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## **Vipac Engineers & Scientists**

FVA Group Pty Ltd

**Fairview - AS 4284 testing on facades**


**Test Report - Stryum with Flexible Membrane**


30B-19-0059-TRP-6774700-2

11 November 2020

<b>Job Title:</b>	Fairview - AS 4284 testing on facades
<b>Report Title:</b>	Test Report - Stryum with Flexible Membrane
<b>Document Reference:</b>	30B-19-0059-TRP-6774700-2

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<b>REVISION HISTORY:</b>			
Rev. #	Comments / Details of change(s) made	Date	Revised by:
Rev. 00	Original issue	01/04/2020	R.Dyck
Rev. 01	Bookmarks repaired	01/04/2020	R.Dyck
Rev. 02	Updated company name, pipe penetration detail, membrane	11/11/2020	R.Dyck

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**EXECUTIVE SUMMARY**

Vipac Engineers and Scientists were commissioned by Fairview Pty Ltd / FVA Group Pty Ltd (the client) to perform AS/NZS 4284:2008 testing for their cladding system.

The sample was installed by the client at the Vipac test laboratory in Port Melbourne, and the sample was tested by Vipac Engineers and Scientists during January 2020.

The test sample was found to have the below results for AS/NZS 4284:2008 compliance:

Test Date	AS/NZS4284:2008 Test	Result
21/11/2019	Clause 8.2 Preliminary tests	Complies +2000Pa, -2500Pa SLS Preload
22/11/2019	Clause 8.3 Structural test at serviceability limit state	Complies with Span deflection requirements at +2000Pa, -2500Pa
25/11/2019	Clause 8.5 Static water test	Complies 600Pa
25/11/2019	Clause 8.6 Cyclic water test	Complies Stage 1: 300Pa – 600Pa Stage 2: 400Pa – 800Pa Stage 3: 600Pa – 1200Pa
25/11/2019	Clause 8.8 Structural test at ultimate limit state	Complies +4000, -5250

*Table 1: Test results summary*

Full details are contained within this report.

**TABLE OF CONTENTS**

<b>1</b>	<b>INTRODUCTION .....</b>	<b>5</b>
<b>2</b>	<b>TEST REFERENCE &amp; APPLICATION STANDARD .....</b>	<b>5</b>
<b>3</b>	<b>TEST SPECIMEN .....</b>	<b>5</b>
<b>4</b>	<b>TEST EQUIPMENT .....</b>	<b>6</b>
<b>5</b>	<b>TEST RESULTS .....</b>	<b>7</b>
5.1	Clause 8.2 – Preliminary Tests .....	7
5.1.1	Criteria: Static pressure .....	7
5.1.2	Criteria: Static and cyclic water tests .....	7
5.2	Clause 8.3 – Structural test at serviceability limit state (sls) .....	8
5.3	Clause 8.5 – Static water test .....	10
5.4	Clause 8.6 – Cyclic water test .....	11
5.5	Clause 8.8 – Structural test at the Ultimate Limit State .....	12
	Appendix A Test Sample structure .....	13
	Appendix B Test sample Details .....	16

## 1 INTRODUCTION

<b>Document Type:</b>	Test Report
<b>Company:</b>	Fairview Pty Ltd / FVA Group Pty Ltd
<b>Product:</b>	Stryum with Proclima Extasana membrane
<b>Test Date:</b>	January 2020
<b>Testing Authority:</b>	Vipac Engineers & Scientists

## 2 TEST REFERENCE & APPLICATION STANDARD

<b>AS/NZS 4284:2008</b>	Testing of Building Facades
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## 3 TEST SPECIMEN



*Figure 1: Test Sample prior to installation*

Details of the test sample can be found in Appendix A and B of this report.

#### 4 TEST EQUIPMENT

Measurement	Instrument Type/Make	Model	Vipac Serial Number
Deflection	Dial gauges/ Mitutoyo	3058S-19	000034597
			000033756
			000034596
			000033758
			000034598
Distance	Tape Measure / Stanley	8m	000033666
Pressure	Digital Manometer / PCE	PCE-PDA-10L	000033540
Water flow rate	Flow meter/ Siemens	Mag 6000	000031229
Time	Stopwatch/ Dick Smith	Y1299	000033567

*Table 2: Instruments used throughout testing*

## 5 TEST RESULTS

### 5.1 CLAUSE 8.2 – PRELIMINARY TESTS

**Test Standard:** AS/NZS 4284:2008 – Testing of Building Facades

**Test Date:** 31/01/2020

#### 5.1.1 CRITERIA: STATIC PRESSURE

Test sample shall withstand the Serviceability Limit State pressure with no structural damage or distortion.

**Applied Load:** Nominated Serviceability Pressure: +2.0 kPa, -2.5 kPa

Duration: 10 seconds

#### 5.1.2 CRITERIA: STATIC AND CYCLIC WATER TESTS

Under static and cyclic water tests there shall be no leaks. A leak is considered to occur when one or more of the following occur:

- Water appears on any inside surface of the façade, visible from an occupied space.
- Uncontrolled water appears on any inside surface of the façade (uncontrolled water is defined as any leakage not contained and drained away after 5 minutes).
- Water appears that is likely to wet insulation, fixtures and finishes.
- Water appears in other locations specified as unacceptable by the Specifier

**Static water test:** **Applied Load:** Nominated pressure: +0.600 kPa

Duration: water spray operated for 5 minutes at 0 kPa chamber pressure, followed by water spray and pressure at the test pressure for 15 minutes. Observe for 5 minutes after removal of both water and air pressure.

**Cyclic water test:** **Applied Load:** Nominated pressures:

Stage	Lower pressure	Upper pressure	Cycle Duration
Stage 1	0.300 kPa	0.600 kPa	5 minutes
	0 kPa		2 minutes
Stage 2	0.400 kPa	0.800 kPa	5 minutes
	0 kPa		2 minutes
Stage 3	0.600 kPa	1.200 kPa	5 minutes
Observation	0 kPa		5 minutes

Table 3: Cyclic pressure lower and upper limits, cycle time of 3 seconds to 5 seconds

**Applied Water:** Water spray rate: 3.0 L/m<sup>2</sup>min  
 Measured spray area: 8.6 m<sup>2</sup>  
 Resulting spray flow rate: 25.9 l/min

**Results:** The preliminary static and cyclic water tests were completed successfully.

**Conclusion:** The preliminary test of the façade complies with the requirements of AS/NZS 4284:2008

**5.2 CAUSE 8.3 – STRUCTURAL TEST AT SERVICEABILITY LIMIT STATE (SLS)**

**Test Standard:** AS/NZS 4284:2008 – Testing of Building Facades

**Test Date:** 31/01/2020

**Formulae:** The net mid-span deflection ( $d$ ) of each member is given by the following:

$$d = D_m - D_e$$

where:

$D_m$  = Mid span displacement

$D_e$  = Average of end displacements

**Criteria:** According to AS/NZS4284:2008 no framing member shall deflect by an amount greater than span/250mm. Successive member displacement shall not exceed 3.0mm. The maximum displacement of a framing member shall not exceed 20mm. All components of the sample are required to remain structurally intact as detailed on test sample drawings with no signs of visible damage or distortion.

**Applied Load:** +2.0kPa, -2.5kPa

**Results:**

Span Detail	Span [mm]	Pressure direction	Measured pressure [Pa]	Measured Span Deflection [mm]	Span deflection Ratio
<b>Span 1</b> (Node 1,2,3)	1150	Positive	2002	0.90	1271
		Negative	-2501	-0.98	1173
<b>Span 2</b> (Node 3,4,5)	1150	Positive	2002	1.12	1027
		Negative	-2501	-1.48	780
<b>Span 3</b> (Node 1,3,5)	2300	Positive	2002	3.91	589
		Negative	-2501	-4.27	539

Table 4: Span deflection results - +2.0kPa, -2.5kPa

Zero Stage	Node 1 [mm]	Node 2 [mm]	Node 3 [mm]	Node 4 [mm]	Node 5 [mm]
<b>Z1</b>	0.00	0.00	0.00	0.00	0.00
<b>Z2</b>	0.04	0.06	0.03	0.06	0.06
<b>Z4</b>	-0.81	-1.01	-1.21	-0.94	-0.51
<b>Z5</b>	-0.83	-1.05	-1.27	-0.99	-0.54
<b>Z7</b>	0.05	0.06	-0.04	0.00	-0.06

Table 5: Residual deflection result - +2.0kPa, -2.5kPa





*Figure 2: Node locations (1-5 from bottom to top)*

**Conclusion:** The test sampled complied with the structural span deflections limits of Span/250.

### 5.3 CLAUSE 8.5 – STATIC WATER TEST

**Test Standard:** AS/NZS 4284:2008 – Testing of Building Facades

**Test Date:** 31/01/2020

**Criteria:** Under static water test there shall be no leaks. A leak is considered to occur when one or more of the following occur:

- a) Water appears on any inside surface of the façade and is visible from an occupied space.
- b) Uncontrolled water appears on any inside surface of the façade.
- c) Water appears that is likely to wet insulation, fixtures and finishes.
- d) Water appears in other locations specified as unacceptable by the Specifier

**Applied Load:** Nominated Pressure: +0.600 kPa

Duration: water spray operated for 5 minutes at 0 kPa chamber pressure, followed by water spray and pressure at the test pressure for 15 minutes. Observe for 5 minutes after removal of both water and air pressure.

**Applied Water:** Water spray rate: 3.0 L/m<sup>2</sup>min

Measured spray area (inside pressure chamber): 8.64 m<sup>2</sup>

Resulting spray flow rate: 25.9 l/min

**Results:** The Static water test was completed with no uncontrolled water penetration occurring.

**Conclusion:** The Static water results of the test sample comply with the specified limits set out in AS/NZS 4284:2008.

**5.4 CLAUSE 8.6 – CYCLIC WATER TEST**

**Test Standard:** AS/NZS 4284:2008 – Testing of Building Facades

**Test Date:** 31/01/2020

**Criteria:** Under cyclic water test there shall be no leaks. A leak is considered to occur when one or more of the following occur:

- a) Water appears on any inside surface of the façade and is visible from an occupied space.
- b) Uncontrolled water appears on any inside surface of the façade.
- c) Water appears that is likely to wet insulation, fixtures and finishes.
- d) Water appears in other locations specified as unacceptable by the Specifier

**Applied Load:** Nominated Pressures:

Stage	Lower pressure	Upper pressure	Cycle Duration
Stage 1	0.300 kPa	0.600 kPa	5 minutes
	0 kPa		2 minutes
Stage 2	0.400 kPa	0.800 kPa	5 minutes
	0 kPa		2 minutes
Stage 3	0.600 kPa	1.200 kPa	5 minutes
Observation	0 kPa		5 minutes

*Table 8: Cyclic pressure lower and upper limits, cycle time of 3 seconds to 5 seconds*

**Applied Water:** Water spray rate: 3.0 L/m<sup>2</sup>min

Measured spray area (inside pressure chamber): 8.64 m<sup>2</sup>

Resulting spray flow rate: 25.9 l/min

**Results:** The Cyclic water test was completed with the test was completed with no uncontrolled water penetration occurring.

**Conclusion:** The Cyclic water results of the test sample comply with the specified limits set out in AS/NZS 4284:2008.

**5.5 CLAUSE 8.8 – STRUCTURAL TEST AT THE ULTIMATE LIMIT STATE**

**Test Standard:** AS/NZS 4284:2008 – Testing of Building Facades

**Test Date:** 31/01/2020

**Criteria:** There shall be no disengagement or partial disengagement of any framing member or panel, no failure of fixings, stops or locking devices. No repeated glass breakage or cracking of glass.

**Applied Load:** Ultimate Limit State Pressures: + 4.0 kPa, - 5.25 kPa

Apply the pressure from zero to ultimate limit state in 50-60 seconds, apply ultimate limit state for 10 seconds.

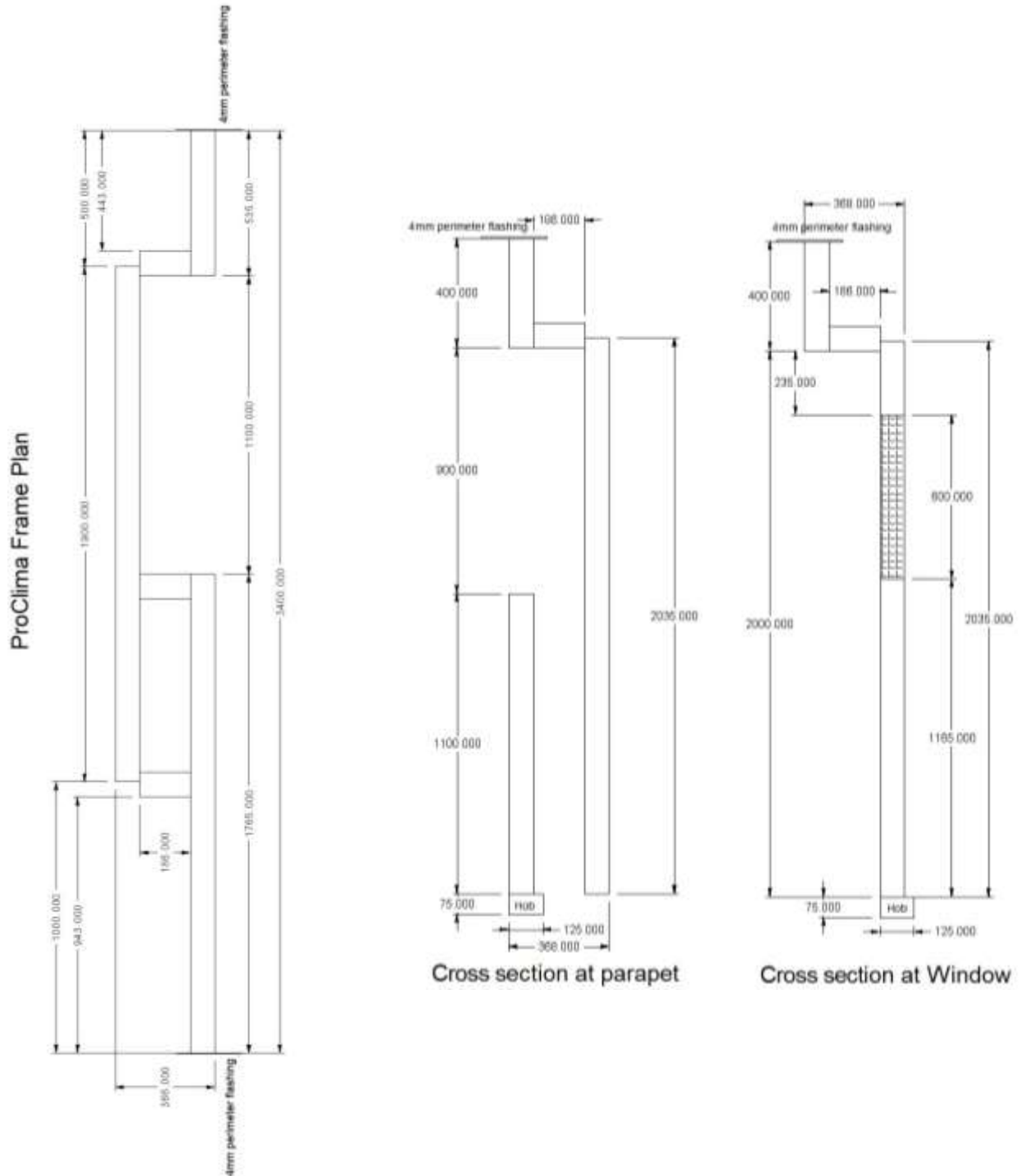
**Results:**

Test Pressure [kPa]	Results
+4.01	All criteria met
-5.28	All criteria met

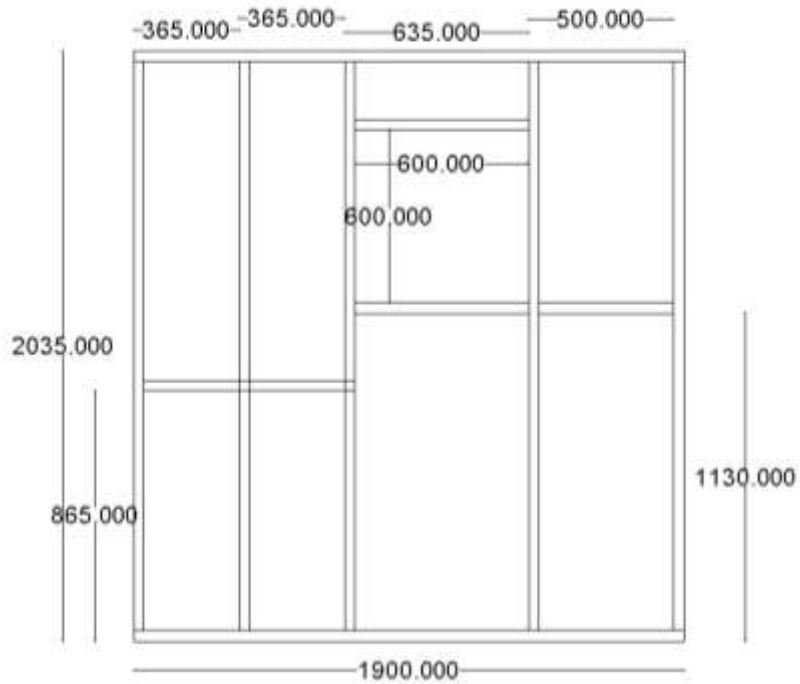
*Table 9: Results, Ultimate Limit State*

**Conclusion:** The Ultimate limit state results of the test sample comply with the requirements of AS/NZS 4284:2008.

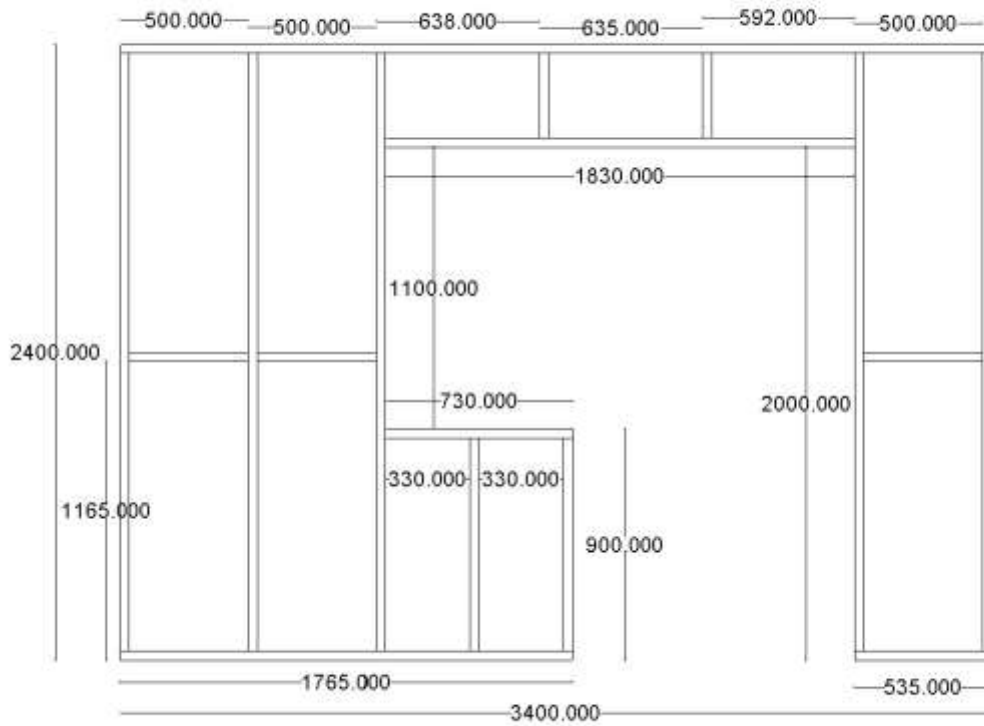
## Appendix A TEST SAMPLE STRUCTURE



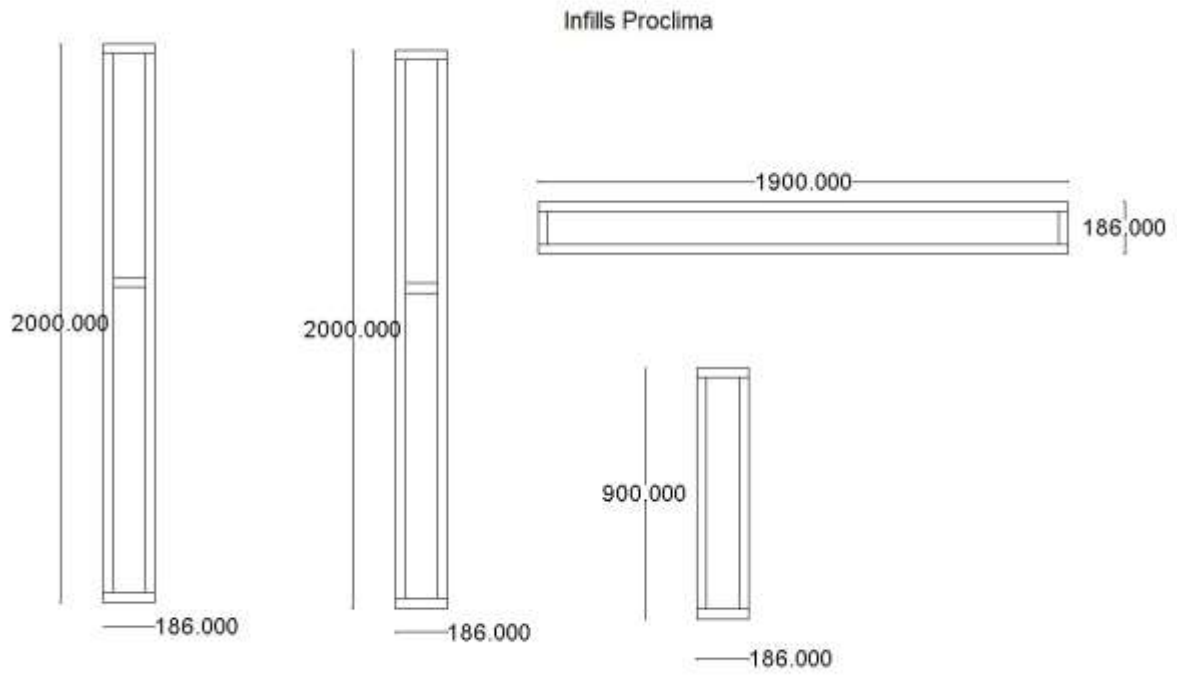
Back Frame Proclima



Face Frame Proclima



11 November 2020





## **Appendix B TEST SAMPLE DETAILS**

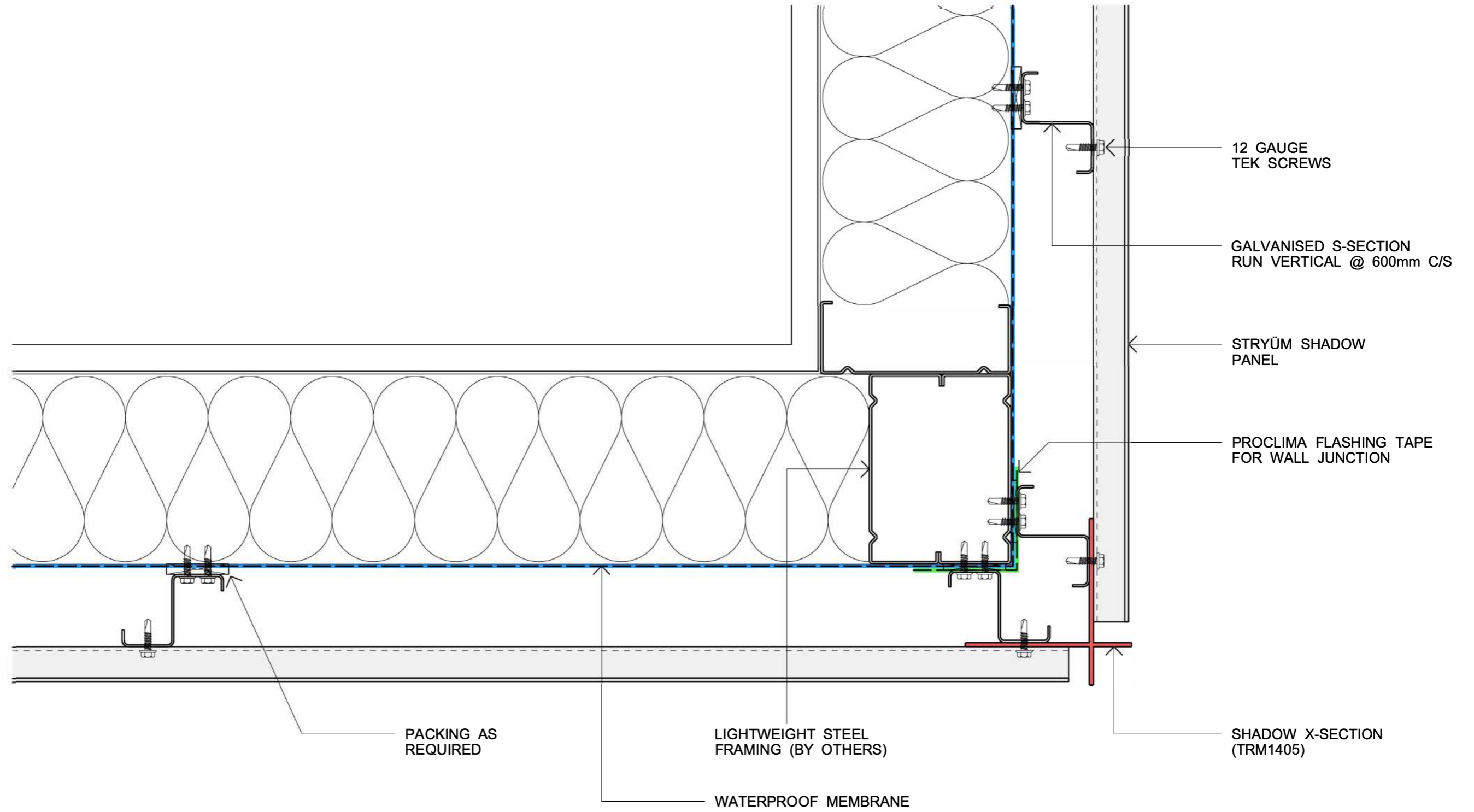
This page is blank and the sample details are in the following pages.



# Stryüm 4284

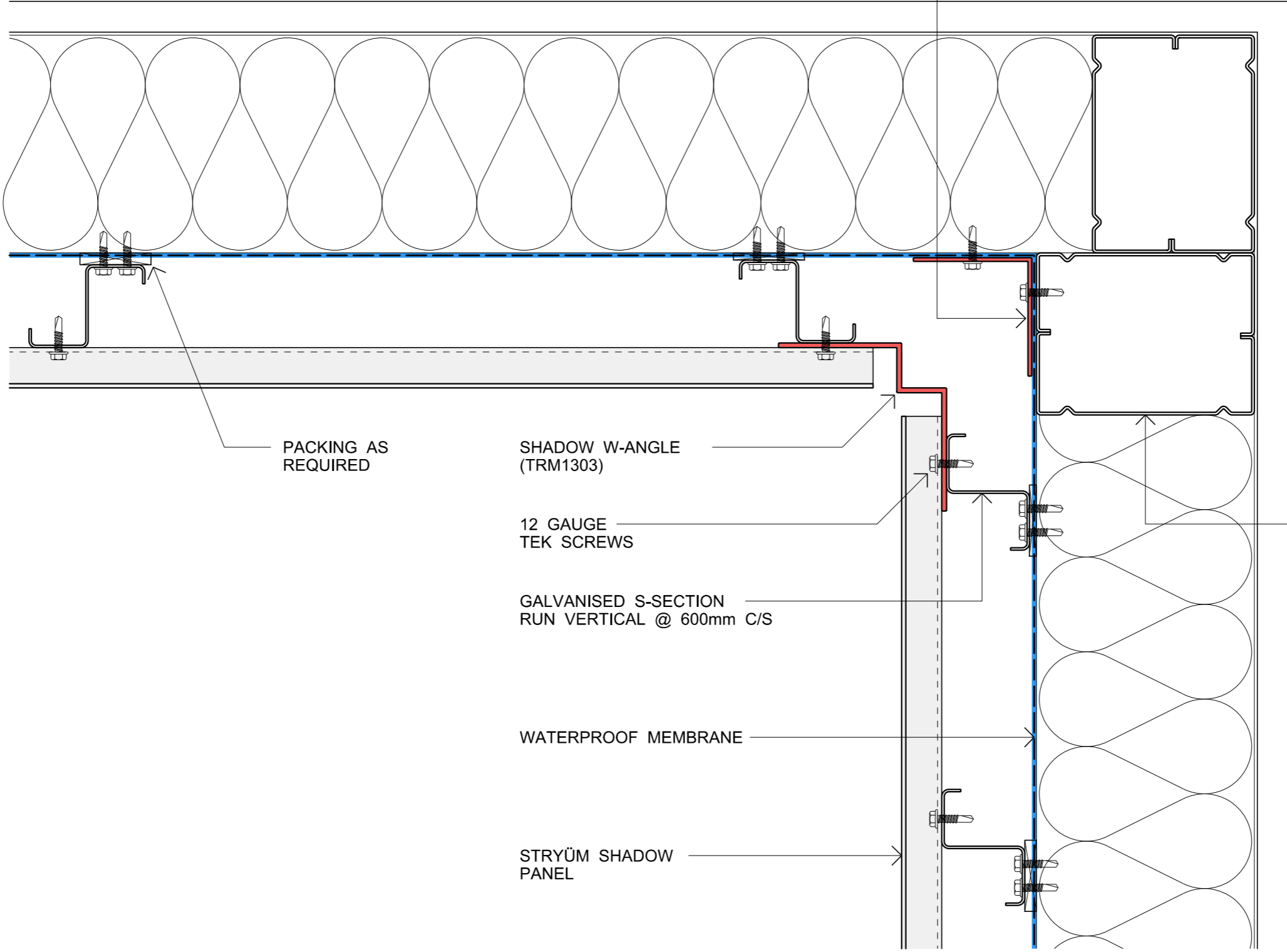
## Drawings

Shadow Horizontal



EXTERNAL CORNER 1

L ANGLE INSTALLED OVER  
WATERPROOF MEMBRANE  
(REQUIRED FOR SARKING ONLY)



PACKING AS  
REQUIRED

SHADOW W-ANGLE  
(TRM1303)

12 GAUGE  
TEK SCREWS

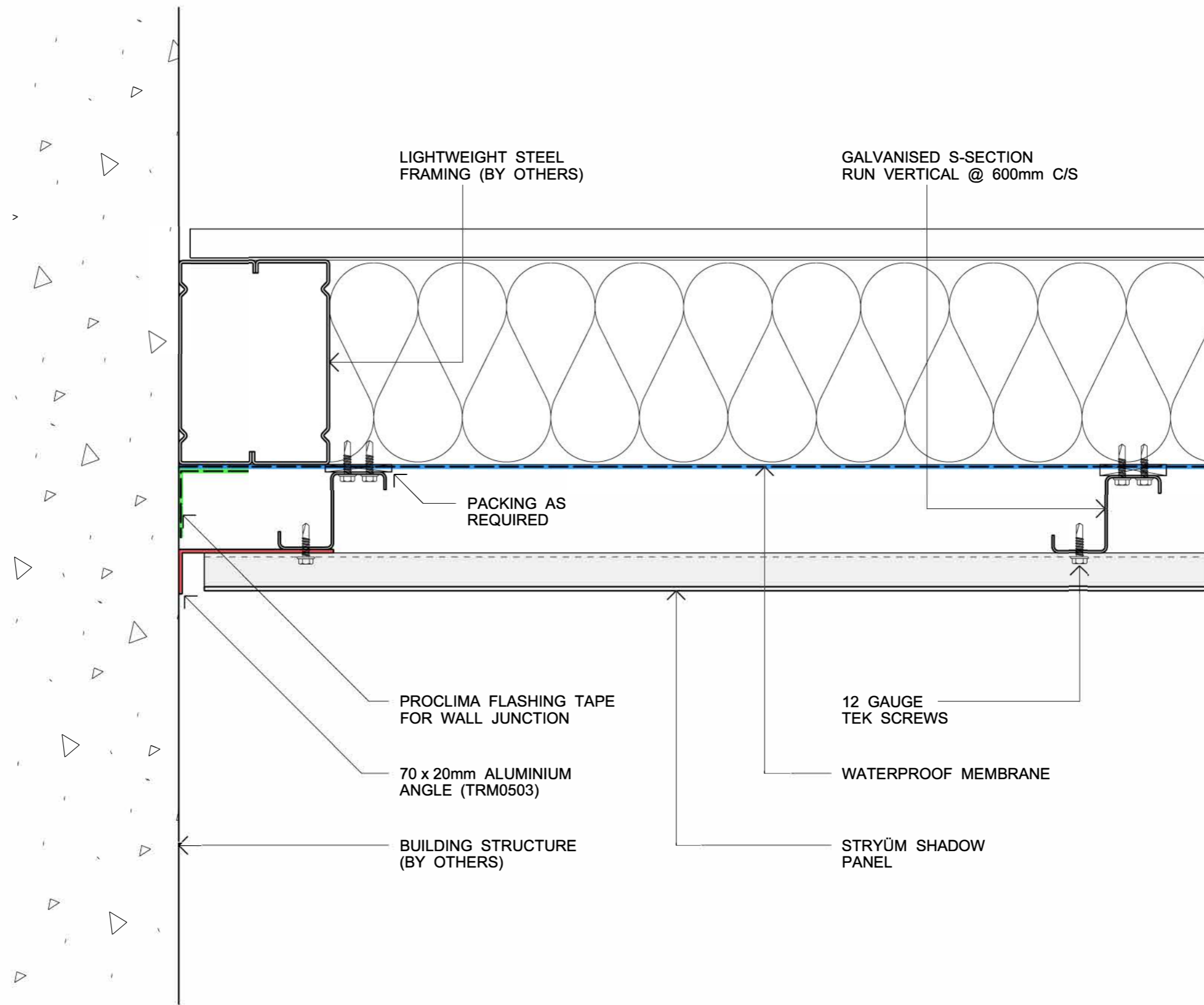
GALVANISED S-SECTION  
RUN VERTICAL @ 600mm C/S

WATERPROOF MEMBRANE

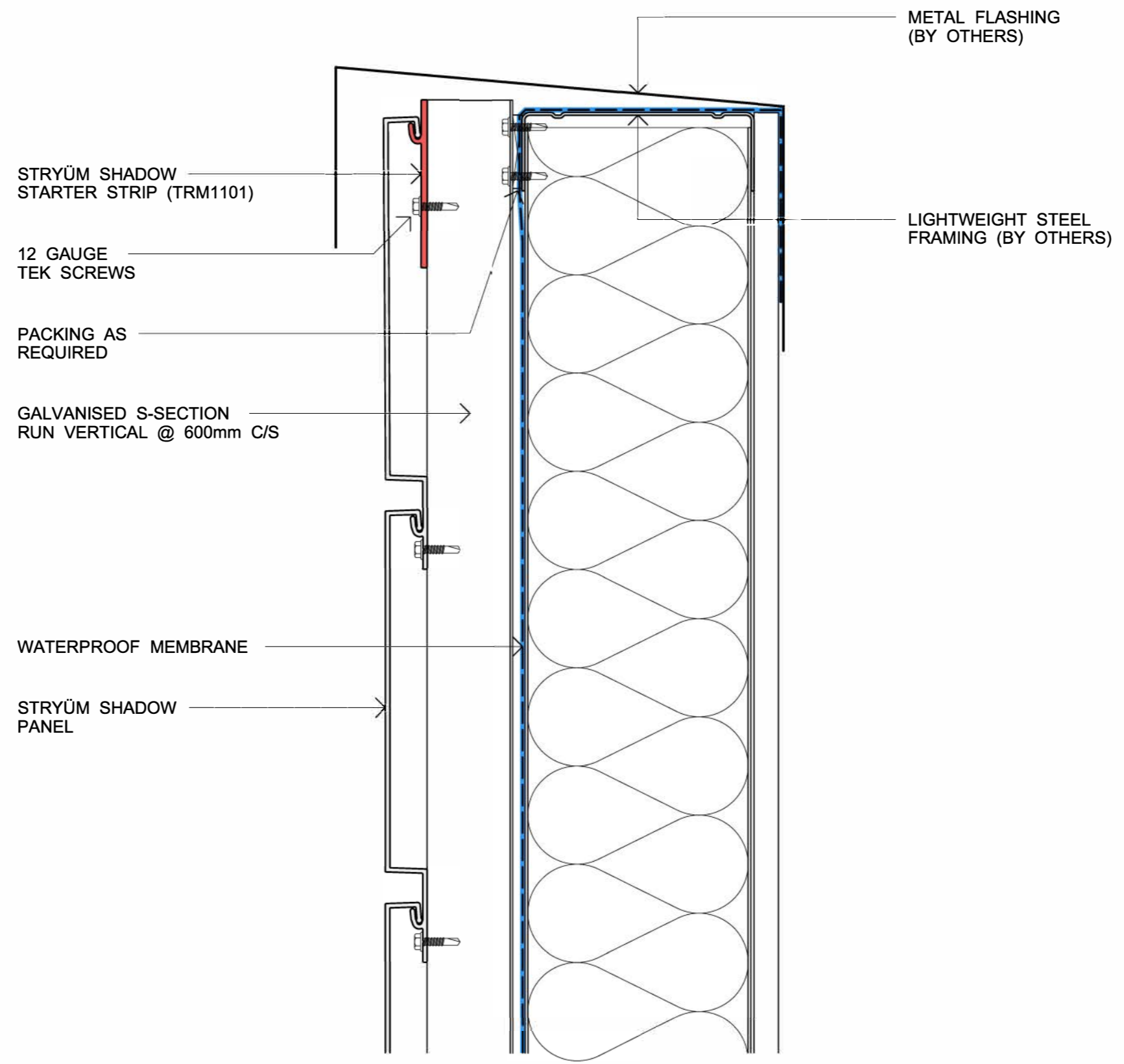
STRYÜM SHADOW  
PANEL

LIGHTWEIGHT STEEL  
FRAMING (BY OTHERS)

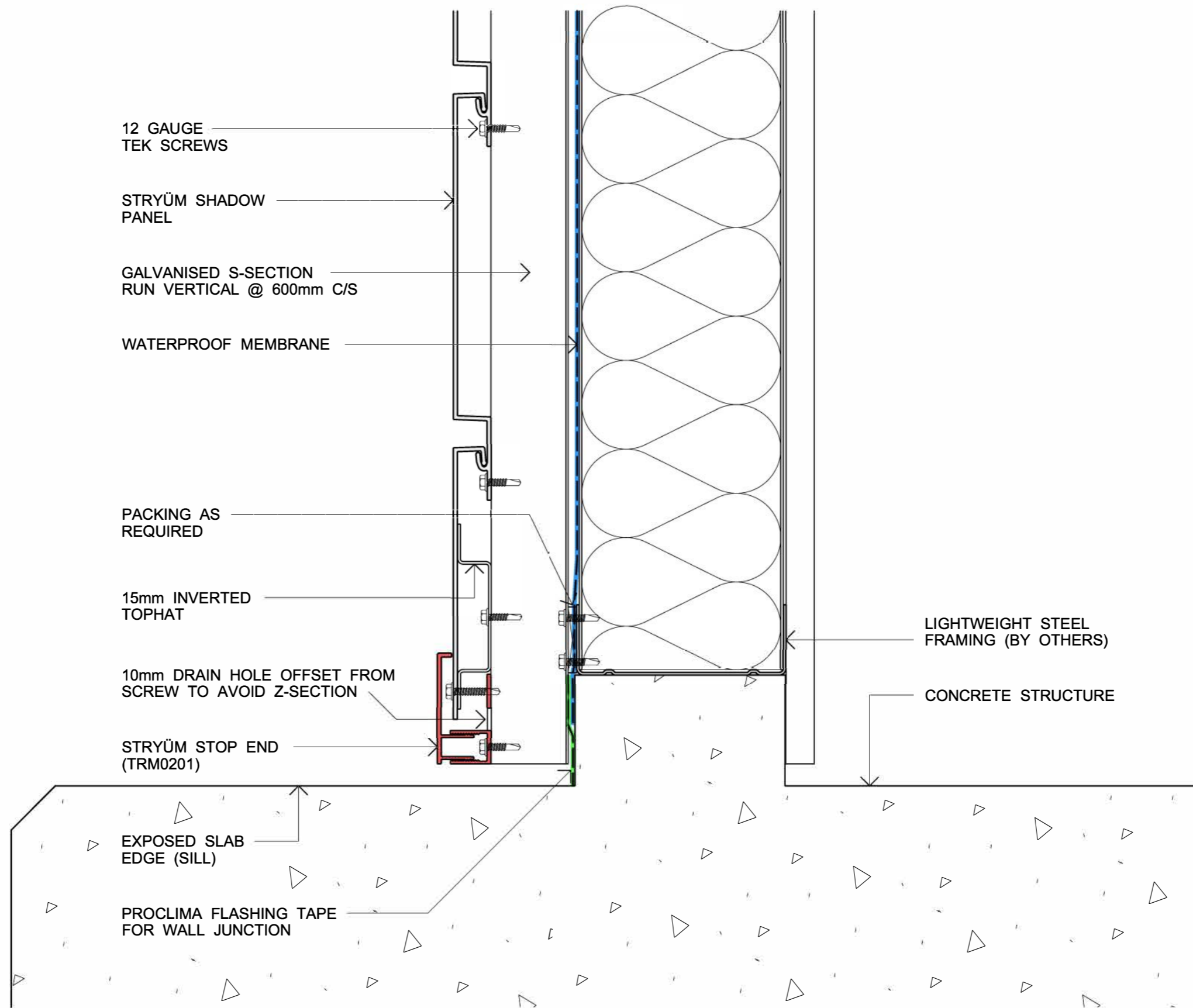
INTERNAL CORNER



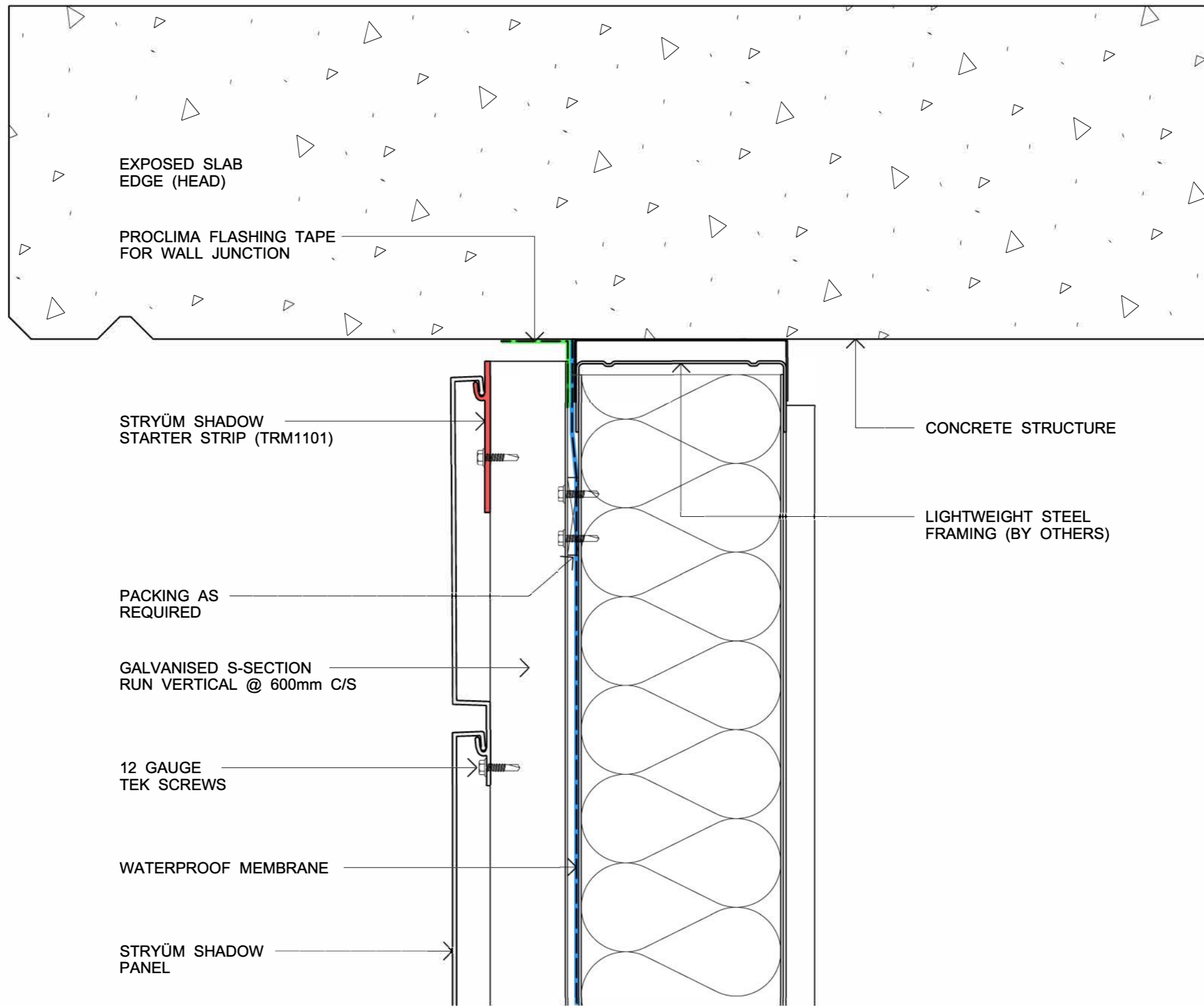
PANEL START / END DETAIL



PARAPET DETAIL

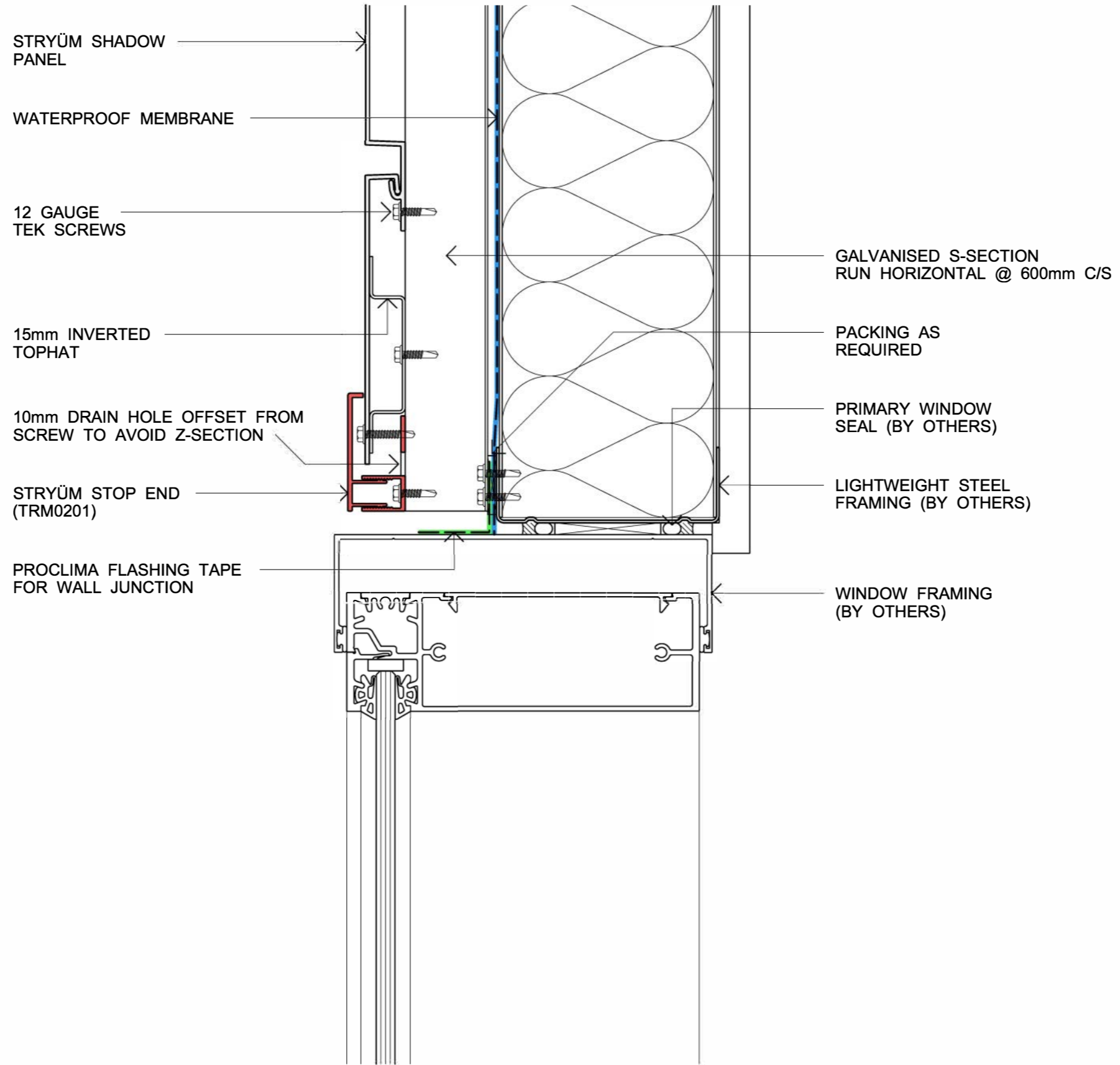


SLAB JUNCTION - FLOOR

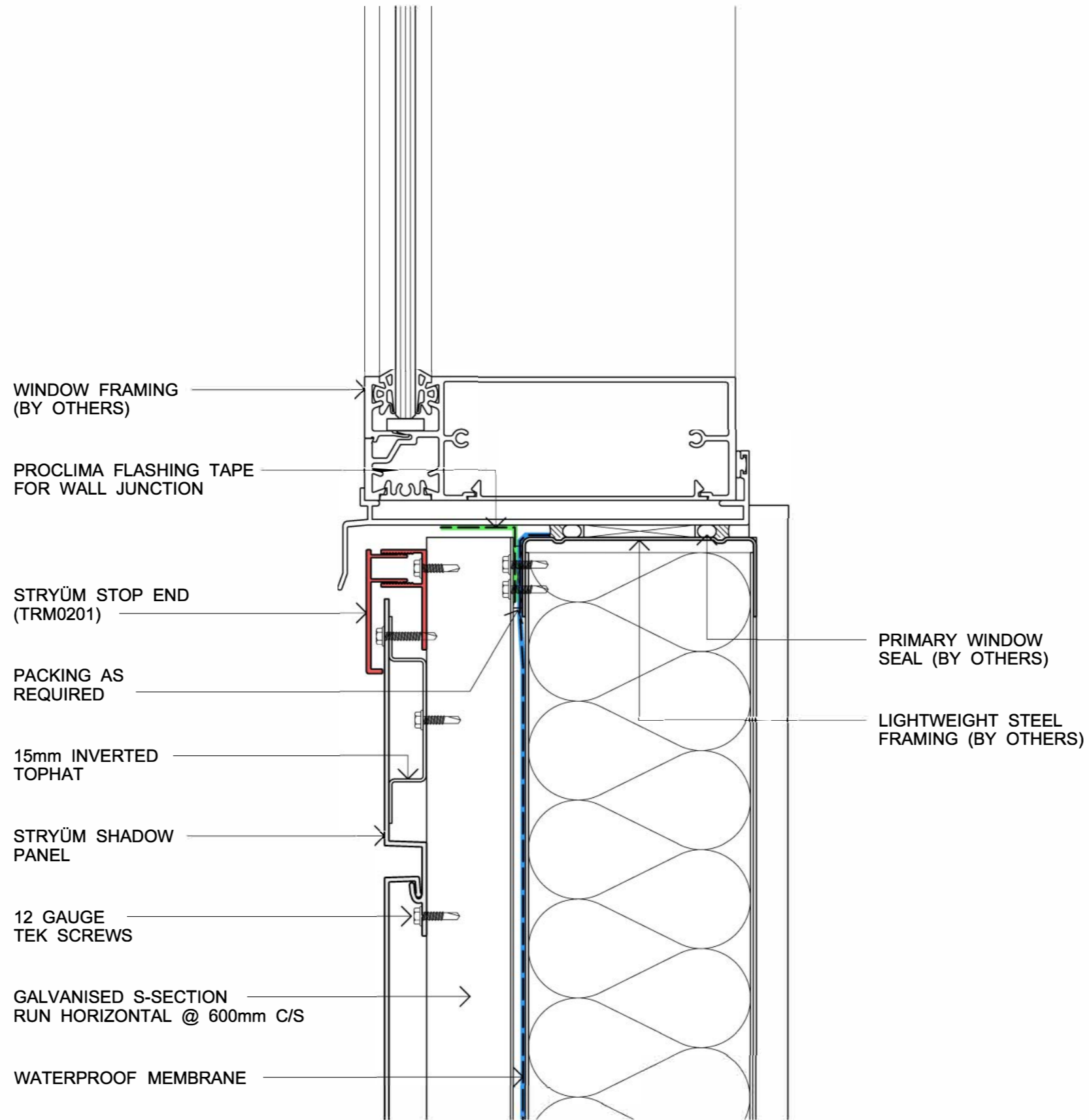


SLAB JUNCTION - HEAD

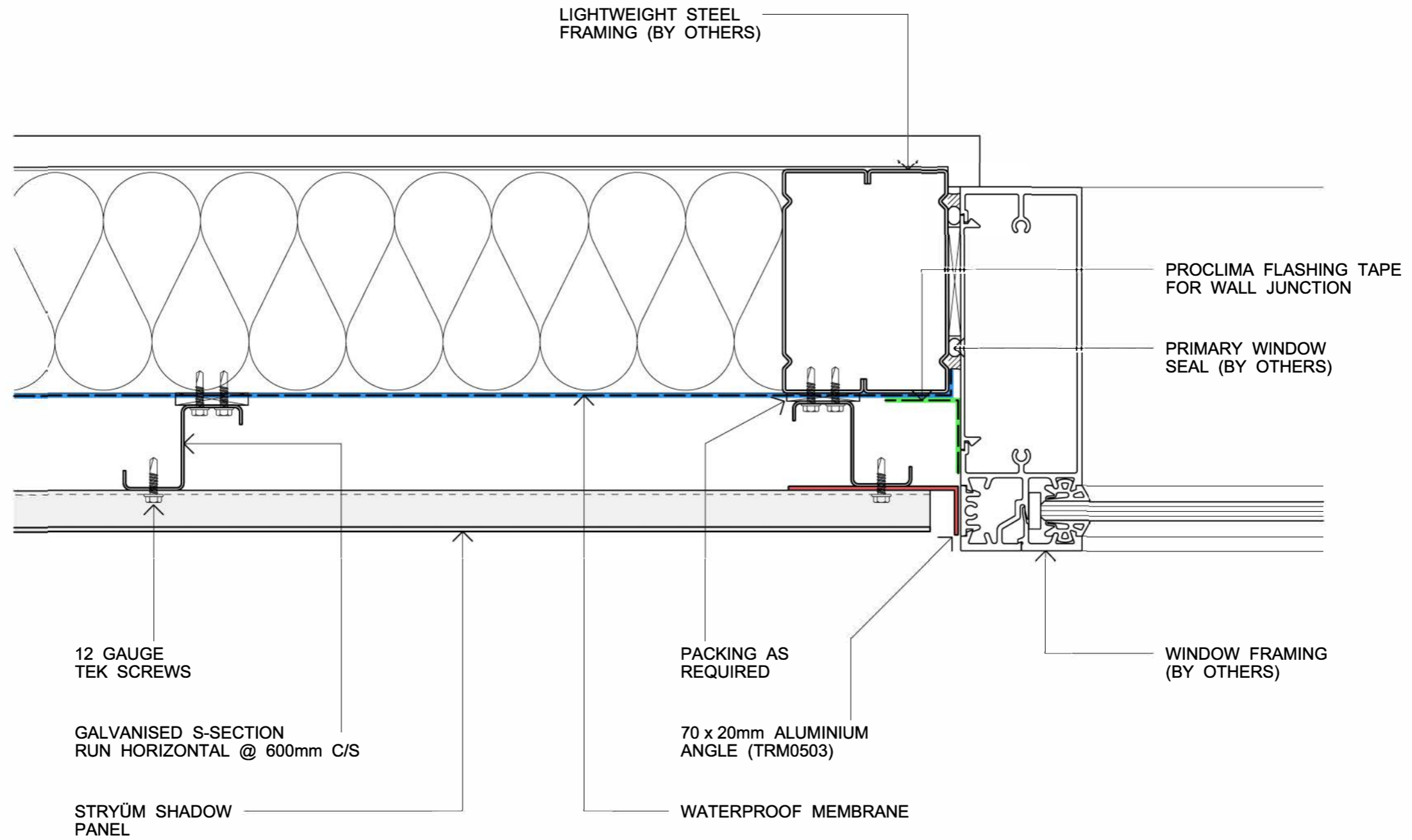




WALL OPENING DETAIL - HEAD

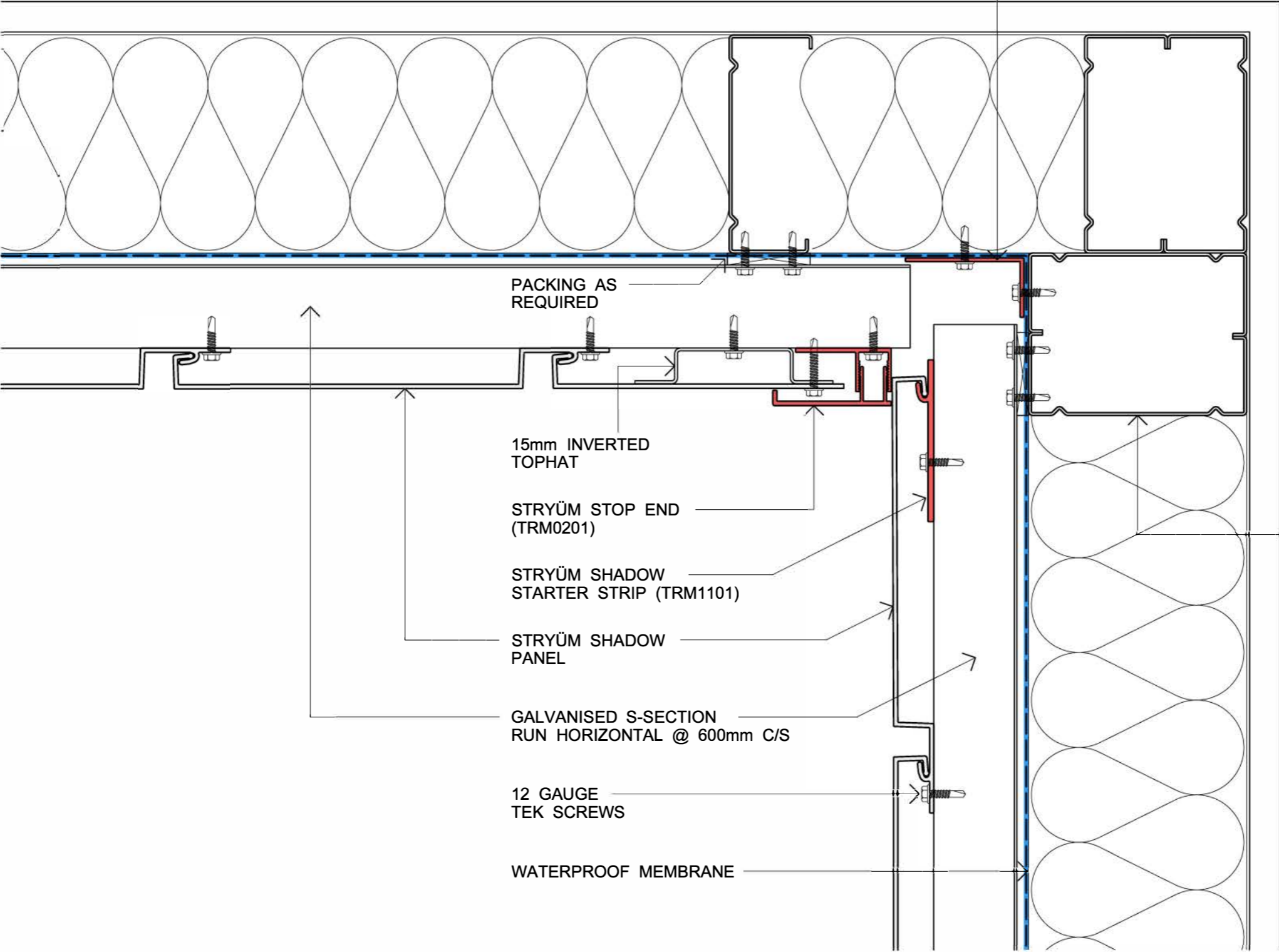


WALL OPENING DETAIL - SILL

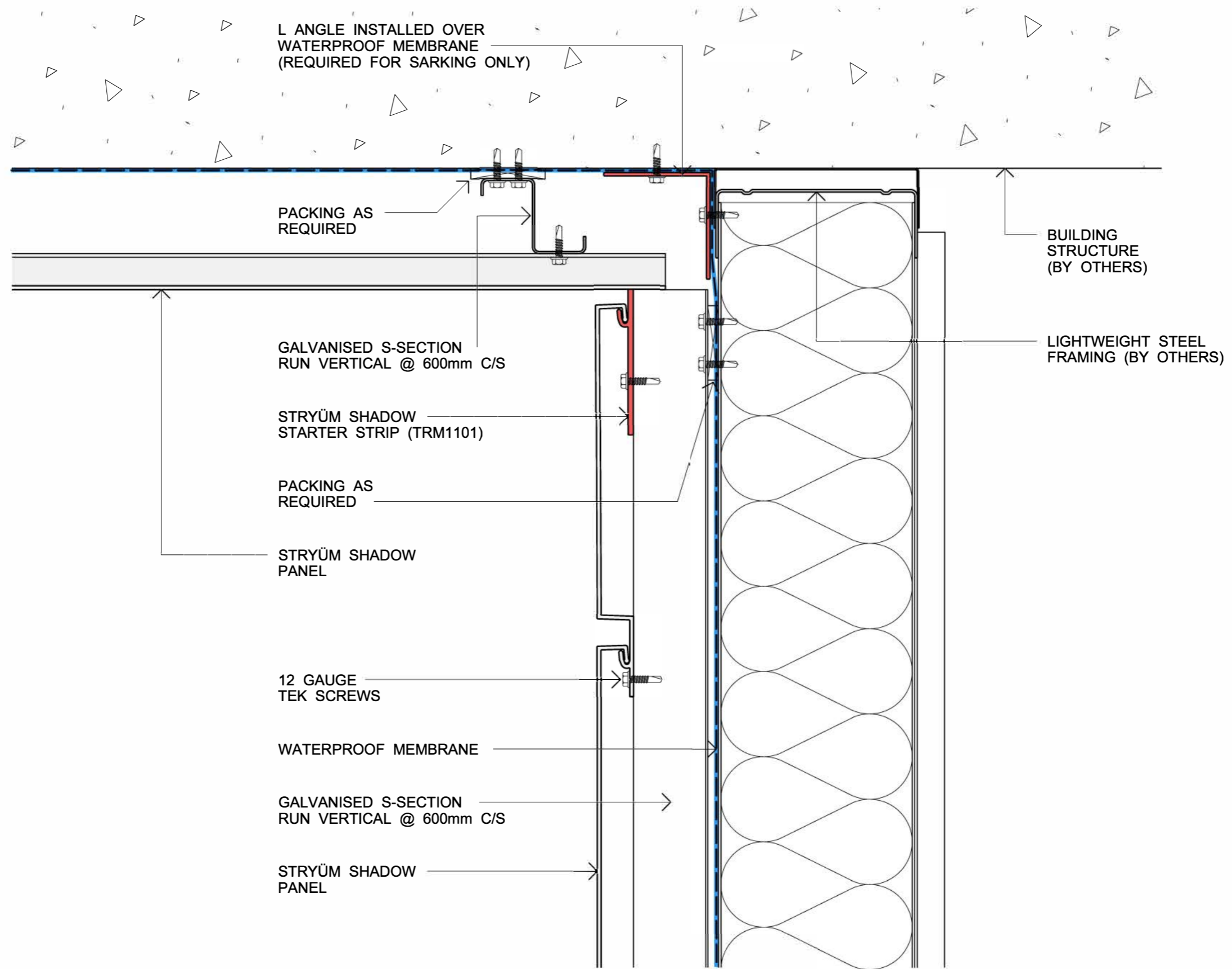


WALL OPENING DETAIL - JAMB

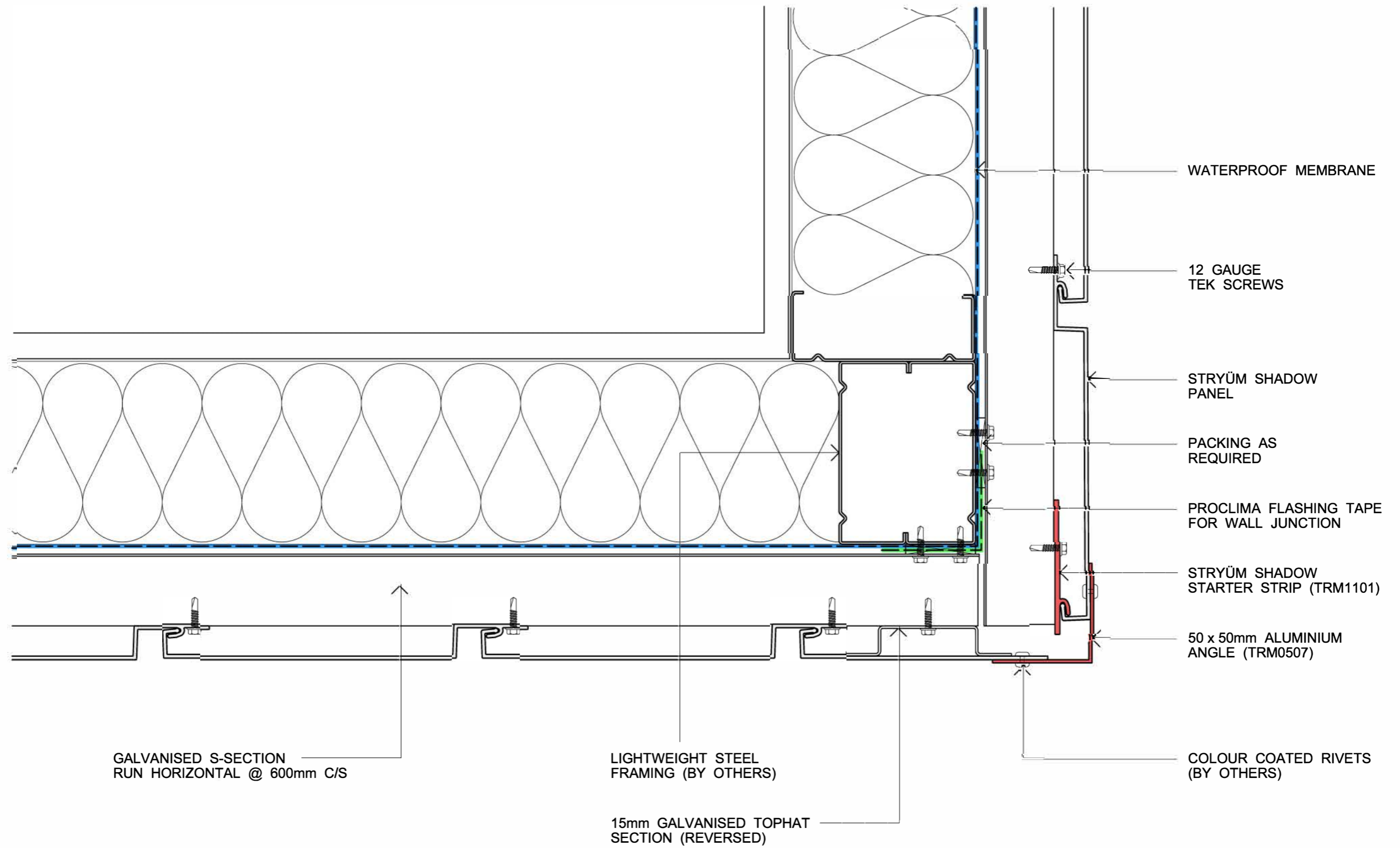
L ANGLE INSTALLED OVER  
WATERPROOF MEMBRANE  
(REQUIRED FOR SARKING ONLY)



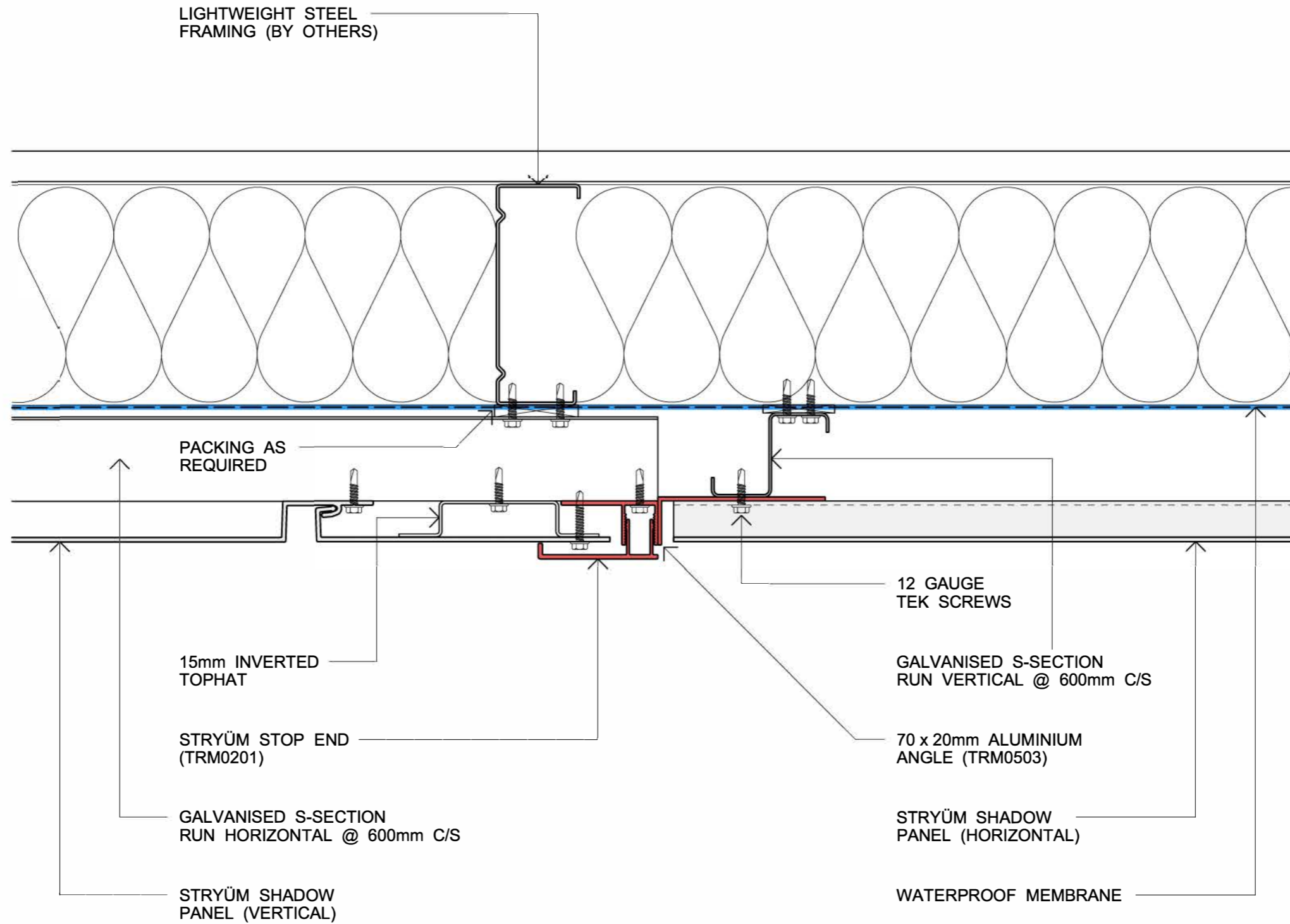
INTERNAL CORNER 1



SOFFIT JUNCTION 1a - VERTICAL TO HORIZONTAL



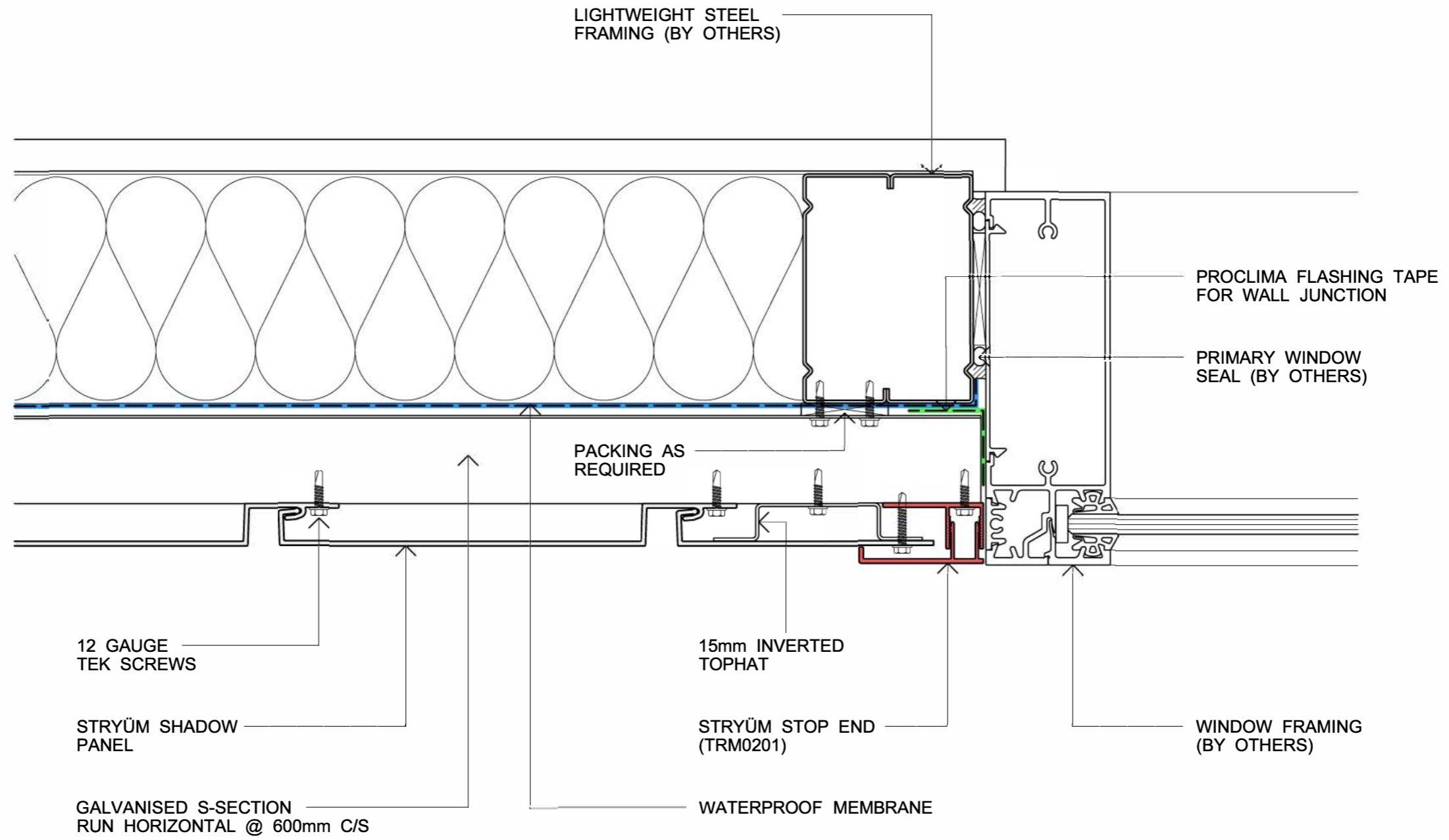
SOFFIT JUNCTION 2 - HORIZONTAL TO VERTICAL



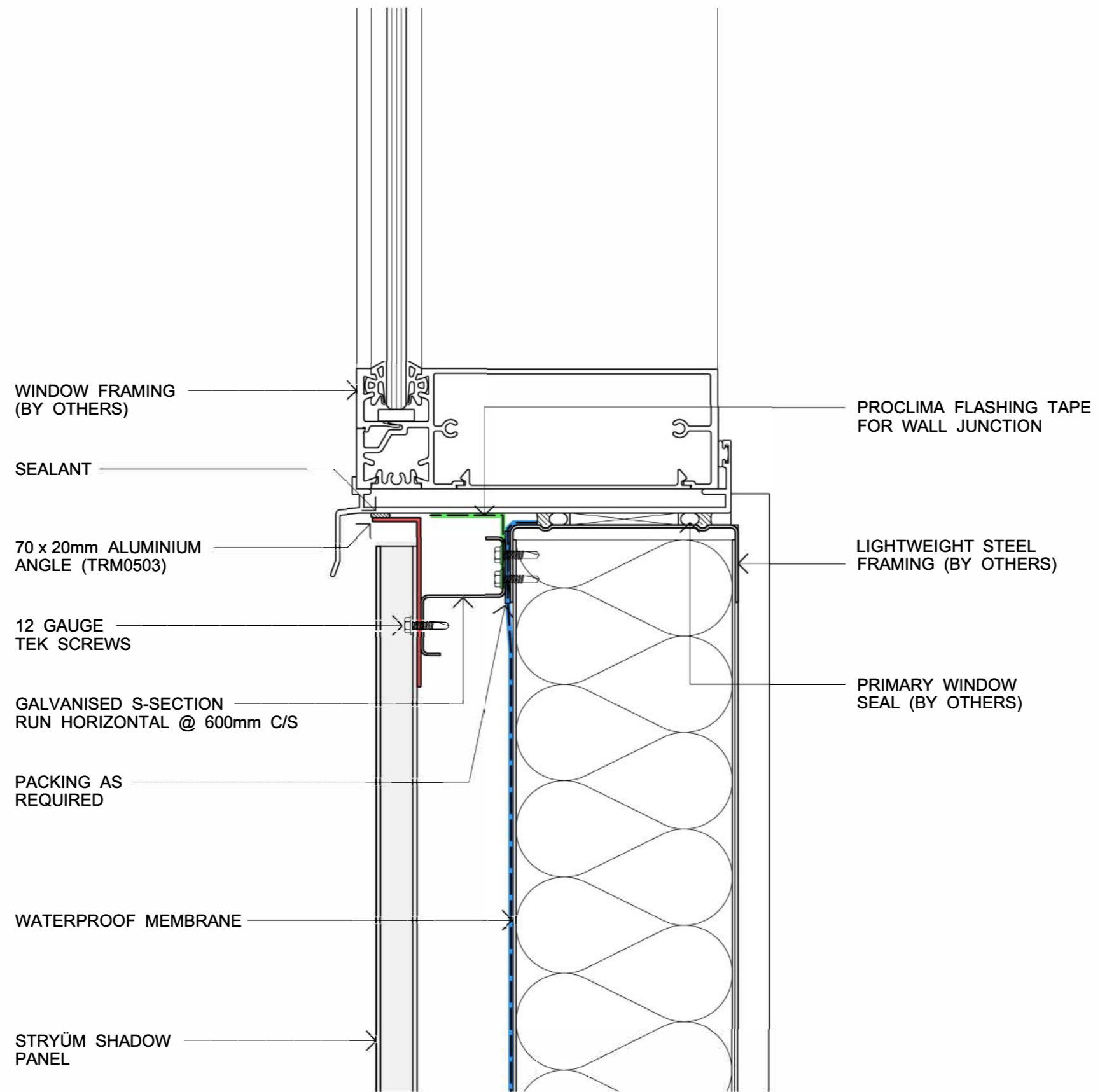
PANEL HORIZONTAL TO VERTICAL INTERSECTION DETAIL

Shadow Vertical

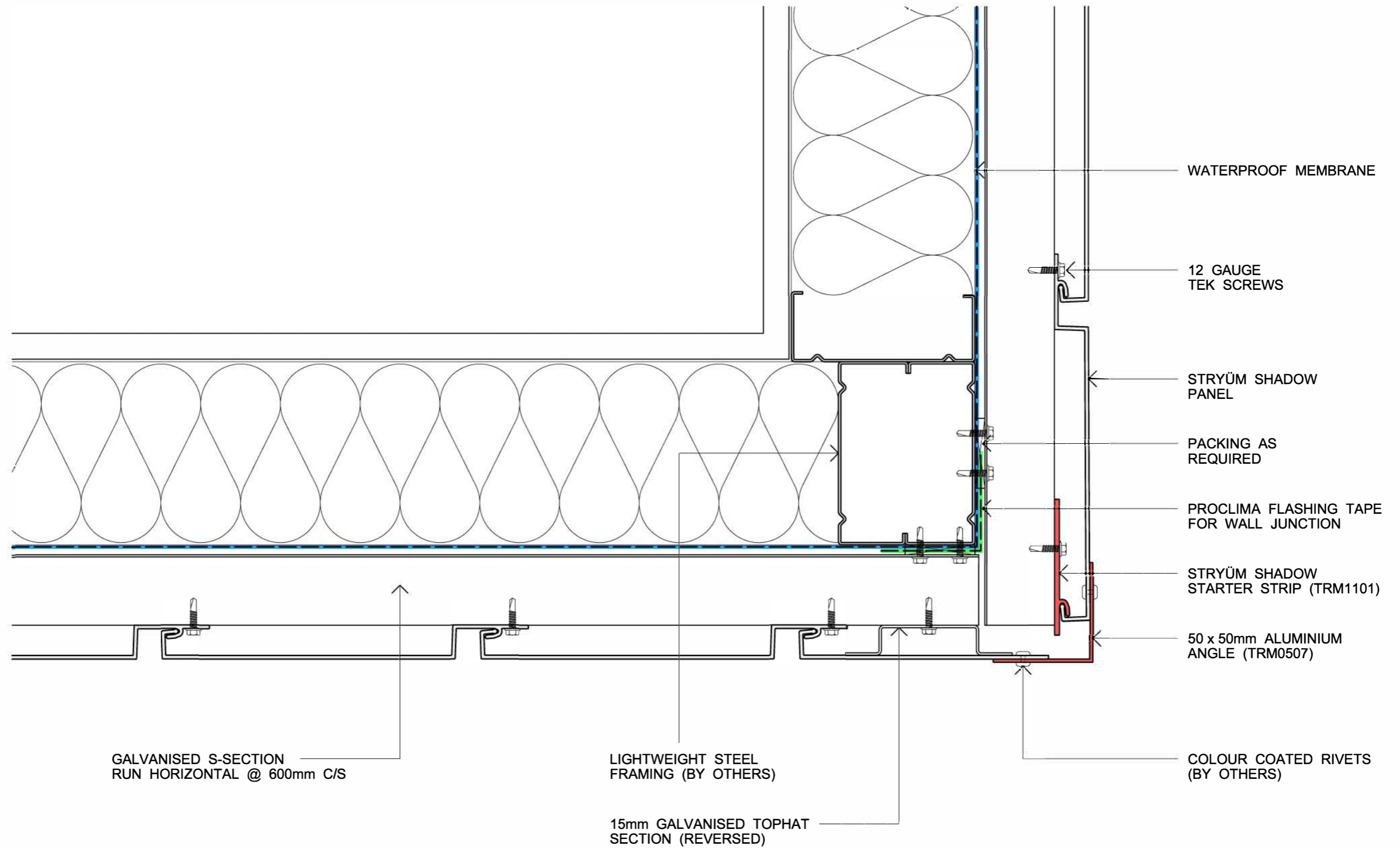




WALL OPENING DETAIL - JAMB

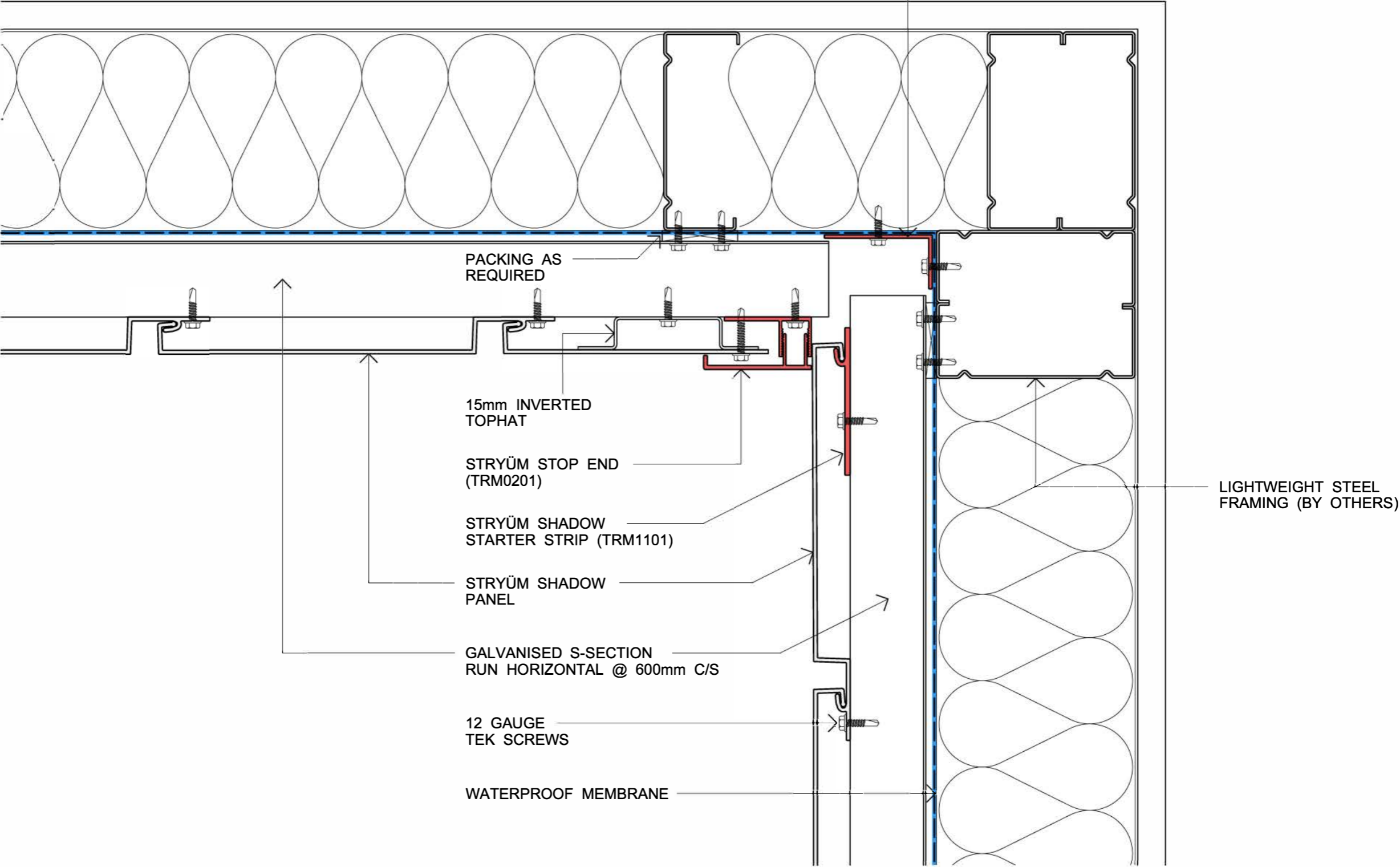


WALL OPENING DETAIL - SILL

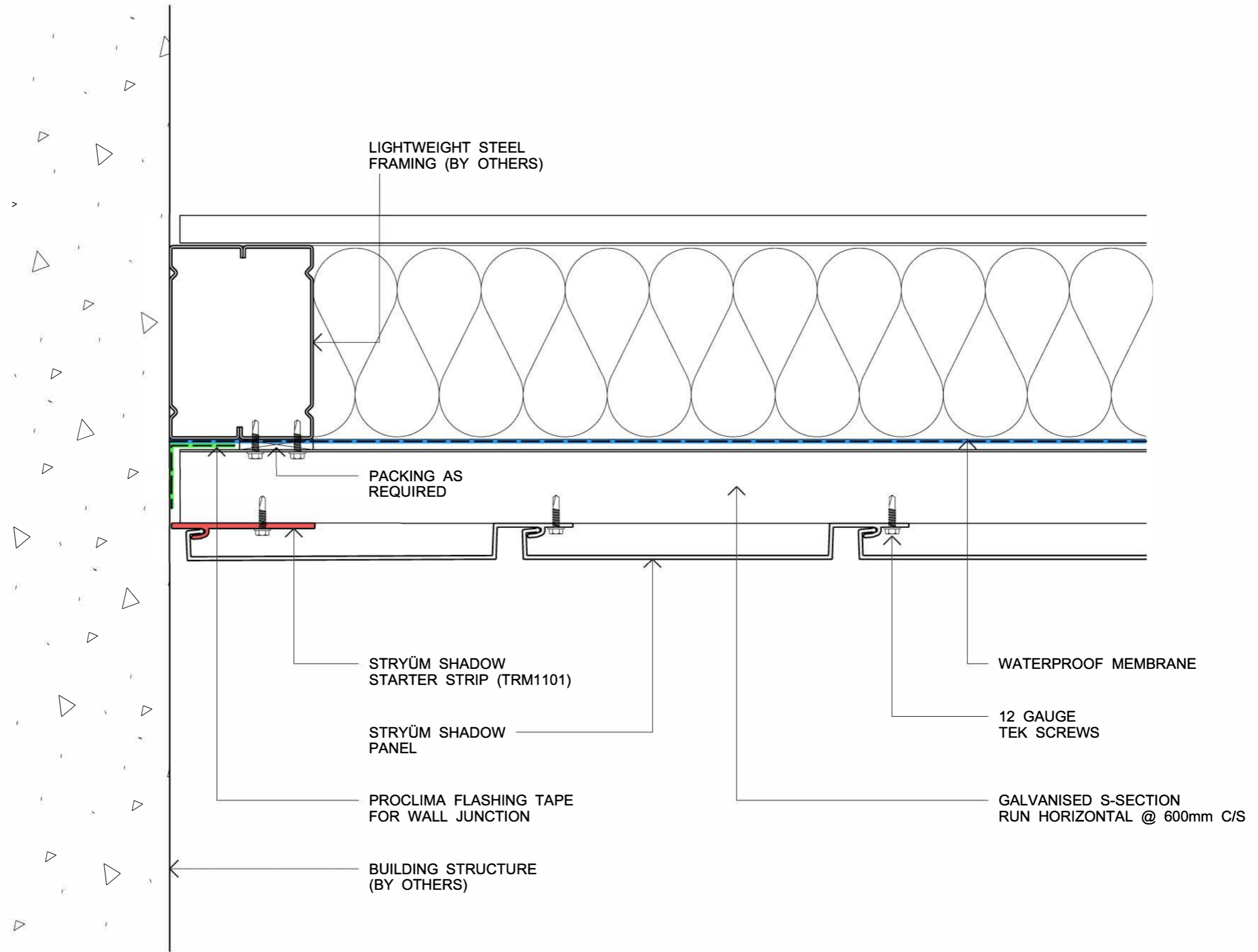


EXTERNAL CORNER 1 - 50x50 ANGLE

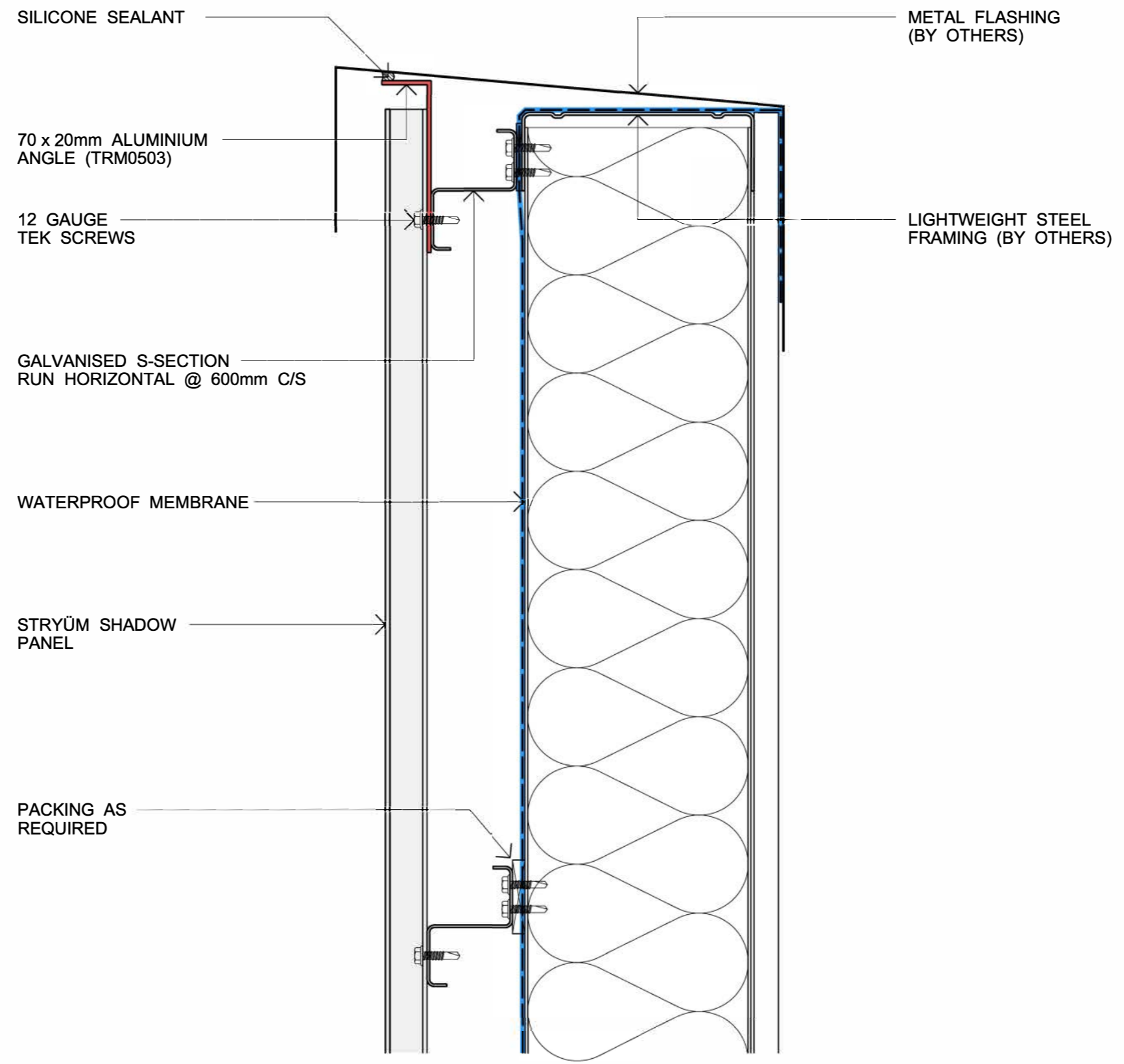
L ANGLE INSTALLED OVER  
WATERPROOF MEMBRANE  
(REQUIRED FOR SARKING ONLY)



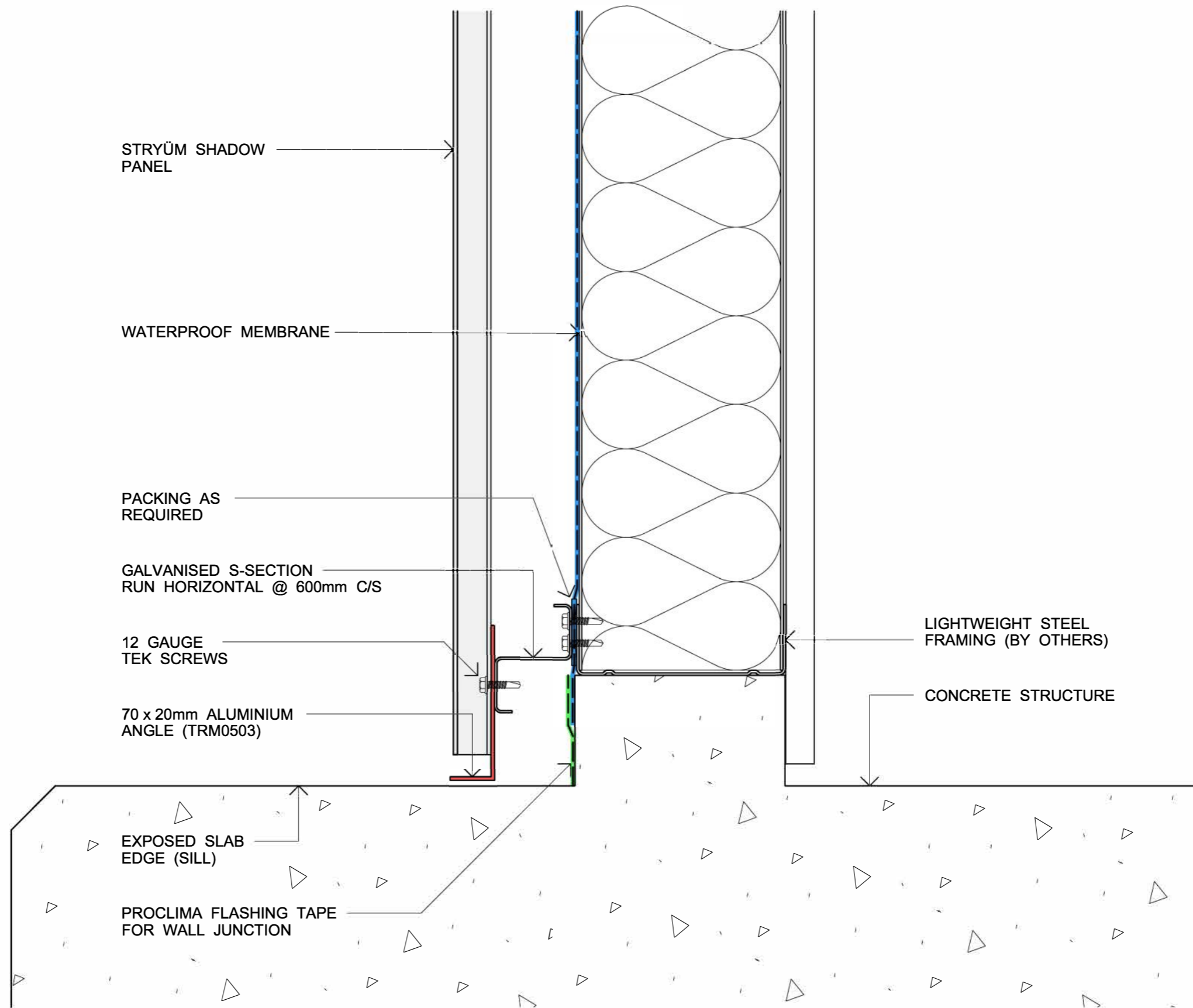
INTERNAL CORNER 1



PANEL START DETAIL



PARAPET DETAIL



STRYUM SHADOW  
PANEL

WATERPROOF MEMBRANE

PACKING AS  
REQUIRED

GALVANISED S-SECTION  
RUN HORIZONTAL @ 600mm C/S

12 GAUGE  
TEK SCREWS

70 x 20mm ALUMINIUM  
ANGLE (TRM0503)

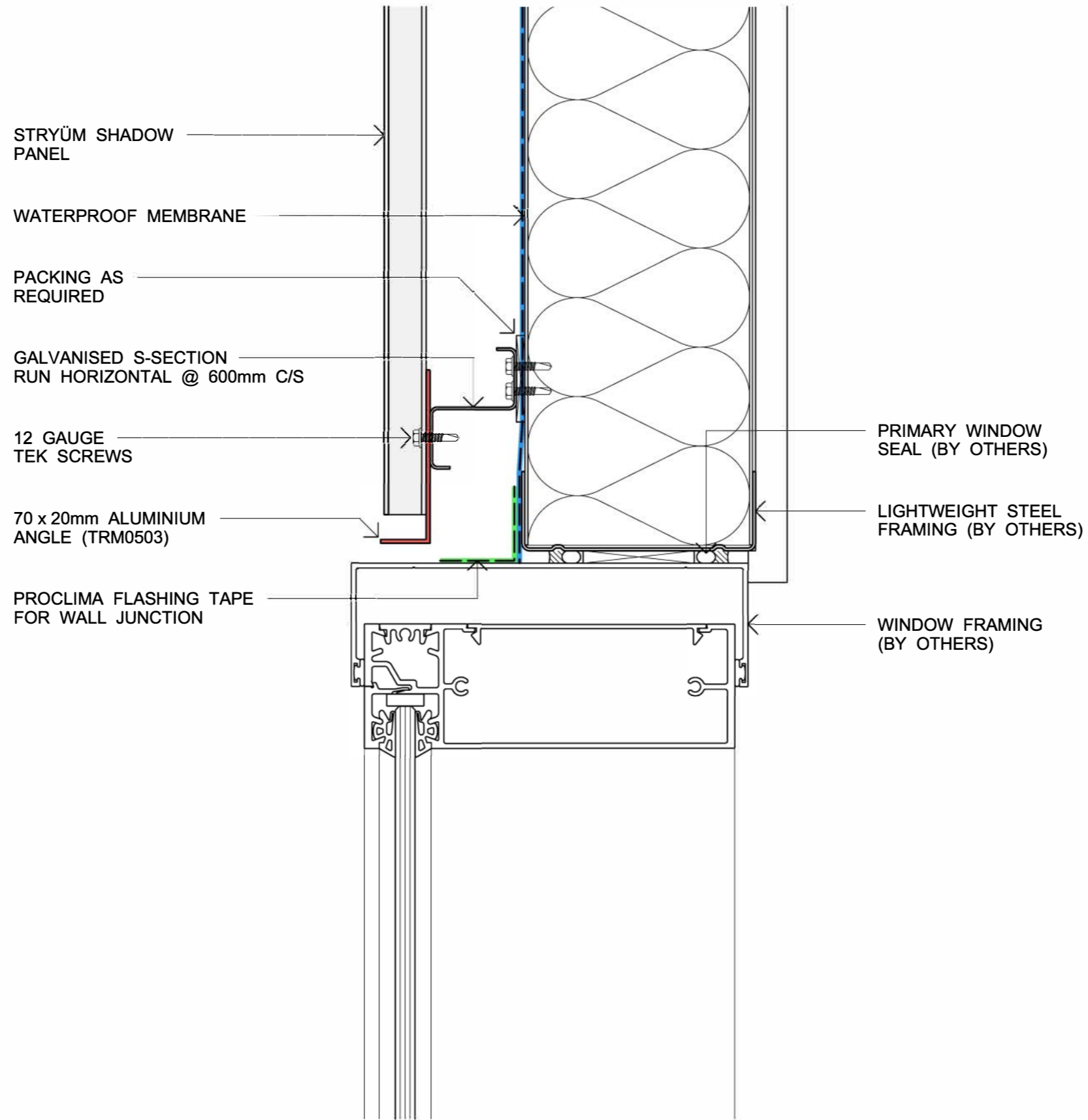
LIGHTWEIGHT STEEL  
FRAMING (BY OTHERS)

CONCRETE STRUCTURE

EXPOSED SLAB  
EDGE (SILL)

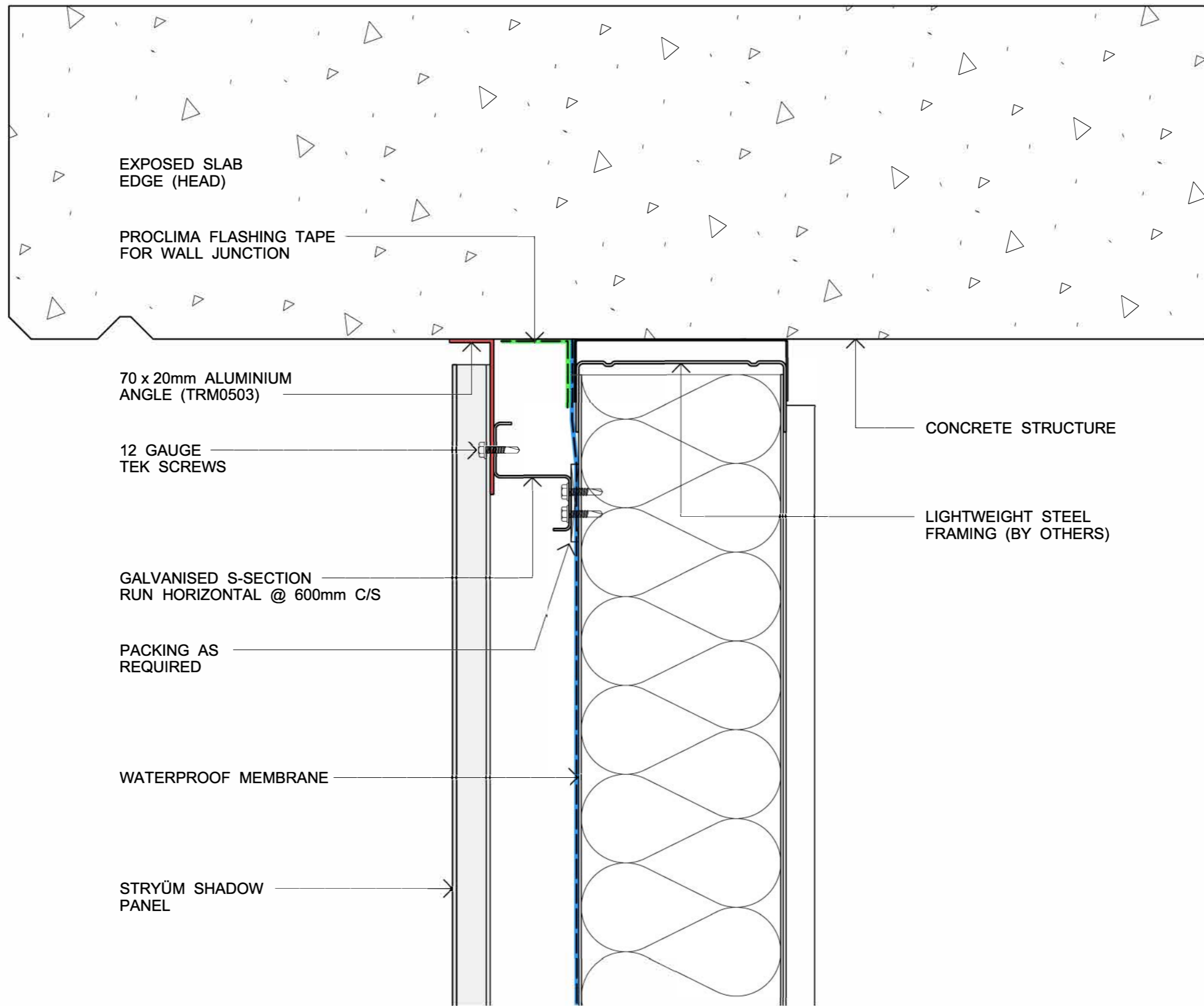
PROCLIMA FLASHING TAPE  
FOR WALL JUNCTION

SLAB JUNCTION - FLOOR

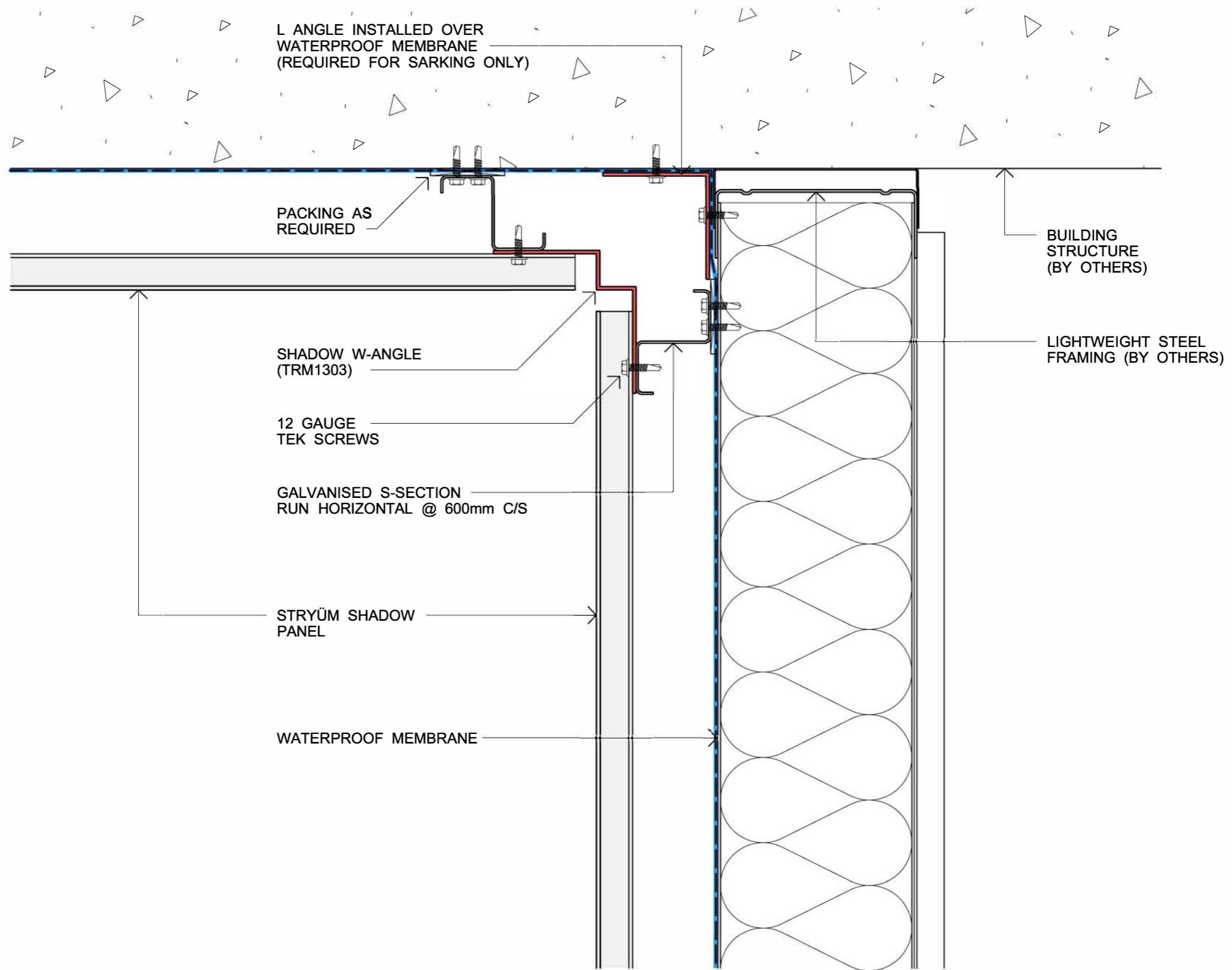


WALL OPENING DETAIL - HEAD

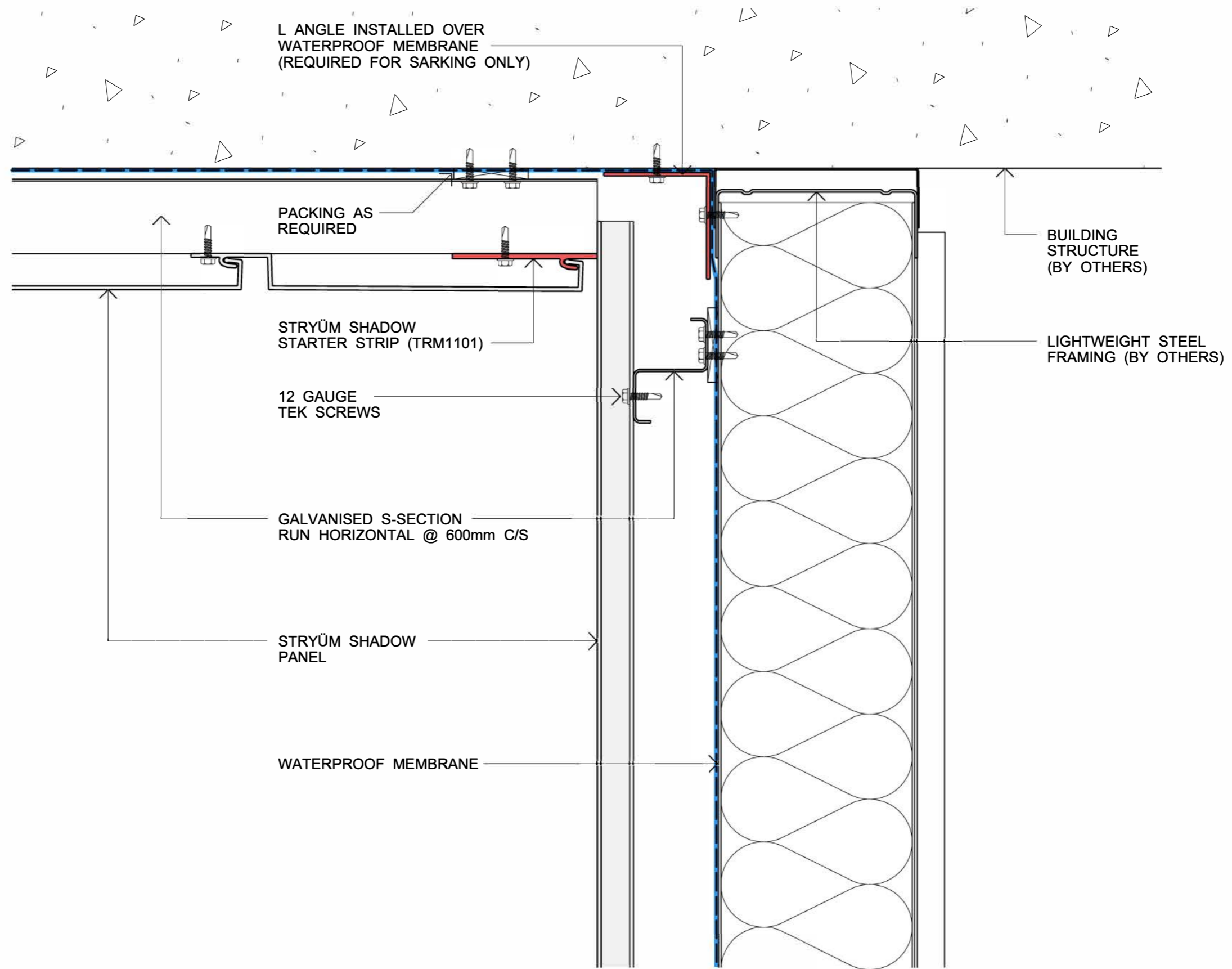




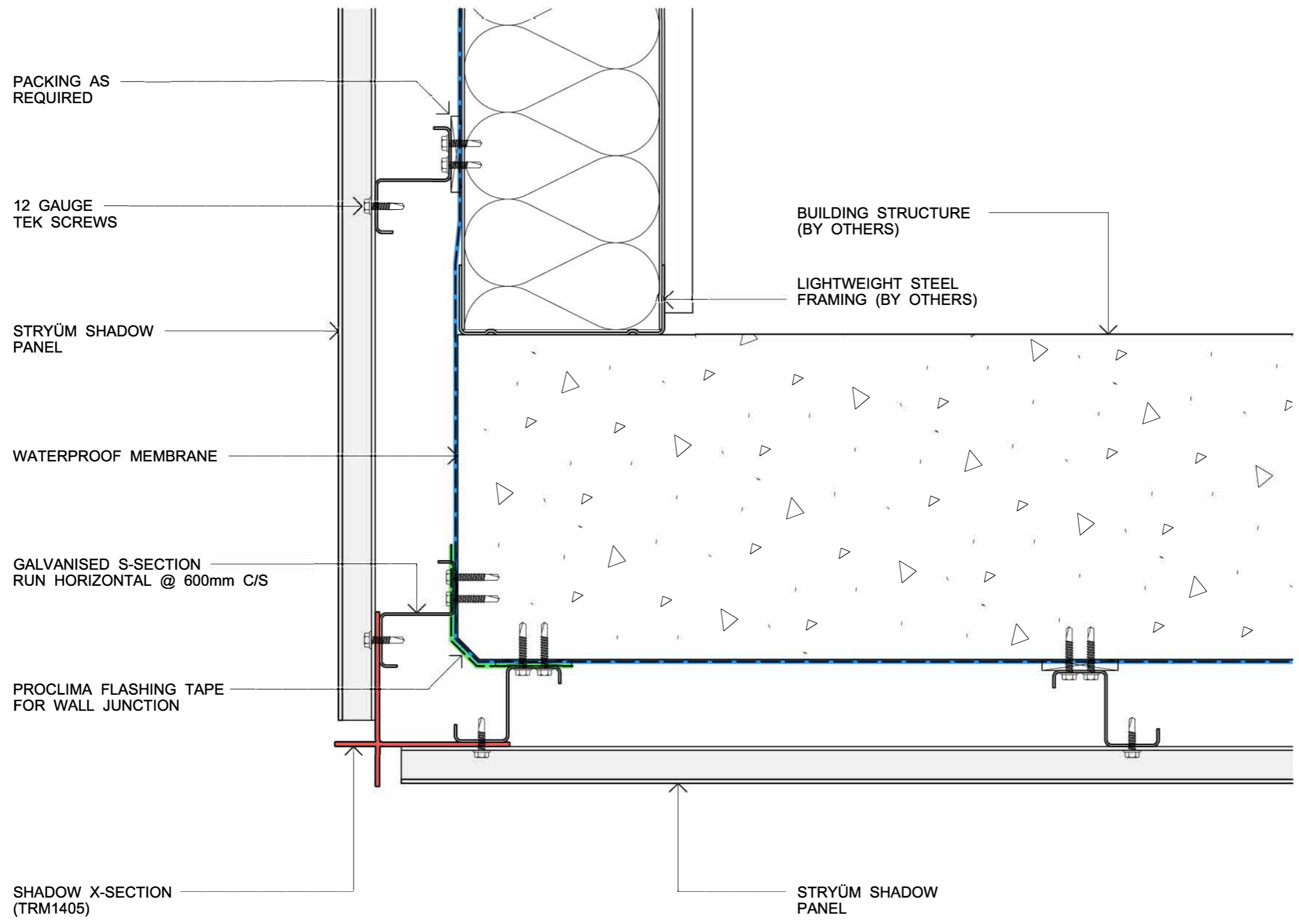
SLAB JUNCTION - HEAD



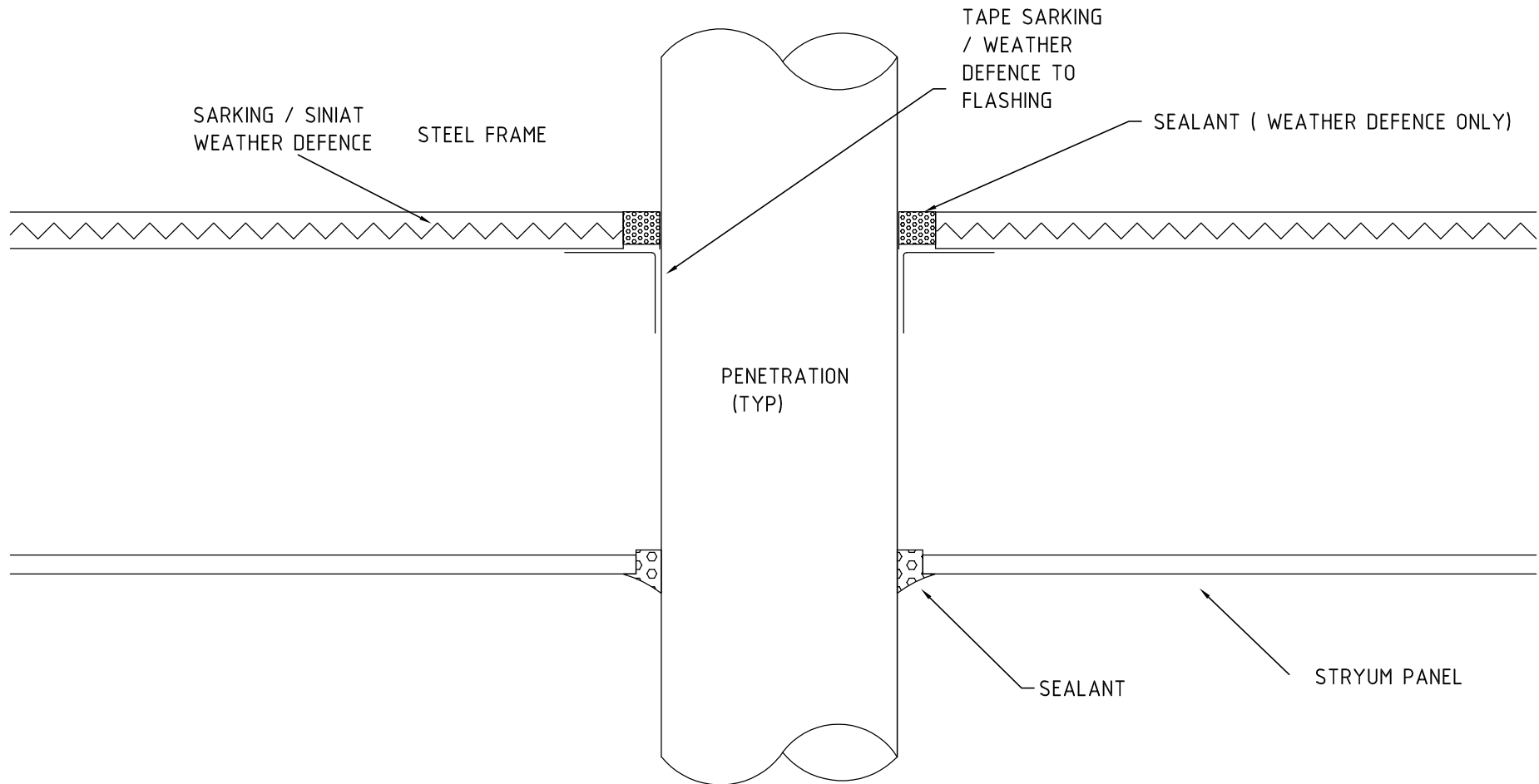
SOFFIT JUNCTION 1a - VERTICAL TO HORIZONTAL



SOFFIT JUNCTION 1b - VERTICAL TO HORIZONTAL



SOFFIT JUNCTION 2a - HORIZONTAL TO VERTICAL



## 12. TYPICAL PENETRATION DETAIL



Disclaimer:  
 These details are limited to the generalised design specification for STRYUM and are intended for use by a technically skilled person only. Any use of the same is at their own discretion and risk.

**FAIRVIEW**

DEFINING ARCHITECTURE SINCE 1968

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**END OF REPORT**