

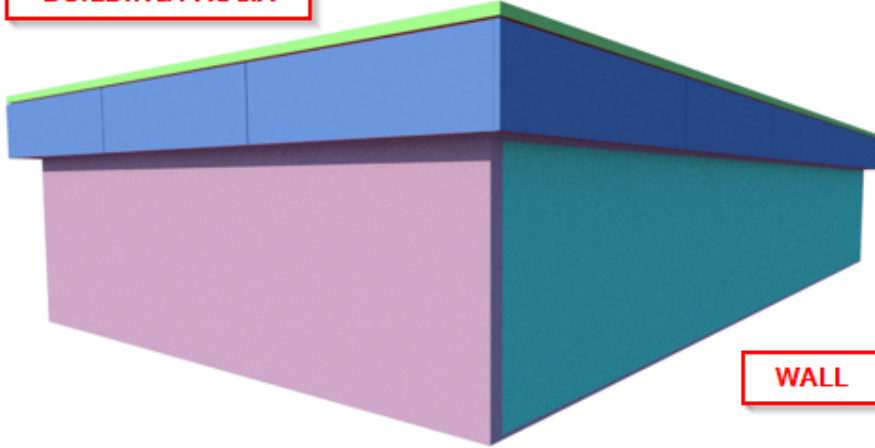
# Kaneba™ D-4ACP DESIGN GUIDE



### CASSETTE CLADDING BUILDING APPLICATIONS

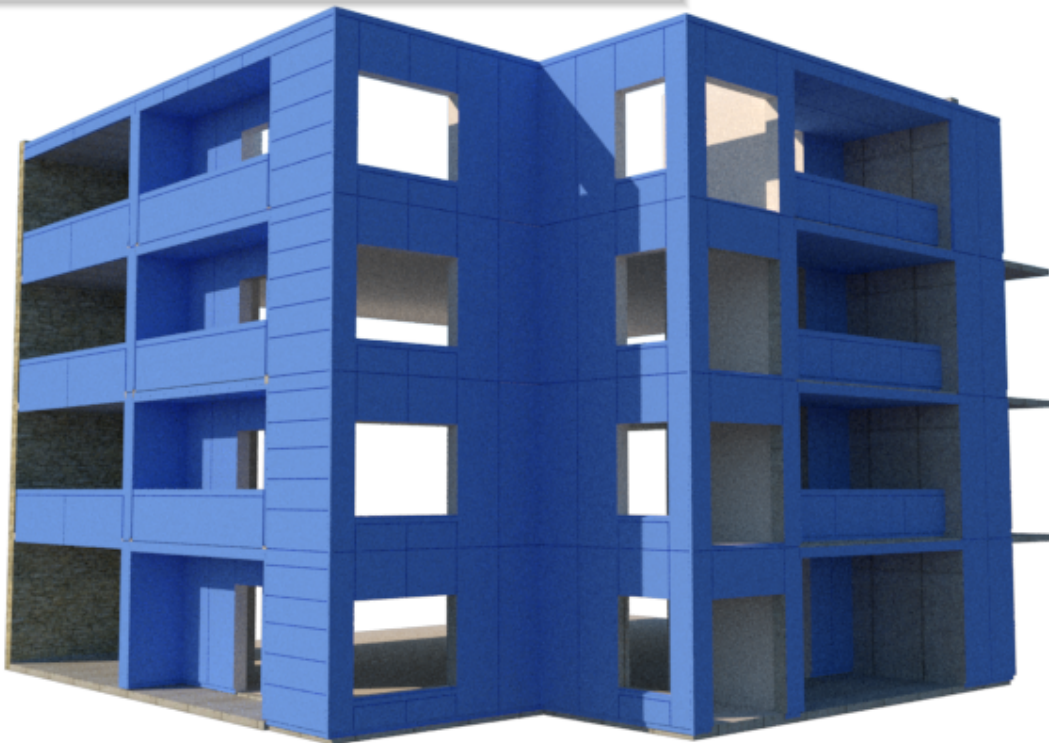
Cassette Cladding attach a variety of claddings and transitions them seamlessly.

**BUILDING FASCIA**



**WALL**

**BUILDINGS OF VARYING DETAILS AND COMPLEXITY**



Cassette Cladding applies common proprietary design principles and installation techniques for different cladding types. The componentry used is designed to change the system configuration based upon requirements that may apply to the specific building for example cladding type (ACM, Aluminium), building complexity and performance requirements (like fire performance).

This guide provides a step-by-step method to enable the building designer to document the cladding requirements to avoid further clarification requests or cost overruns resulting from insufficient information.

### STEPS

- 1) Choose the correct Cassette Cladding option
- 2) Review the relevant Cassette Cladding technical specification
- 3) Review details
- 4) Review related trade requirements
- 5) Incorporate the Cassette Cladding requirements on the architectural drawings
- 6) Maintenance

### Step 1 – Choose the appropriate Cassette Cladding option

Cladding type	Cassette Cladding System	Features
Aluminium Composite Panel	D-4ACP	<ul style="list-style-type: none"> <li>• 87mm cladding system depth</li> <li>• Cladding cavity insulation*</li> <li>• Wide range of interface details.</li> </ul>
	L-4ACP	<ul style="list-style-type: none"> <li>• 50mm cladding system depth</li> </ul>
Solid Aluminium	D-3AL	<ul style="list-style-type: none"> <li>• 86mm cladding system depth</li> <li>• Cladding cavity insulation.</li> <li>• Wide range of interface details.</li> </ul>
	L-3AL	<ul style="list-style-type: none"> <li>• 49mm cladding system depth</li> </ul>

<sup>1</sup> Where the above criteria are required from the buildings specific cladding design intent, the Cassette Cladding system can be joined to conventional cladding systems.

Based upon the building type and requirements select the appropriate Cassette Cladding system. (This guide only provides details for the highlighted system.)

### Step 2 – Review the relevant Cassette Cladding technical specification

This document is guidance for suitably qualified building construction professionals like architects, designers and specifiers who want to incorporate Cassette Cladding in the exterior façade of a building.

The guidance of this document is suitable to apply Cassette Cladding, in combination with other building elements, as a non-load-bearing external wall cladding system for buildings within the following scope:

- Wall structures able to structurally support the weight of CC and withstand wind pressures up to 3kPa ULS; however, the details in this document shows structural elements for and principles applied by NZS3604:2011
- All New Zealand wind zones up to and including EH and defined in NZS 3604.
- All corrosion zones as defined in NZS3604:2011

The Cassette Cladding system has the following limitations and features:

- Not suitable for non-vertical exposed surfaces; however suitable for Sheltered horizontal surfaces like soffits.
- Front elevations of cassette panels must be rectangular or square and cannot be curved or tapered<sup>1</sup>.
- Fabrication of panels by approved Cassette Cladding fabrication partners.
- Installation of all components may take place by Cassette Cladding installation partners or general builders can install simple projects<sup>2</sup>.

<sup>2</sup> Work may have to be done under the supervision of a Licensed Building Practitioner - therefore familiarize

- Fire performance for building up to 25m in height is achievable<sup>3</sup>.
- Maximum panel sizes are 5000mm x 1570mm with no colour restriction due to thermal expansion.
- Adhere to elevated panel module requirements to achieve various installation sequencing options during construction or thereafter. (Bottom to top of building, top to bottom or random)

Designers must verify that their design intent meets the requirements of the NZBC. Any modification to the details provided in this document may require verification testing.

Refer to the latest version of Cassette Cladding D-4ACP Product Technical Statement published on [www.kaneba.co.nz](http://www.kaneba.co.nz) and make sure it is suitable for your intended use. The information in this document is in addition to that of the Product Technical Statement.

For consistency across different building trades this document references various NZBC Acceptable Solutions. These Acceptable Solutions are not necessarily a requirement of Cassette Cladding but were adopted to simplify compliance reviews.

For use of Cassette Cladding outside the scope of this document the Designer, architect or engineer must undertake specific engineering design (SED). For advice on designs outside the scope of this specification ask Kaneba on 021447564 or e-mail [Jan@kaneba.nz](mailto:Jan@kaneba.nz).

**Kaneba limit its liability for the content of this document to the extent that it (or the version applicable at the time) was used as supporting information for applying for building consent AND the building consent application was approved.**

### Step 3 - Details

Refer the current Cassette Cladding Details document published on [www.kaneba.co.nz](http://www.kaneba.co.nz) for available detail options.

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yourself with the building consent and legislative requirements

### Step 4 – Review related trade requirements

Project design is undertaken by the Designer. The building Designer combines different methods of construction and materials, including the Cassette Cladding, for the overall design of a building.

#### **4.1 Moisture Management**

It is the responsibility of the Designer to identify moisture related risks associated with the building design.

Exterior walls must be designed to effectively manage moisture, considering both the interior and exterior environments of the building, particularly in buildings that have a higher risk of wind driven rain penetration, or where these buildings are artificially heated or cooled.

Wall openings, penetrations, junctions, connections, windows sills, heads, and jambs must incorporate appropriate flashings for waterproofing that are not all addressed in the Cassette Cladding system. Other materials, components, and installation methods used to manage moisture in external walls, must comply with the requirements of relevant standards and the NZBC.

For further information in relation to designing for weather tightness, refer to BRANZ Ltd [www.branz.co.nz](http://www.branz.co.nz) and the New Zealand government Building Performance website [www.building.govt.nz](http://www.building.govt.nz)

#### **4.2 Fire Resistance and Spread of Flame**

Upon approval Cassette Cladding can be used where spread of flame needs to be controlled outside<sup>i</sup> or inside<sup>ii</sup> buildings. Cassette Cladding cannot be used to achieve fire ratings due to its insignificant mass to stop flame.

To comply with section C (fire of NZBC) there are two pathways to compliance to meet clauses C3.5 & C3.7 for exterior walls:

- Evaluating separate components of the CC and underlying wall based on ISO5660
- Intermediate (NFPA285) or large-scale testing in the form of BS8414.

<sup>3</sup> Based on MBIE Guidance for Fire Testing Requirements dated December 2018.

### 4.3 Compatibility of materials

It is the Designers responsibility to consider the effects of compatibility of materials in the building design. Specific attention must be given at penetrations and intersections of Cassette Cladding with other components of the building. Examples would include wooden weatherboard treated with a copper-based preservative installed above the aluminium-based Cassette Cladding system. The same would apply to copper or zinc products in contact with or discharging water onto the Cassette Cladding.

Refer NZBC Acceptable Solution 'E2/AS1' Table 20 "Material selection", Table 21 "Compatibility of materials in contact" and Table 22 "Compatibility of materials subject to run-off".

### 4.4 Structural adequacy of wall frames

In addition to any NZBC / NZS3604 and framing manufacturer requirements the following applies for Cassette Cladding.

Framing shown in Cassette Cladding detail drawings of this specification incorporate a rigid direct fixed air barrier<sup>4</sup>.

Suitable framing must be positioned in locations where the air barrier needs attachment and where Cassette Cladding require attachment to the wall structure, which generally are located at panel edges (offset to the dimensions shown on the design details<sup>5</sup>.)

PLAN POSITIONS	FRAMING / STRUCTURE REQUIREMENT
Internal Corner	Without a stud centreline offset 163mm <sup>6</sup> from the internal corner CCS4 will be fixed on nogs at maximum 800mm c/c.
External Corner	Without a stud centreline offset 51mm <sup>7</sup> from the external corner CCS5 will be fixed on nogs at maximum 800mm c/c.

<sup>4</sup> As required for wind pressures above 1.5kPa.

<sup>5</sup> Joint center does not match the position of the frame center.

<sup>6</sup> 150mm for a flexible underlay, 156mm for a 6mm rigid underlay, 163mm for a 13mm rigid underlay.

Vertical panel joint centre	A stud is required at the centreline of every vertical panel joint.
<b>HORIZONTAL POSITIONS</b>	<b>FRAMING / STRUCTURE REQUIREMENT</b>
Bottom of wall	Nogs are required between studs right above the floor plate to provide continuous framing to receive screws 64mm C/C above FFL. (This will provide a bottom edge of panel 75mm above FFL)
Inter-storey floor	Continuous nogs / frame is required 100mm C/C below the FFL (to provide a joint C/C 100mm below FFL)
Top of wall	Continuous nogs / frame is required 100mm C/C below the top edge of the structure (to provide a joint C/C 100mm below the top edge of the structure)
Mid floor	Continuous nogs are required at joint C/C between floor levels.
Bottom of fascia	CCS10 only require fixing to studs, so no continuous nogs are required.

### 4.5 Building underlay requirements

In addition to any NZBC / NZS3604 / E2/AS1<sup>8</sup> and building underlay manufacturer requirements the following applies for Cassette Cladding.

Cassette Cladding recommend a rigid building underlay<sup>9</sup> to limit airflow through the wall construction. Without an air barrier the moisture management, fire protection and structural aspects of the details provided in this specification will be compromised.

<sup>7</sup> 64mm for a flexible underlay, 58mm for a 6mm rigid underlay, 51mm for a 13mm rigid underlay.

<sup>8</sup> Table 23 and paragraphs 9.1.4, 9.1.5, 9.1.6, 9.1.7

<sup>9</sup> It simplifies visual verification of its integrity from the outside of the building when installing CC. Suitable options assists in protecting the underlying structure from fire.

The Acceptable Solution E2/AS1 requires external walls to have barriers to airflow, in the form of:

- a) Interior linings with all joints stopped for wind zones up to Very High; however, this is not an acceptable air barrier for Cassette Cladding because its effectiveness cannot be relied upon during the life of the building.
- b) Rigid underlays for buildings in Extra High wind zones, or
- c) Where walls are not lined, such as attic spaces at gable ends, an air barrier complying with NZBC 'E2/AS1' Table 23, and
- d) For attached garages, underlays to NZBC 'E2/AS1' Paragraph 9.1.3.4.

For EH wind zone and specific design projects where the wind pressures are higher than 1.5kPa (ULS), a Rigid Air Barrier must be used.

Rigid building underlays must be installed to have the surfaces flat with all their required sealing tapes and fasteners. Where flexible building underlays are used, they must be supported by solid backing in locations where Cassette Cladding flashing interfaces with it.

#### 4.6 Water resistive barrier requirements

Water Resistive Barriers are recommended over rigid building underlays and may be suitable to replace some flashings.

#### 4.7 Flashing requirements

All wall openings, penetrations, intersections, connections, window sills, window heads and window jambs must be flashed. The Cassette Cladding installation provides several proprietary flashing details; however, consider the adequacy and extent of these to determine if all specific details for the project are covered.

The building underlay must be appropriately incorporated with penetration and junction flashings. Materials must be lapped in such a way that water tracks down to the exterior face of the building underlay. The selected flashing material must comply with the durability requirements of table 20 on the NZBC Acceptable Solution 'E2/AS1'

Cassette Cladding D13 as an example requiring a flashing at an internal corner termination.

#### 4.8 Penetrations

A competent weathertightness specialist must design all cladding penetration details for each project.

### Step 5 – Incorporate Cassette Cladding requirements on drawings

#### 5.1 General

Cassette Cladding design is performed by the building Designer.

The design must show specific Cassette Cladding configurations on elevation drawings and how it relates to the rest of the elements on the façade of the specific project.

Refer the Cassette Cladding detail document and supplementary notes for guidance on the Cassette Cladding design. Specifically note:

- Top of parapets (copings) must always have a minimum slope of 5°
- Windowsill slopes must always have a minimum slope of 10°
- Each individual Cassette Cladding panel is provided with ventilation and drainage spreading the ventilation load over the entire wall surface and not only at certain wall locations.
- Cassette Cladding panels must be rectangular or square in shape.
- Cassette Cladding panels must be at least 300mm high<sup>10</sup> and 100mm wide. (Up to approximately 1575mm x 5000mm<sup>11</sup>)
- The Cassette Cladding design provides for thermal movement of all colours – so panel sizes don't have to be limited on low LRV surfaces to accommodate for greater amounts of thermal movement.
- On roofs and enclosed balustrades, the minimum clearance between the bottom edge of Cassette Cladding and the external roof or deck surface must be 35mm as required by NZBC Acceptable Solution 'E2/AS1' Figure 18 (Page 57)
- Do not design Cassette Cladding so that it may remain in contact with water or ground.

<sup>10</sup> To practically insert and remove panels from First Fix support rails.

<sup>11</sup> Dependent on panel type selection and facing cladding type.

### 5.2 Cladding colour options

Different cladding options and brands have different sheet modules available. To avoid supply issues refer the following general guidance.

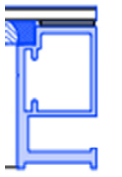
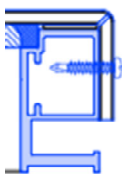
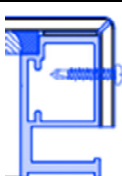
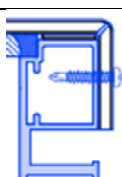
Cladding options	Lead times, sizes, colours
<b>ACM</b> Alcopanel FR	500m <sup>2</sup> MOQ 5-week lead time from South Korea factory W: 1020mm, 1250mm, 1575mm L: ≤ 5000mm Refer Alcopanel colour chart for available options
<b>ACM</b> Alucobond PLUS	5-week lead time from Australia stocks Specific sizes Refer Alucobond colour chart for available options and sizes
<b>Prefinished Aluminium</b> Mondoclad	5-week lead time from Australia stocks Specific sizes Refer Mondoclad colour chart for available options and sizes
<b>Powder coated Aluminium</b>	1200mm x 2400mm Dulux powder coatings range

### 5.3 Panel edge selection and panel sizes

Refer detail drawings P01, P01A, P01B, P01C, P02, P02A, P02B, P02C, P02D for panel types available.

Based upon the edge option panel sizes will vary and extrusion colours require consideration.

TYPICAL PANEL JOINT	
PANEL TYPE P01	
	P01 – Option 1 (ACM) Max yield H – 43mm; W – 43mm
	P01 – Option 2 (ACM) Max yield H – 43mm; W – 43mm
	P01 – Option 3 (Solid Aluminium) Max yield H – 43mm; W – 43mm
	P01 – Option 4 (Solid Aluminium) Max yield H – 43mm; W – 43mm
PANEL TYPE P02	
	P02 – Option 1 (ACM / Solid Aluminium) Max yield H – 0mm; W – 0mm
	P02 – Option 2 (ACM / Solid Aluminium) Max yield H – 0mm; W – 0mm

	P02 – Option 3 (ACM / Solid Aluminium) Max yield H – V1mm; W – 0mm
	P02 – Option 4 (ACM / Solid Aluminium) Max yield H – 70mm; W – 70mm
	P02 – Option 5 (ACM / Solid Aluminium) Max yield H – (35+V1)mm; W – 70mm
	P02 – Option 6 (ACM / Solid Aluminium) Max yield H – 35mm; W – 70mm
<p><i>Max yield shows the maximum panel size possible to fabricate from a module cladding sheet are purchased in. Eg. for Panel P01 Option 1 a 4000mm x 1250mm sheet will produce a panel size (4000mm – 43mm = 3957mm) x (1250mm -43mm = 1206mm)</i></p>	

- Facing panel finishes (where they are not all the same as per 5.2 Panel Colour Options)
  - Joint finishes (where they are not all the same as per 5.3 Joint extrusion colour selection)
  - Marking relevant details from this document (or the design drawings for the project) and their specific positioning.
  - Showing specific critical dimensions. (Eg. Where panels need to be an exact size it would be shown on the drawings otherwise it would be subject to adjustment to actual as built building structures.)
- 2) Co-ordination requirements with other work.

### 5.4 Extrusion colour selection

Available powder coating colours options are shown on the Altus chart – Link.

Anodizing options are:

AN1 – Natural anodized 20um	15 Year durability
AN2 – Black anodized 25um	15 Year durability

### 5.5 Detail Design

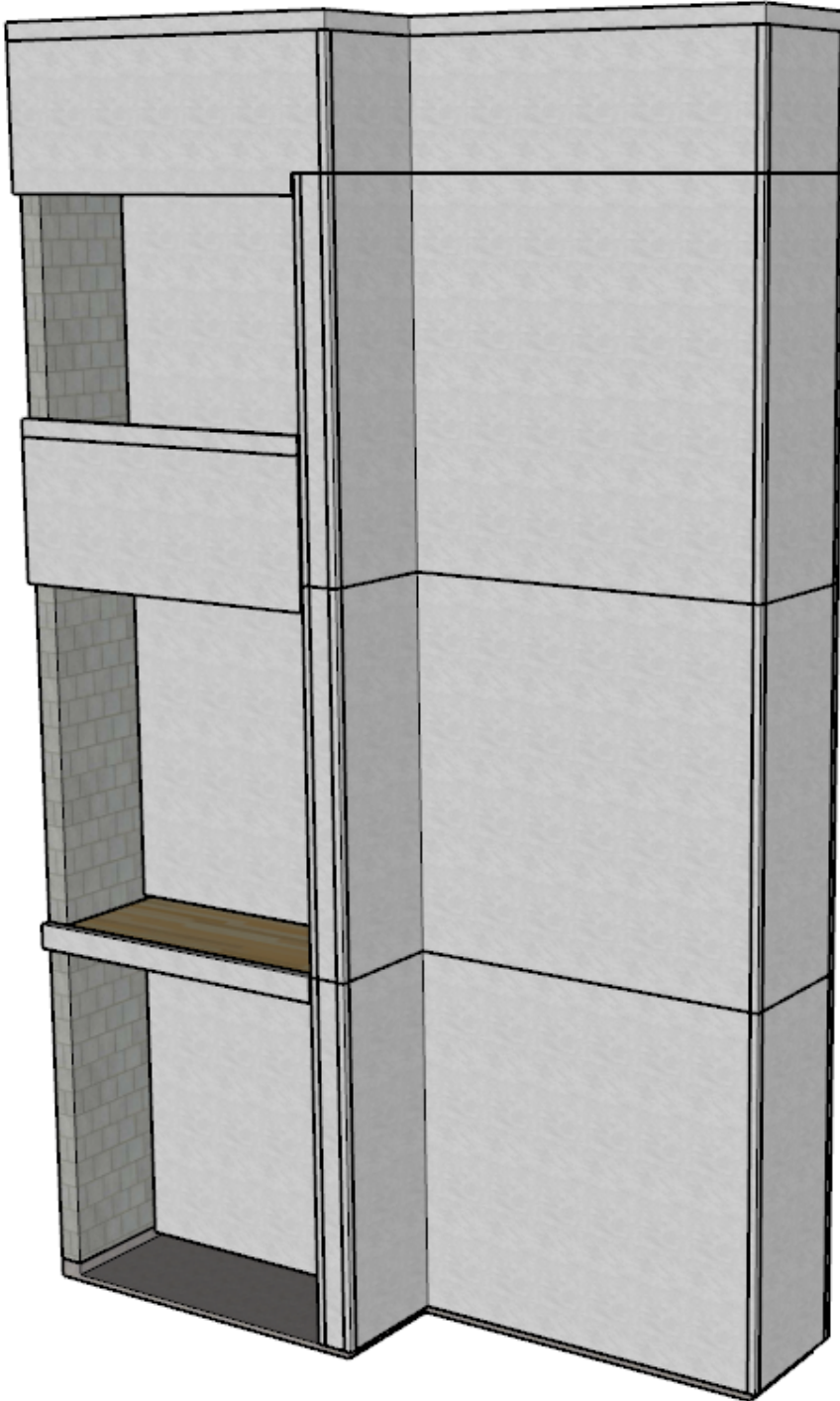
The Cassette Cladding contractor require the following information to provide an accurate quotation for and execute the work:

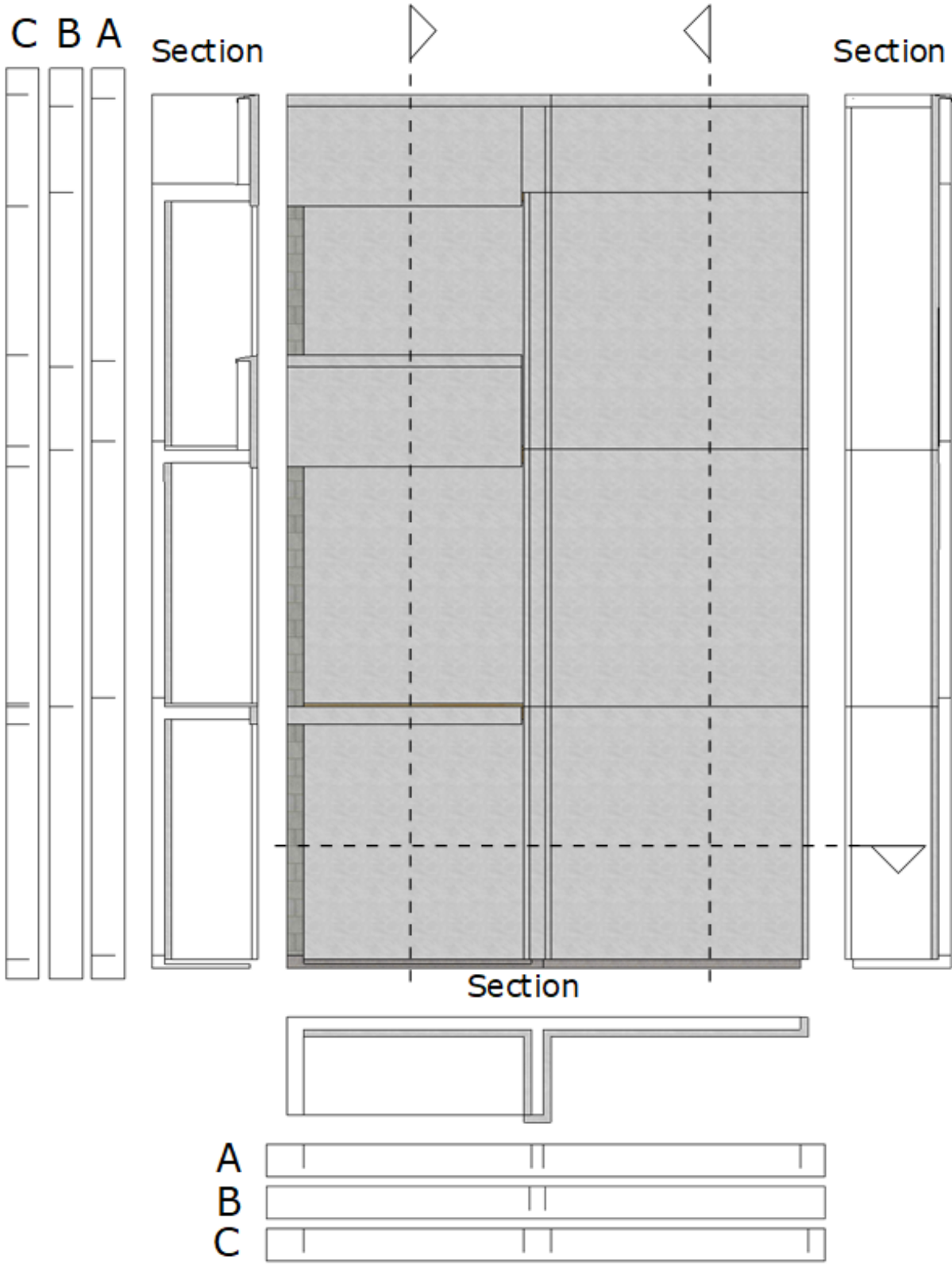
- 1) Fully dimensioned elevation drawings showing:
  - Cassette Cladding facing panels as part of the building façade.



Example of 3 storey building facade

**Perspective view (showing essential joint lines)**





Column A: Level lines shown in column A relates to the building and are to be provided by the designer. From top to bottom they show:

- top edge of structure,
- Top structural edge of balustrade L2
- FFL L2
- FFL L1
- FFL GL

Column B: Horizontal joint centrelines shown in column B are all derived from the lines provided in column A and are not changeable.

Column C: These edges also relate to the structure provided.

Designer add further horizontal joints for visual effect on the following basis:

- Joint lines to accommodate limited sizes of cladding panels.
- Joint lines for visual effect.
- All panels heights must be minimum 300mm.

Designer add window or door openings.

Row A: Lines shown in Row A relates to the building and are to be provided by the building designer. From left to right they show:

- Concrete wall Cassette Cladding will terminate against.
- Wall Cassette Cladding will terminate against.
- Wall Cassette Cladding will terminate against.
- Edge of structure around which Cassette Cladding will terminate.

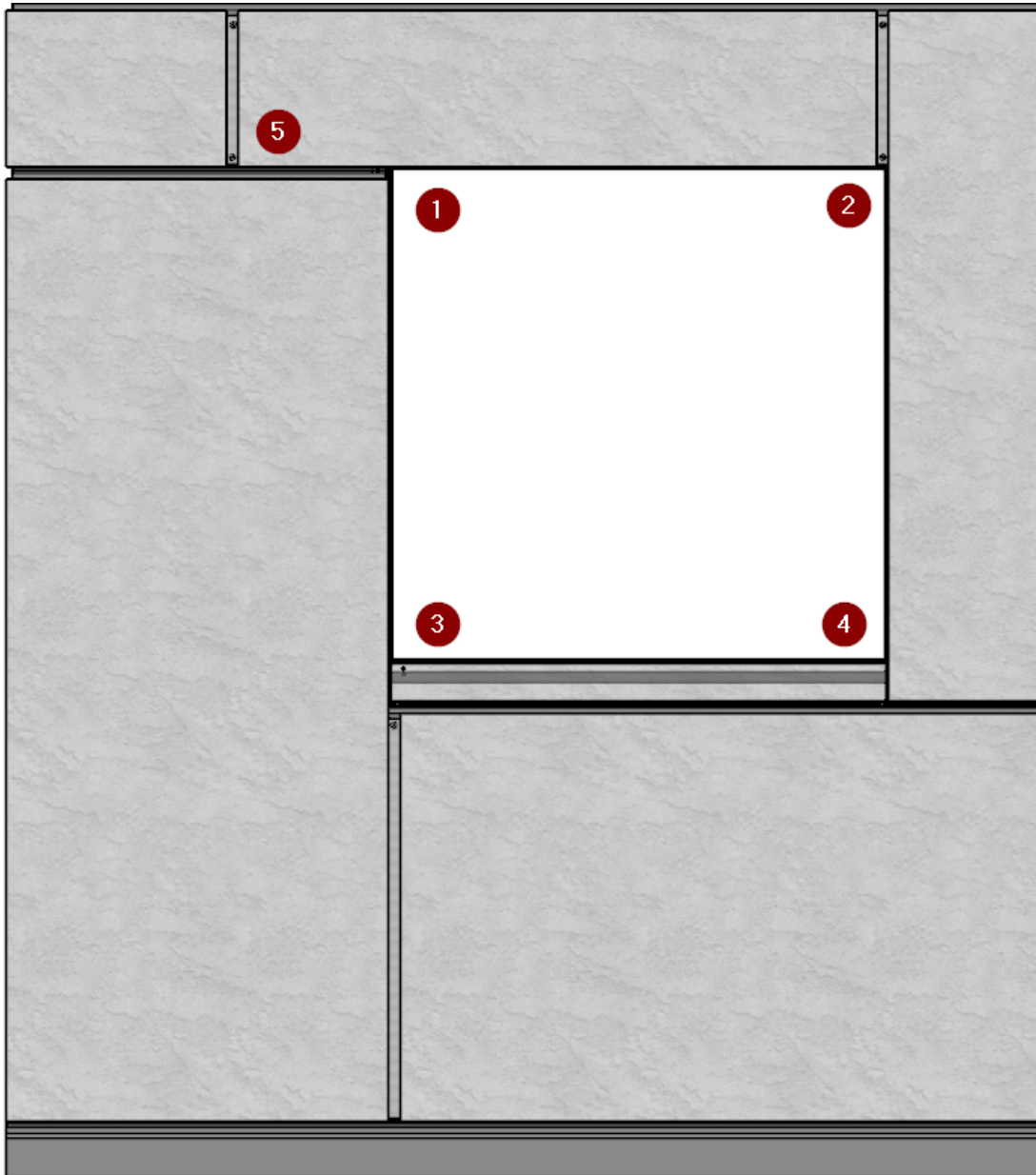
Row B: Joint centrelines derived from Row A

Row C: Cassette Cladding finishing lines derived from Row A

Designer add further vertical joints for visual effect on the following basis:

- Joint lines to accommodate limited sizes of cladding panels.
- Joint lines for visual effect.
- All panels heights must be minimum 300mm.
- A wall between two internal corners must at least have two vertical panels.

Example of joint positions for a typical floor level where panels terminate at bottom



Note 1: Where a horizontal joint meets a window head the side of the joint falls below the window head.

Note 2: Where a vertical joint meets the window head the side of the joint aligns with the inside of the window jamb.

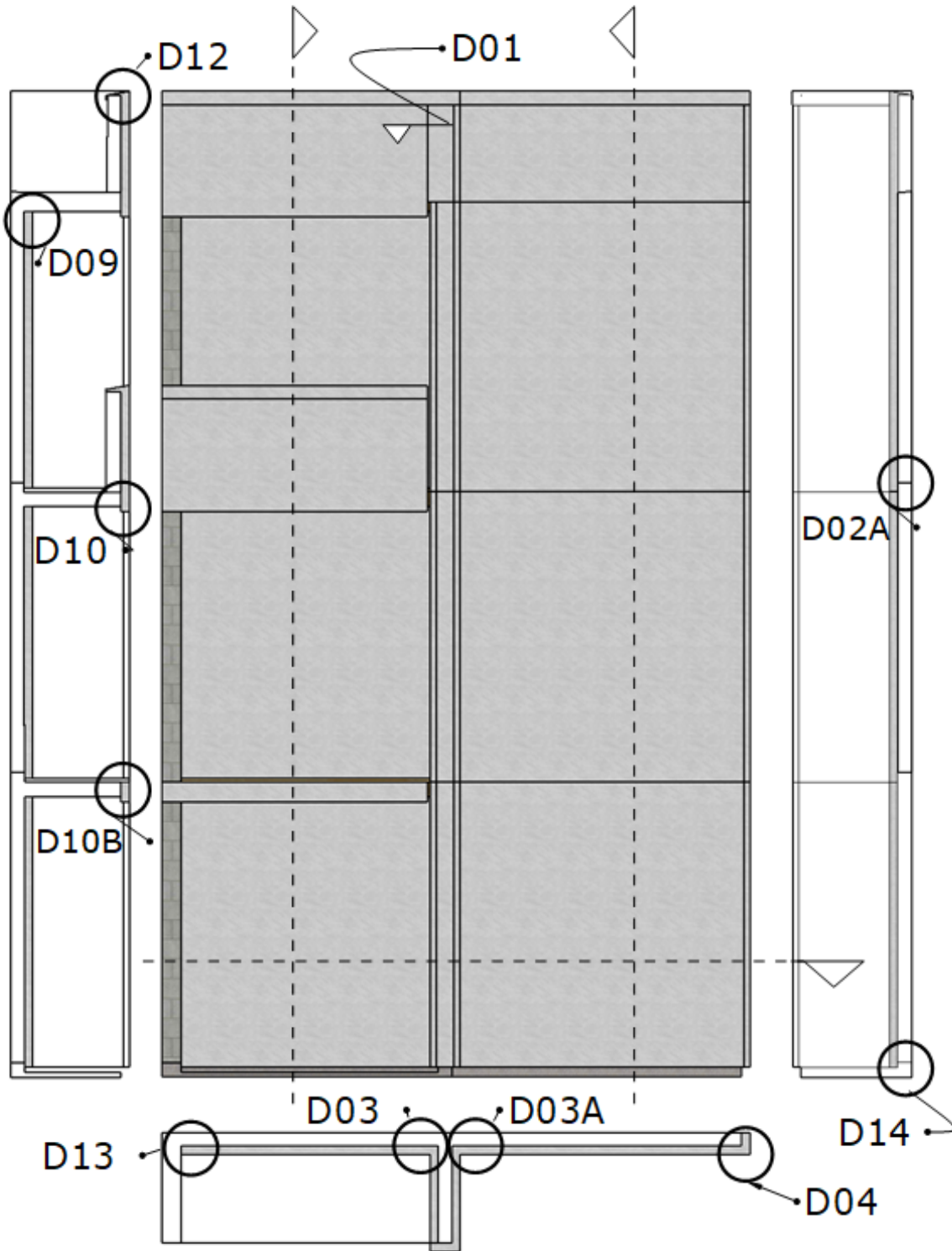
Note 3: Where a vertical joint meets the windowsill the side of the joint aligns with the inside of the window jamb.

Note 4: It is recommended to always have vertical joints on both sides below windows to avoid water staining on cladding panel surfaces that fall within washed areas<sup>12</sup>.

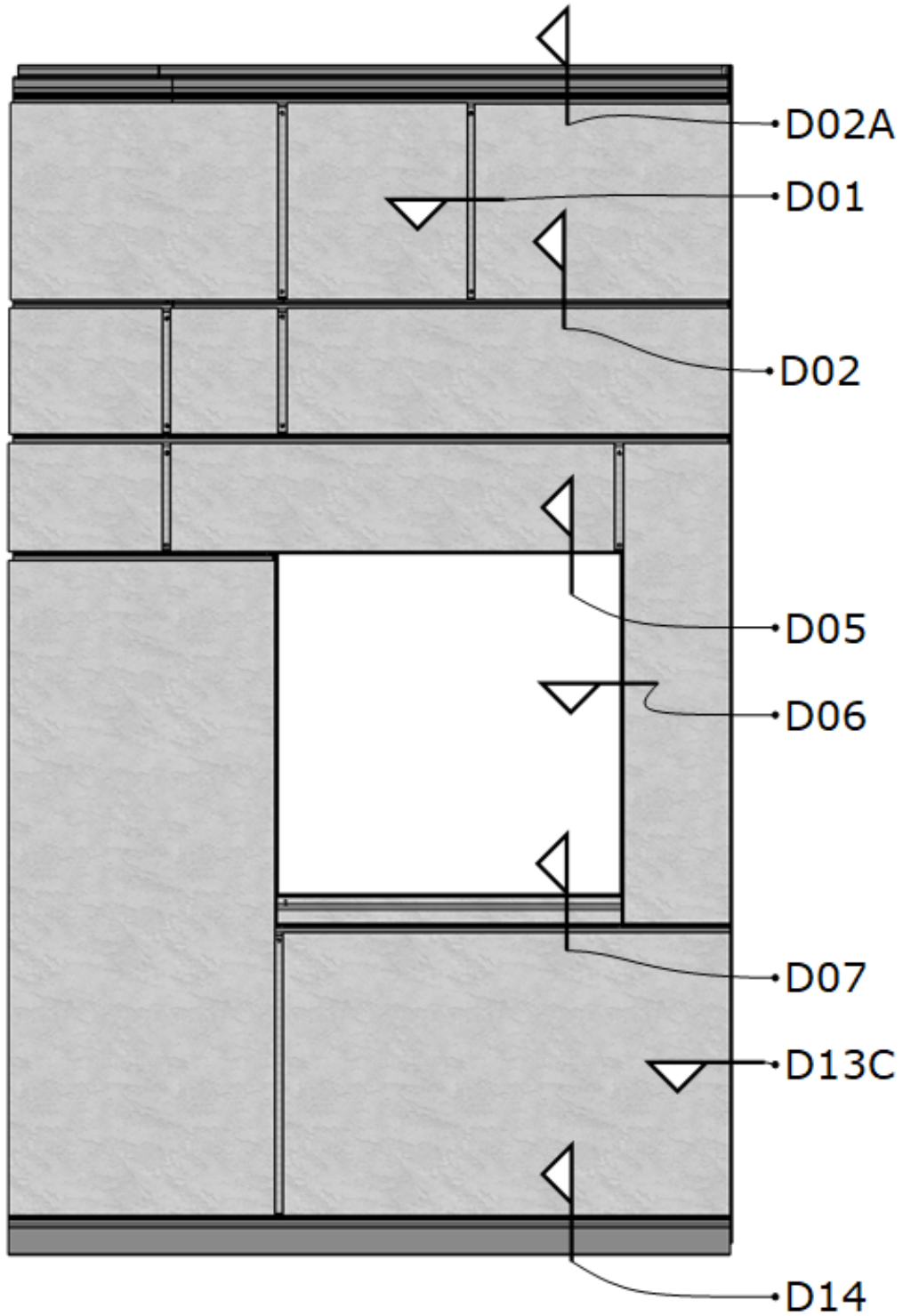
Note 5: Staggered joints are achievable required.

<sup>12</sup> Washed areas are walls that normally will be washed down with rainwater when it rains.

ONCE JOINT POSITIONS ARE DETERMINED ADD DETAIL REFERENCES  
 Example of details applicable on a three-level building



Example of details applicable on a typical portion of a single storey wall



## 6 MAINTENANCE

It is the responsibility of the Designer to determine normal maintenance requirements to comply with NZBC Acceptable Solution B2/AS1.

The extent and nature of maintenance will depend on the geographical location and exposure of the building. As a guide, it is recommended that basic normal maintenance tasks shall include but not be limited to:

- Washing down exterior surfaces every 6 – 12 months. (Do not use a high-pressure water blaster to wash down the cladding.)
- Maintaining the exterior envelope and connections including joints, penetrations, flashings and sealant that may provide a means of moisture entry beyond the exterior cladding.
- Pruning back vegetation that is close to or touching the building.
- Ensure finished ground levels maintain the required clearances from the building.

## 7 SPECIFICATION CHECKLIST

ITEM	DESCRIPTION	INCORPORATE IN CASSETTE CLADDING SPECIFICATION	CHECK
St 1	Choose correct Cassette Cladding option	<i>Eg. Cassette Cladding D-4ACP</i>	
St 2	Review relevant Cassette Cladding PTS		
St 3	Are relevant Cassette Cladding details suitable for the intended building		
St 4	Incorporate related trade requirements on project drawings:		
	<ul style="list-style-type: none"> <li>• Weathertightness</li> </ul>		
	<ul style="list-style-type: none"> <li>• Spread of fire</li> </ul>		
	<ul style="list-style-type: none"> <li>• Materials compatibility</li> </ul>		
	<ul style="list-style-type: none"> <li>• Structure adequacy</li> </ul>		
	<ul style="list-style-type: none"> <li>• Building underlay</li> </ul>		
	<ul style="list-style-type: none"> <li>• Water resistive barrier</li> </ul>		
	<ul style="list-style-type: none"> <li>• Flashings</li> </ul>		
	<ul style="list-style-type: none"> <li>• Penetrations</li> </ul>		
St 5.1	General Cassette Cladding requirements and limitations shown on drawings		
St 5.2	Cladding colour option/s	Brand, Model, Colour code <i>Eg. Alcopanel FR 106 Silver Metallic</i>	
St 5.2	Cladding panel sizes shown on drawings		
St 5.3	Cassette Cladding perimeter frame option	<i>Eg P01 – Option 1</i>	
St 5.4	Cassette Cladding extrusion colour	<i>Eg Duratec x xx x xx</i>	
St 5.5	Project drawings requirements.		
	<ul style="list-style-type: none"> <li>• Reference levels for all FFL levels</li> </ul>		
	<ul style="list-style-type: none"> <li>• Reference level to top edge of structure</li> </ul>		
	<ul style="list-style-type: none"> <li>• Cassette Cladding panel edges or joint centrelines</li> </ul>		
	<ul style="list-style-type: none"> <li>• Correct positioning of Cassette Cladding joints by windows and other openings</li> </ul>		
	<ul style="list-style-type: none"> <li>• Cassette Cladding detail references</li> </ul>		
St 6	Maintenance schedule to building owner		
	<ul style="list-style-type: none"> <li>• How often to be washed down</li> </ul>		
	<ul style="list-style-type: none"> <li>• What to be checked</li> </ul>		
	<ul style="list-style-type: none"> <li>• External factors to address that may affect the cladding</li> </ul>		