Viking
Torch-On

Applicator handbook

Roofspec
Viking

Taking care of detail

Introduction

In addition to product and design quality, installation plays a significant role in the performance of a membrane system.

In recognition of this, Viking Roofspec has developed this booklet to provide installers with a quick and easy guide to product information and installation requirements in order to comply with Viking's specification(s).

The purpose of this booklet is to provide the installer with a condensed version of details and instructions in the field.

Contents

A note about safety

All work should be undertaken in line with current occupational health and safety legislation.

You are responsible for your personal safety and the safety of those around you. Viking Roofspec urges you to take the time to understand your obligations and to plan and undertake your work safely.

Working at Heights

"Roof work should only be undertaken by persons who have the knowledge, experience and resources necessary for the work to be completed safely."

From Guidelines for the provision of facilities and general safety in the Construction Industry to meet the requirements of the HEALTH AND SAFETY IN EMPLOYMENT ACT 1992 & REGULATIONS 1995

(Completion of Unit Standard 15757 (working at heights) is highly recommended for installers of roofing membranes.

Hazardous materials

Some materials used with this system are flammable or toxic. Safety information regarding these can be found in the appropriate Viking Roofspec Material Safety Data Sheets (MSDS), available from www.vikingroofspec.co.nz. Correct personal protective equipment should be used where applicable.

Fire

The use of an open flame will always present the risk of fire or burns to property or people. A fire extinguisher must always be close at hand. If a fire does occur, call 111 and ask for the fire department.

Any building that presents high risk (especially older buildings), a one hour fire watch should be put in place.

First aid kits should have a burn cream for minor burns.

Access to leather welding gloves should be part of the required tools list.

Fire Types And How To Extinguish Them				
Types Of Fire		**Water**	**Co_2**	**Dry Powder**
A	Combustion solids eg. wood, paper, clothing	✓	NO	NO
B	Flammable liquids etc. oil, paint, petrol	NO	✓	✓
C	Electrical Hazards	NO	✓	✓
D	Gases eg. natural gas, acetylene	TURN OFF AT MAIN VALUE		

For more information regarding worksafe requirements, please contact the Department of Labour. Information online is available at: www.worksafe.govt.nz

General cautions and warnings

Material Safety Data Sheets (MSDS) must be on location at all times during the transportation and storage and application of materials.

When loading materials onto the roof, comply with onsite requirement that prevent overloading building structure.

When possible, try to eliminate or minimise construction traffic to completed roof sections.

On phased roofing, provide temporary seals to prevent moisture infiltration.

Materials storage and handling

It is essential the Viking Roofspec Approved Applicator is aware of proper storage of roofing materials. The following are some storage requirements and recommendations for Viking Roofspec products.

1. Adhesives, cleaners, primers and sealants; as well as their fumes, contain petroleum distillers and are extremely flammable. Do not breathe vapours and maintain proper ventilation. Store adhesives, cleaners, primers and sealants away from heat, flame or sparks.
2. Job site storage temperatures in excess of 32° Celsius may affect the shelf life of curable materials e.g. pressure sensitive tapes, adhesives, primers etc.
3. Rotate stocks of adhesive, primers etc. according to shelf life to minimise or eliminate waste.
4. In hot weather, do not leave containers on the roof for prolonged periods. Heat may cause possible combustion.
5. Do not store containers with opened lids due to loss of solvent through flash-off. Open containers must not be placed near intake ventilators.
6. The shelf life of pressure sensitive products can be affected by storage temperatures.

Viking Torch-On product information

Modified bitumen membranes are sheets of bitumen modified with a chemical polymer to alter the physical properties of the bitumen.

Modified roof membranes are composed of reinforcing fabrics, usually polyester, glass fibre or both, that serve as the carrier or reinforcement for the hot modified bitumen, as it is manufactured into a roll. The reinforcement helps to keep the bitumen in place within the sheet. They also provide tensile strength and allow for varying degrees of elongation of the sheet.

All polymer modified sheets are factory coated on one or both sides with modified bitumen. The sheets are surfaced with very fine minerals such as sand, mica, or talc. These serve as release agents and prevent adhesion of the material while in roll form.

Modified bitumen membranes are produced in a variety of thicknesses or weights and a variety of reinforcements. Many smooth-surfaced sheets are used both as base sheets and as interply sheets in multiple-ply modified bitumen systems. Granule surfaced sheets generally serve as cap and flashing sheets.

There are three general types of modified bitumen membranes. These three general types of polymer modifiers give rise to materials that differ in physical characteristics as well as chemical composition:

APP or Atactic Polypropylene is when vestoplast is added to the bitumen. This process called 'phase inversion'. The result is an atactic polypropylene (APP). More commonly known as 'plasticised bitumen', APP membranes have better UV tolerance. The melting point is higher and they have good puncture resistance.

Styrene Butadiene Styrene or SBS is when styrene and bitumen are mixed together allowing the phase inversion process to take place resulting in the new compound to form. More commonly known as 'rubberised bitumen', SBS has some very good qualities such as exceptional elasticity and a low freezing or fracture point. SBS membranes require less heat than APP membranes to apply. SBS membranes can have self healing abilities.

Amorphous Polyalphaolefin or APAO is a more recently developed membrane. The development of virgin polymers: Propylene- Ethylene and Butene resulted in a new polymer compatible with bitumen blends. Sometimes referred as a 'hybrid membrane', APAO membrane combines the best characteristics of both APP and SBS bitumen. APAO has excellent thermal properties where it is highly-effective in cold weather yet has great heat resistance, puncture resistance and UV stability.

Double-layer membranes

In New Zealand we use two layers of torch on membrane. A base layer with a smooth bitumen finish and a top layer, with a mineral or ceramic chip finish.

"Viking Roofspec membranes have a ceramic chip as this does provide a more uniform finish and does not fade as some natural slates have been known to do.

Product description and general area of application

Viking Gemini APP is used for roofs, under floating decks and gutters in New Zealand's climate Zones 1 & 2.

Gemini APP Torch-On									
Product Code	**Description**	**Colour**	**Thickness**	**Width**	**Length**	**Weight**	**m^3**	**Cold Flexibility**	**Origin**
SEM327	Gemini APP Base Sheet	Black	3mm	1.0m	10m	35kg	0.06	-10ºC	Italy
SEM345	Gemini APP Ceramic Cap Sheet	Black	4mm	1.0m	10m	45kg	0.06	-10ºC	Italy
SEM348	Gemini APP Ceramic Cap Sheet	Grey	4mm	1.0m	10m	45kg	0.06	-10ºC	Italy
Recommended for North Island except Volcanic Plateau (climate zones 1 and 2)									

Viking Lybra SBS is used for roofs, under floating decks and gutters mostly in New Zealand's climate Zone 3.

Lybra SBS Torch-On									
Product Code	**Description**	**Colour**	**Thickness**	**Width**	**Length**	**Weight**	**m^3**	**Cold Flexibility**	**Ori-gin**
SEM227	Lybra SBS Base Sheet	Black	3mm	1.0m	10m	35kg	0.06	-15ºC	Italy
SEM245	Lybra SBS Ceramic Cap Sheet	Black	4mm	1.0m	10m	45kg	0.06	-15ºC	Italy
SEM248	Lybra SBS Ceramic Cap Sheet	Grey	4mm	1.0m	10m	45kg	0.06	-15ºC	Italy
Recommended for South Island and North Island's Volcanic Plateau (climate zone 3)									

Viking Phoenix Super APAO is used for roofs, under floating decks and gutters anywhere in New Zealand and the Pacific Islands.

Phoenix Super APAO Torch-On									
Product Code	**Description**	**Colour**	**Thickness**	**Width**	**Length**	**Weight**	**m^3**	**Cold Flexibility**	**Origin**
SEM127	Phoenix Super APAO Base Sheet	Black	4mm	1.0m	10m	50kg	0.06	-35ºC	Italy
SEM331	Phoenix Galaxy APAO Base Sheet	Black	3mm	1.0m	10m	35kg	0.06	-35º	Italy
SEM145	Phoenix Super APAO Ceramic Cap Sheet	Black	4mm	1.0m	10m	55kg	0.06	-35ºC	Italy
SEM148	Phoenix Super APAO Ceramic Cap Sheet	Grey	4mm	1.0m	10m	55kg	0.06	-35ºC	Italy
Can be used in all climate zones									

Viking Torch-On specifications

SCOPE: This modified bitumen specification consists of the provision and intalling of all the modified bitumen membrane and flashings referred to in the booklet.

CONTRACTORS: The modified bitumen membrane shall be installed by contractors skilled and trained in this work and approved by the manufacturers and distributors of the material selected.

WORKMANSHIP: The whole of the work shall be carried out by skilled and trained tradesmen, using adequate and proper methods in accordance with best trade practices; this specification; and the methods and recommendations as laid down by the manufacturer or distributor in order to comply with specification.

WARRANTY: The contractor shall supply the main contractor when requested, written warranties covering the waterproofing properties of the modified bitumen membrane. It will include making good any defects which are covered by said warranties.

Should the architect/main contractor raise any queries on any aspect of this work, the contractor shall attend a site inspection and if required, the manufacturer or distributer may also be called to attend.

STORAGE: Materials should be stored in an airy location away from direct contact from the sun. The temperature in storage should be in excess of 5ºC.

Substrate preperation checklist – plywood

- [ ] **Roof framing supports at 600mm centres in both directions.** (refer WMAI C.o.P for Torchon Membrane Systems Table 7)
- [ ] **Deck Framing supports at 400mm centres in both directions.** (refer WMAI C.o.P for Torchon Membrane Systems Table 7).
- [ ] **Roofs use 17mm** minimum thickness (CCA H3.2 treated), structural plywood (Do not use tongue & groove plywood)
- [ ] **Decks use 21mm** minimum thickness (CCA H3.2 treated), structural plywood (Do not use tongue & groove plywood)
- [ ] Plywood laid with face grain at right angles to supports. Minimum CD grade with the sanded C face upwards
- [ ] Plywood is to be laid with staggered joins in a brick-bond pattern with a continuous bead of suitable construction adhesive on top of timber supports. Sheet edges to be carefully glued with a continuous bead of suitable construction adhesive (no spot gluing) and tight butt-jointed. Once sheets have been placed together remove any excess adhesive by scraping the joint with a chisel. Ensure joints and sheets are not walked on within two hours of application. When fully cured remove excess and sand off joins
- [ ] Leave a 5mm minimum expansion gap around the perimeter of the plane. The fixing specification allows for a maximum 50m^2 without expansion joints (dependant on design). 5mm expansion joints should be used on areas over 50m^2. **For further information regarding placement of expansion joints for your design, please contact the building designer or Viking Roofspec**
- [ ] Plywood screw-fixed with 10g x 50mm S/S counter-sunk screws at 150mm centres at all sheet edges and 200mm centres through the body of the sheet. All screws to be counter sunk 1-2mm
- [ ] Provide minimum 20mm timber fillets at the base of all upstands. **Viking Roofspec recommends using (IMT603) Bitumen Fillets**
- [ ] Chamfer all external edges with a minimum radius of 5mm
- [ ] **Plywood is to be kept dry at all times during construction.** Blow/torch drying the plywood surface prior to membrane application does not comply. Plywood and framing supports to be at no more than **20% moisture content**

- [ ] For roofs and roof decks over living spaces, all insulated cavities must be ventilated in accordance with E2.3.5. No cavity ventilation is required for a Viking WarmRoof system that meets or exceeds the minimum R-value requirements of the climate zone.
  Consider constructing Cross Ventilation with Timber Castellated battens directly under the ply substrate

- [ ] All outlets and overflows are membrane compatible. Note that TPO membranes cannot be welded to stainless steel scuppers or sumps. Outlets/overflows must have clamped grates

- [ ] Ensure re minimum required falls are met. E2/AS1 2011 states 2° for roofs (-1:30 or 34mm/mt), 1.5° for decks (-1:40 or 25mm/mt) and 0.5° for internal gutters (1:100 or 10mm/mt)

- [ ] Ensure you have ordered the correct membrane, colour and thickness for your project..

Notes:

√ Cover the substrate to keep it dry, ensuring the waterproofing membrane can be installed when needed. Communicate early with your Viking Approved Applicator on the project scheduling to ensure weather exposure is kept to a minimum

√ Correct substrate installation is critical to durability and performance of the membrane

√ Failure to strictly comply with substrate specification may affect product warranty

√ All constructions should comply with the New Zealand Building Code. Contact your local council for further advice

√ Communication between the Applicator and Construction Company will assist to ensure specification is met

√ Information regarding our products, specifications and warranties is available at **www.vikingroofspec.co.nz** If you have a query regarding this substrate specification please call Viking on **0800 729 799**

Substrate preperation checklist – concrete

- [ ] Ensure concrete substrate has been allowed to fully cure - at least 28 days from pour.
- [ ] If the concrete is less than 28 days old and a concrete surface sealer has been used or a rapid curing compound, you must identify the product and verify correct curing has taken place prior to laying.
- [ ] Relative humidity of concrete substrates must be 75% or less before application (this can be verified with the use of a hygrometer). Viking recommends the use of Isolink vented base if moisture levels over 18%.
- [ ] Fill hollows or holes with a cement plaster.
- [ ] Surface to be smooth, clean, dry and free of debris or release agents.
- [ ] Venting installed as required. Contact Viking Roofspec if a venting specification has not been provided.
- [ ] Minimum 20mm plaster or bitumen fillets are required to all 90° corners.
- [ ] All drains and outlets are membrane compatible. Confirm with Viking Roofspec if required.
- [ ] Ensure minimum required falls are met. E2/AS1 2011 states 2° for roofs (-1:30 or 34mm/mt), 1.5° for decks (-1:40 or 25mm/mt) and 0.5° for internal gutters (1:100 or 10mm/mt)
- [ ] Reinforced concrete structures can use 1° or 1:60 fall (refer WMAI C.o.P for Torchon Membrane Systems 4.0.1 Wind Uplift)

Please ensure you have ordered the correct membrane, colour and thickness for your project.

Notes:

- √ ***Cover the substrate to keep it dry, ensuring the waterproofing membrane can be installed when needed. Communicate early with your Viking Approved Applicator on the project scheduling to ensure weather exposure is kept to a minimum. Consider pre–priming with solvent bitumen primer.**
- √ Correct substrate installation is critical to durability and performance of the membrane. Failure to strictly comply with substrate specification may affect the product warranty.
- √ All constructions should comply with the New Zealand Building Code. Contact your local council for further advice.
- √ Communication between the applicator and construction company will assist to ensure this specification is met.

Information regarding our products, specifications and warranties is available at **www.vikingroofspec.co.nz** If you have a query regarding this substrate specification please call Viking on **0800 729 799**.

Membrane application

Tools Required:

- A propane gas roofing torch with a trigger control – complete with gas bottle
- Regulator
- 10 metres of hose
- Small, medium and large nozzle
- A round nosed trowel or spatula
- Sharp knife with hock blades and straight blades
- Measuring tape
- Chalk line
- Seam roller
- Flint or lighter
- Leather gloves and a fire extinguisher

Substrate

Before the roofing contractor begins the application of the Torch–On membrane, he/she should satisfy him/herself that the deck or substrate is in a suitable condition for laying, i.e. all screws countersunk, edges rounded, substrate clean, dry and free from grit, contamination or defects, moisture content checked.

Safety

It is the applicator's responsibility to observe all fire prevention policies and practices, to train, instruct and warn employees on the use of torching equipment.

Double-layer system

A double-layer system is more forgiving over small bumps and surface blemishes than a single layer system.

If laid in the correct manner, lap failure will not result in a leak.

It is also easier to programme the construction work and keep areas dry with a double-layer system.

The system allows the first layer to be installed and left for a period while other trades work over it. However this layer should still be protected even though minor damage will be over laid with the top layer.

This does not mean doors and cladding can be installed before the second layer is completely installed. Nor does it allow strips of second layer installed in door thresholds and behind cladding to be joined at a later stage. This will result in Viking warranties becoming void.

Membrane installation

While new applicator employees will most likely start working with a more experienced installer, it is a requirement to attend the training programme provided by Viking Roofspec. These training courses provide the correct laying procedures required to install Viking Roofspec Torch-On membranes to specification.

STEPS:

1. Prime all substrates with Viking bitumen primer as recommended or approved by the manufacturer. Allow to dry. Drying time is dependant on weather conditions.

   Always start from the lowest point of the roof. This means droppers and scuppers must be installed before the laying can commence.

   Gussets should be installed on all internal and external corners before the first layer is installed.

   When laying the first layer, ensure even pressure is applied to the roll.

   The flame should heat the surface and the roll, allowing a flow of molten bitumen to bond to the surface.

   This process is copied for the application of the second layer.

2. The base sheet is laid with the fall and 90° to the gutter. The second layer remains paralled, but is offset at the middle of the first layer.

3. Laps must have a bleed of bitumen extruding out the side. The top layer will have less, but should be even over the entire lap. This is best achieved with a small seam ball bearing rubber roller.

   The lap of the base sheet should be the same as the selvedge lap of the top layer, usually about 90mm (keeping them the same stops creeping on large jobs).

4. End laps must be 150mm. Do not scrape the ceramic chips off with a hot scrapper. This will lead to lap failure, (trained applicators understand the correct method).

5. Doubles should be laid to all upstands with the membrane forming a lap onto the horizontal surface. For best results, keep to one metre doubles.

6. All pipe penetrations should be held firm. Install under doubles around the pipes. After the top layer is installed place a ply plinth, (edges cut at 45°) around the pipe to form a diamond, so water is diverted around the penetration. Overlay the plinth with membrane.

   (**NB:** The plinth should be positioned so that one of the corners faces the water flow which will divert the water down either side of its point).

Primers and sealers

Product Code	Description	Size
SES299	Torch-on Primer Solvent Coverage is 4m² per litre.	20L

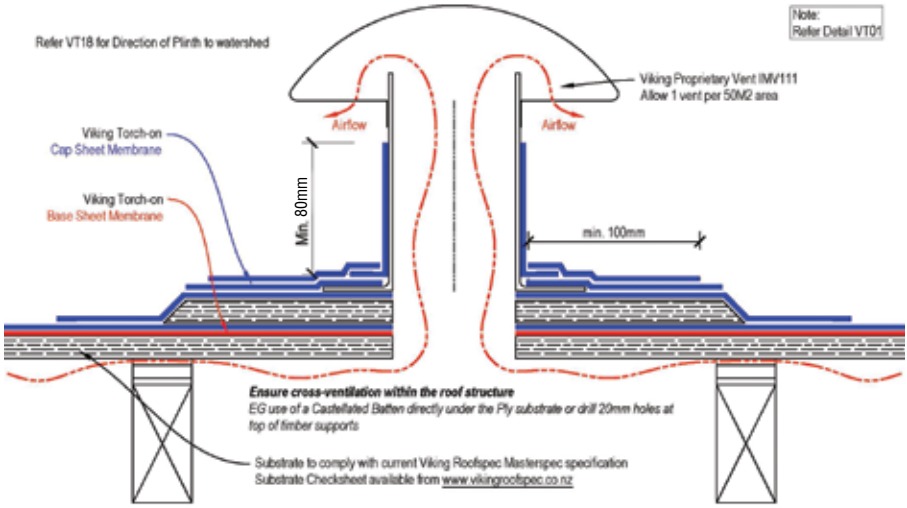
Product Code	Description	Size
SES300	Torch-on Primer Water Coverage is 4m² per litre.	20L

Product Code	Description	Size
SES302	Easy paste	20L
SES303	Easy paste	10L

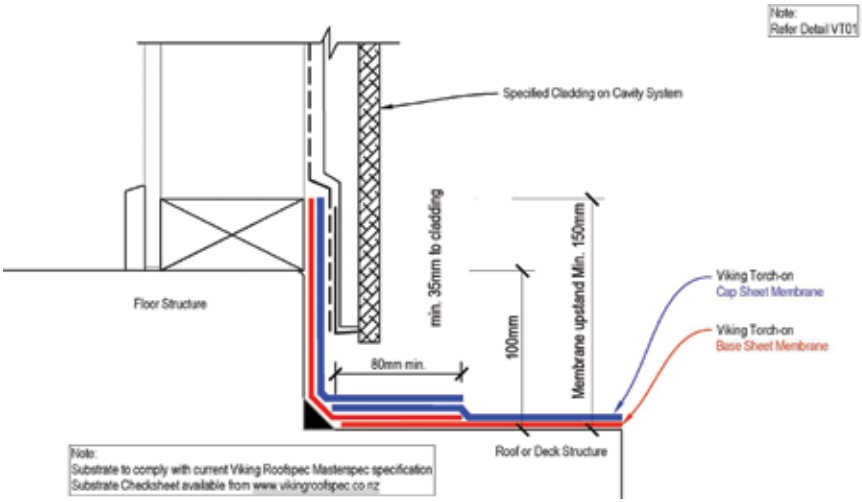
Product Code	Description	Size
SES015	Elastigum	310ml

Standard details

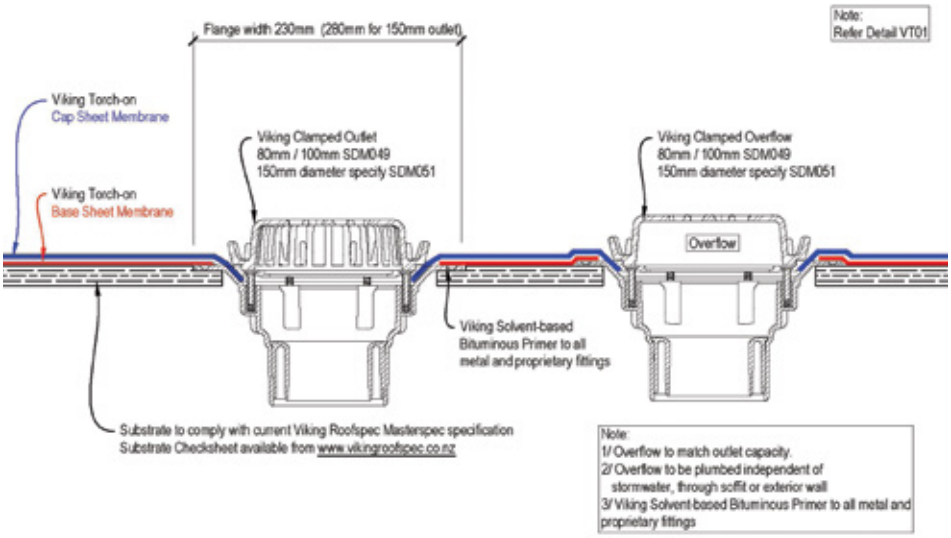
Cavity vent



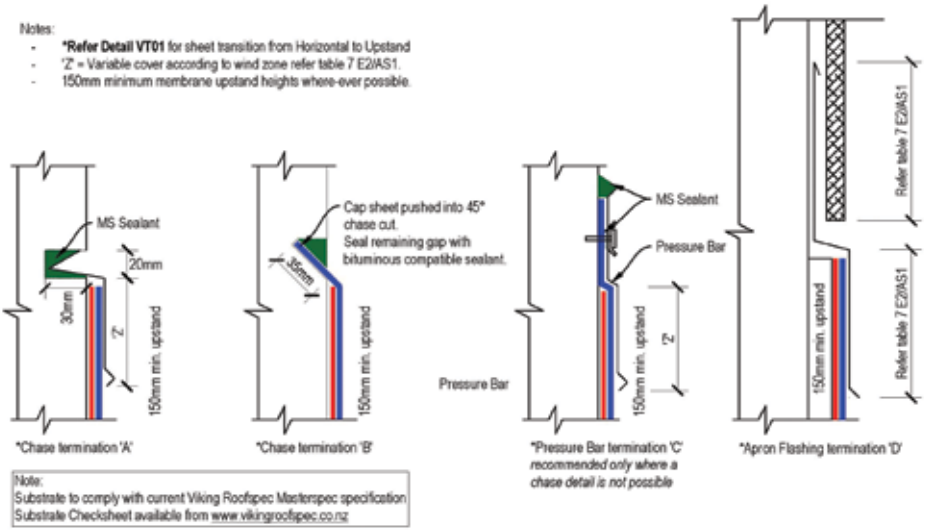
Cavity wall upstand



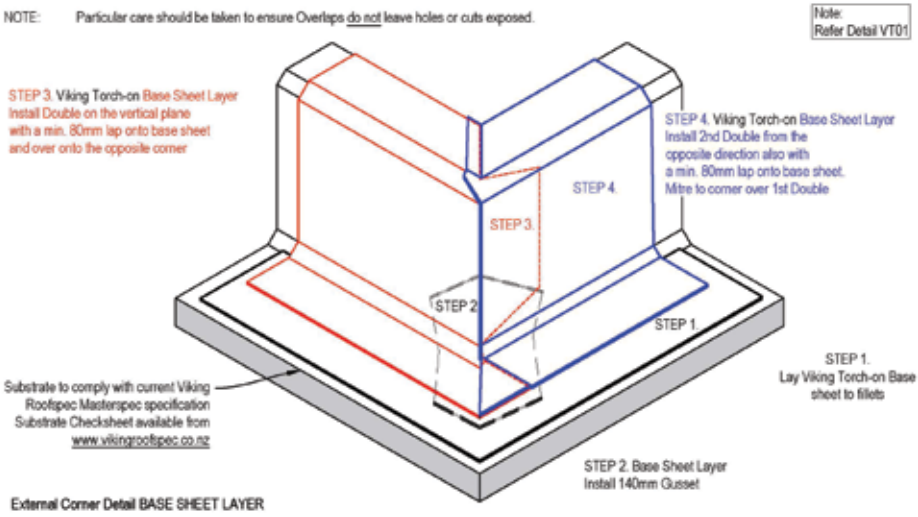
Dropper outlet



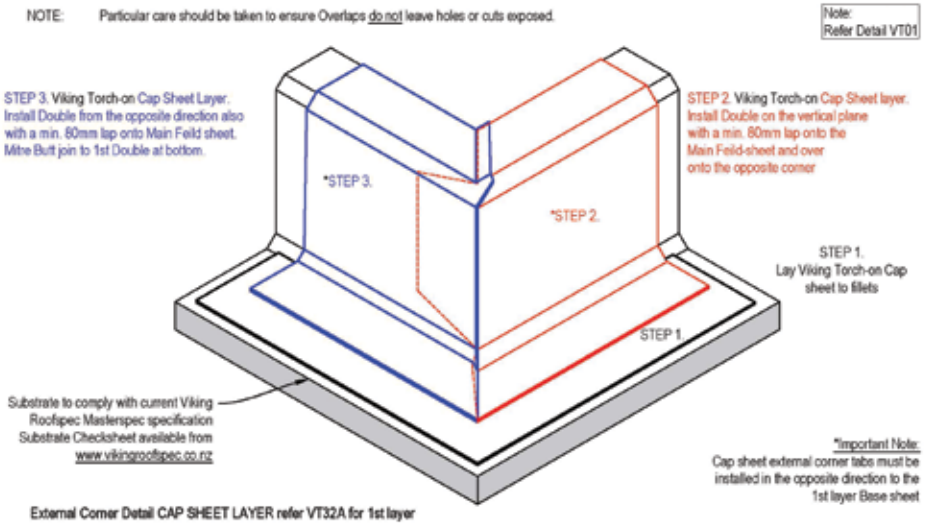
Upstand terminations



External corner detail

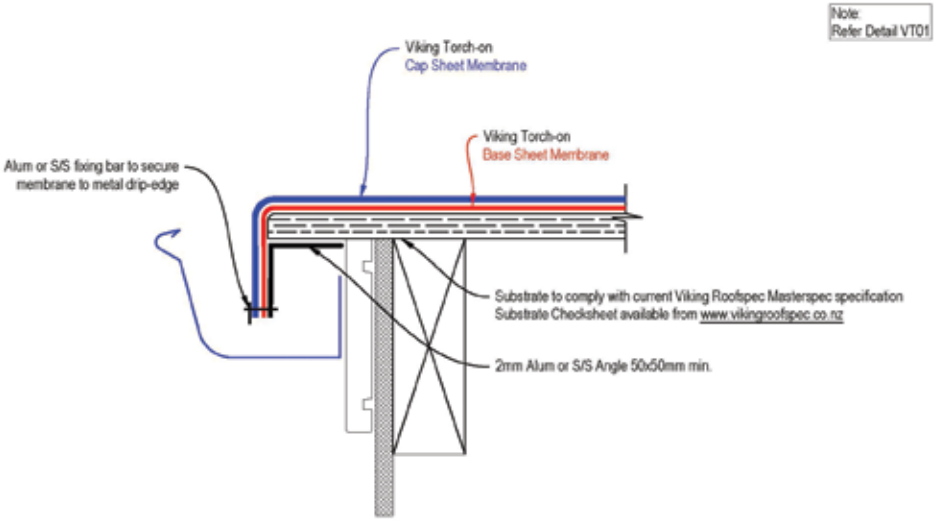


External Corner Detail BASE SHEET LAYER

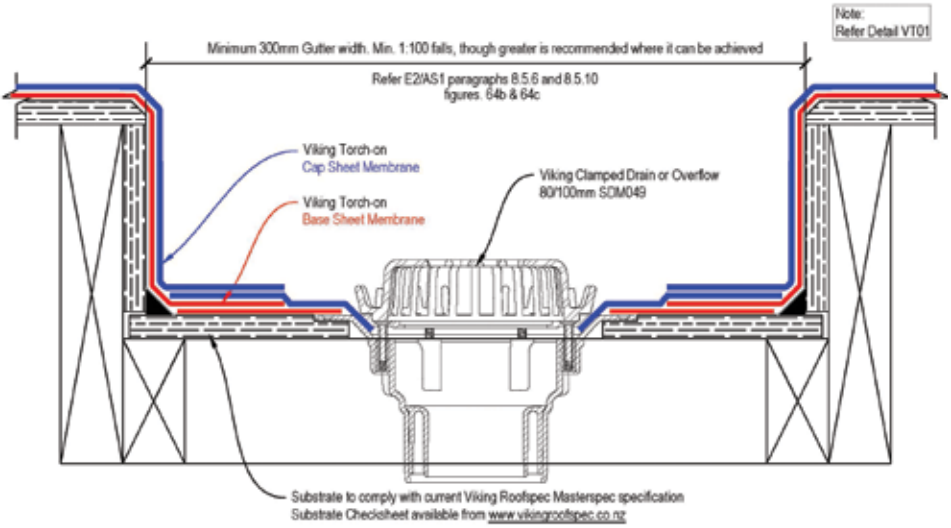


External Corner Detail CAP SHEET LAYER refer VT32A for 1st layer

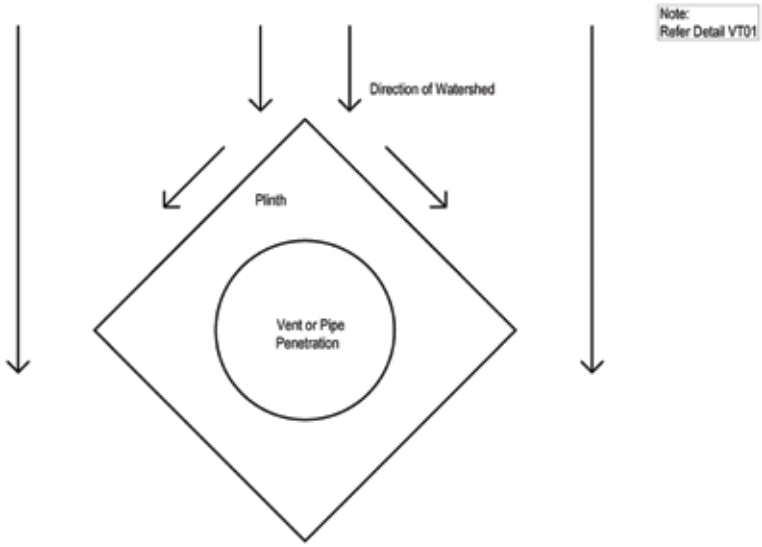
External gutter



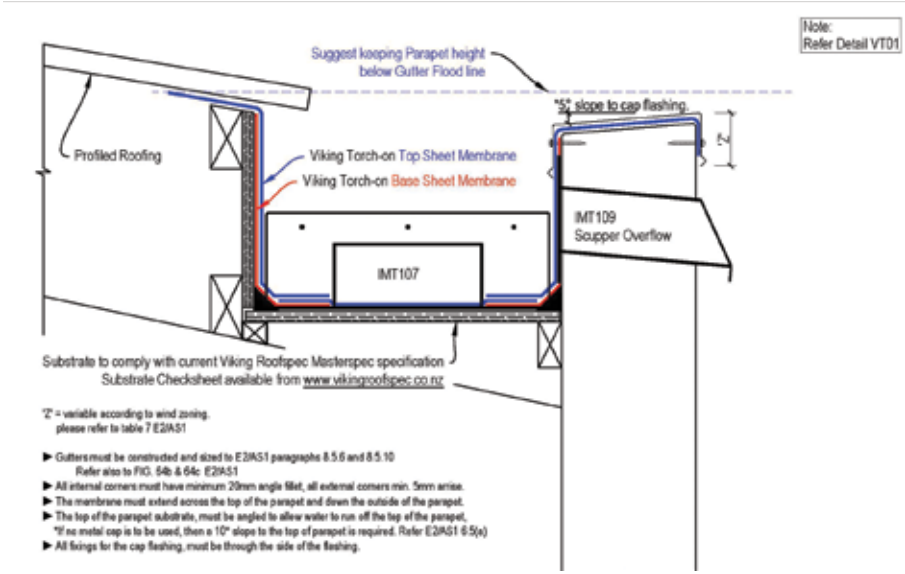
Internal gutter



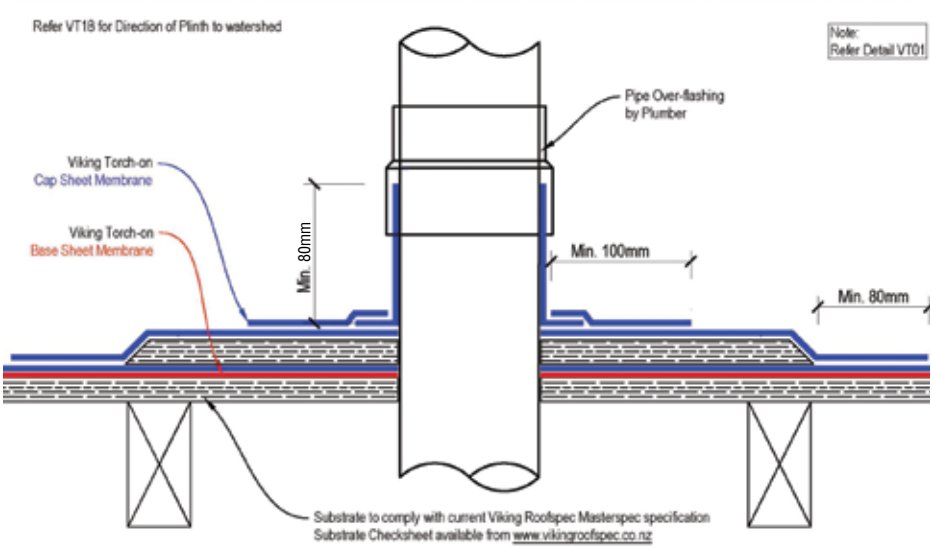
Plinth direction to watershed



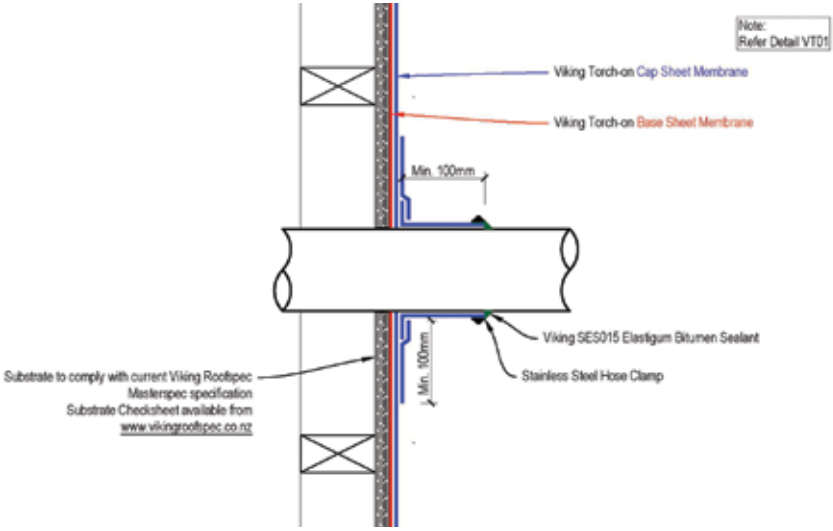
Parapet wall transition



Pipe penetration



Pipe penetration on vertical



Applicator's notes:

Stage 1 :

Torch-On Assessment

1. When you arrive on site, what steps should you take to ensure you are kept safe?

2. On a plywood substrate explain how the ply is laid:

   – At what © are the stainless steel screws installed?

   – Is there a gap between the ply?

3. What other preparation to the substrate is required before laying can commence?

4. Where do you start laying your membrane from?

5. How wide are the head to tail laps? Why are they that measurement?

6. Why don't you take the membrane up the wall in one go?

7. What layer should you look to water test?

   – How deep in the gutters should you water test?

8. What is the difference between an SBS and APP membrane?

9. Name three types of re-enforcing materials used in torch on membranes

10. How should you set out the second layer over the first layer?

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