



Triton Systems

Bonded Sheet Systems

Type A Barrier Waterproofing – BS: 8102 (2009)



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TWS-100/TWS-100GM – bonded sheet membranes

There are six categories of Type A waterproofing systems defined in BS8102:2009, the Code of Practice for protection of below ground structures against water from the ground. Triton supplies a number of these including bonded sheet systems, liquid applied membranes and cementitious coatings/crystallization active systems.

Triton's TWS range falls into the bonded sheet system category and includes a BBA certified Type A waterproofing membrane and a membrane that provides both Type A waterproofing as well as protection against the ingress of ground gas. A range of ancillary products for the installation of each membrane is also available from Triton.

Further guidance on the use and installation of Type A waterproofing systems can be found in the PCA Best Practice Guidance Document – Type A Waterproofing, downloadable from Triton's website: www.tritonsystems.co.uk/prod1.php#p1





Triton TWS-EX100

Triton TWS-EX100 is a self-adhesive sheet membrane constructed from an oriented cross laminated high density polyethylene sheeting and a bitumen-polymer adhesive compound.

The product is a tough and durable self-adhesive sheet with an overall thickness of 1.5mm.

A unique feature is the selvedge. This enables a fast and secure seal on all side edge laps.

Triton TWS-EX100 is used to provide a water and water vapour barrier in all forms of construction. When installed and applied correctly the system provides a Type A barrier protection system in accordance with BS 8102: 2009 - Table 1 and provides levels of protection for grades 1, 2 and 3 in accordance with BS 8102: 2009 – Table 2.

Under normal conditions of use Triton TWS-EX100 will provide a water and water vapour barrier for the life of the building.

Key benefits

- Factory controlled thickness
- Rapid sealing and bonding
- Fast and easy application
- No heating or drying
- Self sealing to minor damage
- Selvedge strip to promote immediate lap sealing
- High puncture resistance
- High joint resistance to water pressure and water vapour transmission

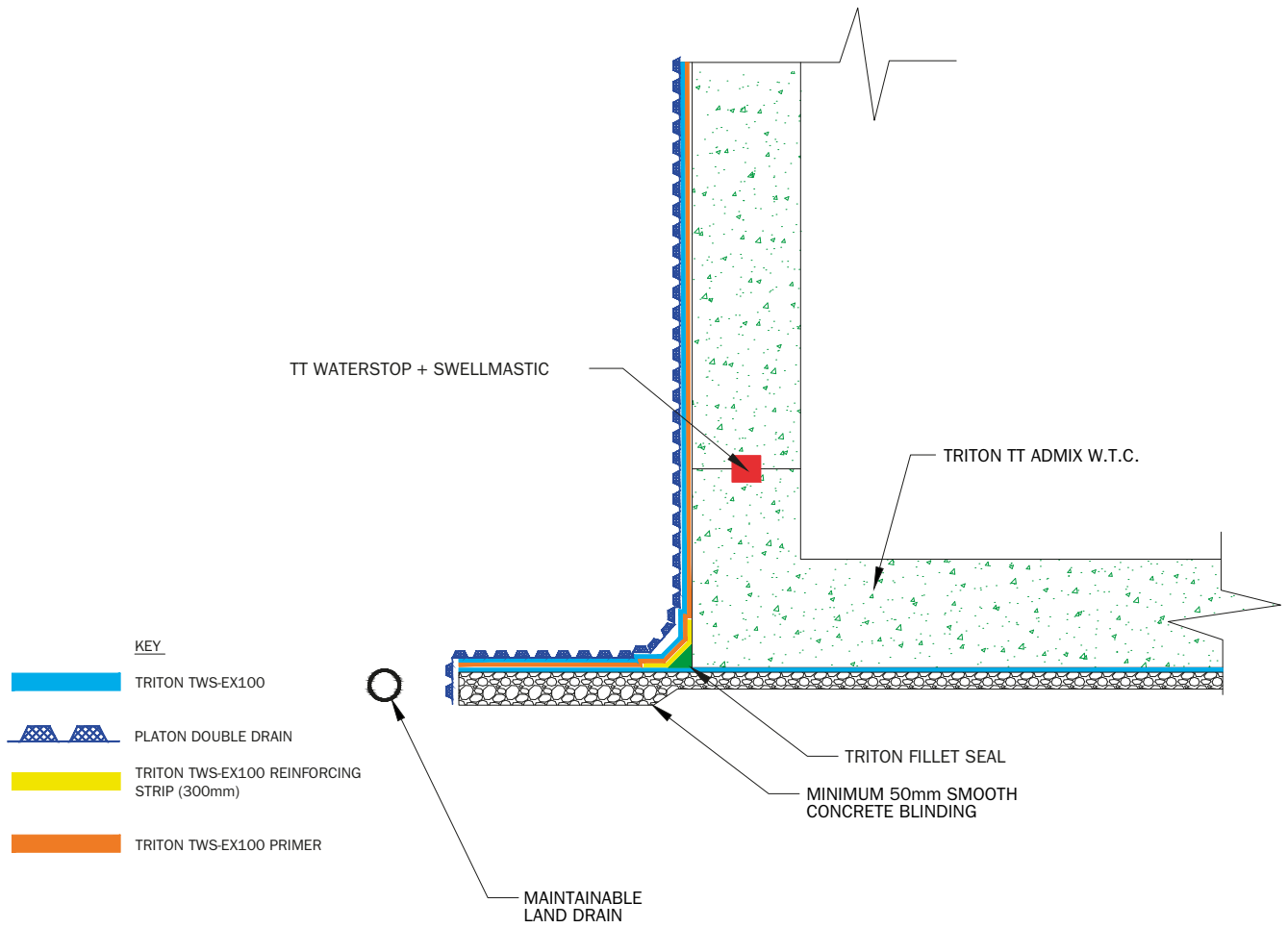
Application

Being water and water vapour resistant, TWS-EX100 has many waterproofing applications in the construction industry including:

- Foundations
- Basements
- Roofs and plaza decks
- Lift shafts, pits
- Service reservoir roofs
- Car parks
- Subways
- Bathrooms
- Balconies

Specification J40 – Flexible sheet tanking / damp proofing, in accordance with NBS Clause 190.

TYPICAL TWS-EX100 EXTERNAL WATER PROOFING DETAIL



For installation advice please refer to separate application guidelines available from Triton Systems.

Typical properties

Property	Test method	Units	Data
Dimensions:			
Backing thickness	–	mm	0.10
Backing type	–	–	HDPE
Adhesive thickness	–	mm	1.40
Total thickness	–	mm	1.50
Width	–	mm	1050
Length	–	m	19.05
Weight	–	kg/m ²	1.7
Carton size	–	mm	260x260x1100
Carton weight	–	kg	35
Mechanical properties:			
Membrane strength	ASTM D1000	N/mm	5.0
Elongation	ASTM D1000	%	300
Puncture resistance	ASTM E154	N	230
Adhesion (180° peel)	ASTM D1000	N/mm	4.0
Functional data:			
Water vapour transmission	ASTM E96	g/m ² /24h	0.30
Water penetration % joint	MOAT 27 5.1.4	–	Nil
Dimensional stability	MOAT 26.5.1.6	%	Longitudinal: -0.1 Lateral: -0.2

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Declaration of Performance

Date: 26/10/2015 version 1

Triton TWS-EX100

Type T in accordance with EN 13967:2012
AVCP System 2+

Triton TWS-EX100 is a self adhesive sheet membrane designed for use as a waterproofing membrane in the construction of basements, roofs and plaza decks, lift shafts, pits, service reservoir roofs, car parks and subways.

Essential characteristics	Performance
Reaction to fire	F
Watertightness	Pass
Durability:	
Watertightness after artificial ageing	Pass
Watertightness after exposure to chemicals	Pass
Dangerous substances	NPD

The performance of the product identified is in conformity with the declared performance above. This declaration of performance is issued under the sole responsibility of the manufacturer. Signed for and on behalf of the manufacturer by:

Name and function	Place and date of issue	Signature
Mr Roger Parker Factory Manager	Crayford, UK 26/10/2015	

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Agrément Certificate
16/5304
Product Sheet 1

TRITON WATERPROOFING MEMBRANES

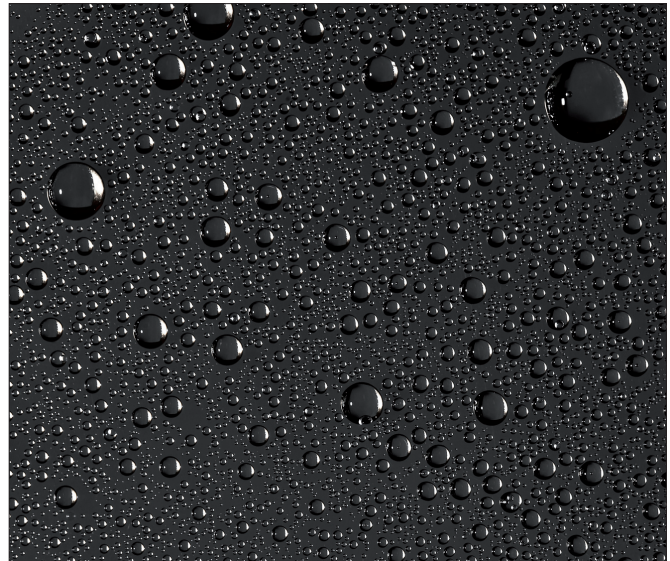
TRITON TWS-EX100 WATERPROOFING MEMBRANE

This Agrément Certificate Product Sheet⁽¹⁾ relates to Triton TWS-EX100 Waterproofing Membrane, for use as a damp-proof and waterproof membrane for solid concrete floors, underground structures, reservoir roofs and for internally and externally applied tanking below ground.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Resistance to water and water vapour — the product will resist the passage of moisture into the structure (see section 6).

Resistance to puncturing — on smooth or blinded surfaces, the membrane will accept without damage the limited foot traffic and loads associated with installation (see section 7).

Durability — under normal service conditions the membrane will provide an effective barrier to moisture for the life of the concrete slab in which it is installed (see section 11).

The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 18 March 2016

John Albon — Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, Triton TWS-EX100 Waterproofing Membrane, if used in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	C2(a)	Resistance to moisture
Comment:		The product will enable a floor to meet this Requirement. See sections 6.1 and 6.2 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:		The product satisfies the requirements of this Regulation. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	3.4	Moisture from the ground
Comment:		The product will enable a floor to satisfy the requirements of this Standard, with reference to clauses 3.4.1 ⁽¹⁾⁽²⁾ , 3.4.2 ⁽¹⁾⁽²⁾ , 3.4.4 ⁽¹⁾⁽²⁾ and 3.4.6 ⁽¹⁾⁽²⁾ . See sections 6.1 and 6.2 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The product can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	12	Building standards applicable to conversions
Comment:		All comments given for this product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	23(a)(i)(iii)(b)(i)	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	28(a)	Resistance to moisture and weather
Comment:		The product will enable a floor to satisfy this Regulation. See section 6.1 and 6.2 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, Principal Designer/CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 1 *Description* (1.1) and 3 *Delivery and site handling* (3.3) of this Certificate.

Additional Information

NHBC Standards 2016

NHBC accepts the use of Triton TWS-EX100 Waterproofing Membrane, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 5.4 *Waterproofing of basements and other below ground structures*.

Where Grade 2 or 3 protection is required and the below-ground wall retains more than 600 mm measured from the top of the retained ground to the lowest finished floor level, the product should be used in combination with either Type B or Type C waterproofing protection and in external applications only.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 13967 : 2012. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Triton TWS-EX100 Waterproofing Membrane is a two-ply, self-adhesive, damp-proof membrane comprising a top layer of polyethylene film (0.1 mm thick) bonded to a layer of bitumen/polymer adhesive carried on a release paper, with a selvage strip. The nominal characteristics for the product are given in Table 1.

Table 1 Characteristics

Characteristic (unit)	Value
Thickness ⁽¹⁾ (mm)	1.5
Width ⁽¹⁾ (m)	1.05
Roll length (m)	19.05
Roll weight (kg)	33
Mass per unit area (kg·m ⁻²)	1.7
Watertightness* (60 kPa)	Pass

(1) Excluding release paper.

1.2 Ancillary materials used with the membrane are:

- Triton TWS-EX Primer — a solution of bitumen in a petroleum aliphatic hydrocarbon supplied in 5 litre and 25 litre containers
- Triton TWS-EX Protection Board — a 2 mm thick protection layer for use in reservoir roofs and, where required, in other specifications
- Triton TWS-EX Reinforcing Tape — for reinforcing at internal and external corners.

2 Manufacture

2.1 The product is manufactured by bonding polyethylene film to a layer of bitumen/polymer adhesive.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the Certificate holder the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis as part of a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

3 Delivery and site handling

3.1 The product is delivered to site in rolls packed in cardboard containers bearing the Certificate holders's name and the BBA logo incorporating the number of this Certificate.

3.2 The rolls should be stacked on end and stored under cover.

3.3 The Certificate holder has taken the responsibility of classifying and labelling the product and ancillary items under the *CLP Regulation (EC) No 1272/2008 on the classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant Safety Data Sheet(s).

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Triton TWS-EX100 Waterproofing Membrane.

Design Considerations

4 Use

4.1 Triton TWS-EX100 Waterproofing Membrane is satisfactory for use in accordance with the relevant clauses of CP 102 : 1973 or BS 8102 : 2009 as damp-proof and/or waterproof membrane, provided it is fully supported and protected.

4.2 The membrane is satisfactory for use as waterproofing for reservoir roofs when protected using a suitable ballast.

4.3 The product is compatible with concrete, smooth brickwork and blockwork or screeded substrates and is resistant to those chemicals likely to be present in normal service conditions.

5 Practicability of installation

The product is designed to be installed by a competent installer or contractor, experienced with this type of product.

6 Resistance to water and water vapour



6.1 The membrane, including joints, provides an effective barrier to the passage of liquid moisture from the ground.

6.2 The membrane has a minimum nominal sheet thickness greater than the requirements of the national Building Regulations. The product therefore complies with the requirements of the national Building Regulations, if installed in the manner described in the relevant documents.

6.3 The membrane is impervious to water and, when used and installed in accordance with this Certificate, will give a waterproof layer capable of accepting minor structural movements without damage.

7 Resistance to puncturing

On smooth or blinded surfaces, the membrane will accept without damage the limited foot traffic and loads associated with installation. The membrane can be punctured by sharp objects and care should be taken to avoid damage during installation, particularly when handling building materials and equipment over the surface and when placing concrete or screeds.

8 Adhesion and stability

The adhesion of Triton TWS-EX100 Waterproofing Membrane to the substrate and to itself, jointed as described in this Certificate, is satisfactory. The membrane's properties allow it to accommodate minor movements likely to occur under normal service conditions in the structure in which it is incorporated.

9 Effects of temperature

9.1 At low temperatures the product will become progressively stiffer, which may make it difficult to handle. However, the product will not crack at the minimum recommended laying temperature when folded around a 20 mm diameter mandrel.

9.2 At elevated temperatures the adhesive will soften which, under extreme conditions, may cause slippage. There may also be the risk of curling of the laps caused by the cross-orientation of the polyethylene sheet; however, when used in accordance with the *Installation* section (ie the membrane is protected as soon as possible after installation), the sheet will be restrained and will not achieve the temperatures at which these effects occur.

10 Maintenance

As the membrane is confined and has suitable durability, maintenance is not required.

11 Durability



The membrane, when fully protected and subjected to normal service conditions, will provide an effective barrier to the transmission of liquid water and water vapour for the life of the structure in which it is incorporated.

Installation

12 General

12.1 Installation of Triton TWS-EX100 Waterproofing Membrane must be in accordance with the Certificate holder's instructions, CP 102 : 1973 or BS 8102 : 2009, the relevant clauses of BS 8000-4 : 1989 and this Certificate.

12.2 All surfaces to which the membrane is to be applied must have a smooth finish, ie they should be free from cavities, projections and mortar deposits. Surfaces should be dry and free from dust and frost. Concrete surfaces should be dense. Where necessary (ie for dusty or porous substrates), the surface is primed with Triton TWS-EX100 Primer at the recommended coverage rate, and allowed to dry. Vertical surfaces must always be primed.

12.3 Vertical surfaces of brickwork and blockwork should be dry and rendered to provide an even surface. Brickwork and blockwork not rendered must be flush pointed to give a smooth surface without sudden changes in level.

12.4 The membrane can be installed in all normal site conditions provided the air temperature is not below 5°C, to prevent the risk of surface condensation.

12.5 The membrane should be covered by a screed or other protective layer as soon as possible after installation. If blockwork protection is used, care must be taken to avoid damage to the membrane during construction.

13 Procedure

13.1 The release paper is removed prior to applying the membrane to the prepared substrate. As the sheet is laid the membrane must be pressed firmly from the middle to prevent trapping air.

13.2 The polyethylene strip on the selvages must be removed to expose the bitumen/polymer adhesive to facilitate lapping of the membrane.

13.3 Overlaps should be at least 50 mm onto the backing film along the roll edges and at least 100 mm onto the backing film at the roll ends of the membrane. The membrane surface to be overlapped should be dust-free and, to ensure a watertight bond, the upper membrane should be firmly pressed down onto the lower one.

14 Applications

Solid concrete floors

14.1 It is essential that the damp-proof membrane in the floor is continuous with the damp-proof course in the surrounding walls. This is achieved by continuing the membrane up internal wall surfaces to tie in with the damp-proof course. A sand/cement screed or rot-proof board should be laid immediately after the installation of the damp-proofing membrane to prevent damage.

External tanking

14.2 The membrane is applied to the site concrete and then applied to the external face of the structure and into the internal wall. A 300 mm wide strip of membrane should be placed at the angle (containing a 50 mm by 50 mm fillet) where the horizontal surface meets the vertical surface, and at the top where it is tucked into the internal wall. A protection wall of brickwork, blockwork or protection board should be used against the membrane to protect it against puncture during backfilling.

Internal tanking

14.3 The membrane is applied to the site concrete base as well as to the interior face of the external wall. It should be tucked into the dpc and applied down the wall and 300 mm onto the site concrete base. A minimum 300 mm wide strip of membrane should be placed at the angle (containing a 50 mm by 50 mm fillet) where the horizontal surface meets the vertical surface and the top where the membrane is lapped into the dpc. The product is applied to the walls to achieve the overlaps defined in section 13.3.

14.4 A wall, preferably concrete, must be constructed immediately after installation to protect the damp-proof membrane and to resist the action of external water pressure. Where brickwork or blockwork is used it should be set 40 mm away from the membrane to enable the space so formed to be thoroughly filled with a sand/cement mortar as the construction proceeds.

Reservoir roof

14.5 The membrane is applied to the substrate as defined in section 13 and protected using 2 mm thick Triton TWS-EX100 Protection Board prior to application of protective ballast (such as paving slabs or pea gravel).

Technical Investigations

15 Tests

Tests were conducted on samples of Triton TWS-EX100 Waterproofing Membrane and the results assessed to determine:

- mass per unit area
- ring and ball softening point
- water vapour permeability
- tensile strength and elongation
- dimensional stability
- low temperature unrolling
- resistance to water pressure (6 metre head)
- resistance to cracking at 0°C and 20°C
- low temperature flexibility at 0°C and -5°C
- resistance to impact
- peel strength
- static indentation
- heat ageing for 56 days at 60°C followed by tensile strength and elongation
- heat ageing for 28 days at 60°C followed by peel strength.

Tests on joints

- tensile strength of joints
- heat ageing for 28 days at 60°C followed by tensile strength
- exposure to water for 7 days at 60°C followed by tensile strength.

16 Investigations

The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

Bibliography

BS 8000-4 : 1989 *Workmanship on building sites — Code of practice for excavation and filling*

BS 8102 : 2009 *Code of practice for protection of below ground structures against water from the ground*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

BS EN ISO 14001 : 2004 *Environmental management systems — Requirements with guidance for use*

CP 102 : 1973 *Code of practice for protection of buildings against water from the ground*

BS EN 13967 : 2012 *Flexible sheets for waterproofing — Plastic and rubber damp proof sheets including plastic and rubber basement tanking sheet — Definitions and characteristics*

Conditions of Certification

17 Conditions

17.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- is copyright of the BBA
- is subject to English Law.

17.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

17.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

17.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

17.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

17.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.



Triton TWS-EX100GM

Triton TWS-EX100GM is a tough, durable self-adhesive membrane specially developed to protect against the ingress of Methane and Radon gases and other ground gases and contaminants. This is achieved by using aluminium as the primary barrier and reinforcing and protecting this by laminating a tough, biaxially oriented HDPE film to one side and a robust bitumen rubber compound to the other. To facilitate easier lap seals, the membrane has a selvedge of bitumen rubber.

Triton TWS-EX100GM is used to provide an effective barrier to water, water vapour, Radon, Methane and Carbon Dioxide in all forms of construction. When installed and applied correctly it will provide an effective barrier to ground gases in accordance with BS 8485: 2015 and provide Type A barrier protection in accordance with BS 8102: 2009 - Table 1 and provides levels of protection for grades 1, 2 and 3 in accordance with BS 8102: 2009 – Table 2.

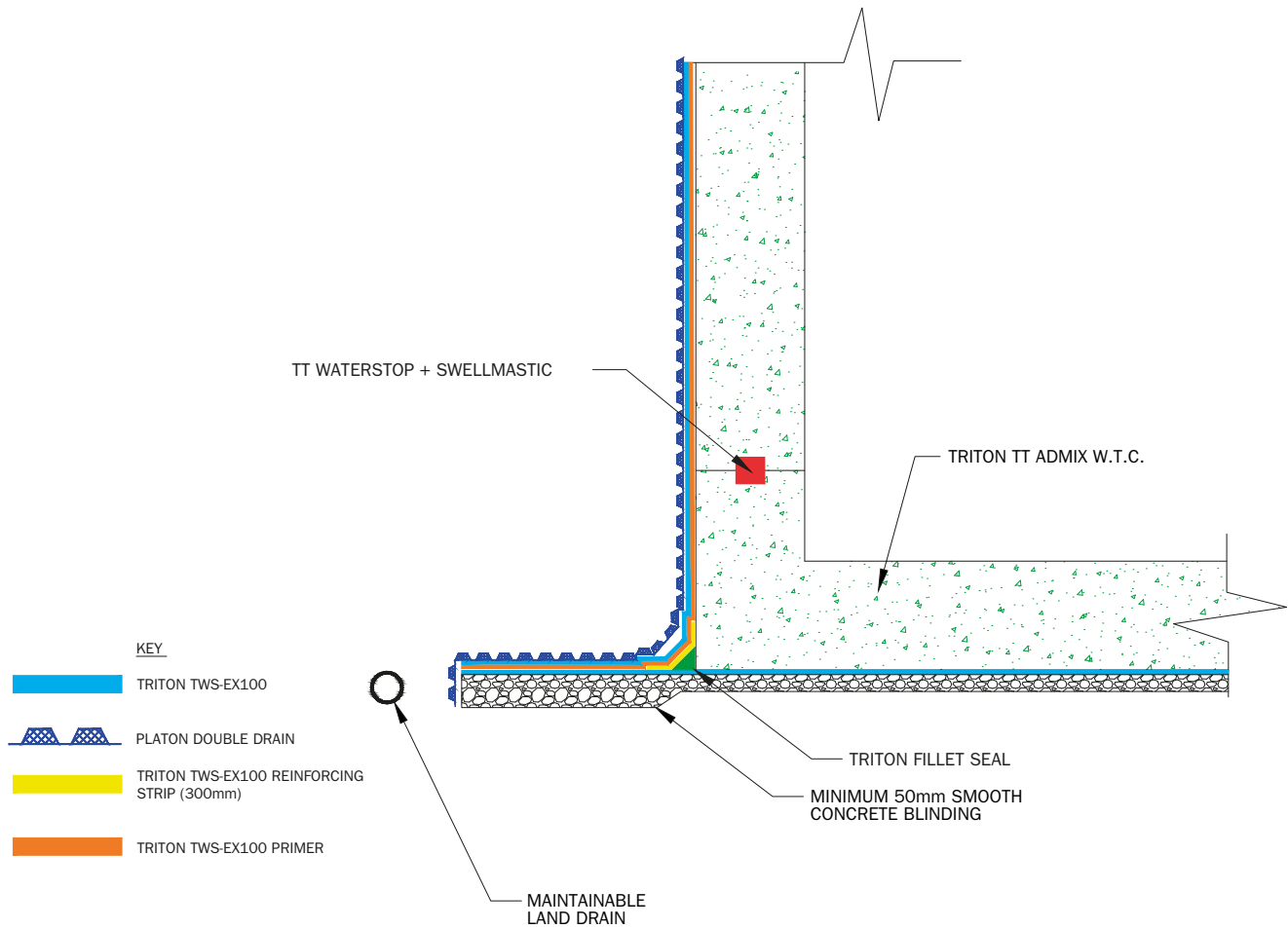
Under normal conditions of use TWS-EX100GM will provide an effective barrier to water, water vapour, Radon, Methane and Carbon Dioxide for the life of the building.

Key features

- Methane gas permeability less than 0.03ml/m²/24 hrs
- Impervious to Radon gas
- High puncture resistant film
- Highly efficient waterproof membrane
- Multi-layer laminate to optimize long term protection
- Adhesive selvedge to aid effective joint sealing
- Self-adhesive
- Cold applied
- Factory controlled thickness

Specification: J40 – Flexible sheet tanking / damp proofing in accordance with NBS Clause 190.

TYPICAL TWS-EX100 EXTERNAL WATER PROOFING DETAIL



For installation advice please refer to application guidelines available separately from Triton Systems

Technical data

Property	Test method	Units	Data
Dimensions:			
Backing thickness	–	mm	0.1
Backing type	–	–	Aluminium Polythene laminate
Adhesive thickness	–	mm	0.90
Total thickness	–	mm	1.00
Width	–	mm	1050
Length	–	m	19.05
Area	–	m ²	30
Weight	–	kg/m ²	1.1
Carton weight	–	kg	33
Mechanical properties:			
Membrane strength	ASTM D1000	N/mm	3.0
Elongation	ASTM D1000	%	40
Puncture resistance	ASTM E154	N	250
Adhesion (180° peel)	ASTM D1000	N/mm	2.0
Functional data:			
Water vapour transmission	ASTM E96	g/m ² /24h	<0.1
Methane gas permeability	–	ml/m ² /24h	<0.03
Radon diffusion	–	m ² /s	5.0 x 10 ⁻¹⁴
Dimensional stability	MOAT 27 5.1.6 80°C	%	Longitudinal: 0.0 Lateral: 0.0

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Declaration of Performance

Date: 26/10/2015 version 1

Triton TWS-EX100GM

Type T in accordance with EN 13967:2012
AVCP System 2+

Triton TWS-EX100GM is a self-adhesive sheet membrane designed as a waterproofing membrane that will also prevent the ingress of CO₂, methane and radon gas when used in the construction of buildings and dwellings.

Essential characteristics	Performance
Reaction to fire	F
Watertightness	Pass
Durability:	
Watertightness after artificial ageing	Pass
Watertightness after exposure to chemicals	Pass
Dangerous substances	NPD

The performance of the product identified is in conformity with the declared performance above. This declaration of performance is issued under the sole responsibility of the manufacturer. Signed for and on behalf of the manufacturer by:

Name and function	Place and date of issue	Signature
Mr Roger Parker Factory Manager	Crayford, UK 26/10/2015	

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TWS-EX100 and TWS-EX100GM waterproofing membranes

1. GENERAL PRINCIPLES

- 1.1 PLEASE ENSURE THAT ALL PERSONS INVOLVED WITH THE APPLICATION OF THE MEMBRANES HAVE STUDIED THE PRODUCT DATA SHEETS PRIOR TO THE INSTALLATION.
- 1.2 The substrate should be sound, smooth, clean, dry and free from sharp edges. Uneven surfaces MUST be made good, remove all loose material, dust and any other contaminants and make good any surface damage with Triton Fillet Seal or Triton Repair Mortar to provide a smooth, even surface prior to the application of TWS-EX Primer/ TWS-EX Primer LT and TWS-EX100/TWS-EX100GM.
- 1.3 Application should not be carried out under wet conditions or on to damp substrates. Note that condensation can occur on a cold substrate even in dry conditions. Ensure all previously applied coatings are compatible and are fully cured. Certain coatings may not require priming, contact Triton's technical team if in any doubt.
- 1.4 When bonding the membrane to the surface, care should be taken to avoid forming air pockets beneath the membrane. This can be achieved by applying pressure from the centre towards the edges.
- 1.5 Overlaps between roll sides and ends should be at least according to the minimum specification.
- 1.6 All overlap joints must be secure and fully bonded. A useful tool to assist this operation is a hand-held roller for vertical application and a foot roller for horizontal application.
- 1.7 End of roll overlaps of adjacent lengths should be staggered to avoid them being side by side on adjoining rolls, causing a four fold overlap.

2. SITE PREPARATION

- 2.1 Prime after general cleaning. Priming will bind any remaining surface dust and will help stabilise a friable and powdery surface.
- 2.2 All vertical and steeply sloping surfaces must be primed using TWS Primer. On horizontal surfaces, where the membrane is beneath a slab, priming is not essential, but the adhesion to the substrate will be improved if the substrate is primed. Primer should not be applied on to the membrane and it is not necessary for overlap jointing. Only prime an area that can be covered with the membrane during the working day. Application of the membrane should commence as soon as the primer is dry.
- 2.3 Fillets should be installed when taking the membrane through acute internal angles to avoid the membrane bridging the surfaces and forming voids beneath the membrane. See typical detail drawings overleaf.

3. MEMBRANE APPLICATION

Horizontal Surfaces

- 3.1 Application of the membrane should be carried out by two applicators. Mark a straight line on the substrate using a chalk line to mark the position of the first roll.
- 3.2 Align the roll alongside this line at the chosen starting position and unroll 1.5 metres of the membrane.
- 3.3 Lift the end of the membrane and peel back about 500mm of the release paper. Fold this underneath the roll.
- 3.4 Apply the membrane to the surface by aligning it with the chalk line and bond the exposed self adhesive compound to the substrate using firm pressure, applied to the centre and smoothing towards the edges.
- 3.5 Push the roll back to rewind it until the loose end of the release paper can be pulled away from underneath.
- 3.6 Take up the release paper, preferably winding this onto a wooden rod, until it is at a comfortable angle for the applicator.

- 3.7 Walk slowly backwards, applying an even strain to the release paper, which should now be wound up onto the wooden rod. Ensure that membrane is aligned along the line as the application proceeds.
- 3.8 Apply firm pressure on to the surface of the membrane to ensure good adhesion to the substrate and to avoid trapping air underneath. Use a broom to smooth the membrane down, working from the centre outwards. Avoid puncturing the membrane, the use of soft soled footwear is recommended.
- 3.9 Once the first roll has been applied, the next roll should then be positioned. Overlap this as specified, with the end of the first roll to form an endlap joint and bond about 500mm to the substrate. It is important to ensure that the endlap dimensions are in accordance with those specified and that the ends of the rolls are staggered.
- 3.10 Once the first width of membrane has been applied commence working on the width alongside this.
- 3.11 The application of this roll is similar to that previously described, except that this roll is positioned alongside the first roll to give the minimum overlap for side laps.
- 3.12 In addition to making a good bond with the substrate, ensure a watertight joint across and along the whole of the sidelap by pressing down on the overlap joint using a hand-held roller or foot roller. Large horizontal areas should be pressed firmly down with a suitably cushioned water filled roller.

4. MEMBRANE APPLICATION

Vertical Surfaces

- 4.1 Start by securing the end of the membrane at the top of the vertical surface. The precise method will depend on site conditions, including the height of the surface, accessibility and the construction detail. The top of the vertical membrane should be linked to any other waterproofing which may exist or to be installed.
- 4.2 It may be necessary to mechanically fix the membrane at the top by either “chasing” the top edge into the substrate or by nailing a wooden batten across its width.
- 4.3 Position the roll at the top of the vertical surface and unwind about one metre.
- 4.4 Peel back the first 500mm of the release paper, fold it down and then press the exposed self-adhesive compound onto the previously primed surface to achieve a strong bond.
- 4.5 Unwind and lower the roll of membrane towards the ground until the sheet is hanging vertically against the surface.
- 4.6 Take hold of the release paper and slowly but firmly pull it downwards. As the release paper is peeled away the membrane should be pressed against the surface, working from the centre outwards to remove any trapped air.
- 4.7 Once the first sheet of membrane has been applied the next sheet can be applied taking care to detail the vertical joints as specified.
- 4.8 On completion, the membrane needs to be protected from damage. Protection boards can be used on vertical surfaces to prevent damage from backfilling. Horizontal surfaces can be protected by insulation laid over or a floor screed.

5. ANCILLARIES

TWS-EX Primer: Applied to the prepared substrate to ensure a complete bond for TWS-EX100 or TWS-EX100GM waterproofing membranes.

TWS-EX Primer LT (low temperature): A fast drying primer which can be applied to damp or slightly green concrete.

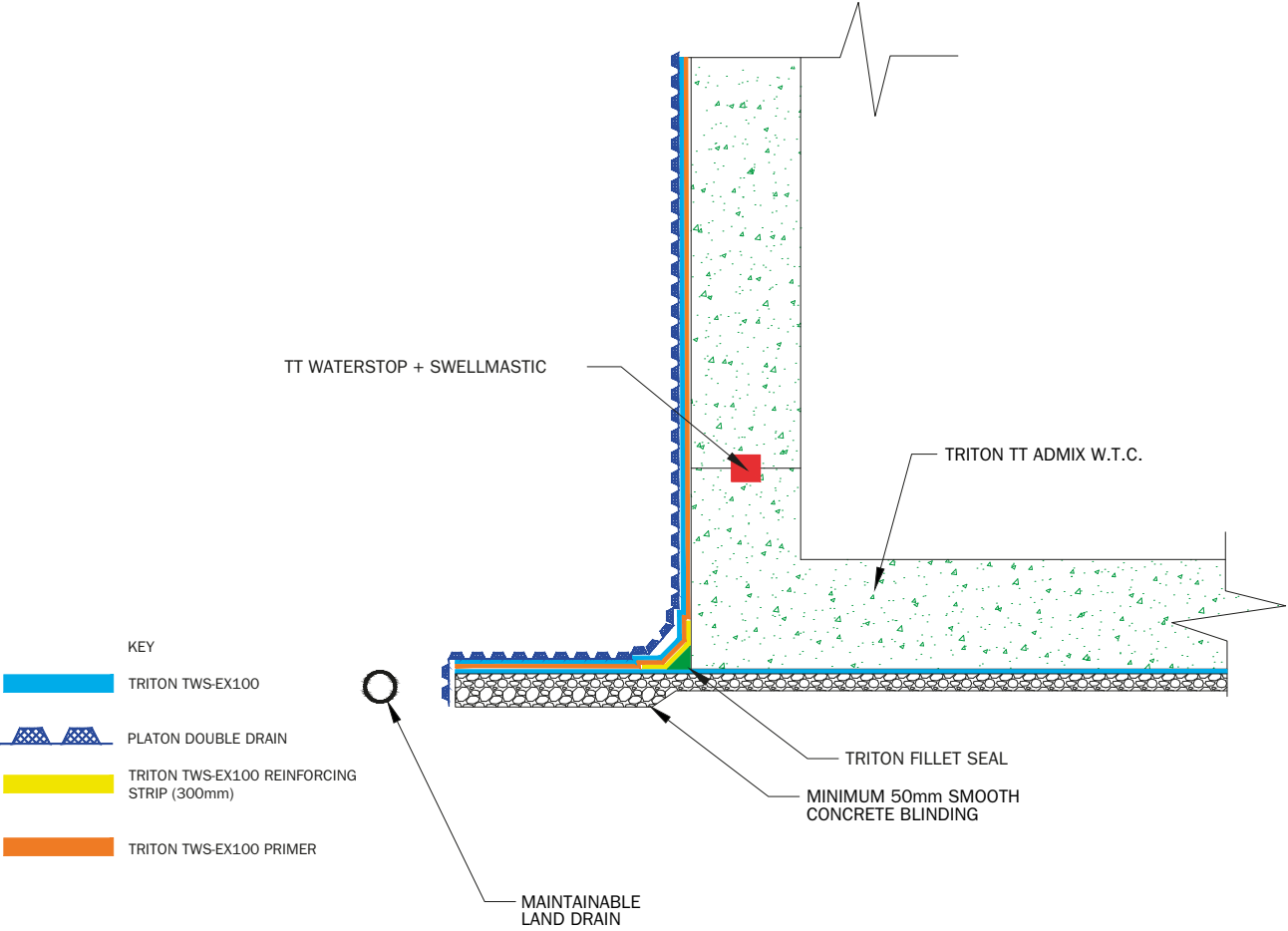
TWS-EX Reinforcing Tape: Strong tape used to provide reinforcement for TWS-EX100 or TWS-EX100GM membranes at edge and corner details.

Triton Fillet Seal: A cement based, polymer modified product for use when installing corner fillet joints.

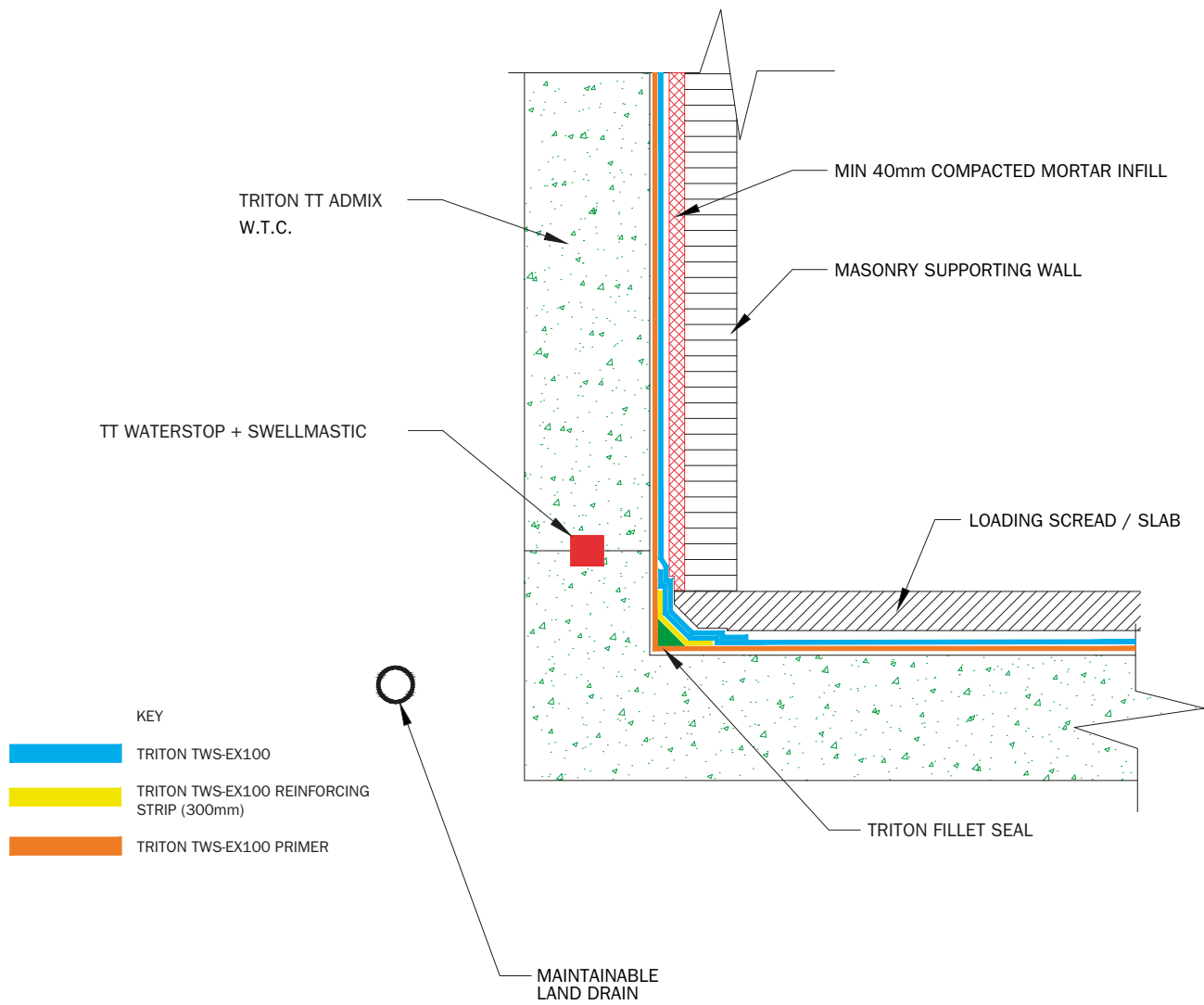
Triton Repair Mortar: A modified cement based repair mortar for concrete, render and screeds for use to provide an even, smooth substrate surface prior to the application of TWS-EX100 or TWS-EX100GM membranes.

6. TYPICAL DRAWINGS

TYPICAL TWS-EX100 EXTERNAL
WATER PROOFING DETAIL

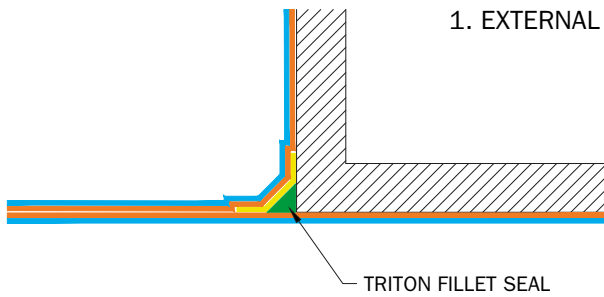


TRITON TWS-EX100 TYPICAL INTERNAL
WATERPROOFING DETAIL

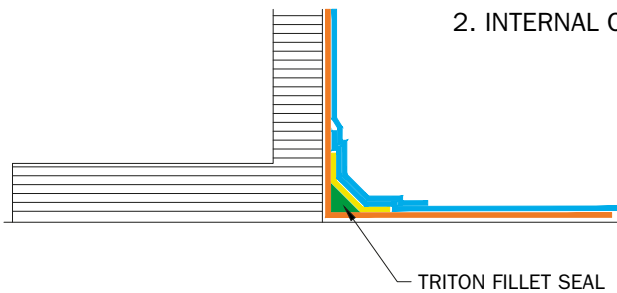


TYPICAL TWS-EX100 CORNER DETAILING

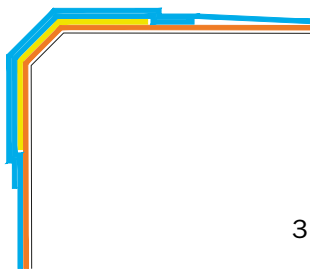
1. EXTERNAL CONTINUITY






2. INTERNAL CORNER



3. EXTERNAL CORNER



KEY

-  TRITON TWS-EX100
-  TRITON TWS-EX100 REINFORCING STRIP
-  TRITON TWS-EX100 PRIMER

Triton Contact Details:

Triton Systems Ltd.
Units 3 – 5 Crayford Commercial Centre, Greyhound Way, Crayford, Kent DA1 4HF

Tel: 01322 318 830
Fax: 01322 524 017
Email: info@tritonsystems.co.uk

www.tritonsystems.co.uk



Triton TWS-EX Primer

Triton TWS-EX Primer is designed to be used in conjunction with Triton TWS-EX100 and Triton TWS-EX100GM membranes in order to consolidate the substrate and ensure complete bond development.

Supplied as a single pack, brush applied liquid coating.

Coverage – 8m²/L.

Technical Data

Type	Bitumen solution
Viscosity	500 cP
Solids content	48%
Flash point	>39°C
Wet film thickness	90 – 110 microns
Dry film thickness	45 – 60 microns
Specific gravity	0.92
Packing	Supplied in 5L and 25L drums

Triton TWS-EX Primer LT (low temperature)

Triton TWS-EX Primer LT is a fast drying primer designed to be used in conjunction with Triton TWS-EX100 and Triton TWS-EX100GM membranes in order to consolidate the substrate and ensure complete bond development.

Classed as moisture tolerant, Triton TWS-EX Primer LT can be applied to damp or slightly green concrete.

Coverage – 8m²/L.

Supplied as a single pack, brush applied liquid coating.

Technical Data

Type	Aromatic solvent/Bitumen solution
Solids content	48%
Specific gravity	0.92
Packing	Supplied in 5L and 25L drums

Triton Contact Details:

Triton Systems Ltd.

Units 3 – 5 Crayford Commercial Centre, Greyhound Way, Crayford, Kent DA1 4HF

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Triton Systems

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Greyhound Way, Crayford, Kent. DA1 4HF

Telephone: **01322 318830**

Fax: **01322 524017**

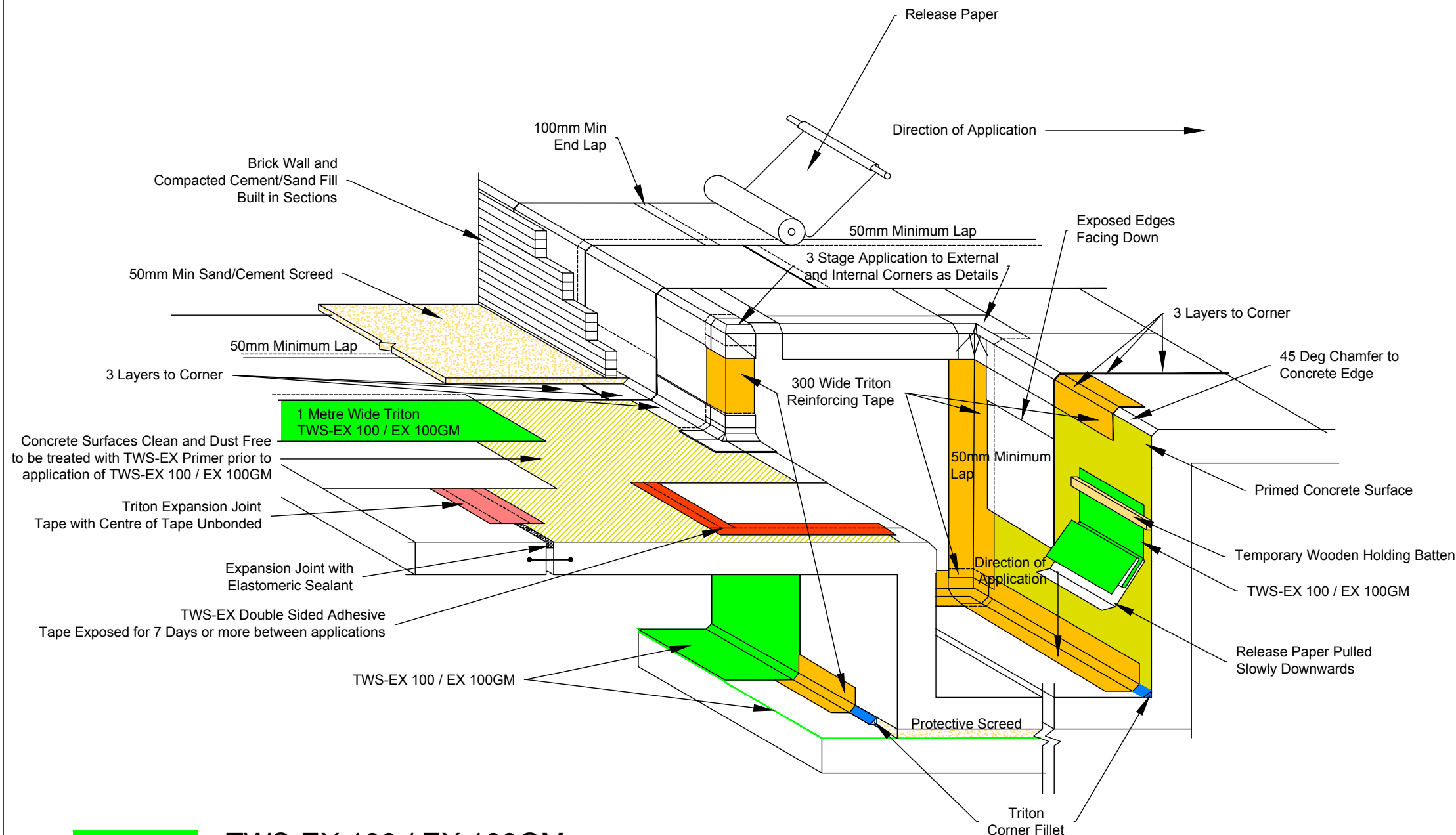
Email: **info@tritonsystems.co.uk**







Web: **www.tritonsystems.co.uk**

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ASSISTANCE CONTACT **TRITON TECHNICAL** ON THE TELEPHONE
NUMBER ABOVE.



-  TWS-EX 100 / EX 100GM
-  TWS-EX Reinforcing Tape 300mm
-  Triton Fillet Seal
-  TWS-EX Expansion Joint Tape
-  TWS-EX Primer
-  TWS-EX Double Sided Adhesive Tape

REV.	MOD. BY	DATE	CHK. BY	APP. BY
Alterations				
TITLE: GENERAL APPLICATION DIAGRAM				
DRG. No. GAD.001				REV 1
DRAWN	TGL	System Files: GAD001.pdf GAD001.dwg		
DATE	04th November 2015			
SCALE (A3)	Not To Scale			
CHECKED				
APPROVED				



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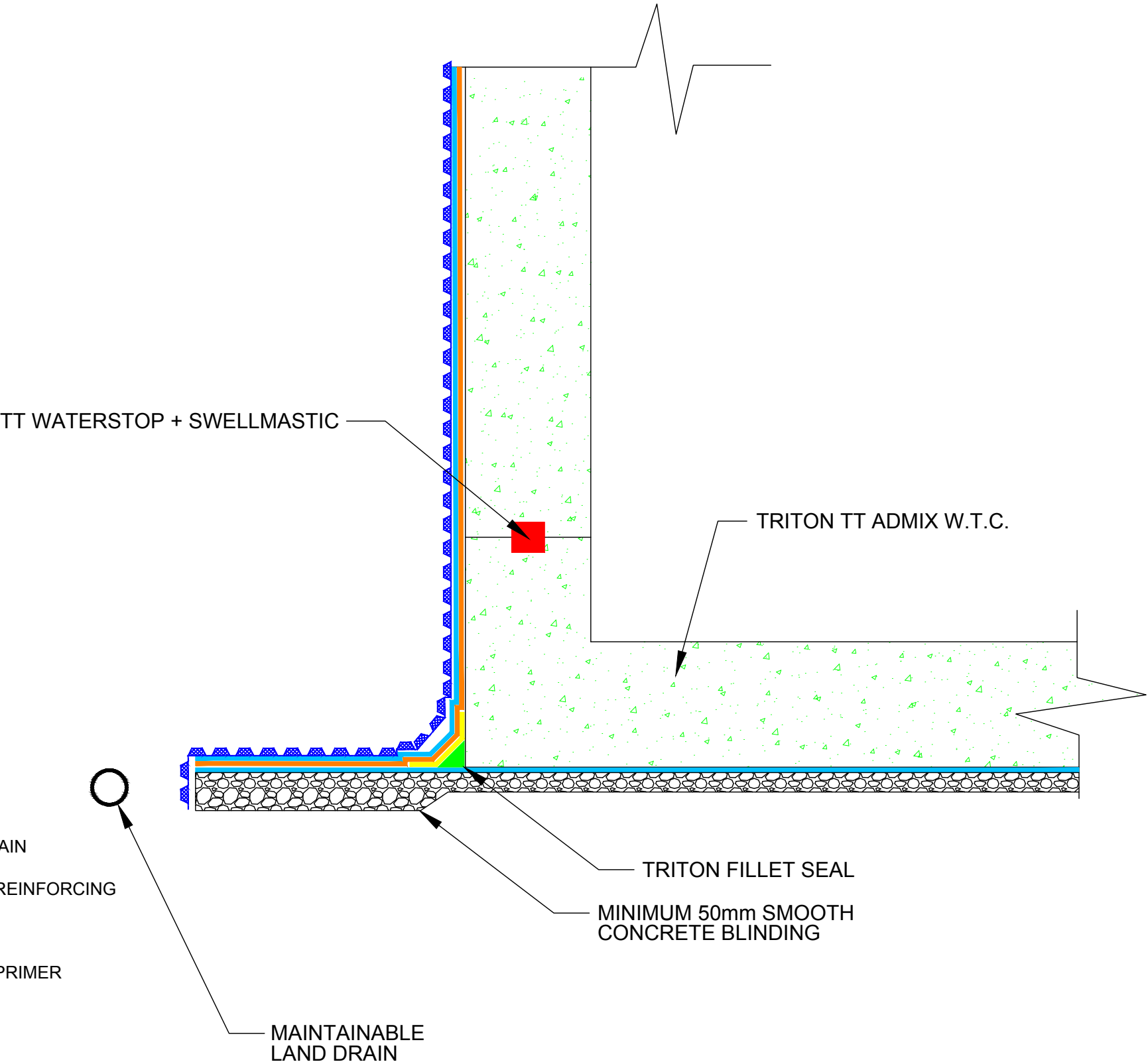
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NUMBER ABOVE.

REV.		DATE
Alterations		
TITLE: TYPICAL TWS-EXP100 EXTERNAL WATER PROOFING DETAIL		
DRG. No. TWS - 001.1		REV A
DRAWN	TGL	System Files: TWS-001-1(A).pdf TWS-001-1(A).dwg
DATE	OCTOBER 2015	
SCALE (A3)	Not To Scale	
CHECKED		
APPROVED		



KEY

- TRITON TWS-EX100
- PLATON DOUBLE DRAIN
- TRITON TWS-EX100 REINFORCING STRIP (300mm)
- TRITON TWS-EX100 PRIMER



www.tritonsystems.co.uk

Triton Systems

Units 3 - 5 Crayford Commercial Centre
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Fax: **01322 524017**

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Web: **www.tritonsystems.co.uk**

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ASSISTANCE CONTACT **TRITON TECHNICAL** ON THE TELEPHONE
NUMBER ABOVE.

REV.

DATE

Alterations

TITLE:

TYPICAL TWS-EXP100 INTERNAL
WATER PROOFING DETAIL

DRG. No.

TWS - 002.1

REV
A

DRAWN

TGL

DATE

OCTOBER 2015

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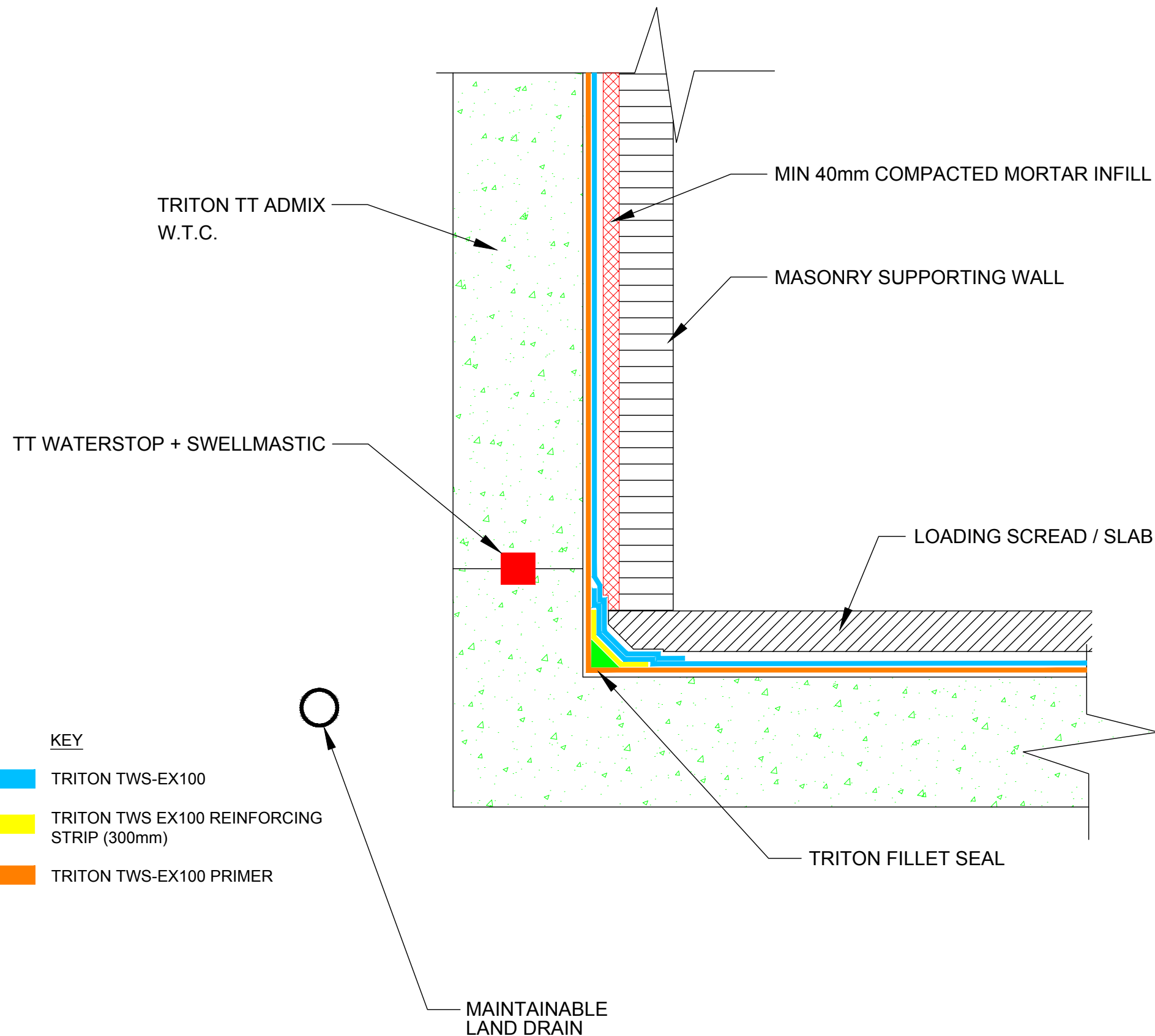
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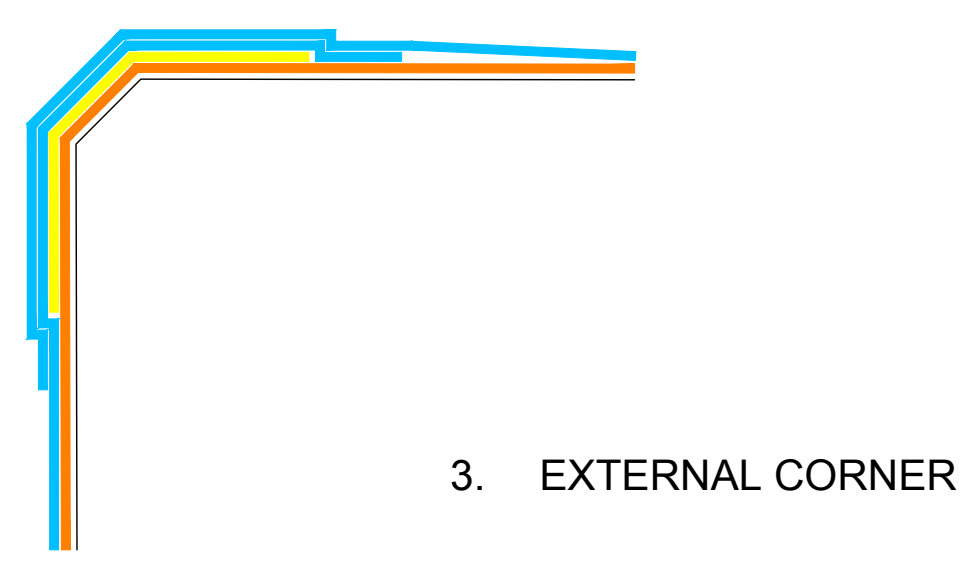
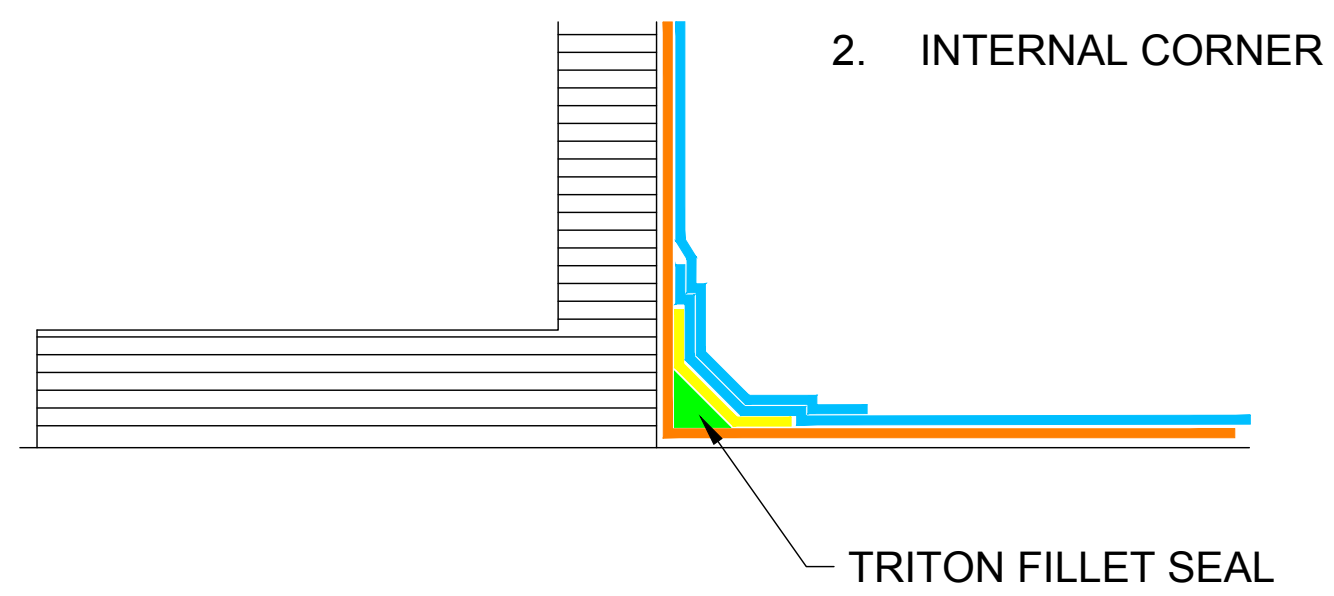
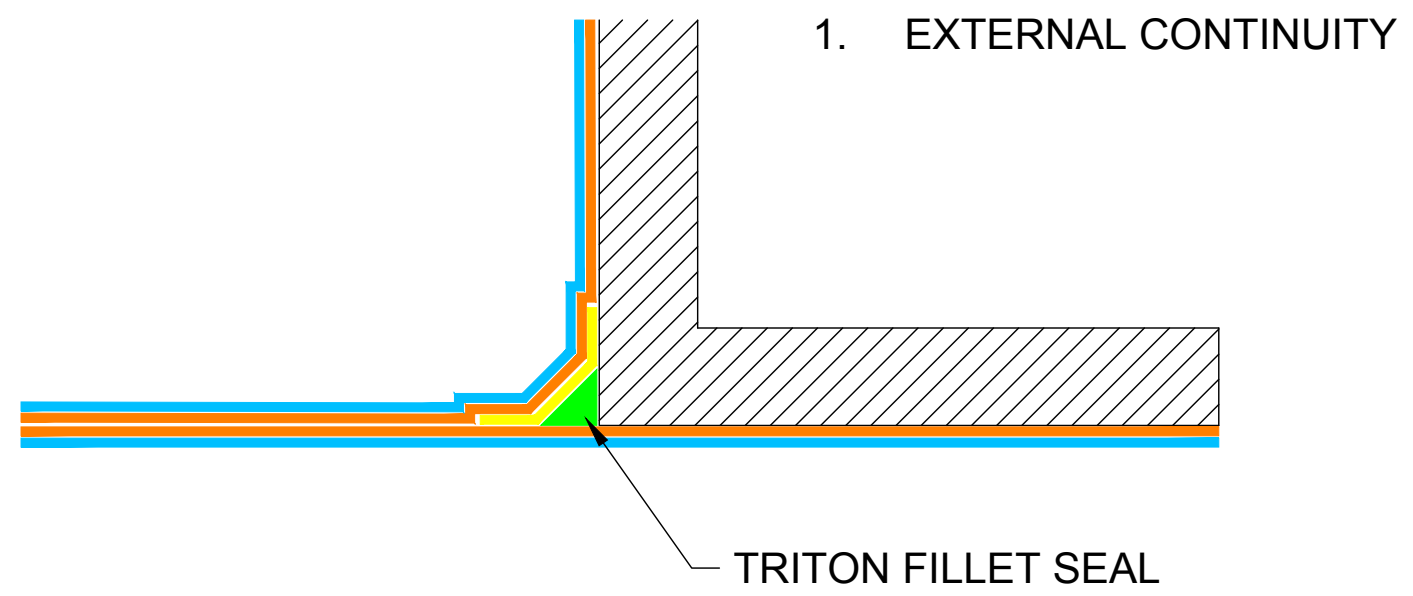
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APPROVED

System
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TWS-002-1(A).dwg





- KEY
- TRITON TWS-EX100
 - TRITON TWS-EX100 REINFORCING STRIP
 - TRITON TWS-EX100 PRIMER



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 NUMBER ABOVE.

REV.		DATE
Alterations		
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DRAWN	TGL	System Files: TWS-003-1(A).pdf TWS-003-1(A).dwg
DATE	OCTOBER 2015	
SCALE (A3)	Not To Scale	
CHECKED		
APPROVED		

TRITON SYSTEMS:

Tel: 01322 318830

J40 FLEXIBLE SHEET TANKING / DAMP PROOFING

To be read in conjunction with preliminaries / General conditions.

TYPES OF TANKING / DAMP PROOFING

190 SELF ADHESIVE BITUMEN DAMP PROOFING/TANKING

- Substrate:.....
- Concrete blinded hardcore.
- Primer: Required to vertical or inclined surfaces – As Clause 335.
- Manufacturer: Triton Systems, 3-5 Crayford Commercial Centre, Greyhound Way, Crayford. DA1 4HF.
- Tel: 01322 318830. Fax: 01322 524017.
- Email: info@tritonsystems.co.uk. Web: www.tritonsystems.co.uk.
-
- Product reference: Triton TWS-EX100.
- Number of layers: One
- Thickness: 1.5mm
- Bonding: Full. Smooth out to exclude air.
- Joints:
- Surfaces to be joined: Clean and dry beyond full width of joint.
- Laps: (minimum) 50mm, roll has selvedge for sealing joints.
- Sealing: Roll to fully adhere.
- Accessories: None required.

WORKMANSHIP

310 WORKMANSHIP GENERALLY

- Condition of substrate:
- Clean and even textured, free from voids and sharp protrusions.
- Moisture content: compatible with damp proofing / tanking.
- Air and surface temperature: Do not apply sheets if below minimum recommended by sheet manufacturer.
- Condition of membrane at completion:
- Neat, smooth and fully supported, dressed well into abutments and around intrusions.
- Completely impervious and continuous.
- Undamaged. Prevent puncturing during following work.
- Permanent overlying construction: Cover membrane as soon as possible.

320 INSPECTION

- Give notice: Before covering any part of membrane with overlying construction.

335 PRIMERS

- Manufacturer: Triton Systems, 3-5 Crayford Commercial Centre, Crayford, Kent. DA1 4HF.
- Tel: 01322 318830. Fax: 01322 524017
- E-mail: info@tritonsystems.co.uk Web: www.tritonsystems.co.uk
- Product reference: TWS-EX Primer, 5lt and 25lt.
- Coverage per coat (minimum): 8m²/lt.
- Curing: Allow to dry thoroughly before covering.

305A ANGLES IN BONDED DAMP PROOF MEMBRANE/TANKING

- Fit internal angles with a sand/cement fillet, not less than 40mm x 40mm, unless noted otherwise.
- Reinforcing strip to all angles:
- Material: As damp proofing/tanking.
- Width (minimum): 300mm.
- Timing: Apply before main sheeting.
- Dressing of main sheeting onto adjacent surfaces (minimum): 100mm.

360 JUNCTIONS WITH PROJECTING DPC's / CAVITY TRAYS

- Adjoining surfaces: Clean and dry.
- Dpc's / cavity trays: Lap and fully bond/seal with sheeting.
- Laps (minimum): 75mm.
- Bonding/Sealing: Triton TWS-EX100 x 150mm wide.

370A PIPES, DUCTS, CABLES, ETC

- Where these pass through sheeting, make junctions completely impervious using Triton TWS-EX100 in accordance with the data sheet for the product.

380 PROTECTION BOARDS FOR DAMP PROOFING / TANKING

- Manufacturer: Triton Systems, 3-5 Crayford Commercial Centre, Crayford, Kent. DA1 4HF.
- Tel: 01322 318830. Fax: 01322 524017.
- E-mail: info@tritonsystems.co.uk Web: www.tritonsystems.co.uk
- Product reference: Platon Double Drain.
- Thickness: 7mm.
- Application: Membrane surface clean and free from contaminants.
- Fixing: Platon Cramps at top edge, 250mm centres.
- Joints: Overlap vertical joints by 500mm.
- Contact with membrane: Secure, full and continuous.

TRITON SYSTEMS:

Tel: 01322 318830

J40 FLEXIBLE SHEET TANKING / DAMP PROOFING

To be read in conjunction with preliminaries / General conditions.

TYPES OF TANKING / DAMP PROOFING

190 SELF ADHESIVE BITUMEN GAS RETARDANT DAMP PROOFING/TANKING

- Substrate:
- Concrete blinded hardcore.
- Primer: Required to vertical or inclined surfaces – As Clause 335.
- Manufacturer: Triton Systems, 3-5 Crayford Commercial Centre, Greyhound Way, Crayford. DA1 4HF.
- Tel: 01322 318830. Fax: 01322 524017.
- Email: info@tritonsystems.co.uk. Web: www.tritonsystems.co.uk.
-
- Product reference: Triton TWS-EX100GM.
- Number of layers: One
- Thickness: 1.5mm
- Bonding: Full. Smooth out to exclude air.
- Joints:
- Surfaces to be joined: Clean and dry beyond full width of joint.
- Laps: (minimum) 50mm, roll has selvedge for sealing joints.
- Sealing: Roll to fully adhere.
- Accessories: None required.

WORKMANSHIP

310 WORKMANSHIP GENERALLY

- Condition of substrate:
- Clean and even textured, free from voids and sharp protrusions.
- Moisture content: compatible with damp proofing / tanking.
- Air and surface temperature: Do not apply sheets if below minimum recommended by sheet manufacturer.
- Condition of membrane at completion:
- Neat, smooth and fully supported, dressed well into abutments and around intrusions.
- Completely impervious and continuous.
- Undamaged. Prevent puncturing during following work.
- Permanent overlying construction: Cover membrane as soon as possible.

320 INSPECTION

- Give notice: Before covering any part of membrane with overlying construction.

335 PRIMERS

- Manufacturer: Triton Systems, 3-5 Crayford Commercial Centre, Crayford, Kent. DA1 4HF.
- Tel: 01322 318830. Fax: 01322 524017
- E-mail: info@tritonsystems.co.uk Web: www.tritonsystems.co.uk
- Product reference: TWS-EX Primer, 5lt and 25lt.
- Coverage per coat (minimum): 8m²/lt.
- Curing: Allow to dry thoroughly before covering.

305A ANGLES IN BONDED DAMP PROOF MEMBRANE/TANKING

- Fit internal angles with a sand/cement fillet, not less than 40mm x 40mm, unless noted otherwise.
- Reinforcing strip to all angles:
- Material: As damp proofing/tanking.
- Width (minimum): 300mm.
- Timing: Apply before main sheeting.
- Dressing of main sheeting onto adjacent surfaces (minimum): 100mm.

360 JUNCTIONS WITH PROJECTING DPC's / CAVITY TRAYS

- Adjoining surfaces: Clean and dry.
- Dpc's / cavity trays: Lap and fully bond/seal with sheeting.
- Laps (minimum): 75mm.
- Bonding/Sealing: Triton TWS-EX100 x 150mm wide.

370A PIPES, DUCTS, CABLES, ETC

- Where these pass through sheeting, make junctions completely impervious using Triton TWS-EX100 in accordance with the data sheet for the product.

380 PROTECTION BOARDS FOR DAMP PROOFING / TANKING

- Manufacturer: Triton Systems, 3-5 Crayford Commercial Centre, Crayford, Kent. DA1 4HF.
- Tel: 01322 318830. Fax: 01322 524017.
- E-mail: info@tritonsystems.co.uk Web: www.tritonsystems.co.uk
- Product reference: Platon Double Drain.
- Thickness: 7mm.
- Application: Membrane surface clean and free from contaminants.
- Fixing: Platon Cramps at top edge, 250mm centres.
- Joints: Overlap vertical joints by 500mm.
- Contact with membrane: Secure, full and continuous.