

# Terraçade TN

A low-angle photograph of a modern building with a red-tiled facade and a grey stone pillar against a blue sky. The building's facade is composed of large, rectangular red tiles arranged in a grid pattern. A prominent grey stone pillar, also with a grid pattern, stands in the foreground. The sky is a clear, deep blue. The overall composition is dynamic, with strong geometric lines and a vibrant color palette.

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# Safe Working Instructions

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# Site Preparation

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## Reworking Tiles

Silica dust can be liberated from the Terraçade TN tiles when they are reworked. Chronic inhalation of crystalline silica has been associated with impairment of lung function. Please refer to SDS for Terraçade, which is available from the Terraçade website ([www.terraçade.com.au](http://www.terraçade.com.au)) for further information. Care should be taken when reworking Terraçade TN tiles to maintain the exposure to crystalline silica below the Exposure Standard prescribed by Worksafe Australia (0.05 mg/m<sup>3</sup>).

Safe working procedures should include:

- Utilising a wet saw when cutting or reworking tiles. Contact the saw manufacturer for further details.
- Wear appropriate personal protective equipment, such as approved dust mask and safety goggles, when utilising power tools or abrasive hand tools on the tiles.
- Ensure that dust is disposed of during clean up and disposal appropriately, by either wetting or vacuuming. (refer to the below opposite).

## Using Brick/Tile Saw or Power Saws

- Ensure that adequate personal protective equipment, such as approved safety glasses, gloves, dust masks and hearing protection are worn.
- Use a wet saw to cut or ensure that adequate ventilation or dust extraction equipment is available if dry cutting is used.

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## Handling

- Care should be taken when handling suspension rails and trims to avoid cuts and abrasions. The use of appropriate gloves may be of benefit. Extra care should be taken when handling cut pieces of tiles.
- It is recommended that large packs of suspension rails should be broken up, so that they may be handled individually.
- Ensure clear passage when moving the suspension rails and trims due to their size. Also allow for adequate storage of the suspension rails and trims to avoid trip hazards.
- Take care when handling cut tiles, to avoid cuts or abrasions from sharp surfaces or broken tiles.
- Consider manual handling issues when lifting tiles.
- Ensure that an adequate number of people are available to support the weight of the roll when rolling out the membrane.

## Surrounding Materials:

- All materials should be stored to avoid damage. Particularly, ensure that the hangers on the suspension rails are protected from distortion and the edges and corners of the tiles are protected from chipping.
- Protect the tiles, rails and trims from exposure to rain, water or chemicals during storage.
- Ensure that pressure water jet cleaning of any surrounding surfaces is conducted prior to the installation of the tiles.
- Protect aluminium components during chemical cleaning of nearby materials, especially acid cleaning.

## Recommended Safety Protection



Face Masks P1 or P2 type approved to the relevant Australian Standards.



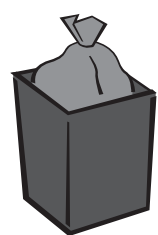
Safety Goggles approved to the relevant Australian Standards.



Hearing Protection approved to the relevant Australian Standards.



Clean up, wet down or vacuum



Dispose of dust contamination



For the most up to date information on Terraçade products and the latest version of this manual, please refer to our website. This document is non-controlled if printed or otherwise removed from the website.

**[terracade.com.au](http://terracade.com.au)**

# System Description

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# Overview

Terraçade™ is an innovative Australian terracotta façade system developed to provide the natural beauty and aesthetic appeal of terracotta to your project.

Terraçade TN has been designed in consultation with Australia's leading engineers to act as a rain screen and rear ventilated façade system. It is a lightweight system and is simple to install.

## System Assembly

The Terraçade TN system is easily installed as the tiles are attached securely by a purpose designed vertical suspension rail. The system can be installed onto a timber framed, steel framed, concrete or masonry structural wall.

The Terraçade TN system is comprised of:

- A galvanised vertical suspension rail incorporating unique tile hangers,
- Lightweight clay tiles designed to fit securely onto the suspension rails,
- Two vertical jointing strip options,
- Fitment sponge,
- A waterproof membrane.

In addition, a full range of trims are available in anodised or powder coated finish to complement or highlight your design, including:

- Internal and external corners,
- A surround that accommodates windows, doors, bases and parapets.

## Benefits of Terraçade TN

Terraçade TN is a rear ventilated façade, which creates an airspace outside the load-bearing wall. This minimises thermal transfer to the building structure, improving comfort levels and providing energy savings. The airspace provides natural ventilation with a chimney effect, which facilitates the removal of heat, humidity and condensation away from the building structure.

## Exposure Grade

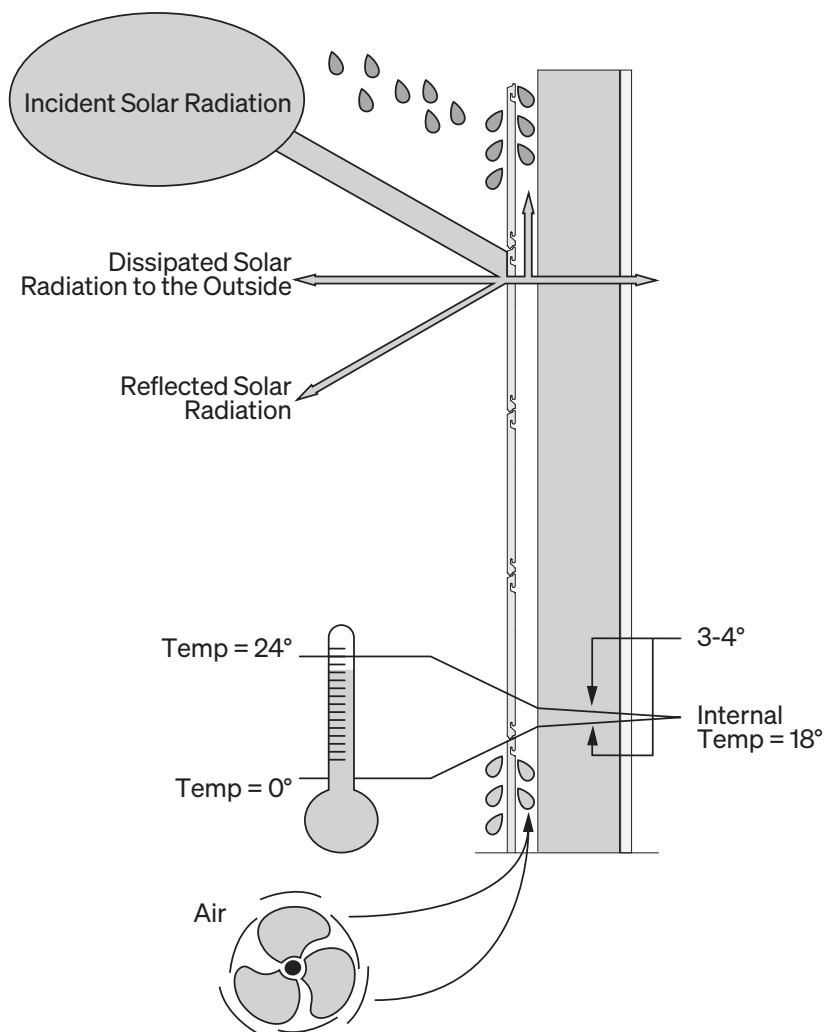
Terraçade TN tiles are classified exposure grade so they can be used in all environments including severe marine environments and areas subject to heavy industrial pollution.

The coastal version incorporates ZAM® precoated steel or stainless steel suspension rails to ensure that the Terraçade TN will stand the test of time

## Tested Performance

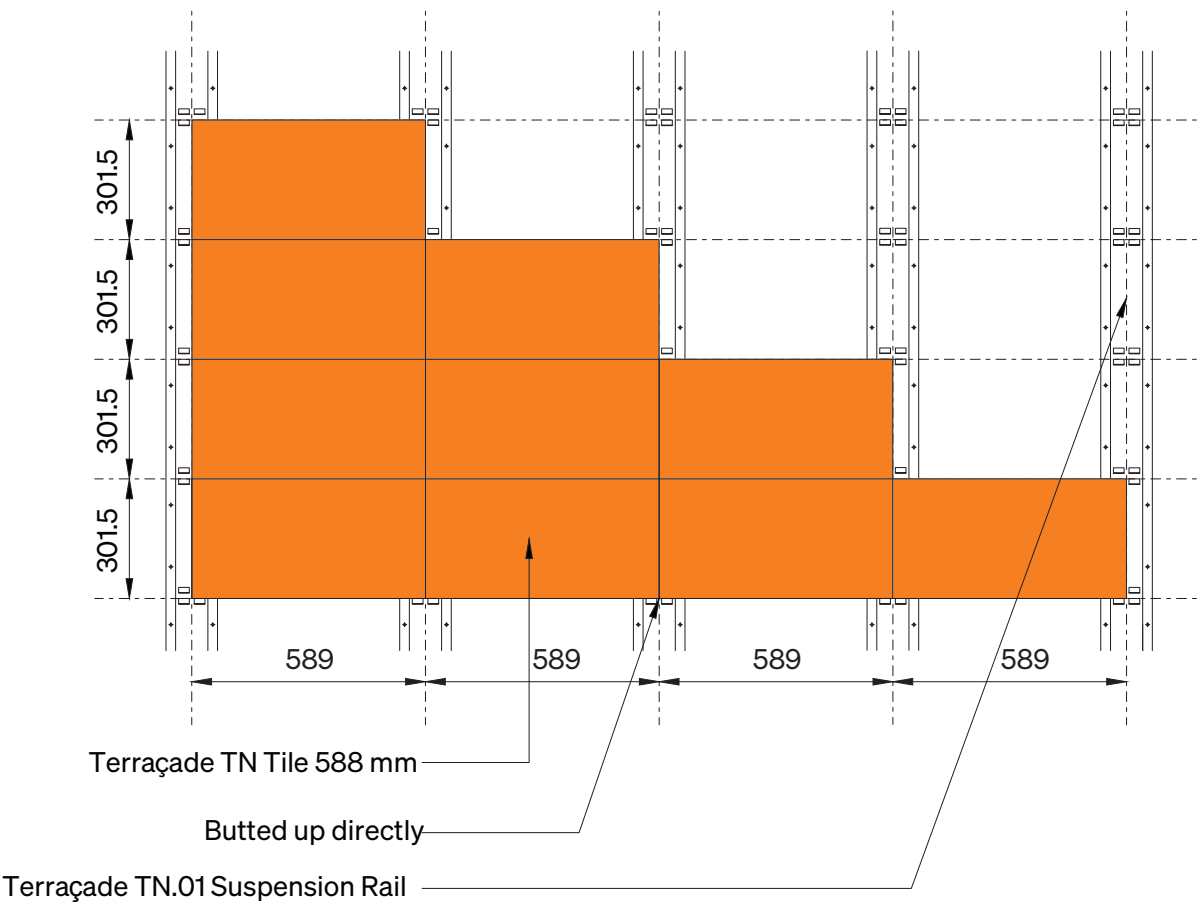
The terracotta tile acts as part of a rain screen system, where the tile is the first line of defence against water penetration and must be used in conjunction with a waterproofed and drained backup wall. A waterproof membrane is supplied as part of the system's tested performance. The system has demonstrated structural and weather performance, as shown through the extensive wind load and water penetration testing conducted to AS/NZS 4284.

The performance of the Terraçade TN tiles has been extensively tested in Austral's NATA accredited laboratory to AS/NZS 4455 and AS/NZS 4456 and in independent NATA accredited laboratories. In addition to the standard TN system a coastal version of Terraçade TN is available for severe marine environments.



# Overview

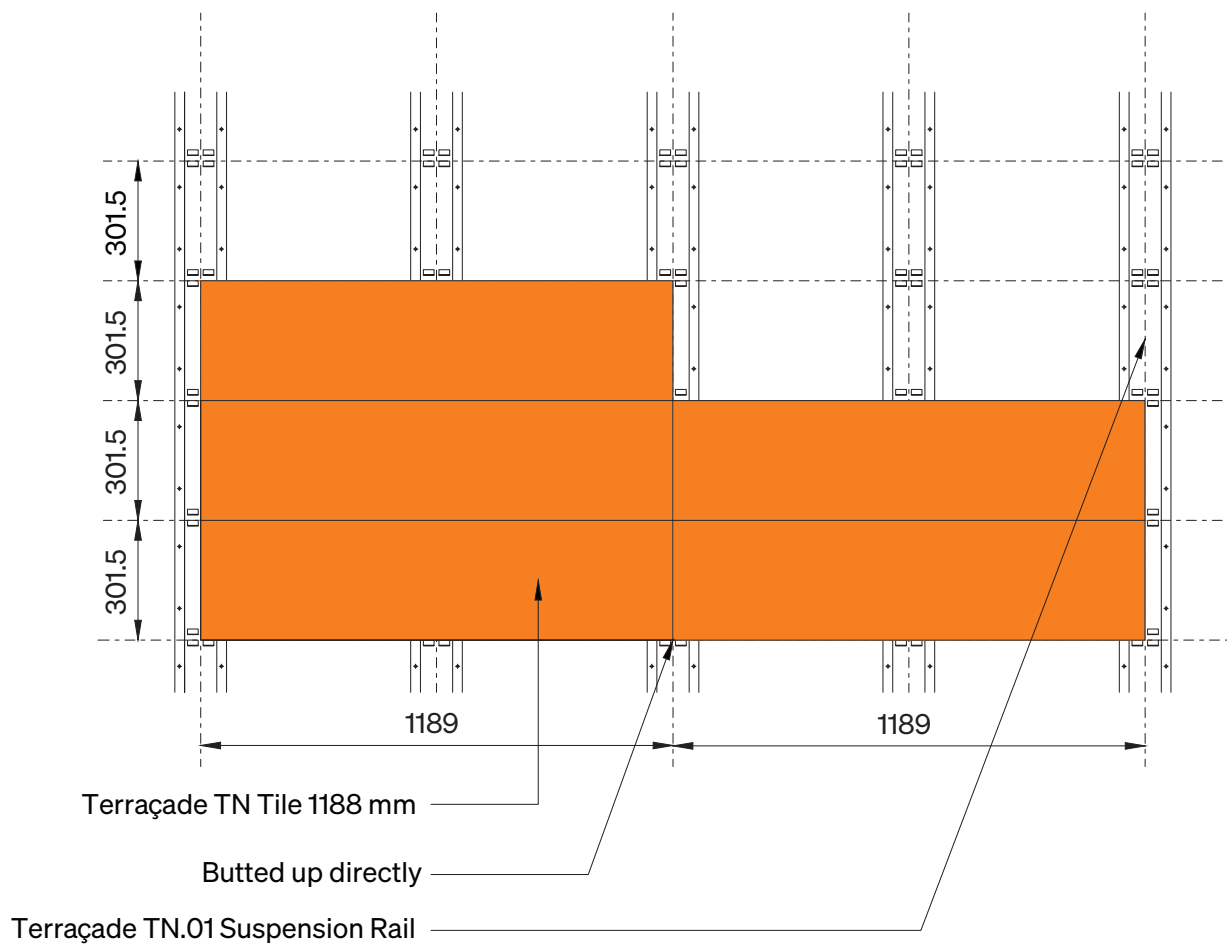
Terraçade TN System with Butt Joint



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## Terraçade TN System with Butt Joint



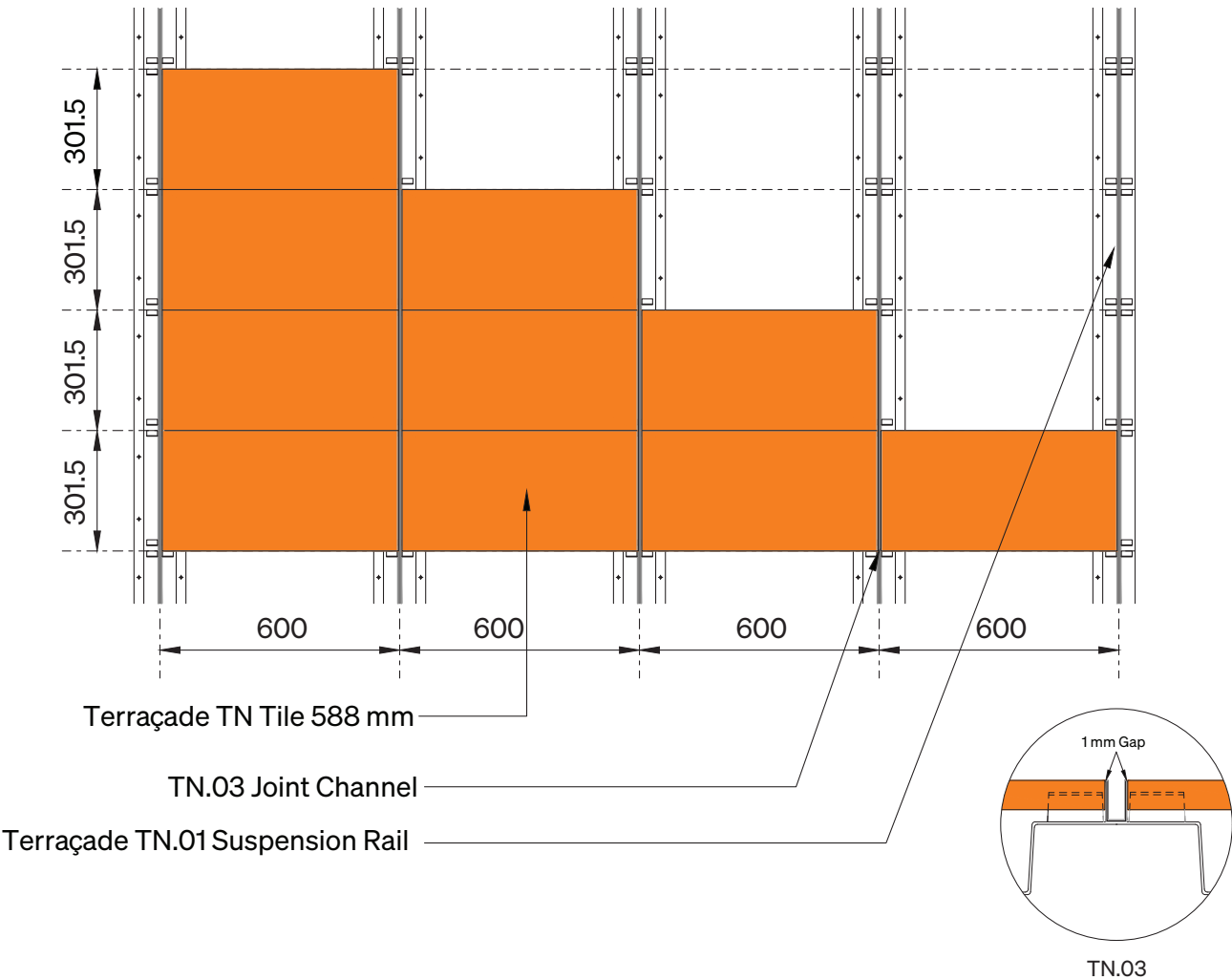
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# Overview

Terraçade TN System with Joint Channel

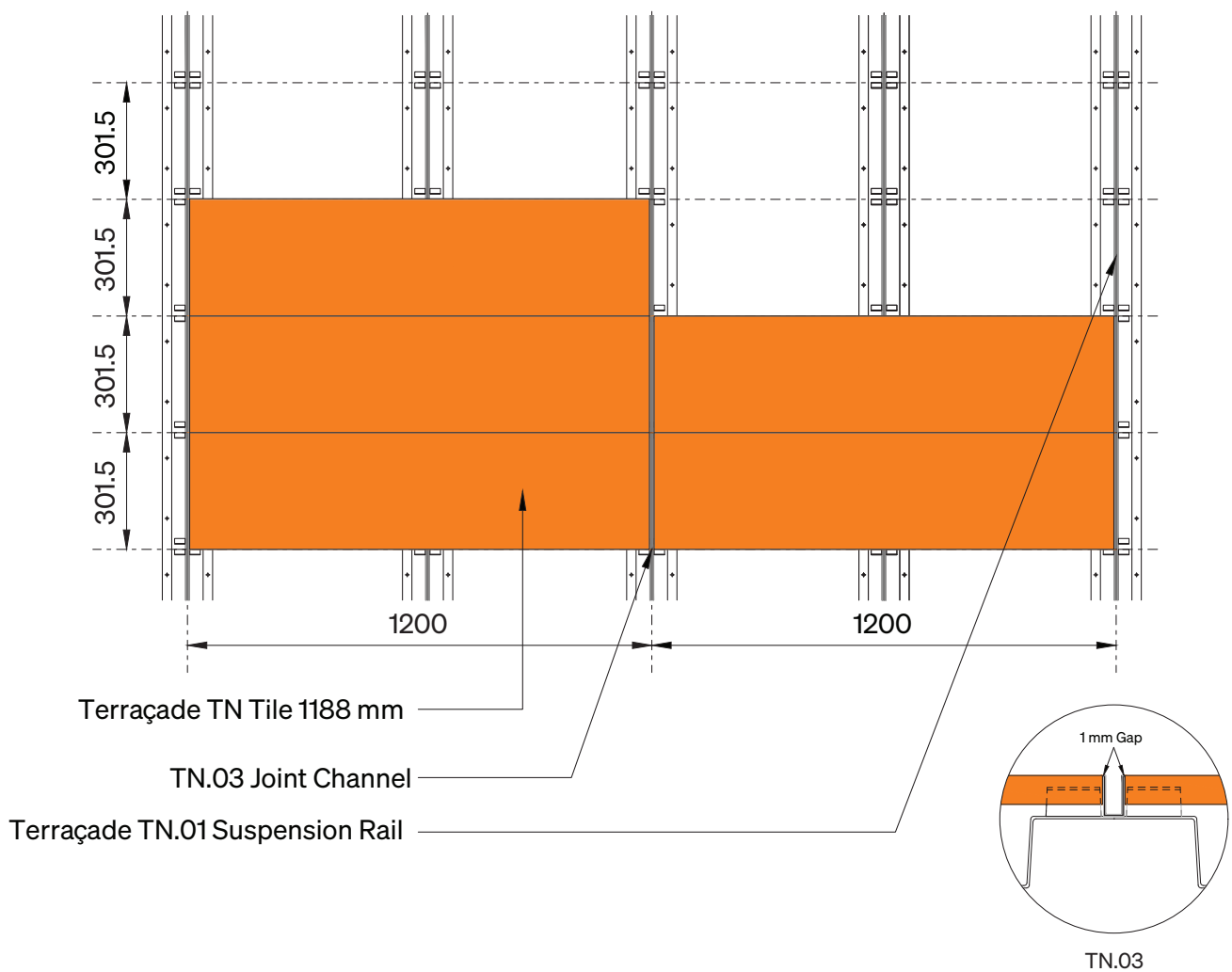


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### Terraçade TN System with Joint Channel



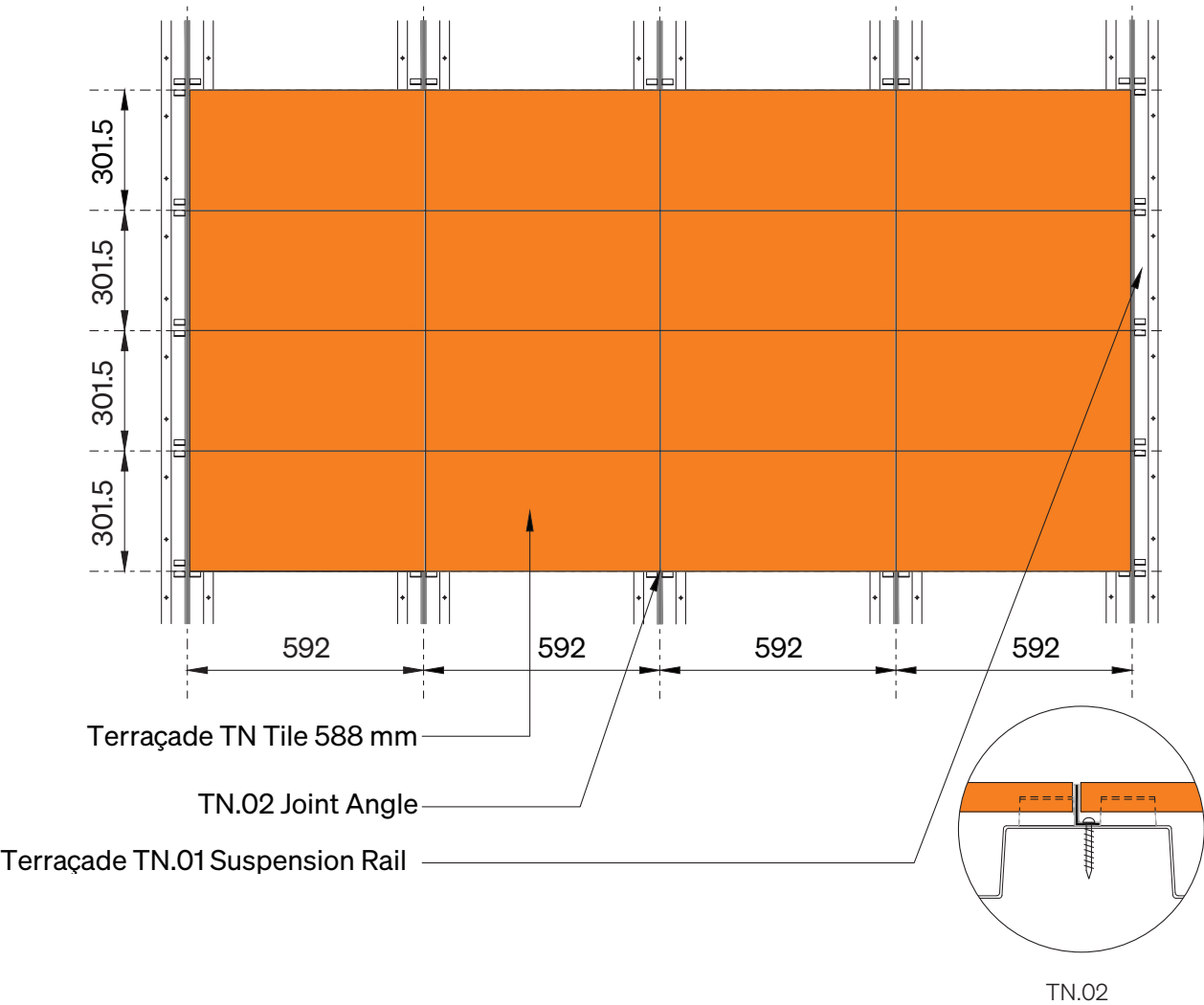
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# Overview

Terraçade TN System with Joint Angle

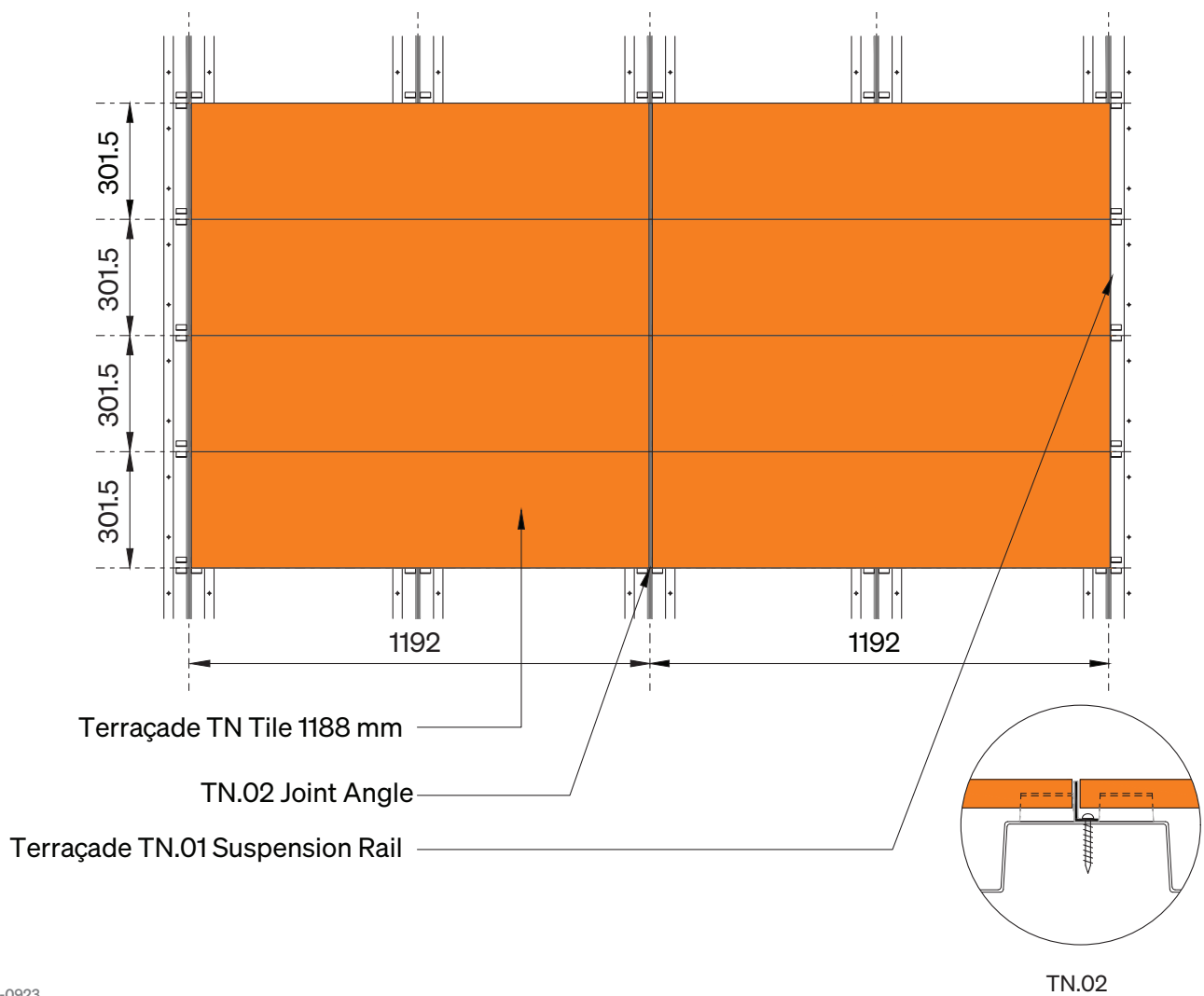


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### Terraçada TN System with Joint Angle



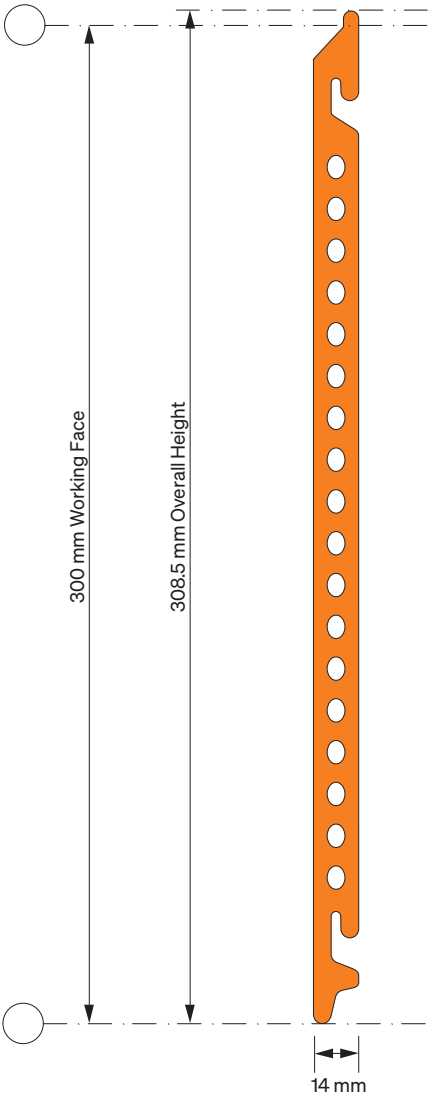
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# Overview

Terraçade TN System Side Profile



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# Features and Benefits

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1.

**Stylish finish**

Sleek and modern, Terraçade creates a unique, stylish finish.

2.

**Range of colours**

A huge range to suit your style.

3.

**Designed to last**

Colours that will never fade and a product warranted for 100 years.

4.

**Fire resistant**

The Terraçade system is non-combustible.

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5.

**Exposure grade**

Certified as suitable for use in marine environments.

6.

**Weather resistant**

Designed to withstand all weather conditions.

7.

**Strong and durable**

Terraçade is designed to resist impact.

8.

**Various applications**

Can be used for residential, commercial, or industrial projects.

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9.

**Natural**

Terraçade is made from natural clay which is kiln fired.

10.

**Simple installation**

The Terraçade system is fast and simple to install.





# Structural Performance

3

# Structural Performance

## System Performance for Earthquake and Wind Loads

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### Supply and Testing Statement

The Terraçade TN system has been tested to AS/NZS 4284 (Testing of building façades) for structural performance and has passed the deflection criteria under serviceable limit state.

System and structural advice has been obtained from Core Project Consulting (Australia) Pty. Ltd. and they have also provided engineering guidance on the structural testing.

### Earthquake Performance

The Terraçade TN system has been checked for compliance with AS 1170: Part 4 Earthquake loads.

From analysis of AS 1170.4 the derived acceleration imparts a load which is approximately equal to the cladding self weight. When such loads are compared to the system's allowable wind pressures it is evident that the wind load is the dominating load case.

As the Terraçade TN system develops small forces from the action of inertia during seismic events, the horizontal directions of movement are accommodated

by the inherent strength of the system. No further action is therefore necessary to resist such movements, and the system is acceptable to AS 4100: 1998 Steel Structures.

Movement however in a true vertical direction does require restraint against the tiles lifting directly off the rail system under such an action.

For installation in earthquake prone areas, the Terraçade TN system requires an anti-lift block or trim installed along its top edge to ensure tiles under the action of vertical seismic events, are unable to detach from their supporting rail.

When the anti-lift block or trim is installed the system is suitable for installation against earthquakes in earthquake prone areas. However this precaution does not alleviate the system's requirements for installation against wind load.

*(Statement supplied by Core Project Consulting).*

### Ultimate Wind Pressures

The following charts and tables have been calculated assuming a building consequence of failure importance level of 2 and a design life of 50 years in accordance with AS/NZS 1170.

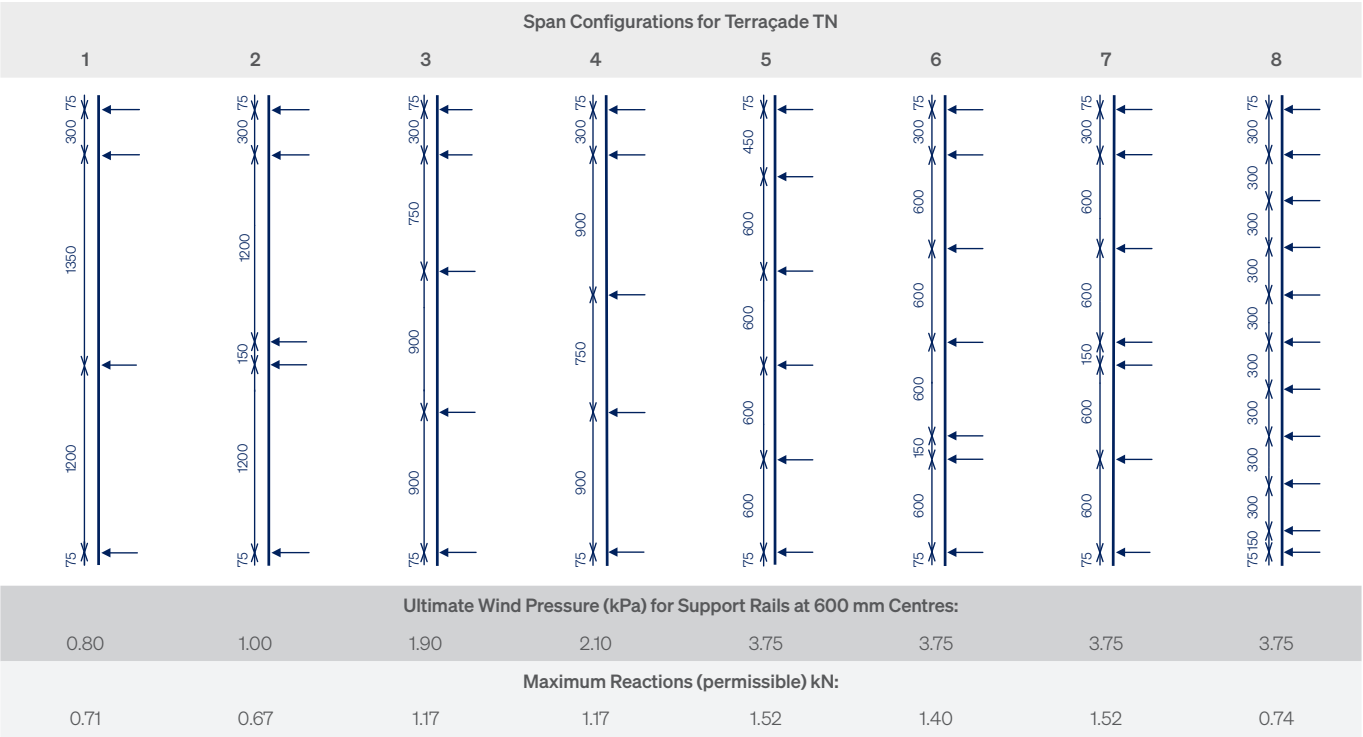
Contact Brickworks Building Products for further engineering advice for buildings that are outside the above criteria.

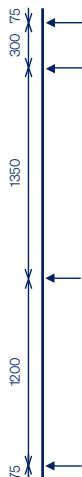
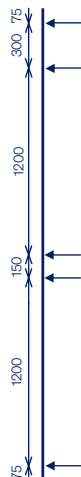
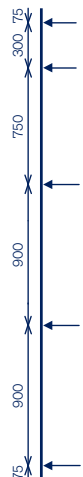
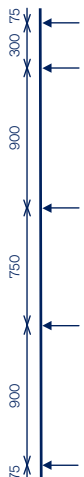
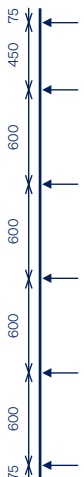
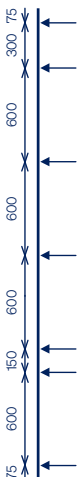
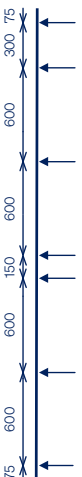
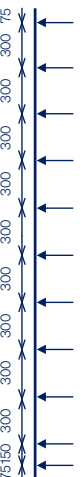
The ultimate wind pressures have been calculated for both the standard (galvanised steel) and the coastal (ZAM® pre-coated steel and stainless steel) support rail versions; the pertinent table should be referred to for a particular project. The ultimate wind pressure tables have been characterised by a particular span configuration. The ultimate wind pressures listed refer to the span configuration directly above it.



The span configuration charts should be used in accordance with the fastener specifications given in the Technical Specification section. Design documentation should accommodate the ultimate wind pressures and fastener specifications for a particular project.

Chart 1: Ultimate Wind Pressures for the standard suspension rail (galvanised steel) & Coastal Suspension Rail (ZAM® Pre-Coated Steel).



Span Configurations for Terraçade TN							
1	2	3	4	5	6	7	8
							
Ultimate Wind Pressure (kPa) for 600 mm Centres:							
0.48	0.65	1.15	1.38	2.51	2.51	2.51	2.51
Maximum Reactions (permissible) kN:							
0.43	0.44	0.71	0.78	1.02	0.94	1.02	0.50

\* Note: The arrows in the allowable pressures tables indicate the fastener locations and the distance noted is the span (mm) between the fasteners.

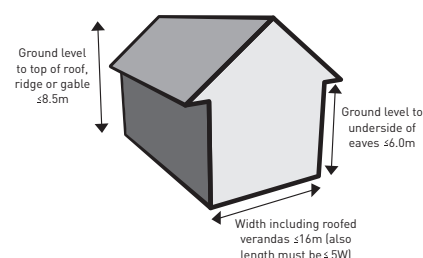
## PART A – Determining Span Configurations using the Housing Code

The following wind load requirements on Terraçade TN only apply to buildings that comply with Australian Standard AS 4055 (Wind loads for housing). In general, AS 4055 applies to houses that are within the dimensions

shown in the diagram to the right. However, the applicability of AS 4055 and subsequent compliance of individual projects should be verified.

Leading engineers at Core Project Consulting have considered the wind pressure requirements for Terraçade TN and have derived the following procedure

for determining the minimum span configurations required for buildings complying with AS 4055.



### Step A1: Wind Pressure Requirements

Identify the wind class applicable to the particular project in accordance with AS 4055. The wind pressure requirements applicable to Terraçade TN have been determined by Core Project Consulting and are given in Table A1.

Note: A superseded version of AS 4055 used permissible wind speed categories to indicate required performance. No relation to this version has been included to reduce confusion as only ultimate wind speeds are quoted in the current version. The wind class should be quoted as N1-N6 or C1-C4.

Table A1

Wind Class	General Pressure (kPa)
N1	0.62
N2	0.86
N3	1.35
N4	2.01
N5	2.96
N6	3.99
C1	1.80
C2	2.68
C3	3.94
C4	5.33

# System Components

## System Performance for Wind Loads

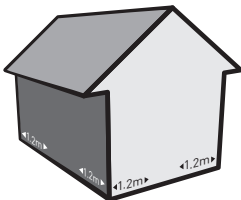
### Step A2: Wind Pressures at Building Corners

Corners of buildings experience higher wind pressures than the rest of the building. Check whether any Terraçade TN is being installed within 1.2 metres (see below diagram) of the building's corners.

The wind pressure requirements determined for building corners by Core Project Consulting are given in the table below.

Table A2

Wind Class	Corner Pressure (kPa)
N1	0.94
N2	1.30
N3	2.02
N4	3.01
N5	4.44
N6	5.99
C1	2.70
C2	4.02
C3	5.91
C4	7.99



### Step A3: Span Determination

Minimum span configuration requirements (for buildings complying with AS 4055) have been determined for the Terraçade TN system in accordance with the procedure outlined by Core Project Consulting.

The allowable pressure tables were used to determine the minimum span configuration requirements for the wind pressure determined. These requirements are summarised in Tables A3 and A4.

The span number given in the tables indicates the lowest span number that the system must be installed at. For example Span 4 indicates that a span configuration of 900 mm – 750 mm – 900 mm is required, any lower numbered spans, such as Span 3 which is 750 mm – 900 mm – 900 mm, cannot be used.

Tables A3 applies to the Standard and Coastal Version (galvanised and ZAM® Rails), whilst Table A4 applies to the C5 Coastal Version stainless steel rails. The tables include both the general installation and the building corner installation requirements.

# System Components

## System Performance for Wind Loads

### Example 1

A typical project has been determined to have a wind class of N1. If the standard version (galvanised rails) is required then using Table A3 the required span is Span 1 for general areas and Span 2 at the corners. It may be worthwhile for the project to specify the higher rated Span 2 for the entire project to simplify installation.

**Note:** It is important to remember that particular projects within C5 Corrosion Zone, require the coastal version stainless steel rails and therefore should use Table A4.

**Note:** The span configurations determined should be specified along with the fastener requirements in all project documentation.

**Note:** Terraçade TN standard (galvanised) and coastal (ZAM® pre-coated steel & stainless steel) rails that are cut to lengths of less than 1.8 m should always be installed at 600 mm centres.

**Note:** If a span configuration is 'N/A' for a particular wind class, use the analysis technique in Part B AS 1170.2. The scope of the wind pressure analysis performed in this housing section is limited and more detailed analysis is performed in Part B.

### Standard & Coastal Version

Table A3: Minimum installation for 600 mm centres (Galvanised and ZAM® Rails).

Wind Class	Minimum Span Configuration Requirements	
	General Installation	Building Corner Installation
N1	Span 1	Span 2
N2	Span 2	Span 3
N3	Span 3	Span 4
N4	Span 4	Span 5-8
N5	Span 5-8	N/A
N6	N/A	N/A
C1	Span 3	Span 5-8
C2	Span 5-8	N/A
C3	N/A	N/A
C4	N/A	N/A

\*N/A equals Not Available

### C5 Coastal Version

Table A4: Minimum installation for 600 mm centres (Stainless Steel Rails).

Wind Class	Minimum Span Configuration Requirements	
	General Installation	Building Corner Installation
N1	Span 2	Span 3
N2	Span 3	Span 4
N3	Span 4	Span 5-8
N4	Span 5-8	N/A
N5	N/A	N/A
N6	N/A	N/A
C1	Span 5-8	N/A
C2	N/A	N/A
C3	N/A	N/A
C4	N/A	N/A

\*N/A equals Not Available

# System Components

## System Performance for Wind Loads

### Suspension Rail Selection Guide

TABLE A5: Suspension rail selection based on site atmospheric corrosivity.

Distance from Breaking Surf*	Distance from Calm Salt Water Body, eg. Bay*	Corrosion Zone according to AS 4312	Recommended Suspension Rail Material
1001 m+	101 m+	Up to C3	Galvanised
501 to 1000 m	0 to 100 m	Up to C4	ZAM* Pre-Coated Steel
0 to 500 m	0 to 100 m	Up to C5	304/316 Stainless Steel

\* General guide only. Please refer to AS 4312-2008 for detailed corrosion zones.

# System Performance for Wind Loads - Australia

## Determining span configuration using the Structural Design Code

### PART B – Determining Span Configurations using the Structural Design Code

The following wind load requirements on Terraçade TN only apply to buildings that comply with Australian Standard AS/NZS 1170.2 (Structural design actions, Part 2: Wind actions). The applicability of AS/NZS 1170.2 and subsequent compliance of individual projects should be verified.

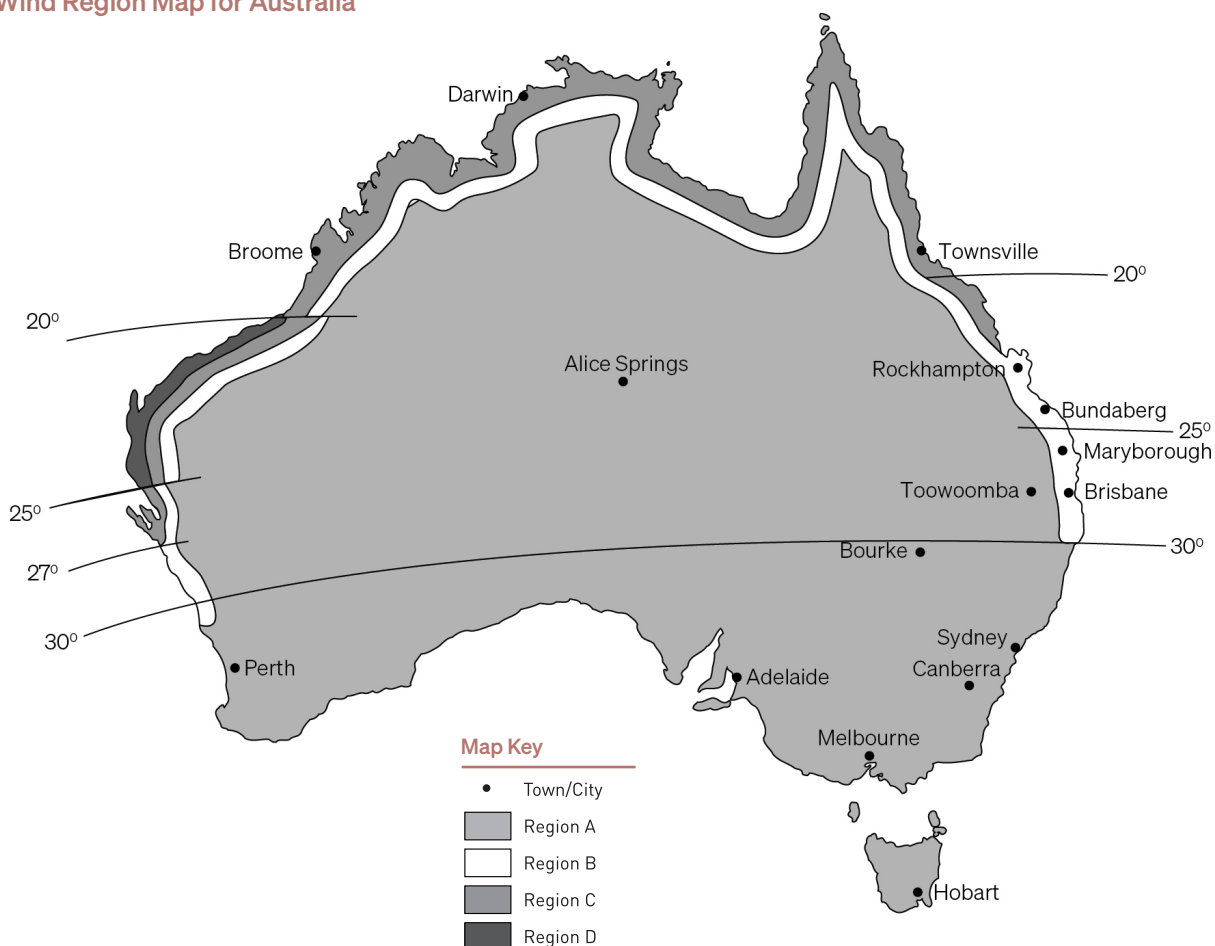
AS/NZS 1170.2 identifies four main wind regions pertinent to Australia as shown in the map below.

Leading engineers at Core Project Consulting have considered the wind pressure requirements for Terraçade TN and have derived the following procedure for determining the minimum span configurations required for buildings complying with AS1170.2.

**Note:** Shielding was not considered in the analysis.

**Note:** Topography can affect wind pressure if a building is located high on a steep slope or escarpment. Brickworks Building Products should be contacted in such circumstances.

### Wind Region Map for Australia



# System Components

## System Performance for Wind Loads

### Step B1: Wind Region

Identify the wind region that the project is located in. If the wind region has not been specified, it should be determined in accordance with AS/NZS 1170.2. The map indicates the wind regions for Australia. It is important to note that regions C and D are affected by cyclones and Terraçade TN are not recommended for these regions.

### Step B2: Height

Determine the height above ground level to which the Terraçade TN will be installed. AS/NZS 1170.2 outlines the method of determining reference heights. The wind pressure requirements have been categorised by specific limiting heights. Always select the limiting height that is larger or equal to the project installation height.

### Step B3: Terrain Category

Identify the terrain category for the project. The terrain will affect the wind flow that a project is subjected to. The four terrain categories defined in AS/NZS 1170.2 are:

- Category 1: Very few or no obstructions and an exposed open terrain.
- Category 1.5: Open water surfaces subjected to shoaling waves, e.g. near-shore ocean water; large unenclosed bays on seas and oceans; lakes; and

enclosed bays extending greater than 10 km in the wind direction.

- Category 2: Limited and well-spread obstructions in an open terrain. Typical terrains include grasslands and water surfaces.
- Category 2.5: Terrain with a few trees or isolated obstructions, typical of developing outer urban areas with scattered houses, or large acreage developments with fewer than ten buildings per hectare.
- Category 3: Numerous low (3-5 m) obstructions that are closely spaced.

A typical terrain is a suburban housing estate.

- Category 4: High number of large and tall (10-30 m) obstructions that are closely spaced. A typical terrain is a large city centre.

**Note:** The terrain category should be determined in accordance with AS/NZS 1170.2 and obstructions should have permanence during a wind event.

### Step B4: Wind Pressure

A wind pressure table (Table B1) has been provided as a reference. The wind pressure for an individual project can be determined from the table using the information determined in the preceding steps.

### Example 1:

A typical project in a suburban area of Brisbane (i.e. Terrain Category 3, Region B) installed to a height of 4 m. For this case using the limiting height of 10 m, the wind pressure for Terraçade TN is 1.63 kPa (using Table B1).

### Step B5: Corner Wind Pressure

The corners of tall, slender buildings experience higher wind pressures than the rest of the building. When Terraçade TN is installed in this corner region, a different support rail span configuration may be required.

To determine the span configuration requirement, calculate the aspect ratio ( $r$ ) of the building by dividing its average roof height ( $h$ ) by its smallest plan dimension ( $b$  or  $d$ ). If the aspect ratio is less than or equal to 1, no additional requirements are necessary for Terraçade TN being installed on the building corner.

(Note: AS/NZS 1170.2-2011 has equalised the worst-case magnitudes of positive and negative wind pressure coefficients and factors for permeable cladding on buildings with an aspect ratio of less than or equal to 1).

If the aspect ratio is greater than 1, then check whether any Terraçade TN is being installed on the building corners. The length of the corner region (for a tall building)

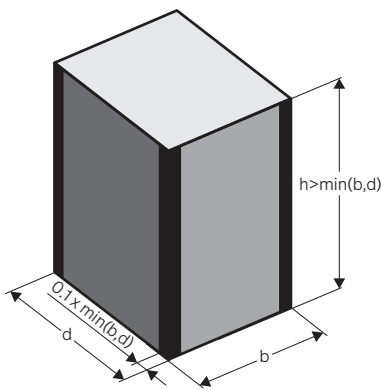


# System Components

## System Performance for Wind Loads

is one-tenth of the shortest plan dimension (refer to below diagram).

### Example 2:



A six storey building has plan dimensions of 32 metres and 16 metres, and has an average roof height of 20 metres. The aspect ratio found by dividing the height of 20 m by the smallest plan dimension i.e., 16 m, which equals 1.25. Since the aspect ratio is greater than 1, additional fixings for the Terraçade TN support rails are required at the corners of the building for the increased wind pressure.

The distance from the corners of the building requiring additional fixings for the Terraçade TN support rails is one-tenth of the shortest plan dimension, which in this example is  $0.1 \times 16 = 1.6$  metres. This must be rounded up to a multiple of 600 mm (support rail spacing), for this example, the distance from the corners of the building requiring additional support fixings is 1.8 m.

A wind pressure table (Table B2) has been provided as a reference for the wind pressure at the building corners.

### Example 3:

A medium-rise project in the central business district of Brisbane (i.e. Terrain Category 4, Region B) is installed to a height of 30m, with an aspect ratio of greater than one.

For this case, the wind pressure for general areas of Terraçade TN for a limiting height of 30 m is 1.52 kPa (using Table B1) and the wind pressure on at the corners is 2.16 kPa (using Table B2).

The minimum span fastener configuration for general installation can be read from Table B3 for 600 mm centres (e.g., span configuration 3, for a height of 30 m in this example).

The minimum span fastener configuration for corner installation can be read from Table B4 for 600 mm centres (e.g. span configurations 5 to 8, for a height of 30 m in this example).

However, it is recommended to adopt the higher rated span 5 to 8 configuration for the entire project to simplify installation.

### Step B6: Span Determination

Minimum span configuration requirements (for buildings complying with AS/NZS 1170.2) have been determined for the Terraçade TN system in

accordance with the procedure outlined by Core Project Consulting. The allowable pressure tables were used to determine the minimum span configuration requirements for the wind pressure determined. These requirements are summarised in Tables B3-B6.

The span number given in the tables indicates the lowest span number that the system must be installed at. For example Span 4 indicates that a span configuration of 900 mm – 750 mm – 900 mm is required (refer to span diagram below), any lower numbered spans, such as Span 3 which is 750 mm – 900 mm – 900 mm, cannot be used.

Table B3 and B4 apply to the Standard and Coastal Version (galvanised and ZAM® Rails). Table B5 and B6 apply to the C5 Coastal Version (Stainless steel rails).

Note: It is important to remember that particular projects that require the C5 coastal version (stainless steel rails) should use Tables B5 and B6.

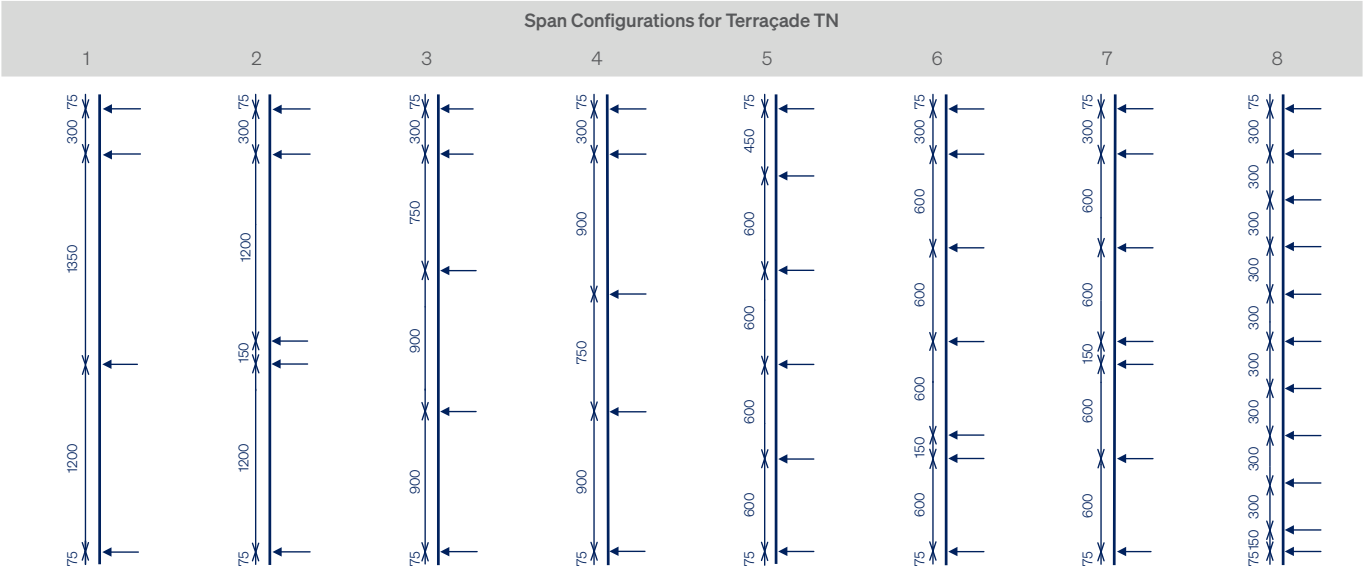
Note: The span configurations determined should be specified along with the fastener requirements (refer to the Technical Specifications - Fastener Section) in all project documentation.

Note: Terraçade TN rails that are cut to lengths of less than 1.8 m should always be installed at 600 mm centres.

# System Components

## System Performance for Wind Loads

Chart 3: Span Configurations for Terraçade TN



\* Note: The arrows in the allowable pressures tables indicate the fastener locations and the distance noted is the span (mm) between the fasteners.

# System Components

## System Performance for Wind Loads

Table B1: Wind Pressure

Wind Region	Limiting Height (m)	Terrain Category 1	Terrain Category 1.5	Terrain Category 2	Terrain Category 2.5	Terrain Category 3	Terrain Category 4
A	10	1.88	1.69	1.50	1.26	1.03	0.84
	15	2.01	1.83	1.65	1.42	1.19	0.84
	20	2.12	1.93	1.75	1.53	1.32	0.84
	30	2.23	2.05	1.88	1.69	1.50	0.96
	40	2.30	2.16	2.01	1.82	1.62	1.08
B	10	2.97	2.67	2.37	2.00	1.63	1.33
	15	3.19	2.90	2.61	2.24	1.88	1.33
	20	3.35	3.06	2.76	2.43	2.09	1.33
	30	3.53	3.25	2.97	2.67	2.37	1.52
	40	3.64	3.41	3.19	2.87	2.56	1.71
C	10	4.48	4.02	3.57	3.01	2.46	2.01
	15	4.80	4.37	3.93	3.38	2.83	2.01
	20	5.05	4.61	4.16	3.66	3.15	2.01
	30	5.31	4.89	4.48	4.02	3.57	2.28
	40	5.49	5.14	4.80	4.33	3.86	2.58
D	10	7.14	6.41	5.69	4.80	3.92	3.20
	15	7.66	6.96	6.27	5.39	4.51	3.20
	20	8.06	7.35	6.64	5.83	5.03	3.20
	30	8.47	7.80	7.14	6.41	5.69	3.64
	40	8.75	8.20	7.66	6.90	6.15	4.11

# System Components

## System Performance for Wind Loads

Table B2: Wind Pressure for Tall Building Corners (Aspect Ration > 1)

Wind Region	Limiting Height (m)	Terrain Category 1	Terrain Category 1.5	Terrain Category 2	Terrain Category 2.5	Terrain Category 3	Terrain Category 4
A	10	2.68	2.41	2.14	1.80	1.47	1.20
	15	2.87	2.61	2.35	2.02	1.69	1.20
	20	3.02	2.76	2.49	2.19	1.89	1.20
	30	3.18	2.93	2.68	2.41	2.14	1.37
	40	3.28	3.08	2.87	2.59	2.31	1.54
B	10	4.24	3.81	3.38	2.85	2.33	1.90
	15	4.55	4.14	3.73	3.20	2.68	1.90
	20	4.79	4.36	3.94	3.46	2.99	1.90
	30	5.03	4.64	4.24	3.81	3.38	2.16
	40	5.20	4.87	4.55	4.10	3.66	2.44
C	10	6.39	5.74	5.09	4.30	3.51	2.86
	15	6.85	6.23	5.61	4.82	4.03	2.86
	20	7.21	6.57	5.94	5.22	4.50	2.86
	30	7.58	6.98	6.39	5.74	5.09	3.26
	40	7.83	7.34	6.85	6.18	5.51	3.68
D	10	10.18	9.15	8.12	6.86	5.59	4.57
	15	10.92	9.94	8.95	7.69	6.43	4.57
	20	11.50	10.48	9.47	8.32	7.17	4.57
	30	12.08	11.13	10.18	9.15	8.12	5.20
	40	12.48	11.70	10.92	9.85	8.78	5.87

# System Components

## System Performance for Wind Loads

Table B3: General Installation (ZAM® Pre-Coated Steel and Galvanised Rails)

Wind Region	Limiting Height (m)	Terrain Category 1	Terrain Category 1.5	Terrain Category 2	Terrain Category 2.5	Terrain Category 3	Terrain Category 4
A	10	Span 3	Span 3	Span 3	Span 3	Span 3	Span 2
	15	Span 4	Span 3	Span 3	Span 3	Span 3	Span 2
	20	Span 5-8	Span 4	Span 3	Span 3	Span 3	Span 2
	30	Span 5-8	Span 4	Span 3	Span 3	Span 3	Span 2
	40	Span 5-8	Span 5-8	Span 4	Span 3	Span 3	Span 3
B	10	Span 5-8	Span 5-8	Span 5-8	Span 4	Span 3	Span 3
	15	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 3	Span 3
	20	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 4	Span 3
	30	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 3
	40	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 3
C	10	N/A	N/A	Span 5-8	Span 5-8	Span 5-8	Span 4
	15	N/A	N/A	N/A	Span 5-8	Span 5-8	Span 4
	20	N/A	N/A	N/A	Span 5-8	Span 5-8	Span 4
	30	N/A	N/A	N/A	N/A	Span 5-8	Span 5-8
	40	N/A	N/A	N/A	N/A	N/A	Span 5-8
D	10	N/A	N/A	N/A	N/A	N/A	Span 5-8
	15	N/A	N/A	N/A	N/A	N/A	Span 5-8
	20	N/A	N/A	N/A	N/A	N/A	Span 5-8
	30	N/A	N/A	N/A	N/A	N/A	Span 5-8
	40	N/A	N/A	N/A	N/A	N/A	N/A

\*N/A equals Not Available

# System Components

## System Performance for Wind Loads

Table B4: Corner Installation - Aspect Ratio > 1 (ZAM® Pre-Coated Steel and Galvanised Rails)

Wind Region	Limiting Height (m)	Terrain Category 1	Terrain Category 1.5	Terrain Category 2	Terrain Category 2.5	Terrain Category 3	Terrain Category 4
A	10	Span 5-8	Span 5-8	Span 5-8	Span 3	Span 3	Span 3
	15	Span 5-8	Span 5-8	Span 5-8	Span 4	Span 3	Span 3
	20	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 3	Span 3
	30	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 3
	40	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 3
B	10	N/A	N/A	Span 5-8	Span 5-8	Span 5-8	Span 3
	15	N/A	N/A	Span 5-8	Span 5-8	Span 5-8	Span 3
	20	N/A	N/A	N/A	Span 5-8	Span 5-8	Span 3
	30	N/A	N/A	N/A	N/A	Span 5-8	Span 5-8
	40	N/A	N/A	N/A	N/A	Span 5-8	Span 5-8
C	10	N/A	N/A	Span 5-8	Span 5-8	Span 5-8	Span 4
	15	N/A	N/A	N/A	Span 5-8	Span 5-8	Span 4
	20	N/A	N/A	N/A	Span 5-8	Span 5-8	Span 4
	30	N/A	N/A	N/A	N/A	Span 5-8	Span 5-8
	40	N/A	N/A	N/A	N/A	N/A	Span 5-8
D	10	N/A	N/A	N/A	N/A	N/A	N/A
	15	N/A	N/A	N/A	N/A	N/A	N/A
	20	N/A	N/A	N/A	N/A	N/A	N/A
	30	N/A	N/A	N/A	N/A	N/A	N/A
	40	N/A	N/A	N/A	N/A	N/A	N/A

\*N/A equals Not Available

# System Components

## System Performance for Wind Loads

Table B5: General Installation (Stainless Steel Rails)

Wind Region	Limiting Height (m)	Terrain Category 1	Terrain Category 1.5	Terrain Category 2	Terrain Category 2.5	Terrain Category 3	Terrain Category 4
A	10	Span 5-8	Span 5-8	Span 5-8	Span 4	Span 3	Span 3
	15	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 4	Span 3
	20	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 4	Span 3
	30	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 3
	40	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 3
B	10	N/A	N/A	Span 5-8	Span 5-8	Span 5-8	Span 4
	15	N/A	N/A	N/A	Span 5-8	Span 5-8	Span 4
	20	N/A	N/A	N/A	Span 5-8	Span 5-8	Span 4
	30	N/A	N/A	N/A	N/A	Span 5-8	Span 5-8
	40	N/A	N/A	N/A	N/A	N/A	Span 5-8
C	10	N/A	N/A	N/A	N/A	Span 5-8	Span 5-8
	15	N/A	N/A	N/A	N/A	N/A	Span 5-8
	20	N/A	N/A	N/A	N/A	N/A	Span 5-8
	30	N/A	N/A	N/A	N/A	N/A	Span 5-8
	40	N/A	N/A	N/A	N/A	N/A	N/A
D	10	N/A	N/A	N/A	N/A	N/A	N/A
	15	N/A	N/A	N/A	N/A	N/A	N/A
	20	N/A	N/A	N/A	N/A	N/A	N/A
	30	N/A	N/A	N/A	N/A	N/A	N/A
	40	N/A	N/A	N/A	N/A	N/A	N/A

\*N/A equals Not Available



# System Components

## System Performance for Wind Loads

Table B6: Corner Installation - Aspect Ratio > 1 (Stainless Steel Rails)

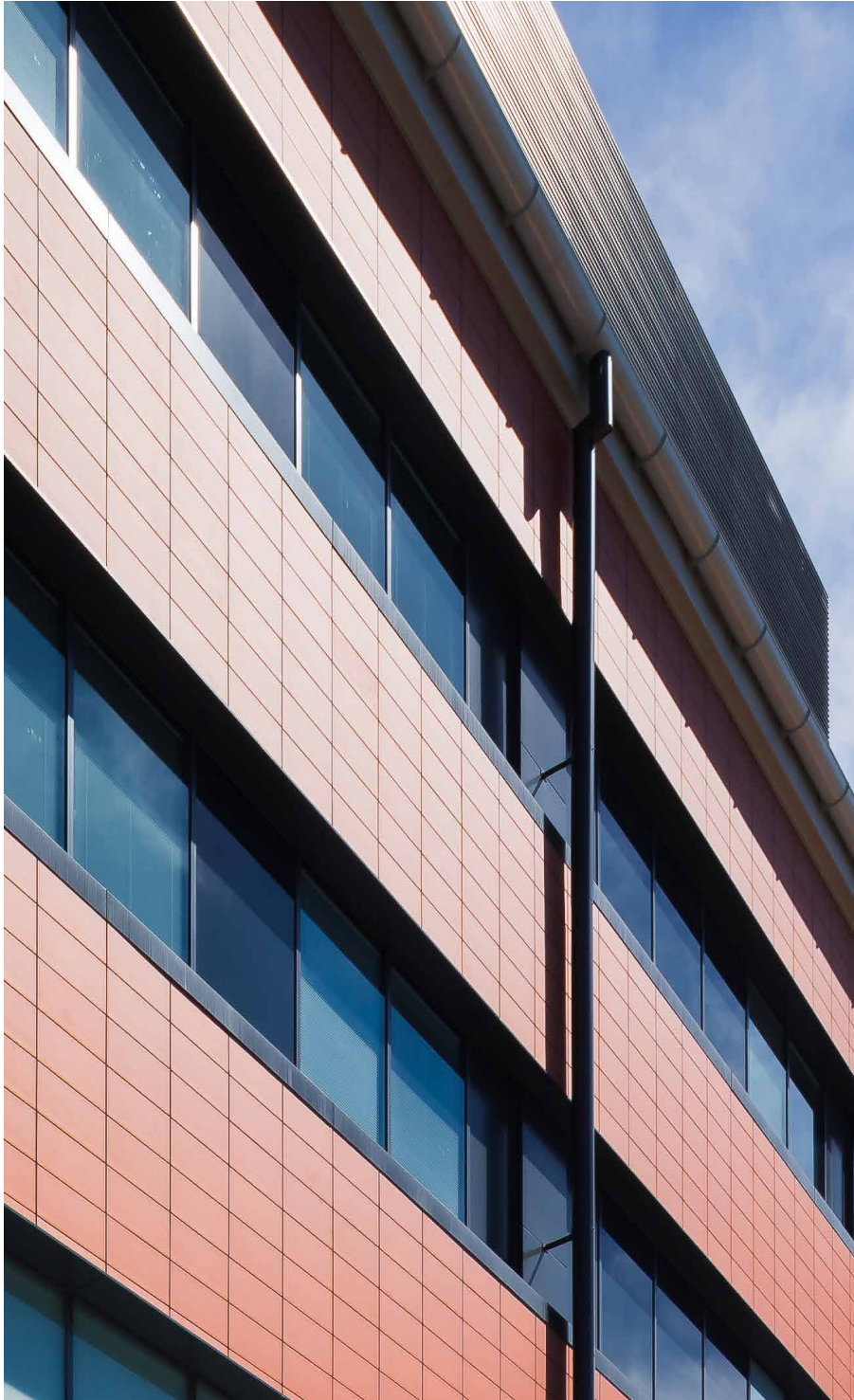
Wind Region	Limiting Height (m)	Terrain Category 1	Terrain Category 1.5	Terrain Category 2	Terrain Category 2.5	Terrain Category 3	Terrain Category 4
A	10	Span 5-8	Span 5-8	Span 5-8	Span 3	Span 3	Span 3
	15	Span 5-8	Span 5-8	Span 5-8	Span 4	Span 3	Span 3
	20	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 3	Span 3
	30	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 3
	40	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 5-8	Span 3
B	10	N/A	N/A	Span 5-8	Span 5-8	Span 5-8	Span 3
	15	N/A	N/A	Span 5-8	Span 5-8	Span 5-8	Span 3
	20	N/A	N/A	N/A	Span 5-8	Span 5-8	Span 3
	30	N/A	N/A	N/A	N/A	Span 5-8	Span 5-8
	40	N/A	N/A	N/A	N/A	Span 5-8	Span 5-8
C	10	N/A	N/A	Span 5-8	Span 5-8	Span 5-8	Span 4
	15	N/A	N/A	N/A	Span 5-8	Span 5-8	Span 4
	20	N/A	N/A	N/A	Span 5-8	Span 5-8	Span 4
	30	N/A	N/A	N/A	N/A	Span 5-8	Span 5-8
	40	N/A	N/A	N/A	N/A	N/A	Span 5-8
D	10	N/A	N/A	N/A	N/A	N/A	N/A
	15	N/A	N/A	N/A	N/A	N/A	N/A
	20	N/A	N/A	N/A	N/A	N/A	N/A
	30	N/A	N/A	N/A	N/A	N/A	N/A
	40	N/A	N/A	N/A	N/A	N/A	N/A

\*N/A equals Not Available









# Technical Specifications

# 4

# Material Schedule and Properties

## C1: Material list used in the Terraçade TN system

Component	Material
01. Tiles	Fired extruded clay tile.
02. Suspension Rail	Standard - Galvanised (cold formed light galvanised sheet), or C4 Coastal - ZAM® pre-coated steel, or C5 Coastal - stainless steel sheet grade 316.
03. Visible Trims	<p>Aluminium - All extrusions are aluminium Grade 6063-T5 and are produced to Australian Standard AS 1866 (Aluminium and Aluminium Alloys - Extruded Rod, Bar, Solid and Hollow Shapes).</p> <p>Trims are available in:</p> <ul style="list-style-type: none"> <li>• Mill finish, which is expected to have a design life in excess of twenty-five years for moderate environments (as defined in AS/NZS 2312).</li> <li>• Anodised finish in clear and black, which can have a design life in excess of forty years.</li> <li>• Powder coated finish to AS 3715 in various colours, which can come with a guarantee of ten years.</li> </ul> <p>Folded Metal Trims – These trims are available in Colourbond® or alternative finishes from other suppliers.</p>
04. Waterproof Membrane	<p>For framed systems a waterproof membrane can be supplied as part of the system's tested performance.</p> <p>The membrane is a spunbonded polypropylene material that allows the egress of vapour from within the frame, but restricts the ingress of rain and moisture.</p>
05. Fitment Sponge	EPDM rubber with acrylic adhesive.
06. Set-out Tool	Specially designed tool to maintain vertical continuity if multiple lengths of the suspension rail are butted end to end.



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## Tile Properties

Extensive testing is carried out in Austral Bricks' NATA accredited laboratory to AS/NZS 4455, AS/NZS 4456, and in independent NATA accredited laboratories to AS 4459.

### C2: TN Tile Property

Nominal Tile Dimensions	308 × 588 mm	308 × 1188 mm
Mass	~4.5 kg	~9 kg
Number of Tiles/m <sup>2</sup>	5.6	2.7
Weight/m <sup>2</sup>	25 kg	25 kg
Cold Water Absorption	<2.5%	<2.5%
Breaking Strength	~6.7 kN	~6.0 kN
Modulus of Rupture	~40 MPa	~44 MPa
Moisture Expansion	0.001%	0.001%
Linear Thermal Expansion	$\sim 4.8 \times 10^{-6} \text{ (}^{\circ}\text{C)}^{-1}$	$\sim 4.8 \times 10^{-6} \text{ (}^{\circ}\text{C)}^{-1}$
Durability Class	Exposure Grade	Exposure Grade
Fire Rating	Non-combustible	Non-combustible

\* Brickworks Building Products reserves the right to change specifications without notice – February 2022. Check the Terraçade website for updated results. ZAM® is a registered trade mark of Nisshin Steel.

# Material Schedule and Properties

## Suspension Rail and Trim Options

### C3: Standard Properties and Trim Materials

	Nominal Length	Coefficient of Thermal Expansion (10 <sup>-6</sup> / °C)	Iyy (mm <sup>4</sup> )	E (GPa)
Stainless Steel Suspension Rails	3008 mm	15.9 - 17.2	4.75×10 <sup>4</sup>	190
Galvanised Suspension Rails	3008 mm	11.7	4.75×10 <sup>4</sup>	200
ZAM® Pre-Coated Steel Suspension Rails	3008 mm	10.7	4.75×10 <sup>4</sup>	210
Aluminium Trim	5500 mm	23.4	-	69

Please ensure to create sufficient gaps between rails and trims to accommodate thermal expansion of the materials.

## Suspension Rail Selection Guide

### C4: Rail Selection Guide

Distance from Breaking Surf*	Distance from Calm Salt Water Body, eg. Bay*	Corrosion Zone according to AS 4312	Recommended Suspension Rail Material
1001 m+	101 m+	Up to C3	Galvanised
501 to 1000 m	0 to 100 m	Up to C4	ZAM® Pre-Coated Steel
0 to 500 mm	0 to 100 m	Up to C5	304/316 Stainless Steel

\* General guide only. Please refer to AS 4312-2008 for detailed corrosion zones.

## Fitment Sponge Properties

### C5: Fitment Sponge Properties

Cell Type	Closed	Thermal Conductivity (W/mK)	0.3
Resistance to Water Penetration	Good	Flame Retardant	Yes
Abrasion / Tear Resistance	Average	Toxicity	Low
Resistance to Weathering (uv/ozone)	Excellent	Compatibility with Plastics	Good
Resistance to Chemicals	Good	Compatibility with Silicones	Good
Resistance to Petrol/Oil	Poor	Force to Compress	Medium
Temperature Resistance (°C)	105	Conformability	Moderate

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## Terraçade Membrane Properties

### C6: Membrane Properties

Roll Dimensions	1.5 m x 50 m
Weight of complete Roll	~7.5 kg
Thickness	0.5 mm
Weight	100 g/m <sup>2</sup>
Resistance to Water Penetration	Pass
Water Vapour Permeability	7.5 µg/Ns
Vapour Resistance	0.13 MNs/g
Burst Strength, Wet Dry	294 N
Duty	Light
Flammability Index	Low (<5)
Air Permeability / Air Tightness	Air Permeable
Allowable UV exposure prior to installation of cladding	2 months
Tensile Strength	MD 3.8 kN/m CD 3.1 kN/m

# Material Schedule and Properties

The fasteners specified below should be used in accordance with the allowable pressures of the system.

## C7: Fasteners

Substrate	Fixings	Size	Supplier	Product Code	Recommended Min. Embedment	Grade
Timber	Type 17 Hex Head Screw	14G - 10 × 50 mm	Bremick	STHC5140502	Min. 45 mm into supporting timber	SS 304
		14G - 10 × 50 mm	Buildex	6-032-0023-1		SS 304
Metal	Hex Head Bolt	M8 × 30 mm	Bremick	BHHM4080302	Min. thickness of base plate 1 mm	SS 304
		M8 × 150 mm	Bremick	BHHM4081502		SS 304
		M8 × 35 mm	James Glen	2851		SS 304
		M8 × 150 mm	James Glen	2897		SS 304
		M8 × 35 mm	Hobson	BH04PCM080035		SS 304
		M8 × 150 mm	Hobson	BH04PCM080150		SS 304
	Hex Head Tek Screw	14G x 50 mm	Bremick	SMHC6140502		SS 304
		14G - 14 × 52 mm	Buildex	6-392-0008-8		SS 305
Concrete Walls	Chemical Bolt	M10 × 130 mm	Bremick	ACSM6101302	Min. 60 mm embedment depth	SS 316
		M8 × 110 mm	Ramset	CS08110SS		SS 316
		Chemset 101	Ramset	C101C		SS 316
		M8 × 110 mm	Hobson	MCS16PCM080110		SS 316
	Sleeve Anchor	M8 × 65 mm mechanical anchors	Bremick	ASNM6080652	Min. 50 mm embedment depth	SS 316
		M8 × 80 mm	Hobson	MTB16PM080080		SS 316
Solid / Pressed Brick	Wall Plug + Screw	M8 × 50 mm Plug + 14G x 50 Screws	Bremick	PWPMF080502 SPXT 4072002	Min. 50 mm embedment depth	SS 304
		M8 × 50 mm Plug + 14G x 2" Screws	Hobson	MWPFB-50 TSS04PP#140200		SS 304

The above table is a guide to anchorage selection and does not alleviate the installers' responsibility to ensure the anchorage chosen is fit for purpose. Specifiers should review the maximum reaction section of the load span tables and review the design accordingly. If in doubt advice should be sought by the product design engineers.

All screws and bolts are to be manufactured to AS 1111 and AS 3566.

\* Note: Refer to the load span table (allowable pressures) for reaction output.

A4/70 indicates that the material required is cold worked, austenitic stainless steel.

M6, M8, #12 and #14 indicate the gauge or fastener diameter required.

These descriptions should be confirmed with the fastener manufacturer.

## C7: Fasteners Continued

Substrate	Fixings	Size	Supplier	Product Code	Recommended Min. Embedment	Grade
Concrete Filled Hollow Block	Chemical Bolt	M10 × 130 mm	Bremick	ACSM6101302	Min. 65 mm embedment depth	SS 316
		M8 × 110 mm	Ramset	CS08110SS		SS 316
		Chemset 101	Ramset	C101C		
		M8 × 110 mm	Hobson	MCS16PCM080110		SS 316
	Sleeve Anchor	M8 × 65 mm mechanical anchors	Bremick	ACSM6080652	Min. 35 mm embedment depth	SS 316
		M8 × 80 mm	Hobson	MTB16PM080080		SS 316
Extruded Hollow Brick	Chemical Bolt	M10 × 130 mm	Bremick	ACSM6101302	Min. 65 mm embedment depth	SS 316
		M8 × 110 mm	Ramset	CS08110SS		SS 316
		Chemset 101	Ramset	C101C		
		M8 × 110 mm	Hobson	MCS16PCM080110		SS 316
Fixing TN. 03 Joint Channel to TN. 06 Suspension Rail	Pan phillips self tapping screw	#6 × 1-1/4	United Fasteners	6114		SS 304
	Pan head self tapping screw	4G x 25 mm	Trifixx	STPS04025	Special order of 4000 - 5000	SS 304
	Pan head self tapping screw	6G x 1-1/4 long	Tower Fastening System	KSTP0630	Packs of 1000	SS 304

The above table is a guide to anchorage selection and does not alleviate the installers' responsibility to ensure the anchorage chosen is fit for purpose. Specifiers should review the maximum reaction section of the load span tables and review the design accordingly. If in doubt advice should be sought by the product design engineers.

All screws and bolts are to be manufactured to AS 1111 and AS 3566.

\* Note: Refer to the load span table (allowable pressures) for reaction output.

A4/70 indicates that the material required is cold worked, austenitic stainless steel.

M6, M8, #12 and #14 indicate the gauge or fastener diameter required.

These descriptions should be confirmed with the fastener manufacturer.

# Thermal and Acoustic Performance

## Thermal Performance

The thermal resistance values for particular wall constructions have been calculated by professional engineers from Clarkson Consulting Services Pty Ltd in accordance with AS/NZS 4859.1 and AS/NZS 4859.2. The tables below list the R-value for the wall constructions on an elemental basis for each component. 16 mm Terraçade TN tiles were used in the calculations.

The overall system R-value for specific spans can be calculated using the area fraction of the

surface area of the insulation and frame as per NZS 4214 Methods of determining the total thermal resistance of parts of buildings.

The table below shows the R-values of the specific Terraçade TN system elements for reference.

For example, if a project is to be built with 2.7 metre high 90 x 45 mm timber stud walls with 600 mm centres, then the total system R value is as follows (see below):

## Acoustic Performance

The acoustic performance of the same wall constructions was calculated by professional engineers from PKA Acoustic Consulting and is given in the corresponding tables alongside the system R-Values.

The weighted sound reduction index ( $R_w$ ) is used to rate the level of sound insulating ability of the wall constructions.  $C_{tr}$  is an adjustment factor which is used to account for low frequency noise.

$$R_{system} = f_{insulation} R_{insulation} + f_{frame} R_{frame}$$


Where  $f_{insulation}$  is the area fraction of the insulation in the system and  $f_{frame}$  is the area fraction of the frame in the system.

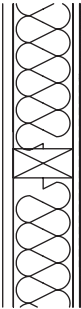
$$R_{system} = (0.878 \times 2.905) + (0.121 \times 1.073)$$

$$R_{system} = 2.680 \text{ m}^2\text{K/W}$$

Terraçade TN System Element	R-Value
Terraçade TN Tile	0.024
Terraçade Suspension Rail with air gap	0.150

The system R-values in the following tables are calculated with the same area fraction as the example calculation above.

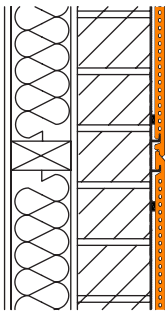
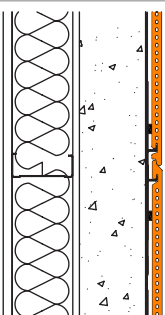
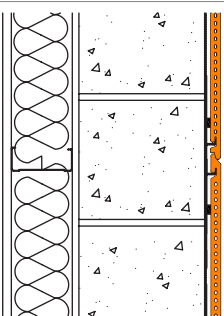
Low Rise Residential Systems			Thermal Performance			Acoustic Performance	
Detail	Back Up Wall	Frame	Through Insulation R-Value (m²K/W)	Through Frame R-Value (m²K/W)	System R-Value (m²K/W)	R <sub>w</sub> (dB)	R <sub>w</sub> + C <sub>tr</sub> (dB)
	Terracade TN Tile TN Suspension Rails Vapour Permeable Membrane Min. 90mm glasswool batts 10mm Plasterboard	Timber Studs 90mm x 45mm	2.883	1.064	2.662	45	36
		Steel Studs 90mm x 45mm	2.883	0.480	2.592	46	37

Low Rise Residential 60/60/60 FRL Systems*			Thermal Performance			Acoustic Performance	
Detail	Back Up Wall	Frame	Through Insulation R-Value (m²K/W)	Through Frame R-Value (m²K/W)	System R-Value (m²K/W)	R <sub>w</sub> (dB)	R <sub>w</sub> + C <sub>tr</sub> (dB)
	Terracade TN Tile TN Suspension Rails Rigid Air Barrier Min. 90mm glasswool batts 16mm FR Plasterboard	Timber Studs 90mm x 45mm	2.975	1.157	2.755	46	35
		Steel Studs 90mm x 45mm	2.975	0.573	2.684	47	36

\* The indicative fire ratings are sourced from industry published resources and shall not be used as evidence for compliance with any fire related provisions of the NCC.



# Thermal and Acoustic Performance

Brick, Precast and Concrete		Thermal Performance			Acoustic Performance	
Systems						
Detail	Back Up Wall	Through Insulation R-Value (m²K/W)	Through Frame R-Value (m²K/W)	System R-Value (m²K/W)	R <sub>w</sub> (dB)	R <sub>w</sub> + C <sub>tr</sub> (dB)
	Terracade TN Tile TN Suspension Rails Vapour Permeable Membrane Min. 40mm Gap 110mm Brick Veneer Min. 90mm Timber Studs Min. 90mm glasswool batts 10mm Plasterboard	3.213	1.395	2.993	60	52
	Terracade TN Tile TN Suspension Rails Vapour Permeable Membrane No Gap to Studs 125mm Concrete Min. 90mm glasswool batts Min. 90mm Steel Studs 13mm Plasterboard	2.986	0.584	2.695	62	53
	Terracade TN Tile TN Suspension Rails Vapour Permeable Membrane No Gap to Studs 200mm Blockwork Min. 90mm glasswool batts Min. 90mm Steel Studs 13mm Plasterboard	3.056	0.654	2.765	63	54

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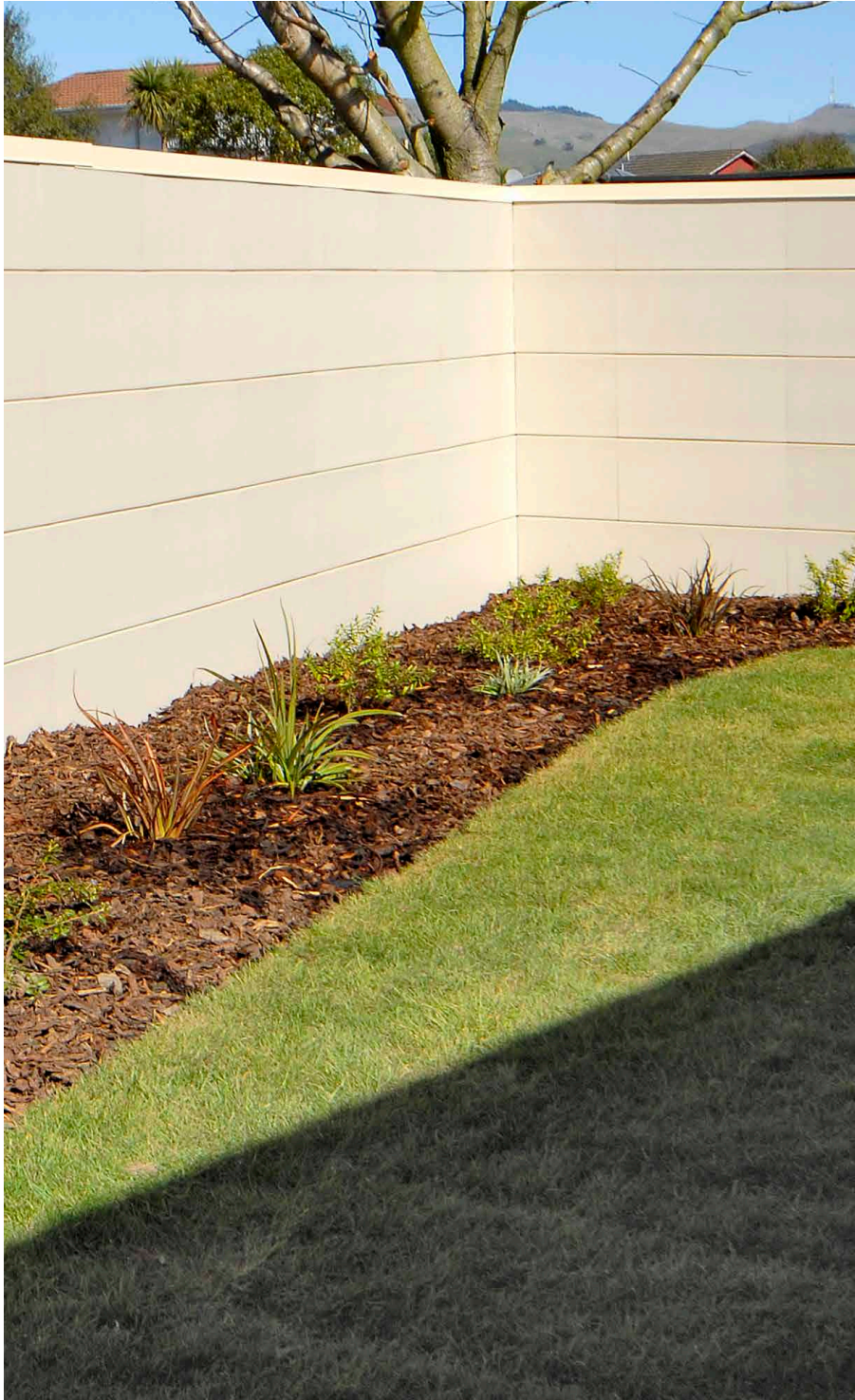
#### Thermal Performance Notes:

- Internal and external air films are included in all calculations.
- Furring channels nominated with a nominal width of 16 mm, or furring channels and battens up to 20 mm may be used with no material effect on the R-value of the air gaps or the whole construction.
- All air gaps within the construction systems are assumed to be enclosed with two parallel bounding surfaces of high emissivity (non-reflective).
- The 13 mm rigid air barrier (RAB) and 16 mm fire resistant (FR) internal plasterboard have been used to achieve an indicative FRL of 60/60/60.

- The indicative fire ratings are sourced from industry published resources and shall not be used as evidence for compliance with any fire related provisions of the NCC.
- Bulk insulation installed in accordance with AS4859.1 or thermal insulation of building, manufacturers' instruction and AS3999 Bulk thermal insulation – installation.
  - The Glasswool Batts have an R value of 2.5m<sup>2</sup>K/W
- Membrane specified, supplied, and installed in accordance with AS4200.1 Pliable building membrane and underlays installation and AS4200.2 Pliable building membranes and underlays – installation.

#### Acoustic Performance Notes:

- Terracade TN system is assumed to be 25 kg/m<sup>2</sup>.
- Insulation is assumed to be glasswool batts min. 20 kg/m<sup>2</sup>.
- Rigid air barrier is assumed to be min. 11 kg/m<sup>2</sup>.
- 10 mm plasterboard is assumed to be min. 6.4 kg/m<sup>2</sup>.
- 16 mm fire-rated plasterboard is assumed to be min. 12.4 kg/m<sup>2</sup>.
- 13 mm plasterboard is assumed to be min. 8.4 kg/m<sup>2</sup>.
- Standard brickwork is assumed to be min. 150 kg/m<sup>2</sup>.
- Precast concrete wall is assumed to be min. 270 kg/m<sup>2</sup>.
- Core filled blockwork is assumed to be min. 360 kg/m<sup>2</sup>.



# Components

# 5

# Components

## Standard Installation

- Terraçade TN Tile p<sup>57</sup>
- TN. 01 Vertical Suspension Rail p<sup>58</sup>

## Joint Options

- TN. 02 Aluminium Jointing Angle p<sup>60</sup>
- TN. 03 Aluminium Jointing Channel p<sup>60</sup>

## Corner Trim Options

- TN. 04 Aluminium External Corner p<sup>60</sup>
- TN. 05 Aluminium Internal Corner p<sup>60</sup>

## Surround Trim Options

- TN. 06 Aluminium Surround Profile p<sup>60</sup>

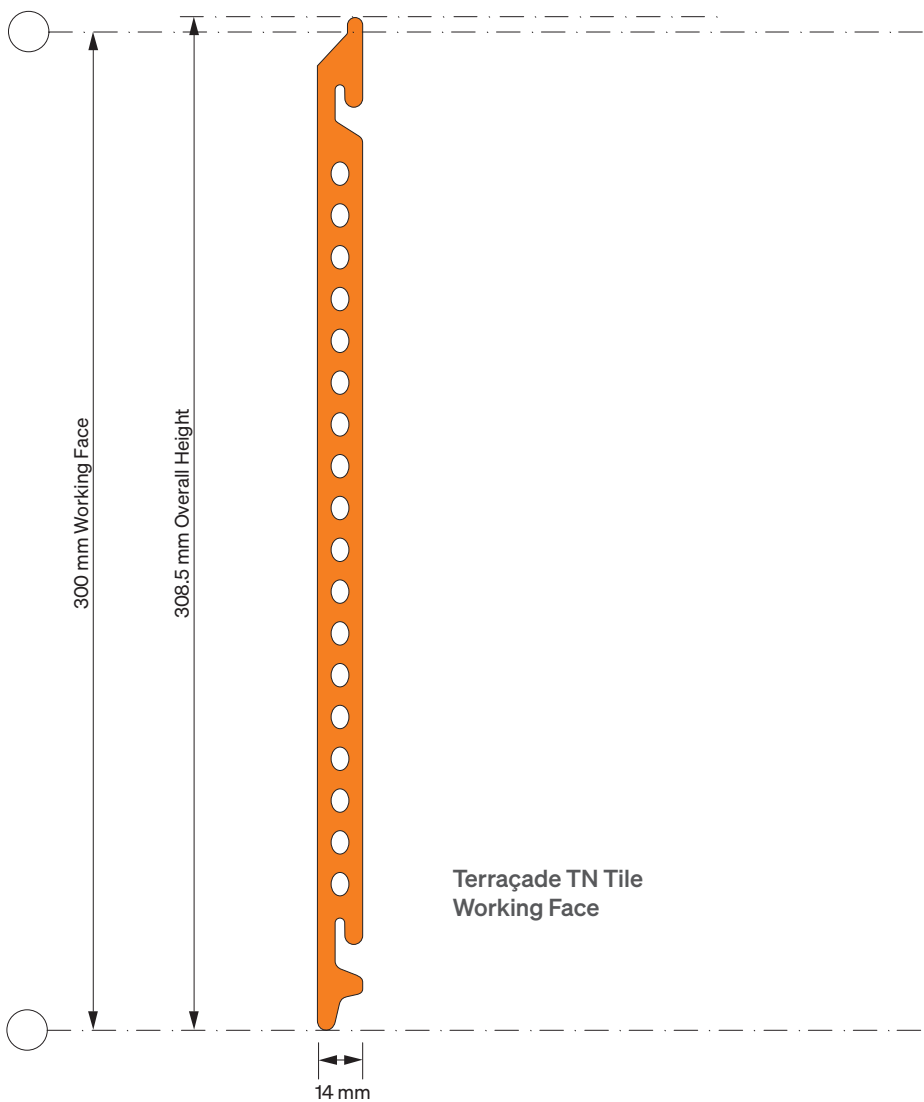
## Other Components

- TN. E2 Fitment Sponge p<sup>61</sup>
- TN. E3 Breathable Membrane p<sup>61</sup>
- TN. Set Out Tool p<sup>61</sup>

All components are available from Terraçade.

# Components

## Terraçade TN Tile Profile

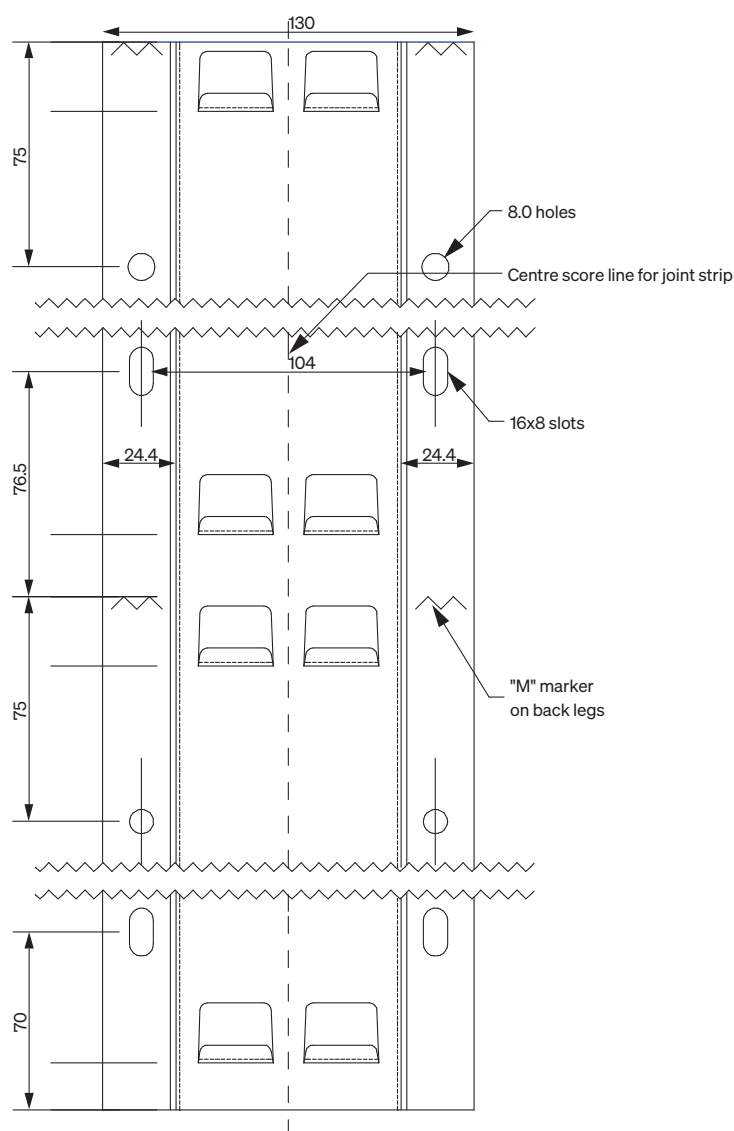


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# Components

## Terraçade TN Suspension Rail – Elevation



TN. 01 Suspension Rail, elevation

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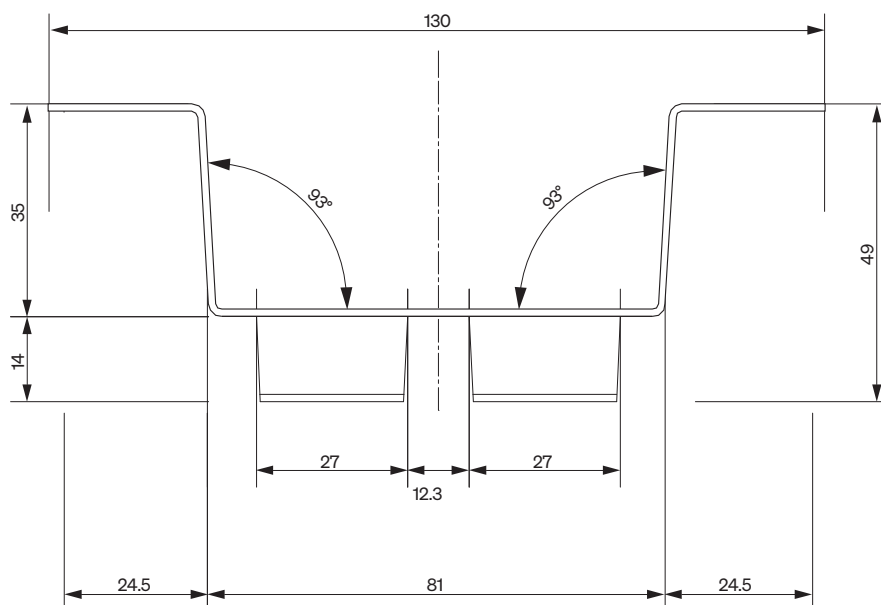
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# Components

## Terraçade TN Suspension Rail – Plan



TN. 01 Suspension Rail, plan

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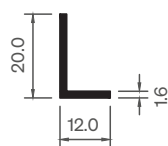
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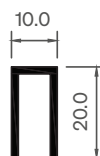
# Components

## Surround Trim, Corner Trim and Joint Options

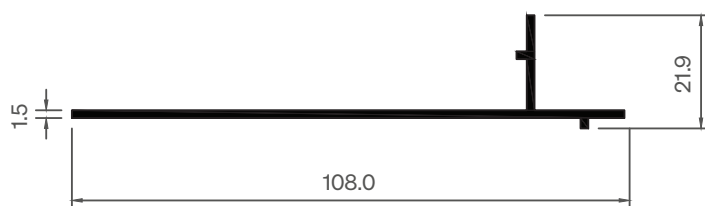
TN. 02 Aluminium Joint Angle



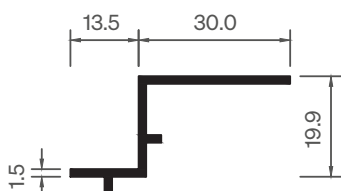
TN. 03 Aluminium Joint Channel



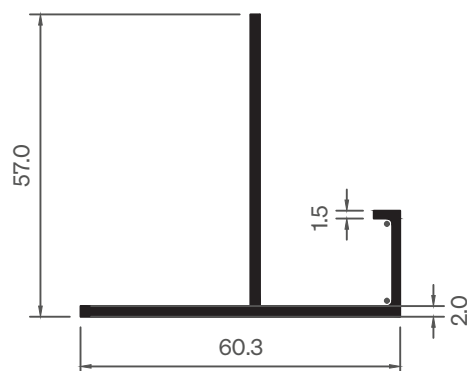
TN. 04 Aluminium External Corner



TN. 05 Aluminium Internal Corner



TN. 06 Aluminium Surround Profile



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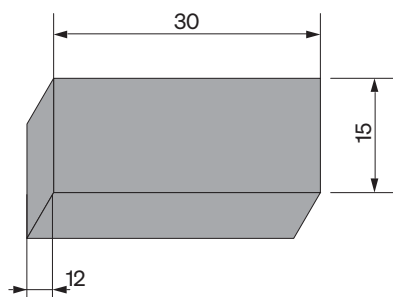
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# Components

## Other Components

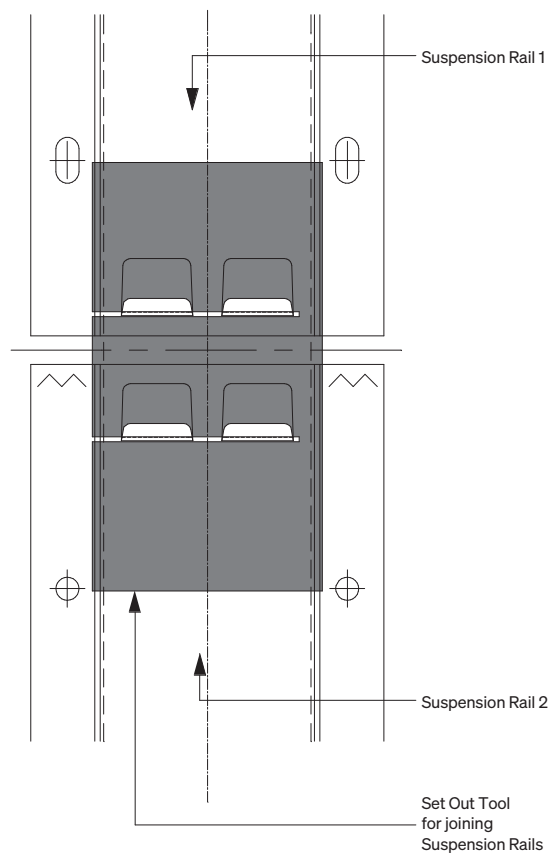
TN. E2 Fitment Sponge



TN. E3 Breathable Membrane



TN. Set Out Tool



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# System Design

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# System Design

## Common Details

- SD-01 Overview p<sup>65</sup>
- SD-02 Side Detail p<sup>66</sup>
- SD-03 Horizontal Detail p<sup>67</sup>
- SD-04 External Corner p<sup>68</sup>
- SD-05 Internal Corner p<sup>69</sup>
- SD-06 Base Detail p<sup>70</sup>
- SD-07 Parapet p<sup>71</sup>
- SD-08 Window Sill p<sup>72</sup>
- SD-09 Window Head p<sup>73</sup>
- SD-10 Window Jamb p<sup>74</sup>
- SD-10 Window Reveal Option p<sup>75</sup>
- SD-11 Set-Out Tool p<sup>76</sup>
- SD-12 Rake Detail p<sup>77</sup>
- SD-13 Top Restraint for Earthquake Zones p<sup>78</sup>

## Typical Details for Common Structural Walls

- D-01 Timber – Horizontal Detail p<sup>79</sup>
- D-02 Timber – Vertical Detail p<sup>80</sup>
- D-03 Timber – Termite Detail (Recessed Slab) p<sup>81</sup>
- D-04 Steel – Horizontal Detail p<sup>82</sup>
- D-05 Steel – Vertical Detail p<sup>83</sup>
- D-06 Concrete – Horizontal Detail p<sup>84</sup>
- D-07 Concrete – Vertical Detail p<sup>85</sup>
- D-08 Masonry – Horizontal Detail p<sup>86</sup>
- D-09 Masonry – Vertical Detail p<sup>87</sup>
- D-10 Membrane – Window Detail p<sup>88</sup>

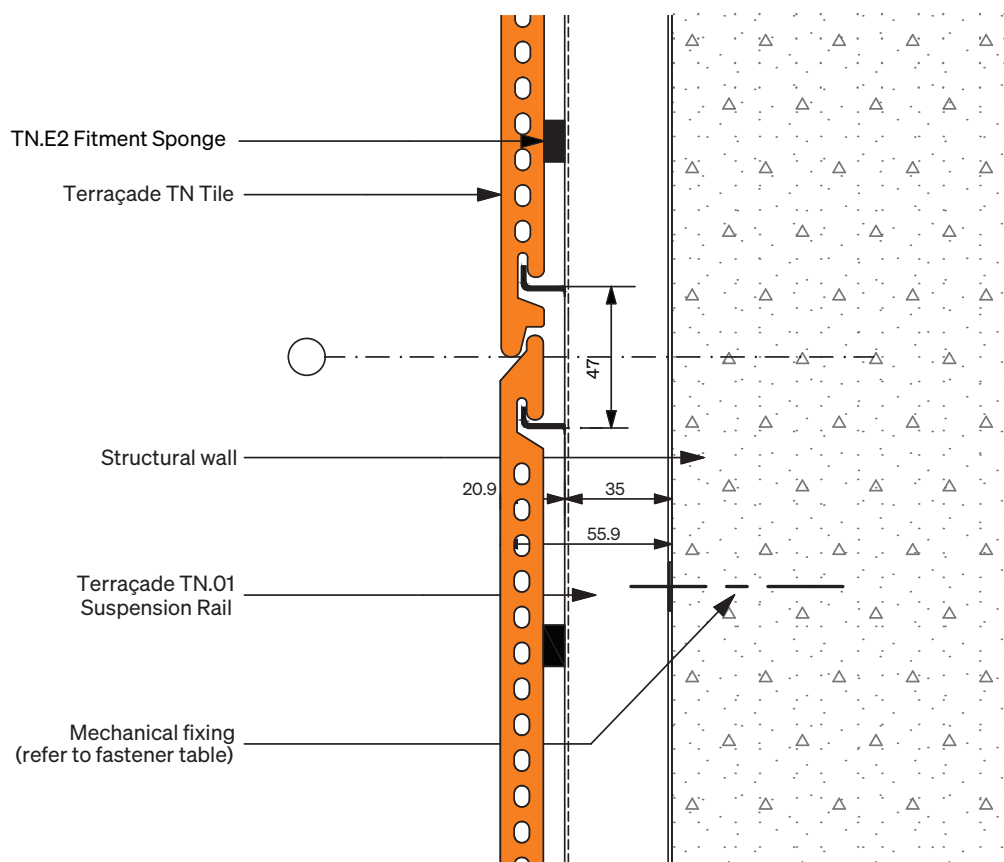


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# System Design

## Side Detail - SD 02



### Handy Tip

Fitment sponges should be fitted immediately prior to installation of tiles.

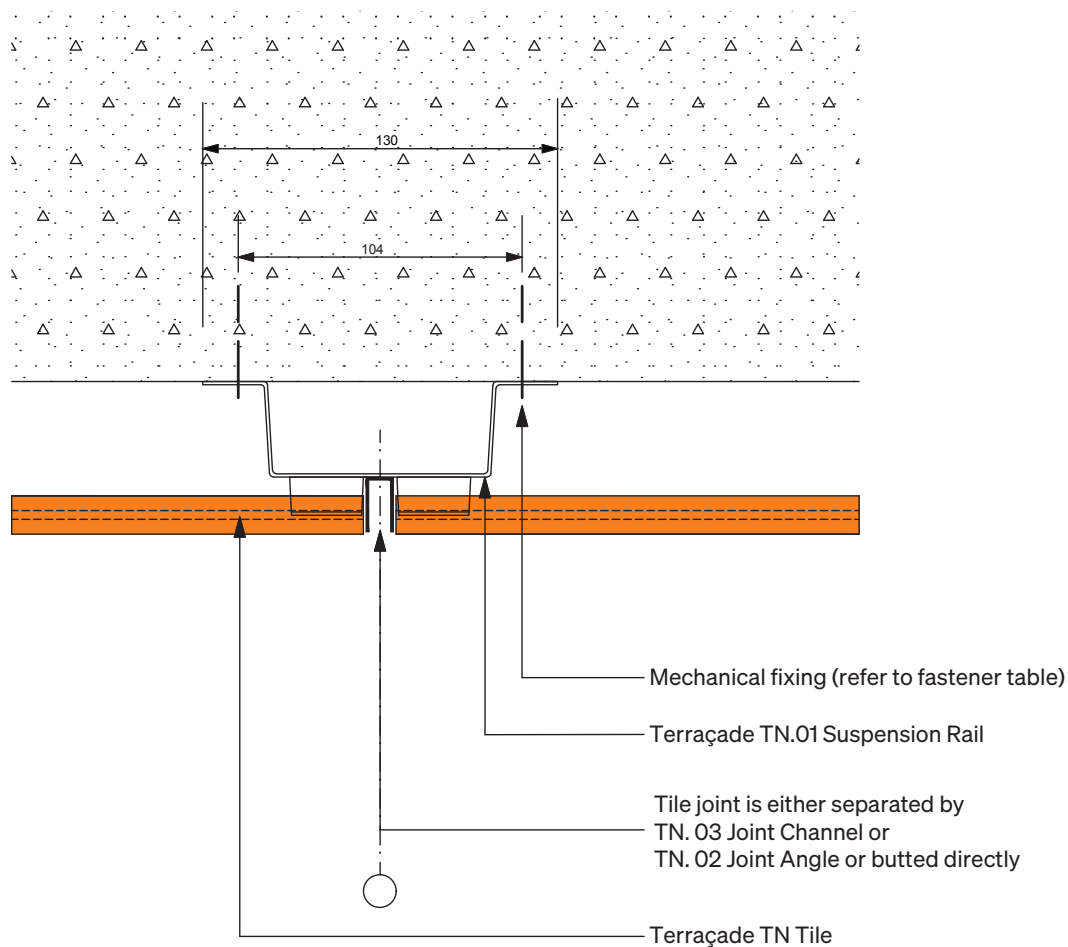
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# System Design

## Horizontal Detail - SD 03



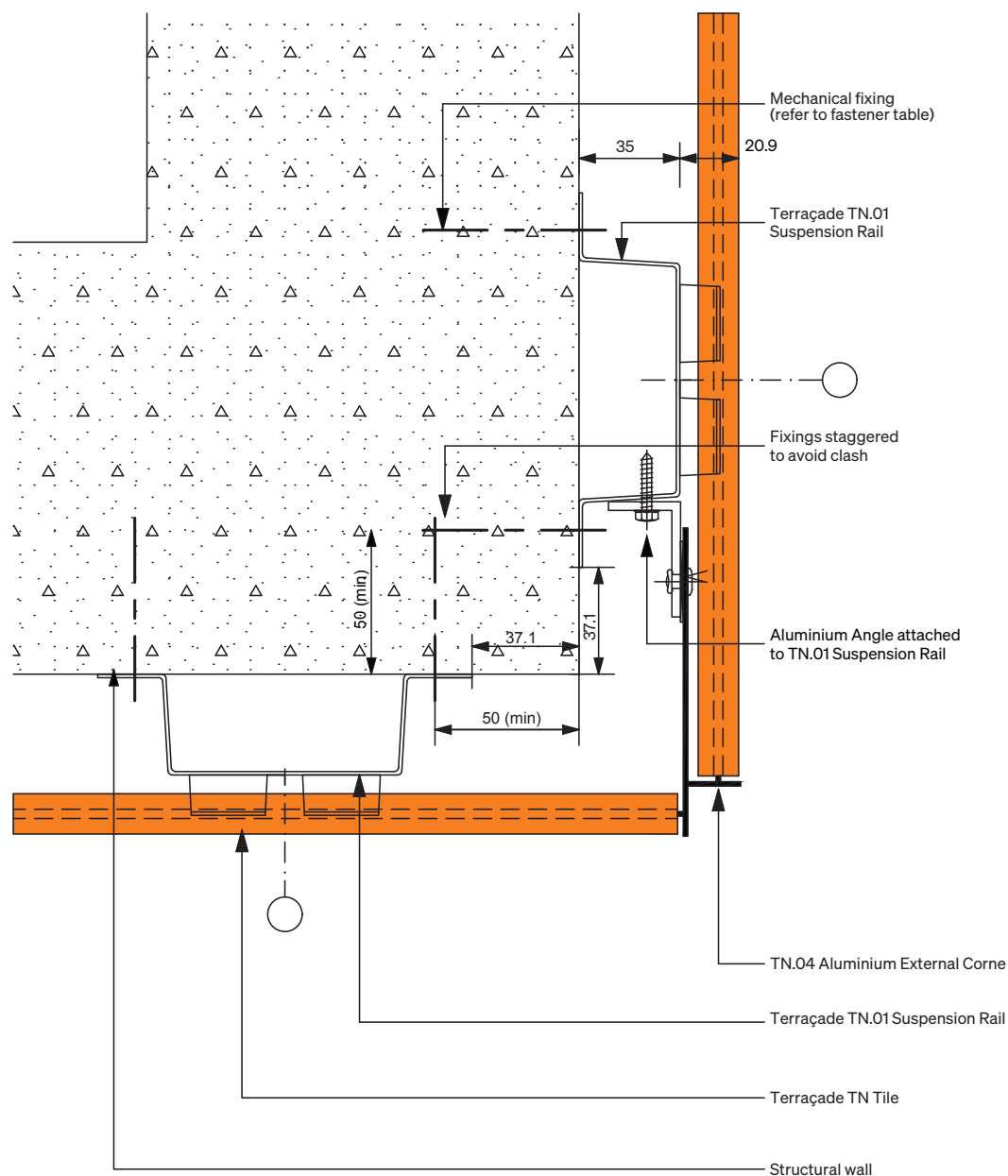
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# System Design

## External Corner - SD 04



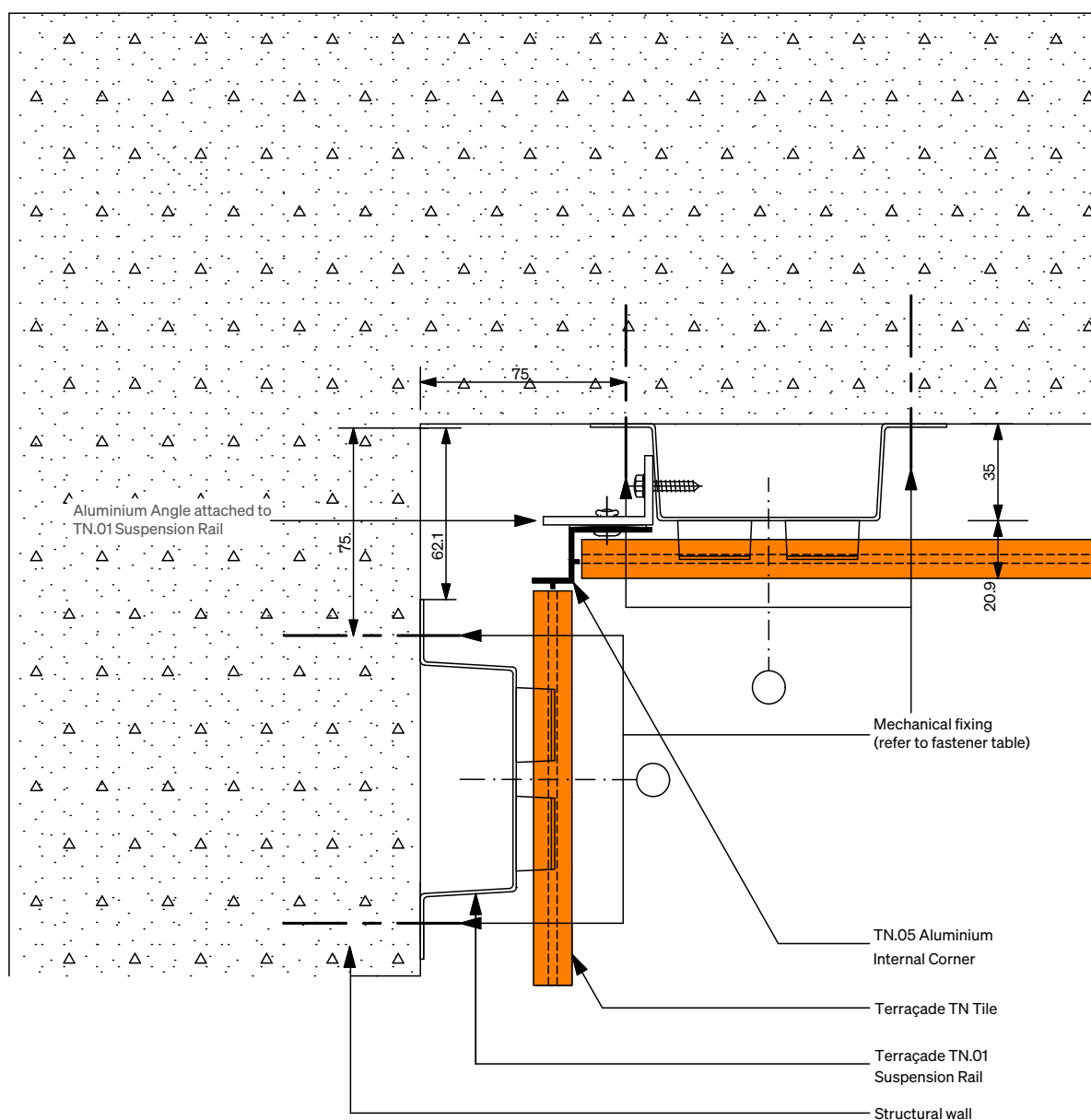
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# System Design

## Internal Corner - SD 05



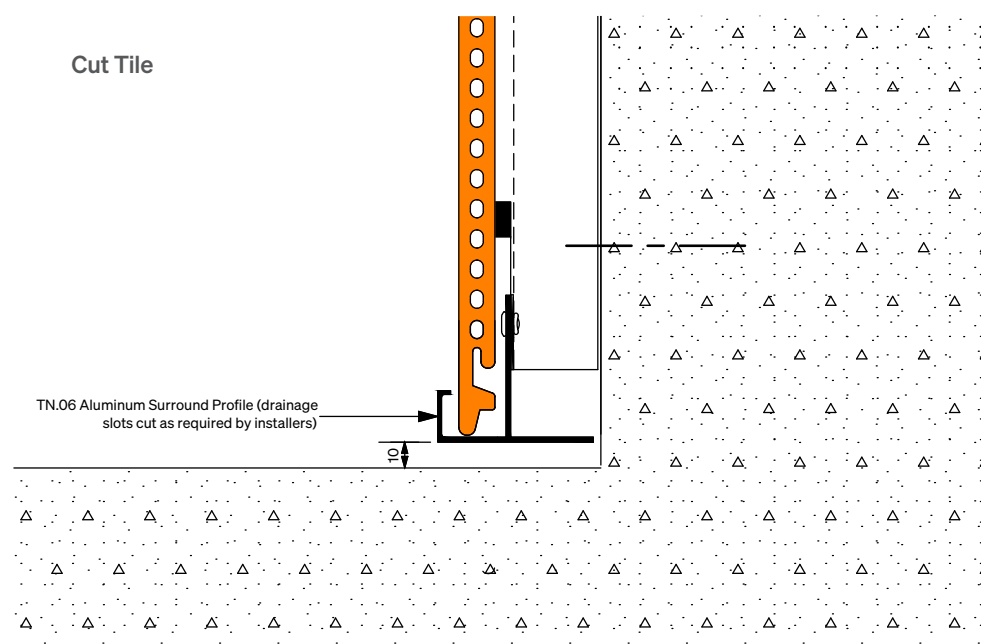
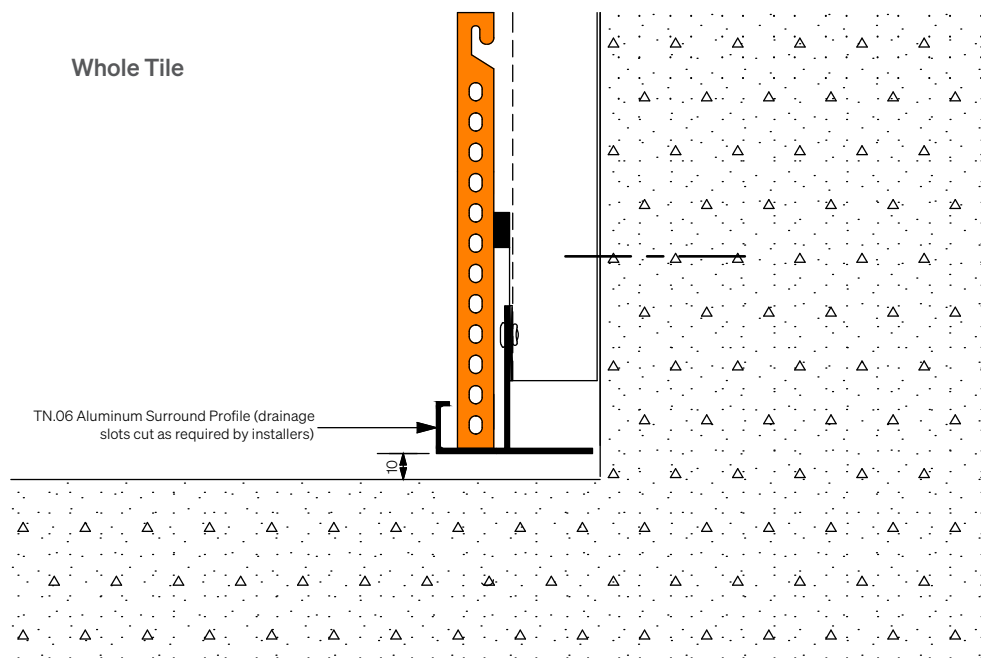
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# System Design

## Base Detail - SD 06



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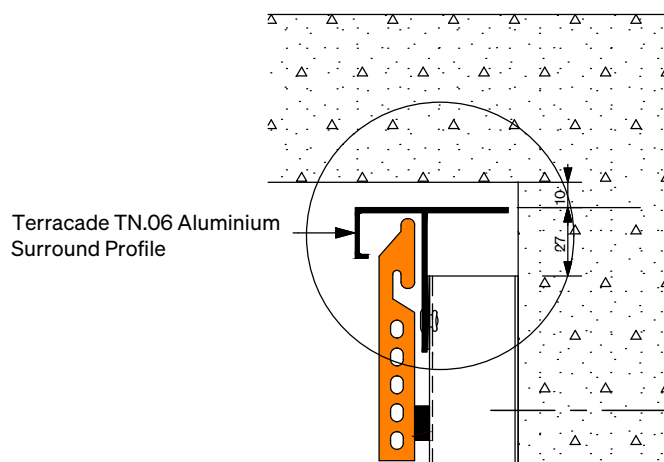
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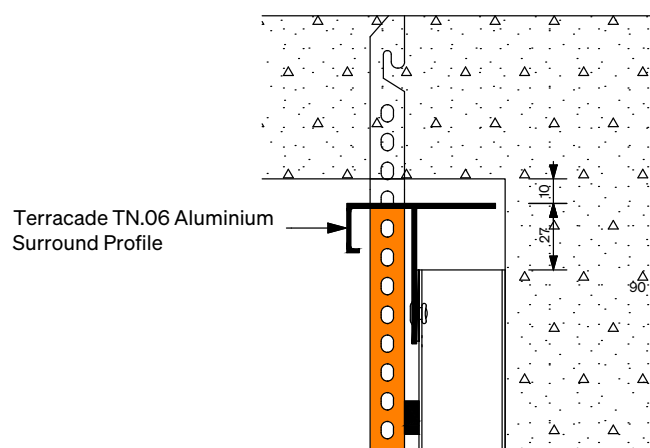
# System Design

## Parapet Detail - SD 07

Whole Tile



Cut Tile



### Handy Tip

If fixing to structural wall and the suspension rail, allow a 10mm gap.

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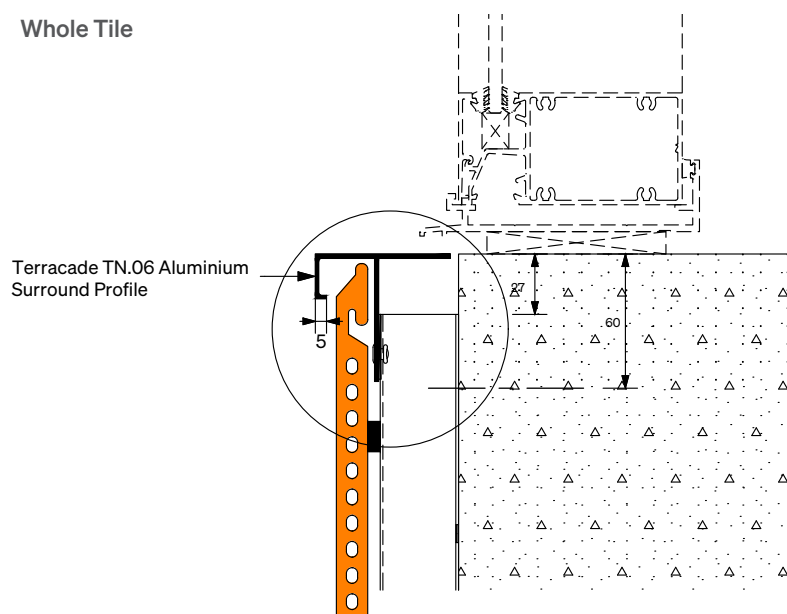
relevant component's technical data. The diagram is not to scale. For more tailored solutions to suit individual applications, please contact Brickworks Building Products. Brickworks Building Products reserves the rights to add, alter or delete components without prior notice.



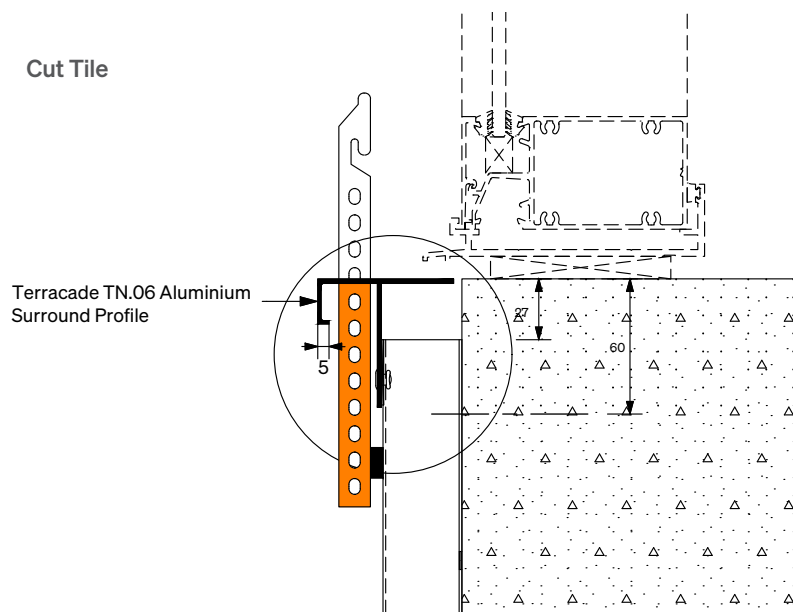
# System Design

## Window Sill - SD 08

Whole Tile



Cut Tile



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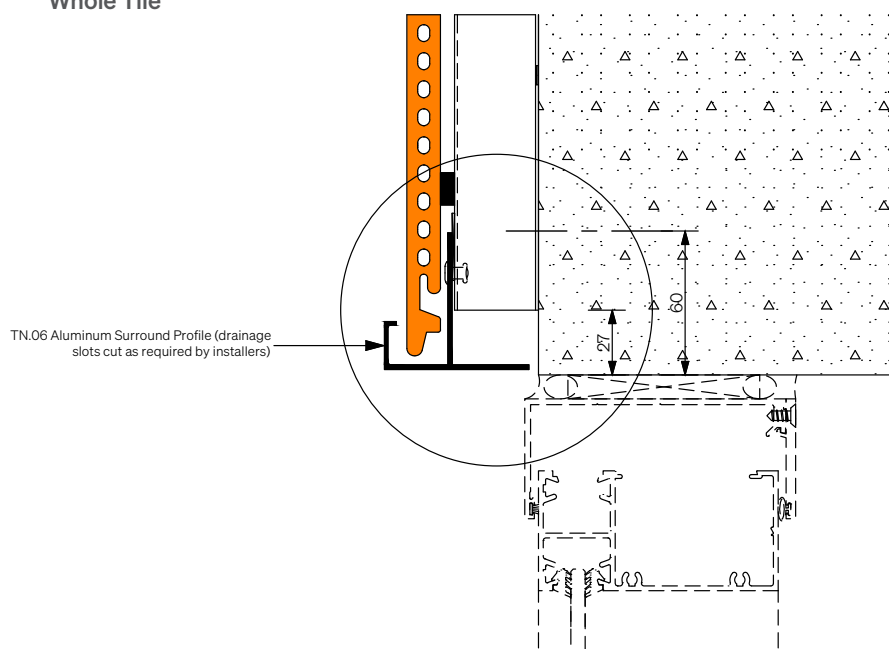
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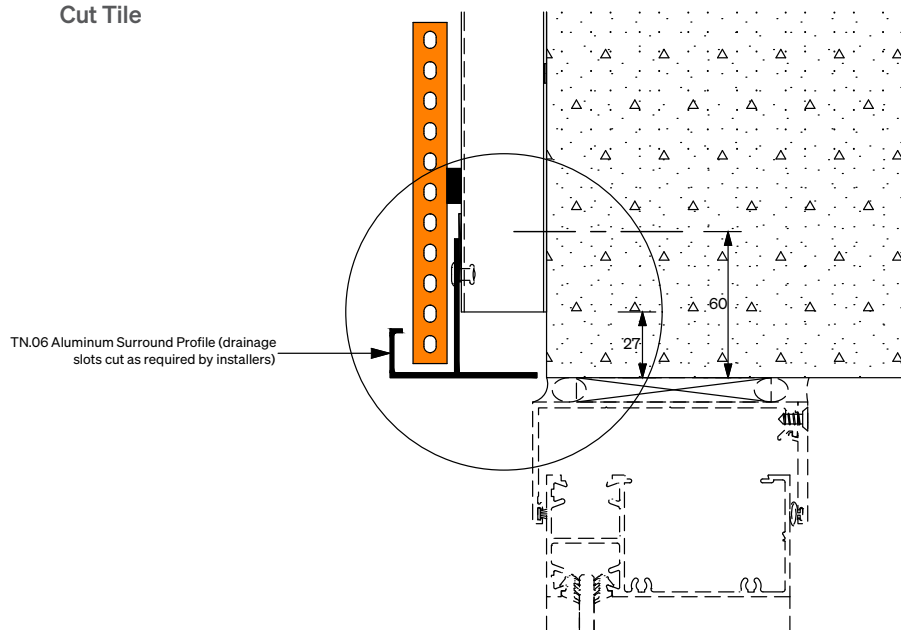
# System Design

## Window Head - SD 09

Whole Tile



Cut Tile



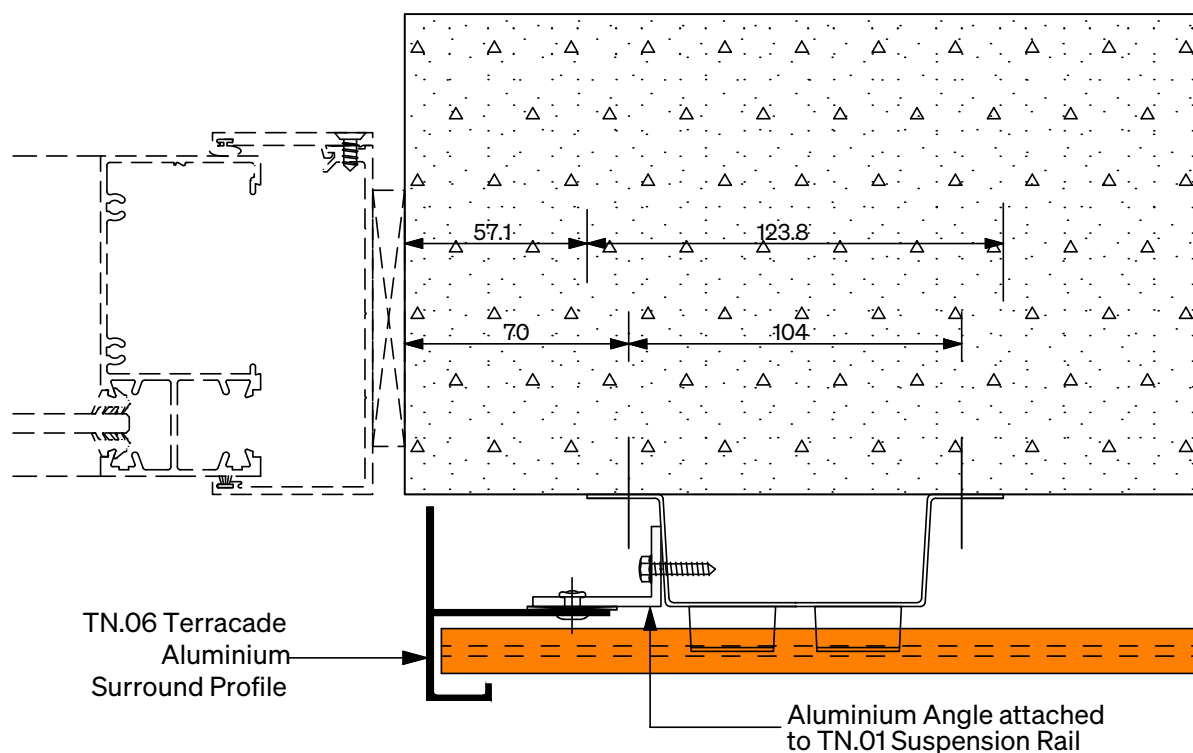
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# System Design

## Window Jamb - SD 10



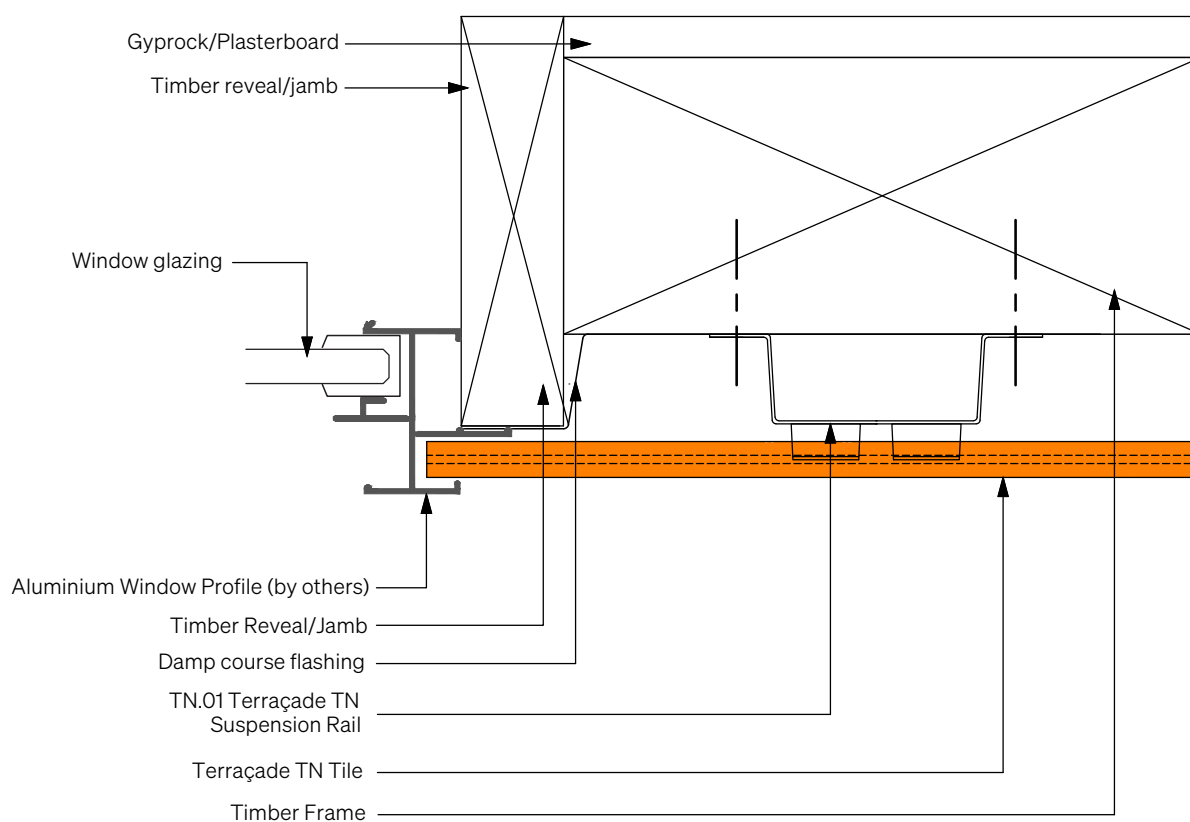
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# System Design

## Window Jamb - SD 10 Window Reveal Option



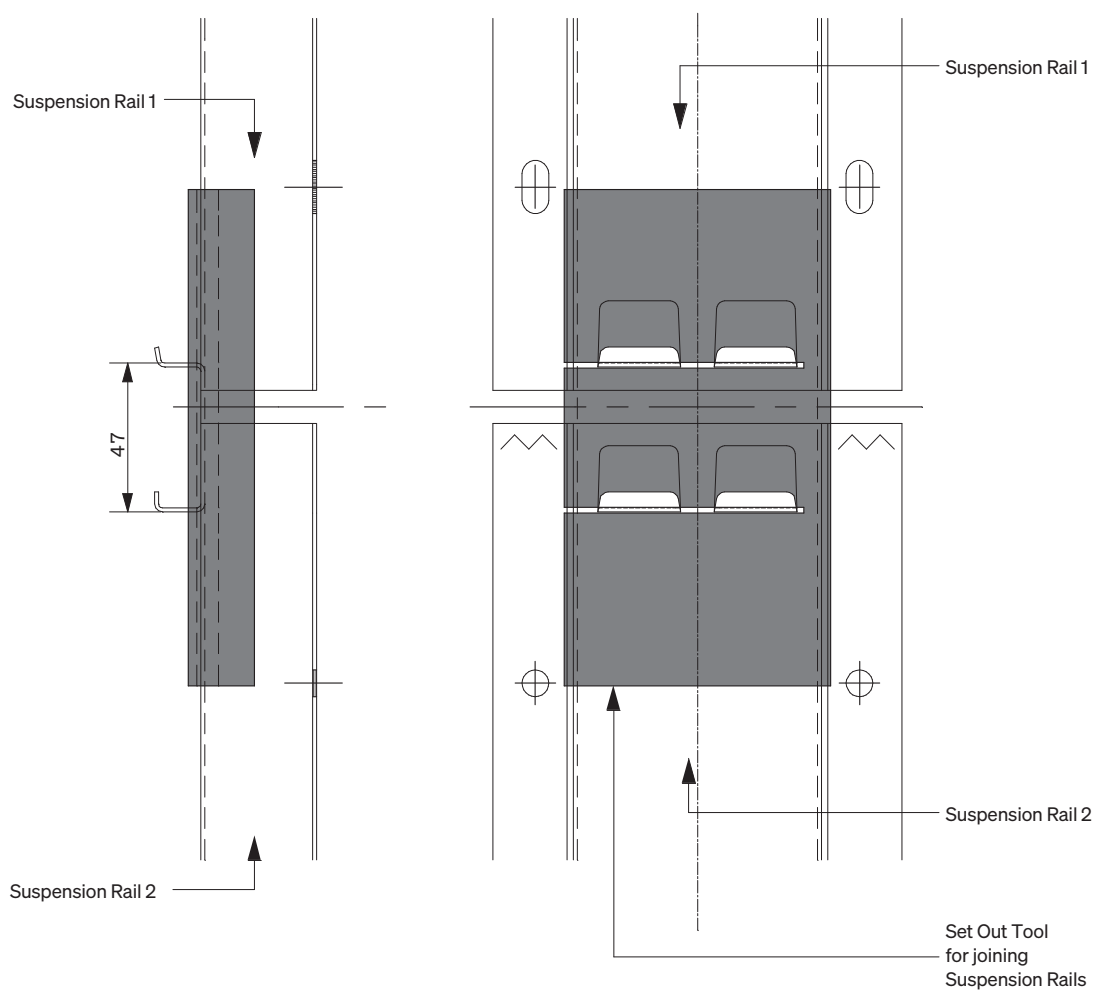
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# System Design

## Set-Out Tool – SD 11



### Handy Tip

The Set Out Tool maintains the vertical continuity of the system when joining rails on above the other. The tool is slotted onto the rails and then removed when both rails are fixed.

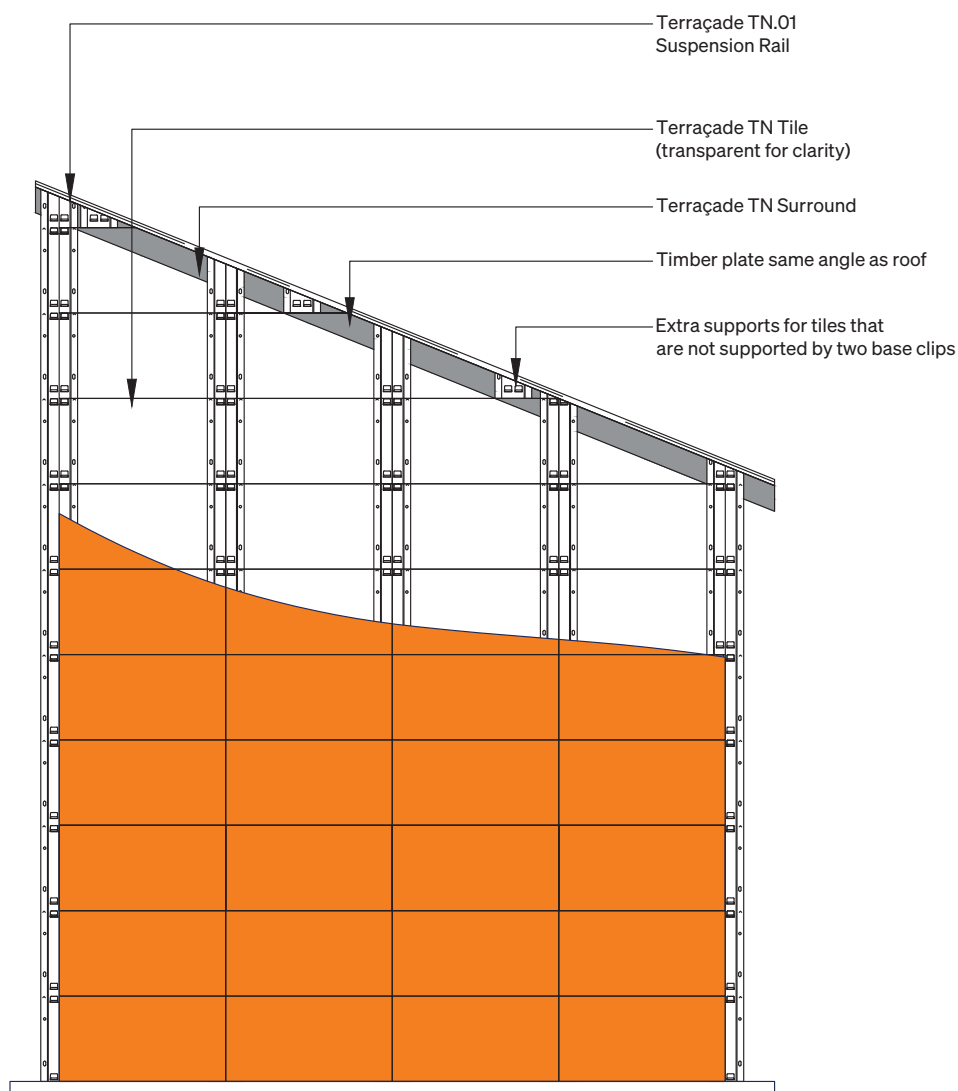
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# System Design

## Rake Detail - SD 12



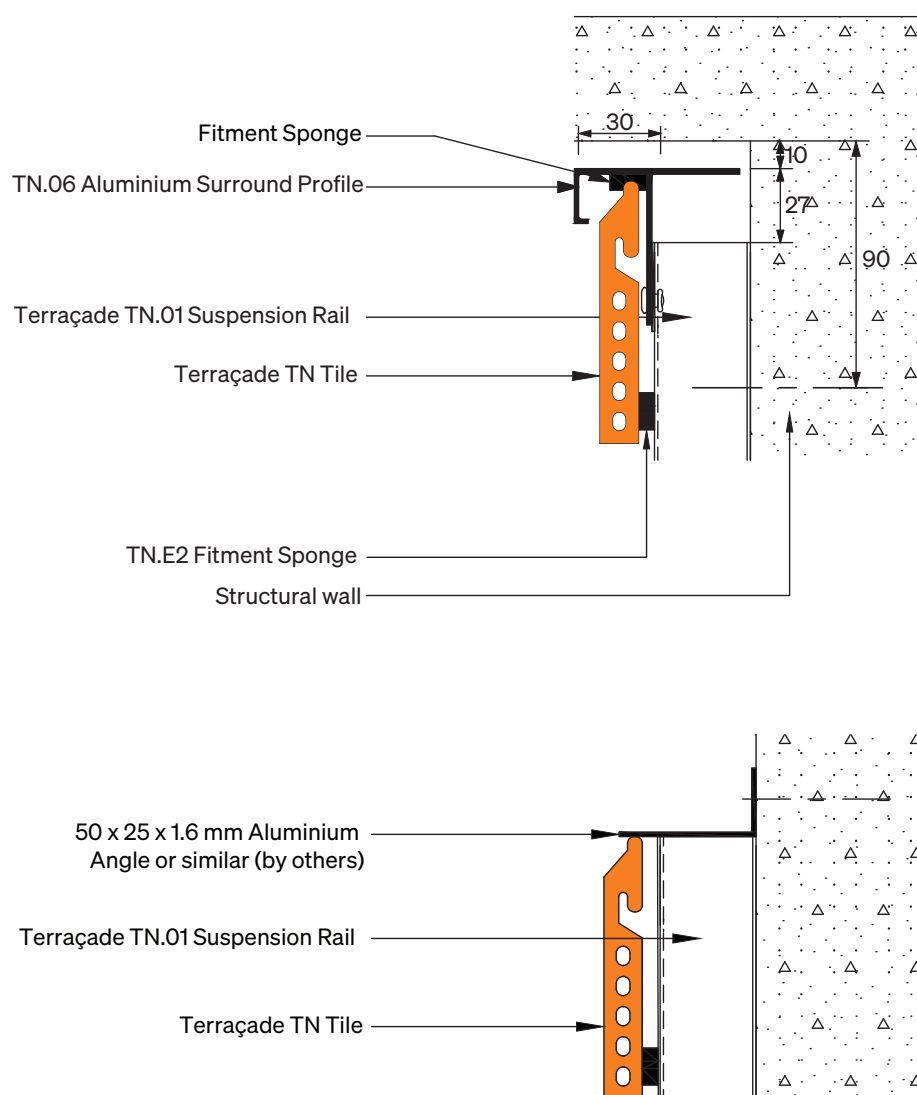
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# System Design

## Top Restraint for Earthquake Zones – SD 13



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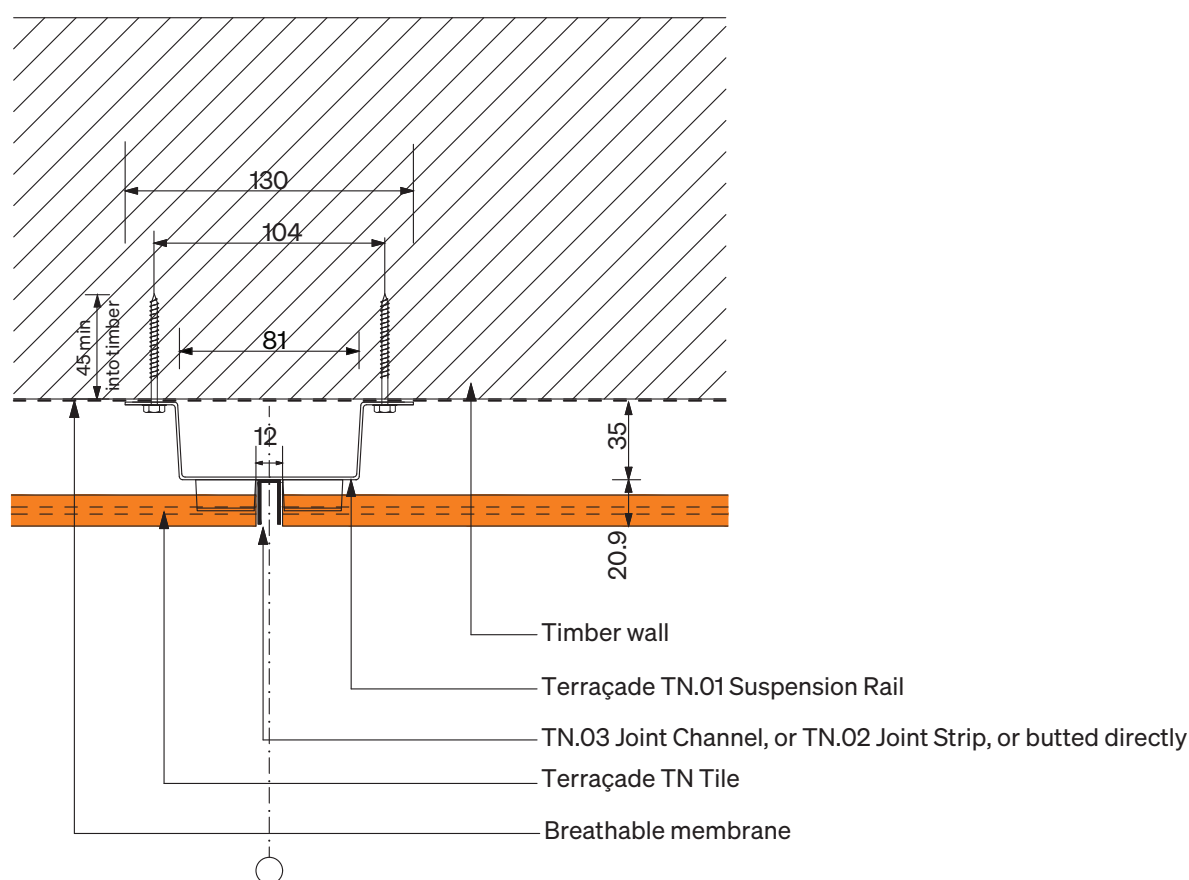
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# System Design

## Horizontal Detail – D-01 Timber



### Handy Tip

Spray or brush the central section of the coastal version suspension rail face (between the hanging tabs) matt black to reduce reflection through any gaps.

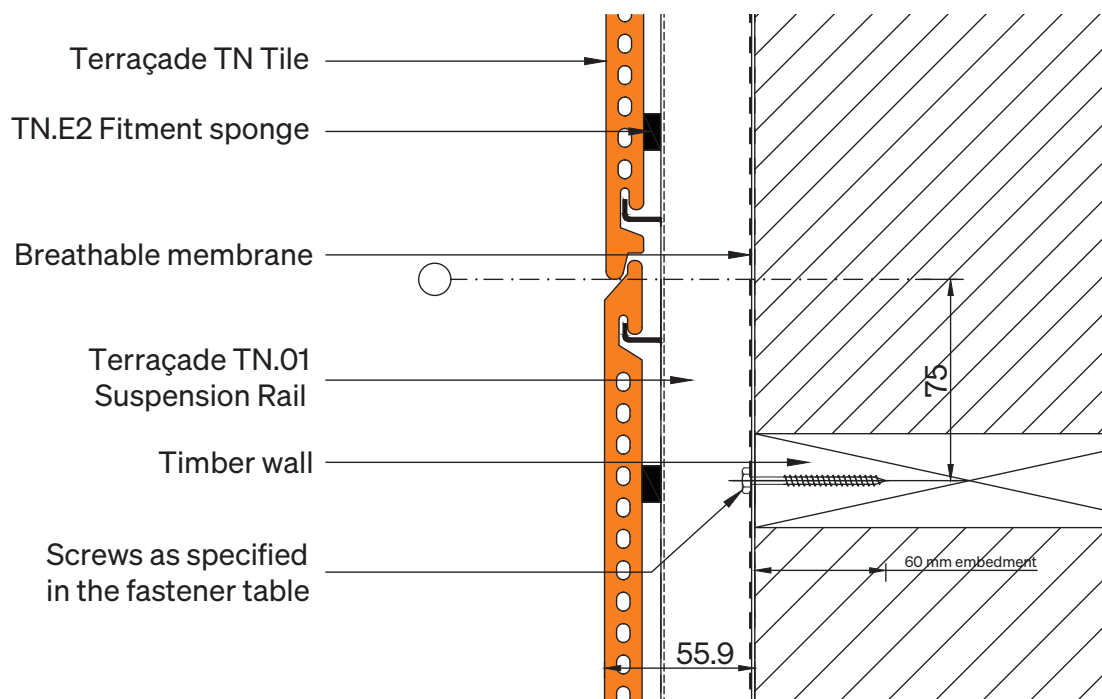
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# System Design

## Vertical Detail – D-02 Timber



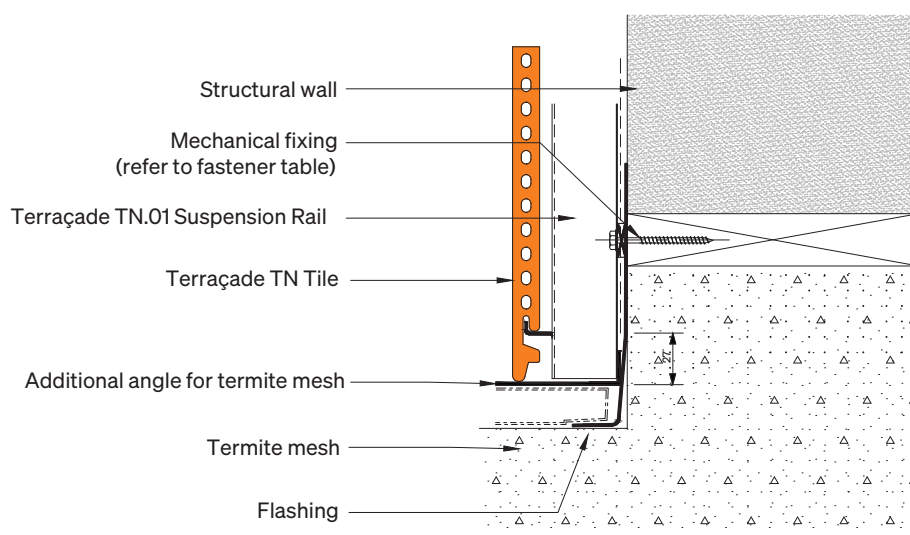
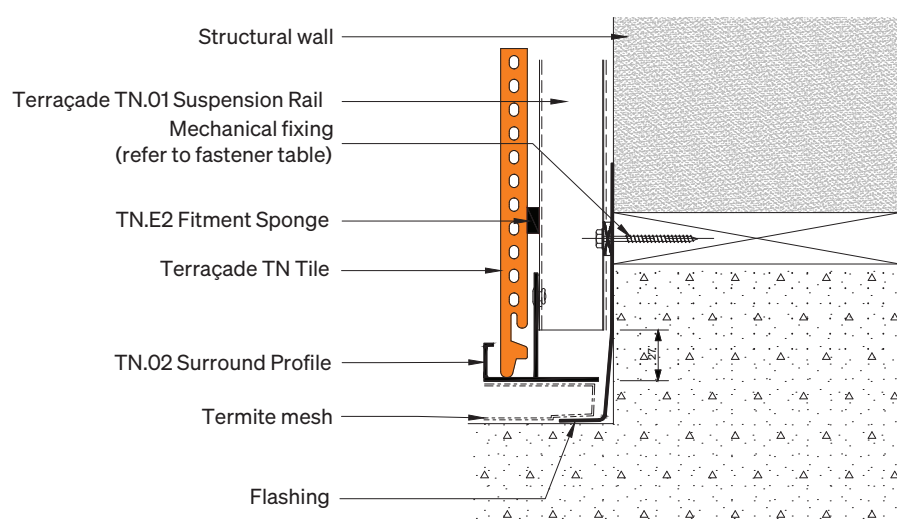
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# System Design

## Recessed Slab – D-03 Termite Detail



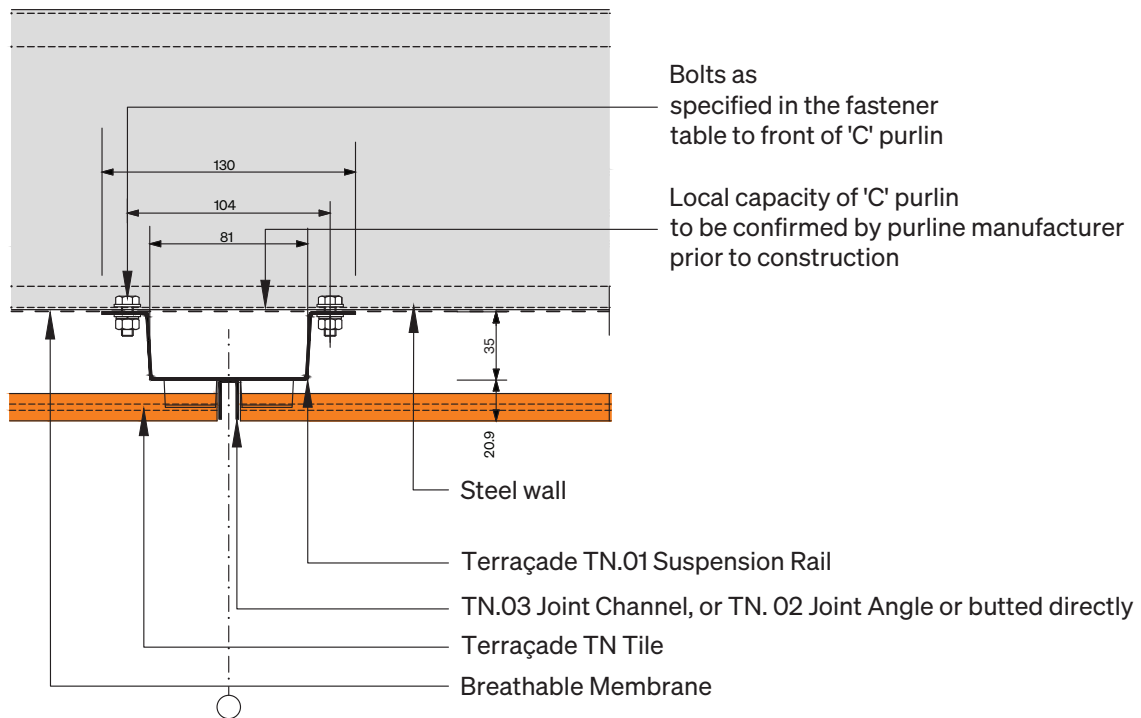
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# System Design

## Horizontal Detail – D-04 Stainless Steel



### Handy Tip

Spray or brush the central section of the coastal version suspension rail face (between the hanging tabs) matt black to reduce reflection through any gaps.

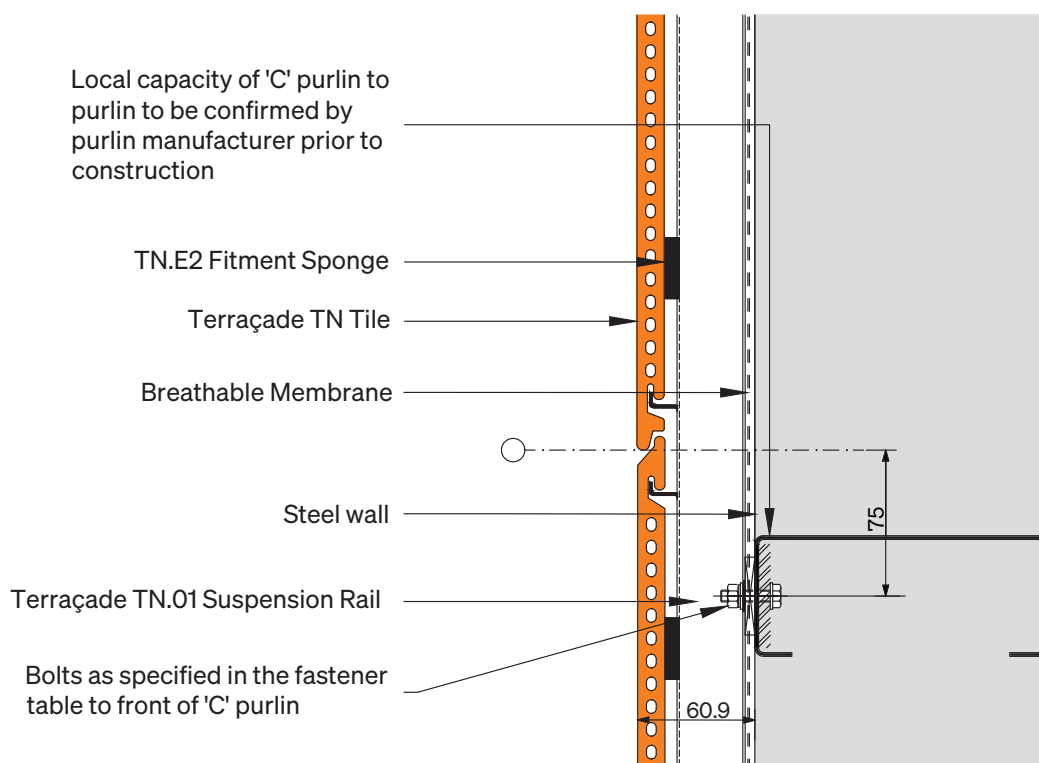
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# System Design

## Vertical Detail – D-05 Steel



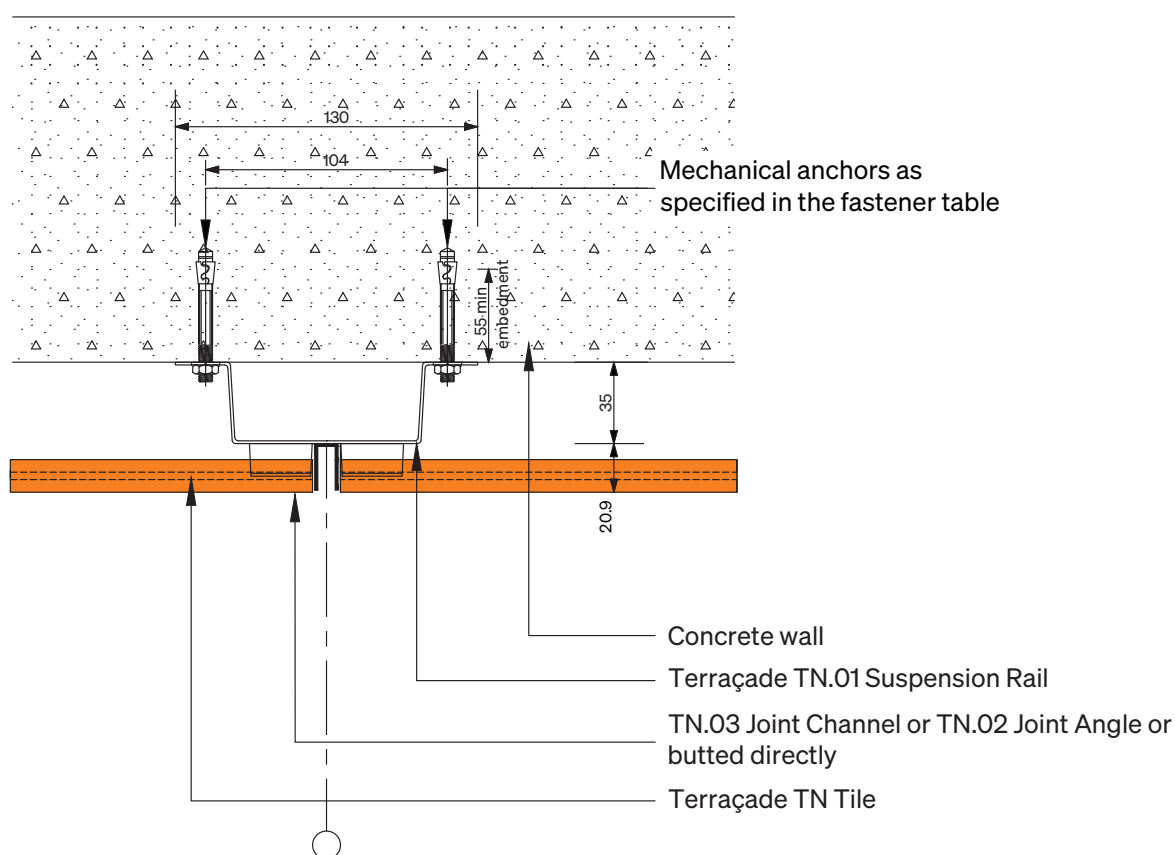
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# System Design

## Horizontal Detail – D-06 Concrete



### Handy Tip

Spray or brush the central section of the coastal version suspension rail face (between the hanging tabs) matt black to reduce reflection through any gaps.

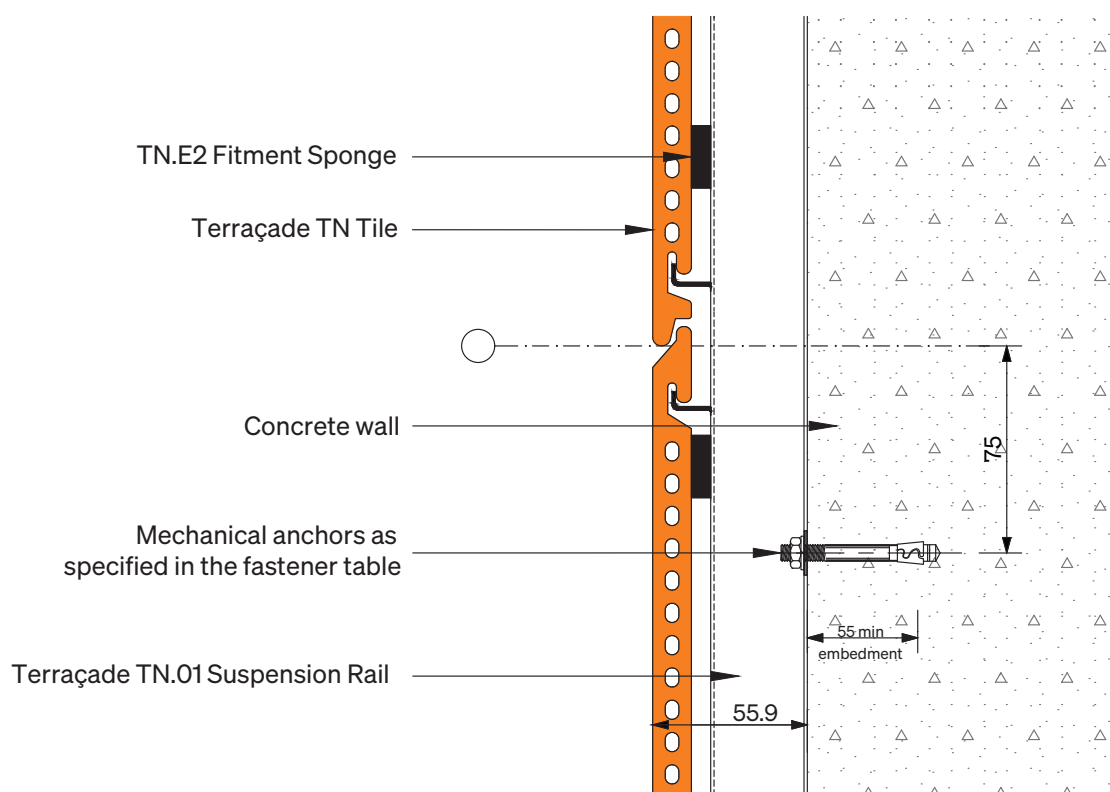
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# System Design

## Vertical Detail – D-07 Concrete



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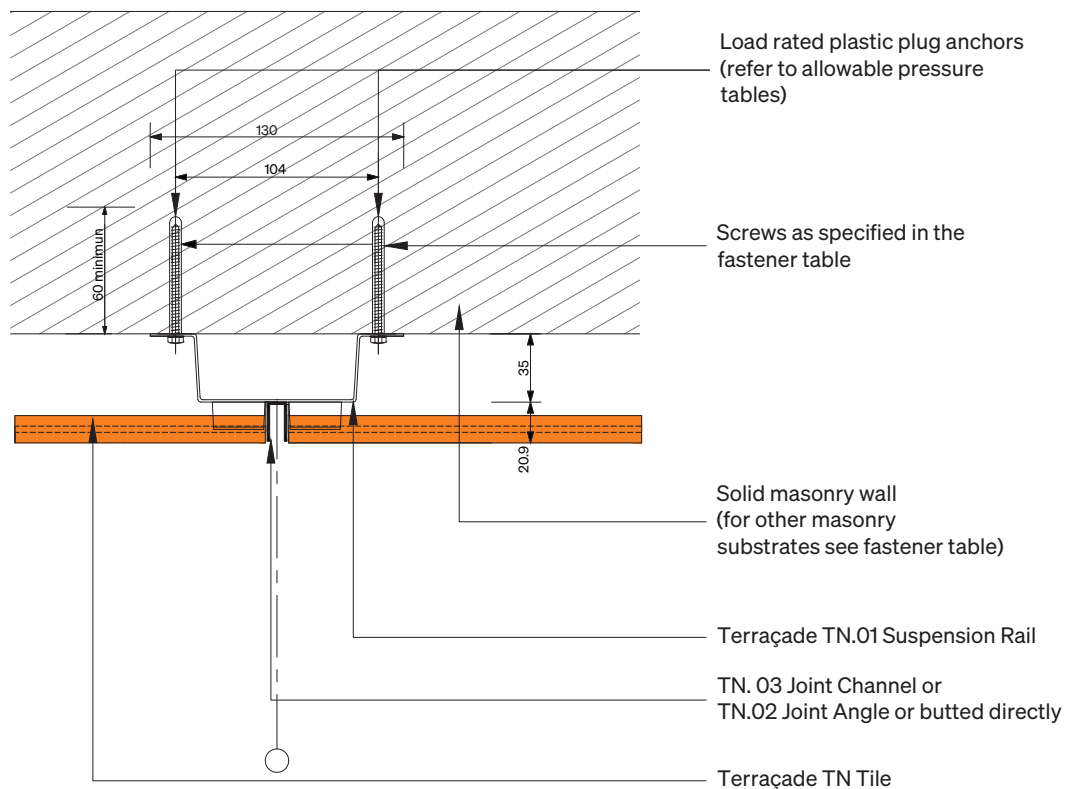
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# System Design

## Horizontal Detail – D-08 Masonry



### Handy Tip

Spray or brush the central section of the coastal version suspension rail face (between the hanging tabs) matt black to reduce reflection through any gaps.

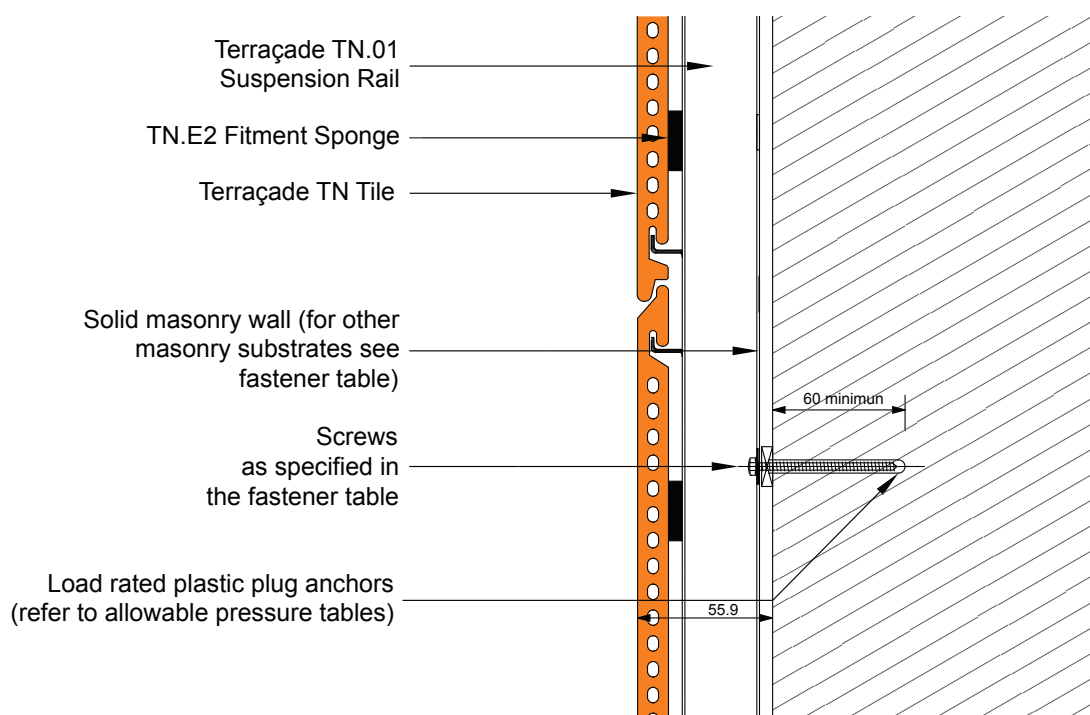
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# System Design

## Vertical Detail – D-09 Masonry



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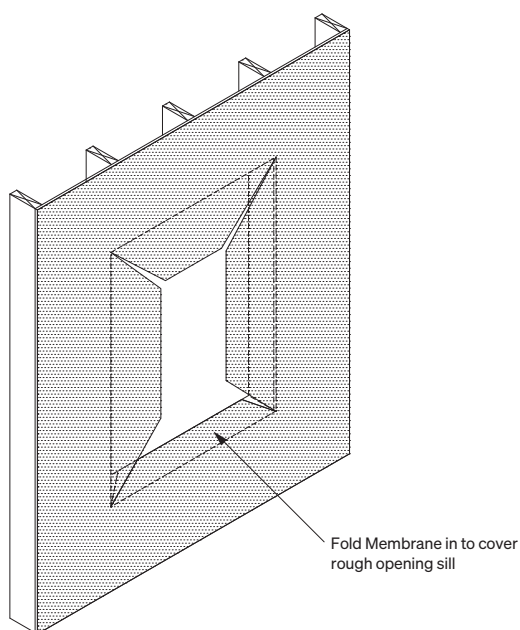
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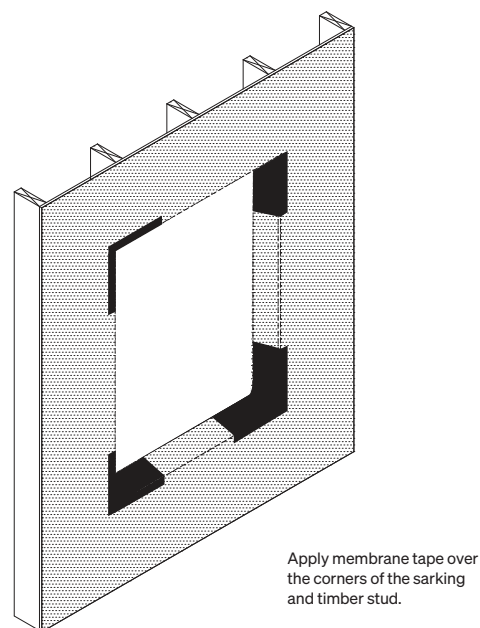
# System Design

## Membrane Detail – D-10 Window

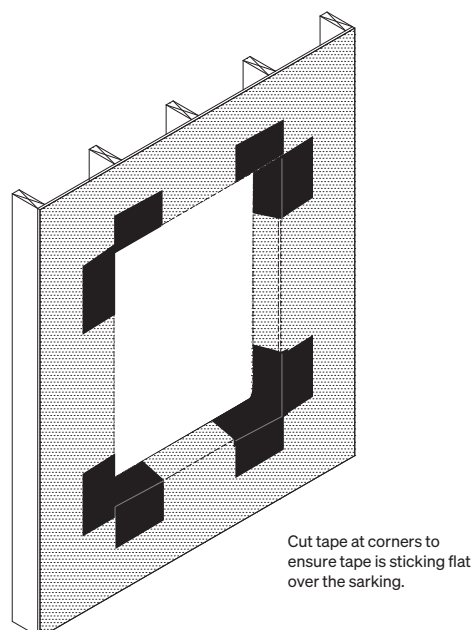
1.



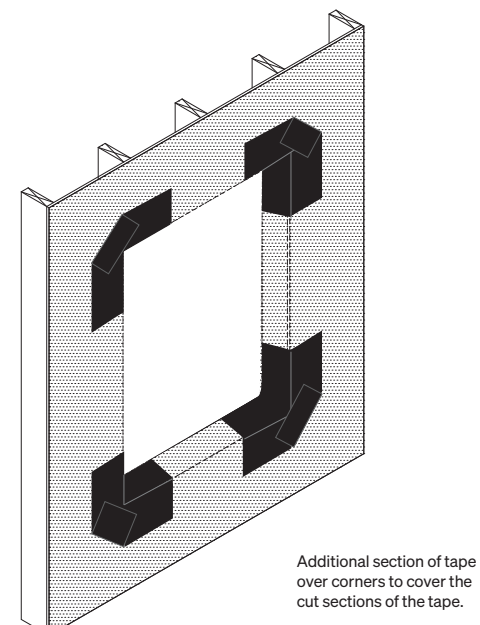
2.



3.



4.



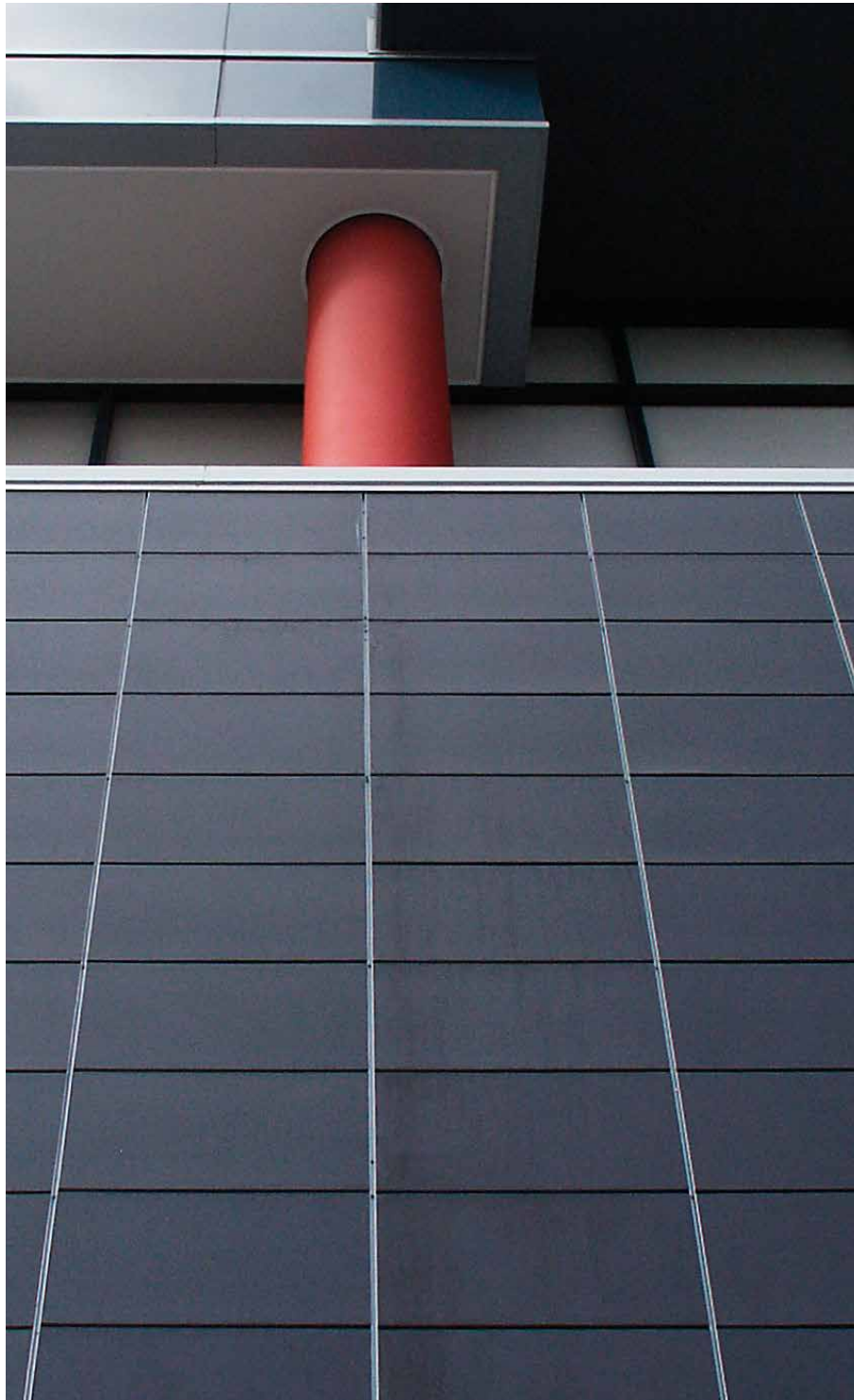
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# Installation

# 7

# Installation

The Terraçade TN System is easily installed as the tiles are securely attached by purpose designed suspension rails.

---

The speed of installation of the tiles and the effectiveness of the panel support system is dependent on achieving close control of tolerances in the fixings of the vertical support system. The unique design of the vertical suspension rails ensures that the vertical module distance is maintained within the rail.

## Preparation

- 01.** Ensure that adequate structural members are available to fasten the suspension rails to. Additional noggings or purlins may be necessary to accommodate the required span configuration. Design documentation should accommodate these requirements.
- 02.** Specify adequate waterproofing measures for the backup structural wall. For framed systems a waterproof membrane is supplied as part of the system's tested performance. Alternative membranes can be used where properties are equivalent or exceed those listed in the table on page 47.
- 03.** Determine the set-out of tiles, based upon the design requirements. The tiles could be set from the base, the top or from any important structural features.
- 04.** Determine the quantities of the components required for a particular design. Contact a Brickworks Building Products representative if you require assistance.

- 05.** Obtain the correct fasteners, as per the fastener table, for the design.
- 06.** Ensure that the installers are aware that irregularities of shape in backup wall must be packed out or accommodated for, to ensure that the suspension rails are installed correctly.

## Examination of Substructure

- 07.** Examine back-up wall for compliance with design requirements (check for discrepancies with drawings, cracks and other possible air leakage sources).
- 08.** Ensure that adequate support structure is available to comply with the span configurations specified.
- 09.** The maximum horizontal or vertical deviation of a surface from a plane surface (bow) in any 2 m length;
  - Structural Tolerance - 5 mm
  - Non-Structural Framework Tolerance - 3 mm

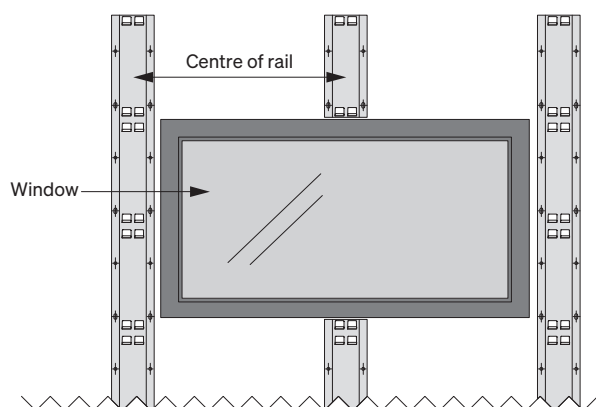


## Set Out and Coordination

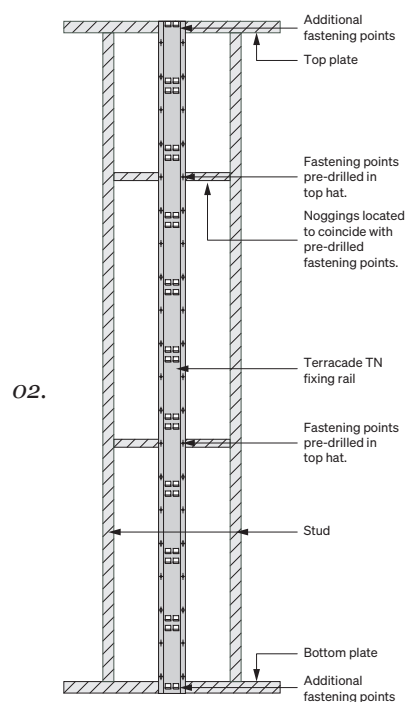
10. Establish and coordinate set-out lines, following design requirements for the set-out of the tiles. For example, the design may require that the tile module is spaced from an important feature or be designed to reduce cut tiles around a window.

(See below diagram O1 and O2).

11. Install any secondary framing necessary to support suspension rails including bimetallic separation, line and level.
12. Confirm support centres for rail as required by the span chart have been achieved.



O1.



O2.

# Installation Components

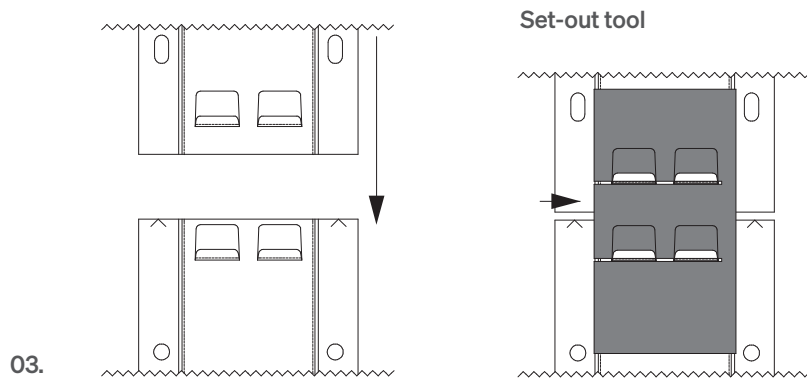
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## Installation of Waterproofing

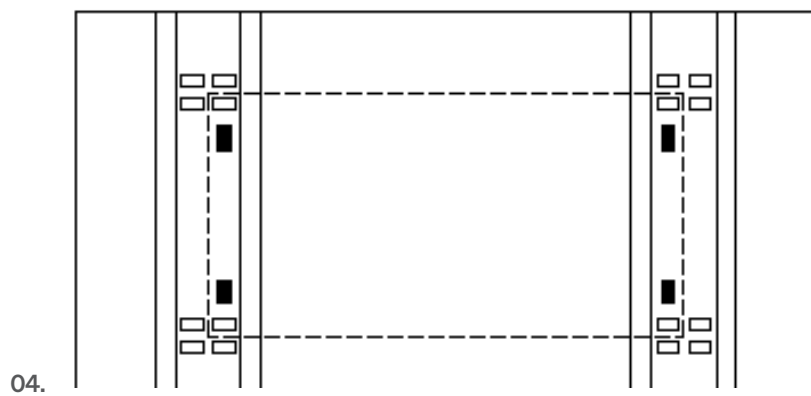
13. For framed systems a waterproof membrane can be supplied as part of the system's tested performance. The waterproof breathable membrane must be installed in accordance with the manufacturers instructions and recommendations.

## Installation of Suspension Rails, Flashings and Trims

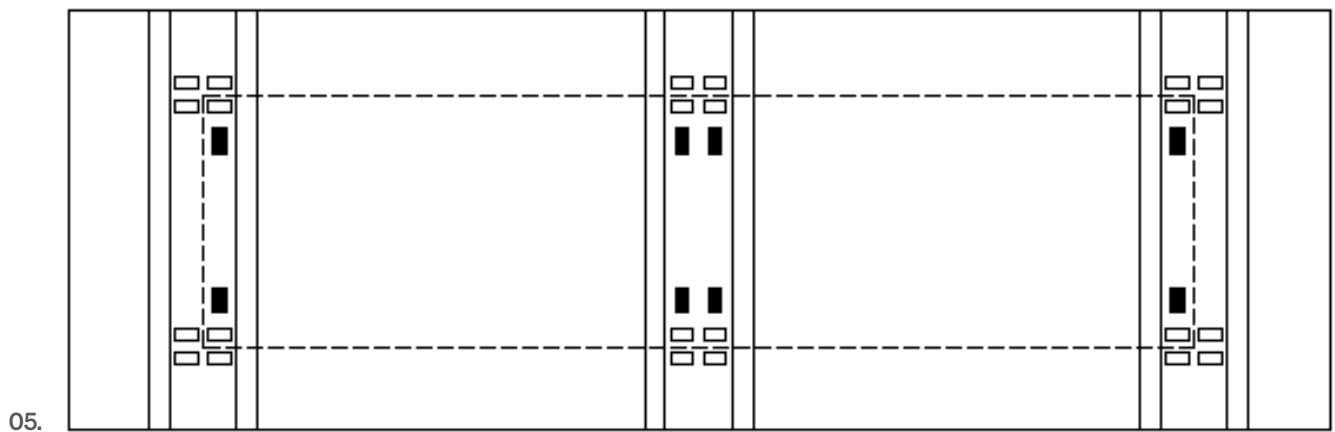
14. Cut suspension rails to size, if necessary, paying particular attention to top and bottom termination and fixing points.
15. Install vertical suspension rails, ensuring that the rails are installed straight and as per the design specifications (with particular reference to the fastener table and the allowable pressures). A level line, spirit level or laser level can be used to ensure accuracy. Note that vertical misalignment between adjacent rails must not exceed 1 mm.
16. A set-out tool should be used to ensure continuity of the vertical module when more than one suspension rail is required in one vertical line.
  - a. When attaching a suspension rail above a pre-attached suspension rail, loosely attach the top suspension rail using the slot holes punched in the suspension rail.
  - b. Engage the set-out tool onto the two rails by slotting it over the hangers.  
(See overleaf diagram 03).
  - c. Once the top suspension rail is positioned correctly and is vertically plumb and level tighten the fastenings and lock the suspension rail into place.
  - d. Remove the set-out tool for use elsewhere.
17. Place fitment sponge vertically onto the suspension rail at the position shown in diagrams 03, 04 and 05. Four sponges are required per 588 mm tile and 6 sponges required per 1188 mm tile.  
(See overleaf diagram 04).
18. Do not leave the fitment sponge exposed to sunlight for more than 24 hours.
19. Install any flashings that may be necessary to maintain the building air seal and weather tightness at openings or adjacent claddings.
20. Check all flashings (corners, at each 2-storey location, around all openings etc) are continuous and complete.
21. Surrounds shall be fixed to the suspension rail with aluminium angles at a maximum 600 mm vertical centres. and negative wind pressure coefficients and factors for permeable cladding on buildings with an aspect ratio of less than or equal to 1).



TN.E2 Fitment Sponge Set Out for 588 mm Tile



TN.E2 Fitment Sponge Set Out for 1188 mm Tile



# Installation Components

## Installation of Tiles

**23.** Commence installation of tiles starting from the base and working upwards, ensuring horizontal set out lines are maintained.

- a. Install tiles onto the vertical suspension rail by initially placing the top receiver of the tile securely on the top hanger. Lift the base of the tile and tilt inwards slightly to engage the bottom hanger. Check that the tile has been securely engaged visually and by physically moving the tile.

(See below diagram 06).

- b. Tiles can be cut to any length or height using a wet saw with appropriate continuous rim diamond blades. Surround trims are used to capture cut tiles. (See details SD06 to SD10 on pages 65-69).

- c. Insert either santoprene or aluminium tile spacers if necessary. Tile spacers will be necessary if a cut tile is not supported by the top hanger to maintain continuity in the tile overlap.

**24.** Insert vertical aluminium jointing strips and fix them mechanically using blind rivets or screws at maximum 600 mm centres. 3M VHB tape may be used to position the joining strip prior to mechanical fixing.

**25.** Brush down or sponge with a moist cloth on completion to remove loose material.

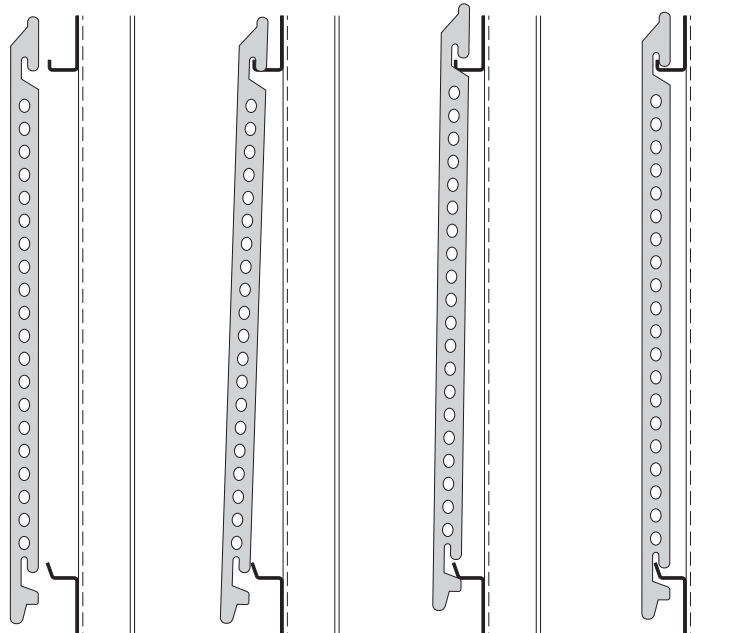
### Notes:

- a. Every length of suspension rail should be fastened at least at one position in the 2 round holes. That is, do not use only the slots to fasten the suspension rail.
- b. Engage the set-out tool onto the two rails by slotting it over the hangers.
- c. If a secondary framing system is required, its suitability should be confirmed by a structural engineer.
- d. It is difficult to remove individual tiles from a wall as it requires 'shuffling' of immediately adjacent tiles. The use of trims and a top wedge should prevent this shuffling as the top tile becomes locked into position.

- e. If additional drill holes in the suspension rail are required, they must not be drilled adjacent to the punched hangers. The only exception occurs when drill holes are required at the top and bottom of the suspension rail, for example at the top plate, or bottom plate of a timber frame.
- f. Where multiple lengths of the support rails are butted end to end it is recommended that the set-out tool supplied is used to ensure tolerances are maintained.
- g. The suspension rails are designed to accommodate the thermal expansion for full lengths when placed using the set-out tool. However, if cut rails are butted against one another a vertical gap of ~5 mm should be left between the rails using the set-out tool to accommodate thermal expansion.
- h. If installing tiles on a rake, the tile weight must be supported at least at two locations.

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06.



# Disassembly Process

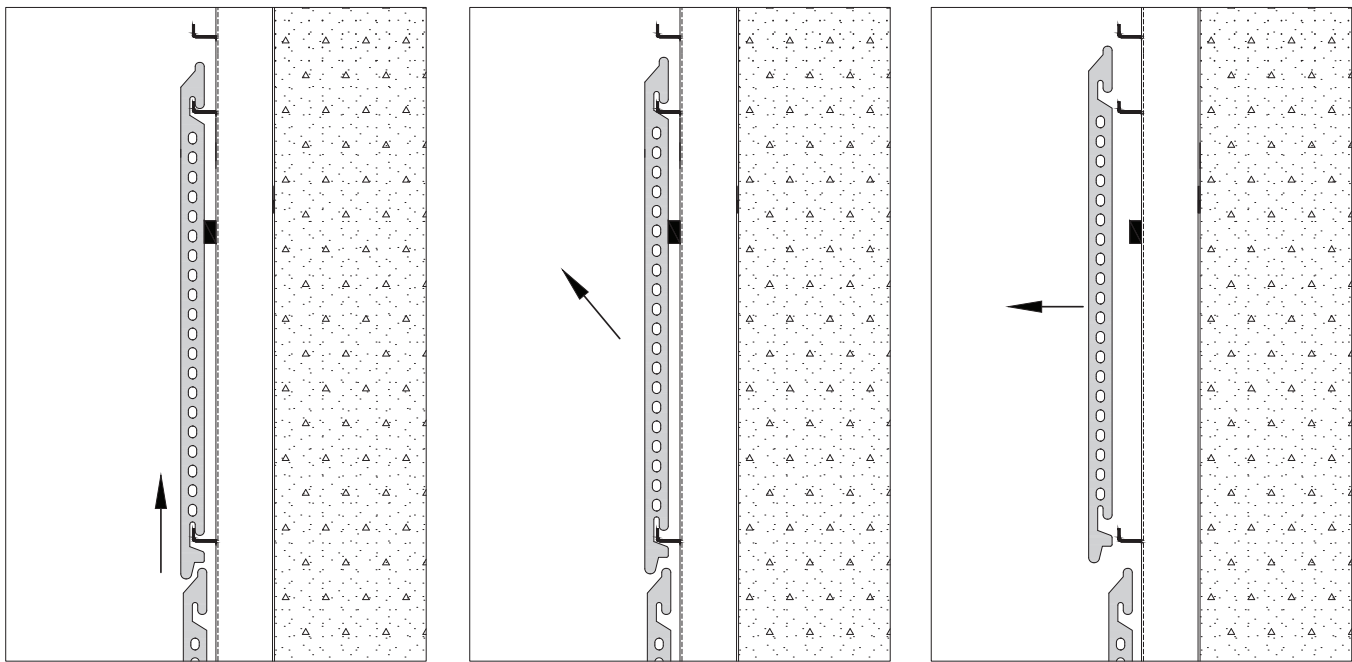
This procedure explains the standard disassembly of the Terraçade TN system to facilitate the reuse of the tiles, flashings, or complete system for another project.

The tiles can be easily removed and replaced with another colour or profile. Any unwanted surrounds, joining strips or rails can be recycled.

## Disassembly Process

- 01.** Remove the vertical aluminium jointing strips by removing the blind rivets or screws.
- 02.** Commence disassembly of Terraçade TN starting from the top and working downwards.
- 03.** Where the edge row of tiles is captured in a surround or edge trim, commence removal at the second row of tiles.
- 04.** Tile removal method:
  - a) Lift the base of the tile directly upwards and pull outwards at an angle to simultaneously disengage the tile from both suspension rails. (See below diagram 7).
  - b) For tiles captured by a surround profile or external corner, first remove adjacent row of tiles sliding slightly to the side of the trim to facilitate disengagement.
- 05.** Remove fitment sponge from rails and surrounds. The fitment sponge cannot be reused.
- 06.** Remove suspension rails, unscrew all fixings.
- 07.** Remove flashings to openings and corner flashings.
- 08.** Remove breathable membrane.
- 09.** Remove any sub-framing if present.
  - h. If installing tiles on a rake, the tile weight must be supported at least at two locations.

07.







# Maintenance

# 8

# Maintenance

## For Terraçade Facade System Components

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### Disassembly Process

#### 1. System Inspection

It is recommended that the Terraçade façade system be inspected at regular intervals to ensure the integrity of the system. The inspection interval will vary according to the sub-frame and trim components utilised in the system. Below is a summary of cleaning and maintenance information that can be accessed at the Terraçade website.

#### 2. Cleaning

Terraçade tiles are a natural terracotta product and are therefore virtually maintenance free. If you wish to remove any dirt or pollution grime that has built up over time, simply lightly hose or sponge down the tiles with water.

The tiles should be washed down during installation using a sponge with water and a neutral pH cleaner and then rinsed off with clean water. For ongoing maintenance the

tiles may be hosed or sponged to remove dust and the build-up of dirt. Normally, cleaning the tiles will be as easy as letting the rain do the work for you.

#### 3. Aluminium Trims

- a. Care & Maintenance Instructions:**  
A simple regular clean will minimise the effects of weathering and will remove dirt, grime and other build-up detrimental to all powder coatings.
- b. Recommended cleaning method:**  
Just a gentle clean with a soft brush and mild detergent, followed by a fresh water rinse, will maintain the long-term performance of your powder coated products. In rural or normal urban environments cleaning should occur every 12 months. In areas of high pollution, such as industrial areas, geothermal areas or coastal environments, cleaning should occur every three months. In particularly hazardous locations,

such as beachfronts, severe marine environments or areas of high industrial pollution, cleaning should be increased to monthly.

- c. Recommended cleaning products:**  
To protect the surface of your powder coated products, do not use strong solvents, abrasive cleaning products or those products that are recommended for thinning various types of paints. If you need to remove splashed paint, sealants or mastics from your powder coated products, you can use white spirits. When using white spirits, cleaning should be carried out in shade and during cooler temperatures using a soft cloth and gentle wiping only. It is also recommended that, prior to use, a small non-visible area of your powder coated products be tested to ensure that no visual colour change or damage will occur, particularly with bright and deep colours.

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#### 4. Sealing Tiles

Terraçade tiles have a hard wearing surface that is resistant to most normal staining agents. In particularly difficult environments, for instance high traffic city areas, Terraçade may be exposed to graffiti vandalism or build up of carbon dirt from passing motor vehicle traffic. A high quality impregnating (penetrating) sealer can be used to make the surface easier to clean and prevent permanent staining as much as possible.

#### 5. Replacing Individual Tiles

It is difficult to remove individual tiles from a wall as it requires 'shuffling' of immediately adjacent tiles. It may be more practical to break the damaged tile with a rubber mallet so that it can be removed piece by piece. Care must be taken if this option is used as falling or sharp pieces of tiles may cause injuries.

To place a new tile into position, insert the top edge of the tile beneath the bottom edge of the tile above. Shuffle the tile above up slightly, ensuring that is restrained

from falling by an assistant. Capture the tile on the top hook first and then the bottom hook. Check that the tile and the tiles above are fully engaged by visual and manual checks.

# Quality Guarantee

**100 YEAR**

PRODUCT WARRANTY

**20 YEAR**

SYSTEM WARRANTY

Brickworks Building Products continued commitment to quality and innovation ensures that Terraçade XP will remain the benchmark for excellence for many years to come.

Our tradition, experience and financial strength have made Brickworks Building Products the first choice for many architects, builders and designers.

Terraçade XP has a warranty of 20 years on the system and a 100 year warranty on colour fastness and durability, as per Brickworks Building Products Warranty for Terraçade.

Contact Brickworks Building Products to have an architectural consultant visit you with samples and technical information, or to discuss your next project.

Please note: Photographs should be considered indicative of colour and texture only. Variations in colour and shade are inherent in all clay fired products. All Terraçade tiles and accessories should be ordered at the same time to avoid the possibility of batch to batch variations. No responsibility will be accepted for colour selection, matching, blending and any other physical or colour related defects once the tiles have been incorporated into any construction. Terraçade™ and Terraçade XP™ are registered trademarks of the Brickworks Building Products or its wholly owned subsidiaries. ACN 119 059 513

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## Notes

[illegible]

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# BRICKWORKS

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