

# Passive Ventilation and Air Barrier Solutions for Cold Roofs and Walls

Roof and Wall Cavity Moisture Management Design Guide



**FEBRUARY 2024**





DriSpace is a division of TCL Hunt, a New Zealand company whose origin dates back to 1937.

DriSpace offers a range of comprehensive ventilation systems, aimed to resolve the internal moisture problem that plagues New Zealand buildings.

The DriSpace systems are created by combining high vapour permeable DriStud roof and wall underlays, with VENT passive ventilation products and/or Proctor technical membranes. These products are engineered specifically for New Zealand weather conditions and provide a complete solution. All products are sold through building merchants and roll-formers throughout the country.

TCL Hunt has a Quality Management System which includes ISO 9001 certification. That said, there is no finish line in business, so all staff are committed to the process of continuous improvement, relishing the challenge to always provide best practice solutions, with products and services that build trust and maintain customer confidence and loyalty.

## Contents

BENEFITS .....	04
DESIGN CONSIDERATIONS .....	05
SYSTEMS SUMMARY TABLE .....	06
PRODUCTS .....	07
SYSTEMS	
<b>Steel Longrun Vented Roof System:</b> Trussed roof pitch 3° to <15° .....	12
<b>Steel Longrun Vented Roof System:</b> Trussed roof pitch 15° to <30° .....	13
<b>Steel Longrun Vented Roof System:</b> Trussed roof pitch 30° or above .....	14
<b>Steel Longrun Vented Roof System:</b> Trussed mono pitch roof 3° to <15° .....	15
<b>Steel Longrun Vented Roof System:</b> Trussed mono pitch roof 15° or above .....	16
<b>Steel Longrun Vented Roof System:</b> Skillion roof pitch 3° or above .....	17
<b>Steel Longrun Vented Roof System:</b> Skillion mono pitch roof 3° or above .....	18
<b>Steel Longrun Sarked Roof with Drainage Mat:</b> Roof pitch 3° or above .....	19
<b>Pressed Tile Vented Roof System:</b> Trussed roof pitch 15° to <30° .....	20
<b>Pressed Tile Vented Roof System:</b> Trussed roof pitch 30° or above .....	21
<b>FR Flexible Wall Underlay System:</b> .....	22
<b>FR Wall System on Rigid Air Barrier:</b> .....	25
<b>Proctor Wraptite SA Wall System:</b> .....	27
<b>Multi-Unit System:</b> .....	29

## Benefits

### BUILD TIGHT, VENTILATE RIGHT

DriSpace systems consist of DriStud wall and roof underlay and Cool Window Flashing tape, Vent products and Proctor brand specialised construction membranes. The systems aim to achieve 'build tight and ventilate right'.

The systems provide solutions to improve NZ buildings by providing an air barrier envelope but allowing our buildings to breathe again. It is essential that buildings achieve balanced airflow through both the habitable and non-habitable areas before they can start to be considered as a healthy home or a healthy working environment. Using the principle, "If you heat and insulate and don't ventilate, you will condensate". DriSpace systems introduce passive ventilation in the roof space to minimise interstitial condensation.

### BENEFITS TO BUILDING AND HOME OWNERS

- Protection against moisture penetration, whilst restricting air movement.
- Creating healthier and more energy-efficient envelopes
- Vapour permeable and air barrier properties
- Cost effective and high performing system components
- Minimise interstitial condensation and mould growth

### BENEFITS TO BUILDERS

- Cost effective moisture protection system
- Easy and fast to handle and install
- Complies with NZBC requirements
- High performing, strong and durable products
- Wide range of products covering from roof to wall

### BENEFITS TO DESIGNERS

- System specification
- Tested for NZ conditions for water resistance, air barriers and vapour permeability
- CodeMark™ Certified for DriStud product range
- BRANZ appraised for Vent NZ product range
- Complies with AS/NZS 4200 for Proctor product range
- Minimises interstitial condensation and mould growth in the roof cavity

## NZBC Compliance

DRISPACE RESIDENTIAL SYSTEM							
NZBC COMPLIANCE	Wall Underlay		Window Flashing Tape	Fire Retardant Roof Underlay	Roof Underlay	Ventilation	
	DriStud Wall Wrap	Proctor Wraptite SA	DriStud Cool Tape	DriStud FRU38	DriStud RU24	VB20, RV10P, RV10DT, G2500N, G1200N, G1275, G502CL	ProctorPassive HC8 EnkaVent
<b>B1 Structure</b>						B1.3.1, B1.3.2, B1.3.4, B1.3.3 [b], [h] and [j]	
<b>B2 Durability</b>	B2.3.1 [a], B2.3.2 [a]	B2.3.1 [a], B2.3.2 [a]	B2.3.1 [b], B2.3.2 [a]	B2.3.1 [a], B2.3.2 [a]	B2.3.1 [a], B2.3.2 [a]	B.2.3.1 [b], B2.3.2	B.2.3.1 [b], B2.3.2
<b>C3 Fire Affection Areas Beyond the Fire Source</b>	C3.4[c]	C3.4[c]		C3.4[c]			C3.4[c]
<b>E2 External Moisture</b>	E2.3.2, E2.3.7	E2.3.2	E2.3.2, E2.3.7	E2.3.2, E2.3.7	E2.3.2, E2.3.7	E2.3.2, E2.3.5, E2.3.6	E2.3.2
<b>E3 Internal Moisture</b>						E3.2 [c]	E3.2 [c]
<b>F2 Hazardous Building Materials</b>	F2.3.1	F2.3.1	F2.3.1	F2.3.1	F2.3.1	F2.3.1	F2.3.1



## Design considerations

### BEWARE OF SUBSTITUTION

All DriSpace systems have been developed, assessed or appraised specifically for New Zealand. Accurate system design details, components and installation practices will ensure the performance of DriSpace systems is achieved. Substitutions are not permitted to any of the specified systems, components and products listed in this section.

### WARRANTY

TCL Hunt warrants that the products will be free from manufacturing defects. Upon receiving of the products, it is recommended that a visual check is made. Where defects are observed, these will be replaced at the discretion of TCL Hunt, provided that they are returned to point of purchase. If installed in accordance with TCL Hunt installation requirements, TCL Hunt warrants that the products will comply with relevant provisions of the NZ Building Code.

TCL Hunt is confident that:

- DriStud products will have a serviceability life of 15 years.
- Vent NZ products will have a serviceability life of 15 years.
- Proctor products will have a serviceability life of 15 years, provided that:
  - The balance of the external wall is installed in accordance with the NZ Building Code; and,
  - Is undertaken or supervised by a Licensed Building Practitioner; and,
  - All necessary maintenance is undertaken in respect of the external wall system.

Warranty shall commence from the date of practical completion of the contract works.

### SCOPE OF USE

DriSpace Systems are designed to provide a NZBC compliant DriStud flexible wall and roof envelope where they function not only as an air barrier but also as an effective secondary line of defence against water penetration into the building interior. The DriSpace Systems also introduce passive ventilation in the roof cavity and provide drained and ventilated cavity on wall to assist with minimizing moist air accumulation within the system and preventing mould growth.

DriStud Wall Wrap is intended for use in new and existing buildings in conjunction with DriStud Cool Window Flashing tape. DriStud Wall Wrap and Roof Underlay can be used over a rigid air barrier, or timber and steel framing to provide protective weather resistant layers. DriStud Wall and Roof Underlays can be installed with absorbent and non-absorbent cladding including profiled metal cladding.

Roof ventilation products are designed as non-structural roofing components that are designed to prevent the build up of internal moisture in roof cavities, mitigating associated risks such as structural decay and harmful moulds. Roof ventilation product combinations are determined based on the design and the pitch of the roof and can be used on both new build and renovation projects and on commercial, residential and school projects.

### DESIGN RESPONSIBILITY

It is the responsibility of the architect, designer or specifier to ensure that the correct DriSpace System is relevant to the intended applications.

*Note: Diagrams are for guidance purposes only. The overall design is the responsibility of the designer as there are often other factors to consider. The company maintains a policy of continuous development of its product range and reserves the right to amend the specification without notice.*

### LIABILITY

TCL Hunt accepts no liability if the DriSpace Systems are not specified and installed in strict accordance with instructions contained in this manual, or any other technical information associated with DriSpace Systems.

### MAINTENANCE & REPAIR

No special maintenance is required for products specified in DriSpace systems. Regular checks, at least annually, must be made to the roof cladding, flashings, and penetrations to ensure they are maintained weathertight and continue to perform their function, to ensure the water will not penetrate the cladding.

### STORAGE

Store building products and accessory materials under conditions that ensure no deterioration or damage. Store rolls in an upright position on a smooth floor, or lay horizontally on pallets, protected from sunlight, UV radiation and moisture.

### INSPECTION

Before starting work, check that the building construction phase will allow work of the required standard. Carry out remedial work identified before laying underlay.

### HEALTH & SAFETY

There are no harmful components in DriSpace Systems and no specific requirements other than normal safe handling practices associated with roll products.

There are no special requirements for the disposal of waste. Ensure safe working practices are always followed when handling and installing DriSpace Systems.

## Systems Summary Table

ROOF MATERIAL	ROOF TYPE	ROOF PITCH	FIRE RETARDANT	PAGE
VENTED ROOF				
Steel Longrun	Trussed Roof	3° to <15°	✓	12
				12
		15° to <30°	✓	13
				13
		30° or above	✓	14
				14
		3° to <15° mono	✓	15
				15
		15° or above mono	✓	16
				16
	Skillion Roof	3° or above	✓	17
				17
		3° or above mono	✓	18
				18
	Sarked Roof	3° or above	✓	19
			✓	19
Pressed Tile	Trussed Roof	15° to <30°	✓	20
				20
		30° or above	✓	21
				21
WALL SYSTEM	SYSTEM TYPE			
	Flexible wall underlay		✓	22
	Flexible wall underlay on rigid wall underlay		✓	25
	Self-adhering flexible Wraptite on rigid wall underlay		✓	27

## Products – Roof Underlay



### DRISTUD FRU38 ROOF UNDERLAY CODEMARK™ CERTIFIED

220 gsm fire retardant, self-support synthetic non-woven roofing underlay consisting of two spun-bonded polyolefin fabric layers laminated to a micro porous water resistant film. Designed for use as a water absorbent, vapour permeable, water resistant roofing underlay under masonry tiles, metal tiles or profiled metal roof claddings, on timber or steel framing. Suitable for direct fix with absorbent and non-absorbent cladding including metal cladding. Suitable for wind zones up to and including 'Extra High', as outlined in NZS 3604. Fire retardant to AS 1530.2 with flammability index of  $\leq 5$ , to NZBC C/AS1-AS7, meets the requirements for suspended fabrics.



### DRISTUD RU24 ROOF UNDERLAY CODEMARK™ CERTIFIED

170 gsm self support synthetic non-woven roofing underlay consisting of two spun-bonded polyolefin fabric layers laminated to a micro porous water resistant film. Designed for use as a water absorbent, vapour permeable, water resistant roofing underlay under masonry tiles, metal tiles or profiled metal roof claddings, on timber or steel framing. Suitable for direct fix with absorbent and non-absorbent cladding including metal cladding. Suitable for wind zones up to and including 'Extra High', as outlined in NZS 3604. RU24 can be used only where fire retardant underlay is NOT required.



### DRISTUD RU22 ROOF UNDERLAY CODEMARK™ CERTIFIED

145 gsm self support synthetic non-woven roofing underlay consisting of two spun-bonded polyolefin fabric layers laminated to a micro porous water resistant film. Intended for use on buildings designed in accordance with NZS 3604:2011 and in wind zones up to and including 'Extra High'. It can be installed over both timber and steel framing to ensure a dry roof cavity. RU22 can be used under masonry tiles, metal tiles and profiled metal roof claddings. RU22 can be used only where fire retardant underlay is NOT required.

ROOF UNDERLAY COMPARISON TABLE

PROPERTY	TEST METHOD	REQUIREMENT	FRU38	RU24 & RU22
Construction		Non-Woven / Breathable Film / Non-Woven	Yes	Yes
Base Weight			220 gsm	170 gsm RU24 145 gsm RU22
Water Vapour Resistance	ASTM E96 Procedure B	$\leq 7\text{MN s/g}$	Vapour Permeable $\leq 0.5\text{MN s/g}$	Vapour Permeable $\leq 0.5\text{MN s/g}$
Absorbency	AS/NZS 4201: Part 6	$\geq 150 \text{ g/m}^2$	Pass	Pass
Direct Fixing with Non Absorbent Cladding			Yes	Yes
Air Permeance	BS ISO 5636-5:2003		Air barrier	Air barrier
Water Resistance	AS/NZS 4201.4:1994	$\geq 100\text{mm H}_2\text{O}$	Pass	Pass
Flammability	AS 1530.2:1993	FR Index $\leq 5$	Fire Retardant (FR Index 1)	Non-Fire Retardant
Supported			Self Support	Self Support
Roof Pitch			$>3^\circ$	$>3^\circ$
Wind Zone			up to and including 'Extra High'	up to and including 'Extra High'
UV			up to 21 days	up to 7 days

## Products – Wall Wrap



### **DRISTUD WALL WRAP CODEMARK™ CERTIFIED**

DriStud Wall Wrap is engineered from resilient non-woven fabric and has a high resistance to moisture. It is perfectly suited for residential and commercial buildings where high-permeable moisture transfer is required. Fire retardant, air barrier, water resistant, absorbent and breathable, DriStud Wall Wrap is suitable for timber or steel framed buildings and suitable for direct fix with non-absorbent cladding and gable ends.

Tested to NZBC E2/AS1, 1.1, suitable for wind zones up to and including 'Very High' and 'Extra High' when used as a flexible underlay over a rigid wall underlay, as outlined in NZS 3604.



### **DRISTUD REPEL CODEMARK™ CERTIFIED**

DriStud REPEL is a green, quattro-laminate synthetic membrane consisting of two outer non-woven layers with scrim. Installed over wall framing, it provides the secondary weather-resistant layer which prevents the accumulation of moisture. Fire retardant, water retardant, flexible air barrier, DriStud REPEL is perfectly suited for residential and commercial buildings and can be direct fixed to timber and steel-framing.



### **PROCTOR WRAPTITE SA CODEMARK™ CERTIFIED**

Proctor Passive Wraptite SA can be installed on new and existing buildings and is suitable for roof and wall applications for residential, commercial and high rise buildings. Proctor Passive Wraptite SA's high vapour permeable peel and stick products used full coverage in pitched roofs and walls allow excellent drying capacity for assemblies wetting during construction and from typical in service leaks over the life-time of the building. Proctor Passive Wraptite SA can be installed over rigid air barrier, replacing tape and flexible underlay. It offers minimal mechanical fixings and provide greater integrity of installation and system. Wraptite SA's high vapour permeability allows damp sheathing to dry quickly and moisture to escape. This ensures good indoor air quality and reduces the likelihood of mould, condensation, timber distortion and metal corrosion.



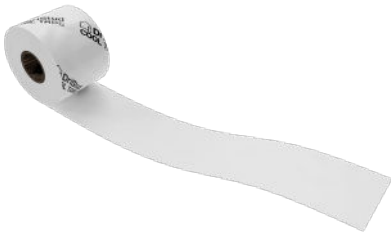
### **PROCTOR WRAPTITE UV-SA CODEMARK™ CERTIFIED**

Proctor Passive Wraptite UV-SA can be installed on new and existing buildings and is suitable for roof and wall applications for residential, commercial and high rise buildings. Wraptite UV-SA has exceptional water resistance and UV resistance to allow for a 'shadow' appearance within open rainscreen façades. Wraptite UV bonds (no mechanical attachment) to multiple substrates for air tightness and ease of installation, negating the requirement for a primer, sealants of tapes. Adhesive curing time is approximately 6hrs to depending on environmental conditions.

Wraptite UV-SA prevents lateral air movement enhancing the buildings thermal performance. With a vapour resistance of 0.67MNs/g vapour permeability in a commercial quality, self-adhered, airtight, breathable membrane



## Products – Tape



### DRISTUD COOL WINDOW FLASHING TAPE CODEMARK™ CERTIFIED

Window sealing system to AAMA 711-13, can also be used for general sealing of wall penetrations including around the window frames. DriStud Cool Window Flashing Tape has a polymer adhesive with a service temperature range of -28°C to 80°C. CodeMark™ certified, suitable for residential or commercial, timber or steel framed buildings. Can be used with DriStud Wall Wrap and with rigid air barriers made of plywood, fibre cement and OSB. To NZS 3604 Building Wind Zones up to and including 'Extra High'. 381µm thick, and available in 3 widths, 75mm, 150mm and 200mm.

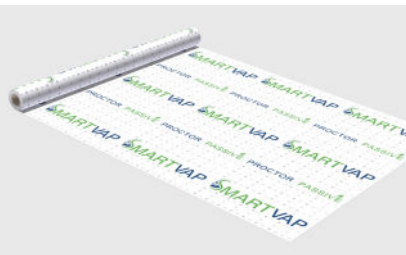
## Products – Drainage Mat



### PROCTORPASSIVE HC8 ENKAVENT

EnkaVent is a three dimensional shaped mesh of UV stabilized polymer monofilaments (8mm thick), tangled and fused together. EnkaVent is used to provide permanent drainage and air movement pathway between the roof sheeting and water resistant roofing underlay and permit the removal of such moisture. ProctorPassive HC8 EnkaVent also offers significant sound reduction from rain impact noise. When used in conjunction with a DriStud Roof Underlay, this offers a complete roofing underlay solution for zinc, copper and other standing seam roof systems.

## Products – Vapour Control Layer



### PROCTOR PASSIVE SMARTVAP 100 (SMARTVAP) (COMPLIES WITH AS/NZS 4200.1)

A two layer, light duty air barrier and variable vapour diffusion resistance retarder. When installed as a continuous layer, SmartVap will form an air tight layer, improving the efficacy of ventilation systems and thermal efficiency of the building enclosure. The effective management of air and vapour passage through wall, ceiling and floor assemblies can help protect the building fabric and insulation from condensation and related problems such as mould, timber rot, corrosion and loss of thermal resistance.

## Products – Vent



### VENTED BATTEN VB20

The VB20 is a polypropylene ventilated batten designed to create a 20mm cavity for ventilation and drainage in both the roof and wall cavity, reducing the risk of moisture build up and condensation. It features convenient peel-off adhesive backing, eliminating the need for nails or glue, to adhere to timber, metal and building wraps. Easy to install, VB20 is manufactured in 1800mm lengths for easy handling. The ventilated polypropylene structure is strong and robust, providing passive airflow of 16,000mm<sup>2</sup> per linear metre. VB20 is insect proof with 4mm vents preventing ingress of nesting insects.



### VENTILATION & DRAINAGE BATTEN VB10

The VB10 is a polypropylene ventilation and drainage batten designed to facilitate passive airflow and cavity drainage between the roofing underlay or membrane and the roof cladding and prevents the transfer of dew point from the undersider of the roofing underlay or membrane. It features a convenient peel-off adhesive backing, eliminating the need for nails or glue. Easy to install, VB10 is manufactured in 1800mm lengths for easy handling. The ventilated polypropylene structure is strong and robust, providing passive airflow of 8,000mm<sup>2</sup> per linear metre. VB10 is insect proof with 4mm vents preventing ingress of nesting insects.



#### OVER FASCIA VENT G1200N

G1200N is the most practical and cost-efficient method of ventilating the eaves for **trussed** roofs for roof pitches greater than 15°. It is easy to install, discrete and is compatible with either timber or metal fascias. G1200N is designed to discreetly ensure a calculated positive air flow into the roof space between the roof underlay and the fascia board. It is designed with 4mm evenly spaced openings specifically sized to prohibit large insects gaining access but wide enough to prevent capillary action.



#### OVER FASCIA VENT G2500N

G2500N is the most practical and cost-efficient method of ventilating the eaves for **skillion** roof and trussed roofs for roof pitches under 15°. It is easy to install, discrete and is compatible with either timber or metal fascias. G2500N is designed to discreetly ensure a calculated positive air flow into the roof space between the roof underlay and the fascia board. It is designed with 4mm evenly spaced openings specifically sized to prohibit large insects gaining access but wide enough to prevent capillary action.

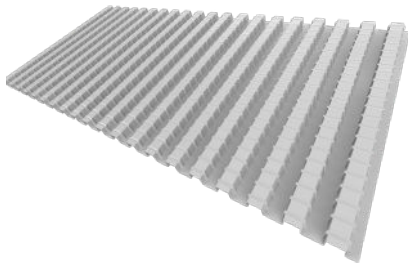


#### RIDGE VENT RV10P & RIDGE VENT DEEP TROUGH RV10DT

RV10P is a ridge vent that has an adhesive and flexible aluminium flashing which is designed to form to roofing profiles and prevent water ingress on any pitch roof. The RV10P forms part of a passive ventilation system that works year round with no moving parts or energy consumption.

RV10P is designed to be compatible with roof cladding profiles with a trough depth of less than 34mm.

RV10DT is designed to be compatible with roof and cladding profiles with a trough depth greater than 34mm.



#### ROLL PANEL VENT/INSULATION GUARD G502CL

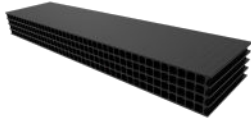




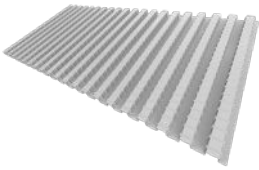

G502CL Roll Panel Vent/Insulation Guard/Eaves Baffle is designed to maintain a continuous 25mm air gap between the underside of the roofing membrane or sarking board and loft insulation at the eaves, providing a consistent flow of air into the roof space. The G502 Roll Panel Vent/ Insulation Guard castellated profile is laid across the top of the roof trusses/rafters parallel with the eaves level and is suitable for both new build and roof renovation projects. The extra width of the panel allows for better coverage when low pitch and deep insulation details are encountered.



#### EAVES COMB FILLER G1275

G1275 Eaves Comb Filler is designed with flexible fingers that adjust to fill the gaps left when using profiled tiles or steel roof cladding, preventing entry of birds and large insects. The use of the G1275 eliminates the need to make or buy expensive purpose made profiled fillers that can block necessary airflow into the roof spacing between underlay and roof cladding.

## Products – Order Quantities

PRODUCT CODE	IMAGE	PRODUCT DESCRIPTION	PACK QUANTITY	LENGTH PER UNIT (mm)	TOTAL LM PER BOX
VB20		Vented Batten (20mm thick)	50	1,800	90.0
VB10		Ventilation & Drainage Batten (10mm thick)	50	1,800	90.0
G1200N		Over Fascia Vent 10mm	20	1,000	20.0
G2500N		Over Fascia Vent 25mm	20	1,000	20.0
RV10P		Ridge Vent Cut RV10P in half lengthwise to use for abutments and barge details.	6	1,200	7.2
RV10DT		Ridge Vent Deep Trough Cut RV10DT in half lengthwise to use for abutments and barge details.	6	1,200	7.2
G502CL		Roll Panel Vent/Insulation Guard/Eaves Baffle	2	6,000	12.0
G1275		Eaves Comb Filler	50	1,000	50.0

## Steel Longrun Vented Roof System

TRUSSED ROOF PITCH 3° TO <15°

DRISPACE SPECIFICATION	UNDERLAY	VENT COMPONENTS	FIXING AND ACCESSORIES
<ul style="list-style-type: none"> <li>Steel Longrun Trussed Roof</li> <li>Roof pitch: 3° to &lt;15°</li> <li>Ventilated with Fire Retardant Underlay</li> </ul>	FRU38	G2500N G502CL VB10	Galvanised or s/s staples, clouts or purlin screws or self tapper. Wire netting or plastic strapping
<ul style="list-style-type: none"> <li>Steel Longrun Trussed Roof</li> <li>Roof pitch: 3° to &lt;15°</li> <li>Ventilated with Non-Fire Retardant Underlay</li> </ul>	RU24 or RU22	<i>Optional:</i> G1275	

### USE CASE

- The system is for steel longrun trussed roof, where the roof pitch is from 3° to <15°.
- While the minimum allowable roof pitch is 3°, it is recommended to have a minimum roof pitch of 5° for effective passive ventilation.
- For ventilated roof cavity with 25,000 mm<sup>2</sup> per LM airflow to minimise condensation and mould growth.
- Use FRU38 for intertenancy dwellings or fire retardant performance is required.
- Install G1275 Eaves Comb Filler on the over fascia vent to prevent bird ingress and nesting insects.

### MANAGING DEW POINT CONDENSATION

For steel longrun with large surface contact areas with roof underlays, it is recommended ventilation and drainage above the underlay is created to defer the dew point condensation from the steel longrun.

Install VB10 on top of the underlay to create the ventilation and drainage pathway.

### BENEFITS

The roof system utilizes high vapour permeable and self-supporting DriStud Roof Underlays and VENT passive ventilation components. Passive ventilation operating year-round with no moving parts or energy consumption, with 4mm vents preventing the ingress of nesting insects.

The system is compatible with timber and metal frames and suitable for up to and including 'Extra High' wind zone (NZS 3604).

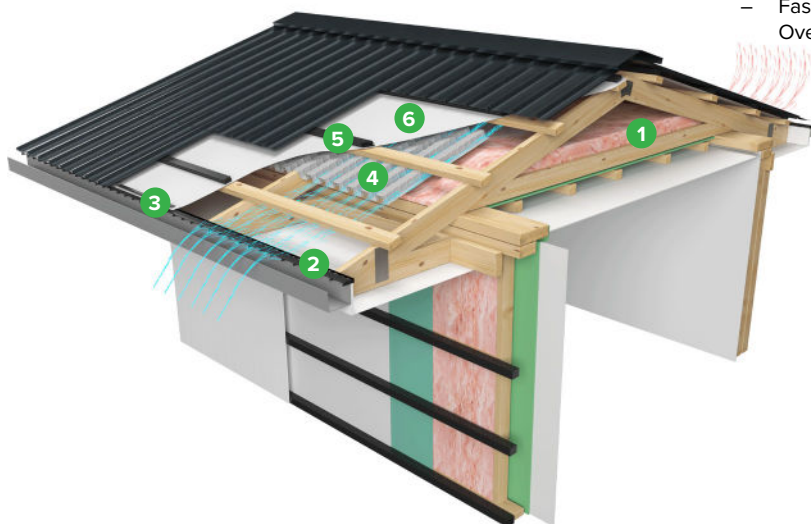
### LINING

1. Lay the G502CL Roll Panel Vent/Insulation Guard/Eaves Baffle across the top of the roof trusses/rafters and roll out the full length of the eaves and adjust to align with the required roof truss centres. Nail or staple to secure in position.
2. Fix G2500N Over Fascia Vent using nails or screws to the top of the fascia board through the fixing holes provided along the full length of the eaves. Minimum 20mm gap between the bottom purlin and Over Fascia Vent is required for air flow.
3. Where underlay span is greater than 1200mm or the roof pitch is under 10°, wire netting<sup>†</sup>, plastic strapping or other strong materials must be installed at right angles across the purlins and draw taut before fixing.
4. Terminating the underlays at the ridge purlins is recommended.
5. Apply DriStud roof underlay from the lowest point to allow laps to shed water. Pull taut to prevent ponding of water. All edge and end laps must be overlapped by a minimum of 150mm.
6. Peel-off adhesive backing of VB10 Ventilation & Drainage Battens and attach to purlins above the roofing underlay for temporary fixing. Cladding fixings must be fixed through the VB10 into the purlins.

<sup>†</sup>75mm galvanized hexagonal wire netting to AS/NZS 4534

### FIXINGS / FRAMING

- Framing must be specified and installed in accordance with NZBC 3604.
- For timber structures fixing or fasteners for roof underlays shall be placed no further than 300mm apart.
- Self tapper to fix on metal fascia, nails for timber fascia for G1275 and G2500N.
- Fascia height to drop by 32mm to allow for G2500N Over Fascia Vent.



- 1 Insulation
- 2 Over Fascia Vent G2500N
- 3 Eaves Comb Filler G1275
- 4 Roll Panel Vent/Insulation Guard G502CL
- 5 Ventilation & Drainage VB10
- 6 DriStud Roof Underlay



## Steel Longrun Vented Roof System

TRUSSED ROOF PITCH 15° TO <30° ■ STEEL LONGRUN

DRISPACE SPECIFICATION	UNDERLAY	VENT COMPONENTS	FIXING AND ACCESSORIES
<ul style="list-style-type: none"> <li>Steel Longrun Trussed Roof</li> <li>Roof pitch: 15° to &lt;30°</li> <li>Ventilated with Fire Retardant Underlay</li> </ul>	FRU38	G1200N G502CL VB10	Galvanised or s/s staples, clouts or purlin screws or self tapper
<ul style="list-style-type: none"> <li>Steel Longrun Trussed Roof</li> <li>Roof pitch: 15° to &lt;30°</li> <li>Ventilated with Non-Fire Retardant Underlay</li> </ul>	RU24 or RU22	<i>Optional:</i> G1275	

### USE CASE

- The system is for steel longrun trussed roof, where the roof pitch is 15° to <30°.
- For ventilated roof cavity with 10,000 mm<sup>2</sup> per LM airflow to minimise condensation and mould growth.
- Use FRU38 for intertenancy dwellings or fire retardant performance is required.
- Install G1275 Eaves Comb Filler on the over fascia vent to prevent bird ingress and nesting insects.

### MANAGING DEW POINT CONDENSATION

For steel longrun with large surface contact areas with roof underlays, it is recommended ventilation and drainage above the underlay is created to defer the dew point condensation from the steel longrun.

Install VB10 on top of the underlay to create the ventilation and drainage pathway.

### BENEFITS

The roof system utilizes high vapour permeable and self-supporting DriStud Roof Underlays and VENT passive ventilation components. Passive ventilation operating year-round with no moving parts or energy consumption, with 4mm vents preventing the ingress of nesting insects.

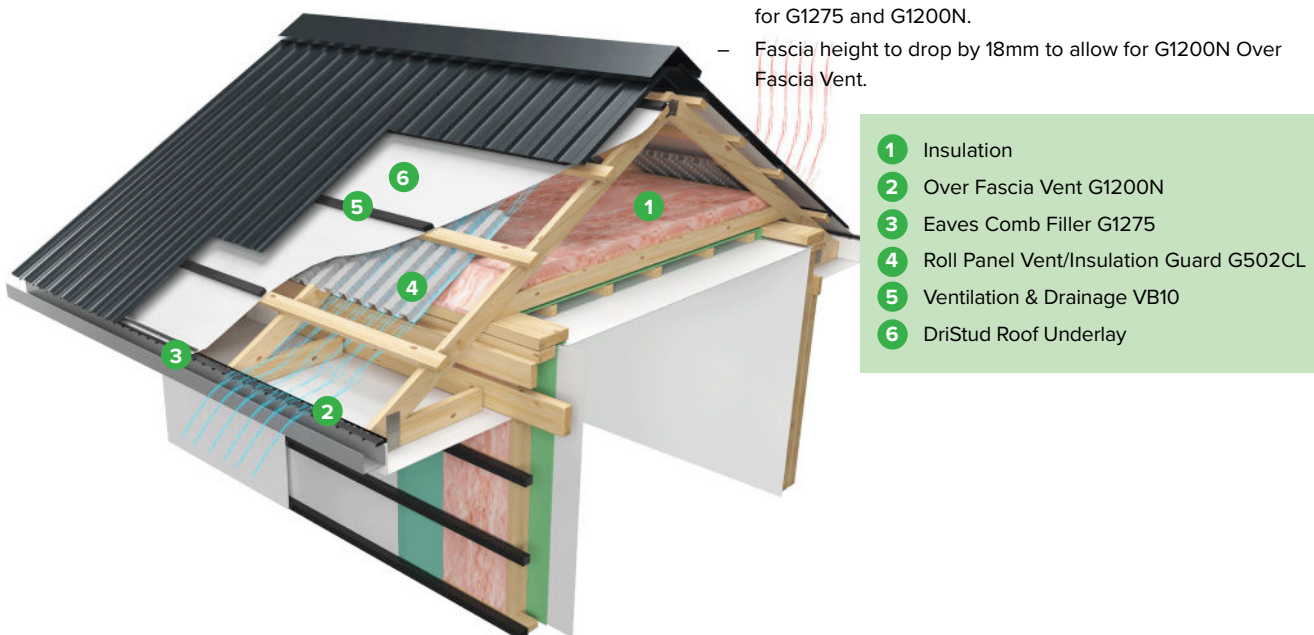
The system is compatible with timber and metal frames and suitable for up to and including 'Extra High' wind zone (NZS 3604).

### LINING

- Lay the G502CL Roll Panel Vent/Insulation Guard/Eaves Baffle across the top of the roof trusses/rafters and roll out the full length of the eaves and adjust to align with the required roof truss centres. Nail or staple to secure in position.
- Fix G1200N Over Fascia Vent using nails or screws to the top of the fascia board through the fixing holes provided along the full length of the eaves. Minimum 20mm gap between the bottom purlin and Over Fascia Vent is required for air flow.
- Apply DriStud roof underlay from the lowest point to allow laps to shed water. Pull taut to prevent ponding of water. All edge and end laps must be overlapped by a minimum of 150mm.
- Terminating the underlays at the ridge purlins is recommended.
- Peel-off adhesive backing of VB10 Ventilation & Drainage Battens and attach to purlins above the roofing underlay for temporary fixing. Cladding fixings must be fixed through the VB10 into the purlins.

### FIXINGS / FRAMING

- Framing must be specified and installed in accordance with NZBC 3604.
- For timber structures fixing or fasteners for roof underlays shall be placed no further than 300mm apart.
- Self tapper to fix on metal fascia, nails for timber fascia for G1275 and G1200N.
- Fascia height to drop by 18mm to allow for G1200N Over Fascia Vent.



## Steel Longrun Vented Roof System

TRUSSED ROOF PITCH 30° OR ABOVE ■ STEEL LONGRUN

DRISPACE SPECIFICATION	UNDERLAY	VENT COMPONENTS	FIXING AND ACCESSORIES
<ul style="list-style-type: none"> <li>Steel Longrun Trussed Roof</li> <li>Roof pitch: 30° or above</li> <li>Ventilated with Fire Retardant Underlay</li> </ul>	FRU38	G1200N G502CL VB10 RV10P or RV10DT <i>Optional:</i> G1275	Galvanised or s/s staples, clouts or purlin screws or self tapper
<ul style="list-style-type: none"> <li>Steel Longrun Trussed Roof</li> <li>Roof pitch: 30° or above</li> <li>Ventilated with Non-Fire Retardant Underlay</li> </ul>	RU24 or RU22		

### USE CASE

- The system is for steel longrun trussed roof, where the roof pitch is 30° or above.
- A complete ventilated roof system with 10,000mm<sup>2</sup> per LM airflow in and release warm air using the natural convection of rising warm air of 8,000mm<sup>2</sup> per LM through the apex to minimise condensation and mould growth.
- Use FRU38 for intertenancy dwellings or fire retardant performance is required.
- Install G1275 Eaves Comb Filler on the over fascia vent to prevent bird ingress and nesting insects.

### MANAGING DEW POINT CONDENSATION

For steel longrun with large surface contact areas with roof underlays, it is recommended ventilation and drainage above the underlay is created to defer the dew point condensation from the steel longrun.

Install VB10 on top of the underlay to create the ventilation and drainage pathway.

### BENEFITS

The roof system utilizes high vapour permeable and self-supporting DriStud Roof Underlays and VENT passive ventilation components. Passive ventilation operating year-round with no moving parts or energy consumption, with 4mm vents preventing the ingress of nesting insects.

The system is compatible with timber and metal frames and suitable for up to and including 'Extra High' wind zone

### LINING

1. Lay the G502CL Roll Panel Vent/Insulation Guard/Eaves Baffle Vent across the top of the roof trusses/rafters and roll out the full length of the eaves and adjust to align with the required roof truss centres. Nail or staple to secure in position.
2. Fix G1200N Over Fascia Vent using nails or screws the top of the fascia board through the fixing holes provided along the full length of the eaves.
3. Apply DriStud roof underlay from the lowest point to allow laps to shed water. Pull taut to prevent ponding of water. All edge and end laps must be overlapped by a minimum of 150mm.
4. Terminate the underlays at the ridge purlins to create airpath.
5. Peel-off adhesive backing of VB10 Ventilation & Drainage Battens and attach to purlins above the roofing underlay for temporary fixing. Cladding fixings must be fixed through the VB10 into the purlins.
6. Install RV10P for trough less than 34mm or RV10DT for trough greater than 34mm on the roof centrally at the apex.
7. Minimum 20mm gap between the bottom purlin and Over Fascia Vent is required for air flow.

### FIXINGS / FRAMING

- Framing must be specified and installed in accordance with NZBC 3604.
- For timber structures fixing or fasteners for roof underlays shall be placed no further than 300mm apart.
- Self tapper to fix on metal fascia, nails for timber fascia for G1275 and G1200N.
- Fascia height to drop by 18mm to allow for G1200N Over Fascia Vent.
- Additional fixing screw length is required to accommodate 20mm thickness of RV10P or RV10DT. The aluminium soft edge should be notched or snipped as required to suit the roofing profile. Notching or snipping is always required on Deep trough or trapezoidal roofing profiles.



- 1 Insulation
- 2 Over Fascia Vent G1200N
- 3 Eaves Comb Filler G1275
- 4 Roll Panel Vent/Insulation Guard G502CL
- 5 Ridge Vent RV10P
- 6 DriStud Roof Underlay
- 7 Ventilation & Drainage VB10



## Steel Longrun Vented Roof System

TRUSSED MONO PITCH ROOF 5° TO <15° ■ STEEL LONGRUN

DRISPACE SPECIFICATION	UNDERLAY	VENT COMPONENTS	FIXING AND ACCESSORIES
<ul style="list-style-type: none"> <li>Steel longrun Trussed Mono Pitch</li> <li>Roof Pitch: 3° to &lt;15°</li> <li>Ventilated with Fire Retardant Underlay</li> </ul>	FRU38	G2500N G502CL VB10	Galvanised or s/s staples, clouts or purlin screws self taper.
<ul style="list-style-type: none"> <li>Steel longrun Trussed Mono Pitch</li> <li>Roof Pitch: 3° to &lt;15°</li> <li>Ventilated with Non-Fire Retardant Underlay</li> </ul>	RU24 or RU22	RV10P or RV10DT <i>Optional:</i> G1275	Wire netting or plastic strapping

\*75mm galvanized hexagonal wire netting to AS/NZS 4534, builders tape or other strong durable materials for roof pitch less than 10°

### USE CASE

- The system is for steel longrun mono roof, where the roof pitch is 3° to < 15°.
- While the minimum allowable roof pitch is 3°, it is recommended to have a minimum roof pitch of 5° for effective passive ventilation.
- A complete ventilated roof system with 25,000mm<sup>2</sup> per LM airflow in from the eaves and release warm air using the natural convection of rising warm air of 8,000mm<sup>2</sup> per LM through the barge to minimise condensation and mould growth.
- Use FRU38 for intertenancy dwellings or where fire retardant performance is required.
- Install G1275 Eaves Comb Filler on the over fascia vent to prevent bird ingress and nesting insects.

### MANAGING DEW POINT CONDENSATION

For steel longrun with large surface contact areas with roof underlays, it is recommended ventilation and drainage above the underlay is created to defer the dew point condensation from the steel longrun.

Install VB10 on top of the underlay to create the ventilation and drainage pathway.

### BENEFITS

The roof system utilizes high vapour permeable and self-supporting DriStud Roof Underlays and VENT passive ventilation components. Passive ventilation operating year-round with no moving parts or energy consumption, with 4mm vents preventing the ingress of nesting insects.

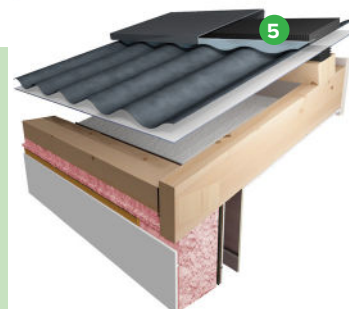
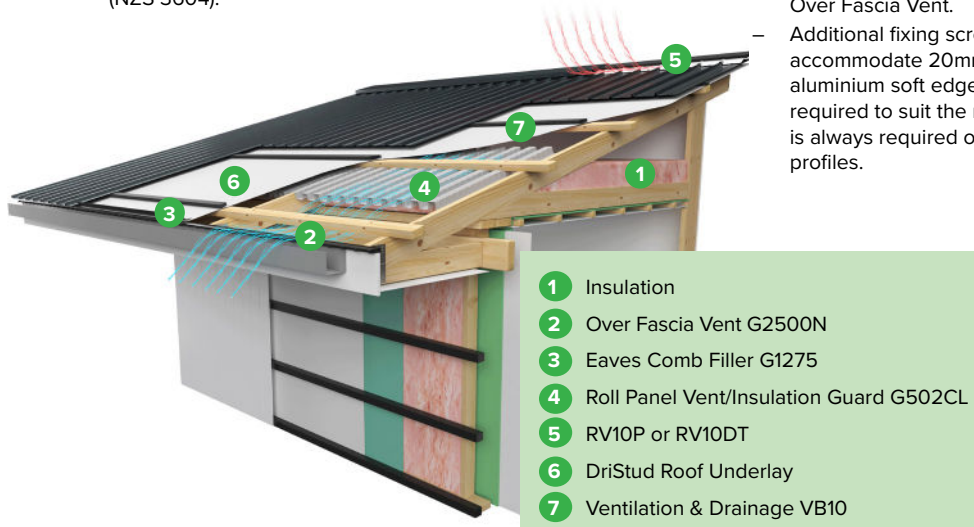
The system is compatible with timber and metal frames and suitable for up to and including 'Extra High' wind zone (NZS 3604).

### LINING

- Lay the G502CL Insulation Guard/Roll Panel Vent across the top of the roof trusses/rafters and roll out the full length of the eaves and adjust to align with the required roof truss centres. Nail or staple to secure in position.
- Fix G2500N Over Fascia Vent using nails or screws to the top of the fascia board through the fixing holes provided along the full length of the eaves.
- Apply DriStud roof underlay from the lowest point to allow laps to shed water. Pull taut to prevent ponding of water. All edge and end laps must be overlapped by a minimum of 150mm.
- Terminate the underlays at the ridge purlins to create airpath.
- Peel-off adhesive backing of VB10 Ventilation & Drainage Battens and attach to purlins above the roofing underlay for temporary fixing. Cladding fixings must be fixed through the VB10 into the purlins.
- Install RV10P for trough less than 34mm or RV10DT for trough greater than 34mm over the top of the roof cladding. Cut RV10P or RV10DT in half lengthwise for abutments and barge details.
- Minimum 20mm gap between the bottom purlin and Over Fascia Vent is required for air flow.

### FIXINGS / FRAMING

- Framing must be specified and installed in accordance with NZBC 3604.
- For timber structures fixing or fasteners for roof underlays shall be placed no further than 300mm apart.
- Self taper to fix on metal fascia, nails for timber fascia for G1275 and G2500N.
- Fascia height to drop by 32mm to allow for G2500N Over Fascia Vent.
- Additional fixing screw length is required to accommodate 20mm thickness of RV10P or RV10DT. The aluminium soft edge should be notched or snipped as required to suit the roofing profile. Notching or snipping is always required on Deep trough or trapezoidal roofing profiles.



## Steel Longrun Vented Roof System

TRUSSED MONO PITCH ROOF 15° OR ABOVE ■ STEEL LONGRUN

DRISPACE SPECIFICATION	UNDERLAY	VENT COMPONENTS	FIXING AND ACCESSORIES
<ul style="list-style-type: none"> <li>Steel longrun Trussed Mono Pitch</li> <li>Roof Pitch: 15° or above</li> <li>Ventilated with Fire Retardant Underlay</li> </ul>	FRU38	G1200N G502CL VB10 RV10P or RV10DT	Galvanised or s/s staples, clouts or purlin screws or self taper
<ul style="list-style-type: none"> <li>Steel longrun Trussed Mono Pitch</li> <li>Roof Pitch: 15° or above</li> <li>Ventilated with Non-Fire Retardant Underlay</li> </ul>	RU24 or RU22	<i>Optional:</i> G1275	

### USE CASE

- The system is for steel longrun trussed mono pitch roof, where the roof pitch 15° or above.
- A complete ventilated roof system with 10,000mm<sup>2</sup> per LM airflow in from the eaves and release warm air using the natural convection of rising warm air of 8,000mm<sup>2</sup> per LM through the barge to minimise condensation and mould growth.
- Use FRU38 for intertenancy dwellings or fire retardant performance is required.
- Install G1275 Eaves Comb Filler on the over fascia vent to prevent bird ingress and nesting insects.

### MANAGING DEW POINT CONDENSATION

For steel longrun with large surface contact areas with roof underlays, it is recommended ventilation and drainage above the underlay is created to defer the dew point condensation from the steel longrun.

Install VB10 on top of the underlay to create the ventilation and drainage pathway.

### BENEFITS

The roof system utilizes high vapour permeable and self-supporting DriStud Roof Underlays and VENT passive ventilation components. Passive ventilation operating year-round with no moving parts or energy consumption, with 4mm vents preventing the ingress of nesting insects.

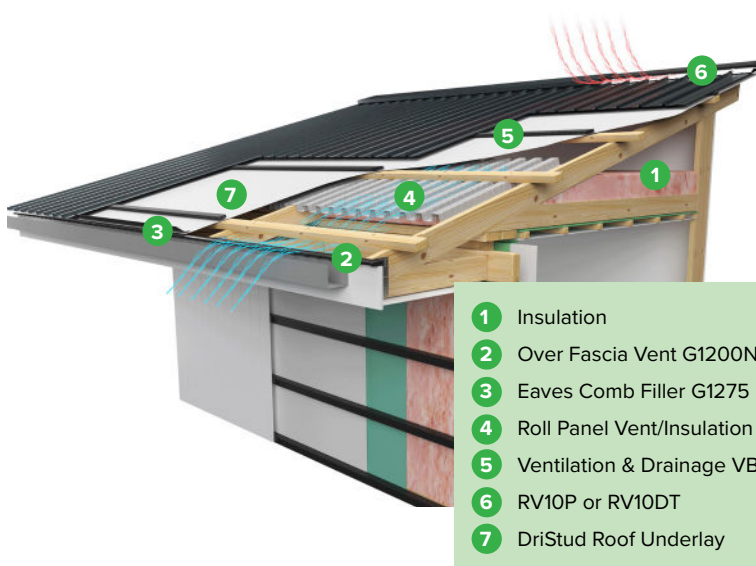
The system is compatible with timber and metal frames and suitable for up to and including 'Extra High' wind zone (NZS 3604).

### LINING

- Lay the G502CL Roll Panel Vent/Insulation Guard across the top of the roof trusses/rafters and roll out the full length of the eaves and adjust to align with the required roof truss centres. Nail or staple to secure in position.
- Fix G1200N Over Fascia Vent using nails or screws to the top of the fascia board through the fixing holes provided along the full length of the eaves.
- Apply DriStud roof underlay from the lowest point to allow laps to shed water. Pull taut to prevent ponding of water. All edge and end laps must be overlapped by a minimum of 150mm.
- Peel-off adhesive backing of VB10 Ventilation & Drainage Battens and attach to purlins above the roofing underlay for temporary fixing. Cladding fixings must be fixed through the VB10 into the purlins. Terminate the underlays at the ridge purlins to create airpath.
- Install RV10P for trough less than 34mm or RV10DT for trough greater than 34mm over the top of the roof cladding. Cut RV10P or RV10DT in half lengthwise for abutments and barge details.
- Minimum 20mm gap between the bottom purlin and Over Fascia Vent is required for air flow.

### FIXINGS / FRAMING

- Framing must be specified and installed in accordance with NZBC 3604.
- For timber structures fixing or fasteners for roof underlays shall be placed no further than 300mm apart.
- Self taper to fix on metal fascia, nails for timber fascia for G1275 and G1200N.
- Fascia height to drop by 18mm to allow for G1200N Over Fascia Vent.
- Additional fixing screw length is required to accommodate 20mm thickness of RV10P or RV10DT. The aluminium soft edge should be notched or snipped as required to suit the roofing profile. Notching or snipping is always required on Deep trough or trapezoidal roofing profiles.



- 1 Insulation
- 2 Over Fascia Vent G1200N
- 3 Eaves Comb Filler G1275
- 4 Roll Panel Vent/Insulation Guard G502CL
- 5 Ventilation & Drainage VB10
- 6 RV10P or RV10DT
- 7 DriStud Roof Underlay





## Steel Longrun Vented Roof System

SKILLION ROOF PITCH 3° OR ABOVE ■ STEEL LONGRUN

DRISPACE SPECIFICATION	UNDERLAY	VENT COMPONENTS	FIXING AND ACCESSORIES
<ul style="list-style-type: none"> <li>Steel Longrun Skillion Roof</li> <li>Roof Pitch: 3° or above</li> <li>Ventilated with Fire Retardant Underlay</li> </ul>	FRU38	G2500N VB20 VB10 RV10P or RV10DT	Galvanised or s/s staples, clouts or purlin screws self tapper.
<ul style="list-style-type: none"> <li>Steel Longrun Skillion Roof</li> <li>Roof Pitch: 3° or above</li> <li>Ventilated with Non-Fire Retardant Underlay</li> </ul>	RU24 or RU22	Optional: G1275	Wire netting or plastic strapping

75mm galvanized hexagonal wire netting to AS/NZS 4534, builders tape or other strong durable materials for roof pitch less than 10°

### USE CASE

- The system is for steel longrun skillion roof, where the roof pitch is 3° or above.
- While the minimum allowable roof pitch is 3°, it is recommended to have a minimum roof pitch of 5° for effective passive ventilation.
- A complete ventilated roof system with 25,000mm<sup>2</sup> per LM airflow in from the eaves and release air using the natural convection of rising warm air of 8,000mm<sup>2</sup> per LM through the apex to minimise condensation and mould growth.
- Use FRU38 for intertenancy dwellings or fire retardant performance is required.
- Install G1275 Eaves Comb Filler on the over fascia vent to prevent bird ingress and nesting insects.

### MANAGING DEW POINT CONDENSATION

For steel longrun with large surface contact areas with roof underlays, it is recommended ventilation and drainage above the underlay is created to defer the dew point condensation from the steel longrun.

Install VB10 on top of the underlay to create the ventilation and drainage pathway.

### BENEFITS

The roof system utilizes high vapour permeable and self-supporting DriStud Roof Underlays and VENT passive ventilation components. Passive ventilation operating year-round with no moving parts or energy consumption, with 4mm vents preventing the ingress of nesting insects.

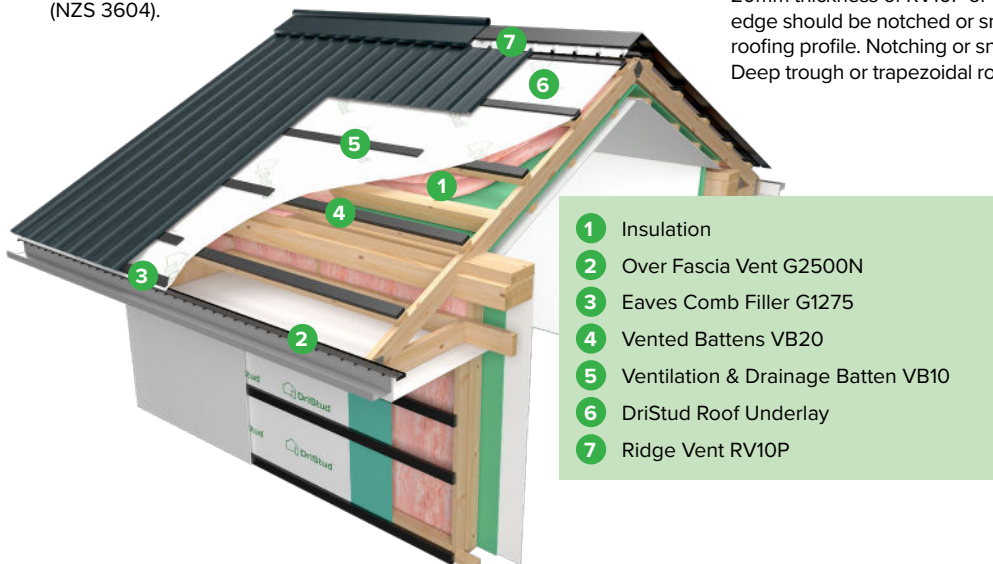
The system is compatible with timber and metal frames and suitable for up to and including 'Extra High' wind zone (NZS 3604).

### LINING

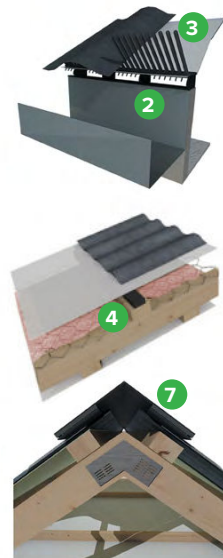
- Fix G2500N Over Fascia Vent using nails or screws to the top of the fascia board through the fixing holes provided along the full length of the eaves.
- Peel-off adhesive backing of VB20 Vented Batten and attach to purlins for temporary fixing. Secure VB20 with exterior cladding fixings.
- Apply DriStud roof underlay from the lowest point to allow laps to shed water. Pull taut to prevent ponding of water. All edge and end laps must be overlapped by a minimum of 150mm.
- Terminate the underlays at the ridge purlins to create airpath.
- Peel-off adhesive backing of VB10 Ventilation & Drainage Battens and attach to purlins above the roofing underlay for temporary fixing. Cladding fixings must be fixed through the VB10 into the purlins.
- Install RV10P for trough less than 34mm or RV10DT for trough greater than 34mm on the roof centrally at the apex.
- Minimum 20mm gap between the bottom purlin and Over Fascia Vent is required for air flow.

### FIXINGS / FRAMING

- Framing must be specified and installed in accordance with NZBC 3604.
- For timber structures fixing or fasteners for roof underlays shall be placed no further than 300mm apart.
- Self tapper to fix on metal fascia, nails for timber fascia for G1275 and G2500N.
- Fascia height to drop by 32mm to allow for G2500N Over Fascia Vent.
- Additional fixing screw length is required to accommodate 20mm thickness of RV10P or RV10DT. The aluminium soft edge should be notched or snipped as required to suit the roofing profile. Notching or snipping is always required on Deep trough or trapezoidal roofing profiles.



- Insulation
- Over Fascia Vent G2500N
- Eaves Comb Filler G1275
- Vented Battens VB20
- Ventilation & Drainage Batten VB10
- DriStud Roof Underlay
- Ridge Vent RV10P



## Steel Longrun Vented Roof System

SKILLION MONO PITCH ROOF 3° OR ABOVE ■ STEEL LONGRUN

DRISPACE SPECIFICATION	UNDERLAY	VENT COMPONENTS	FIXING AND ACCESSORIES
<ul style="list-style-type: none"> <li>Steel Longrun Skillion Mono Pitch</li> <li>Roof Pitch: 3° or above</li> <li>Ventilated with Fire Retardant Underlay</li> </ul>	FRU38	G2500N VB20 RV10P or RV10DT VB10	Galvanised or s/s staples, clouts or purlin screws self taper. Wire netting or plastic strapping
<ul style="list-style-type: none"> <li>Steel Longrun Skillion Mono Pitch</li> <li>Roof Pitch: 3° or above</li> <li>Ventilated with Non-Fire Retardant Underlay</li> </ul>	RU24 or RU22		

75mm galvanized hexagonal wire netting to AS/NZS 4534, builders tape or other strong durable materials for roof pitch less than 10°.

### USE CASE

- The system is for steel longrun skillion mono pitch roof, where the roof with pitch 3° or above
- While the minimum allowable roof pitch is 3°, it is recommended to have a minimum roof pitch of 5° for effective passive ventilation.
- A complete ventilated roof system with 25,000mm<sup>2</sup> per LM airflow in from the eaves and release air using the natural convection of rising warm air of 8,000mm<sup>2</sup> per LM through the apex to minimise condensation and mould growth.
- Use FRU38 for intertenancy dwellings or fire retardant performance is required.
- Install G1275 Eaves Comb Filler on the over fascia vent to prevent bird ingress and nesting insects.

### MANAGING DEW POINT CONDENSATION

For steel longrun with large surface contact areas with roof underlays, it is recommended ventilation and drainage above the underlay is created to defer the dew point condensation from the steel longrun.

Install VB10 on top of the underlay to create the ventilation and drainage pathway.

### BENEFITS

The roof system utilizes high vapour permeable and self-supporting DriStud Roof Underlays and VENT passive ventilation components. Passive ventilation operating year-round with no moving parts or energy consumption, with 4mm vents preventing the ingress of nesting insects.

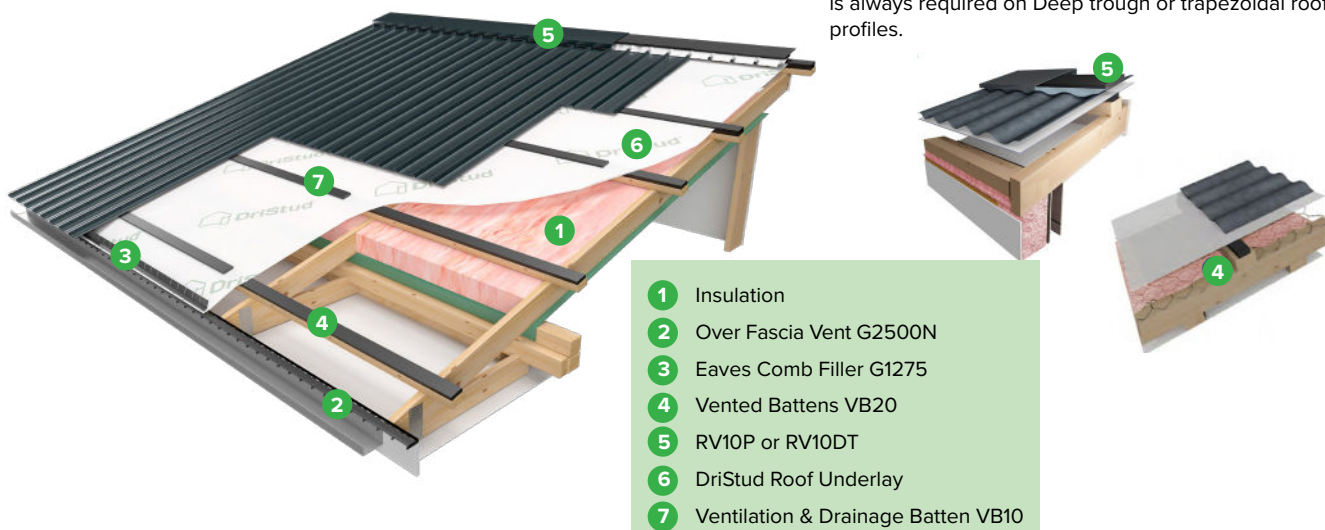
The system is compatible with timber and metal frames and suitable for up to and including 'Extra High' wind zone (NZS 3604).

### LINING

1. Fix G2500N Over Fascia Vent using nails or screws to the top of the fascia board through the fixing holes provided along the full length of the eaves.
2. Apply DriStud roof underlay from the lowest point to allow laps to shed water. Pull taut to prevent ponding of water. All edge and end laps must be overlapped by a minimum of 150mm.
3. Terminate the underlays at the ridge purlins to create airpath.
4. Peel-off adhesive backing of VB10 Ventilation & Drainage Battens and attach to purlins above the roofing underlay for temporary fixing. Cladding fixings must be fixed through the VB10 into the purlins.
5. Install RV10P for trough less than 34mm or RV10DT for trough greater than 34mm over the top of the roof cladding. Cut RV10P or RV10DT in half lengthwise for abutments and barge details.
6. Minimum 20mm gap between the bottom purlin and Over Fascia Vent is required for air flow.

### FIXINGS / FRAMING

- Framing must be specified and installed in accordance with NZBC 3604.
- For timber structures fixing or fasteners for roof underlays shall be placed no further than 300mm apart.
- Self taper to fix on metal fascia, nails for timber fascia for G1275 and G2500N.
- Fascia height to drop by 32mm to allow for G2500N Over Fascia Vent.
- Additional fixing screw length is required to accommodate 20mm thickness of RV10P or RV10DT. The aluminium soft edge should be notched or snipped as required to suit the roofing profile. Notching or snipping is always required on Deep trough or trapezoidal roofing profiles.



- 1 Insulation
- 2 Over Fascia Vent G2500N
- 3 Eaves Comb Filler G1275
- 4 Vented Battens VB20
- 5 RV10P or RV10DT
- 6 DriStud Roof Underlay
- 7 Ventilation & Drainage Batten VB10

## Steel Longrun Sarked Roof with Drainage Mat

ROOF PITCH 3° OR ABOVE

DRISPACE SPECIFICATION	UNDERLAY	VENT SYSTEM	FIXING AND ACCESSORIES
<ul style="list-style-type: none"> <li>• Standing seam roof system</li> <li>• Ventilated with drainage mat</li> <li>• Fire Retardant Underlay</li> </ul>	FRU38	G2500N VB20 RV10P or RV10DT	Galvanised or s/s staples, clouts or purlin screws. Scissors or knife.
<ul style="list-style-type: none"> <li>• Standing seam roof system</li> <li>• Ventilated with drainage mat</li> <li>• Self-Adhering Fire Retardant Underlay</li> </ul>	ProctorPassive Wraptite SA	ProctorPassive HC8 EnkaVent	

### USE CASE

- A complete roof system for sarked roof with all types of steel longrun where the roof pitch is 3° or above.
- While the minimum allowable roof pitch is 3°, it is recommended to have a minimum roof pitch of 5° for effective passive ventilation.
- Roof space ventilated with 25,000mm<sup>2</sup> per LM airflow from the eaves and release rising warm air of 8,000mm<sup>2</sup> per LM through the apex to minimise condensation and mould growth.

### ADDITIONAL VENTILATION

Install ProctorPassive HC8 EnkaVent to provide a permanent drainage channel for condensate that may get under the roof sheet. Install under zinc, copper, galvanised steel and any other standing seam roof to reduce corrosion risk.

### BENEFITS

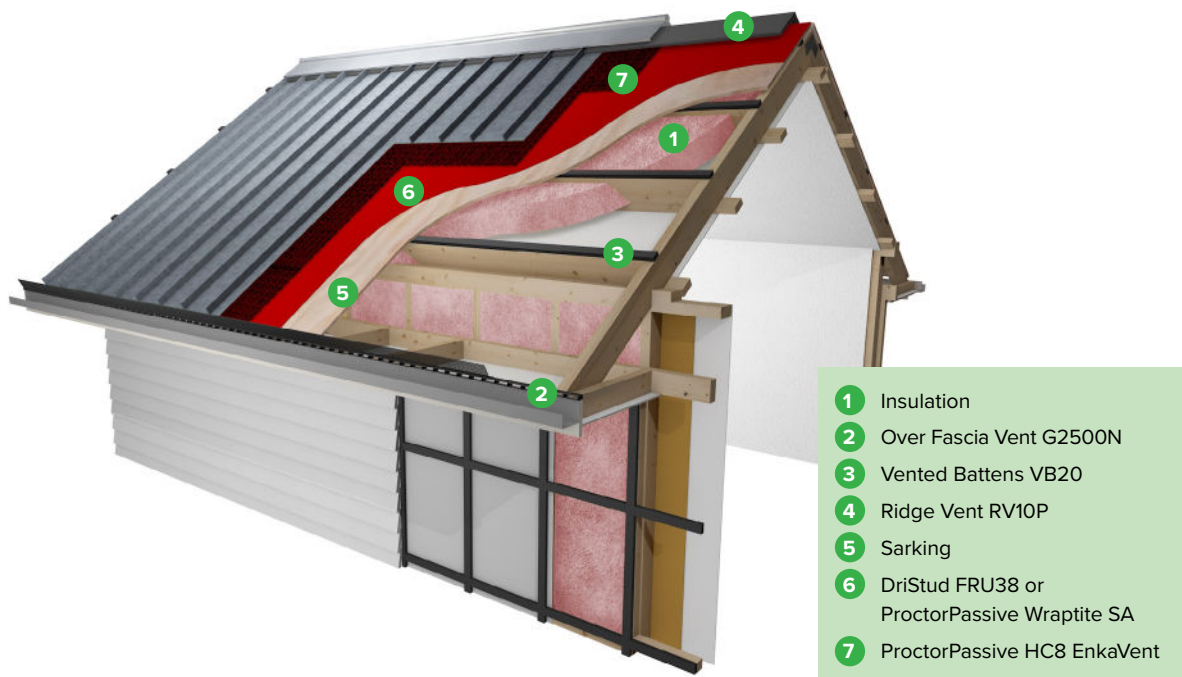
- Allows some movement of the roof sheet under temperature fluctuation.
- Allows for moisture to escape from the roofing structure above and below the sarking.
- The system components listed above and ProctorPassive HC8 EnkaVent have low flammability with flammability index of ≤5 and are deemed fire retardant in accordance with AS 1530.2

### LINING

1. If using DriStud FRU38 roof underlay, apply DriStud FRU38 from the lowest point to allow laps to shed water. Pull taut to prevent ponding of water. All edge and end laps must be overlapped by a minimum of 150mm. Use DriStud Cool Window Flashing Tape or Joining Tape to achieve lap seals.
2. If using ProctorPassive Wraptite SA, adhere Wraptite to the supporting sheet sarking horizontally or vertically. Overlaps must be minimum 75mm regardless of roof pitch. Eaves guards should be used to protect the membrane from sunlight.
3. Install G2500N Over Fascia Vent, VB20 Vented Batten and RV10P or RV10DT to introduce airflow below the sarking.
4. Install RV10P for trough <34mm and RV10DT for trough ≥34mm.
5. Terminate the underlays at the apex to create airpath.

### FIXINGS / FRAMING

- Framing must be specified and installed in accordance with NZBC 3604.
- ProctorPassive HC8 EnkaVent is staple or screw fixed for temporary fixing until the roof is installed.
- Try to place fixings where the membrane is overlapped to reduce leakage risk of the membrane.



- 1 Insulation
- 2 Over Fascia Vent G2500N
- 3 Vented Battens VB20
- 4 Ridge Vent RV10P
- 5 Sarking
- 6 DriStud FRU38 or ProctorPassive Wraptite SA
- 7 ProctorPassive HC8 EnkaVent

## Pressed Tile Vented Roof System

TRUSSED ROOF PITCH: 15° TO <30° ■ PRESSED TILE ROOF

DRISPACE SPECIFICATION	UNDERLAY	VENT COMPONENTS	FIXING AND ACCESSORIES
<ul style="list-style-type: none"> <li>Pressed Tile Trussed Roof</li> <li>Roof Pitch: 15° to &lt;30°</li> <li>Ventilated with Fire Retardant Underlay</li> </ul>	FRU38	G1200N G502CL	Galvanised or s/s staples, clouts or purlin screws self tapper
<ul style="list-style-type: none"> <li>Pressed Tile Trussed Roof</li> <li>Roof Pitch: 15° to &lt;30°</li> <li>Ventilated with Non-Fire Retardant Underlay</li> </ul>	RU24 or RU22		

### USE CASE

- The system is for pressed tile trussed roof, where the roof pitch is 15° to < 30°.
- For ventilated roof cavity with 10,000 mm<sup>2</sup> per LM airflow to minimise condensation and mould growth.
- Use FRU38 for intertenancy dwellings or where fire retardant performance is required.

### ADDITIONAL COMPONENTS

Eaves Comb Filler (G1275): Install G1275 on the over fascia vent, G1200N to prevent bird ingress and nesting insects.

### BENEFITS

The roof system utilizes high vapour permeable and self-supporting DriStud Roof Underlays and VENT passive ventilation components. Passive ventilation operating year-round with no moving parts or energy consumption, with 4mm vents preventing the ingress of nesting insects.

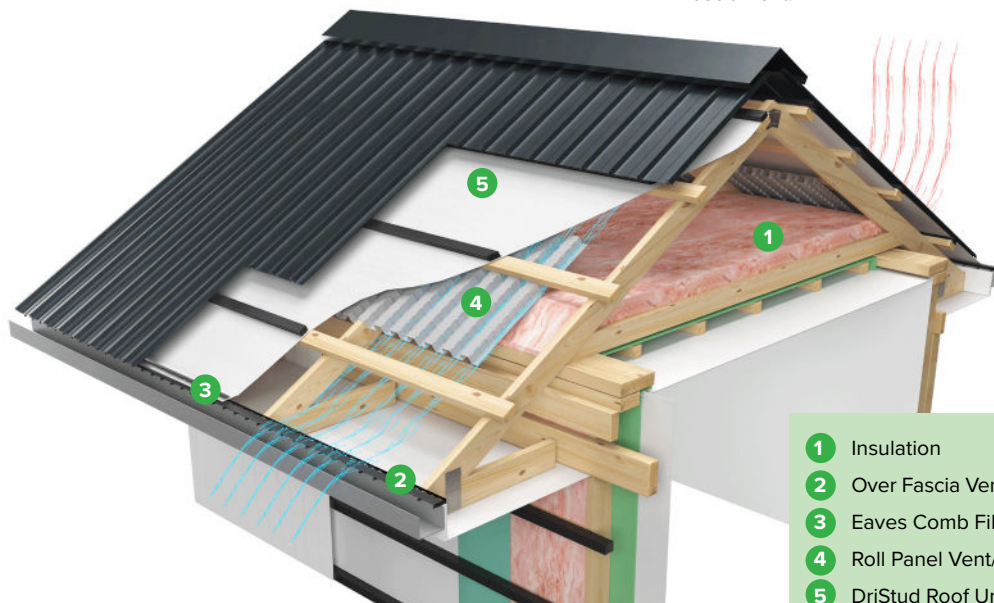
The system is compatible with timber and metal frames and suitable for up to and including 'Extra High' wind zone (NZS 3604).

### LINING

1. Lay G502CL Roll Panel Vent/Insulation Guard across the top of the roof trusses/rafters and roll out the full length of the eaves and adjust to align with the required roof truss centres. Nail or staple to secure in position.
2. Fix G1200N Over Fascia Vent using nails or screws to the top of the fascia board through the fixing holes provided along the full length of the eaves. Minimum 20mm gap between the bottom purlin and Over Fascia Vent is required for air flow.
3. Apply DriStud roof underlay from the lowest point to allow laps to shed water. Pull taut to prevent ponding of water. All edge and end laps must be overlapped by a minimum of 150mm.
4. It is recommended the roof underlay is terminated at the ridge purlins.

### FIXINGS / FRAMING

- Framing must be specified and installed in accordance with NZBC 3604.
- For timber structures fixing or fasteners for roof underlays shall be placed no further than 300mm apart.
- Self tapper to fix on metal fascia, nails for timber fascia for G1275 and G1200N.
- Fascia height to drop by 18mm to allow for G1200N Over Fascia Vent.



- 1 Insulation
- 2 Over Fascia Vent G1200N
- 3 Eaves Comb Filler G1275
- 4 Roll Panel Vent/Insulation Guard G502CL
- 5 DriStud Roof Underlay



## Pressed Tile Vented Roof System

TRUSSED ROOF PITCH: 30° OR ABOVE ■ PRESSED TILE ROOF

DRISPACE SPECIFICATION	UNDERLAY	VENT COMPONENTS	FIXING AND ACCESSORIES
<ul style="list-style-type: none"> <li>Pressed Tile Trussed Roof</li> <li>Roof Pitch: 30° or above</li> <li>Ventilated with Fire Retardant Underlay</li> </ul>	FRU38	G1200N G502CL VB10*	Galvanised or s/s staples, clouts or purlin screws self tapper
<ul style="list-style-type: none"> <li>Pressed Tile Trussed Roof</li> <li>Roof Pitch: 30° or above</li> <li>Ventilated with Non-Fire Retardant Underlay</li> </ul>	RU24 or RU22		

\*VB10 is a half the thickness of VB20

### USE CASE

- The system is for trussed pressed tile roof, where the roof pitch is 30° or above.
- A complete ventilated roof system with 10,000mm<sup>2</sup> per LM airflow in and release warm air using the natural convection of rising warm air of 8,000mm<sup>2</sup> per LM through the apex to minimise condensation and mould growth.
- Use FRU38 for intertenancy dwellings or where fire retardant performance is required.

### ADDITIONAL COMPONENTS

Eaves Comb Filler (G1275): Install G1275 on the over fascia vent, G1200N to prevent bird ingress and nesting insects.

### BENEFITS

The roof system utilizes high vapour permeable and self-supporting DriStud Roof Underlays and VENT passive ventilation components. Passive ventilation operating year-round with no moving parts or energy consumption, with 4mm vents preventing the ingress of nesting insects.

The system is compatible with timber and metal frames and suitable for up to and including 'Extra High' wind zone (NZS 3604).

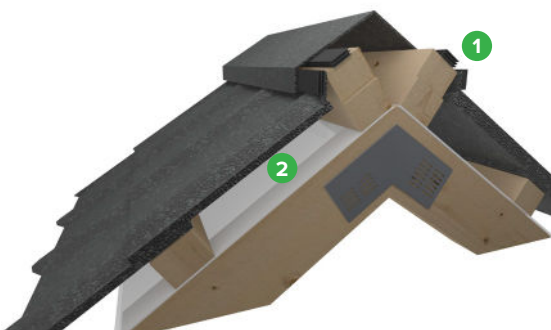
### LINING

1. Lay G502CL Roll Panel Vent/Insulation Guard across the top of the roof trusses/rafters and roll out the full length of the eaves and adjust to align with the required roof truss centres. Nail or staple to secure in position.
2. Fix G1200N Over Fascia Vent using nails or screws to the top of the fascia board through the fixing holes provided along the full length of the eaves.
3. Apply DriStud roof underlay from the lowest point to allow laps to shed water. Pull taut to prevent ponding of water. All edge and end laps must be overlapped by a minimum of 150mm.
4. Roof underlay must be terminated at the ridge purlins.
5. Split VB20 in half and make 10mm thick VB10 and install on the ridge purlins to create airpath.
6. Minimum 20mm gap between the bottom purlin and Over Fascia Vent is required for air flow.

### FIXINGS / FRAMING

- Framing must be specified and installed in accordance with NZBC 3604.
- For timber structures fixing or fasteners for roof underlays shall be placed no further than 300mm apart.
- Self tapper to fix on metal fascia, nails for timber fascia for G1275 and G1200N.
- Fascia height to drop by 18mm to allow for G1200N Over Fascia Vent.
- Additional fixing screw length is required to accommodate 20mm thickness of RV10P or RV10DT. The aluminium soft edge should be notched or snipped as required to suit the roofing profile. Notching or snipping is always required on Deep trough or trapezoidal roofing profiles.

- 1 Vented Batten VB10
- 2 DriStud Roof Underlay



## FR Flexible Wall Underlay System

### FIRE RETARDANT VAPOUR PERMEABLE AIR BARRIER SYNTHETIC WALL UNDERLAY

DRISPACE SPECIFICATION	DRISPACE SYSTEM COMPONENTS
Fire retardant wall wrap with <ul style="list-style-type: none"> <li>– direct fixed cladding</li> <li>– drained and vented cavity cladding</li> <li>– masonry veneer cladding</li> </ul>	<ul style="list-style-type: none"> <li>– DriStud Wall Wrap or DriStud REPEL</li> <li>– DriStud Cool Window Flashing Tape</li> <li>– VB20*</li> <li>– EPDM flexible seals or Marshall's Trade Seals</li> <li>– Polypropylene strap or 75mm galvanised mesh/wire</li> </ul>
– Proctor SmartVap 100	

\*NB: The VB20 should be treated as non-structural cavity batten.

#### USE CASE

1. It is a fire-retardant flexible wall underlay system and is suitable for both timber and steel framed buildings.
2. Can be direct fixed or installed in conjunction with a minimum 18mm drained cavity.
3. Can be used with non absorbent or absorbent claddings including masonry veneer in accordance with NZBC Acceptable Solution E2/AS1 for timber framed buildings or specific design for steel framed buildings.
4. The system includes multiple components to offer solutions to airtightness and weathertightness of the envelope.
5. Situated in NZS 3604 Wind Zones up to and including 'Very High' and 60 days of UV exposure.

#### ADDITIONAL COMPONENTS

- The following sealants are tested in accordance with AAMA 711-13 and compatible with DriStud Window Flashing Tape: Dowsil 795, Gorilla Firestop Ms5, Fix HG MS, Fixall 200 MS, MasterSeal, NP 1508, Sika AT, Sika MS.
- For buildings with high risks of condensation, it is recommended Proctor SmartVap 100, air barrier and variable vapour diffusion resistance retarder is installed as a continuous layer to the framing on the inside face of the insulation to improve the ventilation systems and thermal efficiency of the building enclosure.

#### BENEFITS

The wall system integrates multiple products to achieve high vapour permeability and air barrier properties for moisture vapour transfer but airtightness of the envelope, creating a healthier and more energy-efficient structure. DriStud Wall Wrap and REPEL are fire retardant, vapour permeable, air barrier, absorbent and durable underlay and can be installed on gable ends. The Cool Window Flashing Tape has polymer adhesive and ensures maximum adhesion across a wide range of temperatures without the need of primer nor corner moulds. It provides ultimate protection against water infiltration for windows, doors and through-wall entry points.

Vented wall batten, VB20 installed over DriStud Wraps creates a 20mm cavity for ventilation and drainage in the wall cavity, reducing the risk of moisture build up and condensation.

#### LINING

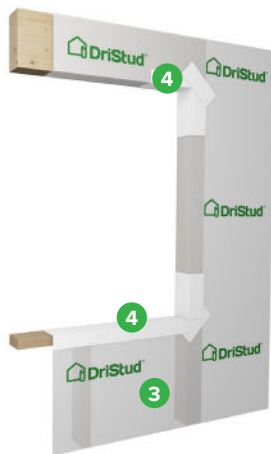
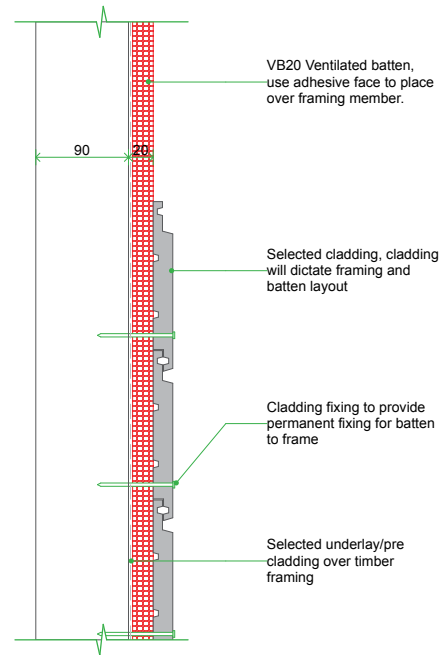
6. DriStud Wall Wrap is recommended to be installed horizontally with the printed side facing out. Horizontal laps should be overlapped no less than 75mm and vertical laps no less than 150mm. If possible, vertical laps should be over framing members or other solid backing. Where horizontal laps are required the upper sheet must overlap the bottom one to allow for moisture run off. At the end of runs and on gable walls, laps should be made vertically with a 150 mm end lap over studs. Tape vertical joints, cuts and tears with DriStud Cool or Joining Tape.
7. Run the underlay over openings and leave covered until windows and doors are ready to be installed. Form openings in the membrane by cutting a 45° diagonal from each corner of the penetration. Fold back the flaps inside the opening and staple to the penetration framing. Cut off excess underlay flush with the internal face of the wall frame.
8. Install DriStud Cool Window Flashing Tape to NZBC E2/AS1, 9.1.5 or DriStud Cool Tape Installation Guide. It requires only one layer on the horizontal sill surface.
9. Install VB20 as a drained vented batten by peeling-off adhesive backing for temporary fixing. It can be installed over the wall underlay both vertically or horizontally in line with requirements of selected wall cladding systems. It must be installed over the building wrap and cladding fixings must be fixed through the VB20 Vented Batten into the studs and dwangs.
10. Where stud spacings are greater than 450 mm, 75 mm galvanized mesh or wire galvanized in accordance with AS/NZS 4534, polypropylene strap or VB20 are installed over the building underlay behind the cavity battens at 300mm centres horizontally to prevent bulging of the building underlay into the drainage cavity.
11. Use flexible EPDM seals or Marshall's Trade Seals for wall cladding pipe and service penetration to E2/AS1.
12. DriStud REPEL Installation: Repel enables internal work to proceed before cladding is applied. Therefore, it is crucial to strictly follow the REPEL installation instructions outlined in the guide. Please visit our website for more information.

## FR Flexible Wall Underlay System (Cont.)

### FIXINGS / FRAMING

- Framing must be specified and installed in accordance with NZBC 3604.
- To fix DriStud Wall Wrap to the timber framing, use galvanized little grippers, 6-8mm staples or 20mm large head galvanized clouts to fix the underly securely to the frame with fasteners at 300mm centres horizontally and vertically. Additional fasteners should be used around each opening to be cut out. Fix securely to studs and dwangs so the underlay is taut across the framing.
- To fix DriStud Wall Wrap to steel framing use adhesive spray, tape or flat head screws or wafer-head self-drilling screws, power-driven helical nails or strapping and staples to fasten to the framing or thermal break. The exterior cladding fastenings will act as the permanent fixings.

### DIMENSIONS

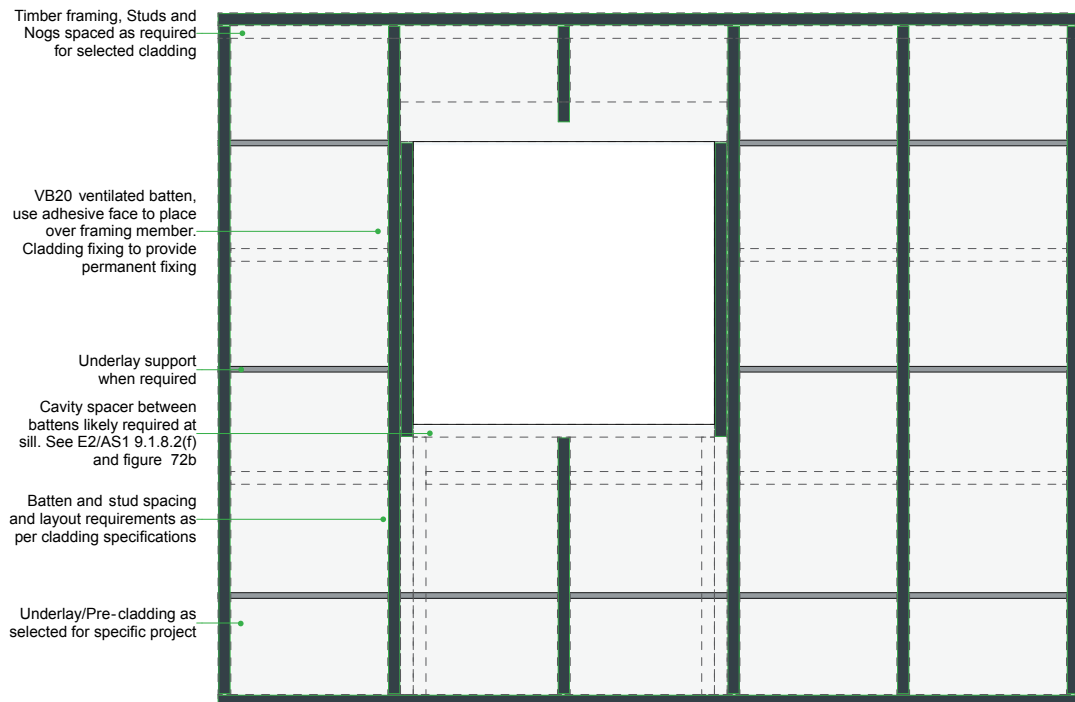


- 1 Insulation
- 2 Vented Batten VB20
- 3 DriStud Wall Wrap or REPEL
- 4 DriStud Cool Window Flashing Tape

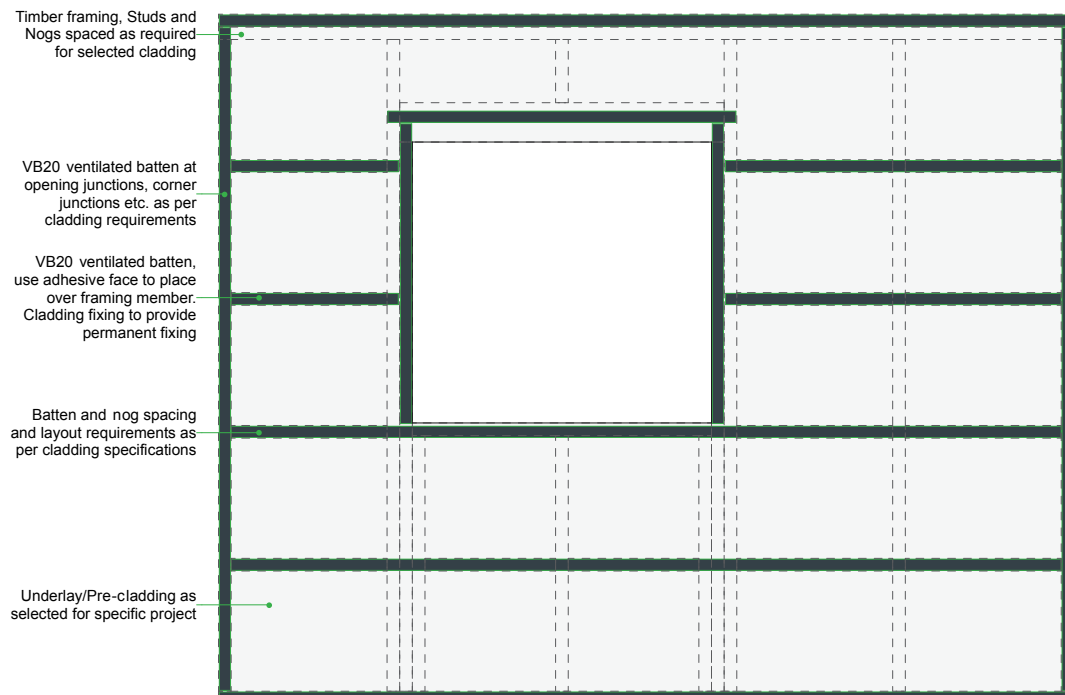


## FR Flexible Wall Underlay System (Cont.)

### VENT VB20 HORIZONTAL CLADDING SYSTEM



### VENT VB20 VERTICAL CLADDING SYSTEM





## FR wall system on rigid air barrier

### FLEXIBLE WALL UNDERLAY ON RIGID WALL UNDERLAY

DRISPACE SPECIFICATION	DRISPACE SYSTEM COMPONENTS
Fire retardant flexible wall underlay installed on Rigid Wall Underlays	<ul style="list-style-type: none"> <li>– DriStud Wall Wrap or DriStud REPEL</li> <li>– DriStud Cool Window Flashing Tape</li> <li>– VB20*</li> <li>– EPDM flexible seals or Marshall's Trade Seals</li> </ul>
– Proctor SmartVap 100	

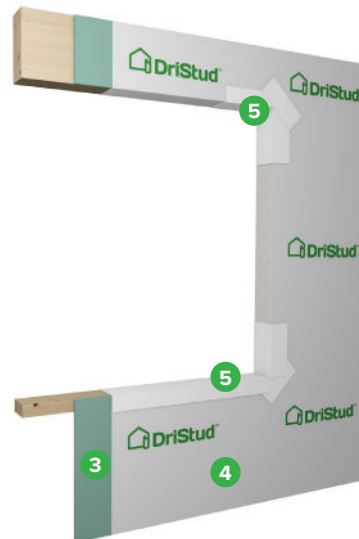
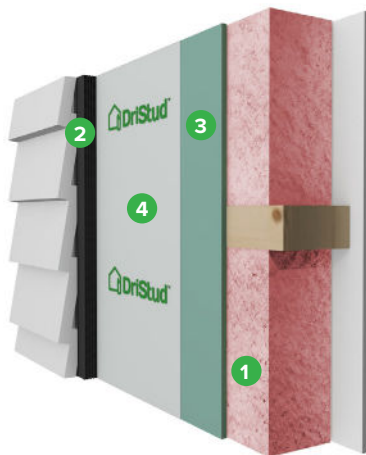
\* NB: The VB20 should be treated as non-structural cavity batten.

#### USE CASE

- It is a fire retardant flexible wall underlay system installed on rigid wall underlays made from plywood, OSB or fibre cement.
- The system integrates multiple components to offer additional weather and air tightness benefits to rigid air barriers for both cavity and direct fixed with absorbent and non-absorbent claddings.
- Situated in NZS 3604 Wind Zones up to and including 'Extra High' and 90 days of UV exposure.

#### ADDITIONAL COMPONENTS

- The following sealants are tested in accordance with AAMA 711-13 and compatible with DriStud Window Flashing Tape: Dowsil 795, Gorilla Firestop Ms5, Fix HG MS, Fixall 200 MS, MasterSeal, NP 1508, Sika AT, Sika MS.
- For buildings with high risks of condensation, it is recommended Proctor SmartVap 100 air barrier and variable vapour diffusion resistance retarder is installed as a continuous layer to the framing on the inside face of the insulation to improve the ventilation systems and thermal efficiency of the building enclosure.



- 1 Insulation
- 2 Vented Batten VB20
- 3 Rigid Wall Underlay
- 4 DriStud Wall Wrap or REPEL
- 5 DriStud Cool Window Flashing Tape

## FR wall system on rigid air barrier (Cont.)

### BENEFITS

The wall system integrates flexible wall underlay components to install on rigid wall underlays made of plywood, OSB, exterior grade gypsum and fibre cement. The system offers additional weather and air tightness and allows fast drying of moisture built up within the envelope, creating a healthier and more energy-efficient structure. Vented wall batten, VB20 installed over DriStud Wraps creates a 20mm cavity for ventilation and drainage in the wall cavity, reducing the risk of moisture build up and condensation. The Cool Window Flashing Tape has polymer adhesive and ensures maximum adhesion across a wide range of temperatures without the need of primer nor corner moulds. It provides ultimate protection against water infiltration for windows, doors and through-wall entry points.

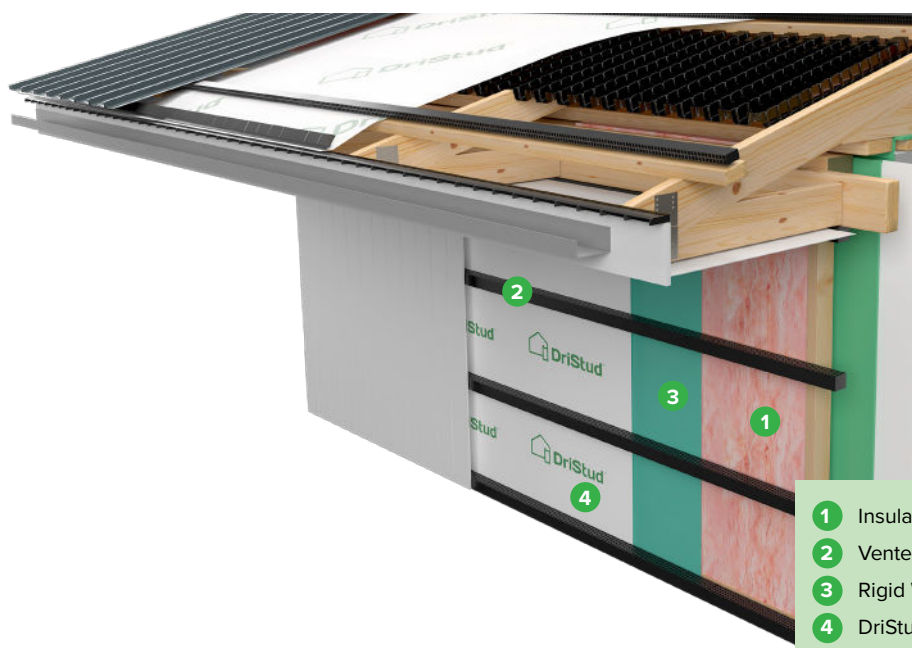
### LINING

1. DriStud Wall Wrap is recommended to be installed horizontally with the printed side facing out. Horizontal laps should be overlapped no less than 75mm and vertical laps no less than 150mm. Where horizontal laps are required the upper sheet must overlap the bottom one to allow for moisture run off. Tape the vertical joins, cuts and tears with DriStud Cool Window Flashing Tape.
2. Run the underlay over openings and leave covered until windows and doors are ready to be installed. Form openings in the underlay by cutting a 45° diagonal from each corner of the penetration. Fold back the flaps inside the opening and staple to the penetration framing. Cut off excess underlay flush with the internal face of the wall frame. Install DriStud Cool Window Flashing Tape to NZBC E2/AS1, 9.1.5 or DriStud Cool Tape Installation Guide. It requires only one layer on the horizontal sill surface.

3. Install VB20 as a drained vented batten by peeling-off adhesive backing for temporary fixing. It can be installed over the wall underlay both vertically or horizontally in line with requirements of selected wall cladding systems. Must be installed over the building wrap. Cladding fixings must be fixed through the VB20 Vented Batten into the studs and dwangs.
4. Use flexible EPDM seals or Marshall's Trade Seals for wall cladding pipe and service penetration to E2/AS1.
5. DriStud REPEL Installation: REPEL enables internal work to proceed before cladding is applied. Therefore, it is crucial to strictly follow the REPEL installation instructions outlined in the guide. Please visit our website for more information.

### FIXINGS / FRAMING

- Framing must be specified and installed in accordance with NZBC 3604 and rigid wall underlays are installed in accordance with the manufacturers' specification.
- Pull flexible underlays taut and fix securely to the rigid wall underlays with galvanized little grippers, 6-8mm staples or 20mm large head galvanized clouts at 300mm centres horizontally and vertically. Additional fasteners should be used around each opening to be cut out.



- 1 Insulation
- 2 Vented Batten VB20
- 3 Rigid Wall Underlay
- 4 DriStud Wall Wrap

## ProctorPassive Wraptite Wall Systems

### SELF ADHERING MEMBRANE ON RIGID WALL UNDERLAY

DRISPACE SPECIFICATION	DRISPACE SYSTEM COMPONENTS	VENT SYSTEM
ProctorPassive Wraptite SA - Self-adhering external air barrier for roof and wall	<ul style="list-style-type: none"> <li>ProctorPassive Wraptite SA &amp; UV-SA</li> <li>Approved Liquid Flashing: <a href="#">Gorilla Flexi</a></li> <li>DriFlash Tape and YouByute Flexi Tape</li> </ul>	<ul style="list-style-type: none"> <li>VB20*</li> </ul>

\*NB: The VB20 should be treated as non-structural cavity batten.

#### USE CASE

- Wraptite SA and UV-SA are CodeMark Certified self-adhesive vapour permeable external flexible air barriers.
- Use Wraptite for closed cladding applications and UV-SA for high UV environments including Open Joint cladding applications.
- Proctor Wraptite SA is an externally applied fully adhered vapour permeable Weather Resistant Barrier/Air Barrier membrane for walls and roofs onto the various substrates with cavity wall claddings.
- Wraptite SA & UV-SA are compatible with and can be adhered to Aluminium (painted or mill finish), Anodised Aluminium, Concrete Block, Exterior Grade Gypsum/Fire Board, Galvanised Metal, In-Situ Concrete, OSB, Precast Concrete, Pre-Painted Steel, Rigid Vinyl, Steel, Plywood.

- ProctorPassive Wraptite and the range of Wraptite accessories are robust materials that are suitable as a roof and wall underlay on SIP and CLT construction. This makes Wraptite a flexible and simple solution for achieving airtightness on both on-site and off-site projects.

#### ADDITIONAL COMPONENTS

- Tools: utility knife, rubber roller, stiff brush, marker pen, measuring tape, scissors, barrel sealant gun, putty knife, clean cloth.





## Proctor Wraptite SA Wall System (Cont.)

### BENEFITS

- Wraptite SA & UV-SA makes the envelope airtight and energy efficient by addressing air leakage that accounts for up to 70% reduction in the effectiveness of insulation.
- Wraptite SA & UV-SA's high vapour permeability allows the rigid air barrier to dry quickly and moisture to escape. This ensures good indoor air quality by reducing the likelihood of mould, mildew, condensation, timber distortion and metal corrosion.
- Proctor Passive Wraptite SA & UV-SA fully bonds without mechanical attachments to most substrates for ease of installation, requiring minimal use of sealants or tapes.
- Proctor Passive Wraptite SA & UV-SA utilizes a patented full coverage air permeable adhesive to provide unsurpassed vapour permeability in a commercial quality, self-adhered, water resistant breather membrane.

### LINING PREPARATION

Substrate surfaces must be clean, dry and free from all bond-breaking contaminants and sharp protrusions.

Keep Wraptite in the original packaging which also functions as a dispenser.

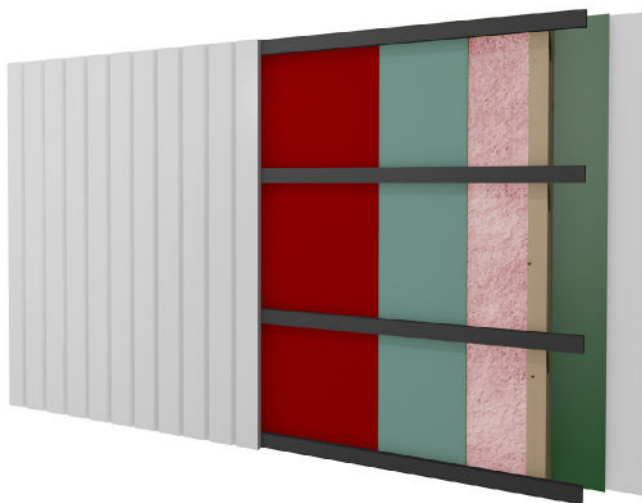
### WALL LINING

1. Wraptite membrane can be installed horizontally (2 person method) or vertically (1 person method)
2. Pre-cut the membrane to the required length then reroll with the release paper facing outwards and peel back the release paper and lightly apply the adhesive surface to the prepared substrate.
3. Using a hand roller or stiff brush smooth out any air bubbles, releasing the air by starting from the middle and working your way towards the edges. Overlaps must be minimum 75mm.

4. Run the underlay over openings and leave covered until windows and doors are ready to be installed. Form openings in the membrane by cutting a 45° diagonal from each corner of the penetration. Fold back the flaps inside the opening and adhere to the penetration framing. Cut off excess underlay flush with the internal face of the wall frame. Install DriStud Cool Window Flashing Tape to NZBC E2/AS1, 9.1.5 or DriStud Cool Tape Installation Guide. It requires only one layer on the horizontal sill surface.
5. Gaps around wall penetrations that are greater than 6mm are prefilled with Wraptite Liquid Flashing and allowed to cure and after DriStud Cool Tape is installed, use approved sealants to fill gaps.
6. Install VB20 as a drained vented batten by peeling-off adhesive backing for temporary fixing. It can be installed over the Wraptite both vertically or horizontally in line with requirements of selected wall cladding systems. Cladding fixings must be fixed through the VB20 Vented Batten into the studs and dwangs.
7. Use flexible EPDM seals for wall cladding pipe and service penetration to E2/AS1.
8. For Wraptite UV-SA installation for open joint cladding applications, please refer to the Wraptite UV-SA installation guide. It is essential to adhere strictly to the Wraptite UV-SA installation instructions provided in the guide. Please visit our website for further details.

### FIXINGS / FRAMING

- Framing must be specified and installed in accordance with NZBC 3604 and rigid wall underlays are installed in accordance with the manufacturers' specification.
- Minimal requirement of fixing: Proctor Passive Wraptite SA fully bonds without mechanical attachments to most substrates.





## Multi Unit Dwellings

FOR ALL ROOF DESIGN AND PITCHES

ROOF PITCH/ DESIGN	DRISPACE SPECIFICATIONS	SYSTEM COMPONENTS
For Trussed and Skillion Roof   3° pitch and above	All previous systems can be used for multi-terraced houses, with DriStud fire retardant underlays. For more indepth information, contact <a href="mailto:technical@dripace.co.nz">technical@dripace.co.nz</a> for specific systems.	<ul style="list-style-type: none"> <li>— DriStud FRU38</li> <li>— ProctorPassive Wraptite SA or UV-SA</li> <li>— VENT</li> <li>— DriStud Wall Wrap and Repel</li> <li>— DriStud Cool Window Flashing Tape or DriFlash Tape</li> </ul>

### OVERVIEW

DriSpace offer a number of vented roof systems for skillion and trussed roofs with different roof pitches. The systems provide solutions to improve new zealand buildings by providing an air barrier envelope but allowing our buildings to breathe again by introducing passive ventilation in the roof space to minimise interstitial condensation.

Roof ventilation products are designed as non-structural roofing components, engineered to prevent the build-up of internal moisture in roof cavities, and mitigating associated risks such as structural decay and harmful moulds. Roof ventilation product combinations are determined based on the design and the pitch of the roof and can be used on both new builds and renovation projects, and on commercial, residential, school and mdh projects.

### APPLICATION

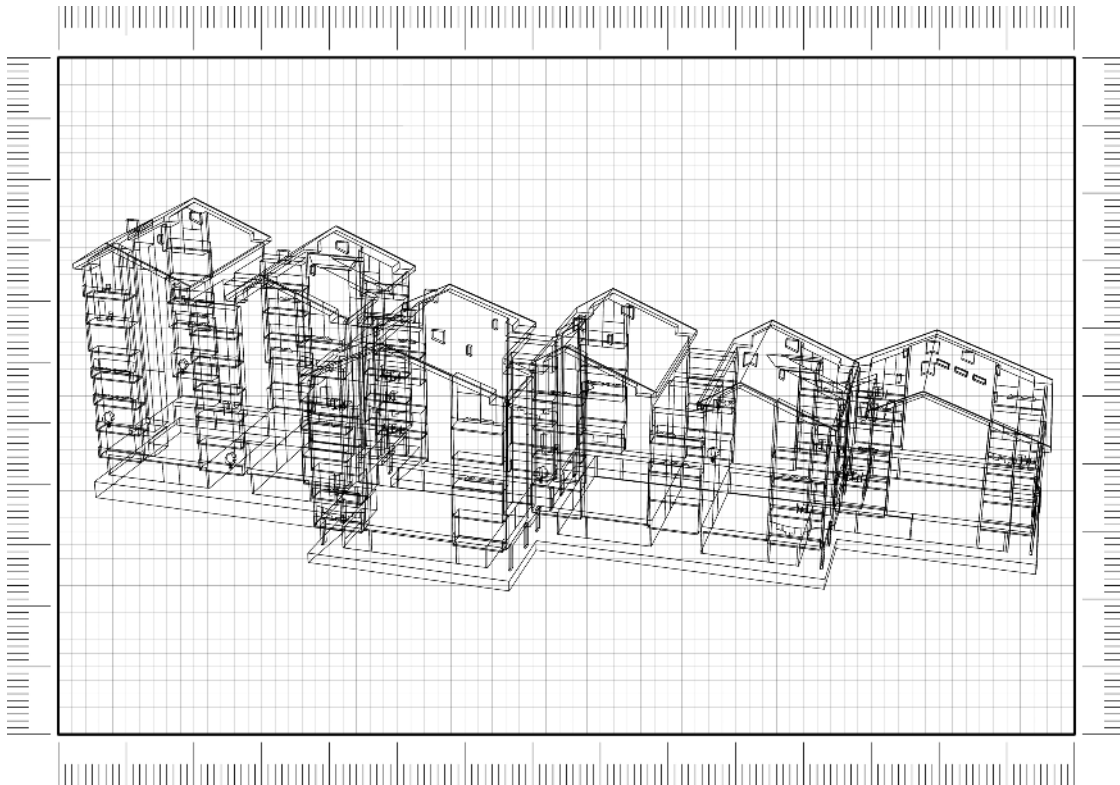
DriSpace systems use three principles:

1. Passive ventilation: VENT
2. High vapour-permeable underlay: DriStud
3. Vapour control layer and airtight membrane: Proctor Passive

Specified vents must be used in the system to ensure sufficient airflow is introduced into the roof, creating a difference in air pressure so that warm moist air is pushed out.

### BENEFITS

Incorporating continuous, calculated and unimpeded passive ventilation into the roof cavity adds durability and sustainability to the lifespan of the roof. Passive ventilation systems will manage internal moisture that is created by the means of construction moisture, occupancy behaviour, or variance of temperature (dew points) in roof system and any associated risks such as building product failure or damp and mould.









DRISPACE IS A DIVISION OF



7-9 Fisher Crescent Mt Wellington Auckland 1060

Ph: 0800 374 7883

e: [technical@drispace.co.nz](mailto:technical@drispace.co.nz)

[www.drispace.co.nz](http://www.drispace.co.nz)