissioning of underground fuel tanks

As previously discussed in Section 2.0 from the targeted works undertaken there was no visual or olfactory evidence of hydrocarbon contamination within the soils (made ground and natural strata) or perched groundwater in and around the UST's suggesting that there has been no significant spillages or leaks in the past.

Given the UST's did not physically impact new foundations it was decided to leave these insitu following decommissioning works. Plate 8 on the following page shows water being removed from the UST's.

Following removal of the water the upper portion of the UST's were removed (cut away) and the remaining lower section backfilled with granular fill ('made safe') to allow venting of hydrocarbon residues.

The removal of the upper portion allowed for the installation of site drainage above the tanks.

4.0 Investigation and decommissioning of underground fuel tanks (Cont'd)



Plate 8 – Removal of water from UST's

5.0 Hazardous Ground Gas Risk Assessment & Remediation Measures

From the results of the complete programme of gas monitoring (i.e. 5 no. standpipes monitoring 9 no. times over 6 no. months), detectable levels of Carbon Dioxide (CO_2) were recorded up to a maximum level of 1.8% *v/v* with no concentrations of Methane (CH_4). The calculated GSV value for CO_2 did not exceed the GSV assessment value of 0.07 l/hr (Characteristic Situation 1) or Green classification (NHBC Traffic Light System), negating the requirement for gas protection measures.

In addition to the gas analyser, a PID survey was also undertaken using an Ion Science Photocheck 2000 Photo Ionisation Detector (PID) meter with a 10.6eV lamp, calibrated to isobutylene (standard measurement scale). The PID measures ionisable vapour concentrations and gives an indication of the presence of volatile organic compounds (VOC's). Negligible levels (≤3ppm) of volatile organic compounds (VOC's) were recorded indicating there is no vapour production below the site associated with lighter fraction hydrocarbons or solvents.

However, based on the contamination screening undertaken, although not manifested in the 7 no. monitoring wells and PID survey, volatile organic compounds were identified in the shallow soils, resulting in the requirement for vapour protection measures (i.e. an upgraded gas membrane (hydrocarbon and volatile vapour resistant membrane) and vented sub-floor voids).

Although considered very low risk from the results of the PID monitoring and post demolition 'watching brief', when considering the results of the Ground Contamination Screening it was considered prudent that the proposed development would include vapour protection measures associated with any residual solvent type contamination and associated potential Volatile and Semi-volatile Organic Compounds (VOC's / SVOC's) which remained following the site strip.

5.0 Hazardous Ground Gas Risk Assessment & Remediation Measures (Cont'd)

The measures should be sufficient to remove the potential migration pathway into the new residential apartments from potentially volatile vapours, and therefore provide the necessary protection to the proposed end users. It was considered that the design details and specification for this site should be designed in accordance with BS8576:2013: Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds, BRE414:2001: Protective measures for housing on gas contaminated land and BS8485:2015 – 'Code of Practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings'.

As good practice, installation of the vapour protection measures and subsequent validation of these measures was undertaken in general accordance with the YALPAG document and CIRIA C735 'Good practice on the testing and verification of protection systems for buildings against hazardous ground gases', August 2014.

An Alderprufe GRA Gas Barrier system with an Aldercourse GRA Gas DPC, with preformed corners (supplied by Alderburgh), was adopted for the development laid across a beam and block suspended floor with a passively vented sub-floor void (Aldervent) below. Alderprufe GRA is a propriety gas barrier compliant with BS8485: 2015 and is effective for hydrocarbon vapours in addition to other hazardous gases. Drawings showing the installation / construction details are attached in Appendix II.

The design and installation of the vapour protection measures were completed independently and were subject to inspection / approval by the NHBC.

6.0 Provision of Clean Cover

To remove the dermal contact and ingestion *pathways* for the proposed end users from the elevated contaminants (Arsenic, PAH's and VOC's/SVOC's), it is proposed to implement a clean cover system. A clean cover system is designed to remove the pathway element of the *source-pathway-receptor* from the pollutant linkage.

The provision of clean cover will not be necessary below areas of hardstanding (i.e. roads and under buildings). The thickness of cover will be strictly 600mm to protect the end users.

Levels of contaminants within imported materials should not exceed the Updated Level 1 Target concentrations. Table 1 below shows the assessment criteria that will be adopted to screen any imported soils.

Any materials brought on to site, including topsoil and subsoil, for use in areas of soft landscaping should be suitably screened and tested for human health assessment prior to delivery, with these results sent to ARC a minimum of 1 week before delivery to site. To confirm the suitability of these materials, validation testing of these materials will also be required following emplacement and / or importation onto site.

Validation screening will be undertaken on all materials brought onto site for the areas of soft landscaping to ensure they are suitable for use. The number of samples screened will be dependent upon the final volumes brought to site and the origin of the imported materials.

We would propose to adopt the Yorkshire and Lincolnshire Pollution Advisory Group (YALPAG) 'Verification Requirements for Cover Systems', Ver 3.4 November 2017, and the sampling frequency as follows:

6.0 Provision of Clean Cover (Cont'd)

Type	Number of Samples	Testing Schedule	Assessment Criteria
Virgin Quarried Material	1 or 2 depending on the type of stone utilised, to confirm the inert nature of the material.	Standard metals/metalloids (should include as a minimum As, Cd, Cr, CrVI, Cu, Hg, Ni, Pb, Se, Zn)	This needs to be agreed with the Local Authority. The Assessment criteria needs to be UK based, e.g. LQM S4UL's, Defra C4SL's or other similarly derived GAC's.
Crushed Hardcore, Stone, Brick	Minimum 1 per 1000m³	Standard metals/metalloids (As above) PAH (16 USEPA speciation) Asbestos	
Greenfield/ Manufactured Soils	Minimum 3 or 1 per 250m³ (whichever is greater)	Standard metals/metalloids (As above) PAH (16 USEPA speciation) Asbestos	
Brownfield/ Screened Soils	Minimum 6 or 1 per 100m³ (whichever is greater)	Standard metals/ metalloids (As above) PAH (16 USEPA speciation) TPH (CWG banded) Asbestos Any additional analysis dependant on the history of the donor site.	

Verification Requirements for Cover Systems', Ver 3.4 November 2017 - Sampling Frequency

All validation screening will be assessed against the Level 1 *Residential without home grown produce* assessment values given in Table 1 below.

Table 1 - (Assessment Criteria for Imported Soils)

Analyte	Critical Conc. (C_C)			Analyte	Critical Conc. (C_C)		
Metals				Speciated PAH's (Cont'd)	1% SOM	2.5% SOM	6% SOM
Arsenic	40(1)			Fluoranthene	1,500(1)	1,600(1)	1,600(1)
Cadmium	85(1)			Fluorene	2,800(1)	3,800(1)	4,500(1)
Chromium III	910(1)			Indeno(123cd)pyrene	45(1)	46(1)	46(1)
Chromium VI	6(1)			Naphthalene	2.3(1)	5.6(1)	13(1)
Copper	7,100(1)			Phenanthrene	1,300(1)	1,500(1)	1,500(1)
Lead	310(2)			Pyrene	3,700(1)	3,800(1)	3,800(1)
Mercury	56(1)			Speciated TPH	1% SOM	2.5% SOM	6% SOM
Nickel	180(1)			Aliphatic EC5-EC6	42(1)	78(1)	160(1)
Selenium	430(1)			Aliphatic EC6-EC8	100(1)	230(1)	530(1)
Zinc	40,000(1)			Aliphatic EC8-EC10	27(1)	65(1)	150(1)
Cyanide	34(3)			Aliphatic EC10-EC12	130(1)	330(1)	770(1)
Asbestos	None Present or Quantification			Aliphatic EC12-EC16	1,100(1)	2,400(1)	4,400(1)
Speciated PAH's	1% SOM	2.5% SOM	6% SOM	Aliphatic EC16-EC35	65,000(1)	92,000(1)	110,000(1)
Acenaphthene	3,000(1)	4,700(1)	6,000(1)	Aliphatic EC35-EC44	65,000(1)	92,000(1)	110,000(1)
Acenaphthylene	2,900(1)	4,600(1)	6,000(1)	Aromatic EC5-EC7	370(1)	690(1)	1,400(1)
Anthracene	31,000(1)	35,000(1)	37,000(1)	Aromatic EC7-EC8	860(1)	1800(1)	3,900(1)
Benzo(a)anthracene	11(1)	14(1)	15(1)	Aromatic EC8-EC10	47(1)	110(1)	270(1)
Benzo(a)pyrene	3.2(1)	3.2(1)	3.2(1)	Aromatic EC10-EC12	250(1)	590(1)	1,200(1)
Benzo(b)fluoranthene	3.9(1)	4.0(1)	4.0(1)	Aromatic EC12-EC16	1,800(1)	2,300(1)	2,500(1)
Benzo(ghi)perylene	360(1)	360(1)	360(1)	Aromatic EC16-EC21	1,900(1)	1,900(1)	1,900(1)
Benzo(k)fluoranthene	110(1)	110(1)	110(1)	Aromatic EC21-EC35	1,900(1)	1,900(1)	1,900(1)
Chrysene	30(1)	31(1)	32(1)	Aromatic EC35-EC44	1,900(1)	1,900(1)	1,900(1)
Dibenz(ah)anthracene	0.31(1)	0.32(1)	0.32(1)				

(1) = LQM S4UL's (2014) – *Residential without home grown produce*, (2) = CL:AIRE C4SL's – *Residential without home grown produce*, (3) = ATRISK^{SOIL} SSV

6.0 Provision of Clean Cover (Cont'd)

A drawing titled "Landscape Proposals" Ref. NE-2086-05-LA-01 Rev B is provided in Appendix III.

The correct implementation and suitability of the clean cover materials, as detailed above, will need to be confirmed by ARC, i.e. trial pits to confirm thickness, site photographs and laboratory screening.

We trust the contents of this Interim Validation Report is to your satisfaction and if you require any further information or clarification please do not hesitate to contact us.

Yours sincerely,

[redacted]

John Ditchburn *BEng (Hons) CSci MIEnvSc FGS*
Associate Director

Appendix I

Aastec Ltd

ASBESTOS REMOVAL

METHOD STATEMENT

SITE ADDRESS
HARTON CENTRE
AMBLESIDE AVE
SOUTH SHIELDS
NE34 0DY

CLIENT
RGS WASTE & TRANSPORT SERVICES LTD

ASBESTOS CONTRACTOR

AASTEC LTD

Asbestos License No: 091705373

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5. METHOD STATEMENT AMENDMENTS/ADDENDUMS

6. EMPLOYEE DECLARATION

CONTRACTUAL INFORMATION & DESCRIPTION OF WORKS TO BE CARRIED OUT

SITE ADDRESS	Harton Centre, Ambleside Ave South Shields NE34 0DY
CLIENT	McCarthy & Stone Aspen House, Wykeham Rd Northminster Business Park Upper Poppleton York YO26 6QW
CLIENTS REPRESENTATIVE	Karl Hetherington 07731 318925 Fraser Mitcalfe 07415 640402
OTHER LICENSE HOLDERS (Supervisory, Scaffold etc)	None Tel:
PLAN OF WORKS PREPARED / CHECKED BY	Neil Sutcliffe Tel: 07545 877275 | Peter Morgan Tel: 07545 877275
ISSUE AUTHORISED BY	Neil Sutcliffe
DATE	24/11/17
ENFORCING AUTHORITY	Health & Safety Executive, Newcastle
PRINCIPAL CONTRACTOR	McCarthy & Stone Tel. 01904 444200
DESIGN COORDINATOR	TBA Tel.
SPECIFIC WORK AREA	Excavated demolition material from former dam
SITE SUPERVISOR	Darren Taylor Tel: 07519 935450
CONTRACT SUPERVISOR NUMBER OF SITE VISITS	Neil Sutcliffe Tel: 07545 877275 | 1
CLIENT/EMPLOYEE LIASON	1) Neil Sutcliffe 2) Peter Morgan
COMMENCEMENT DATE	Site setup: 27/11/17 Removal dates: 27 - 31/11/17
DURATION OF WORKS	5 days
DELAYS TO WORK EST.	Understaffed ☐ Insufficient Equipment ☐ Insufficient Time Allocated ☐ Additional Works ☐ Greater Extent of ACM's ☐ Other Works Overunning ☐ Other reasons ☐
EST. COMPLETION DATE	31/11/17
WORKING HOURS	8am – 4.30pm
No. OF OPERATIVES ON SITE	A maximum of 4 operatives will be working at any one time
NON ASBESTOS HAZARDS	Manual handling, slips trips falls

DESCRIPTION OF WORKS TO BE CARRIED OUT

TYPE OF SURVEY / SURVEYOR	Strongly presumed
No. & RESULT OF BULK SAMPLES	Strongly presumed
QUANTITY, FORM & CONDITION	3000kg – Asbestos Cement debris - Poor
MAXIMUM ANTICIPATED EXPOSURE LEVEL	0.05 f/ml
UKAS ACCREDITED ANALYST	N/A The works involve the removal of asbestos cement debris from demolition rubble. Control limits will not be exceeded
TYPE OF R.P.E & SPECIFICATION	*Sundstrom Half Mask Respirators* fitted with a P3 particle filter *(only to be used when setting up DCU, enclosure, transporting waste to skip, removal of bonded asbestos materials or where control limits are unlikely to be exceeded)* Assigned protection factor 20 times the OEL. Manufactured to EN 143
TYPE OF OVERALLS & COLOUR	All PPE used during the removal of asbestos will be resistant to penetration by asbestos dust/fibres, have a hood & fit closely at the ankles & wrists. • Type 5 ORANGE whilst removing non-licensed asbestos bonded materials
METHOD OF REMOVAL	Low pressure spray
TOOLS TO BE USED	Power tools: None Hand tools: Shovel, Rake, Brush
TRANSIT / WASTE ROUTE IN POOR CONDITION	N/A Lockable wheelie bin will be sited adjacent the work area
OTHERS AT RISK	Other contractors
LOCATION OF ASBESTOS	The asbestos to be found at the site address is in the form of asbestos cement and is located within the excavated demolition soil/rubble
TYPE OF ASBESTOS	The asbestos to be found in the excavated demolition soil/rubble was presumed to be Chrysotile.
ASBESTOS DAMAGED OR IN POOR CONDITION	The asbestos is in poor condition
LIKELY DIFFICULTIES	Adverse weather
SPECIAL CHARACTERISTICS OF THE SITE	None
ISOLATION OF SERVICES	Electric Undertaken By: N/A Gas Undertaken By: N/A Water Undertaken By: N/A
SITE PERSONNEL	A maximum of 4 operatives will be working at any one time.
WASTE DISPOSAL	All contaminated materials will be bagged & sealed in polythene. Then at the end of the shift the asbestos waste will be cleaned with a 'H' type vacuum cleaner prior to being double bagged, clearly labelled 'Danger-Asbestos'. & shall then be placed in a lockable container and taken to a licensed facility for disposal as 'Hazardous Waste'. Aastec Ltd will transport the waste in a lockable container to Gill Demolitions Ltd, Progress Works, Hall Lane, Bradford

DESCRIPTION OF WORKS TO BE CARRIED OUT

PLANT TO BE USED ON SITE	'H' Type vacuum cleaner Transformers 240 volts to 110 volts. Low-pressure spray for wetting agents. Generator Power Tools: None Hand tools: Shovel, rake, brush
COSHH ON SITE	Surfactant, Mixed Dusts, Petrol, Diesel
CONSTRUCTION OF ENCLOSURE AND TESTING THE TENTED AREA	*N/A* The works involve the removal of asbestos cement debris from excavated demolition soil/rubble. Control limits will not be exceeded
WETTING AGENTS	The asbestos cement will be wetted using a solution of water & surfactant and will be applied using a low pressure spray unit. This will reduce fibre levels by thoroughly soaking the asbestos.
METHOD OF REMOVAL	The asbestos cement debris is mixed in with the excavated demolition soil/rubble. Operatives will work in conjunction with the ground workers excavator driver. The excavator will remove the top layer of the rubble. Asbestos operatives using rakes & shovels will then check the separated rubble for asbestos contamination Operatives will spray any visible asbestos cement with a mixture of water & surfactant. The asbestos cement debris will then be handpicked from the rubble and placed directly into a red asbestos bag ready for disposal. The waste will then be double bagged in a clear waste bag & placed in the lockable bin
CHANGES TO METHOD STATEMENT	Any changes required to the method statement must be authorised through line management (site supervisor, contract supervisor, H&S manager).
CLEANING OF THE WORKING AREA	At the end of the asbestos removal works all surfaces shall be free of visible debris. One of these vacs along with a bucket of soapy water and a handful of cloths will be available for primary decontamination of the workers.
FINAL CLEARANCE	*N/A* The works involve the removal of asbestos cement debris from excavated demolition soil/rubble. Control limits will not be exceeded
LOCATION OF NEAREST A & E HOSPITAL	South Tyneside District Hospital Harton Lane, South Shields NE34 0PL Tel: 0191 404 1000
EMERGENCY PROCEDURES	**See Standard Procedures in Case of Emergency** For emergency procedures in the event of accident, fire, failure of equipment or asbestos spillage
FIRE ASSEMBLY POINT	TBA at induction
LOCATION OF FIRST AID KITS & FIRE EXTINGUISHERS	In site van

METHOD STATEMENT
AMENDMENT / ADDENDUM

ITEMS TO BE RECORDED		
Date of Amendment	Supervisor Name	Authorised by

EMPLOYEE DECLARATION

This method statement must be read in conjunction with the Generic Method Statement in the Health & Safety File

(TO BE SIGNED ON SITE)

I, the undersigned, confirm that I have read and understood this Method Statement.

PRINT NAME	SIGNATURE	DATE

The Hazardous Waste Regulations 2005: Consignment Note

Environment Agency

PRODUCER'S - WHITE / CONSIGNOR'S - GREEN / CARRIERS - YELLOW / CONSIGNEE'S - PINK

PART A Notification details

1 Consignment note code: AA SHCA / AS508

2 The waste described below is to be removed from (name, address, postcode, telephone, e-mail, facsimile):
HARTON CENTRE
AMBLESIDE AVE
SOUTH SHIELDS
NE34 0DY

3 Premises code (where applicable): N1A

4 The waste will be taken to (name, address and postcode):
GILL DEMOLITION
PROGRESS WORKS, HALL LANE
BRADFORD BD4 7DT

5 The waste producer was (if different from 2) (name, address, postcode, telephone, e-mail, facsimile):
Aastec Ltd
Unit 4 Royds Enterprise Park
Future Fields
Bradford BD6 3EW

PART B Description of the waste

If continuation sheet used, tick here ☐

1 The process giving rise to the waste(s) was: DEMOLITION

2 SIC for the process giving rise to the waste: 45.25/

3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code)(6 digits)	Quantity (kg)	The chemical/biological components of the waste and their concentrations are: Component	Concentration (% or mg/kg)	Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
ASBESTOS CEMENT	170605	150kg	CHRYSOTILE	>20%	MIXED	H7	LOCKED BIN

The information given below is to be completed for each EWC identified

EWC code	Packing group(s)	UN identification number(s)	Proper shipping name(s)	UN class(es)	Special handling requirements
170605	III	UN2590	WHITE ASBESTOS	9	DOUBLE BAGGED

PART C Carrier's certificate

(If more than one carrier is used, please attach schedule for subsequent carriers. If a schedule of carriers is attached tick here. ☐)

I certify that I today collected the consignment and that the details in A2, A4 and B3 are correct and I have been advised of any specific handling requirements.

1 Carrier name: [redacted]

On behalf of (name, address, postcode, telephone, e-mail, facsimile):
Aastec Ltd
Unit 4 Royds Enterprise Park
Future Fields
Bradford BD6 3EW

2 Carrier registration no./reason for exemption:
CBDU 73864

3 Vehicle registration no. (or mode of transport, if not road):
EK14 KPT

Signature: [redacted]

Date 07/12/2017 Time 16:10

PART D Consignor's certificate

I certify that the information in A, B and C above is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

1 Consignor name: [redacted]

On behalf of (name, address, postcode, telephone, e-mail, facsimile):
Aastec Ltd
Unit 4 Royds Enterprise Park
Future Fields
Bradford BD6 3EW

Signature: [redacted]

Date 07/12/2017 Time 16:10

PART E Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170605	150	A	D15

1 I received this waste at the address given in A4 on: Date 07/12/2017 Time 16:09

2 Vehicle registration no. (or mode of transport if not road):
EK14 UPT

3 Where waste is rejected please provide details:

I certify that waste management licence/permit/authorised exemption no(s).
EPR/CP3298IX

authorises the management of the waste described in B at the address given in A4.

Name: [redacted]

On behalf of (name, address, postcode, telephone, e-mail, facsimile):
GILL DEMOLITIONS LTD
Progress Works,
Hall Lane,
Bradford BD4 7DT
Tel: 01274 733011

Signature: [redacted]

Date 07/12/2017 Time 16:09

HWCN01v051

The Hazardous Waste Regulations 2005: Consignment Note

Environment Agency

PRODUCER'S - WHITE / CONSIGNOR'S - GREEN / CARRIERS - YELLOW / CONSIGNEE'S - PINK

PART A Notification details

1 Consignment note code: AASHCA/ASS07

2 The waste described below is to be removed from (name, address, postcode, telephone, e-mail, facsimile):
HARTON CENTRE
AMBLESIDE AVE
SOUTH SHIELDS
NE34 0DY

3 Premises code (where applicable): MIA

4 The waste will be taken to (name, address and postcode):
GILL DEMOLITION
PROGRESS WORKS, HALL LANE
BRADFORD BD4 7DY

5 The waste producer was (if different from 2) (name, address, postcode, telephone, e-mail, facsimile):
Aastec Ltd
Unit 4 Royds Enterprise Park
Future Fields
Bradford BD6 3EW

PART B Description of the waste

If continuation sheet used, tick here ☐

1 The process giving rise to the waste(s) was: DEMOLITION

2 SIC for the process giving rise to the waste: 45.25/

3 WASTE DETAILS (where more than one waste type is collected all of the information given below must be completed for each EWC identified)

Description of waste	List of wastes (EWC code)(6 digits)	Quantity (kg)	The chemical/biological components of the waste and their concentrations are: Component	Concentration (% or mg/kg)	Physical form (gas, liquid, solid, powder, sludge or mixed)	Hazard code(s)	Container type, number and size
ASBESTOS CEMENT	170605	200 Kg	CHRYSOTILE	>20%	MIXED	H7	LOOSE IN TRAILER

The information given below is to be completed for each EWC identified

EWC code	Packing group(s)	UN identification number(s)	Proper shipping name(s)	UN class(es)	Special handling requirements
170605	III	UN2590	WHITE ASBESTOS	9	DOUBLE BAGGED

PART C Carrier's certificate

(If more than one carrier is used, please attach schedule for subsequent carriers. If a schedule of carriers is attached tick here. ☐)

I certify that I today collected the consignment and that the details in A2, A4 and B3 are correct and I have been advised of any specific handling requirements.

1 Carrier name: M. HARRISON

On behalf of (name, address, postcode, telephone, e-mail, facsimile):
Aastec Ltd
Unit 4 Royds Enterprise Park
Future Fields
Bradford BD6 3EW

2 Carrier registration no. (or reason for exemption):
CBDY 73864

3 Vehicle registration no. (or mode of transport, if not road):
YH62 EYZ

Signature [redacted]

Date 01/12/2017 Time 1250

PART D Consignor's certificate

I certify that the information in A, B and C above is correct, that the carrier is registered or exempt and was advised of the appropriate precautionary measures. All of the waste is packaged and labelled correctly and the carrier has been advised of any special handling requirements.

1 Consignor name: M. HARRISON

On behalf of (name, address, postcode, telephone, e-mail, facsimile):
Aastec Ltd
Unit 4 Royds Enterprise Park
Future Fields
Bradford BD6 3EW

Signature [redacted]

Date 01/12/2017 Time 1250

PART E Consignee's certificate (where more than one waste type is collected all of the information given below must be completed for each EWC)

Individual EWC code(s) received	Quantity of each EWC code received (kg)	EWC code accepted/rejected	Waste management operation (R or D code)
170605	200	A	D5

1 I received this waste at the address given in A4 on: Date 01/12/2017 Time 1650

2 Vehicle registration no. (or mode of transport if not road):
YH62EYZ

3 Where waste is rejected please provide details:

I certify that waste management licence/permit/authorised exemption no(s).

EPR/CP3248SY

authorises the management of the waste described in B at the address given in A4.

Name: [redacted]

On behalf of (name, address, postcode, telephone, e-mail, facsimile):
GILL DEMOLITIONS LTD
Progress Works,
Hall Lane,
Bradford BD4
Tel: 0127

Signature [redacted]

Date 01/12/2017 Time 1650

HWCN01v051

Appendix II

T: 0191 378 6380
E: admin@arc-environmental.com
W: www.arc-environmental.com
Registered in England No. 05539784

Membranes

LDERPRUFE

Gas Barriers



FULLY DESIGNED SYSTEMS

To protect against all ground borne gases and land contamination

- METHANE
- CARBON DIOXIDE
- VOC's - VOLATILE ORGANIC COMPOUNDS
- HYDROCARBONS
- RADON

SYSTEMS COMPLIANCE

- BS8485:2015
- NHBC - AMBER 1 & 2
- CIRIA 748
- CIRIA 665

CE COMPLIANT
BBA CERTIFICATION

CE

BBA APPROVAL INSPECTION TESTING CERTIFICATION

ALDERPRUFE Gas Barrier Systems

The reasons for gas protection are well documented, whether it be to protect against methane, carbon dioxide, radon, hydrocarbons or hydrocarbon vapours. Careful consideration must be given to any construction project and steps taken to minimise and or eliminate that risk – guidance on classification and appropriate levels of protection can be found in Ciria 665:2007, BRE414:2001, NHBC Report 10627-R01(04):2007 NHBC Technical Extra issue 20, Ciria C748, and more commonly now for gas protection BS8485:2015.

Our comprehensive range of fully compatible gas protection products form integrated systems to protect buildings from the ingress of ground borne gases and contamination, whatever the construction method, gas Characteristic Situation (CS), Gas Screening Value (GSV) or NHBC 'Amber' category.

We offer a range of Alderprufe gas barrier membranes, gas dpc and pre-formed sections to suit all type of construction methods. Our Geovoid range of gas venting void formers allows for maximum flexibility to design gas dilution and dispersal systems to suit every type of construction (refer to separate Alderburgh Gas Ventilation brochure).

Our range of products includes loose-laid, self-adhesive and pre-applied barriers, Membrane Holdfast system which can be used to tie any membrane to the underside of slab, gas dpc / cavity closure, sealing tapes, and prepared factory-made units for sealing around stanchions, service entries, piles which penetrate the membranes. The whole system is fully compatible and designed to seal the whole structure from gas migration including the floor, walls and cavities. These systems also conform with current Building Regulation requirements to protect buildings from water penetration from the ground.

It is essential that proper consideration and application is undertaken to ensure proper sealing at all joints, laps and service entries, and to ensure that damage by follow-on trades is avoided.

Frequently, Inspection and Validation of the installed system is required in accordance with Ciria C735; indeed it is a necessity if the system is to comply with BS8485:2015 – Alderburgh Group can arrange this for you.

Alderburgh Ltd can provide Technical Support to help you meet the requirements for your project.

ALDERPRUFE

Product Guide Check List

Product Guide Check List	Alder Prufe GRA	Alder Prufe Ultra	Alder Prufe HC	Alder Prufe MR50	Alder Prufe LGM	Alder Prufe GRM	Alder Course Tuflex	Super Yellow Gas Barrier	Alder Course GRA	HC Dpc	Tuflex Dpc
Methane Resistant	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Carbon Dioxide Resistant	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Radon Resistant	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Hydrocarbon /VOC	✔	✔	✔	✔	✔				✔	✔	
NHBC Amber Applications	Amber 1 & 2	Amber 1 & 2	Amber 1 & 2	Amber 1 & 2	Amber 1 & 2	Amber 1	Amber 1	Amber 1	Amber 1 & 2	Amber 1 & 2	Amber 1
Ciria 665	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
BS8485:2015	✔	✔		✔	✔				✔		
Ciria C748	✔	✔	✔	✔	✔				✔	✔	
Thickness	0.6mm	0.5mm	1mm	2mm	1mm	0.5mm	0.5mm - 1mm	0.5mm	3.5mm	1mm	1mm
Roll size	2m x 50m	2m x 50m	1.2m x 30m	1m x 15m	5kg 15kg	2m x 50m	1.2m x 50m	1.2m x 50m	various x 8m	various x 30m	various x 20m
Colour	Blue/ Silver	Black/ Silver	Black	Black	Red/ Green	Blue/ White	Grey/ Black	Yellow	Sanded	Black	Grey/ Black

Refer to Alderburgh Ltd Technical support and published guidance documents for further information.

ALDERPRUFE GRA

Alderprufe GRA Gas Barrier is a multilayer, low-density polyethylene membrane, reinforced with a polypropylene reinforcing grid with an integral aluminium foil (BBA 16/5368) for use above or below a concrete ground floors that are not subject to hydrostatic pressure, to protect buildings against gas penetration from the ground.

General Description

Alderprufe GRA is a proprietary gas barrier that is compliant with **BS8485:2015, Ciria 665** and is suitable for **Amber 1 & 2** applications. It provides an effective barrier to methane, carbon dioxide, radon, and hydrocarbon vapours; as **Ciria C748** notes, aluminium simply does not allow any permeation of almost any common organic pollutant.
It can be installed above or below a slab, above or below insulation or beneath a screed.
The methods of jointing provide an effective barrier to the passage of gases, hydrocarbon vapours, liquid water and water vapour from the ground.

Alderprufe GRA is suitable for use in accordance with the relevant clauses of CP102:1973 Code of Practice for protection of buildings against water from the ground (as amended), in concrete floors not subject to a hydrostatic pressure, and will meet Requirement of Building Regulations Approved Document C (England and Wales), in that sheet thickness is at least 1000 gauge.

Alderprufe GRA has a high resistance to puncture. On smooth or blinded surfaces it will not be damaged by normal on-site foot traffic but care should be taken to avoid damage during installation, particularly when handling building materials and equipment over the surface and when placing concrete or screed since it can be punctured by sharp objects.
Alderprufe GRA may be installed under all conditions normal to the construction of ground floor slabs.

The membranes remain flexible and do not soften at the extreme temperatures likely to occur in practice. When used in accordance with the manufacturer's instructions there will be no adverse effect on the membranes from underfloor heating under normal conditions of use, **Alderprufe GRA** will provide an effective barrier to the transmission of gases, liquid water and water vapour for the life of the concrete slab in which it is installed.





ALDERPRUFE GRA GAS BARRIER

Characteristic	Test Method	Unit	Alderprufe GRA
Physical Properties			
Thickness	EN 1849-2	mm	0.60
Width	EN 1849-2	m	2
Length	EN 1849-2	m	50 / 25
Weight	EN 1849-2	g/m2	350
Gas Permeability			
Methane	EN ISO 15105 - 1	ml/m2/day/atm	0.09
Carbon Dioxide	EN ISO 15105 - 1	ml/m2/day/atm	0.09
Radon	K124/02/95	m2/s	8.00
Water Vapour Transmission	EN 1931	g/m2/day	0.10
Complies with: BS8485:2015, CIRIA C664, CIRIA C748, NHBC (Green Amber 1, Amber 2, Red),			

Installation

Unless the base is smooth, a surface blinding of soft sand or **Geotex 300PP** protection should be used to avoid puncturing the membrane during installation or when the concrete or screed is being placed.

Before jointing, sheets must be clean and free from dirt and grease. Adjacent sheets should be overlapped by at least 100mm wide and bonded with 100mm wide double-sided **Gastite Tape**.

Perforation or puncture of the sheets should be patched with sheets of identical thickness lapped at least 150mm beyond the limit of the puncture and sealed with 100mm wide **Gastite Tape**.
Continuity with DPC: **Alderprufe GRA** membrane must be continuous with damp-proof course in the surrounding walls; lapped and bonded to **Aldercourse GRA** gas dpc for continuation through load-bearing walls. Where necessary **Alderprufe MR50** should be used as a vertical course to link the two (refer to typical details and separate data sheets.)

Placing Concrete or Screed: **Alderprufe GRA** must be covered by a screed or other protective layer as soon as possible after installation. Care should be taken to ensure that the membrane is not stretched or displaced when placing the concrete or screed.
Best practice is to use pre-formed collars and cloaks at penetrations to the gas barrier, for example at columns, pipes or piles.
If gas ventilation is needed, refer to **Aldervent Gas Ventilation** brochure.

Use with: *Aldercourse GRA gas dpc * Gastite Tape * Preformed pipe collars, column cloaks, pile collars * Geotex 300PP or Backerboard HD protection * Membrane Holdfast * Alderprufe MR50*

ALDERPRUFE Ultra VOCM

Alderprufe Ultra VOCM Gas & Volatile Organic Compounds including Hydrocarbons Barrier is a multilayer flexible polyethylene membrane with a unique core component, specifically designed to provide protection against methane, carbon dioxide, radon, VOCs and hydrocarbons.
Alderprufe Ultra VOCM has been designed to withstand the most aggressive environments, typically on sites that were formally petrol stations, coalfields, contaminated industrial sites or landfill.

General Description

Alderprufe Ultra VOCM is a proprietary gas barrier that is compliant with **BS8485:2015, Ciria C748, Ciria 665** and is suitable for **Amber 1 & 2** applications. It provides an effective barrier to methane, carbon dioxide, radon, hydrocarbon vapours and hydrocarbons – permeation testing is in accordance with **BS8485:2015 and Ciria C748.**

It can be installed above or below a slab, above or below insulation or beneath a screed, and provides an effective barrier to the passage of gases, VOC vapours, liquid water and water vapour from the ground.

Alderprufe Ultra VOCM is suitable for use in accordance with the relevant clauses of CP102:1973 Code of Practice for protection of buildings against water from the ground (as amended), in concrete floors not subject to a hydrostatic pressure, and will meet Requirementof Building Regulations Approved Document C (England and Wales), in that sheet thickness is at least 1000 gauge.

Alderprufe Ultra VOCM has a high resistance to puncture. On smooth or blinded surfaces it will not be damaged by normal on-site foot traffic but care should be taken to avoid damage during installation, particularly when handling building materials and equipment over the surface and when placing concrete or screed since it can be punctured by sharp objects.
Alderprufe Ultra VOCM may be installed under all conditions normal to the construction of ground floor slabs.
The membranes remain flexible and do not soften at the extreme temperatures likely to occur in practice. When used in accordance with the manufacturer's instructions there will be no adverse effect on the membranes from underfloor heating under normal conditions of use, **Alderprufe Ultra VOCM** will provide an effective barrier to the transmission of gases, VOCs, liquid water and water vapour for the life of the concrete slab in which it is installed.

Application

Unless the base is smooth, a surface blinding of soft sand or **Geotex 300PP** protection should be used to avoid puncturing the membrane during installation or when the concrete or screed is being placed.

Jointing: Before joining, sheets must be clean and free from dirt and grease, adjacent sheets should be overlapped by at least 100mm. Ideally the laps will be **heat-welded** by a specialist installer, but if this can't be achieved 100mm wide **Gastite Tape** could be used ensuring laps are well-rolled for good adhesion.

Perforation: Perforation or puncture of the membrane can be patched; laps should be at least 150mm beyond the limit of the puncture and sealed using the same method as the joints.
Continuity with DPC: **Alderprufe VOCM** membrane must be continuous with damp-proof course in the surrounding walls; lapped and bonded to **Aldercourse GRA** gas dpc or **Aldercourse HC Dpc** for continuation through load-bearing walls.

Placing Concrete or Screed: **Alderprufe VOCM** must be covered by a screed or other protective layer as soon as possible after installation. Care should be taken to ensure that the membrane is not stretched or displaced when placing the concrete or screed.
Best practice is to use pre-formed collars and cloaks at penetrations to the gas barrier, for example at columns, pipes or piles. If gas ventilation is needed refer to **Aldervent Gas Ventilation** brochure.

Use with: *Aldercourse GRA gas dpc * Gastite Tape * Preformed pipe collars, column cloaks, pile collars * Geotex 300PP or Backerboard HD protection * Membrane Holdfast * Alderprufe MR50*

ALDERPRUFE ULTRA VOCM

Characteristic	Test Method	Unit	Alderprufe Ultra VOCM
Physical Properties			
Thickness	EN 1849-2	mm	0.5
Width	EN 1849-2	m	2
Length	EN 1849-2	m	50
Weight	EN 1849-2	g/m2	500
Hydraulic Properties			
Water Vapour Transmission Rate	ASTM E96	g/m2/day	0.93-0.95
Watertightness	EN 1928	-	PASS
Mechanical Properties			
Resistance to Static Load	EN 12730 - B	Kg	>20
Tensile Strength (MD)	EN 12311 -2 (A)	N/50mm	>550
Tensile Strength (CMD)	EN 12311 -2 (A)	N/50mm	>400
Tensile Elongation (MD/CMD)	EN 12311 -2 (A)	%	>550
Tear Resistance (MD/CMD)	EN 12310-1	N	>300
Resistance to Impact	EN 12691 - B	mm	650
Reaction to Fire	EN ISO 11925-2	Class	E
Resistance to Artificial Ageing	EN 1296	-	PASS
Resistance to Chemicals	EN 1847	-	PASS
Vapour Permeability - 100% concentration			
Transmission rate of Benzene	EN ISO 15105 - 2	mg/m2/day	2250
Transmission rate of Toluene	EN ISO 15105 - 2	mg/m2/day	2370
Transmission rate of Ethyl Benzene	EN ISO 15105 - 2	mg/m2/day	400
Transmission rate of Xylene (m,p,o)	EN ISO 15105 - 2	mg/m2/day	690
Transmission rate of Hexane	EN ISO 15105 - 2	mg/m2/day	92.25
Transmission rate of Vinyl chloride	EN ISO 15105 - 2	mg/m2/day	36.44
Transmission rate of 1,1,2 Trichloroethene (TCE)	EN ISO 15105 - 2	mg/m2/day	1.44
Transmission rate of 1,1,2,2 Tetrachloroethene (PCE)	EN ISO 15105 - 2	mg/m2/day	1.59
Gas Permeability			
Methane Permeability	EN ISO 15105 - 1	ml/m2/day/atm	0.13
Methane Permeability (Welded Joint)	EN ISO 15105 - 1	ml/m2/day/atm	1.00
Carbon Dioxide Permeability	EN ISO 15105 - 1	ml/m2/day/atm	3.01
Transmission rate of Vinyl chloride Gas	EN ISO 15105 - 1	ml/m2/day/atm	0.04
Radon Permeability	K124/02/95	m2/s	1.0 x 10-12
Complies with: BS8485:2015, CIRIA C748, NHBC Standards (Green Amber 1, Amber 2, Red), CE Mark - EN13967:2012			

Durability & Chemical Resistance	Test Method	Tensile Strength Retained	Result
Sulfuric Acid (10% Solution H2S04, 50o for 56 days)	EN 14414-A	100%	PASS
Basic (Calcium Hydroxide saturated suspension, 10% Solution 50o for 56 days)	EN 14414-B	100%	PASS
Solvents (35% Diesel, 35% Paraffin, 30% Oil HD30 (vol) 50o for 56 days)	EN 14414 -C	> 80%	PASS
Synthetic Leachate (mixture of 14 acids, chlorides, sulphates & phosphates, 50o for 56 days)	EN 14414-D	100%	PASS
Resistance to Leaching (Hot Water, deionised, 50o for 56 days)	EN 14414-A	100%	PASS
Resistance to Leaching (Aqueous Alkaline, saturated Calcium Hydroxide, 50o for 56 days)	EN 14414-B	100%	PASS

ALDERPRUFE HC

Alderprufe HC Geomembrane is a high quality single layer HDPE membrane, suitable for use as a barrier membrane on brownfield sites that require protection from a wide range of chemical contaminants and hydrocarbons on sites that typically have been used for petrol stations, landfill, coalfields or contaminated industrial sites.
Alderprufe HC Geomembrane combines strength with flexibility enabling high levels of stress/crack resistance to be achieved together with excellent bi-axial load absorption characteristics. Due to its high puncture and impact resistance **Alderprufe HC** Geomembrane generally requires no protective screed or boarding when laying reinforced concrete above it.
Alderprufe HC Geomembrane can be jointed using heat-welding, which can be undertaken in a wide range of climate conditions. If taped joints are used, then laps must be a minimum 100mm, and fully sealed with **Gastite Tape** in the laps and **Alderprufe Lap Tape** over the laps, all rolled well for good adhesion.

General Description

Alderprufe HC can be installed above or below a slab, above or below insulation or beneath a screed, and provides an effective barrier to the passage of gases, vapours, liquid water and water vapour from the ground.

Alderprufe HC is suitable for use in accordance with the relevant clauses of CP102:1973 Code of Practice for protection of buildings against water from the ground (as amended), in concrete floors not subject to a hydrostatic pressure (unless joints are welded), and will meet Requirement of Building Regulations Approved Document C (England and Wales), in that sheet thickness is at least 1000 gauge.



Alderprufe HC has a high resistance to puncture. On smooth or blinded surfaces it will not be damaged by normal on-site foot traffic but care should be taken to avoid damage during installation, particularly when handling building materials and equipment over the surface and when placing concrete or screed; however it can be used without a protection layer. **Alderprufe HC** may be installed under all conditions normal to the construction of ground floor slabs.
The membrane does not soften at the extreme temperatures likely to occur in practice. When used in accordance with the manufacturer's instructions there will be no adverse effect on the membranes from underfloor heating under normal conditions of use, **Alderprufe HC** will provide an effective barrier to the transmission of gases, liquid water and water vapour for the life of the concrete slab in which it is installed.
Continuity with DPC: **Alderprufe HC** membrane must be continuous with dpc, lapped and bonded to **Aldercourse GRA** gas dpc or HC Dpc for continuation through load-bearing walls. Where necessary Alderprufe MR50 should be used as a vertical course to link the two (refer to typical details and separate data sheets.) If gas ventilation is needed, refer to **Aldervent Gas Ventilation** brochure.

ALDERPRUFE HC HYDROCARBON BARRIER

Characteristic	Test Method	Unit	Alderprufe HC
Physical Properties			
Thickness	EN 1849-2	mm	1
Width	EN 1849-2	m	1.2
Length	EN 1849-2	m	30
Weight	EN 1849-2	g/m2	972
Vapour Permeability - 100% concentration			
Transmission rate of Diesel	MDV	g/m2/hr	7.00
Transmission rate of Petrol	MDV	g/m2/hr	14.80
Transmission rate of Xylene	MDV	g/m2/hr	14.60
Transmission rate of Tolulene	MDV	g/m2/hr	23.00
Gas Permeability			
Methane Permeability	EN ISO 15105 - 1	ml/m2/day/atm	76.20
Complies with: CIRIA 665, CIRIA C748, NHBC (Green Amber 1, Amber 2, Red),			

Use with: Aldercourse GRA gas dpc *HC Dpc * Gastite Tape * Preformed pipe collars, column cloaks, pile collars * Geotex 300PP or Backerboard HD protection * Membrane Holdfast * Alderprufe MR50

ALDERPRUFE MR50

Alderprufe MR50 self-adhesive waterproofing membrane is intended for use in concrete, brickwork and blockwork construction, both internally and externally, to protect buildings against water and the ingress of methane, carbon dioxide and radon gases from the ground. **Alderprufe MR50** high performance gas resistant membrane is derived from the well-established **Alderprufe 20K** structural waterproofing membrane (BBA 16/5370). **Alderprufe MR50** incorporates a 50micron aluminium layer next to the cross laminated HDPE carrier, between two 1mm layers of modified bitumen; the aluminium layer provides an effective barrier to VOC as noted in **Ciria C748**. The upper membrane surface is protected by a thin PE film and the lower surface by a siliconised release paper.



Benefits

Alderprufe MR50 offers the ease of application of a self-adhesive membrane with total gas resistance by the aluminium foil. It provides economic protection in a single application without the need for taping strips at overlaps. The modified bitumen layers provide the aluminium core with complete protection from alkali attack from the over site concrete or screed. The laps are self-adhesive, or can be heat-bonded.

Installation

Alderprufe MR50 should generally be installed in accordance with the recommendations of CP102: 1973, Code of Practice for the Protection of Buildings against water from the ground and in accordance with **BS8102:2009 and BS8485:2015.**
All surfaces should be smooth, clean and dry. Loosely adhering material or sharp protrusions should be removed; brickwork must be skimmed with sand /cement to provide an even surface. Concrete and render should be completely cured, dry and dust free. All areas must first be primed with **Alderprufe Tac Primer** and allowed to dry. Only prime sufficient to be covered with membrane in the same working day. Cut the membrane to the appropriate length, remove about 200mm of release sheet and bond the membrane firmly to the substrate. Remove the release sheet progressively pressing the membrane onto the primed surface. To prevent air being trapped, pressure must be applied from the centre. All side and end laps to be 100mm and rolled to ensure a complete seal. For total security, laps may be heat sealed by lightly heating the upper surface of the laid sheet at overlaps to a width of 100mm to expose the bitumen before applying the next sheet. This provides for a complete homogenous welded joint. Angles and corners should be provided with a suitable fillet and reinforced with a 300mm wide strip of **Alderprufe MR50** equidistant across the directional change.
Continuity with DPC: **Alderprufe MR50** must be continuous with dpc, lapped and bonded to **Aldercourse GRA** gas dpc for continuation through load-bearing walls.

Alderprufe MR50 must not be applied when the surface temperatures fall below 5°C. Only sufficient membrane should be laid as can be adequately protected as work proceeds. **Alderprufe MR50** must be stored in dry conditions under cover at a minimum temperature of 5°C and a maximum of 30°C. Rolls must be stored on their sides, stacked no more than 5 high.
If gas ventilation is needed, refer to **Aldervent Gas Ventilation** brochure.

ALDERPRUFE MR50

Characteristic	Test Method	Unit	Alderprufe MR50
Physical Properties			
Thickness	EN 1849-2	mm	2
Width	EN 1849-2	m	1
Length	EN 1849-2	m	15
Weight	EN 1849-2	g/m2	2000
Water Vapour Resistance			
Transmission rate of Diesel	MDV	g/m2/hr	7.00
Transmission rate of Petrol	MDV	g/m2/hr	14.80
Transmission rate of Xylene	MDV	g/m2/hr	14.60
Transmission rate of Tolulene	MDV	g/m2/hr	23.00
Gas Permeability			
Methane	EN ISO 15105 - 1	ml/m2/day/atm	0.85
Carbon Dioxide	EN ISO 15105 - 1	ml/m2/day/atm	0.28
Radon	K12/05/95	m2/s	4 x 10-12
Complies with: BS8485:2015, CIRIA 665,NHBC (Green Amber 1, Amber 2, Red), BS8102:2009, and CIRIA C748 (* vapours - impermeable aluminium core			

Use with: Membrane Holdfast * Alderprufe GRA * Alderprufe Ultra VOCM * Alderprufe HC * Alderprufe GRM * Alderprufe Tuflex * Super Yellow gas barrier

ALDERPRUFE GRM

Alderprufe GRM Gas Barrier is a multilayer, low-density polyethylene membrane, reinforced with a polypropylene reinforcing grid for use above or below a concrete ground floors that are not subject to hydrostatic pressure, to protect buildings against gas penetration from the ground.

General Description

Alderprufe GRM is a 2000g reinforced gas barrier compliant with **CIRIA C665 and NHBC Amber 1** classification. It provides an effective barrier to carbon dioxide, radon and low levels of methane. It can be installed above or below a slab, above or below insulation or beneath a screed.
The methods of jointing provide an effective barrier to the passage of gases, liquid water and water vapour from the ground.

Alderprufe GRM is suitable for use in accordance with the relevant clauses of CP102:1973 Code of Practice for protection of buildings against water from the ground (as amended), in concrete floors not subject to a hydrostatic pressure, and will meet Requirement of Building Regulations Approved Document C (England and Wales), in that sheet thickness is at least 1000 gauge.

Alderprufe GRM has a high resistance to puncture. On smooth or blinded surfaces it will not be damaged by normal on-site foot traffic but care should be taken to avoid damage during installation, particularly when handling building materials and equipment over the surface and when placing concrete or screed since it can be punctured by sharp objects.
Alderprufe GRM may be installed under all conditions normal to the construction of ground floor slabs.

The membrane remains flexible and does not soften at the extreme temperatures likely to occur in practice. When used in accordance with the manufacturer's instructions there will be no adverse effect on the membranes from underfloor heating under normal conditions of use, **Alderprufe GRM** will provide an effective barrier to the transmission of gases, liquid water and water vapour for the life of the concrete slab in which it is installed.

ALDERPRUFE GRM REINFORCED GAS BARRIER

Characteristic	Test Method	Unit	Alderprufe GRA
Physical Properties			
Thickness	EN 1849-2	mm	0.5
Width	EN 1849-2	m	2
Length	EN 1849-2	m	50
Weight	EN 1849-2	g/m2	275
Gas Permeability			
Methane	EN 15105-1	ml/m2/day/atm	<514
Carbon Dioxide	EN 15105-1	ml/m2/day/atm	<514
Radon	K124/02/95	m2/s	8.00
Water Vapour Transmission	EN 1931	g/m2/day	0.10
Complies with:- CIRIA C665, NHBC (Green, Amber 1)			

Installation

Unless the base is smooth, a surface blinding of soft sand or **Geotex 300PP** protection should be used to avoid puncturing the membrane during installation or when the concrete or screed is being placed.
Before jointing, sheets must be clean and free from dirt and grease. Adjacent sheets should be overlapped by at least 100mm wide and bonded with 100mm wide double-sided Gastite Tape.
Perforation or puncture of the sheets should be patched with sheets of identical thickness lapped at least 150mm beyond the limit of the puncture and sealed with 100mm wide **Gastite Tape**.
Continuity with DPC: **Alderprufe GRM** membrane must be continuous with damp-proof course in the surrounding walls; lapped and bonded to **Aldercourse GRA** gas dpc or **Tuflex Dpc** for continuation through load-bearing walls. Where necessary **Alderprufe MR50** should be used as a vertical course to link the two (refer to typical details and separate data sheets.)

Placing Concrete or Screed: **Alderprufe GRM** must be covered by a screed or other protective layer as soon as possible after installation. Care should be taken to ensure that the membrane is not stretched or displaced when placing the concrete or screed.
Best practice is to use pre-formed collars and cloaks at penetrations to the gas barrier, for example at columns, pipes or piles.
If gas ventilation is needed, refer to **Aldervent Gas Ventilation** brochure.

Use with: Aldercourse GRA gas dpc *Tuflex dpc * Gastite Tape * Preformed pipe collars, column cloaks, pile collars * Geotex 300PP or Backerboard HD protection * Membrane Holdfast * Alderprufe MR50

ALDERPRUFE LGM

Alderprufe LGM Liquid Gas Barrier is specialist styrene butadiene latex based liquid membrane, and is supplied ready to use. It provides a simple continuous gas barrier against the ingress of methane, carbon dioxide, radon, VOC, air and moisture into a building, and is green in colour.

General Description

Alderprufe LGM is a liquid gas barrier compliant with **BS8485:2015, CIRIA C665, BR211 and NHBC Green, Amber 1 & Amber 2** classifications. It can be used to protect most building surfaces form the effect of liquid and water vapour, can be used as a dpm on floors and walls, and will provide an effective barrier to the ingress of methane, carbon dioxide and radon when applied in a minimum thickness of 1mm.

ALDERPRUFE LGM LIQUID GAS BARRIER

Characteristic	Test Method	Unit	Alderprufe LGM
Properties			
Applied Thickness	mm	>1.00	
Supplies as a Red Viscous Liquid Pack size:	5Kg / 15 Kg		
Gas Permeability			
Methane	EN 15105-1	ml/m2/day/atm	0.01
Radon (applied >1mm provides a complete barrier to radon)	Saarland University, GER	mm	>1mm
Water Tightness	EN 11296, EN 1367		
EN 1928	PASS		
Complies with:- BS8485:2015, CIRIA C665, NHBC (Green, Amber 1, Amber 2), BR211			

Installation

The substrate should have a smooth or a light even texture; masonry should be flush pointed and defects in the surface made good prior to application. The surface should be clean, sound and free of dust, loose material, or free surface water. Do not apply **Alderprufe LGM** in wet conditions or if expected before the membrane can dry, Do not apply if the temperature is below 7oC. If multiple coats are required, apply the coats at right angles to each other, ensuring previous coats(s) are touch-dry before applying the next.

Drying time in good conditions is typically 1-2 hours in to reach touch dry, but this will vary greatly dependant on site and weather conditions. Secondary coats should be applied within 24 hours.

Alderprufe LGM can be applied by brush, roller or airless spray.

To achieve the minimum applied 1mm thickness for a gas barrier, you will need 2Kg / m2.

Use **Alderprufe LGM Reinforcing Scrim** at corner, angles, edge detail, upstands, kickers as required (Roll size 120mm x 5m)

If gas ventilation is needed, refer to Aldervent Gas Ventilation brochure.

Use with: Aldercourse GRA gas dpc *HC Dpc * Gastite Tape * Preformed column cloaks, pile collars * Geotex 300PP or Backerboard HD protection * Membrane Holdfast * Alderprufe MR50 * Alderprufe HC * Alderprufe GRA * Alderprufe Ultra VOCM * Alderprufe Tuflex * Super

ALDERPRUFE Tuflex

Alderprufe Tuflex membrane is a single layer cold applied geomembrane suitable for environmental protection to structures, containments and cut-off trenches. It combines excellent chemical resistance with low flexural modulus to provide a malleable, flexible membrane suitable for non-smooth surfaces and factory prefabrication to optimise on-site installation.

Alderprufe Tuflex is a gas barrier compliant with **CIRIA C665** and NHBC **Amber 1** classification. It provides an effective barrier to carbon dioxide, radon and low levels of methane. It can be installed above or below a slab, above or below insulation or beneath a screed. The methods of jointing provide an effective barrier to the passage of gases, liquid water and water vapour from the ground.

Alderprufe Tuflex is suitable for use in accordance with the relevant clauses of CP102:1973 Code of Practice for protection of buildings against water from the ground (as amended), in concrete floors not subject to a hydrostatic pressure, and will meet the requirements of Building Regulations Approved Document C (England and Wales).
Alderprufe Tuflex has a high resistance to puncture. On smooth or blinded surfaces it will not be damaged by normal on-site foot traffic but care should be taken to avoid damage during installation, particularly when handling building materials and equipment over the surface and when placing concrete or screed since it can be punctured by sharp objects.

Alderprufe Tuflex may be installed under all conditions normal to the construction of ground floor slabs. Before jointing, sheets must be clean and free from dirt and grease. Adjacent sheets should be overlapped by at least 100mm wide and can be welded or bonded with 100mm wide double-sided **Gastite Tape**.
Perforation or puncture of the sheets should be patched with sheets of identical thickness lapped at least 150mm beyond the limit of the puncture and sealed by welding or with 100mm wide **Gastite Tape**.
Continuity with DPC: **Alderprufe Tuflex** must be continuous with damp-proof course in the surrounding walls; lapped and bonded to **Aldercourse GRA** gas dpc or Tuflex Dpc for continuation through load-bearing walls. Where necessary **Alderprufe MR50** should be used as a vertical course to link the two (refer to typical details and separate data sheets.)

Placing Concrete or Screed: **Alderprufe Tuflex** must be covered as soon as possible. Care should be taken to ensure that the membrane is not stretched or displaced when placing the concrete or screed.
Best practice is to use pre-formed collars and cloaks at penetrations to the gas barrier, for example at columns, pipes or piles.
If gas ventilation is needed, refer to **Aldervent Gas Ventilation** brochure.

Alderprufe Tuflex has a wide range of other uses, including cut-off trench containment, where it can has been successfully installed up to 8m as a vertical barrier to contain contaminants and gases on brownfield sites and around landfill (refer to separate Tuflex geomembrane brochure for details specific to these applications)

ALDERPRUFE TUFLEX

Characteristic	Test Method	Unit	Tuflex membrane
Physical Properties			
Thickness	EN 1849-2	mm	0.75
Width	EN 1849-2	m	1.2
Length	EN 1849-2	m	50
Weight	EN 1849-2	g/m2	900
Gas Permeability			
Methane	MDV	ml/m2/day/atm	>40
Carbon Dioxide	MDV	ml/m2/day/atm	>40
Water Vapour Transmission	ASTM E96	g/m2/day	<0.01
Complies with CIRIA C665, NHBC (Green, Amber 1)			

Use with: Aldercourse GRA gas dpc * Tuflex dpc * Gastite Tape * Preformed pipe collars, column cloaks, pile collars * Geotex 300PP or Backerboard HD protection * Membrane Holdfast * Alderprufe MR50

ALDERPRUFE Super Yellow Gas Barrier

Super Yellow Gas Barrier is a 2000g gas barrier in accordance with **CIRIA 665.** It combines gas and damp proofing protection in an easy to install, flexible, co-polymer thermoplastic membrane which is coloured yellow for ease of identification on site. It can be used above or below concrete ground floors that are not subject to hydrostatic pressure, to protect buildings against gas penetration from the ground.

Super Yellow gas barrier is compliant with **CIRIA C665** and NHBC **Amber 1** classification. It provides an effective barrier to carbon dioxide, radon and low levels of methane. It can be installed above or below a slab, above or below insulation or beneath a screed.
The methods of jointing provide an effective barrier to the passage of gases, liquid water and water vapour from the ground.

Super Yellow gas barrier is suitable for use in accordance with the relevant clauses of CP102:1973 Code of Practice for protection of buildings against water from the ground (as amended), in concrete floors not subject to a hydrostatic pressure, and will meet the requirements of Building Regulations Approved Document C

Super Yellow gas barrier has a high resistance to puncture. On smooth or blinded surfaces it will not be damaged by normal on-site foot traffic but care should be taken to avoid damage during installation, particularly when handling building materials and equipment over the surface and when placing concrete or screed since it can be punctured by sharp objects.
Super Yellow gas barrier may be installed under all conditions normal to the construction of ground floor slabs.

The membrane remains flexible and does not soften at the extreme temperatures likely to occur in practice. When used in accordance with the manufacturer's instructions there will be no adverse effect on the membranes from underfloor heating under normal conditions of use, Super Yellow gas barrier will provide an effective barrier to the transmission of gases, liquid water and water vapour for the life of the concrete slab in which it is installed.

Installation

Unless the base is smooth, a surface blinding of soft sand or **Geotex 300PP** protection should be used to avoid puncturing the membrane during installation or when the concrete or screed is being placed.
Before jointing, sheets must be clean and free from dirt and grease. Adjacent sheets should be overlapped by at least 100mm wide and bonded with 100mm wide double-sided **Gastite Tape**. Joints can also be **heat-welded**.
Perforation or puncture of the sheets should be patched with sheets of identical thickness lapped at least 150mm beyond the limit of the puncture and sealed with 100mm wide **Gastite Tape**.
Continuity with DPC: **Super Yellow gas membrane** must be continuous with damp-proof course in the surrounding walls; lapped and bonded to **Aldercourse GRA** gas dpc or **Tuflex Dpc** for continuation through load-bearing walls. Where necessary Alderprufe MR50 should be used as a vertical course to link the two (refer to typical details and separate data sheets.)

Placing Concrete or Screed: **Super Yellow gas barrier** must be covered by a screed or other protective layer as soon as possible after installation. Care should be taken to ensure that the membrane is not stretched or displaced when placing the concrete or screed. Best practice is to use pre-formed collars and cloaks at penetrations to the gas barrier, for example at columns, pipes or piles. If gas ventilation is needed, refer to **Aldervent Gas Ventilation** brochure.

SUPER YELLOW GAS BARRIER

Characteristic	Test Method	Unit	Super yellow Gas Barrier
Physical Properties			
Thickness	EN 1849-2	mm	0.5
Width	EN 1849-2	m	1.2
Length	EN 1849-2	m	50
Weight	EN 1849-2	g/m2	470
Gas Permeability			
Methane	ISO 2782 MDV	m2/s/Pa	1.13 x 10-17
Carbon Dioxide	ISO 2782 MDV	m2/s/Pa	2.8 x 10-17
Radon	MDV	m2/s	5.477 x 10-12
Complies with CIRIA 665, NHBC (Green Amber 1), BRE414, BR211			

Precautions
Super Yellow gas membrane is classified as non-hazardous when used in accordance with CP102: 1973. The membrane is chemically inert and is not affected by acids or alkalis that may be present in the sub-soils.
Care should be taken to avoid accidental damage when handling the membrane on site.
The product is not intended for use where there is the risk of hydrostatic pressure, where it will be exposed for long periods of outdoor weathering, or where hydrocarbons or high levels of methane are recorded.

Use with: Aldercourse GRA gas dpc * Tuflex dpc * Gastite Tape * Preformed pipe collars, column cloaks, pile collars * Geotex 300PP or Backerboard HD protection * Membrane Holdfast * Alderprufe MR50 * Alderprufe LGM Liquid gas membrane

ALDERCOURSE GRA



Aldercourse GRA is an aluminium cored high performance damp-proof course, to maintain the integrity of the gas barrier system in load-bearing locations. Used combination with all Alderprufe gas barriers it provides a continuous “through the wall to floor” junction.

Aldercourse GRA is a laminate of aluminium, high quality oxidised bitumen and hessian, surfaced with a light sand finish, and is compliant with **BS8485:2015** and **BS6398**. The aluminium layer provides an effective barrier to VOC as noted in **Ciria C748**. **Aldercourse GRA** can be heat-bonded to masonry, and in addition to gas barrier applications, it can also be used in cavity tray applications including parapet walls and beneath copings and cappings.

Priming

Any surface to which **Aldercourse GRA** will be heat bonded must be primed with one coat of **Tac Primer** at a rate of 0.1 to 0.3 litres per m2 dependent on the porosity of the surface. The primer must be allowed to dry thoroughly before applying **Aldercourse GRA.**

Application

Aldercourse GRA Damp-proof course should be laid on a wet mortar bed in accordance with British Standards Codes of Practice. All laps of Aldercourse to Aldercourse must be secured by heat bonding, and should be a minimum of 150mm. Laps between Alderprufe gas barriers and **Aldercourse GRA** should be secured as follows: - A ‘tail’ of **Aldercourse GRA** dpc should extend onto the slab by a minimum of 150mm; the top surface of the **Aldercourse GRA** should be softened by use of a gas torch to allow the bitumen to become viscous; Gastite Tape should be applied to the exposed surface. **Alderprufe gas barrier** should then be applied Gastite Tape, and the joint rolled well for good adhesion.

ALDERCOURSE GRA GAS DPC

Characteristic	Test Method	Unit	Aldercourse GRA
Physical Properties			
Thickness	EN 1849-2	mm	3.2
Width (400mm, 500mm, 600mm, 1000mm are standard widths)	EN 1849-2	m	various
Length	EN 1849-2	m	8
Weigth	EN 1849-2	g/m2	4000
Gas Permeability			
Methane	EN ISO 15105 - 1	ml/m2/day/atm	0.98
Carbon Dioxide	EN ISO 15105 - 1	ml/m2/day/atm	0.28
Radon	K12/05/95	m2/s	1.5 x 10-14
Complies with:- BS8485:2015, CIRIA 665, NHBC (Green Amber 1, Amber 2, Red), CIRIA C748 (*vapours - impermeable aluminium core)			

Use with: Alderprufe GRA* Alderprufe MR50 * Alderprufe Ultra VOCM * Alderprufe HC * Alderprufe GRM * Super Yellow Gas Barrier * Alderprufe Tuflex * Alderprufe LGM Liquid Gas Membrane

ALDERCOURSE HC DPC

HC DPC has a similar composition to **Alderprufe HC** and is used to maintain the integrity of the barrier system in load-bearing locations; when combined with Alderprufe HC it provides a continuous “through the wall to floor” junction.



Application

HC Dpc should be laid on a wet mortar bed in accordance with British Standards Codes of Practice. All laps of HC Dpc to HC Dpc can be secured by heat bonding, or can be taped using double side Gastite Tape and should be a minimum of 100mm. Laps between Alderprufe gas barriers and **HC Dpc** should be secured as follows: - A ‘tail’ of **HC Dpc** should extend onto the slab by a minimum of 150mm and welded to **Alderprufe HC** membrane or **Gastite Tape** should be applied to the exposed surface. **Alderprufe HC** membrane should then be applied to the **Gastite Tape**, and the joint rolled well for good adhesion.

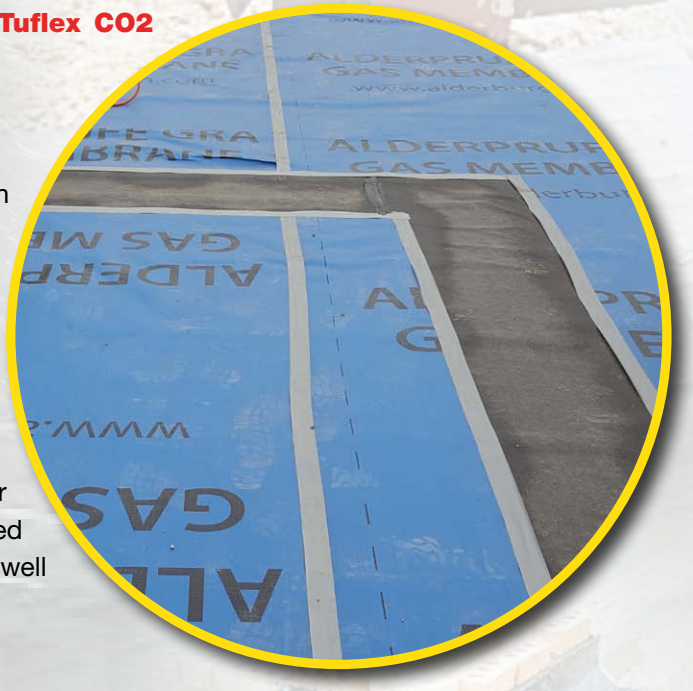
ALDERCOURSE HC DPC

Characteristic	Test Method	Unit	Aldercourse HC DPC
Physical Properties			
Thickness	EN 1849-2	mm	1
Width	EN 1849-2	m	600mm, 1200mm
Length	EN 1849-2	m	30
Weight	EN 1849-2	g/m2	972
Vapour Permeability - 100% concentration			
Transmission rate of Diesel	MDV	g/m2/hr	7.00
Transmission rate of Petrol	MDV	g/m2/hr	14.80
Transmission rate of Xylene	MDV	g/m2/hr	14.60
Transmission rate of Tolulene	MDV	g/m2/hr	23.00
Gas Permeability			
Methane Permeability	EN ISO 15105 - 1	ml/m2/day/atm	76.20
Complies with: CIRIA 665, CIRIA C748, NHBC (Green Amber 1, Amber 2, Red),			

Use with: Alderprufe Ultra VOCM * Alderprufe HC * Alderprufe LGM Liquid Gas Membrane

ALDERCOURSE Tuflex DPC

Tuflex DPC is a high performance polymeric dpc, a flexible sheet material of propylene copolymers for use with **Alderprufe GRM, Tuflex CO2** and **Super Yellow gas barrier.**



Application

Tuflex Dpc should be laid on a wet mortar bed in accordance with British Standards Codes of Practice. All laps of **Tuflex Dpc** to **Tuflex Dpc** can be secured by heat bonding, or can be taped using double side **Gastite Tape** and should be a minimum of 100mm. Laps between Alderprufe gas barriers and **Tuflex Dpc** should be secured as follows: - A 'tail' of **Tuflex Dpc** should extend onto the slab by a minimum of 100mm and sealed to the gas barrier by welding (if appropriate) or applying **Gastite Tape** should be applied to the exposed surface, then the membrane applied, and the joint rolled well for good adhesion.

TUFLEX DPC

Characteristic	Test Method	Unit	Tuflex DPC
Physical Properties			
Thickness	EN 1849-2	mm	1
Width	m	various	
Length	EN 1849-2	m	20
Weight	EN 1849-2	g/m2	900
Gas Permeability			
Methane	ISO 2782	m2/s/Pa	1.13 x 10-17
Carbon Dioxide	ISO 2782	m2/s/Pa	2.8 x 10-17
Radon	MDV	m2/s	5.477 x 10-12
Complies with CIRIA 665, NHBC (Green Amber 1)			

Use with: Alderprufe GRA* Alderprufe MR50 * Alderprufe GRM * Super Yellow Gas Barrier * Alderprufe Tuflex * Alderprufe LGM Liquid Gas Membrane

ALDERSEAL Gastite Mastic

Alderseal Gastite Mastic is a self-supporting non setting mastic, developed for sealing around cable ducts, conduits, service pipe entries and reinforcing bars against gas and water ingress, particularly at the critical point of entry when small diameter penetrations pass through the Membrane system.
It is possible for gas and water to track up and along cable, duct and steel bar penetrations of the Membrane – it is difficult to guarantee a sealed collar system on small diameter penetration; **Alderseal Gastite Mastic** has been specifically developed to solve this problem.
It has British Telecom type approval and meets the requirements of British Gas for sealing services.

Description

Firm Fibrous Mastic based on Polybutene, mineral fillers, organic fibres and water displacing materials.

Application

Alderseal Gastite Mastic is packed into the ends of the duct by hand and moulded firmly around cables and against the duct ensuring there are no gaps or fissures. The Mastic should be packed to a depth of least equal diameter of the duct.
When used for sealing around solid penetrations reinforcing bars, mains, water pipes, etc. It is moulded by hand using firm pressure pressed into the angle caused by penetration. The Mastic being moulded onto both sides of the angle by at least 40mm.
Alderseal Gastite Mastic can also be used to pack into the angle at penetrations before the application of Factory Formed Collars and Cloaks.
All surfaces should be free from loose rust, scale, dirt or previous sealant.

Properties

Alderseal Gastite Mastic Adheres to common construction materials such as steel, glazed earthen ware, clay, lead, polythene, pvc. It is unaffected by natural gas including Methane and Carbon Dioxide and water and accommodates movement.
Alderseal Gastite Mastic also adheres to wet surfaces and withstands at least 20kpa (2 metre head) water pressure for a minimum of 30 minutes.

ALDERSEAL GASTITE MASTIC

Characteristic	Test Method	Unit	Alderseal Gastite Mastic
Physical Properties			
Specific Gravity	MDV	-	1.66
Application Temperature Range	MDV	oC	0-35
Service Temperature Range	MDV	oC	-15 to + 100
Dimensions	MDV	mm	330 x 40 x 40

Use with: Alderprufe GRA* Alderprufe GRM * Alderprufe Ultra VOCM * Alderprufe HC * Alderprufe MR50 *Super Yellow Gas Barrier * Alderprufe Tuflex * Alderprufe LGM Liquid Gas Membrane * Aldercourse GRA gas dpc * HC Dpc * Tuflex Dpc

ALDERPRUFE Ancillaries

Alderseal Gastite Tape

Description

A modified polymer adhesive in sheet form with a silicone release paper, for sealing laps on all Alderprufe Gas Barrier systems, to themselves and each other, eg, Preformed Corners and Profiles, Protection Boards, both vertical and horizontally, Fillet Sections.

Roll sizes: 100mm x 15m, 50mm x 15m.

Application

Prepare surface to be adhered to. Concrete and masonry must first be allowed to dry and for best results primed using **Alderprufe TAC Primer**. Membrane surfaces must be clean and dry.
Roll well to ensure good adhesion. Warming tape by storing indoors before use will aid adhesion. Once in place the profile or product is firmly fixed and becomes an integral part of the gas protection system.

Alderprufe Membrane Holdfast

Description

Holdfast is a tying system for fixing the membrane to the underside of concrete slabs when future subsidence of the prepared ground is anticipated.
Holdfast are square cellular pads which are fixed to the membrane at pre-determined centres. When concrete is poured, it enters in to the Holdfast cells and so bonds the membrane to the slab; this simple, cost effective system can be used in conjunction with any Alderprufe membrane.
Holdfast can be applied by heat-welding or using **Gastite Tape** (as appropriate)
Dimensions: 100mm x 100mm cells on a membrane background.

Preformed Pipe Collars (Top Hats)

The Preformed Pipe Collar is easily installed wherever penetration of the Gas barrier membrane is necessary for ducting or other services. Seal to the Alderprufe gas barrier membrane using **Gastite Tape**, or heat-bonding as appropriate; seal the collar to the pipe using **Gastite Tape** or **Alderprufe MR50**. Available in 110mm, 123mm, 135mm or 160mm as standard diameter; special sizes can easily be made to order.

Preformed Column Cloaks

Description

Factory formed column cloaks designed to eliminate all risk in applications of membranes at the weakest point. Eliminates any risk of error by applicator guaranteeing a complete waterproof and gastite detail.
Manufactured in the factory with fully tested joints.
The profiles are supplied to the exact size of the stanchions or the profile they are sealing. Heat bonded to the steel and either welded or adhered using **Gastite Tape** to the membrane, the profiles guarantee total security against ingress at the most difficult point to seal – these are always installed as part of our guaranteed systems.
Column Cloaks are made to suit the Alderprufe membrane they are to be used with to form a totally compatible system.

Preformed Corner Cloaks

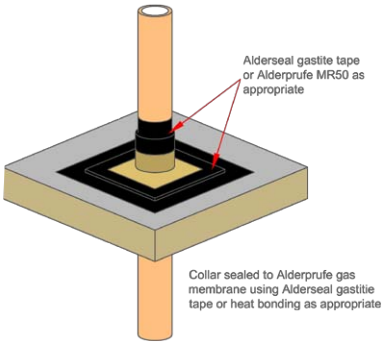
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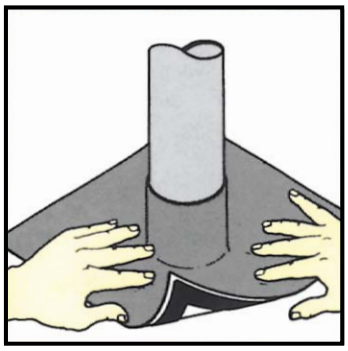
Factory formed corner cloaks designed to eliminate all risk in applications of membranes at the weakest point. Eliminates any risk of error by applicator guaranteeing a complete waterproof and gastite detail.
Manufactured in the factory with fully tested joints.
The profiles are supplied to the exact size to suit site requirements and adhered to the membrane or gas dpc using **Gastite Tape** or heat welding as appropriate.
Corner Cloaks are made to suit the Alderprufe membrane they are to be used with to form a totally compatible system.

Use with: Alderprufe GRA* Alderprufe GRM * Alderprufe Ultra VOCM * Super Yellow Gas Barrier * Alderprufe Tuflex * Alderprufe LGM Liquid Gas Membrane * Aldercourse GRA gas dpc * HC Dpc * Tuflex Dpc.

ALDERBURGH

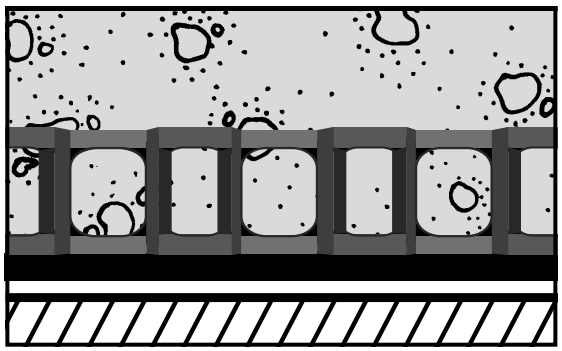
Service Pipe Cloak

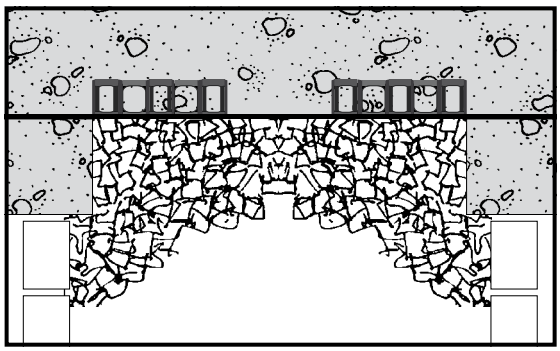






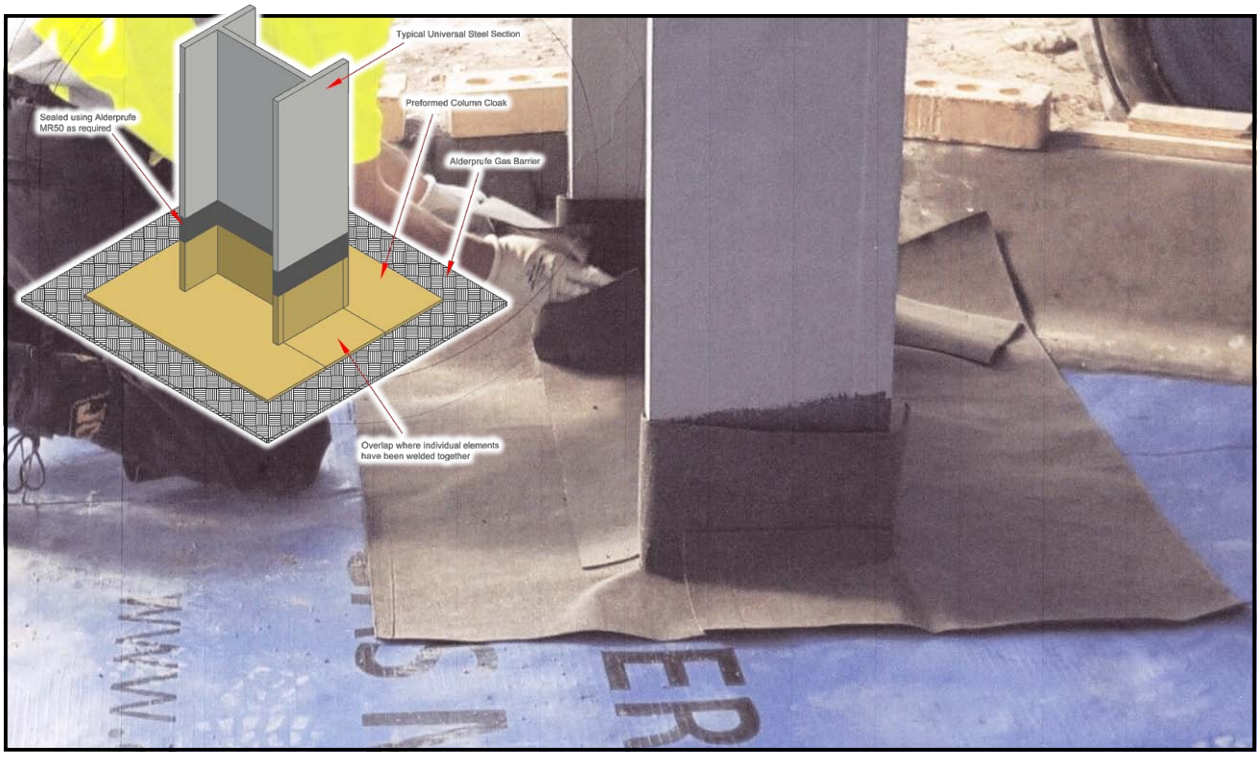
Alderprufe Membrane Holdfast





ALDERBURGH

Column Cloak



ALDERPRUFE

Gas Barriers



ALDERPRUFE Gas Protection

All products are manufactured to the highest quality, being subject to rigid quality control.

However, the company cannot control conditions of application and use of its products, thus any warranty, written or implied, is given in good faith for materials only.

Alderburgh Ltd will not accept any responsibility for damage or injury arising from storage, handling, misapplication or misuse of its products.

All transactions are subject to our standard condition of sale; a copy is available on request.

To find out more about these systems and products please contact us

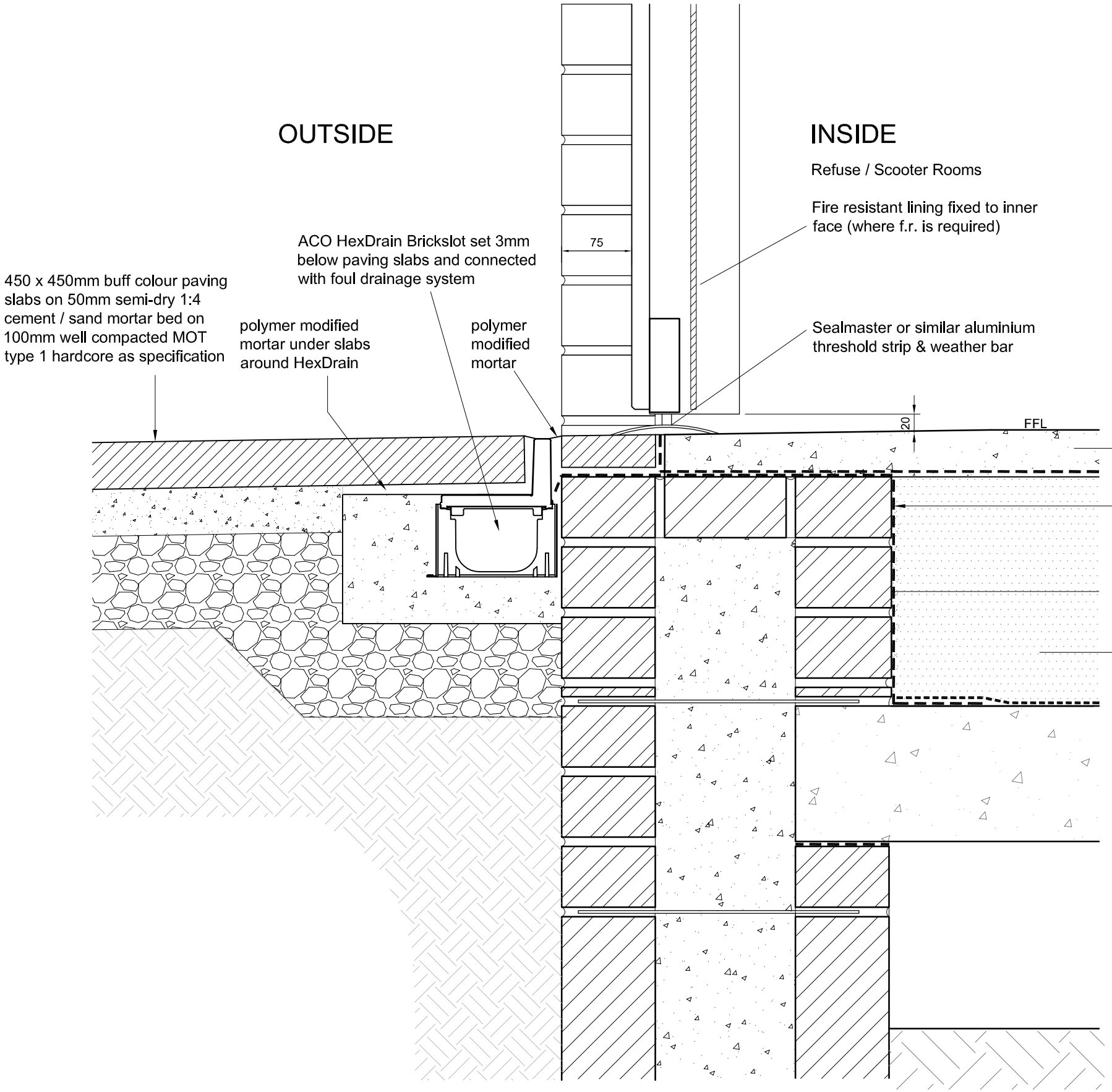
ENVIRONMENTAL SUSTAINABLE SOLUTIONS LTD

ALDERBURGH
Solution Led Systems *to ground borne problems*

Alderburgh Ltd
Solutions House
Dane Street
Rochdale
OL11 4EZ

T: 01706 374416, E: sales@alderburgh.com; tehnical@alderburgh.com
W: www.alderburgh.com

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Rev	Date	Details	Drawn by	Checked by
A	15/06/17	Construction Stage 5	PAS	SMS
B	25/06/18	Drawing updated	SMS	IS

NOTES:

1. This drawing is to be read in conjunction with the project specification.

2. Underfloor void is to be sprayed with weedkiller

3. A DPM need not be provided where the ground below the floor is above adjacent ground level or is effectively drained.

4. The procedure for the placement of PCC floor units, shimming, packing and grounting is to be carried out in accordance with the specification. Refer also to the Site Safety Booklet and Method Statement by the floor unit manufacturer.

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6. For Radon protection details refer to drawings 'NE-2145-05-AC-150, NE-2145-05-AC-151, NE-2145-05-AC-152 & NE-2145-05-AC-153'.

7. Floor insulation should be laid with closely butted joints, laid staggered with a break bonded pattern and filled tightly at edges and around any service penetrations. See manufactures product literature and BBA certificate for further information.

8. Overlap wall insulation with top of perimeter floor insulation by min.150mm. In addition overlap ends of insulation filled concrete floor units.

9. Separating layer to be overlapped 150mm and taped at joints.

10. The NHBC is to confirm if the U Value of the wall and floor constructions as shown will achieve a pass in the SAP / SBEM calculations.

McCarthy & Stone

client name

49 RLC Apartments
Harton Centre
Ambleside Avenue
South Shields

project

XD5 Door Threshold Detail

title

Construction Stage 5

status

April 2017 — date
SMS — drawn

1:5 @ A3 — scale
IS — checked

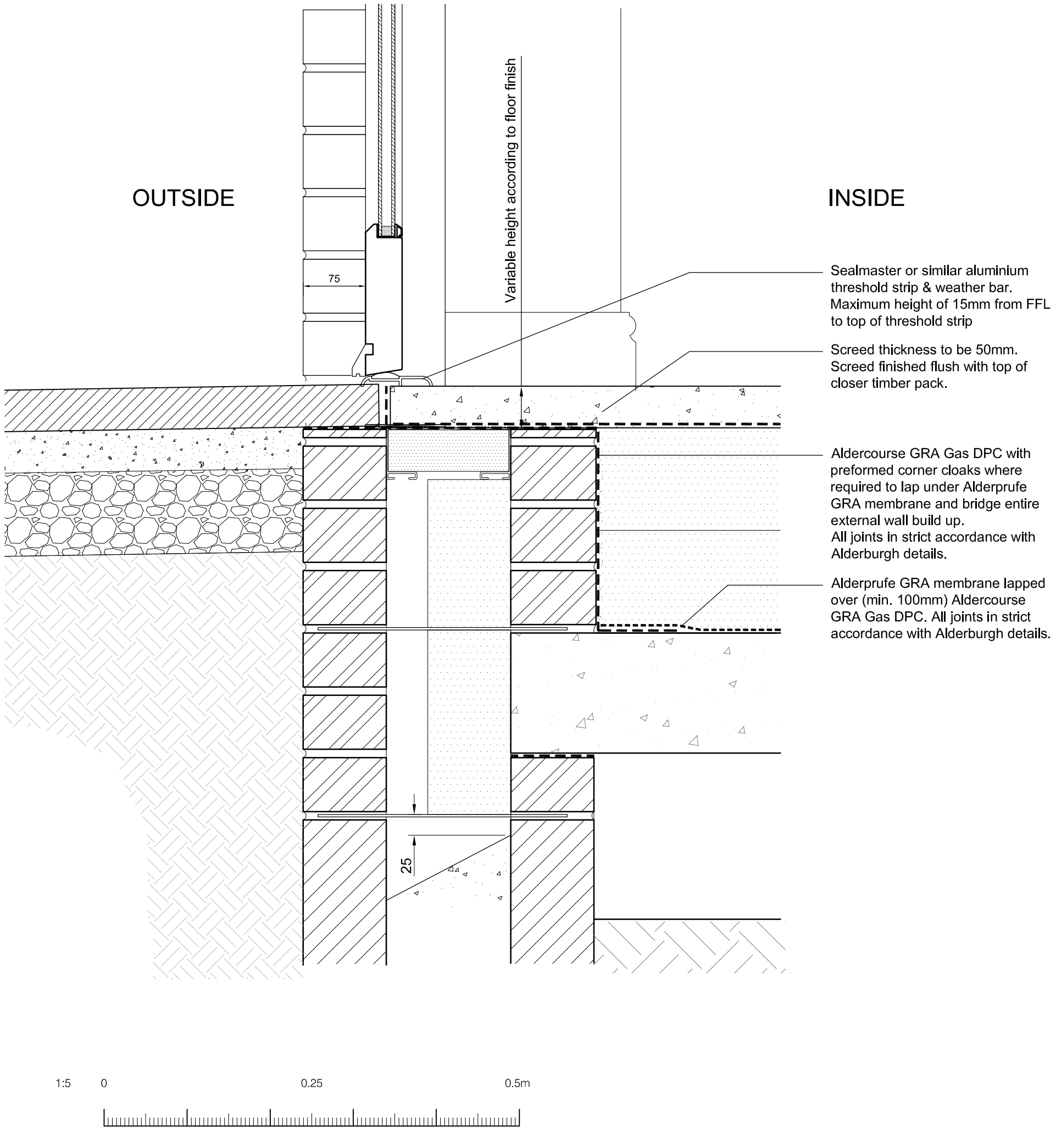
NE-2339-05-AC-054 XD5 Door Threshold

drawing number

B — revision
757-09 — job number

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1:5 0 0.25 0.5m

Rev	Date	Details	Drawn by	Checked by
A	15/06/17	Construction Stage 5	PAS	SMS
B	25/06/18	Drawing updated	SMS	IS

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McCarthy & Stone

client name

49 RLC Apartments
Harton Centre
Ambleside Avenue
South Shields

project

XD3 Door Threshold Detail

title

Construction Stage 5

status

April 2017 — date
SMS — drawn

1:5 @ A3 — scale
IS — checked

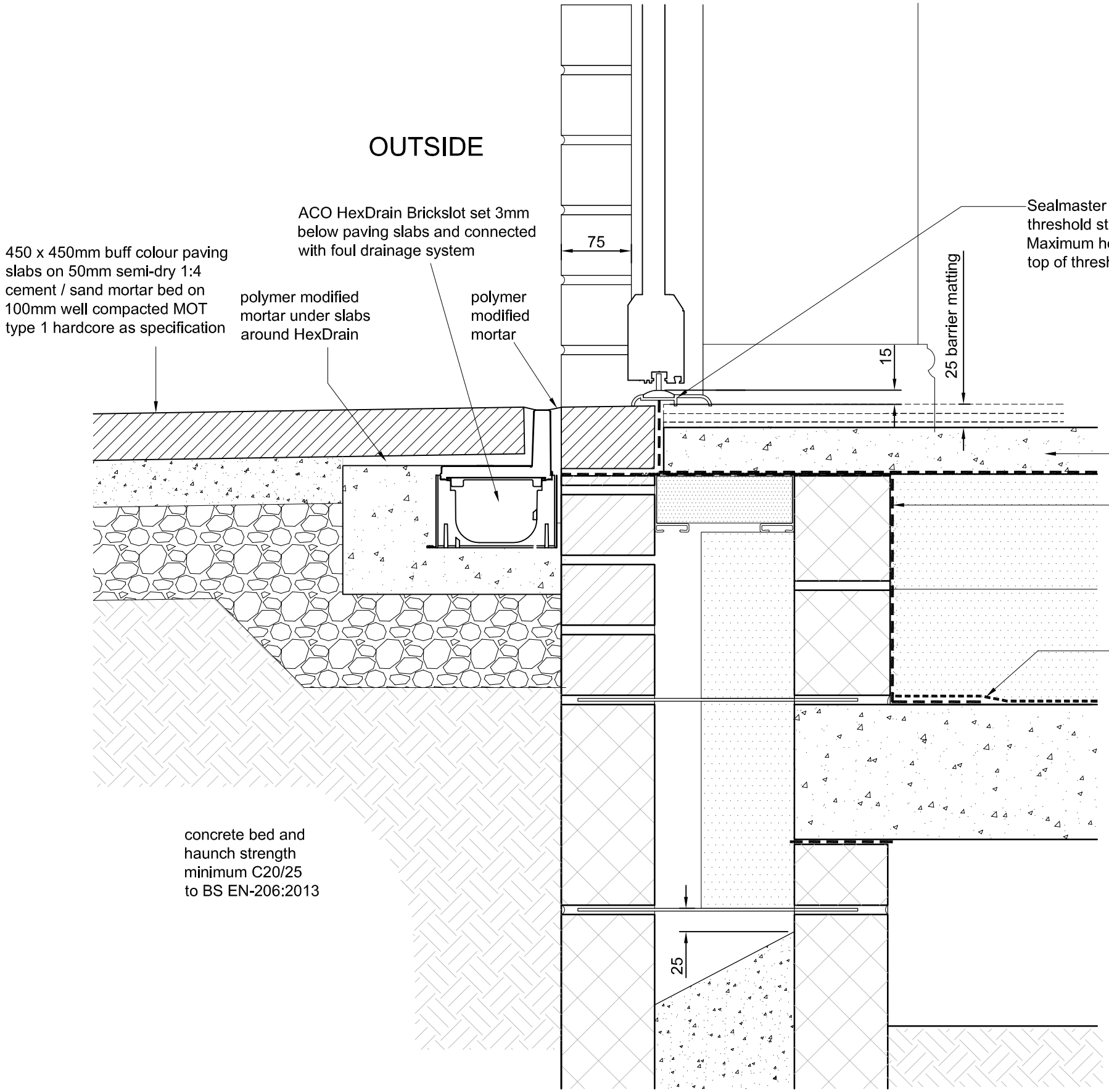
NE-2339-05-AC-053 XD3 Door Threshold

drawing number

B — revision
757-09 — job number

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Rev	Date	Details	Drawn by	Checked by
A	15/06/17	Construction Stage 5	PAS	SMS
B	25/06/18	Drawing updated	SMS	IS

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McCarthy & Stone

client name

49 RLC Apartments
Harton Centre
Ambleside Avenue
South Shields

project

WD1 Door Threshold Detail

title

Construction Stage 5

status

April 2017 — date
SMS — drawn

1:5 @ A3 — scale
IS — checked

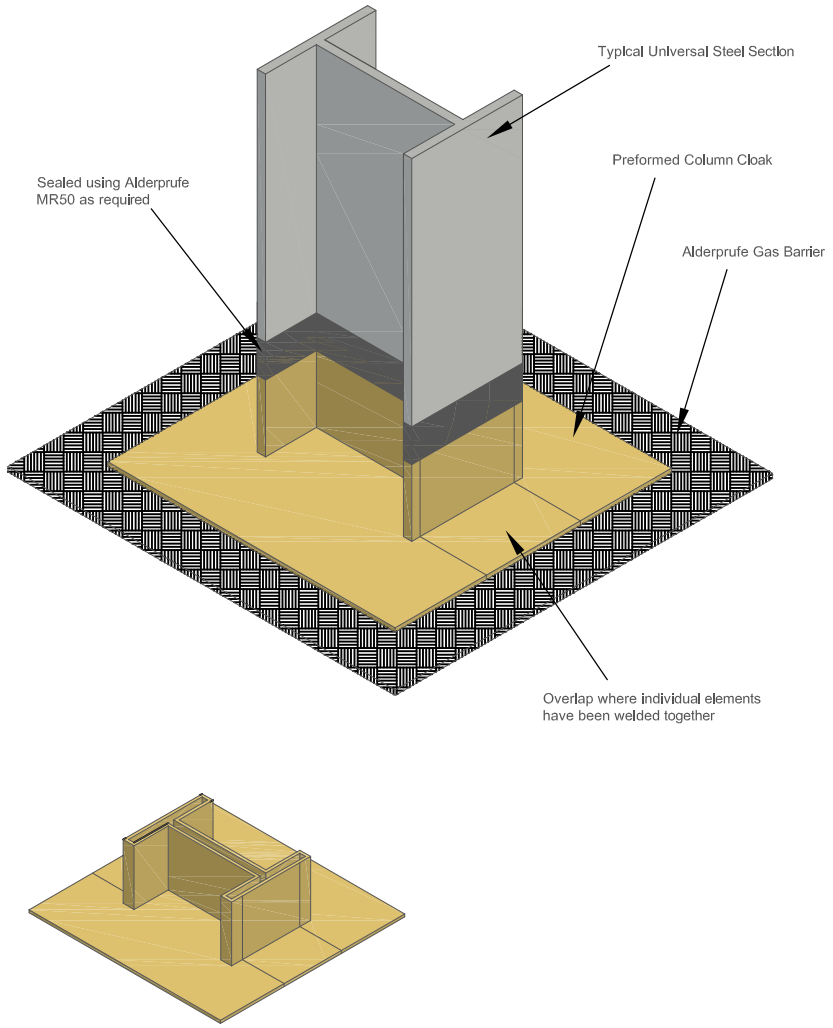
NE-2339-05-AC-052-WD1 Door Threshold

drawing number

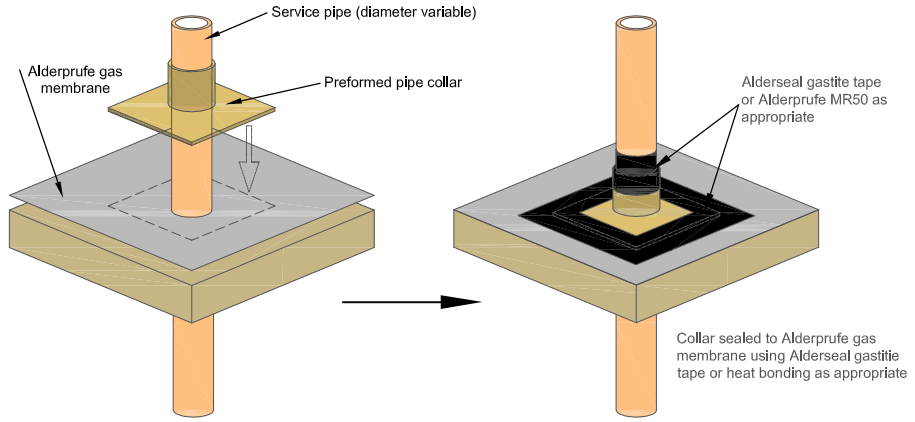
B — revision
757-09 — job number

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Column Cloak Detail



Pipe Collar Detail

Rev	Date	Details	Drawn by	Checked by
A	14/06/17	Construction Stage 5	PAS	SMS

NOTES:

1. All gas barrier, ventilation, coloar & cloak details to Alderburgh approval. Gas barrier & ventilation as shown is based on details provided by Alberburgh 22/03/17.
2. Alderburgh membrane, collars & cloaks to be installed in strict accordance with Alderburgh details and recommendations.

McCarthy & Stone

client name

49 RLC Apartments
Harton Centre
Ambleside Avenue
South Shields

project

Penetrations Details
Pipe Collar & Column Cloak

title

Construction Stage 5

status

March 2017 — IS

date — drawn

N.T.S — SMS

scale — checked

NE-2339-05-AC-051 Penetrations Details

drawing number

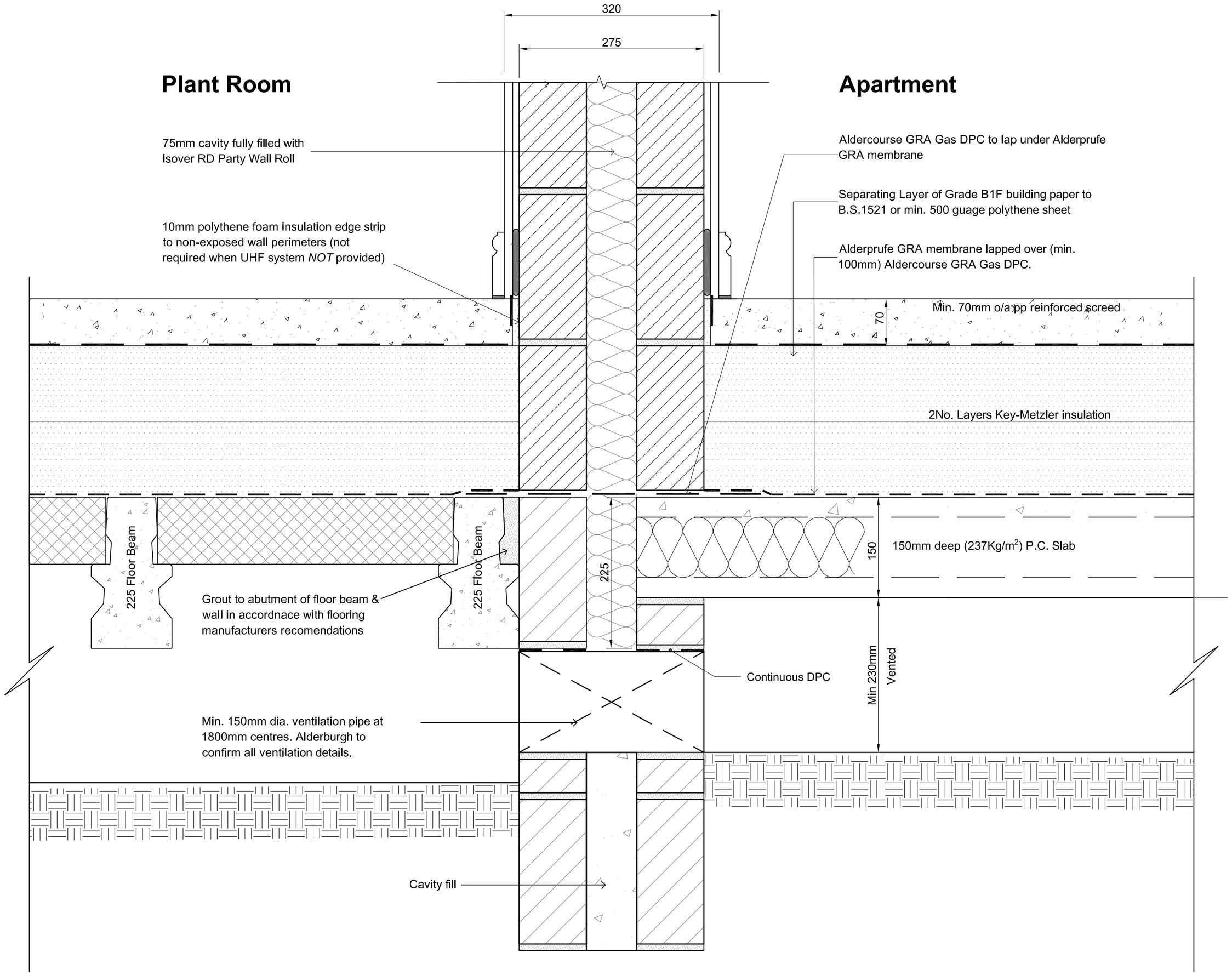
A — 757-09

revision — job number

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Rev	Date	Details	Drawn by	Check by
A	14/06/17	Construction Stage 5	PAS	SMS



Floor Beam Detail
Scale 1:5

1:5 0 0.25 0.5m

NOTES:

1. This drawing is to be read in conjunction with the project specification.
2. Party wall cavity tie to be type 2, wire butterfly wall ties cannot be used on cavity walls with cavities greater than 75mm.
3. Floor insulation should be laid with closely butted joints, laid staggered with a break bonded pattern and filled tightly at edges and around any service penetrations. See manufactures product literature and BBA certificate for further information.
4. Refer to SD 04.00.03/04 Vertical Course Details for blockwork coursing details between all floors.
5. Separating layer to be turned up full screed depth at perimeter. Joints to be overlapped 150mm and taped.
6. The procedure for the placement of PCC floor units, shimming, packing and grouting is to be carried out in accordance with the specification. Refer also to the Site Safety booklet and Method Statement by the floor unit manufacturer.
7. All gas barrier & ventilation details to Alderburgh approval.
   Gas barrier & ventilation as shown is based on details provided by Alderburgh 22/03/17.
8. The Alderburgh gas membranes and damp proof courses are to be installed in strict accordance Alderburgh details and recommendations.

McCarthy & Stone

client name

49 RLC Apartments
Harton Centre
Ambleside Avenue
South Shields

project

Floor Beam Detail

title

Construction Stage 5

status

March 2017 — date
IS — drawn

1:5 @ A2 — scale
SMS — checked

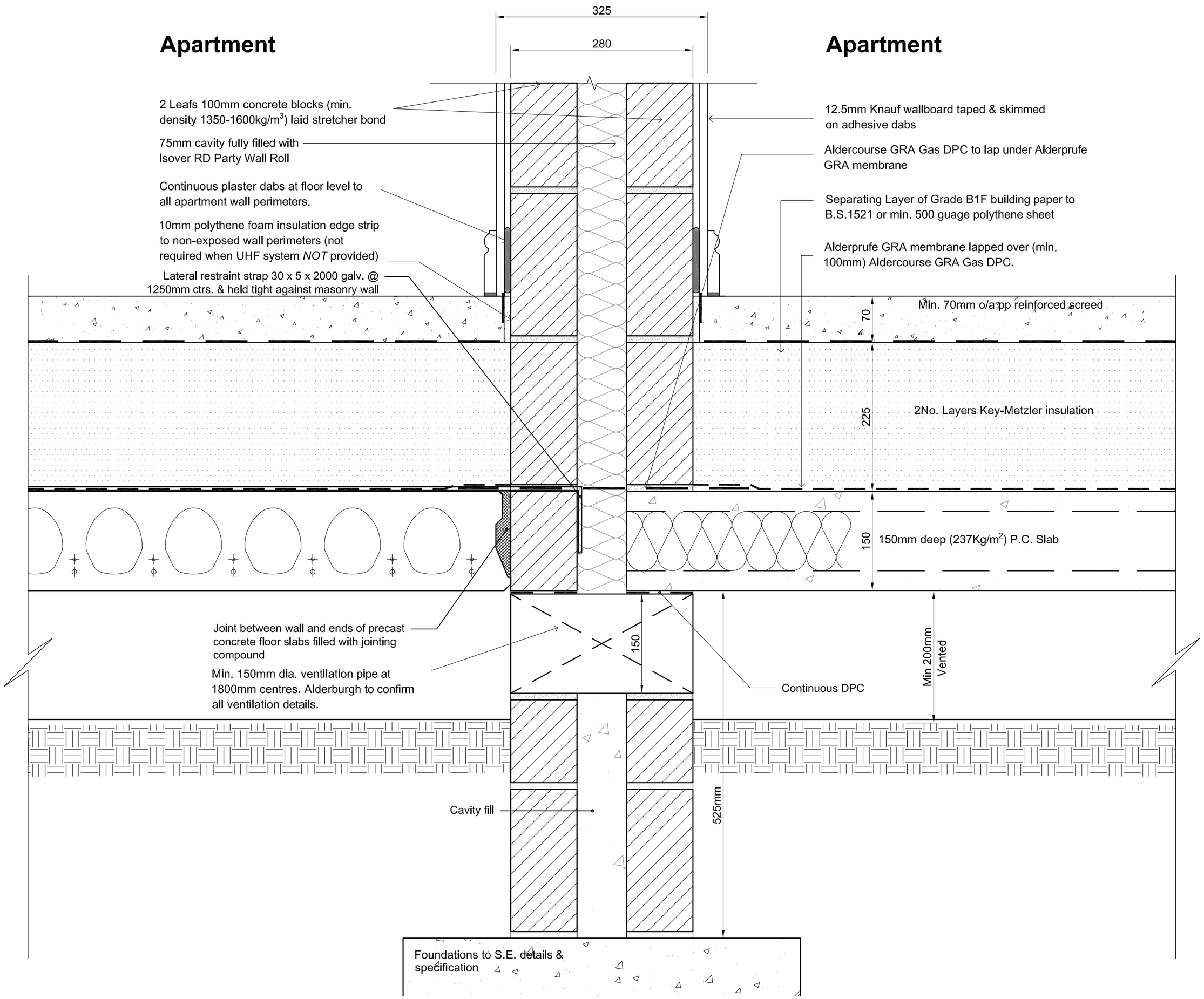
NE-2339-05-AC-041-Floor Beam

drawing number

A — revision
757.09 — job number

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2 Royal Square, London EC1N 1NY
t: 0113 244 1133 e: info@boxarchitects.co.uk
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Ground Floor Party Wall Detail
Scale 1:5

1:5 0 0.25 0.5m

Rev	Date	Details	Drawn by	Check by
A	14/06/17	Construction Stage 5	PAS	SMS

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McCarthy & Stone

client name

49 RLC Apartments
Harton Centre
Ambleside Avenue
South Shields

project

Ground Floor Party Wall Detail

title

Construction Stage 5

status

March 2017 — IS

date — drawn

1:5 @ A2 — SMS

scale — checked

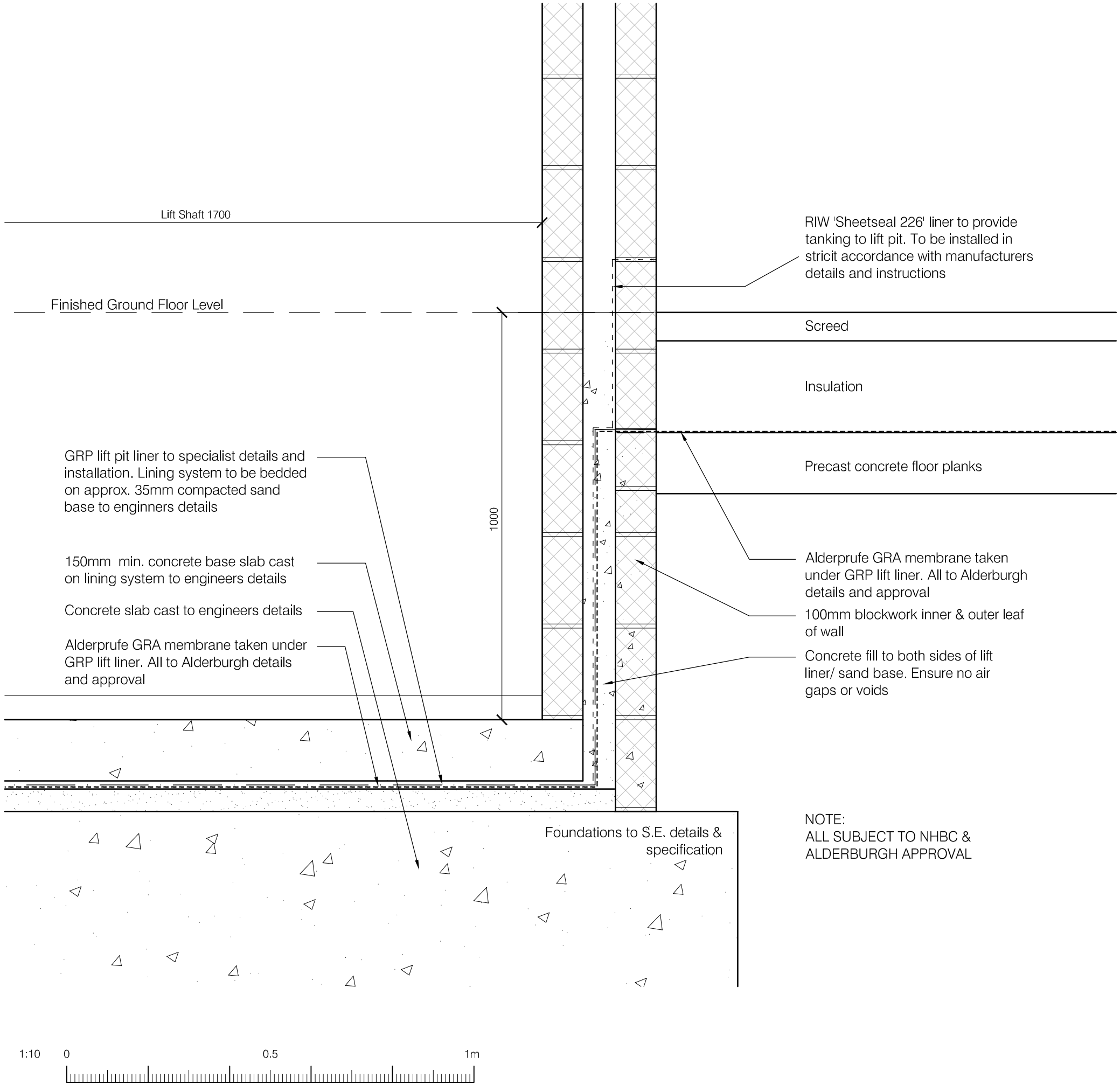
NE-2339-05-AC-039-Ground Floor Party Wall

drawing number

A — 757.09

revision — job number

box architects
CDs Shoam, Levels 13/ 25
2 Angel Square, London, EC1V 1NY
t: 0113 2441133 e: info@boxarchitects.co.uk
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NOTE:
ALL SUBJECT TO NHBC & ALDERBURGH APPROVAL

Rev	Date	Details	Drawn by	Checked by
A	14/06/17	Construction Stage 5	PAS	SMS

NOTES:

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5. The cavity insulation manufactures product reference and BBA certification is "Celotex CW4100". Refer to product literature for additional information on design and application.
6. Wall ties to external insulated cavity walls to be Ancon ST1 type 1 or Staifix RT2 type 2 all to DD140.
7. For Radon protection details refer to External Services - Radon Protection Details.
8. Floor insulation should be laid with closely butted joints, laid staggered with a break bonded pattern and filled tightly at edges and around any service penetrations. See manufactures product literature and BBA certificate for further information.
9. Refer to SD 04.00.03/04 vertical course details for blockwork coursing details between all floors.
10. Overlap wall insulation with top of perimeter floor insulation by min.150mm. In addition overlap ends of insulation filled concrete floor units.
11. PC Floor planks abutting external cavity wall require 30x5x2000 galvanised lateral restraining strap at 1250mm centres held tight against masonry wall fixed to top of PC unit using 5nr hamma screws or similar. Refer to structural engineers details.
12. Separating layer to be turned up full screed depth at perimeter. Joints to be overlapped 150mm and taped.
13. All gas barrier & ventilation details to Alderburgh approval. Gas barrier & ventilation as shown is based on details provided by Alderburgh 22/03/17.
14. The Alderburgh gas membranes and damp proof courses are to be installed in strict accordance Alderburgh details and recommendations.

McCarthy & Stone

client name

49 RLC Apartments
Harton Centre
Ambleside Avenue
South Shields

project

Lift Pit details

title

Construction Stage 5

status

March 2017	SMS
date	drawn
1:10 @ A3	IS
scale	checked

NE-2339-05-AC-036-Lift Pit Detail

drawing number

A	757-09
revision	job number

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External

Fair faced brickwork external skin

100mm thick Celotex CW4100 cavity insulation

50mm clear cavity

Ancon ST1 Type 1 or Stafix RT Type 2 cavity wall ties to be installed at 450mm Vertical centres (225mm centres within 225mm of any openings) & 900mm centres horizontally.

Flexible cavity tray -min clear drop 150mm

Weepholes @max. 900mm c/c

Continuous DPC

150 Min. 150mm

G.L.

500

160

Aldervent (Ground Level Vent) min. depth 500mm, min. width 160mm at 1800mm centres. Alderburgh to confirm all ventilation details.

Apartment

100mm concrete blocks (min. density 1950kg/m3) laid in single stretcher bond

12.5mm Knauf wallboard taped & skimmed on adhesive dabs.

25mm EPS perimeter insulation edge strip

Separating Layer of Grade B1F building paper to B.S.1521 or min. 500 guage polythene sheet

Aldercourse GRA Gas DPC with preformed corner cloaks where required to lap under Alderprufe GRA membrane and terminate under cavity tray in external leaf of wall. All joints in strict accordance with Alderburgh details.

Alderprufe GRA membrane lapped over (min. 100mm) Aldercourse GRA Gas DPC. All joints in strict accordance with Alderburgh details.

Min. 70mm o/a pp reinforced screed

70

2No. Layers Key-Metzler insulation

225

295

150

Ends of voids in precast concrete floor units to be packed with mineral wool min. 400mm into beam where adjacent to insulated cavity at floor levels.

Continuous Hyload DPC

Min. 150mm dia. ventilation pipe to connect to Aldervent (Ground Level Vent) at 1800mm centres. Alderburgh to confirm all ventilation details.

150

Min. 200mm Vented

25

Cavity Fill

525

Foundations to S.E. details & specification

1:5 0 0.25 0.5m

Rev	Date	Details	Drawn by	Checked by
A	05/05/17	Revised position of Aldercourse as per discussions with client & Alderburgh.	IS	SMS
B	14/06/17	Construction Stage 5	PAS	SMS

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McCarthy & Stone

client name

49 RLC Apartments
Harton Centre
Ambleside Avenue
South Shields

project

External cavity wall / floor junction showing ground vent & gas barrier

title

Construction Stage 5

status

March 2017 — date — IS — drawn

1:5 @ A3 — scale — SMS — checked

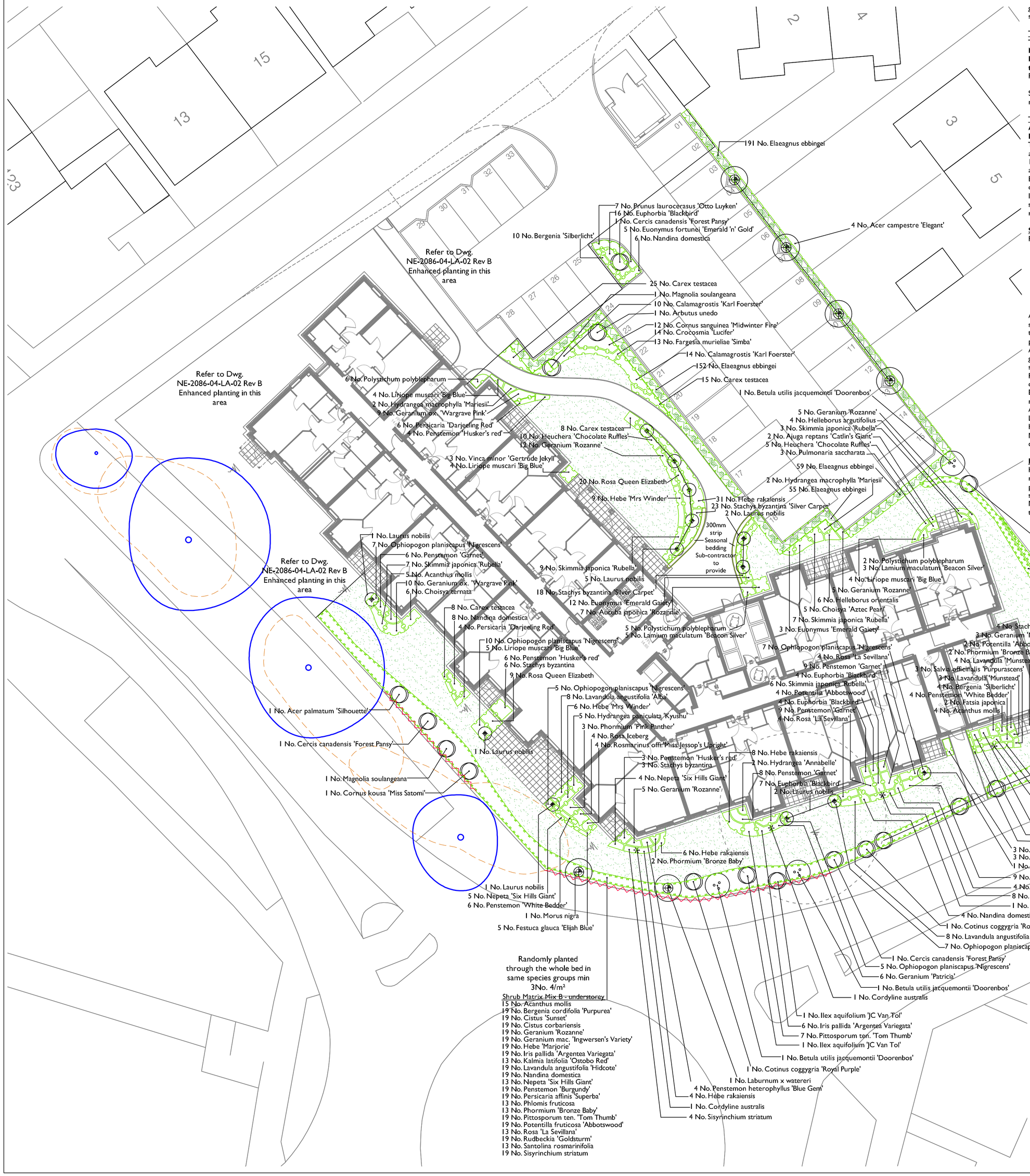
NE-2339-05-AC-035-DPC Detail 1

drawing number

B — revision — 757-09 — job number

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Sales Entrance Planting

2No. 1.5m spiral cypress trees in 49cm Versailles hardwood timber planters www.primrose.co.uk or similar approved with sufficient numbers of single colour seasonal bedding plants to fill the space around the stem of each tree. Bedding to be replaced 3No. times through the year. Boxes supplied with sufficient compost and 'swellgell' to plant trees and bedding.

Planting specification

*Prior to supply and spreading of topsoil, all subsoil areas are to be ripped (subject to site specific geology) to alleviate compaction and improve aeration in accordance with BS 3882:2015 British standard for Topsoil, Annex A Recommendations for stripping, handling and preparing topsoil.

Topsoil

The topsoil is to comply with the British Standard BS 3882:2015 definition for Multipurpose grade topsoil, and is to be accompanied with a test certificate and horticultural analysis summary for approval by the landscape architect prior to delivery to site.
Provide a minimum of one week's notice.

Shrub areas are to receive topsoil minimum 450mm depth after compaction. Grass areas to receive minimum 150mm depth after compaction.

Trees

All plant material is to be inspected by the landscape architect prior to delivery to site. Provide a minimum of one week's notice.
Trees shall be set in pits 1200mm dia x 900mm depth, backfilled with a mixture of approved topsoil and tree and shrub planting compost at the rate of one part compost to two parts topsoil and 70 - 140g/m² Osmocote, Sierrablen Flora 15-9-9 + 3% MgO granular controlled release, or similar approved.
Each tree shall be planted to the original depth and secured by two stakes 1.4m in length and a timber cross bar with soft rubber block and belting. After planting all trees shall be watered in and a mulch layer of Ornamental Bark Mulch 5-35mm with minimal dust and fines and less than 5% wood content spread over the tree pit to 50mm depth. Allow one clear spiral guard and one 2.5m x 35mm Root rain Metro watering pipe per tree. - Supplier Greentech Tel: 01423 332100 or similar approved.

Shrub planting

PLANTS - GENERAL

- Condition: Materially undamaged, sturdy, healthy and vigorous.
- Appearance: Of good shape and without elongated shoots.
- Hardiness: Grown in a suitable environment and hardened off.
- Health: Free from pests, diseases, discoloration, weeds and physiological disorders.
- Budded or grafted plants: Bottom worked.
- Root system and condition: To requirements of National Plant Specification and balanced with branch system.

All shrubs shall be set out to the positions shown on the drawing and to the densities given. All stock shall comply with the specification provided on the drawing. Plants unobtainable or known to be likely to be unobtainable at time of ordering: Submit alternatives, stating: Price; difference from specified plants/ trees. Obtain approval before making any substitution.
All shrub beds shall be topped up with good quality topsoil to ensure 450mm planting depth the base ground being thoroughly broken up before placement. Tree and shrub planting compost shall be spread to a minimum depth of 50mm and in addition evenly spread, 70 -140g/m² Osmocote, Sierrablen Flora 15-9-9 + 3% MgO granular controlled release, or similar approved, thoroughly working in during cultivation.
Excavate shrub planting pits 150 mm wider than roots when fully spread. Backfill with excavated material.
After planting thoroughly water immediately without damaging or displacing plants or soil.
Lightly firm soil around plants and fork and/ or rake soil, to a fine tilth with gentle cambers and no hollows. Avoid damaging plants. Mulch planting all beds to a depth of 75mm with ornamental Bark Mulch 5-35mm with minimal dust and fines and less than 5% wood content. The mulch should be free of pests, disease, fungus and weeds.

Hedges

Hedge trenches are to be 450mmx450mmx450mm the base of which shall be broken up prior to returning the backfill mixture. This shall comprise two parts topsoil to one part tree and shrub planting compost. Stock shall be planted at the distances given in the schedules in single rows. All stock shall be planted to the root collar and well firmed in place. After planting, a 50mm layer of Melcourt ornamental bark or equal approved shall be spread over the trench. All stock shall be thoroughly watered in.

Turfing

All areas to be turfed shall be topsoiled to a minimum depth of 150mm over ground free of compaction by cultivation. The soil shall be fine graded to even running falls and cross raked to form a fine tilth. Before turfing an approved pre-turfing fertiliser shall be applied in accordance with the manufacturer's instructions. All edges to shrub beds will be cleanly cut with an edging iron, arisings removed from site.

Maintenance

Carry out the operations in the following clauses for **a period of 12 months** from the date of practical completion.
Plants/ trees/ shrubs that have failed to thrive (unless due to theft or malicious damage) within the 12 month period from the date of practical completion will be replaced with equivalent plants/ trees/ shrubs to match the original.
Remove soil and arisings from hard surfaces and grassed areas. Generally leave the works in a clean tidy condition at Completion and after any maintenance operations.
Maintain weed free area around each tree and shrub. Keep planting beds clear of weeds: by hoeing. Fork over beds as necessary to keep soil loose, with gentle cambers and no hollows. Take care not to reduce depth or effect of mulch.
Gently firm loosened soil around trees/ shrubs. Straighten leaning trees/ shrubs. Tighten and straighten stakes if required.
Prune to promote healthy growth and natural shape removing: Dead, dying, diseased wood and suckers. Remove arisings.
Trim and shape each specimen appropriately to species, location, season, and stage of growth, leaving a well balanced natural appearance.
All shrub beds shall be thoroughly watered as necessary for the continued thriving of all planting. In times of water shortage obtain instructions before proceeding.
Re-mulch at the end of the 12 maintenance period to a depth of 75mm ensuring that the soil is thoroughly moistened prior to re-mulching.
All planting shall be maintained in good order throughout the initial establishment period.
Twice a month between May and September and a total of three visits between October and April.
Grass areas are to be cut and the cuttings collected up and carted off.
Grass areas with bulbs are to be left uncut for at least six weeks after final flowering.
Grass with wildflower seeded areas are to be cut to a height of 50mm every two months or when the sward reaches 150mm. All arisings are be removed. Spot treat persistent weeds with glyphosate.

In future years wildflower areas are to be cut twice a year. First cut to a height of 75mm in March/April and the second cut after flowering to a height of 75mm in August/October. All the cuttings are to be removed.

Plant Schedules

Trees

Number	Species	Girth	Height	Pot Size	Specification
4 No.	Acer campestre 'Elegant'	14-16cm	4.0-4.5m	75-80L	C :Extra Heavy Standard
1 No.	Acer palmatum 'Osakazuki'		125-150cm	18L	C
1 No.	Acer palmatum 'Silhouette'		125-150cm	18L	C
2 No.	Amelanchier lamarkii		150-175cm	35L	C
1 No.	Arbutus unedo		175-200cm	45L	C
4 No.	Betula utilis jacquemontii 'Doorenbos'		300-350cm	80L	Multi-Stemmed :C
3 No.	Cercis canadensis 'Forest Pansy'		150-175cm	12L	C
6 No.	Ilex aquifolium 'JC Van Tol'		150-175cm	45L	C
1 No.	Laburnum x watereri	14-16cm	4.0-4.5m	80L	Extra Heavy Standard :C
13 No.	Laurus nobilis			35L	Standard :50cm head :C
3 No.	Magnolia soulangeana		125-150cm	45L	C
2 No.	Morus nigra	14-16cm	4.0-5.0m	80L	Extra Heavy Standard :C

Total :41 No.

Hedges

Number of Plants	Species	Pot Size	Height	Specification	Density
457 No.	Elaeagnus ebbingei	3L	Selected to 80cm	C	5/m

Total :457 No.

Shrubs

Number	Species	Pot Size	Height	Specification
7 No.	Aucuba japonica 'Rozannie'	3L	30-40cm	C
3 No.	Berberis thunbergii 'Atropurpurea'	3L	40-60cm	C
3 No.	Buddleia globosa	3L	40-60cm	C
3 No.	Callistemon citrinus	3L	40-60cm	C
2 No.	Chaenomeles superba 'Crimson & Gold'	3L	40-60cm	C
5 No.	Choisya 'Aztec Pearl'	3L	30-40cm	C
6 No.	Choisya ternata	3L	30-40cm	C
26 No.	Cistus 'Sunset'	2L	20-30cm	C
26 No.	Cistus corbariensis	2L	20-30cm	C
4 No.	Cordyline australis	10L	60-80cm	C
3 No.	Cornus alba 'Kesselringii'	3L	40-60cm	C
1 No.	Cornus kousa 'China Girl'	45L	150-175cm	C
2 No.	Cornus kousa 'Miss Satomi'	45L	150-175cm	C
12 No.	Cornus sanguinea 'Midwinter Fire'	3L	40-60cm	C
3 No.	Cotinus 'Grace'	3L	30-40cm	C
2 No.	Cotinus coggygria 'Royal Purple'	35L	100-125cm	C
3 No.	Elaeagnus ebbingei	3L	40-60cm	C
3 No.	Escallonia 'Apple Blossom'	3L	40-60cm	C
15 No.	Euonymus 'Emerald Gaiety'	3L	20-30cm	C
5 No.	Euonymus fortunei 'Emerald 'n' Gold'	3L	20-30cm	C
2 No.	Fatsia japonica	10L	60-80cm	C
26 No.	Hebe 'Marjorie'	2L	20-30cm	C
21 No.	Hebe 'Mrs Winder'	3L	20-30cm	C
49 No.	Hebe rakaiensis	3L	20-30cm	C
2 No.	Hydrangea 'Annabelle'	3L	40-60cm	C
4 No.	Hydrangea macrophylla 'Mariesii'	10L	40-60cm	C
5 No.	Hydrangea paniculata 'Kyushu'	5L	30-40cm	C
18 No.	Kalmia latifolia 'Ostobo Red'	3L	20-30cm	C
7 No.	Lavandula 'Munstead'	3L	20-30cm	C
25 No.	Lavandula angustifolia 'Alba'	3L	20-30cm	C
26 No.	Lavandula angustifolia 'Hidcote'	2L	15-20cm	C
22 No.	Nandina domestica	3L	40-60cm	C
26 No.	Nandina domestica	2L	20-30cm	C
3 No.	Philadelphus 'Virginal'	3L	60-80cm	C
18 No.	Phlomis fruticosa	2L		C
22 No.	Phormium 'Bronze Baby'	3L	40-60cm	C
5 No.	Phormium 'Pink Panther'	10L	60-80cm	C
3 No.	Phormium 'Sundowner'	3L	40-60cm	C
3 No.	Photinia fraseri 'Red Robin'	3L	30-40cm	C
3 No.	Physocarpus opulifolius 'Diablo'	2L	20-30cm	C
7 No.	Pittosporum ten. 'Tom Thumb'	3L	20-30cm	C
26 No.	Pittosporum ten. 'Tom Thumb'	2L	20-30cm	C
3 No.	Pittosporum tenuifolium	3L	40-60cm	C
6 No.	Potentilla 'Abbotswood'	3L	20-30cm	C
26 No.	Potentilla fruticosa 'Abbotswood'	3L	20-30cm	C
7 No.	Prunus laurocerasus 'Otto Luyken'	3L	30-40cm	C
8 No.	Rosa 'La Sevillana'	3L	40-60cm	C
18 No.	Rosa 'La Sevillana'	2L	40-60cm	C
4 No.	Rosa Iceberg	2L	40-60cm	C
29 No.	Rosa Queen Elizabeth	3L	40-60cm	C
4 No.	Rosmarinus offi.'Miss Jessop's Upright'	3L	40-60cm	C
3 No.	Salvia officinalis 'Purpurascens'	2L	30-40cm	C
18 No.	Santolina rosmarinifolia	2L	20-30cm	C
32 No.	Skimmia japonica 'Rubella'	3L	20-30cm	C
3 No.	Syringa vulgaris 'Mme Lemoine'	3L	30-40cm	C
3 No.	Viburnum plicatum 'Mariesii'	3L	30-40cm	C
3 No.	Vinca minor 'Gertrude Jekyll'	2L	15-20cm	C

Total :624 No.

Bamboos

Number	Species	Pot Size	Height	Specification	Density
13 No.	Fargesia murielae 'Simba'	3L	40-60cm	C	4/m²

Total :13 No.

Herbaceous

Number	Species	Pot Size	Specification
30 No.	Acanthus mollis	2L	Full Pot
2 No.	Ajuga reptans 'Catlin's Giant'	2L	Full Pot
14 No.	Bergenia 'Silberlicht'	3L	Full Pot
26 No.	Bergenia cordifolia 'Purpurea'	2L	Full Pot
24 No.	Calamagrostis 'Karl Foerster'	2L	Full Pot
4 No.	Calamagrostis acutiflora 'Karl Foerster'	2L	Full Pot
61 No.	Carex testacea	2L	Full Pot
14 No.	Crocosmia 'Lucifer'	2L	Full Pot
31 No.	Euphorbia 'Blackbird'	2L	Full Pot
5 No.	Festuca glauca 'Elijah Blue'	2L	Full Pot
14 No.	Geranium 'Miss Heidi'	2L	Full Pot
6 No.	Geranium 'Patricia'	2L	Full Pot
53 No.	Geranium 'Rozanne'	2L	Full Pot
26 No.	Geranium mac. 'Ingwersen's Variety'	2L	Full Pot
19 No.	Geranium ox. 'Wargrave Pink'	2L	Full Pot
4 No.	Helleborus argutifolius	2L	Full Pot
6 No.	Helleborus orientalis	2L	Full Pot
15 No.	Heuchera 'Chocolate Ruffles'	2L	Full Pot
32 No.	Iris pallida 'Argentea Variegata'	2L	Full Pot
4 No.	Kniphofia caulescens	2L	Full Pot
8 No.	Lamium maculatum 'Beacon Silver'	2L	Full Pot
17 No.	Liriope muscari 'Big Blue'	2L	Full Pot
4 No.	Miscanthus sinensis 'Gracillimus'	2L	Full Pot
27 No.	Nepeta 'Six Hills Giant'	2L	Full Pot
41 No.	Ophiopogon planiscapus 'Nigrescens'	2L	Full Pot
26 No.	Penstemon 'Burgundy'	2L	Full Pot
32 No.	Penstemon 'Garnet'	2L	Full Pot
16 No.	Penstemon 'Husker's red'	2L	Full Pot
10 No.	Penstemon 'White Bedder'	2L	Full Pot
4 No.	Penstemon heterophyllus 'Blue Gem'	2L	Full Pot
10 No.	Persicaria 'Darjeeling Red'	2L	Full Pot
26 No.	Persicaria affinis 'Superba'	2L	Full Pot
4 No.	Phlomis russeliana	2L	Full Pot
3 No.	Pulmonaria saccharata	2L	Full Pot
26 No.	Rudbeckia 'Goldsturm'	2L	Full Pot
8 No.	Sedum 'Ruby Glow'	2L	Full Pot
30 No.	Sisyrinchium striatum	2L	Full Pot
16 No.	Stachys byzantina	2L	Full Pot
41 No.	Stachys byzantina 'Silver Carpet'	3L	Full Pot

Total :739 No.

Ferns

Number	Species	Pot Size	Specification	Density
13 No.	Polystichum polyblepharum	2L	Full Pot	5/m²

Total :13 No.

Key

- Existing trees with root protection areas
- Grass - turf
- Proposed hedge
- Proposed shrub mix
- Proposed ornamental shrub planting
- Proposed tree standard
- Proposed tree extra heavy standard 14-16cm girth
- Proposed tree multi stemmed
- Large specimen shrub
- Council requirement: Greentech GT 260 root barrier 2.25 x 25m Cut on site to 1.1m depth

NORTH

Rev.	Date		Drawn	Checked
B	31.05.18	Additional root barrier to west boundary	IB	IB
A	23.04.18	Added root barrier to southern boundary	TM	IB

SMEEDEN FOREMAN

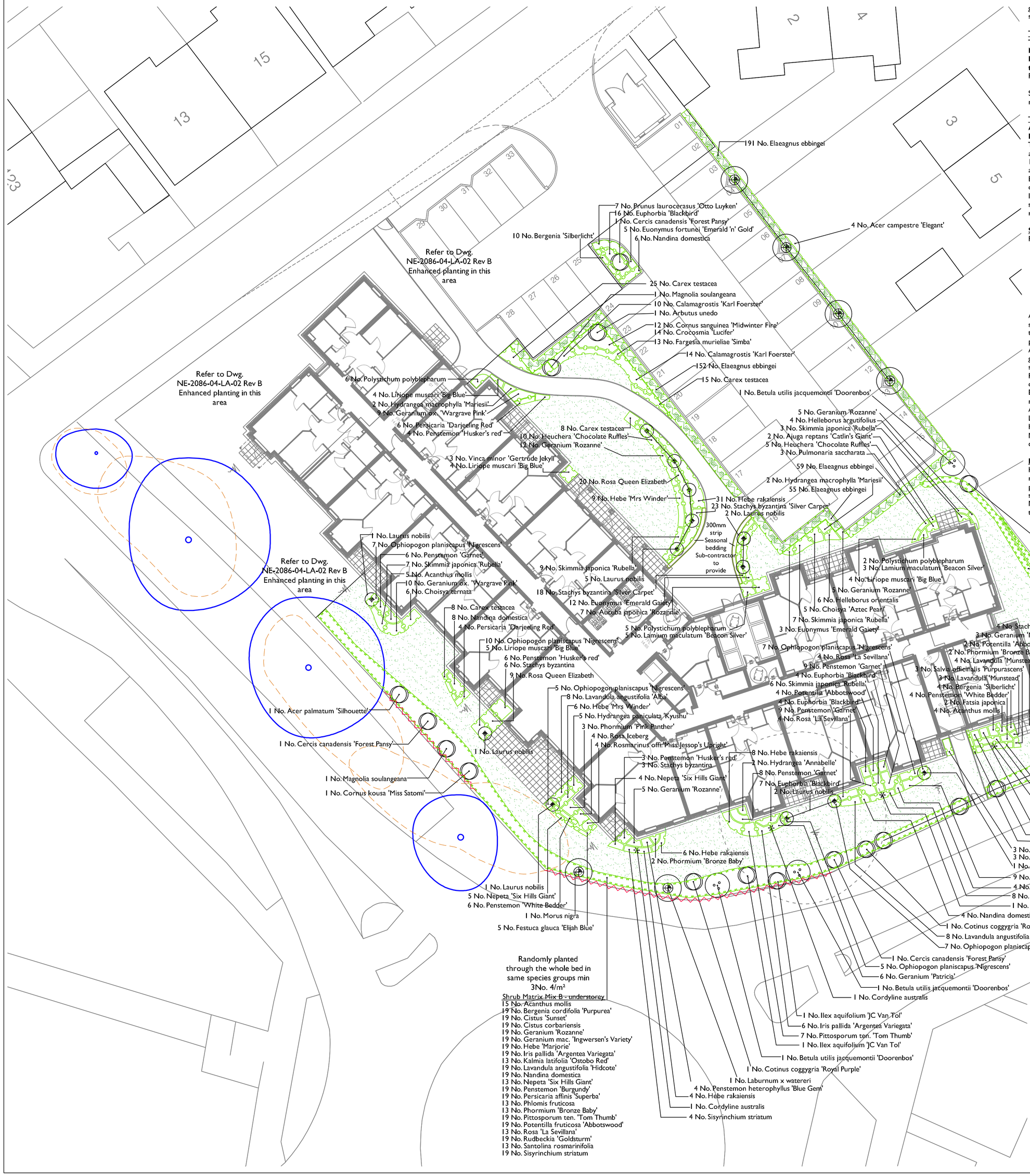
Project	McCarthy & Stone, South Shields SF 2521
Title	Landscape Proposals
Scale	1:200 @A1 Drawn by TM
Date	June 2016 Checked IB
Drawing No.	NE-2086-05-LA-01 Rev B

Landscape Architects - Urban Designers
Ecologists - Horticulturists
Somerset House, Low Moor Lane, Scotton, Knaresborough, N. Yorks HG5 9JB
Tel: 01423 863369 Fax: 01423 313107
Email: office@smeedenforeman.co.uk
www.smeedenforeman.co.uk

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Appendix III

T: 0191 378 6380
E: admin@arc-environmental.com
W: www.arc-environmental.com
Registered in England No. 05539784



Sales Entrance Planting

2No. 1.5m spiral cypress trees in 49cm Versailles hardwood timber planters www.primrose.co.uk or similar approved with sufficient numbers of single colour seasonal bedding plants to fill the space around the stem of each tree. Bedding to be replaced 3No. times through the year. Boxes supplied with sufficient compost and 'swellgell' to plant trees and bedding.

Planting specification

*Prior to supply and spreading of topsoil, all subsoil areas are to be ripped (subject to site specific geology) to alleviate compaction and improve aeration in accordance with BS 3882:2015 British standard for Topsoil, Annex A Recommendations for stripping, handling and preparing topsoil.

Topsoil

The topsoil is to comply with the British Standard BS 3882:2015 definition for Multipurpose grade topsoil, and is to be accompanied with a test certificate and horticultural analysis summary for approval by the landscape architect prior to delivery to site.
Provide a minimum of one week's notice.

Shrub areas are to receive topsoil minimum 450mm depth after compaction. Grass areas to receive minimum 150mm depth after compaction.

Trees

All plant material is to be inspected by the landscape architect prior to delivery to site. Provide a minimum of one week's notice.
Trees shall be set in pits 1200mm dia x 900mm depth, backfilled with a mixture of approved topsoil and tree and shrub planting compost at the rate of one part compost to two parts topsoil and 70 - 140g/m² Osmocote, Sierrablen Flora 15-9-9 + 3% MgO granular controlled release, or similar approved.
Each tree shall be planted to the original depth and secured by two stakes 1.4m in length and a timber cross bar with soft rubber block and belting. After planting all trees shall be watered in and a mulch layer of Ornamental Bark Mulch 5-35mm with minimal dust and fines and less than 5% wood content spread over the tree pit to 50mm depth. Allow one clear spiral guard and one 2.5m x 35mm Root rain Metro watering pipe per tree. - Supplier Greentech Tel: 01423 332100 or similar approved.

Shrub planting

PLANTS - GENERAL

- Condition: Materially undamaged, sturdy, healthy and vigorous.
- Appearance: Of good shape and without elongated shoots.
- Hardiness: Grown in a suitable environment and hardened off.
- Health: Free from pests, diseases, discoloration, weeds and physiological disorders.
- Budded or grafted plants: Bottom worked.
- Root system and condition: To requirements of National Plant Specification and balanced with branch system.

All shrubs shall be set out to the positions shown on the drawing and to the densities given. All stock shall comply with the specification provided on the drawing. Plants unobtainable or known to be likely to be unobtainable at time of ordering: Submit alternatives, stating: Price; difference from specified plants/ trees. Obtain approval before making any substitution.
All shrub beds shall be topped up with good quality topsoil to ensure 450mm planting depth the base ground being thoroughly broken up before placement. Tree and shrub planting compost shall be spread to a minimum depth of 50mm and in addition evenly spread, 70 -140g/m² Osmocote, Sierrablen Flora 15-9-9 + 3% MgO granular controlled release, or similar approved, thoroughly working in during cultivation.
Excavate shrub planting pits 150 mm wider than roots when fully spread. Backfill with excavated material.
After planting thoroughly water immediately without damaging or displacing plants or soil.
Lightly firm soil around plants and fork and/ or rake soil, to a fine tilth with gentle cambers and no hollows. Avoid damaging plants. Mulch planting all beds to a depth of 75mm with ornamental Bark Mulch 5-35mm with minimal dust and fines and less than 5% wood content. The mulch should be free of pests, disease, fungus and weeds.

Hedges

Hedge trenches are to be 450mmx450mmx450mm the base of which shall be broken up prior to returning the backfill mixture. This shall comprise two parts topsoil to one part tree and shrub planting compost. Stock shall be planted at the distances given in the schedules in single rows. All stock shall be planted to the root collar and well firmed in place. After planting, a 50mm layer of Melcourt ornamental bark or equal approved shall be spread over the trench. All stock shall be thoroughly watered in.

Turfing

All areas to be turfed shall be topsoiled to a minimum depth of 150mm over ground free of compaction by cultivation. The soil shall be fine graded to even running falls and cross raked to form a fine tilth. Before turfing an approved pre-turfing fertiliser shall be applied in accordance with the manufacturer's instructions. All edges to shrub beds will be cleanly cut with an edging iron, arisings removed from site.

Maintenance

Carry out the operations in the following clauses for **a period of 12 months** from the date of practical completion.
Plants/ trees/ shrubs that have failed to thrive (unless due to theft or malicious damage) within the 12 month period from the date of practical completion will be replaced with equivalent plants/ trees/ shrubs to match the original.
Remove soil and arisings from hard surfaces and grassed areas. Generally leave the works in a clean tidy condition at Completion and after any maintenance operations.
Maintain weed free area around each tree and shrub. Keep planting beds clear of weeds: by hoeing. Fork over beds as necessary to keep soil loose, with gentle cambers and no hollows. Take care not to reduce depth or effect of mulch.
Gently firm loosened soil around trees/ shrubs. Straighten leaning trees/ shrubs. Tighten and straighten stakes if required.
Prune to promote healthy growth and natural shape removing: Dead, dying, diseased wood and suckers. Remove arisings.
Trim and shape each specimen appropriately to species, location, season, and stage of growth, leaving a well balanced natural appearance.
All shrub beds shall be thoroughly watered as necessary for the continued thriving of all planting. In times of water shortage obtain instructions before proceeding.
Re-mulch at the end of the 12 maintenance period to a depth of 75mm ensuring that the soil is thoroughly moistened prior to re-mulching.
All planting shall be maintained in good order throughout the initial establishment period.
Twice a month between May and September and a total of three visits between October and April.
Grass areas are to be cut and the cuttings collected up and carted off.
Grass areas with bulbs are to be left uncut for at least six weeks after final flowering.
Grass with wildflower seeded areas are to be cut to a height of 50mm every two months or when the sward reaches 150mm. All arisings are be removed. Spot treat persistent weeds with glyphosate.

In future years wildflower areas are to be cut twice a year. First cut to a height of 75mm in March/April and the second cut after flowering to a height of 75mm in August/October. All the cuttings are to be removed.

Plant Schedules

Trees

Number	Species	Girth	Height	Pot Size	Specification
4 No.	Acer campestre 'Elegant'	14-16cm	4.0-4.5m	75-80L	C :Extra Heavy Standard
1 No.	Acer palmatum 'Osakazuki'		125-150cm	18L	C
1 No.	Acer palmatum 'Silhouette'		125-150cm	18L	C
2 No.	Amelanchier lamarkii		150-175cm	35L	C
1 No.	Arbutus unedo		175-200cm	45L	C
4 No.	Betula utilis jacquemontii 'Doorenbos'		300-350cm	80L	Multi-Stemmed :C
3 No.	Cercis canadensis 'Forest Pansy'		150-175cm	12L	C
6 No.	Ilex aquifolium 'JC Van Tol'		150-175cm	45L	C
1 No.	Laburnum x watereri	14-16cm	4.0-4.5m	80L	Extra Heavy Standard :C
13 No.	Laurus nobilis			35L	Standard :50cm head :C
3 No.	Magnolia soulangeana		125-150cm	45L	C
2 No.	Morus nigra	14-16cm	4.0-5.0m	80L	Extra Heavy Standard :C

Total :41 No.

Hedges

Number of Plants	Species	Pot Size	Height	Specification	Density
457 No.	Elaeagnus ebbingei	3L	Selected to 80cm	C	5/m

Total :457 No.

Shrubs

Number	Species	Pot Size	Height	Specification
7 No.	Aucuba japonica 'Rozannie'	3L	30-40cm	C
3 No.	Berberis thunbergii 'Atropurpurea'	3L	40-60cm	C
3 No.	Buddleia globosa	3L	40-60cm	C
3 No.	Callistemon citrinus	3L	40-60cm	C
2 No.	Chaenomeles superba 'Crimson & Gold'	3L	40-60cm	C
5 No.	Choisya 'Aztec Pearl'	3L	30-40cm	C
6 No.	Choisya ternata	3L	30-40cm	C
26 No.	Cistus 'Sunset'	2L	20-30cm	C
26 No.	Cistus corbariensis	2L	20-30cm	C
4 No.	Cordyline australis	10L	60-80cm	C
3 No.	Cornus alba 'Kesselringii'	3L	40-60cm	C
1 No.	Cornus kousa 'China Girl'	45L	150-175cm	C
2 No.	Cornus kousa 'Miss Satomi'	45L	150-175cm	C
12 No.	Cornus sanguinea 'Midwinter Fire'	3L	40-60cm	C
3 No.	Cotinus 'Grace'	3L	30-40cm	C
2 No.	Cotinus coggygria 'Royal Purple'	35L	100-125cm	C
3 No.	Elaeagnus ebbingei	3L	40-60cm	C
3 No.	Escallonia 'Apple Blossom'	3L	40-60cm	C
15 No.	Euonymus 'Emerald Gaiety'	3L	20-30cm	C
5 No.	Euonymus fortunei 'Emerald 'n' Gold'	3L	20-30cm	C
2 No.	Fatsia japonica	10L	60-80cm	C
26 No.	Hebe 'Marjorie'	2L	20-30cm	C
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49 No.	Hebe rakaiensis	3L	20-30cm	C
2 No.	Hydrangea 'Annabelle'	3L	40-60cm	C
4 No.	Hydrangea macrophylla 'Mariesii'	10L	40-60cm	C
5 No.	Hydrangea paniculata 'Kyushu'	5L	30-40cm	C
18 No.	Kalmia latifolia 'Ostobo Red'	3L	20-30cm	C
7 No.	Lavandula 'Munstead'	3L	20-30cm	C
25 No.	Lavandula angustifolia 'Alba'	3L	20-30cm	C
26 No.	Lavandula angustifolia 'Hidcote'	2L	15-20cm	C
22 No.	Nandina domestica	3L	40-60cm	C
26 No.	Nandina domestica	2L	20-30cm	C
3 No.	Philadelphus 'Virginal'	3L	60-80cm	C
18 No.	Phlomis fruticosa	2L		C
22 No.	Phormium 'Bronze Baby'	3L	40-60cm	C
5 No.	Phormium 'Pink Panther'	10L	60-80cm	C
3 No.	Phormium 'Sundowner'	3L	40-60cm	C
3 No.	Photinia fraseri 'Red Robin'	3L	30-40cm	C
3 No.	Physocarpus opulifolius 'Diablo'	2L	20-30cm	C
7 No.	Pittosporum ten. 'Tom Thumb'	3L	20-30cm	C
26 No.	Pittosporum ten. 'Tom Thumb'	2L	20-30cm	C
3 No.	Pittosporum tenuifolium	3L	40-60cm	C
6 No.	Potentilla 'Abbotswood'	3L	20-30cm	C
26 No.	Potentilla fruticosa 'Abbotswood'	3L	20-30cm	C
7 No.	Prunus laurocerasus 'Otto Luyken'	3L	30-40cm	C
8 No.	Rosa 'La Sevillana'	3L	40-60cm	C
18 No.	Rosa 'La Sevillana'	2L	40-60cm	C
4 No.	Rosa Iceberg	2L	40-60cm	C
29 No.	Rosa Queen Elizabeth	3L	40-60cm	C
4 No.	Rosmarinus offi.'Miss Jessop's Upright'	3L	40-60cm	C
3 No.	Salvia officinalis 'Purpurascens'	2L	30-40cm	C
18 No.	Santolina rosmarinifolia	2L	20-30cm	C
32 No.	Skimmia japonica 'Rubella'	3L	20-30cm	C
3 No.	Syringa vulgaris 'Mme Lemoine'	3L	30-40cm	C
3 No.	Viburnum plicatum 'Mariesii'	3L	30-40cm	C
3 No.	Vinca minor 'Gertrude Jekyll'	2L	15-20cm	C

Total :624 No.

Bamboos

Number	Species	Pot Size	Height	Specification	Density
13 No.	Fargesia murielae 'Simba'	3L	40-60cm	C	4/m²

Total :13 No.

Herbaceous

Number	Species	Pot Size	Specification
30 No.	Acanthus mollis	2L	Full Pot
2 No.	Ajuga reptans 'Catlin's Giant'	2L	Full Pot
14 No.	Bergenia 'Silberlicht'	3L	Full Pot
26 No.	Bergenia cordifolia 'Purpurea'	2L	Full Pot
24 No.	Calamagrostis 'Karl Foerster'	2L	Full Pot
4 No.	Calamagrostis acutiflora 'Karl Foerster'	2L	Full Pot
61 No.	Carex testacea	2L	Full Pot
14 No.	Crocosmia 'Lucifer'	2L	Full Pot
31 No.	Euphorbia 'Blackbird'	2L	Full Pot
5 No.	Festuca glauca 'Elijah Blue'	2L	Full Pot
14 No.	Geranium 'Miss Heidi'	2L	Full Pot
6 No.	Geranium 'Patricia'	2L	Full Pot
53 No.	Geranium 'Rozanne'	2L	Full Pot
26 No.	Geranium mac. 'Ingwersen's Variety'	2L	Full Pot
19 No.	Geranium ox. 'Wargrave Pink'	2L	Full Pot
4 No.	Helleborus argutifolius	2L	Full Pot
6 No.	Helleborus orientalis	2L	Full Pot
15 No.	Heuchera 'Chocolate Ruffles'	2L	Full Pot
32 No.	Iris pallida 'Argentea Variegata'	2L	Full Pot
4 No.	Kniphofia caulescens	2L	Full Pot
8 No.	Lamium maculatum 'Beacon Silver'	2L	Full Pot
17 No.	Liriope muscari 'Big Blue'	2L	Full Pot
4 No.	Miscanthus sinensis 'Gracillimus'	2L	Full Pot
27 No.	Nepeta 'Six Hills Giant'	2L	Full Pot
41 No.	Ophiopogon planiscapus 'Nigrescens'	2L	Full Pot
26 No.	Penstemon 'Burgundy'	2L	Full Pot
32 No.	Penstemon 'Garnet'	2L	Full Pot
16 No.	Penstemon 'Husker's red'	2L	Full Pot
10 No.	Penstemon 'White Bedder'	2L	Full Pot
4 No.	Penstemon heterophyllus 'Blue Gem'	2L	Full Pot
10 No.	Persicaria 'Darjeeling Red'	2L	Full Pot
26 No.	Persicaria affinis 'Superba'	2L	Full Pot
4 No.	Phlomis russeliana	2L	Full Pot
3 No.	Pulmonaria saccharata	2L	Full Pot
26 No.	Rudbeckia 'Goldsturm'	2L	Full Pot
8 No.	Sedum 'Ruby Glow'	2L	Full Pot
30 No.	Sisyrinchium striatum	2L	Full Pot
16 No.	Stachys byzantina	2L	Full Pot
41 No.	Stachys byzantina 'Silver Carpet'	3L	Full Pot

Total :739 No.

Ferns

Number	Species	Pot Size	Specification	Density
13 No.	Polystichum polyblepharum	2L	Full Pot	5/m²

Total :13 No.

Key

- Existing trees with root protection areas
- Grass - turf
- Proposed hedge
- Proposed shrub mix
- Proposed ornamental shrub planting
- Proposed tree standard
- Proposed tree extra heavy standard 14-16cm girth
- Proposed tree multi stemmed
- Large specimen shrub
- Council requirement: Greentech GT 260 root barrier 2.25 x 25m Cut on site to 1.1m depth

NORTH

Rev.	Date		Drawn	Checked
B	31.05.18	Additional root barrier to west boundary	IB	IB
A	23.04.18	Added root barrier to southern boundary	TM	IB

SMEEDEN FOREMAN

Project	McCarthy & Stone, South Shields SF 2521
Title	Landscape Proposals
Scale	1:200 @A1 Drawn by TM
Date	June 2016 Checked IB
Drawing No.	NE-2086-05-LA-01 Rev B

Landscape Architects - Urban Designers
Ecologists - Horticulturists
Somerset House, Low Moor Lane, Scotton, Knaresborough, N. Yorks HG5 9JB
Tel: 01423 863369 Fax: 01423 313107
Email: office@smeedenforeman.co.uk
www.smeedenforeman.co.uk

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Appendix IV

T: 0191 378 6380
E: admin@arc-environmental.com
W: www.arc-environmental.com
Registered in England No. 05539784

Solum House, Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham, DH7 8PN
Telephone: 01913786380

BOREHOLE LOG

Project				BOREHOLE No
Harton Lane, South Shields				**BH11**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
16-136	08-04-16			
Contractor				Sheet
Arc Environmental Ltd				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
						(0.30) 0.30	Brown slightly clayey sandy gravelly soil with brick and sandstone fragments (MADE GROUND)		
0.20	D/J					0.45	Tarmac (MADE GROUND)		
0.50	D/J					0.60	Brick fragments (MADE GROUND)		
						(0.50) 1.10	Firm brown very sandy very gravelly clay with brick and sandstone fragments (MADE GROUND)		
1.00	D/J								
1.50	D						Stiff (high strength) brown mottled grey sandy gravelly CLAY. Gravel comprises fine to coarse sandstone and occasional coal (GLACIAL TILL - PELAW CLAY MEMBER)		
1.50	V	>130kN/m^2				(1.40)			
2.00	D								
2.00	V	>130kN/m^2				2.50			
2.50	D								
2.50	V	>130kN/m^2							

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	WATER OBSERVATIONS: BH remained dry

All dimensions in metres Scale 1:37.5	Client McCarthy & Stone	Method/ Plant Used Dynamic Sampling (HH)	Logged By PM

AGS3 UK BH LOGS.GPJ AGS3_ALL.GDT 13/4/16

Solum House, Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham, DH7 8PN
Telephone: 01913786380

BOREHOLE LOG

Project				BOREHOLE No
Harton Lane, South Shields				**BHI**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
16-136		14.37	E 437,045.5 N 564,790.3	
Contractor				Sheet
Arc Environmental Ltd				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				14.25		0.12	Tarmac (MADE GROUND)		
				14.02		0.35	Black sandy ash with brick, sandstone and concrete fragments (MADE GROUND)		
				13.89		0.48	Brick and concrete rubble with some roots (MADE GROUND)		
						(0.50)	Dark brown sandy clayey brick and concrete fragments. Some roots (MADE GROUND)		
				13.39		0.98			
						(0.72)	Firm greenish brown and grey sandy silty gravelly clay with some ash and brick fragments (MADE GROUND)		
				12.67		1.70			
1.70	V	53kN/m^2				(0.50)	Firm light brown mottled orangish brown silty slightly sandy gravelly CLAY. Gravel comprises fine to coarse sandstone (GLACIAL TILL - PELAW CLAY MEMBER)		
2.00	V	44kN/m^2		12.17		2.20			
2.30	V	111kN/m^2					Stiff dark brown/grey slightly sandy gravelly CLAY. Gravel comprises fine to coarse sandstone (GLACIAL TILL - PELAW CLAY MEMBER)		
2.60	V	>120kN/m^2							
3.00	V	>120kN/m^2				(1.80)			
3.50	V	>120kN/m^2							
				10.37		4.00			
4.00	V	>120kN/m^2							

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											WATER OBSERVATIONS: BH remained dry

All dimensions in metres Scale 1:37.5	Client McCarthy & Stone	Method/ Plant Used Dynamic Sampling	Logged By SW

AGS3 UK BH LOGS A TO K.GPJ AGS3_ALL.GDT 15/3/17

Solum House, Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham, DH7 8PN
Telephone: 01913786380

BOREHOLE LOG

Project				BOREHOLE No
Harton Lane, South Shields				**BHH**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
16-136		14.34	E 437,038.5 N 564,788.4	
Contractor				Sheet
Arc Environmental Ltd				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				14.10		0.24	Dark brown sandy clayey gravelly soil with some roots (MADE GROUND)		
				14.00		0.34	Tarmac - poor quality (MADE GROUND)		
				13.94		0.40	Dark grey / black ash with some brick fragments (MADE GROUND)		
				13.59		(0.35) 0.75	Brown sandy concrete, mortar and brick rubble (MADE GROUND)		
				12.74		(0.85) 1.60	Firm greenish brown and grey silty sandy gravelly clay with ash and brick fragments (MADE GROUND)		
				12.44		(0.30) 1.90	Firm brown silty slightly sandy gravelly CLAY with some roots. Gravel comprises fine to coarse sandstone (GLACIAL TILL - PELAW CLAY MEMBER)		
2.00	V	61kN/m^2					Firm (medium strength) light brown mottled orangish brown silty slightly sandy gravelly CLAY. Gravel comprises fine to coarse sandstone (GLACIAL TILL - PELAW CLAY MEMBER)		
2.20	V	53kN/m^2		12.04		(0.40) 2.30			
2.40	V	115kN/m^2					Stiff (high strength) dark brown/grey slightly sandy gravelly CLAY. Gravel comprises fine to coarse sandstone (GLACIAL TILL - PELAW CLAY MEMBER)		
3.00	V	>120kN/m^2							
3.50	V	>120kN/m^2		10.34		(1.70) 4.00			
4.00	V	>120kN/m^2							

Boring Progress and Water Observations						Chiselling			Water Added		GENERAL REMARKS
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To	
											WATER OBSERVATIONS: BH remained dry

All dimensions in metres Scale 1:37.5	Client McCarthy & Stone	Method/ Plant Used Dynamic Sampling	Logged By SW

AGS3 UK BH LOGS A TO K.GPJ AGS3_ALL.GDT 15/3/17

Solum House, Unit 1 Elliott Court
St Johns Road, Meadowfield
Durham, DH7 8PN
Telephone: 01913786380

BOREHOLE LOG

Project				BOREHOLE No
Harton Lane, South Shields				**BHG**
Job No	Date	Ground Level (m)	Co-Ordinates ()	
16-136		14.55	E 437,039.6 N 564,791.3	
Contractor				Sheet
Arc Environmental Ltd				1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				14.45		0.10	Tarmac (MADE GROUND)		
				14.12		(0.33) 0.43	Brick and concrete rubble with some ash (MADE GROUND)		
				13.40		(0.72) 1.15	Soft becoming firm dark brown very sandy gravelly clay (MADE GROUND)		
				13.05		(0.35) 1.50	Loose black ash with some brick fragments (MADE GROUND)		
1.60	V	>120kN/m^2					Stiff (high strength) dark brown/grey slightly sandy gravelly CLAY. Gravel comprises fine to coarse sandstone (GLACIAL TILL - PELAW CLAY MEMBER)		
2.00	V	>120kN/m^2							
2.40	V	>120kN/m^2				(2.50)			
3.00	V	>120kN/m^2							
3.50	V	>120kN/m^2							
				10.55		4.00			
4.00	V	>120kN/m^2							

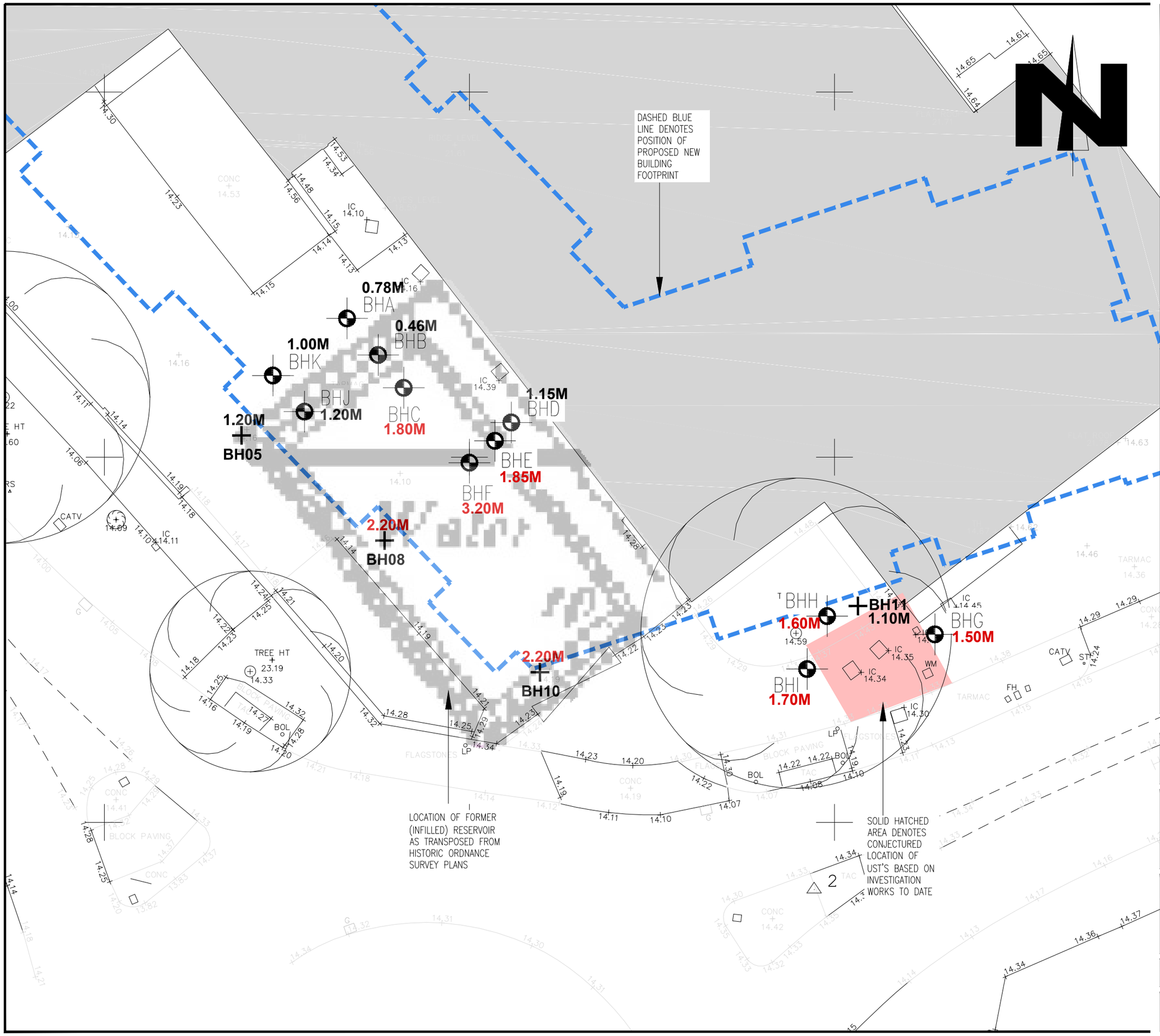
Boring Progress and Water Observations						Chiselling			Water Added	
Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Dpt	From	To	Hours	From	To

GENERAL REMARKS

WATER OBSERVATIONS: Water strike at 1.15m.

All dimensions in metres Scale 1:37.5	Client McCarthy & Stone	Method/ Plant Used Dynamic Sampling	Logged By SW

AGS3 UK BH LOGS A TO K.GPJ AGS3_ALL.GDT 15/3/17



ARC ENVIRONMENTAL LTD
Solum House
Unit 1 Elliott Court
St. John's Road
Meadowfield
Durham, DH7 8PN
Tel: (0191) 378 6380
Fax: (0191) 378 0494
e-mail: admin@arc-environmental.com
web: www.arc-environmental.com

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LEGEND	
	APPROXIMATE SITE BOUNDARY
	SUPPLEMENTARY BOREHOLES TO TARGET FORMER HISTORIC RESERVOIR AND TANKS ON SITE
BH11	PREVIOUS BOREHOLE POSITION
1.20M 1.80M	MADE GROUND DEPTHS RECORDED AT INVESTIGATION POSITION. DEPTHS IN RED REFER TO LOCALLY DEEPER MADE GROUND RECORDED AT LOCATION OF FORMER INFILLED RESERVOIR AND AROUND LOCATION OF EXISTING UST's

rev.	date	amendments	drawn	chckd

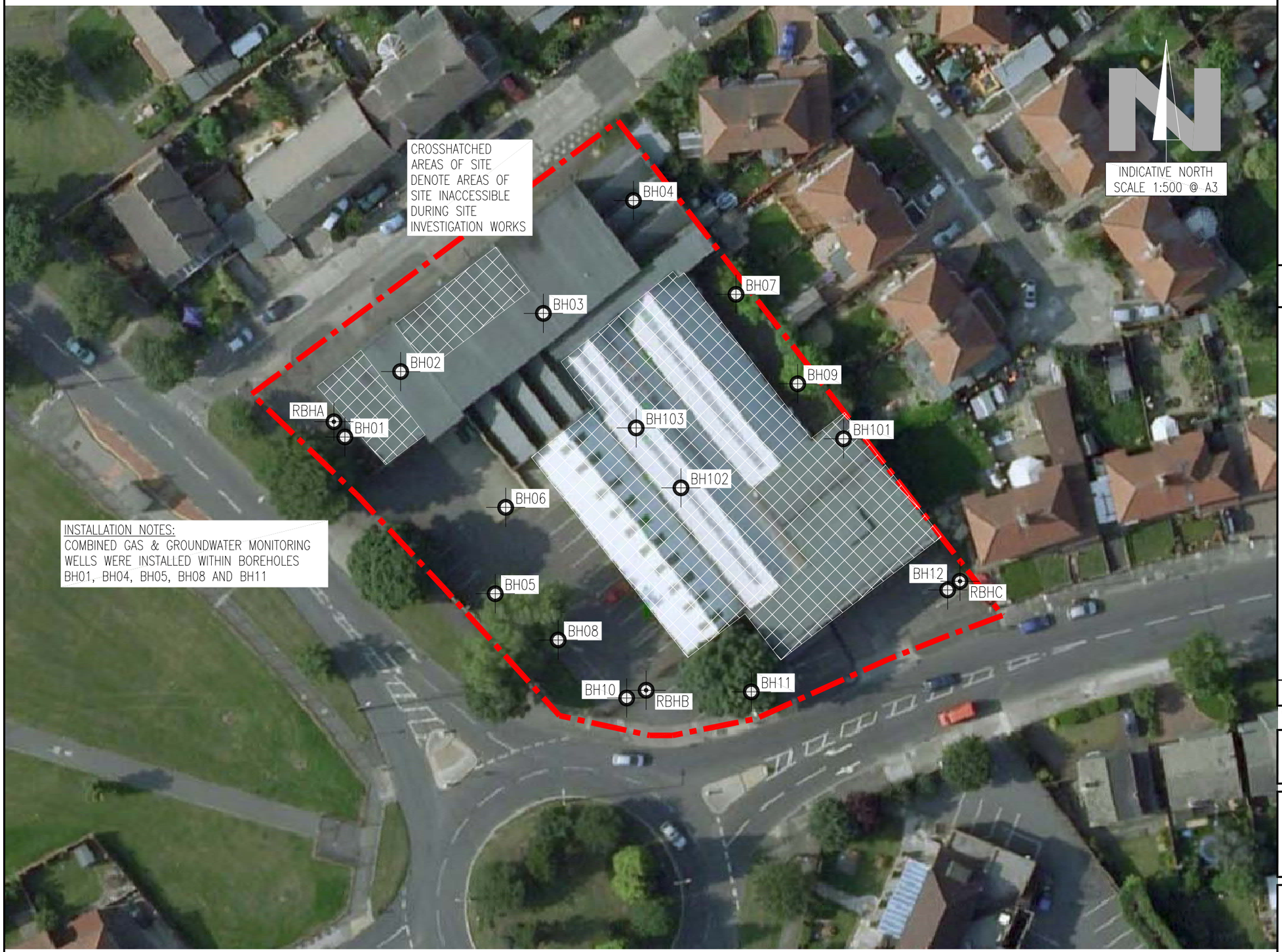
Client:
McCARTHY & STONE (RETIREMENT LIFESTYLES LTD)

Project Title:
Proposed CAT II Accommodation
Harton Centre, 52 Harton Lane
South Shields, Tyne & Wear, NE34 0EE

Drawing Title:
Delineation Works Plan

Scale at A3:	Date:	Drawn by:	Approved by:
1:200 @ A3	06.03.17	P.D	J.P.D

Job Ref:	Drg no:	Rev:
16-136	–	–



ARC ENVIRONMENTAL LTD
Solum House
Unit 1 Elliott Court
St. John's Road
Meadowfield
Durham, DH7 8PN
Tel: (0191) 378 6380
Fax: (0191) 378 0494
e-mail: admin@arc-environmental.com
web: www.arc-environmental.com

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LEGEND	
	APPROXIMATE SITE BOUNDARY
	WINDOWLESS SAMPLING BOREHOLE POSITION
	ROTARY BOREHOLE LOCATION

rev.	date	amendments	drawn	chckd

Client:
McCARTHY & STONE (RETIREMENT LIFESTYLES LTD)

Project Title:
Proposed CAT II Accommodation
Harton Centre, 52 Harton Lane
South Shields, Tyne & Wear, NE34 0EE

Drawing Title:
Borehole Location Plan

Scale at A3:	Date:	Drawn by:	Approved by:
1:500 @ A3	13.04.16	P.D	J.P.D

Job Ref:	Drg no:	Rev:
16-136	–	–