



GEOSHIELD Verification PLAN



PROJECT DESCRIPTION

Green Park Station
Smallmead Rd
Reading
RG30 3UR

The proposed development for which gas protection measures are deemed required comprise a new extension/addition to Green Park Railway station.

From the designs submitted the site as been designated as requiring Ground gas protection measures to CS3 level in accordance with BS8485 2015 + A1 2019

The recordings have been included within this pre-verification plan.

Geoshield have adopted the highest design and verification principles associated with BS8485 2015 +A1 2019

This pre-verification plan reviews the design to ensure it is compliant with the developer and planning authority requirements and in conjunction with all design requirements.

In summary the design does achieve the required level of attention to detail with its robust specific gas membrane design , protection and slab design

The Pre-verification plan confirms how the installation will be tested in accordance with CIRIA735 .The verification visits will be documented in verification reports suitable for submission to the local planning authority in order to satisfy and discharge planning consent

All faults detected during the inspection and verification visits of the ground gas membrane will require remediation before sign off.



GEOSHIELD Verification PLAN



CONTENTS

Section 1:	Project details	Page 1
Section 2:	Project material specification	Page 1
Section 3:	Project information	Page 2
Section 4:	GeoShield surveyor information	Page 3
Section 5:	Project information: Drawings, S.I, MSDS, Maps	Page 4/
Section 6:	Client Details	Page 15
Section 7:	Application team leaders	Page 16
Section 8:	Health and safety	Page 17
Section 9:	Applicator competence	Page 18
Section 10:	Gas regime	Page 19
Section 11:	Testing	Page 20
Section 12:	Risk assessment	Page 21
Section 13:	GeoShield competence	Page 23
Section 14:	Method Statement	Page 24
Section 15:	Project technical assessments	Page 25
Section 16:	Contractor Quality Assurance (CQA)	Page 27
Section 17:	Pre-Contract Meeting Checklist	Page 28
Section 18:	On-Site risk assessment	Page 29
Section 19:	Pre-Contract Meeting Summary	Page 30



GEOSHIELD
Verification
PLAN



Section 1:

Project details - GEO10478

PROJECT:

Westside CFA Piling - Balfour Beatty/Galldris

PROJECT ADDRESS:

Green park station

Smallmead Rd

Reading , RG30 3UR

SPECIFICATION:

Verified in accordance CIRIA 735.

Design in accordance with BS8485 2015 + 2019 for Methane and Carbon Dioxide.

Substrate prepared in-accordance with manufactures instructions and BS8485

- PrePrufe 300R Plus LT

- Bituthene Liquid Membrane

- PrePrufe Tape LT



GEOSHIELD
Verification
PLAN



SPECIFICATION:

INFORMATION INCLUDED:

Material specification technical data sheets

158989-ARP-RG-FB-DR-C-300101 rev C02. - Footbridge piling foundation layout.

158989-ARP-RG-FB-DR-C-300110 rev C02. - Footbridge sub-structure sections.

158989-ARP-RG-BD-DR-S-500006 rev B02. - Substructure sections and details

Information presented to at the pre-verification stage assumed correct

Any change client will let GeoShield know or this Pre-verification Plan will be void.



GEOSHIELD
Verification
PLAN



SURVEYOR:

Chris Kynman

VERIFICATION COMPANY:

GeoShield Limited

Icon Business Centre

4100 Park Approach

Thorpe Park

Leeds

CONTACT NUMBER:

07387 373 167

EMAIL ADDRESS:

ckynman@geoshield.co.uk

ORDER NUMBER:

To be confirmed

PER VISIT:

YES:

☐

NO:

☐

PROJECT:

YES:

☒

NO:

☐



GEOSHIELD Verification PLAN



SPECIFICATION

PRODUCT DATA SHEET



BITUTHENE® LIQUID MEMBRANE

Two component, elastomeric, liquid applied detailing compound for use with GCP waterproofing membranes

Product Description

Bituthene® Liquid Membrane is a two component, elastomeric, cold applied, trowel grade material designed for a variety of uses with the GCP waterproofing systems. The VOC (Volatile Organic Compound) content is 10 g/L.

Architectural and industrial maintenance regulations limit the VOC content in products classified as architectural coatings. Refer to Technical Letters at gcpat.com for the most current list of allowable limits.

Use

Bituthene® Liquid Membrane is ideally suited for the following uses:

- Fillet material at inside corners
- Reinforcement material at inside corners
- Flashing material around drains, protrusions, curbs and parapets
- Sealing material at terminations
- Repair material for defects on concrete surfaces
- Flashing material at corners

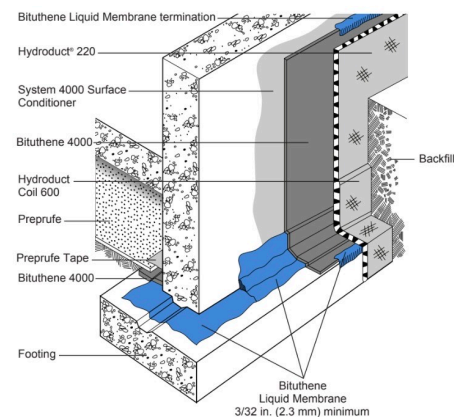
The two parts of Bituthene Liquid Membrane are mixed on site and troweled on to provide a simple and quick waterproofing detailing aid in conjunction with Bituthene, Preprufe® and Procor® systems.

Compatibility

Bituthene® Liquid Membrane is completely compatible with Bituthene, Preprufe and Procor, and with existing asphalt or coal tar-based waterproofing materials. It is also compatible with cured silicone and polyurethane sealants. It is not compatible with creosote, pentachlorophenol, linseed oil or polysulfide-based sealants.

Product Advantages

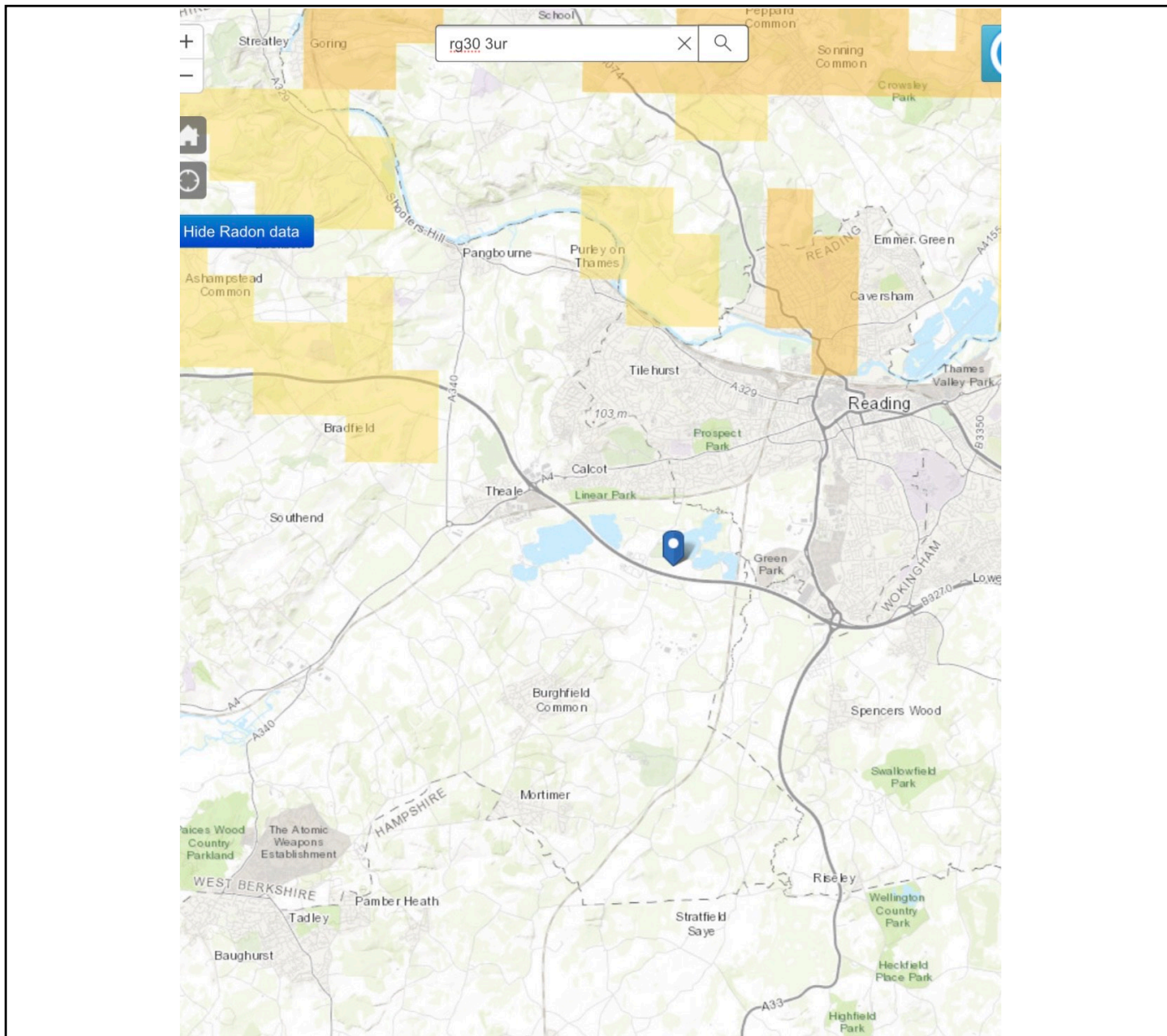
- Liquid applied
- Waterproof
- Tough, rubber-like
- Chemically cured
- Cold applied
- System compatible



Drawings are for illustration purposes only.
Please refer to gcpat.com for specific application details.

GEOSHIELD Verification PLAN

SPECIFICATION



Uk Radon map , the dark areas above represent higher Radon ground gas risk areas

This site as shown above with blue marker is not in a radon risk area.



GEOSHIELD Verification PLAN



SPECIFICATION

Supply

Bituthene® Liquid Membrane (Parts A & B)

Unit size	1.5 gal (5.7 L)	4 gal (15.1 L)
Weight per unit	16 lbs (8 kg)	44 lbs (20 kg)
Units per pallet	100	24

Physical Properties

Property	Typical Value	Test Method
Color		
Part A	Black	
Part B	Clear	
Mixture of Parts A and B	Black	
Solids content	100%	ASTM D1644
Elongation	250% minimum	ASTM D412
Peel strength	5 lbs/in. (880 N/m) minimum	ASTM D903
Flexibility, 180° bend over 1 in. (25 mm) mandrel at -25°F (-32°C)	Unaffected	ASTM D1970

Application Procedures

Safety, Storage and Handling Information

Bituthene® products must be handled properly. Vapors from solvent-based primers and mastic are harmful and flammable. For these products, the best available information on safe handling, storage, personal protection, health and environmental considerations has been gathered. Safety Data Sheets (SDS) are available at gcpat.com and users should acquaint themselves with this information. Carefully read detailed precaution statements on product labels and the SDS before use.

Surface Preparation

All surfaces must be dry and free from dirt, grease, oil, dust or other contaminants. Bituthene® Liquid Membrane may be applied at temperatures of 25°F (-4°C) or above. Store in a dry place above 40°F.

Mixing

Add the entire contents of the Part B container to Part A and mix for 3 to 5 minutes until uniform. Part A is black and Part B is clear. Take care to scrape material from the side and bottom of the containers to ensure thorough mixing. A low speed (150 rpm) mechanical mixer with flat paddle blades is required. Do not apply any material if streaks can be seen due to insufficient mixing. Once mixed, Bituthene® Liquid Membrane must be applied by trowel within 1.5 hours. More time is available at lower temperatures. At

high temperatures, thickening and curing will be faster. Material that has thickened must be discarded. The material will cure to a very flexible rubber-like material.

Bituthene Liquid Membrane must be applied at a minimum thickness of $\frac{3}{8}$ in. (2.3 mm) unless otherwise noted on details. In fillet applications, the face of the fillet should be a minimum of $\frac{3}{4}$ in. (20 mm). In corner flashing application details, it should extend 6 in. (150 mm) in each direction from the corner. Bituthene Liquid Membrane will adhere to primed or unprimed concrete.

Bituthene Liquid Membrane should be allowed to cure at least 24 hours before flood testing.

Coverage

As a fillet material, 1 gal (3.8 L) will cover approximately 100 linear feet (30 m). As a flashing material, 1 gal (3.8 L) will cover approximately 17 ft² (1.6 m²). As a fillet and reinforcement, 1 gal (3.8 L) will cover approximately 14 linear feet (4.3 m).

Cleaning

Clean tools and equipment with mineral spirits before Bituthene® Liquid Membrane has cured. Mineral spirits is a combustible liquid and should be used only in accordance with the manufacturer's safety recommendations. Do not use solvents to clean hands or skin.

gcpat.com | Customer Service: 1-866-333-3726

We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate, and is offered for consideration, investigation and verification by the user, but we do not warrant the results to be obtained. Please read all statements, recommendations, and suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation, or suggestion is intended for any use that would infringe any patent, copyright, or other third party right.

Bituthene, Hydroduct and Preprufe are trademarks, which may be registered in the United States and/or other countries, of GCP Applied Technologies Inc. This trademark list has been compiled using available published information as of the publication date and may not accurately reflect current trademark ownership or status.

© Copyright 2017 GCP Applied Technologies Inc. All rights reserved.

GCP Applied Technologies Inc., 62 Whittemore Avenue, Cambridge, MA 02140 USA.

In Canada, GCP 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6.

GCP0083

BIT-230-1217



SPECIFICATION

PRODUCT DATA SHEET



PREPRUFE® 300R PLUS & 160R PLUS

Pre-applied waterproofing membranes that bond integrally to poured concrete for use below slabs or behind basement walls on confined sites

Product Description

Preprufe® 300R Plus & 160R Plus membranes are unique composite sheets comprised of a thick HDPE film, pressure sensitive adhesive and weather resistant protective coating. Designed with Advanced Bond Technology™ and a dual adhesive ZipLap™, Preprufe Plus membranes form a unique, integral bond to poured concrete, preventing both the ingress and lateral migration of water while providing a robust barrier to water, moisture and gas.

Release liner free and designed for efficient, reliable installation, the Preprufe Plus ZipLap allows for an adhesive to adhesive bond at seam overlaps and delivers superior performance in harsh conditions without the need for specialized equipment, heat or power.

The Preprufe R Plus System includes:

- **Preprufe 300R Plus** — heavy-duty grade for use below slabs and on rafts (i.e. mud slabs). Designed to accept the placing of heavy reinforcement using conventional concrete spacers
- **Preprufe 160R Plus** — thinner grade for blindside, zero property line applications against soil retention systems. Vertical use only
- **Preprufe Tape LT** — for covering cut edges, roll ends, penetrations and detailing (temperatures between 25 °F (-4 °C) and 86 °F (+30 °C))
- **Preprufe Tape HC** — for covering cut edges, roll ends, penetrations and detailing (minimum 50 °F (10 °C))
- **Preprufe CJ Tape LT** — for construction joints, and detailing (temperatures between 25 °F (-4 °C) and 86 °F (+30 °C))
- **Preprufe CJ Tape HC** — for construction joints, and detailing (minimum 50 °F (10 °C))
- **Bituthene® Liquid Membrane**—for sealing around penetrations, etc.
- **Adcor® ES** — waterstop for joints in concrete walls and floors
- **Preprufe Tieback Covers** — preformed cover for soil retention wall tieback heads
- **Preprufe Preformed Corners**—preformed inside and outside corners

Preprufe 300R Plus & 160R Plus membranes are applied either horizontally to smooth prepared concrete, carton forms or well rolled and compacted earth or crushed stone substrate; or vertically to permanent formwork or adjoining structures. Concrete is then cast directly against the adhesive side of the membranes. The specially developed Preprufe adhesive layers work together to form a continuous and integral seal to the structure.

Preprufe can be returned up the inside face of slab formwork but is not recommended for conventional twin-sided formwork on walls, etc. Use Bituthene self-adhesive membrane or Procor® fluid-applied membrane to walls after removal of formwork for a fully bonded system to all structural surfaces.

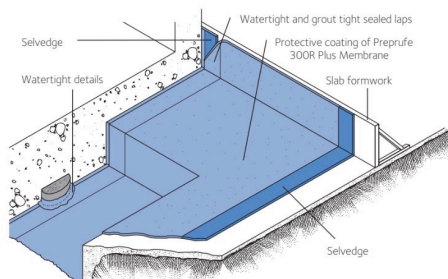
GEOSHIELD Verification PLAN



SPECIFICATION

Advantages

- **Forms a unique continuous adhesive bond to concrete poured against it** - prevents water migration and makes it unaffected by ground settlement beneath slabs
- **Fully-adhered adhesive to adhesive watertight Ziplaps** and easy to execute detailing
- **Provides a barrier to water, moisture and gas** - physically isolates the structure from the surrounding ground
- **Easy roll/kick out installation** - reduces installation time and cost
- **Release liner free** - expedites installation and reduces construction site waste
- **Solar reflective** - reduced temperature gain
- **Simple and quick to install** - requiring no priming or fillets
- **Can be applied to permanent formwork** - allows maximum use of confined sites
- **Self protecting** - can be trafficked immediately after application and ready for immediate placing of reinforcement
- **Unaffected by wet conditions** - cannot activate prematurely
- **Inherently waterproof, non-reactive system:**
 1. Not reliant on confining pressures or hydration
 2. Unaffected by freeze/thaw, wet/dry cycling
- **Chemical resistant** - effective in most types of soils and waters, protects structure from salt or sulphate attack



Drawings are for illustration purposes only.
Please refer to gcpat.com for specific application details.

Installation

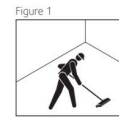
The most current application instructions, detail drawings and technical letters can be viewed at gcpat.com. For other technical information contact your local GCP representative.

Preprufe Plus membranes have colored zip strips at the top and bottom of the seam area on the edge of the roll. Both zip strips cover an aggressive adhesive. Once the yellow zip strip on the top of the membrane and the blue zip strip on the bottom of the membrane

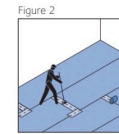
are removed, a strong adhesive to adhesive bond is achieved in the overlap area. This Preprufe Ziplap™ provides an enhanced sealing of the overlaps in harsh conditions combined with a fast and easy way of execution without specialized equipment, heat or power.

Substrate Preparation

All surfaces - It is essential to create a sound and solid substrate to eliminate movement during the concrete pour. Substrates must be regular and smooth with no gaps or voids greater than 0.5 in. (12 mm). Grout around all penetrations such as utility conduits, etc. for stability (see Figure 1).



Horizontal - The substrate must be free of loose aggregate and sharp protrusions. Avoid curved or rounded substrates. When installing over earth or crushed stone, ensure substrate is well compacted to avoid displacement of substrate due to traffic or concrete pour. The surface does not need to be dry, but standing water must be removed.



Vertical - Use concrete, plywood, insulation or other approved facing to sheet piling to provide support to the membrane. Board systems such as timber lagging must be close butted to provide support and not more than 0.5 in. (12 mm) out of alignment.

Membrane Installation

Preprufe Plus membranes can be applied at temperatures of 25°F (-4°C) or above. When installing Preprufe Plus product in cold or marginal weather conditions <40°F (<4°C) the use of Preprufe Tape LT is recommended at all laps and detailing. Preprufe Tape LT should be applied to clean, dry surfaces and the release liner must be removed immediately after application. Alternatively, Preprufe Plus Low Temperature (LT) membrane is available for low temperature applications. Refer to Preprufe Plus LT data sheet and GCP tech letter 16 for more information.

Horizontal substrates - Kick out or roll out the membrane HDPE film side to the substrate with the yellow zip strip facing towards the concrete pour. End laps should be staggered to avoid a build up of layers. Leave yellow and blue zip strips on the membrane until overlap procedure is completed.

Accurately position succeeding sheets to overlap the previous sheet 3 in. (75 mm) along the marked selvedge with the blue zip strip on top of the yellow zip strip. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Peel back and remove both the yellow and blue zip strips in the overlap area to achieve an adhesive to adhesive bond at the overlap. Ensure a continuous bond is achieved without creases and roll firmly with a heavy roller.

Refer to GCP Tech Letter 15 for information on suitable rebar chairs for Preprufe products.

Vertical substrates - Mechanically fasten the membrane vertically using fasteners appropriate for the substrate with the yellow zip strip facing towards the concrete pour. The membrane may be installed in any convenient length. Fastening can be made through the selvedge using a small and low profile head fastener so that the membrane lays



GEOSHIELD Verification PLAN



SPECIFICATION

flat and allows firmly rolled overlaps. Accurately position succeeding sheets to overlap the previous sheet 3 in. (75 mm) along the marked selvage with the blue zip strip on top of the yellow zip strip.

Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Peel back and remove both the yellow and blue zip strips in the overlap area to achieve an adhesive to adhesive bond at the overlap. Roll firmly to ensure a watertight seal.

Roll ends and cut edges - Overlap all roll ends and cut edges by a minimum 3 in. (75 mm) and ensure the area is clean and free from contamination, wiping with a damp cloth if necessary. Allow to dry and apply Preprufe Tape LT (or HC in hot climates) centered over the lap edges and roll firmly (see Figure 2). Immediately remove tinted plastic release liner from the tape.

Details

Detail drawings are available at gcpat.com.

Membrane Repair

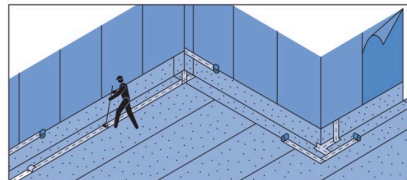
Inspect the membrane before installation of reinforcement steel, formwork and final placement of concrete. The membrane can be easily cleaned by power washing if required. Repair damage by wiping the area with a damp cloth to ensure the area is clean and free from dust, and allow to dry. Repair small punctures (0.5 in. (12 mm) or less) and slices by applying Preprufe Tape centered over the damaged area. Repair holes and large punctures by applying a patch of Preprufe® Plus membrane, which extends 6 in. (150 mm) beyond the damaged area. Seal all edges of the patch with

Preprufe Tape. Any areas of damaged adhesive should be covered with Preprufe Tape. Where exposed selvage has lost adhesion or laps have not been sealed, ensure the area is clean and dry and cover with fresh Preprufe Tape. All Preprufe Tape must be rolled firmly and the tinted release liner removed. Alternatively, use a hot air gun or similar to activate the adhesive using caution not to damage the membranes and firmly roll lap to achieve continuity.

Pouring of Concrete

Ensure the plastic release liner is removed from all areas of Preprufe Tape.

It is recommended that concrete be poured within 56 days (42 days in hot climates) of application of the membrane. Following proper ACI guidelines, concrete must be placed carefully and consolidated properly to avoid damage to the membrane. Never use a sharp object to consolidate the concrete. Provide temporary protection from concrete over splash for areas of the Preprufe membrane that are adjacent to a concrete pour.



GEOSHIELD Verification PLAN

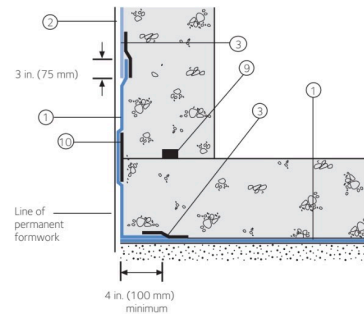


SPECIFICATION

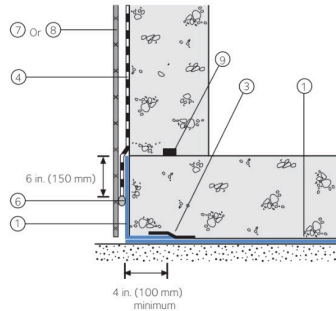
Detail Drawings

Details shown are typical illustrations and not working details.
For a list of the most current details, visit us at gcpat.com.
For technical assistance with detailing and problem solving please
call toll free at 866-333-358M (3726).

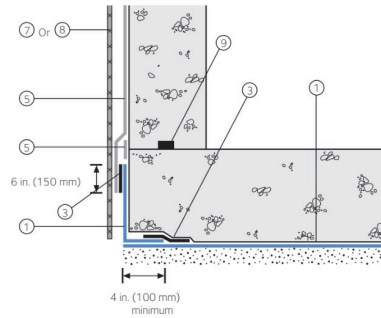
Wall base detail against permanent shutter



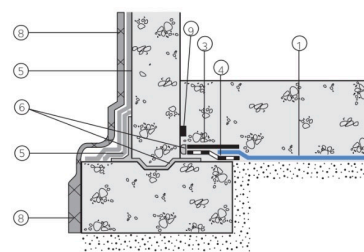
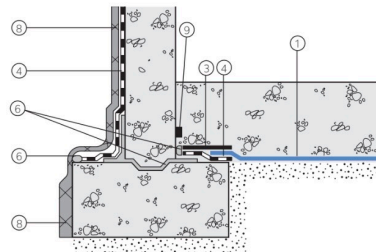
Bituthene wall base detail (Option 1)



Procor wall base detail (Option 1)



Bituthene® wall base detail (Option 2)



- 1 Preprufe 300R Plus
- 2 Preprufe 160R Plus
- 3 Preprufe Tape
- 4 Bituthene

- 5 Procor
- 6 Bituthene Liquid Membrane
- 7 Approved Protection Course

- 8 Hydroduct
- 9 Adcor ES
- 10 Preprufe CJ Tape

GEOSHIELD Verification Plan



SPECIFICATION

Supply

Dimensions (Nominal)	Preprufe 300R Plus Membrane	Preprufe 160R Plus Membrane	Preprufe Tape (LT or HC*)
Thickness	0.046 in. (1.2 mm)	0.032 in. (0.8 mm)	
Roll size	3 ft. 10 in. x 102 ft. (1.17m x 31.15m)	3 ft. 10 in. x 120 ft. (1.17m x 36.6m)	4 in. x 49 ft (100 mm x 15 m)
Roll area	392 ft² (36 m²)	460 ft² (42 m²)	
Roll weight	108 lbs (50 kg)	92 lbs (42 kg)	4.3 lbs (2 kg)
Minimum side/end laps	3 in. (75 mm)	3 in. (75 mm)	3 in. (75 mm)

Physical Properties

Property	Typical Value 300R Plus	Typical Value 160R Plus	Test Method
Color	white	white	
Thickness	0.046 in. (1.2 mm)	0.032 in. (0.8 mm)	ASTM D3767
Lateral Water Migration Resistance	Pass at 231 ft (71 m) of hydrostatic head pressure	Pass at 231 ft (71 m) of hydrostatic head pressure	ASTM D5385, modified¹
Low temperature flexibility	Unaffected at -20°F (-29°C)	Unaffected at -20°F (-29°C)	ASTM D1970
Resistance to hydrostatic head	231 ft (71 m)	231 ft (71 m)	ASTM D5385, modified²
Elongation	500%	500%	ASTM D412, modified³
Tensile strength, film	4000 psi (27.6 MPa)	4000 psi (27.6 MPa)	ASTM D412
Crack cycling at -9.4°F (-23°C), 100 cycles	Unaffected, Pass	Unaffected, Pass	ASTM C836⁴
Puncture resistance	221 lbs (990 N)	100 lbs (445 N)	ASTM E154
Peel adhesion to concrete	5 lbs/in. (880 N/m)	5 lbs/in. (880 N/m)	ASTM D903, modified⁵
Lap peel adhesion at 72°F (22°C)	8 lbs/in. (1408 N/m)	8 lbs/in. (1408 N/m)	ASTM D1876, modified⁶
Lap peel adhesion at 40°F (4°C)	8 lbs/in. (1408 N/m)	8 lbs/in. (1408 N/m)	ASTM D1876, modified⁶
Permeance to water vapor transmission	0.01 perms (0.6 ng/(Pa x s x m²))	0.01 perms (0.6 ng/(Pa x s x m²))	ASTM E96, method B

Footnotes:

1. Lateral water migration resistance is tested by casting concrete against membrane with a hole and subjecting the membrane to hydrostatic head pressure with water. The test measures the resistance of lateral water migration between the concrete and the membrane.
2. Hydrostatic head tests of Preprufe Membranes are performed by casting concrete against the membrane with a lap. Before the concrete cures, a 0.125 in. (3 mm) spacer is inserted perpendicular to the membrane to create a gap. The cured block is placed in a chamber where water is introduced to the membrane surface up to the head indicated.
3. Elongation of membrane is run at a rate of 2 in. (50 mm) per minute.
4. Concrete is cast against the Preprufe membrane and allowed to cure (7 days minimum).
5. Concrete is cast against the protective coating surface of the membrane and allowed to properly dry (7 days minimum). Peel adhesion of membrane to concrete is measured at a rate of 2 in. (50 mm) per minute at room temperature.
6. The test is conducted 15 minutes after the lap is formed (per GCP published recommendations) and run at a rate of 2 in. (50 mm) per minute at 72°F (22°C).

Removal of Formwork

Preprufe membranes can be applied to removable formwork, such as slab perimeters, elevator and lift pits, etc. Once the concrete is poured the formwork must remain in place until the concrete has gained sufficient compressive strength to develop the surface bond. Preprufe membranes are not recommended for conventional twin-sided wall forming systems, see GCP Tech Letter 13 for information on forming systems used with Preprufe products.

A minimum concrete compressive strength of 3000 psi (20 N/mm²) is recommended prior to stripping formwork supporting Preprufe membranes. Premature stripping may result in displacement of the membrane and/or spalling of the concrete.

Refer to GCP Tech Letter 17 for information on removal of formwork for Preprufe products.

Specification Clauses

Preprufe 300R Plus or 160R Plus membranes shall be applied with its protective coating presented to receive fresh concrete to which it will integrally bond. Only GCP Applied Technologies approved membranes shall be bonded to Preprufe® products. All Preprufe system materials shall be supplied by GCP Applied Technologies, and applied strictly in accordance with their instructions. Specimen performance and formatted clauses are also available.

NOTE: Use Preprufe Tape to tie-in Procor® fluid-applied membrane with Preprufe product.

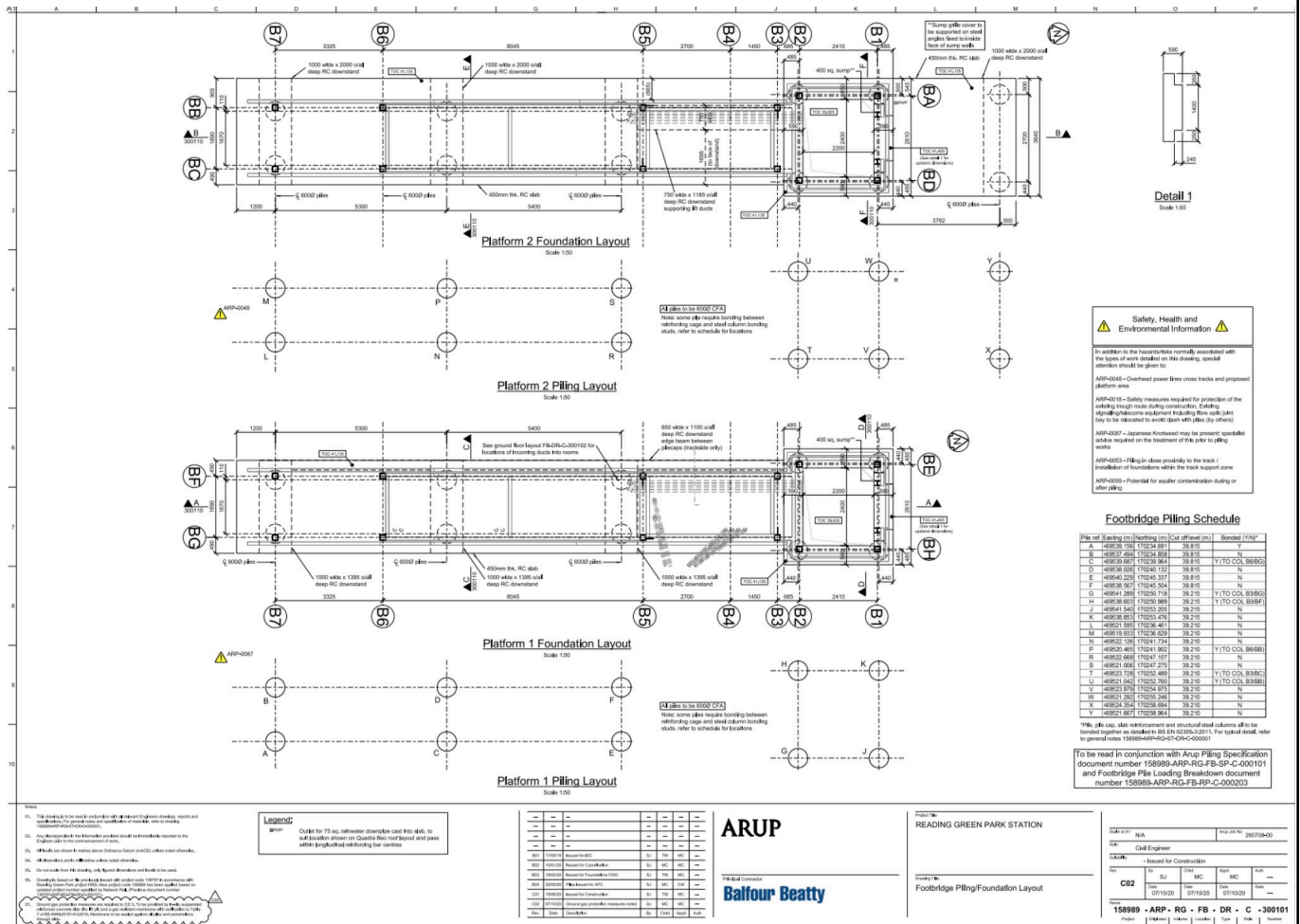
Health and Safety

Refer to relevant SDS (Safety Data Sheet). Complete rolls should be lifted and carried by a minimum of two persons.

GEOSHIELD Verification Plan



DETAILS



158989-ARP-RG-FB-DR-C-300101 rev C02. - Footbridge piling foundation layout.

BGA
British Geomembrane Association

[illegible]

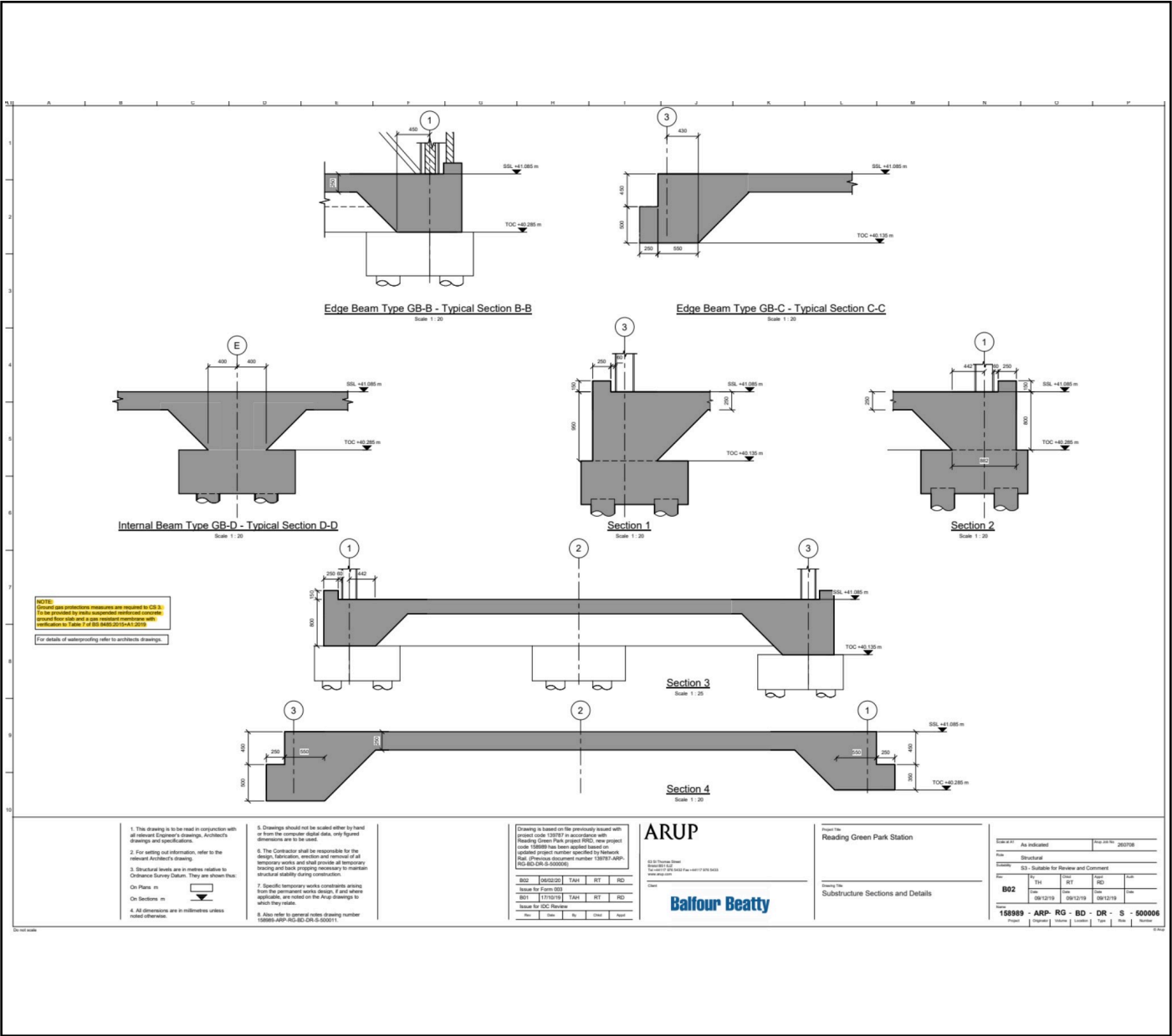
158989-ARP-RG-FB-DR-C-300110 rev C02. - Footbridge sub-structure sections.



GEOSHIELD
Verification Plan



DETAILS

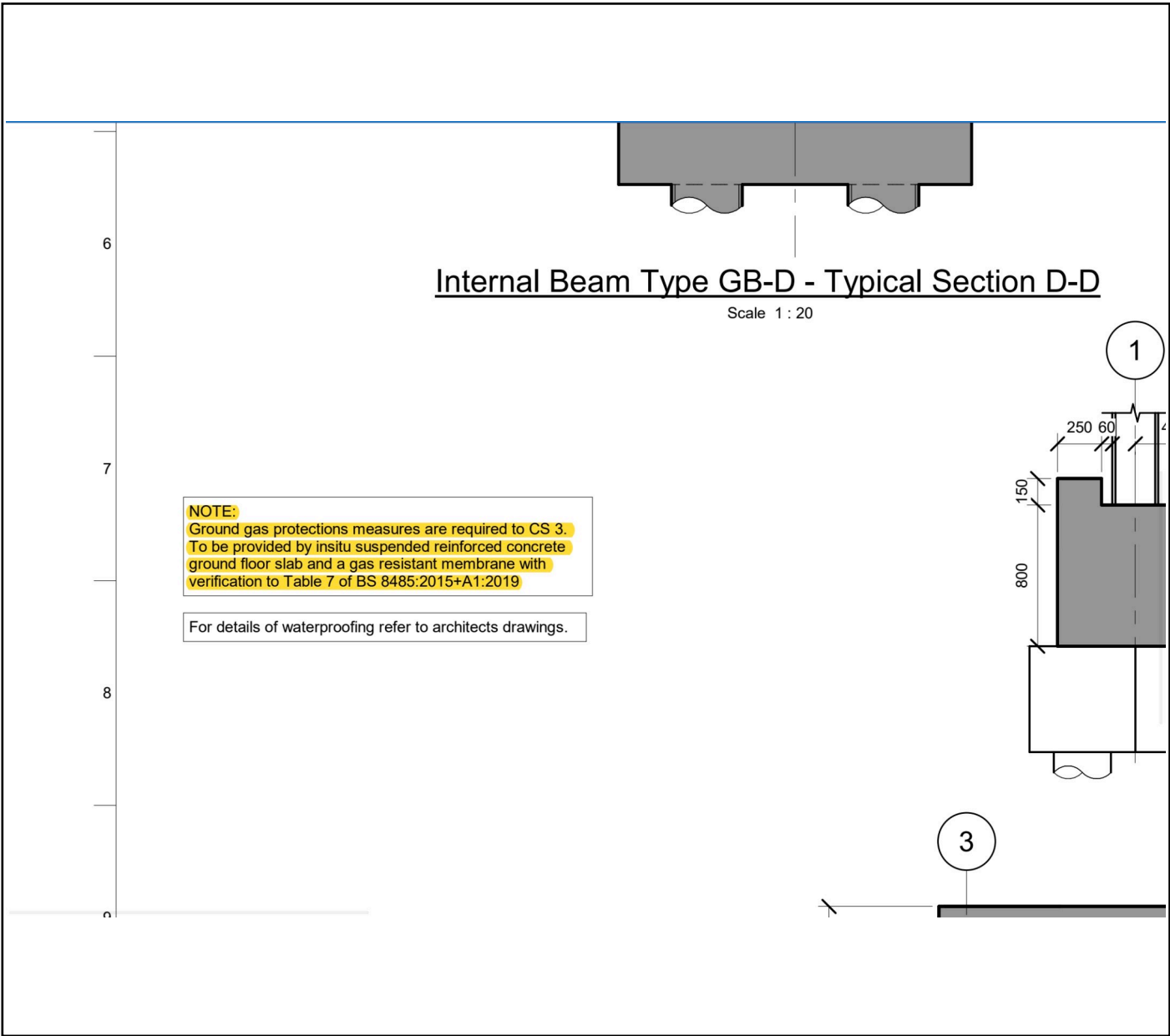




GEOSHIELD
Verification Plan



DETAILS



Blown up area of previous drawing , shows design & information regarding ground gas CS3 risk level

GEOSHIELD
Verification Plan

BGA
British Geomembrane Association



CLIENT DETAILS

CLIENT CONTACT:

Mark Franklin

CONTACTS ROLE:

Director of Fastglobe

MOBILE PHONE:

07739363998

EMAIL ADDRESS:

CLIENT CONTACT:

CONTACTS ROLE:

MOBILE PHONE:

EMAIL ADDRESS

NOTES:



GEOSHIELD
Verification Plan



APPLICATION TEAM LEADERS

APPLICATOR NAME: Chris Hickling

COMPANY: Fastglobe

APPLICATOR TEL: 07958268438

APPLICATOR EMAIL:

APPLICATOR NAME: Brad Watkins

COMPANY: Fastglobe

APPLICATOR TEL: 07985175769

APPLICATOR EMAIL:

NOTES: Fastglobe specialise in the installation of water + gas proof systems.

NOTES: Installers from Fastglobe hold NVQ2 qualifications for the installation of

NOTES: Structural Waterproofing.

NOTES:



GEOSHIELD
Verification Plan



HEALTH AND SAFETY

INDUCTION:

YES



NO:



INDUCTION TIME:

To be confirmed at the pre-verification meeting

CSCS CARD:

YES



NO:



CSCS CARD NUMBER:

0220225

METHOD STATEMENT:

YES



NO:



RISK ASSESSMENT:

YES



NO:



COSHH:

YES



NO:



SITE SPECIFIC HAZARDS:

Materials falling from height

Slips, trips and falls

Excavations

Confined spaces

Plant



GEOSHIELD Verification Plan



NOTIFICATION:

24 HOURS:	YES	☒	NO	☐
48 HOURS:	YES	☐	NO	☒

REASON FOR VISIT:

DURING INSTALLATION:	☒	UNDERSLAB VENTILATION	☐
PRE - POUR:	☒	DPC MEMBRANE CONNECTION	☐
TESTING:	☒	OTHER	☒

TRAINING LEVEL:

SPECIALIST CONTRACTOR:	YES	☒	NO	☐
NVQ LEVEL 2:	YES	☒	NO	☐
COMPETENT APPLICATOR:	YES	☒	NO	☐
TOOLBOX BY GEOSHIELD:	YES	☒	NO	☐

NOTES:

NOTES:

NOTES:

NOTES:

GAS REGIME:				
CS1/Green	YES	☐	NO	☒
CS2/Amber	YES	☐	NO	☒
CS3/Amber 2	YES	☒	NO	☐
CS3/ or above/Red	YES	☐	NO	☒
VOC	YES	☐	NO	☒
RADON BASIC	YES	☐	NO	☒
RADON FULL	YES	☐	NO	☒

Building Type:

TYPE C

POINTS REQUIRED UNDER BS8485 2015

3.0 POINTS

POINTS GAINED FROM BS8485 2015

Score for Structural Barrier:

1.5 POINTS

Grade 2 basement:

N/A

Grade 3 basement:

N/A

Score for Venting:

0 POINTS

Car park:

N/A

Score for Membrane:

2.0 POINTS

POINTS ACHIEVED UNDER BS8485 2015

3.5 POINTS



GEOSHIELD Verification Plan



TESTING:

VISUAL: PICK and PROBE

YES



NO

☐

NON-DESTRUCTIVE SMOKE TEST:

YES

☐

NO

☒

NON-DESTRUCTIVE COMPRESSED AIR LANCE:

YES



NO

☐

DESTRUCTIVE JOINT TESTING:

YES

☐

NO

☒

NON-DESTRUCTIVE TRACER GAS:

YES

☐

NO

☒

DIELECTRIC POROSITY TEST:

YES

☐

NO

☒

PUMP TEST FOR "Twinny" WELD

YES

☐

NO

☒

NOTES:

From the risk assessment GeoShield will Primary conduct a visual

NOTES:

and pick and probe testing regime for this project

NOTES:

We will instigate Air lancing if the installation is deemed poorly applied

NOTES:

For the air lancing to be correctly applied this will be done before the

NOTES:

Girth Tape is Applied.

NOTES:

Only if the application falls below the accepted standard will other testing

NOTES:

be used



GEOSHIELD
Verification Plan



RISK ASSESSMENT

SITE SPECIFIC CIRCUMSTANCES	1	2	3	4	5
Complexity of Design	1	2 ✓	3	4	5
Repetition of design	1	2 ✓	3	4	5
Experience of workforce	1 ✓	2	3	4	5
Gas regime	1	2 ✓	3	4	5
Project management experience	1	2 ✓	3	4	5
Installation conditions (exposed?)	1	2 ✓	3	4	5
Robust Project specific gas design	1 ✓	2	3	4	5

TYPE OF RISK	RANGE	RISK
High Risk	23 - 30	
Medium High Risk	19 - 22	19
Medium Risk	15 - 18	
Medium Low Risk	11 - 14	
Low Risk	0 - 10	

GeoShield have classed this project as a medium to high risk

GeoShield will lay all perimeters down for standards at the pre-Verification meeting to

assist both the installer and the main contractor



GEOSHIELD
Verification Plan



VERIFICATION REPORT

These items will be included in the report

- NUMBER 1

GAS MEMBRANE SPECIFICATION
- NUMBER 2

ELEMENTS OF THE GAS MEMBRANE
- NUMBER 3

DATE, TIME and WEATHER CONDITIONS
- NUMBER 4

PLANS and DETAILS ISSUED
- NUMBER 5

INSTALLATION PHOTO's RELATING TO GRID LINES
- NUMBER 6

REPORTING DEFECTS AND LOGGING IN REMEDIATION LOG
- NUMBER 7

AREAS OF LIMITATION (areas unable to inspect)
- NUMBER 8

LOGGING AND REPORTING RESULTS OF TESTING

VERIFICATION REPORT ISSUE

HARD COPY:

YES

☒

NO

☐

DROP BOX LINK:

YES

☒

NO

☐

EMAIL:

YES

☐

NO

☐

FLASH DRIVE:

YES

☐

NO

☐



GEOSHIELD Verification Plan



GEOSHIELD COMPETENCE

>GeoShield was founded in 2015

>GeoShield solely verifies, they are fully independent of installers, manufactures and geotechnical companies.

>GeoShield follow guidance in CIRIA 735 (sufficient experience, membership of relevant professional organisations) GeoShield are members of the BVC, BGA, ERA, The RADON Council, and UKRA

>Currently GeoShield hold the Chairmanship of the British Verification Council

>Two employees are NSAC Level 3 assessors for the NVQ 2 Gas Membrane install

>GeoShield were key in forming the NVQ 4 Verification qualification in which 2 Verification officers are undertaking this qualification

>GeoShield have the only qualified assessor for the NVQ 4 Verification qualification

>GeoShield Verification officers currently keep up to date CPD's

>All GeoShield Verification Officers have a full understanding of gas membrane install including 3 experienced (NVQ 2) installers in the GeoShield team

>GeoShield Verification Officers are all independent carrying there own air

compressors. Other testing equipment GeoShield have access to are 2 x Buckley

Dielectric Testing machines and also inert gas testing equipment



GEOSHIELD Verification Plan



VERIFICATION PLAN

METHOD STATEMENT

This project consists of an extension to a railway station development. It is expected 4 site visits will be required to cover all the verification work. This will depend on build quality and as such if any remediation work is not completed (if required) in a timely manner , extra visits could be incurred.

GeoShield will instigate the pre-verification Meeting to discuss all aspects of the verification process.

GeoShield recommend all areas have restricted access prior to concrete pour.

All utilities will require post sign off

GeoShield will liaise with Installer and main contractor regarding remediation issues and reinstatement strategy.

The frequency of verification will depend upon quality of installation and protection

Upon completion of each section, GeoShield will issue a handover certificate.

Screed should not be poured until this is issued.



GEOSHIELD
Verification Plan



SUBSTRATE METHOD STATEMENT

Substrate Type:

Block and Beam Construction	Yes		No	☒
-----------------------------	-----	--	----	-------------------------------------

Minimum Preparation	Swept Clear	Yes		No	
---------------------	-------------	-----	--	----	--

Minimum Preparation	Vacuuming	Yes		No	
---------------------	-----------	-----	--	----	--

Minimum Preparation	Compressed air to remove	Yes		No	
---------------------	--------------------------	-----	--	----	--

Minimum Preparation	Remove Mortar Droppings	Yes		No	
---------------------	-------------------------	-----	--	----	--

Stone Substrate	Yes	☒	No	
-----------------	-----	-------------------------------------	----	--

Minimum Preparation	Minimum 25mm Sand Blinding	Yes	☒	No	
---------------------	----------------------------	-----	-------------------------------------	----	--

Minimum Preparation	Limestone Dust	Yes		No	☒
---------------------	----------------	-----	--	----	-------------------------------------

Minimum Preparation	Compacted Substrate	Yes		No	☒
---------------------	---------------------	-----	--	----	-------------------------------------

Minimum Preparation	No large stones	Yes	☒	No	
---------------------	-----------------	-----	-------------------------------------	----	--

Concrete Substrate	Yes		No	☒
--------------------	-----	--	----	-------------------------------------

Minimum Preparation	No Hollows	Yes		No	
---------------------	------------	-----	--	----	--

Minimum Preparation	Troweled Surface	Yes		No	
---------------------	------------------	-----	--	----	--

Remarks:	
----------	--



GEOSHIELD
Verification Plan



PROTECTION METHOD STATEMENT

Protection Type:

Protection Board	Yes	☐	No	☐
------------------	-----	--------------------------	----	--------------------------

Protection Fleece	Yes	☐	No	☐
-------------------	-----	--------------------------	----	--------------------------

Insulation	Yes	☐	No	☐
------------	-----	--------------------------	----	--------------------------

Where Protection Board is installed in the gas remediation strategy the

verifier must be allowed access to inspect the membrane

Remarks:	
----------	--

--

WHERE NO PROTECTION BOARD SPECIFIED

GeoShield's methodology will initially take the strategy of verifying the

first pre-pour. If the gas installation has been compromised when the

steel reinforcement is installed the second pour will be pre-poured inspected

This will continue until the risk has been reduced

Remarks:	
----------	--

--

Concrete Spacers	Yes	☐	No	☐
------------------	-----	--------------------------	----	--------------------------

Plastic 'Tric-Trac'	Yes	☐	No	☐
---------------------	-----	--------------------------	----	--------------------------



GEOSHIELD Verification Plan



VERIFICATION PLAN

COMMERCIAL METHOD STATEMENT

Block and Beam Construction	Yes		No	✓	Solid Floor	Yes	✓	No	
-----------------------------	-----	--	----	---	-------------	-----	---	----	--

Structure	Score		Structure	Score	1.5 points
-----------	-------	--	-----------	-------	------------

Venting	Score		Venting	Score	0 points
---------	-------	--	---------	-------	----------

Membrane	Score		Membrane	Score	2.0 points
----------	-------	--	----------	-------	------------

GAS TYPE:

Carbon Dioxide	Yes	✓	No	
----------------	-----	---	----	--

Methane	Yes	✓	No	
---------	-----	---	----	--

VOC	Yes		No	✓
-----	-----	--	----	---

RADON	Yes		No	✓
-------	-----	--	----	---

VERIFICATION STRATEGY

Percentage strategy	(1st 10 Plots 100%, 11 to 50 Plots 1:5, 51 to > 1:10)	Yes	✓	No	
---------------------	---	-----	---	----	--

Percentage strategy	100% Verification for VOC's	Yes		No	✓
---------------------	-----------------------------	-----	--	----	---

CONTRACTOR/INSTALLER EVIDENCE

Arranged Evidence for Unverified Plots

GeoShield Audited CQA	Yes		No	✓
-----------------------	-----	--	----	---

GeoShield supported documentation	Yes		No	✓
-----------------------------------	-----	--	----	---

No Evidence Strategy	Yes		No	✓
----------------------	-----	--	----	---



GEOSHIELD Verification Plan



PRE-CONTRACT MEETING

Items for discussion at the Pre-Contract meeting

☐

>Induction Procedure

☐

>Identification of installation team and point of contact

☐

>Identification of Project management team

☐

>Identification of Sub-Contractors associated with membrane installation

☐

>Validation of Membrane and design specification

☐

>Verification procedure

☐

>Notifications for Verification

☐

>Preparation of substrate

☐

>Program of works

☐

>Utility entry

☐

>Protection of Membrane

☐

>Remediation Procedure

☐

>Testing Procedures

☐

>Sign off Procedure

☐

>Installer PI

☐

All information is assumed correct at time of issue.

DATE:

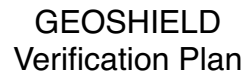


GEOSHIELD Verification Plan



GEOSHIELD SUMMARY RISK ASSESSMENT

BS8485 Building Type		1		2		3		4		5
Profile of Project (school, warehouse)		1		2		3		4		5
Past history of contractor		1		2		3		4		5
Past history of the installer		1		2		3		4		5
Installers hold NVQ 2		1		2		3		4		5
Specific gas design		1		2		3		4		5
Design conforms to BS8485		1		2		3		4		5
Materials conform to BS8485		1		2		3		4		5
Verification follows CIRIA 735		1		2		3		4		5
BS8485 Gas Classification		1		2		3		4		5
VOC		1		2		3		4		5
Complexity of Design		1		2		3		4		5
Repetition of Design		1		2		3		4		5
Installation environment		1		2		3		4		5
Substrate design		1		2		3		4		5
Membrane protection		1		2		3		4		5
Low risk					Low - Medium					
Medium					Medium - High					
High										



If changes are required at this stage they will be put into the revised plan.

[illegible]