

**FR CORE**  
**FR PRO**  
**LYCORCLAD®** **LCP**  
Aluminium Composite Panel



**PREMIUM CLADDING SOLUTIONS**

## **LCP LYCORCLAD® Series (FR CORE/FR HCOM/FR PRO)**

are ideal options for building envelopes due to their superior fire resistance performance, aesthetics, design flexibility and ease of installation.

With excellent processing, performance and aesthetic features, it meets the majority of the fire regulations for both external & internal cladding. Providing superior surface flatness with high quality coating system for façade cladding and selective roofing for architects, interior designers and developers for their commercial, residential, industrial and institutional projects.

**Manufactured in Singapore  
with 100% Full Automation**

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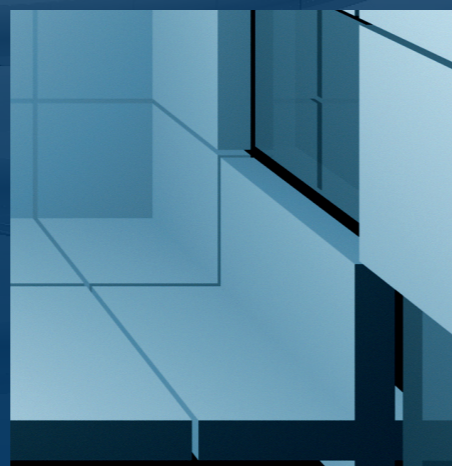
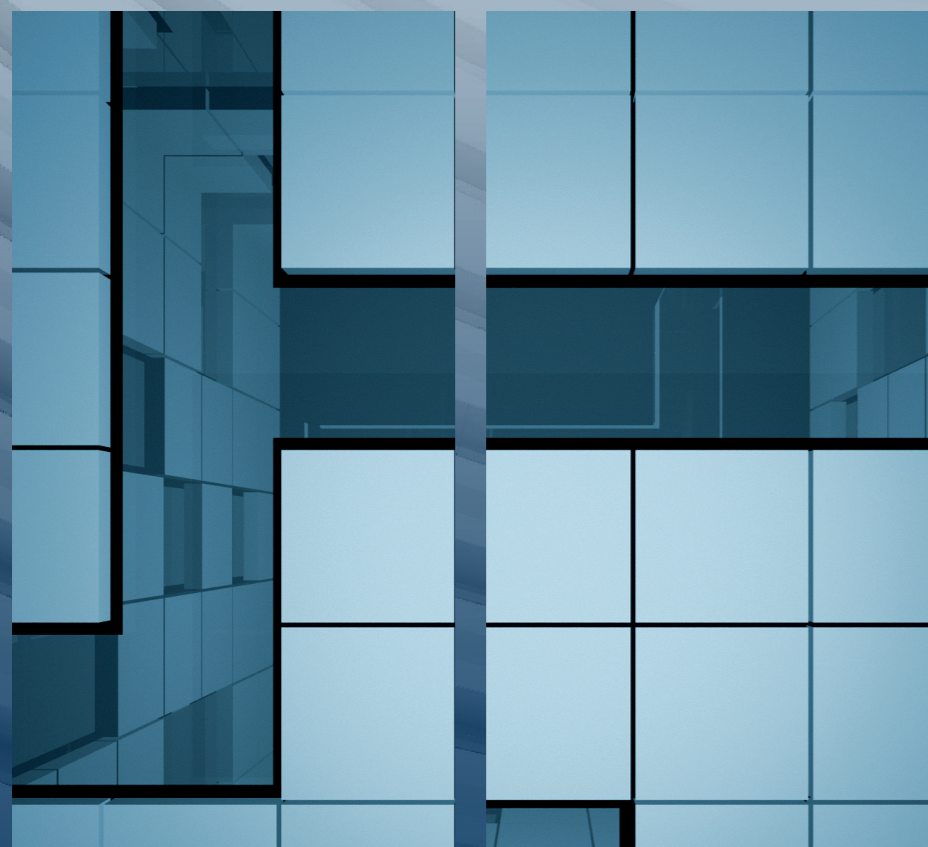
# INTRODUCTION



## LCP LYCORCLAD® FR CORE

With the use of advanced aluminium core technology, LCP LYCORCLAD® FR CORE premium high quality composite panel meets the building code non-combustibility requirements, tested to BS EN 13501-1:2018 Class A2 fire behavior result, S1 classification in relation to smoke production and D'0' classification in relation to flaming droplets or particles. The unique aluminium core structure design uses minimal core materials, making it an effective, cost-efficient and lightweight panel for today's building and construction applications.

- Fire Safety Performance:**  
BS EN 13501-1: 2018 Class A2 for incombustibility, s1 lowest possible smoke emission and d0 for no droplets when the panel is exposed to fire according to the most strictest European Norm EN 13501-1.
- Lightweight and low density
  - Recyclable, energy saving and environmentally friendly
  - High strength and good rigidity
  - Resistant and strong compression strength
  - Non-combustible and moisture resistance
  - Good formability and optional thickness
  - Beautiful appearance and easy to clean
- Complied with SCDF**  
Certificate of Conformity (Roof Covering Material) Scheme 2 (Composite Panels – Cladding to External Wall) Scheme 5
- Complied with Toxicity Test**  
BS EN 45545-2:2020

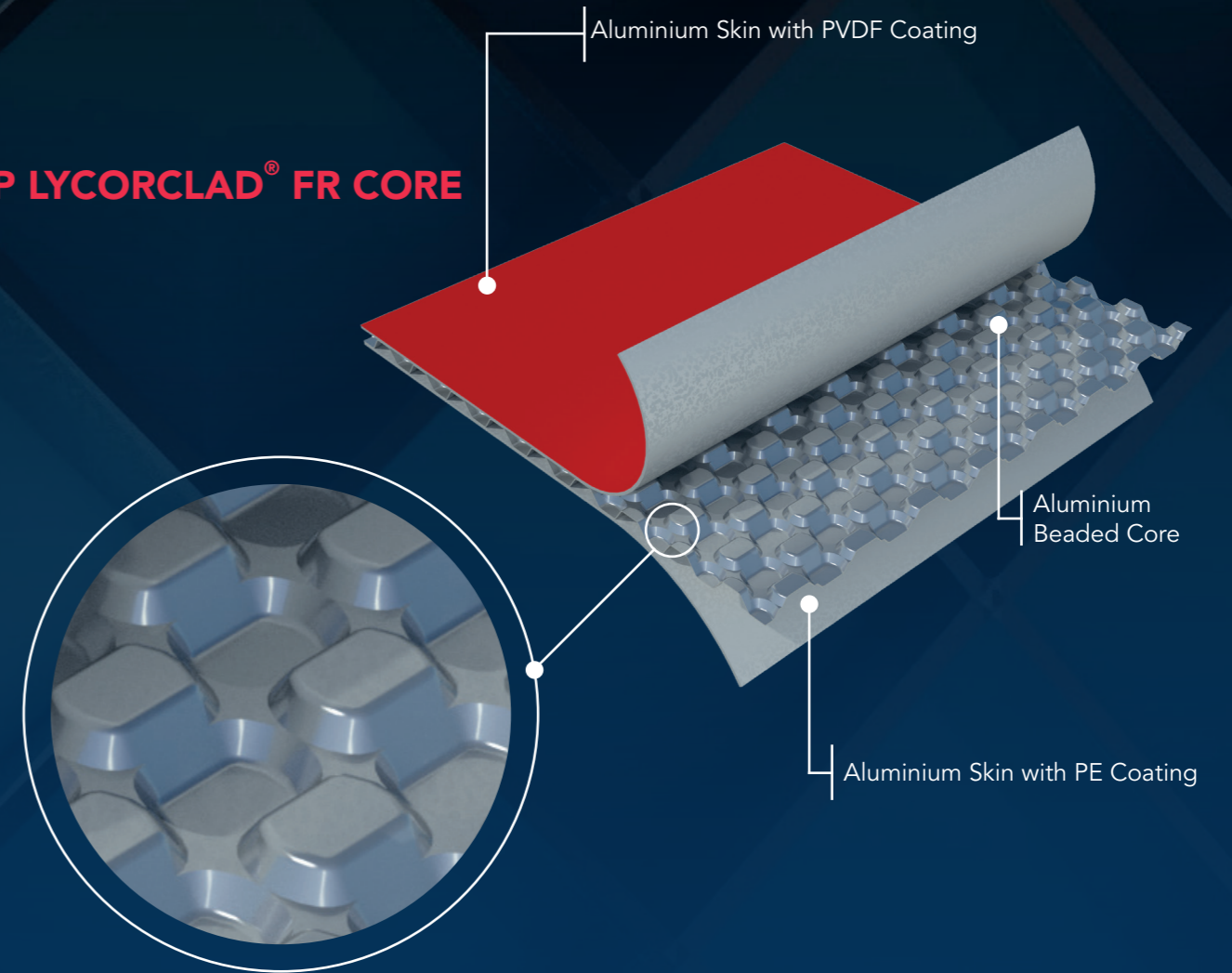


### LCP LYCORCLAD® FR PRO

With A2 graded mineral filled core, **LCP LYCORCLAD® FR PRO** meets the strict requirement of fire regulations and enhances the possibilities for the concept and design of buildings at the same time. The 0.50mm aluminium skin allows freedom of design, combined with superior technological attributes. LCP LYCORCLAD® FR PRO not only complies with the highest design standards BS EN 13501-1:2018 Class A2 fire behavior result, S1 classification in relation to smoke production and D'0' classification in relation to flaming droplets or particles, but it also meets the latest technical requirements in the fields of sustainability and fire protection.

- Fire Safety Performance:**  
BS EN 13501-1: 2018 Class A2 for incombustibility, s1 lowest possible smoke emission and d0 for no droplets when the panel is exposed to fire according to the most strictest European Norm EN 13501-1.
- Complied with SCDF**  
Certificate of Conformity (Roof Covering Material) Scheme 2  
(Composite Panels – Cladding to External Wall) Scheme 5
- Complied with Toxicity Test**  
BS EN 45545-2:2020
- Lightweight and low density
  - Recyclable, energy saving and environmentally friendly
  - High strength and good rigidity
  - Resistant and strong compression strength
  - Non-combustible and moisture resistance
  - Good formability and optional thickness
  - Beautiful appearance and easy to clean

LCP LYCORCLAD® FR CORE



# PRODUCT INFORMATION 2

<b>Standard Width</b>	1220mm, 1500mm
<b>Panel Thickness</b>	4mm ~ 6mm
<b>Skin Thickness</b>	0.5mm ~ 2.0mm

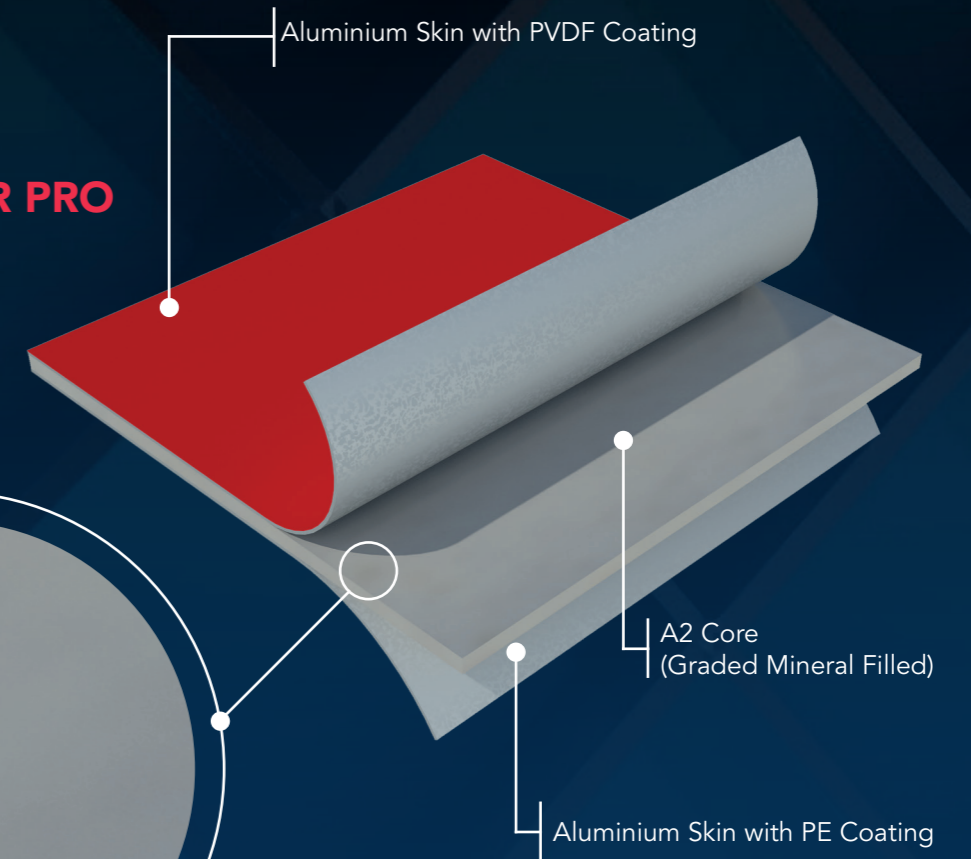
Tolerance			
Panel Thickness	Skin Thickness	Width	Length
±0.2mm	±0.03mm	±2mm	±2mm

**Note:** Products can be customized (other than the thickness and sizes above) to suit project requirements, subject to minimum order quantity.

Aluminium Alloy	Colors	Coating Finishes
A 3004 (Different Grade Available)	Refer to LCP Aluminium Color Chart for more options.	PE, PVDF, NANO, FEVE

**Note:** Special finishes such as granite, marble, wood or other metal options such as stainless steel, copper, zinc and titanium are also available in creative design options upon request.

# LCP LYCORCLAD® FR PRO



<b>Standard Width</b>	1220mm, 1500mm
<b>Panel Thickness</b>	4mm ~ 6mm
<b>Skin Thickness</b>	0.5mm

<b>Tolerance</b>			
Panel Thickness	Skin Thickness	Width	Length
±0.2mm	±0.03mm	±2mm	±2mm

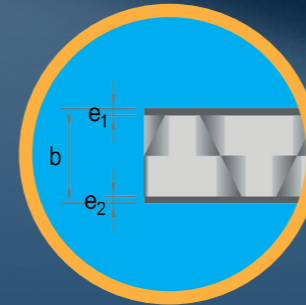
**Note:** Products can be customized (other than the thickness and sizes above) to suit project requirements, subject to minimum order quantity.

Aluminium Alloy	Colors	Coating Finishes
A 3004 (Different Grade Available)	Refer to LCP Aluminium Color Chart for more options.	PE, PVDF, NANO, FEVE

**Note:** Special finishes such as granite, marble, wood or other metal options such as stainless steel, copper, zinc and titanium are also available in creative design options upon request.

LCP LYCORCLAD® FR CORE

TECHNICAL DATA



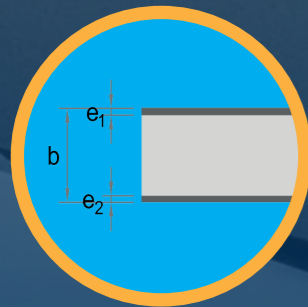
Description	Unit	Specifications	
Overall Thickness "b"	mm	4	6
Aluminium Sheet Thickness "e <sub>1</sub> "	mm	0.7/1.0*	0.7/1.0*
<small>* For 1.0mm Top Aluminium Sheet, Overall thickness will be thicker</small>			
Aluminium Sheet Thickness "e <sub>2</sub> "	mm	0.5	0.5
Panel Weight	kg/m <sup>2</sup>	4.4	4.4
Aluminium Alloy	EN1396	A3004 (Different Grade Available)	
Tensile Strength	MPa (min)	≥ 185	
0.2% Proof Stress	MPa (min)	≥ 130	
Elongation A <sub>50</sub>	% (min)	≥ 3	
Modulus Of Elasticity	MPa	70000	
Standard Width	mm	1220 & 1500	
Min./Max. Length	mm	1000/12000	

TECHNICAL DATA 3



## LCP LYCORCLAD® FR PRO

TECHNICAL DATA



Description	Unit	Specifications	
Overall Thickness "b"	mm	4	6
Aluminium Sheet Thickness "e <sub>1</sub> "	mm	0.5	0.5
Aluminium Sheet Thickness "e <sub>2</sub> "	mm	0.5	0.5
Panel Weight	kg/m <sup>2</sup>	9.0	11.3
Aluminium Alloy	EN1396	A3004 (Different Grade Available)	
Tensile Strength	MPa (min)	≥ 185	
0.2% Proof Stress	MPa (min)	≥ 130	
Elongation A <sub>50</sub>	% (min)	≥ 3	
Modulus Of Elasticity	MPa	70000	
Standard Width	mm	1220 & 1500	
Min./Max. Length	mm	1000/12000	



CORE FEATURES

Core Components	New Non-combustible Natural Inorganic Mineral Material	
Core Thickness	mm	3-5
Core Density	kg/m <sup>3</sup>	1.75-1.85*10
Calorific Value	MJ/kg	≤3
Fire Growth Rate	(FIGRA), W/s	≤120
Total Heat Release in 600s	(THR600s), MJ	≤7.5



# 4 PAINT PERFORMANCE

<b>Pretreatment</b>	Corrosion resistant proprietary conversion coating.
<b>Primer Coat</b>	Universal corrosion inhibitive primer. Normal dry film thickness 5µm each side.
<b>Finish Coat</b>	Custom formulated 70% PVDF paint system with high performance pigments. Nominal dry film thickness 20µm on the top or weather side.
<b>Colour</b>	Refer to LCP Aluminium Color Chart for more options. LCP could match colour as per customer sample or RAL CODE to suit project requirements, subject to minimum order quantity.



Polyvinylidene fluoride that is also known as PVDF in short is a type of fluorocarbon polymer resin used in architectural coating. PVDF coating is one of the preferred architectural coatings due to its excellent weathering characteristic of fluorinated materials.

LCP LYCORCLAD® FR CORE & FR PRO, both are using the aluminium PVDF 2 coatings as its weather side layer that is available in a wide range of consistent, stable, inorganically pigmented colours and are extremely inert, providing long term durability as well as resistance to chemical attack and surface damage caused by acid rain, salt spray, and humidity encountered under normal environmental conditions.



COATING SPECIFICATIONS

	Aluminium Substrata
<b>Dry Film Thickness (nominal)</b> ASTM D1400	5µm Primer, 20µm Topcoat
<b>Gloss</b> ASTM D523@60°	23-35
<b>Pencil Hardness</b> ASTM D3363	HB-H
<b>Flexibility</b> T-Bend, ASTM D4145	1T-Bend; No pick-off¹
<b>Solvent Resistance</b> ASTM D5402	100+ MEK double rubs
<b>Adhesion</b> ASTM D3359 Reverse Impact 1/16" Crosshatch	No Adhesion Loss
<b>Reverse Impact</b> ASTM D2794	5.0J (0.6mm), No pick off
<b>Acid Resistance</b> ASTM D1308 10% Muriatic Acid—24 Hours 20% Sulfuric Acid—18 Hours	No effect No effect
<b>Acid Rain Test</b> Kesternech SO₂/DIN 50018	10 Cycles Min. No objectionable colour change
<b>Alkali Resistance</b> ASTM D1308 10%, 25% NaOH, 1hr	No effect
<b>Salt Spray Resistance</b> ASTM B117 5% salt fog @ 95°F	Passes 4000 hrs 1.6mm (1/16") average scribe creep None or few #8 blisters.
<b>Humidity Resistance</b> ASTM D714 ASTM D2247, 1000hrs 100% relative humidity @ 95°F/34.5°C	Passes 4000 hrs. None or few #8 face blisters
<b>Exterior Exposure</b> 10 years @ 45°, South Florida ASTM D2244 - Colour ASTM D4214 - Chalk	Max 5 Fade Max 8 chalk

## HIGH POLYMER ADHESIVE FILMS

Adhesive film, the core factor of bonding the aluminium coil and non-combustible core material.

LCP LYCORCLAD® FR CORE/FR PRO used high polymer adhesive films, a modified polyolefin hot-melt adhesive film which is solvent-free, hygienic and environmentally friendly.

## TYPICAL PHYSICAL PROPERTIES

Description	ASTM Test Method	Unit	Specification
Density	ASTM D-792	g/cm <sup>3</sup>	0.92
Melt Flow Rate	ASTM D-1238, 190°C/2.16kg	g/10min	19.5
Elongation as Break	ASTM D-638	%	450
Tensile Strength	ASTM D-638	MPa	15.7
Melting point	ASTM D-2117	°C	125
Vicat Softening Point	ASTM D-1525	°C	74

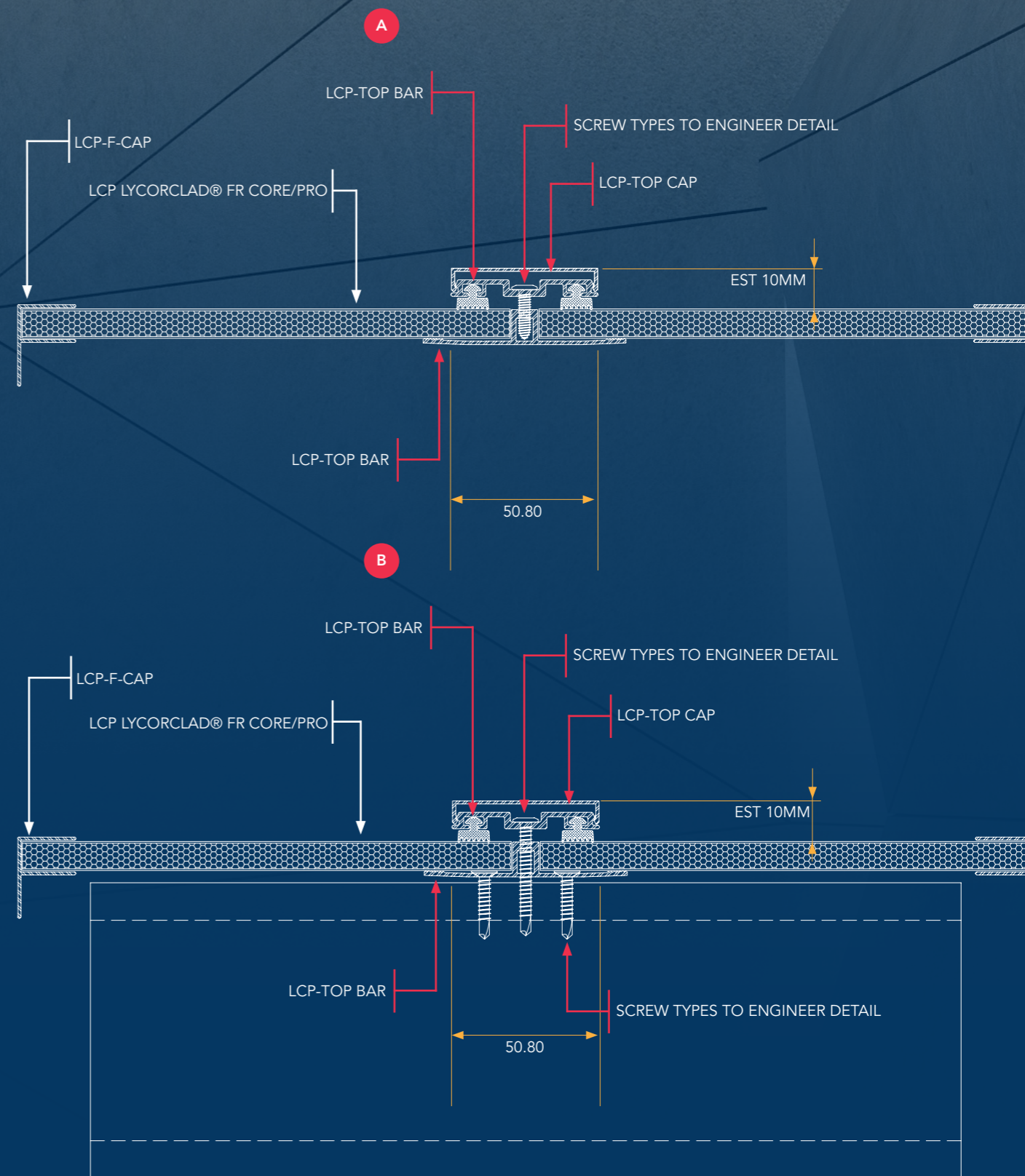
# 5 ADHESIVE FILM PERFORMANCE

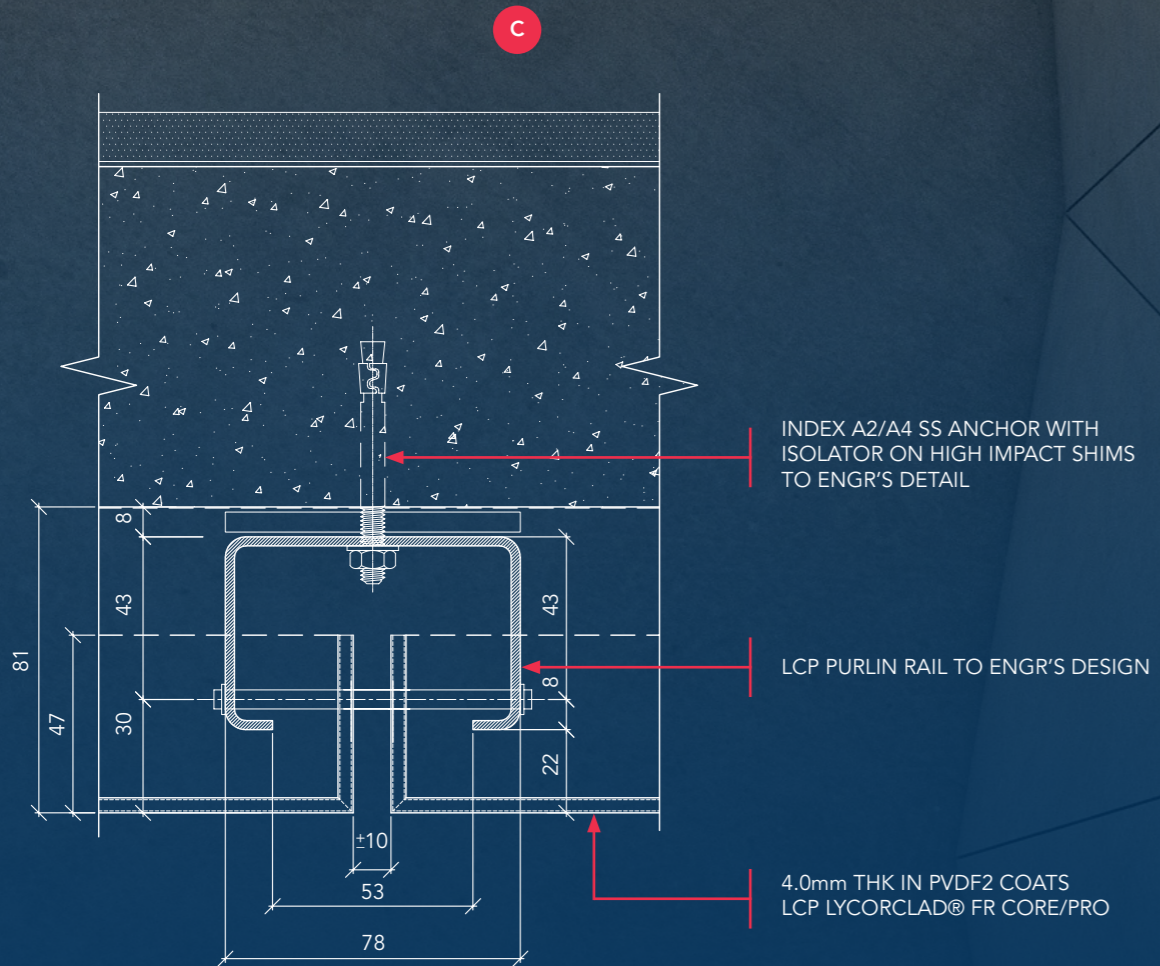


# APPLICATION 6



# 7 ROOF & CLADDING CONNECTION



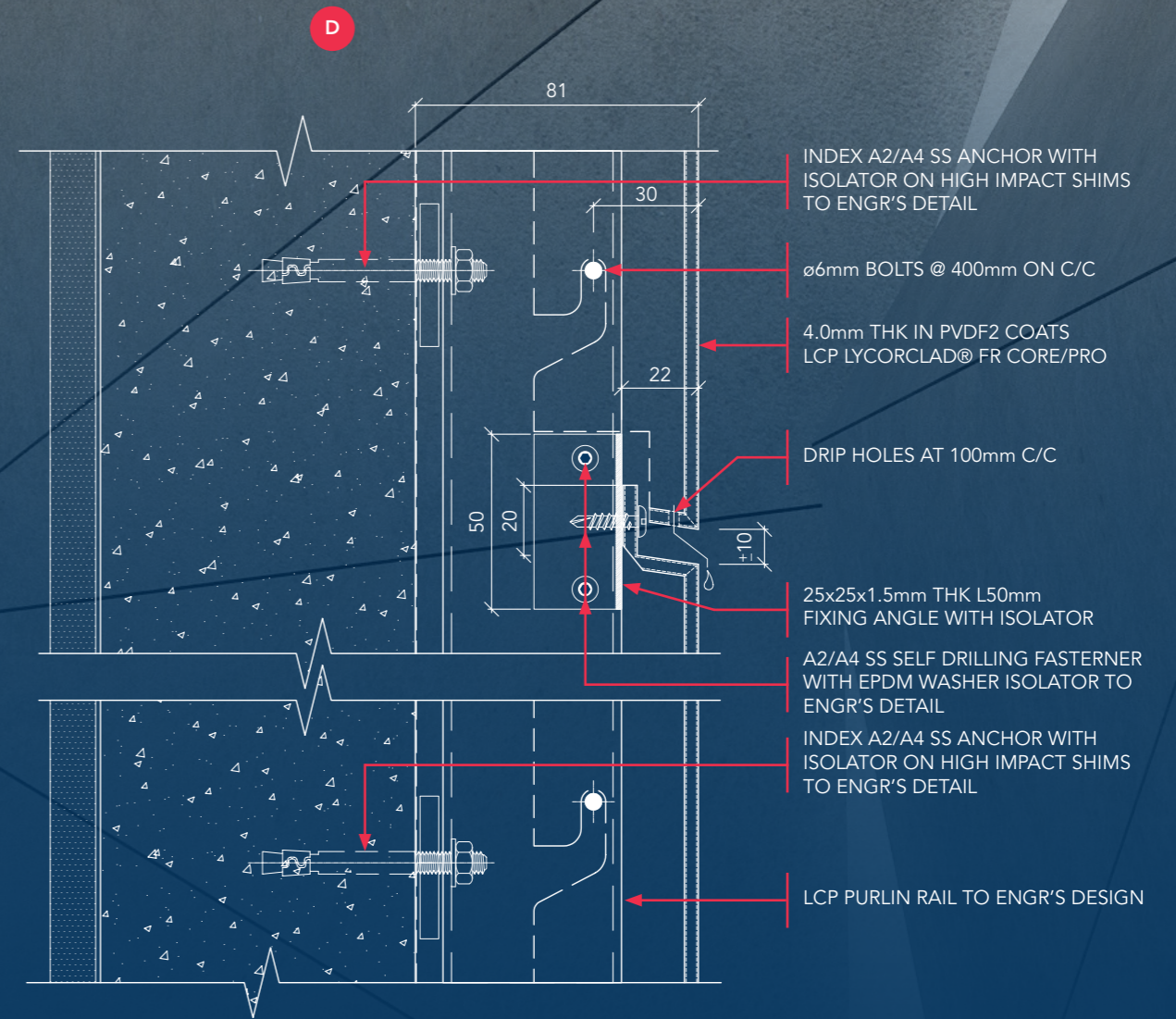


INDEX A2/A4 SS ANCHOR WITH ISOLATOR ON HIGH IMPACT SHIMS TO ENGR'S DETAIL

LCP PURLIN RAIL TO ENGR'S DESIGN

4.0mm THK IN PVDF2 COATS LCP LYCORCLAD® FR CORE/PRO

**1** PLAN - VERTICAL JOINT



INDEX A2/A4 SS ANCHOR WITH ISOLATOR ON HIGH IMPACT SHIMS TO ENGR'S DETAIL

ø6mm BOLTS @ 400mm ON C/C

4.0mm THK IN PVDF2 COATS LCP LYCORCLAD® FR CORE/PRO

DRIP HOLES AT 100mm C/C

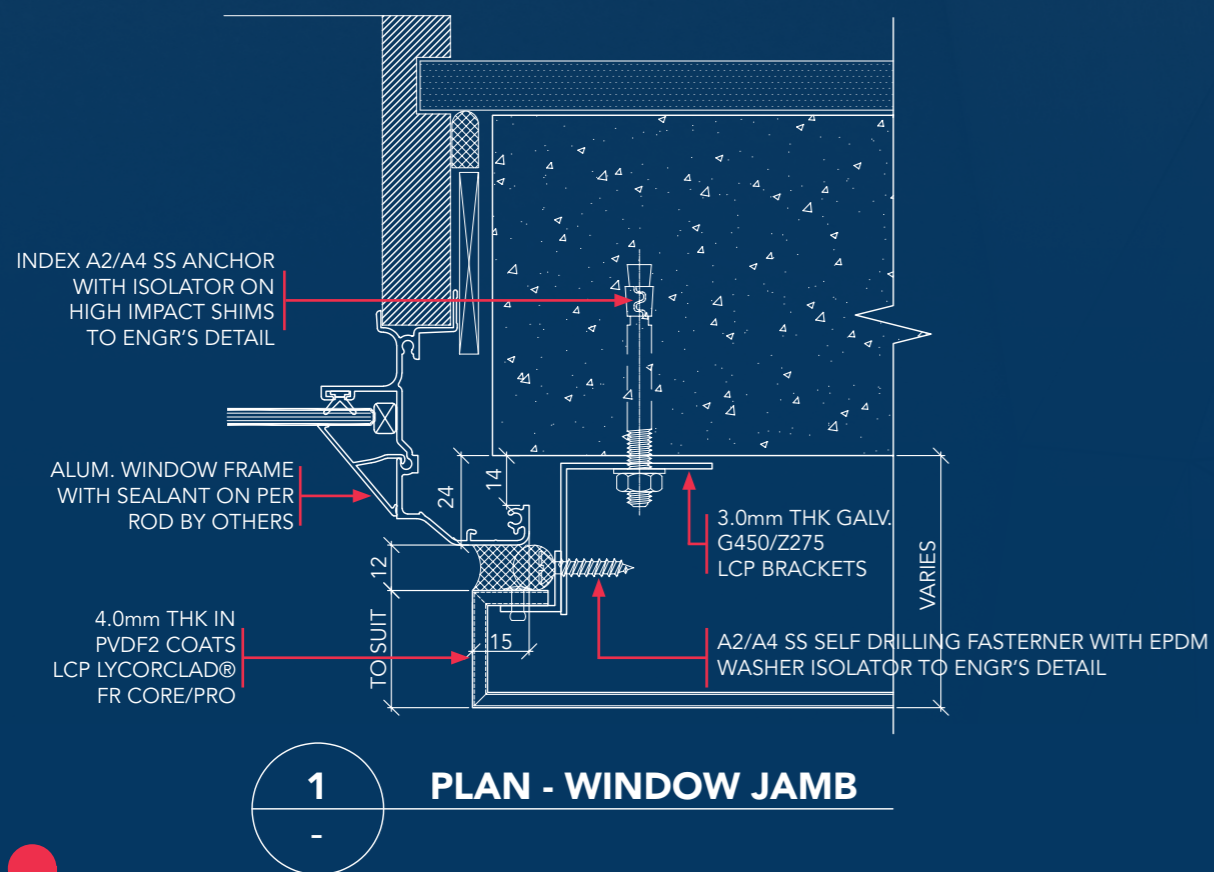
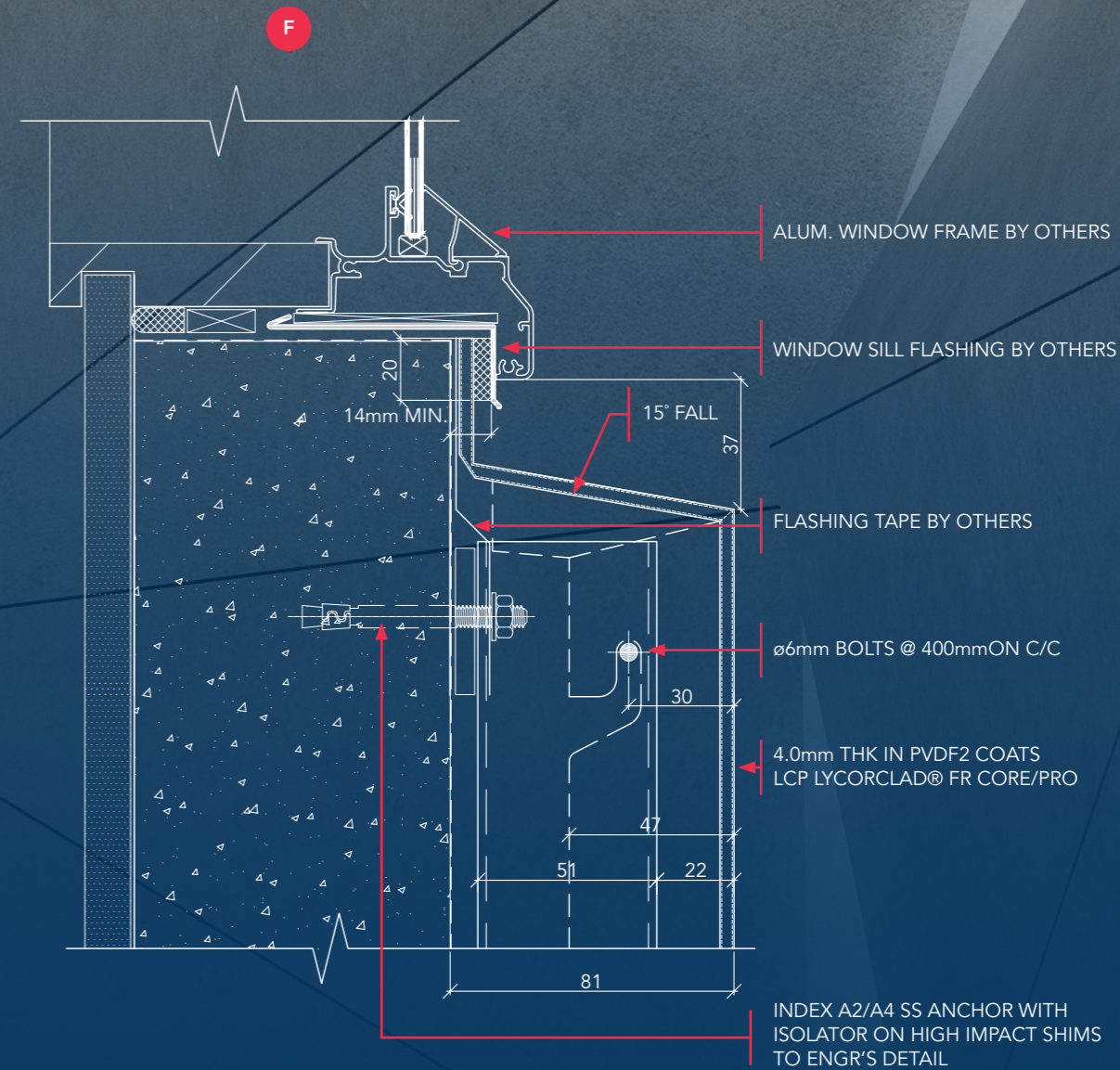
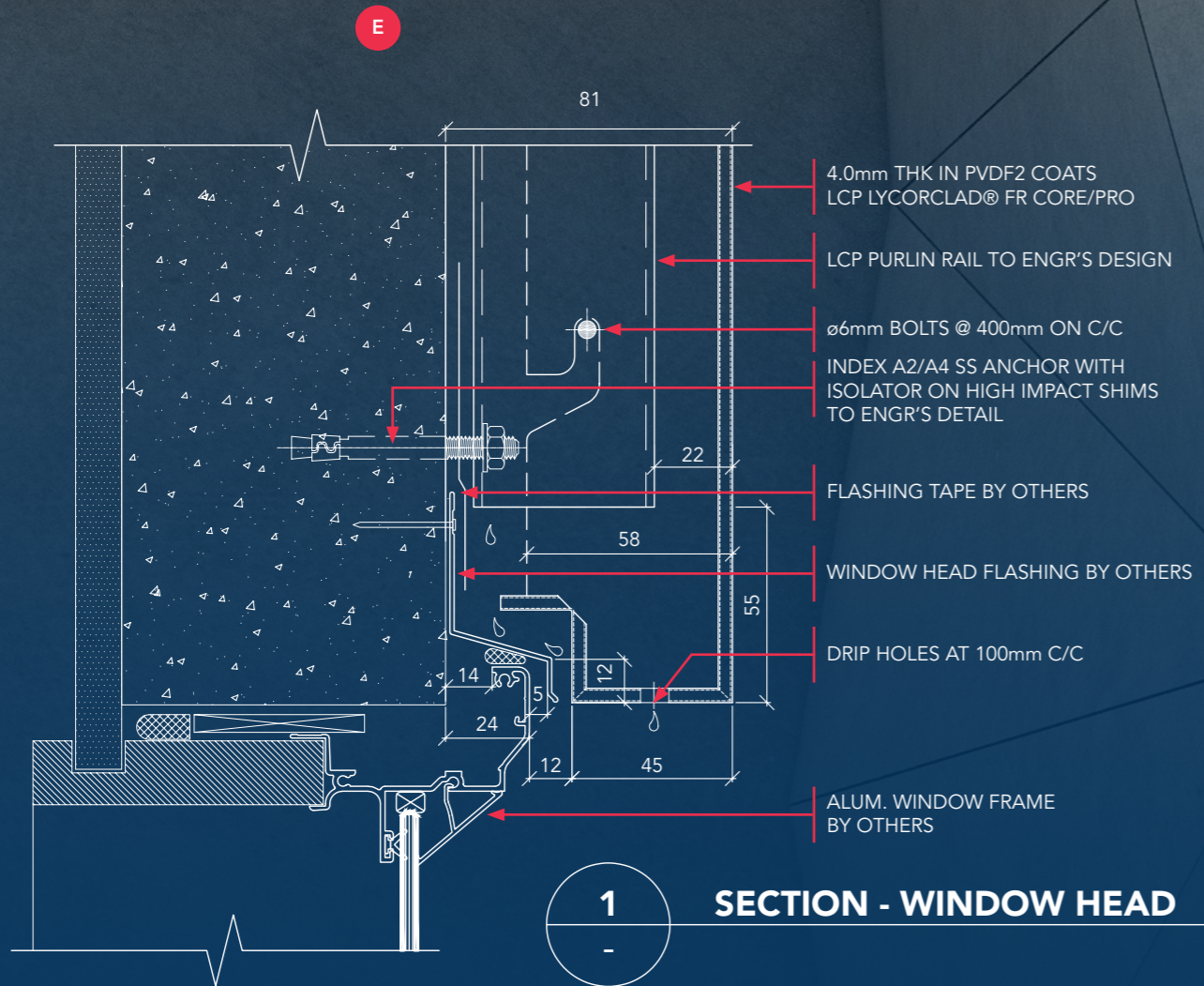
25x25x1.5mm THK L50mm FIXING ANGLE WITH ISOLATOR

A2/A4 SS SELF DRILLING FASTENER WITH EPDM WASHER ISOLATOR TO ENGR'S DETAIL

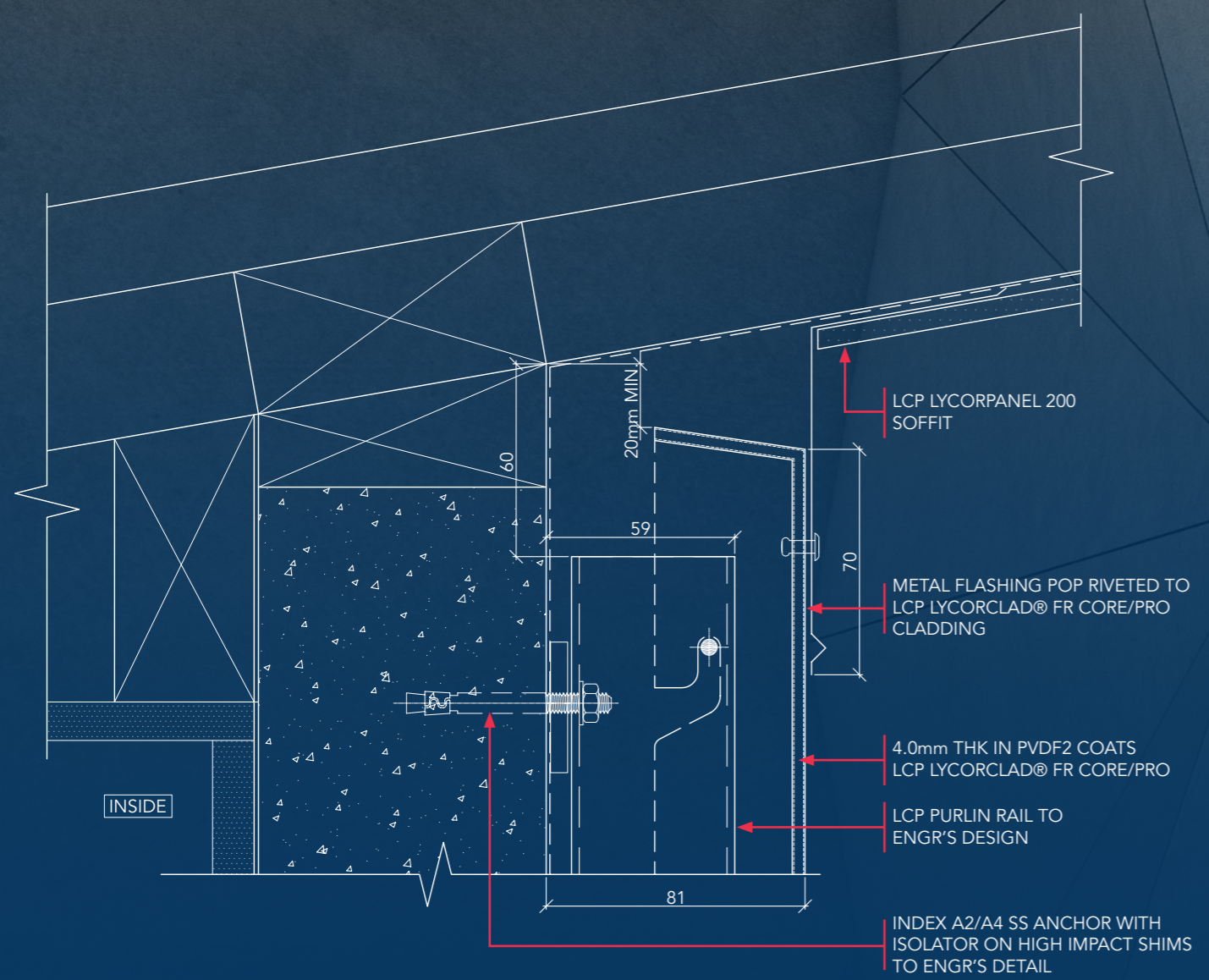
INDEX A2/A4 SS ANCHOR WITH ISOLATOR ON HIGH IMPACT SHIMS TO ENGR'S DETAIL

LCP PURLIN RAIL TO ENGR'S DESIGN

**1** SECTION - HORIZONTAL JOINT

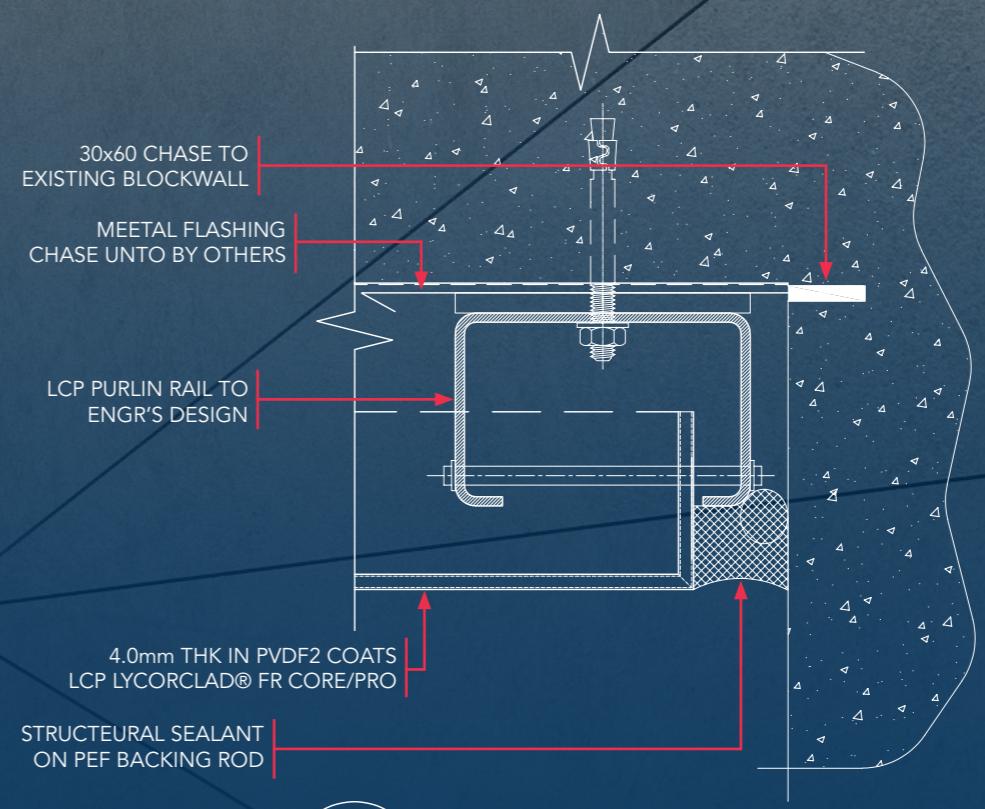


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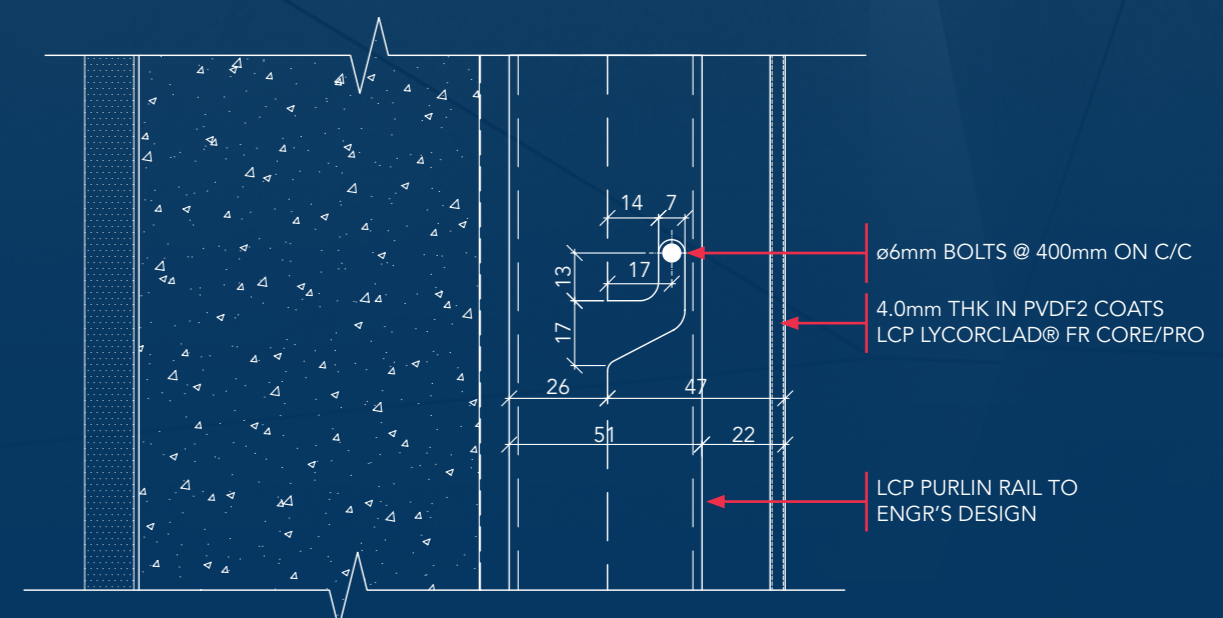


**1** SECTION - SOFFIT JUNCTION

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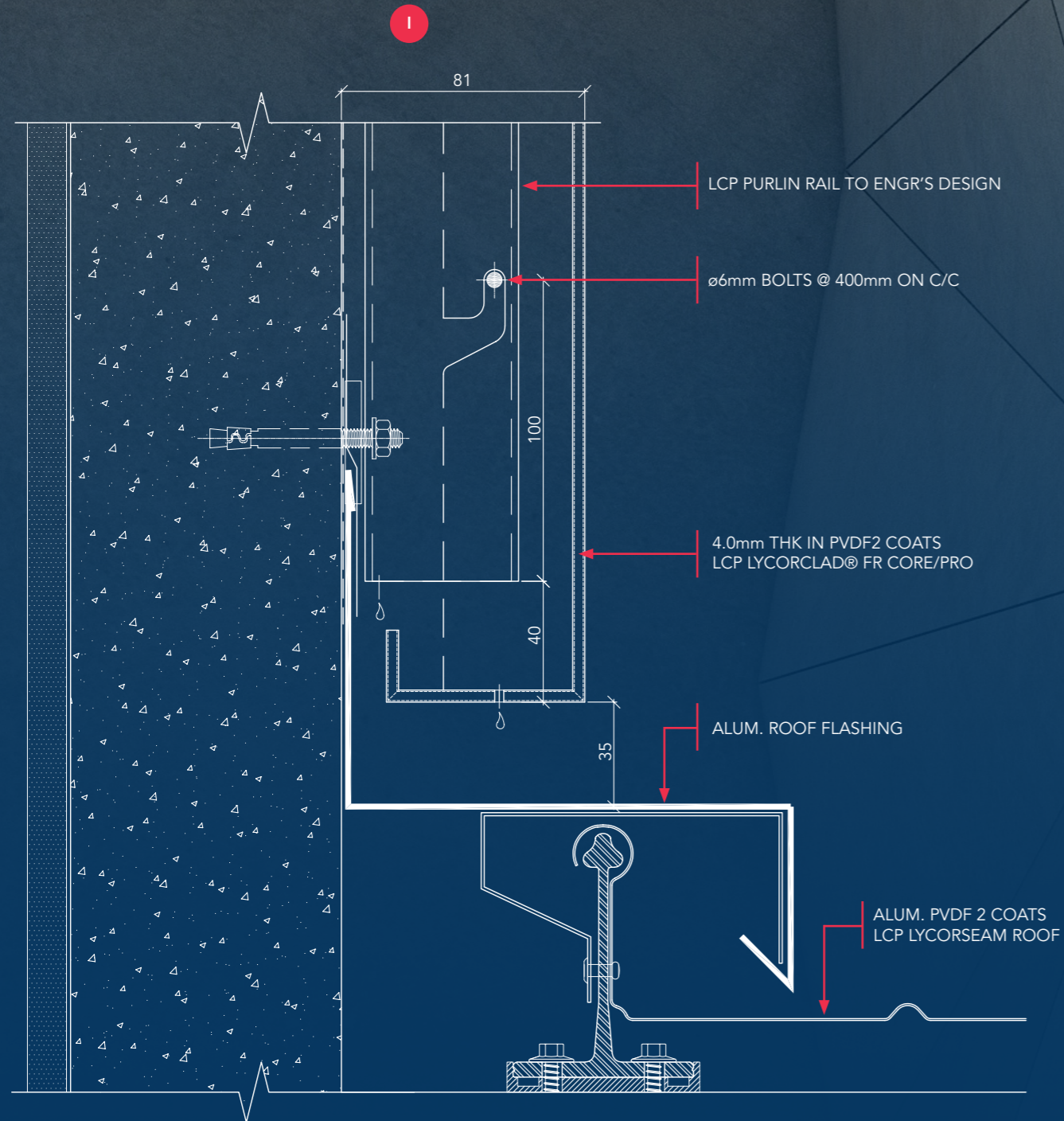


**1** PLAN - WALL JUNCTION

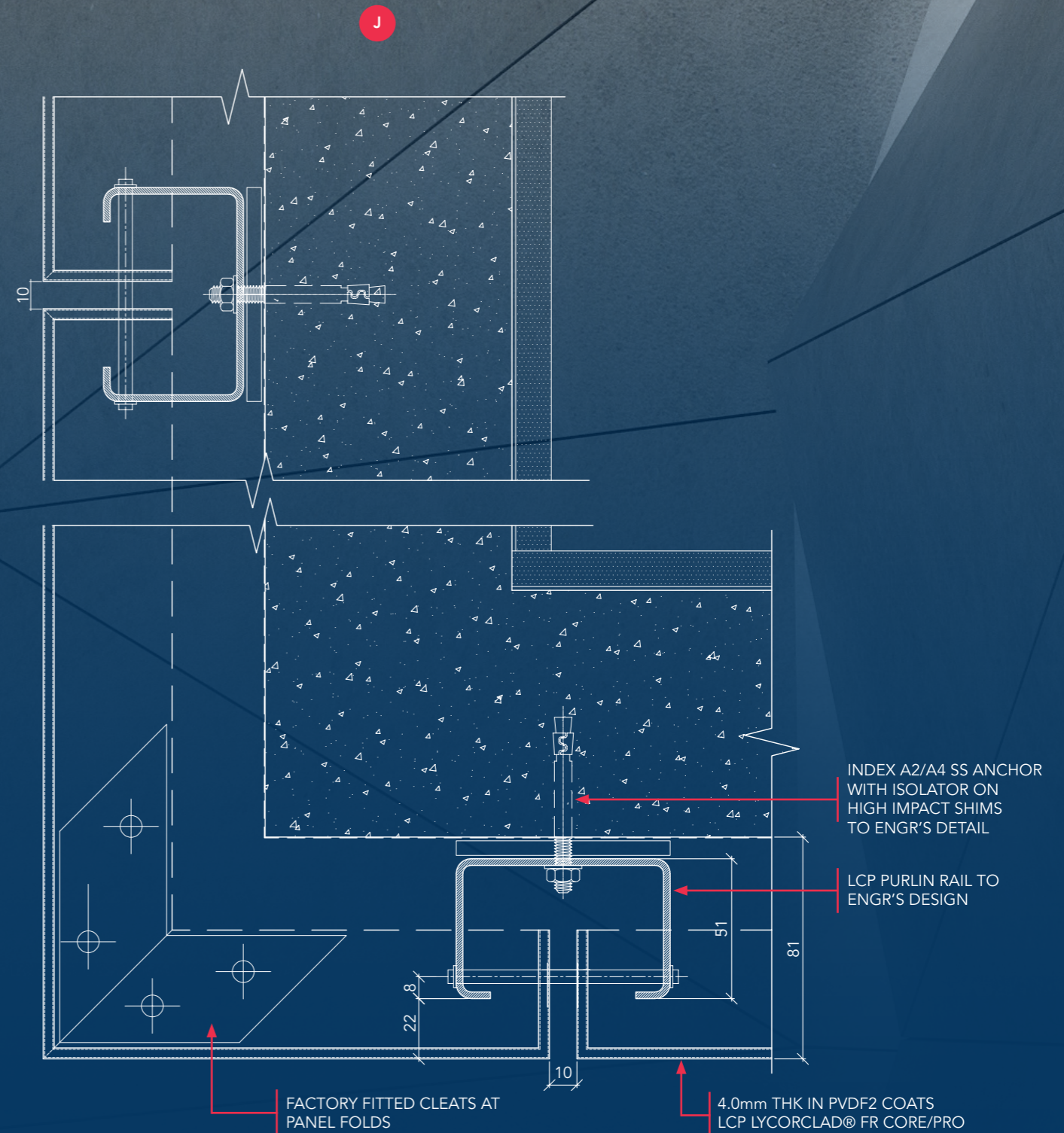


**1** SECTION - PIN DETAIL

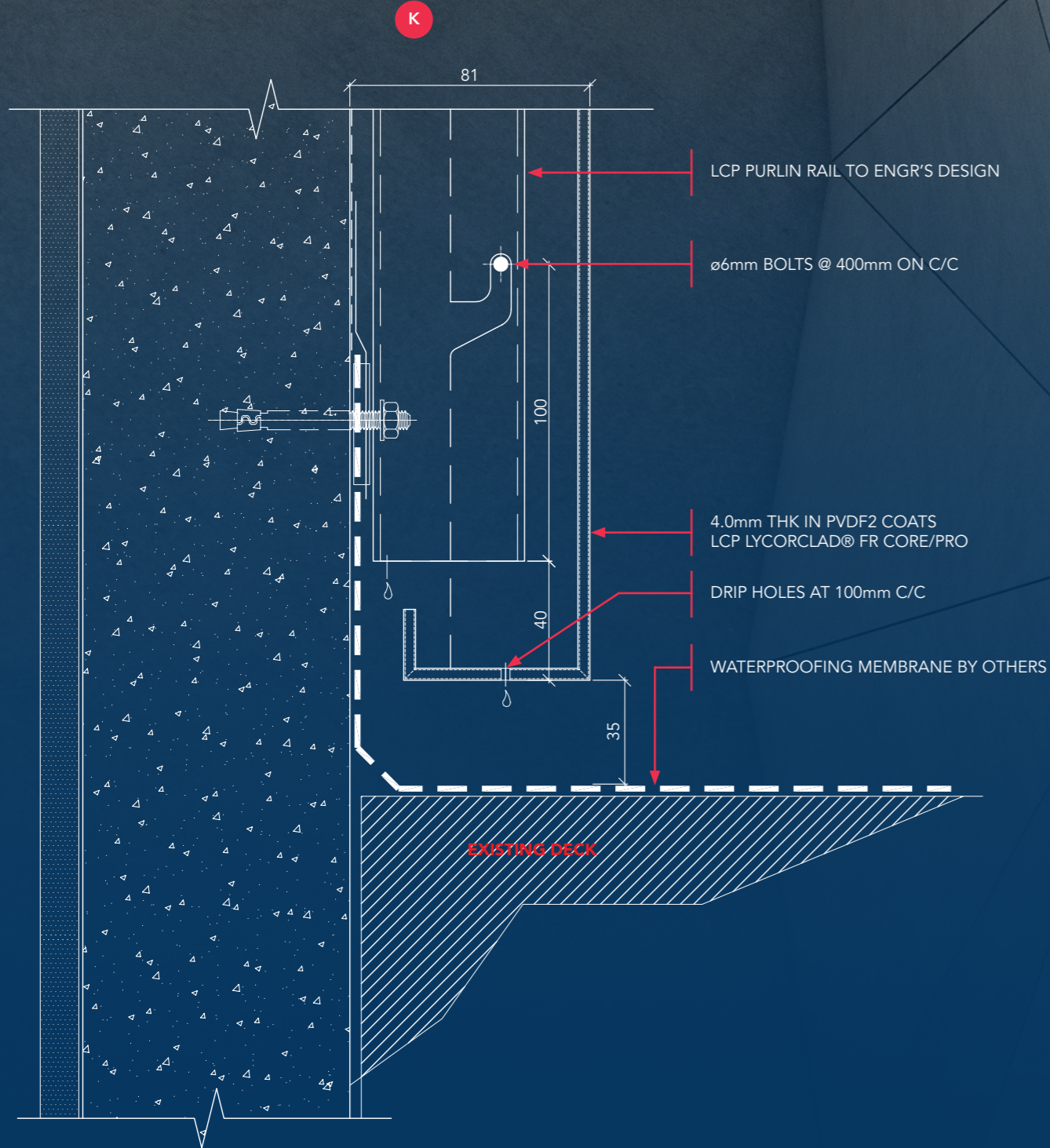




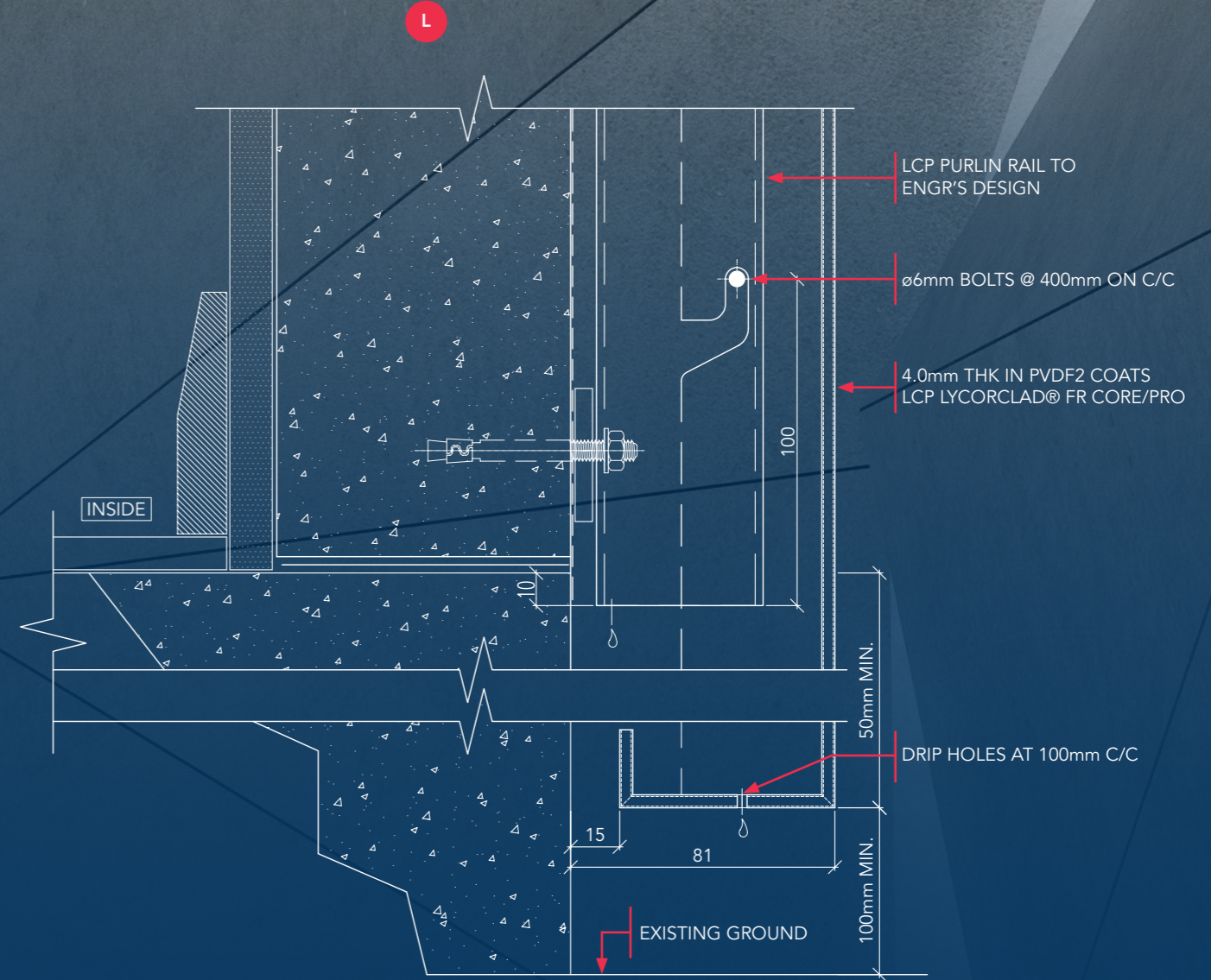
**1** SECTION - ROOF JUNCTION



**1** PLAN - CORNER DETAIL



**1** SECTION - PANEL BASE



**1** SECTION - PANEL BASE

# MAINTENANCE/ **8** STORAGE/ HANDLING GUIDELINES



## When Installing The Panels, The Following Should Be Noted

It is recommended that the panels be installed with their protection film facing the same direction, to avoid possible reflection differences. Colour variations may occur between panels originating from different production batches. It is best to place an entire project's worth of panels in one order to ensure colour consistency.

To ensure perfect functioning of the **LCP LYCORCLAD® FR CORE/FR PRO** protective film, the following information should be observed:

- Storage exceeding 6 months should be avoided, and severe temperature fluctuations and exposure to direct sunlight should be avoided.
- Additionally, do not mark the protective films or panel surfaces with ink (marker), adhesive tapes, or stickers because solvents or plasticizers in these materials can damage the coating surfaces.
- If any part of the protective film comes off during processing or after assembly, dirtied edges may occur over time which can be difficult to remove.
- Remove the protective film as soon as possible after assembly so that it does not remain on panels for an extended period of time during exterior exposure; prolonged exposure may make removal difficult and cause residual glue sticking to the surface of panels due to UV radiation.



### Transportation/Storage

To protect **LCP LYCORCLAD® FR CORE/FR PRO** panels against mechanical damages and the harmful effects of weather conditions and moisture, the following information must be observed:

- When handling pallets, be careful not to scrape the surface. Do not handle open pallets.
- Upon delivery, examine the pallet for any damage due to transportation and moisture (**LCP LYCORCLAD® FR CORE/FR PRO** panels that have become wet must be dried to avoid any spots or corrosion forming). Any damage must be reported immediately and confirmed by the forwarding agent.
- Store pallets so that they are protected against any wetness penetrating due to rain and spray water.
- When storing **LCP LYCORCLAD® FR CORE/FR PRO** panels, stack them one on top of the other. Do not stack the panels vertically and never put anything between the panels during storage to avoid staining.
- When lifting off a panel from its pallet, two people should hold all four corners of the panel and carry it vertically. Always wear gloves while handling these panels to avoid staining.

### Cleaning and Maintenance

#### General Cleaning

Annual cleaning is recommended. To clean the surface, wipe down with a damp soft cloth or a high-pressure cleaner (max. 50 bar) with clean water. If stubborn stains are present, use a gentle, mild soap (such as mild dish detergent) and a clean, damp cloth to remove. Do not use abrasive cleaning agents such as bleach or abrasive sponges or brushes that may scratch the surface.

Do not use cleaning products containing petroleum distillates such as kerosene, turpentine, or paint thinner. These may leave residues that will spoil the look of the finish. Cleaning should take place from top to bottom. Rinse with clean water after cleaning to remove any cleaning agent residue.

Do not clean surfaces heated by the sun (> 40 °C) – the quick drying process may cause blemishes.

#### PERFORMANCE WARRANTY

**LCP LYCORCLAD® FR CORE / FR PRO** panels come with warranty for the performance on the paint system coating applied on the aluminium skins for 10 years with PVDF 2 Coats paint system and up to 15 years on PVDF 3 Coats paint system.

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