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Friday 25 August 2017

NSW Department of Planning and Environment (the Department)

Level 22, 320 Pitt St, Sydney 2000

Via email

Attention: Mr. Chris Ritchie, Director, Industry Assessments

Dear Chris,

Re: NewCold Marsden Park - SSDA Amendment - Architectural Update

Further to our meeting with Department and Blacktown Council Thursday 20 July 2017 and our further telephone discussion with Blacktown Council Tuesday 25 July 2017, we have produced a number of design concepts that should assist in addressing the potential concerns of the Department in addition to those concerns raised by Blacktown Council in their submission dated Sunday 9 July 2017 and the communications that followed.

Changes made to the SSDA submission design – as submitted in the EMKC letter dated Thursday 13 July 2017

As outlined in the EMKC letter dated Thursday 13 July 2017 (refer *Annexure B*) EMKC carefully reviewed the feedback provided by the Department during our meeting Thursday 6 July 2017 and the content of the submission made by Blacktown Council dated Sunday 9 July 2017. The SSDA submission design was amended to incorporate the following:

1. **Amendment to height of "low bay" warehouse component**
    a. Revised ridge height of 16m, compared with the previous 20.86m
    b. Subsequent reduction in building volume by approximately 76,749 cubic metres

2. **Review of façade treatment for the "high bay" warehouse component**
    a. As noted in the SSDA amendment application, the "high bay" warehouse dimensions and volume are critical to NewCold's proposed operation and cannot be varied
    b. We made significant design modifications to address these concerns, including:
        i. Introduction of new materials by Kingspan that are able to be affixed to the Kingspan PIR panels, thereby creating visual interest and reducing the visual impact of the "high bay" warehouse
        ii. Introduction of feature elements and revised colour/patterns
        iii. Departure from NewCold's global design standards
    c. We noted that the proposed finishes are manufactured by Kingspan in the Blacktown Local Government Area. If the proposed finishes are not viewed favourably, we are in a position to select alternative imported products.

3. **Addressing the importance of building presentation to street frontages**
    a. Alteration of the office design to create further visual interest to Hollinsworth Road
    b. Alteration of the "technical room" to create further visual interest to the Harris Avenue interface
    c. Departure from NewCold's global design standards

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4. **Significant increasing in landscaping**
    a. Approximately 9,045sqm allocated for landscaping and the employee communal area, compared with 7,042sqm previously

5. **Alteration of signage to meet the requirements set out by Blacktown Council**

6. **Increasing in car parking to 133 spaces, compared with 104 spaces previously**

Further amendments made to take into account feedback provided during meeting with the Department and Blacktown Council Thursday 20 July 2017 and our further telephone discussion with Blacktown Council Tuesday 25 July 2017.

On Monday 24 July 2017 we provided revised plans and on Tuesday 25 July 2017 we provided revised perspectives to the Department and Blacktown Council, illustrating a design that was intended to address the concerns raised during our meeting Thursday 20 July 2017 (refer perspectives below).

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During our telephone conference with Blacktown Council Tuesday 25 July 2017, Blacktown Council expressed their strong request to have the entire high bay treated with a feature finish (either the same finish we had proposed in the above perspectives or an alternative feature finish).

Following our telephone conference with Blacktown Council, we have undertaken extensive design workshops with NewCold and Kingspan (the PIR panel manufacturer) and have developed a design solution that provides visual interest, treats all facets of the high bay warehouse and is still buildable without compromising the integrity of the PIR panels on the facility.

The revised design solutions takes a slightly different approach to the concepts tabled above. Whilst we acknowledge and respect Blacktown Council's request to have the entire surface area of the high bay treated with a feature finish, we are of the firm belief that our revised design solution will create a superior aesthetical outcome.

In order to create a superior architectural and aesthetical outcome we have specified a customised upgraded finish that is superior to the finishing detailed in the perspectives above. The upgraded finish is a Kingspan Dri-design panel product. The finish creates a 3D effect and assists in distracting from the scale of the high bay warehouse without creating the further bulk that was shown in the previous design concepts. A sample installation is shown below:

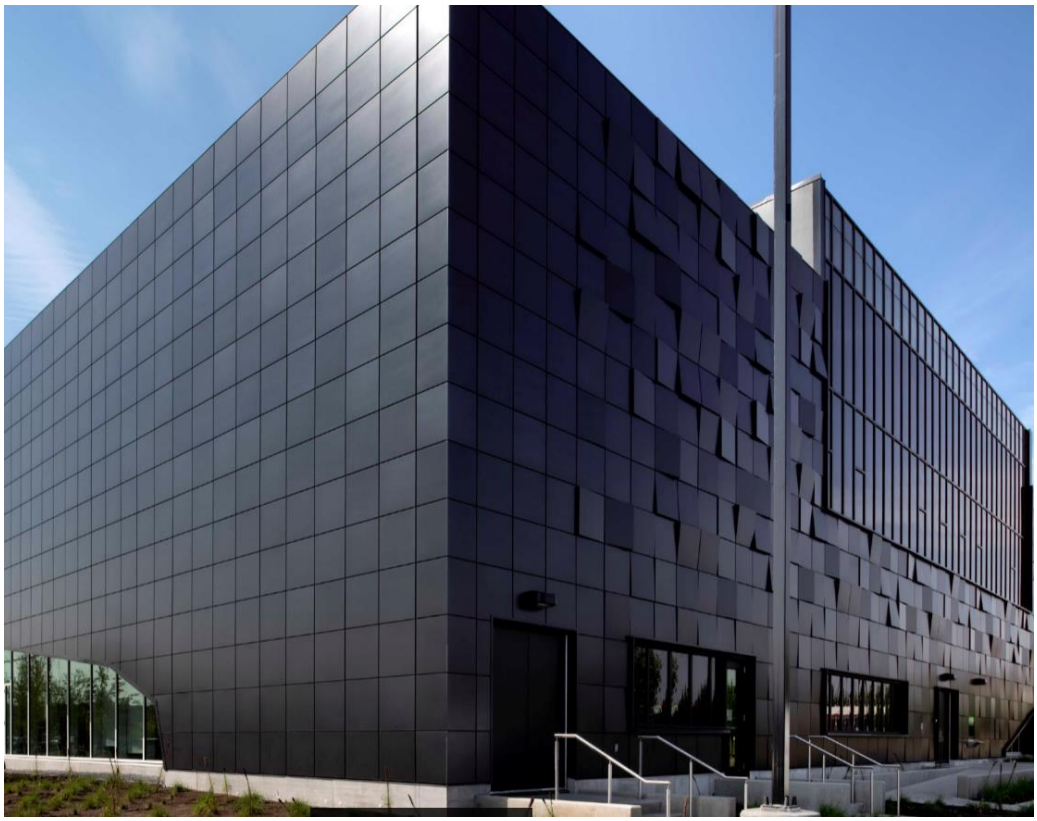

Figure 1: Kingspan Dri-Design Panel Product

Figure 2: Kingspan Dri-Design Panel Product

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We have also had a professional photographer take photographs from the 'sensitive viewpoints' specified by Blacktown Council and we have produced the design to ensure that appearance of the facility is aesthetically pleasing and does not detract from the future intent of these areas. These photomontages are enclosed in the attached architectural documentation.

The following design documentation is enclosed for the review of the Department (refer *Annexure A*, enclosed):

1. Site layout.
2. Elevations.
3. Perspectives.
4. Photomontage
5. Product information for the feature finish.

Conclusion

We appreciate the time and resources that the Department has invested into this SSDA amendment and we welcome the opportunity to discuss the content of this letter.

Yours sincerely,

Edward McKenna
Director | EMKC
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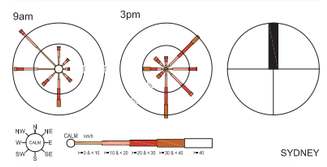
Annexure A: Design Documentation

REVISIONS

A	PRELIMINARY	09.03.17



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PROJECT

NEWCOLD SYDNEY

HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE

PROPOSED ESTATE PLAN

0 25 50 75 100 25 150 200 250m

SCALE: 1:5000 @ A3

CREATE DATE: 18.08.2017 PLOT DATE: 18.08.2017

LAST SAVED BY: karen choi

AU0012 MDP DA01 000 A

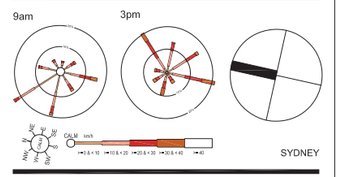
FILE LOCATION: X:\Projects\AU0012 - NewCold Sydney\Architecture\Harris Ave, Marsden Park\AU0012 MDP DA01

REVISIONS

A	PRELIMINARY	31.03.17
B	INDICATIVE RACKING DETAILS	13.04.17
C	CHECK W SURVEY AND TITLE	27.04.17
D	REVISION – COUNCIL COMMENTS	12.07.17
E	REVISION – TRAFFIC CONSULTANT COMMENTS	24.08.17

DEVELOPMENT SUMMARY

SITE AREA	70,300 sqm
HIGH BAY	17,690 sqm
CHILLER DISPATCH	3,714 sqm
FREEZER DISPATCH	3,182 sqm
CHILLER WAREHOUSE	4,256 sqm
FREEZER WAREHOUSE	4,640 sqm
NEWCOLD OFFICE (3 LEVELS)	3,000 sqm
NEWCOLD TECH ROOM (2 LEVELS)	1,200 sqm
TOTAL BUILDING AREA	37,682 sqm
EFFICIENCY	53.60 %
COMMUNAL AREA REQUIRED (3% SITE AREA)	2,109 sqm
OFFICE OUTDOOR AREA	104 sqm
COMMUNAL AREA PROVIDED	2,913 sqm
TOTAL COMMUNAL AREA PROVIDED	3,017 sqm
CARPARKING PROVIDED	133 spaces
HEAVY DUTY PAVEMENT (H)	18,604 sqm
LIGHT DUTY PAVEMENT (L)	3,646 sqm
COVERED PATHWAY	981 sqm



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PROJECT

NEWCOLD SYDNEY

HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE

PROPOSED SITE PLAN

0 5 10 15 20 25 50m

SCALE: 1 : 1000 @ A3

CREATE DATE : 24.08.2017 PLOT DATE : 24.08.2017

LAST SAVED BY: karen choi

AU0012 MDP DA01 002 E

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REVISIONS

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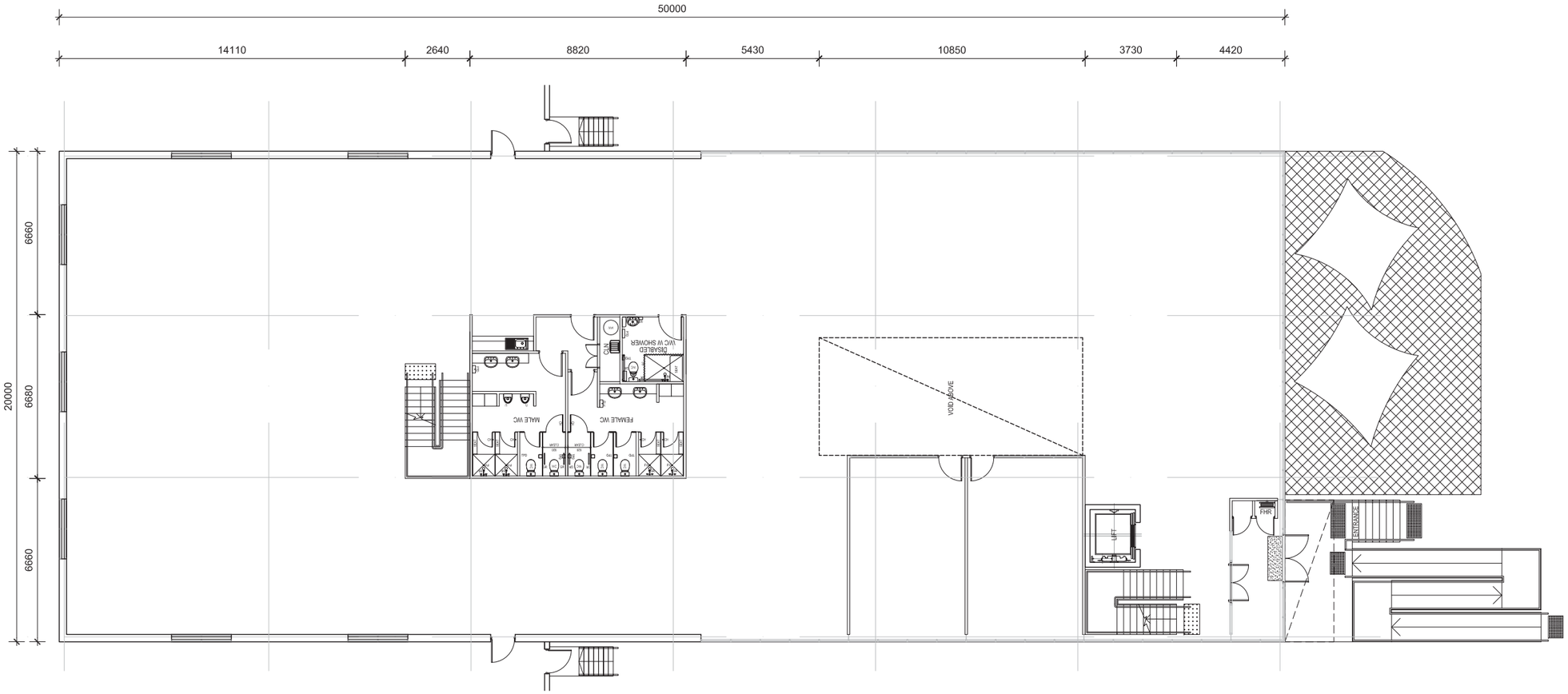
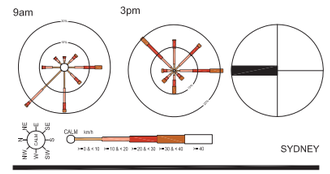


GF OFFICE LAYOUT
Scale 1:200



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PROJECT

NEWCOLD SYDNEY

HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE
PROPOSED GF OFFICE LAYOUT

0 1 2 3 4 5 10m

SCALE: 1:200 @ A3

CREATE DATE: 18.08.2017 PLOT DATE: 18.08.2017
LAST SAVED BY: karen choi

AU0012 MDP DA01 100 A

FILE LOCATION: X:\Projects\AU0012 - NewCold Sydney\Architecture\Harris Ave, Marsden Park\AU0012 MDP DA01

REVISIONS

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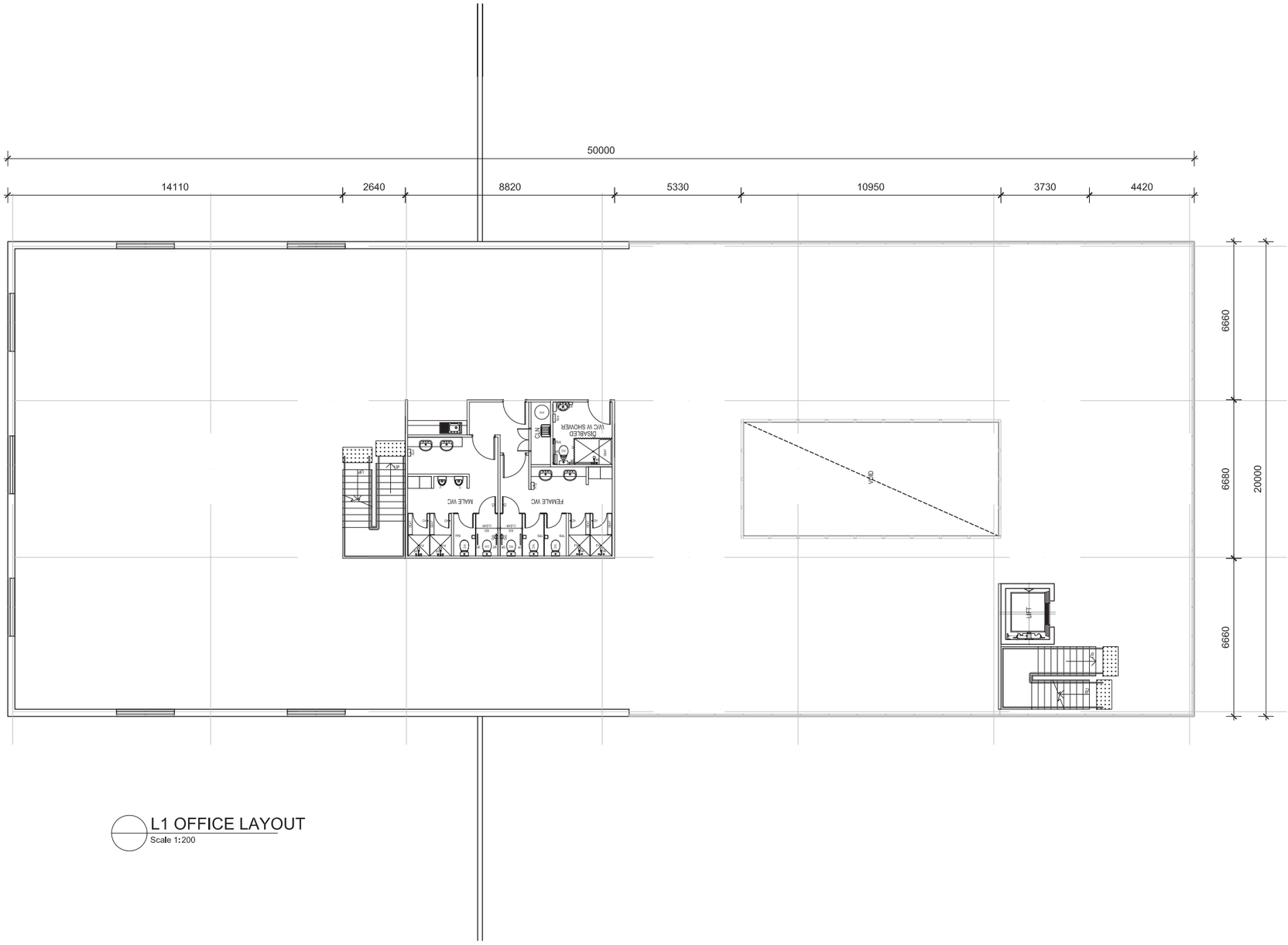
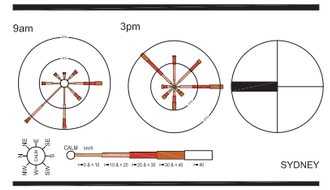


L1 OFFICE LAYOUT
Scale 1:200



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PROJECT

NEWCOLD SYDNEY

HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE
PROPOSED L1 OFFICE LAYOUT

0 1 2 3 4 5 10m

SCALE: 1:200 @ A3

CREATE DATE: 18.08.2017 PLOT DATE: 18.08.2017

LAST SAVED BY: karen choi

AU0012 MDP DA01 110 A

FILE LOCATION: X:\Projects\AU0012 - NewCold Sydney\Architecture\Harris Ave, Marsden Park\AU0012 MDP DA01

REVISIONS

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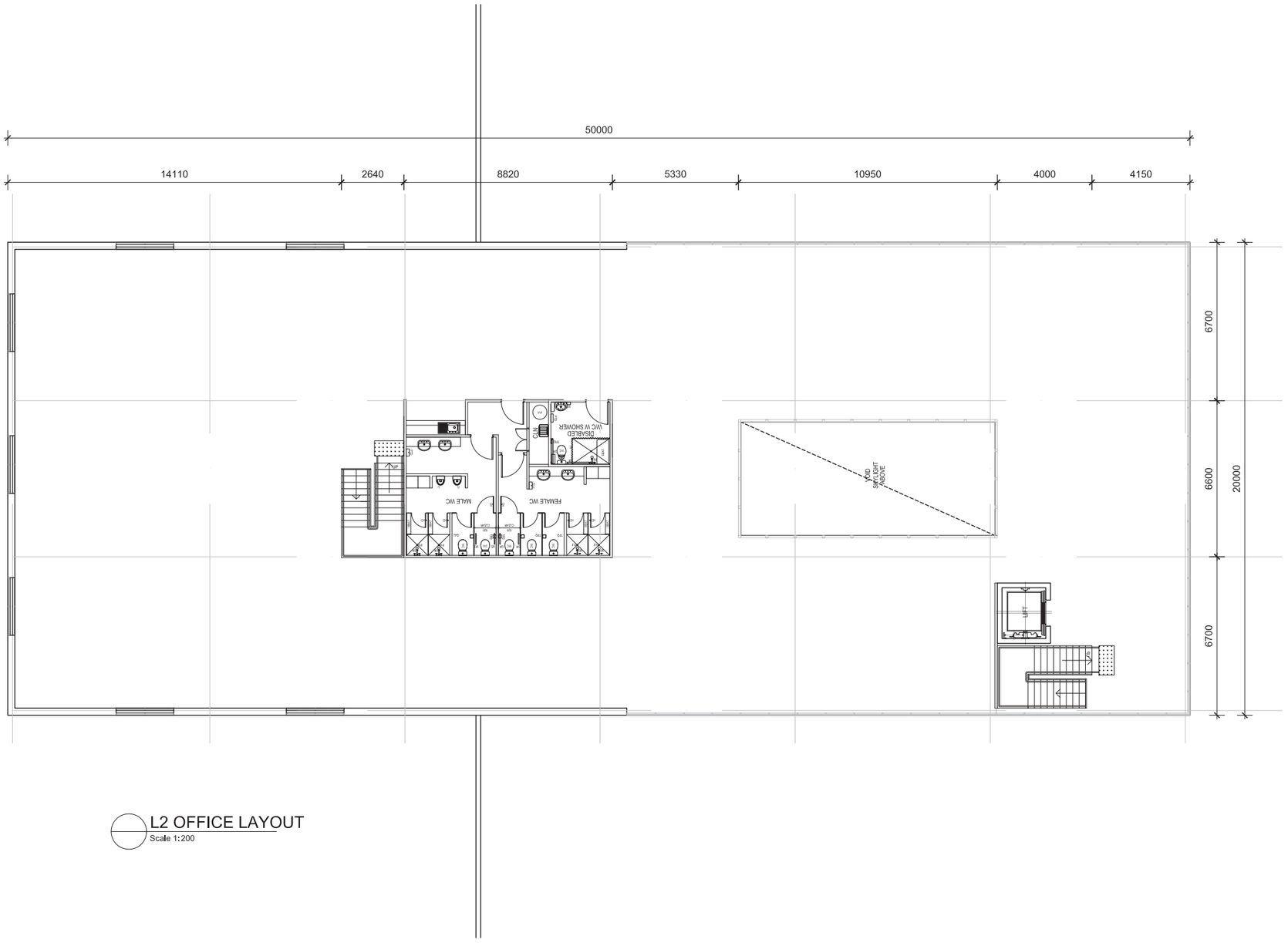

L2 OFFICE LAYOUT
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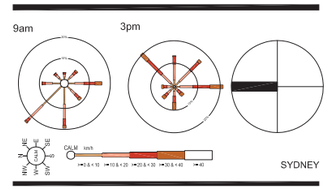

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PROJECT

NEWCOLD SYDNEY

HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE
PROPOSED L2 OFFICE LAYOUT

0 1 2 3 4 5 10m

SCALE: 1:200 @ A3

CREATE DATE: 18.08.2017 PLOT DATE: 18.08.2017

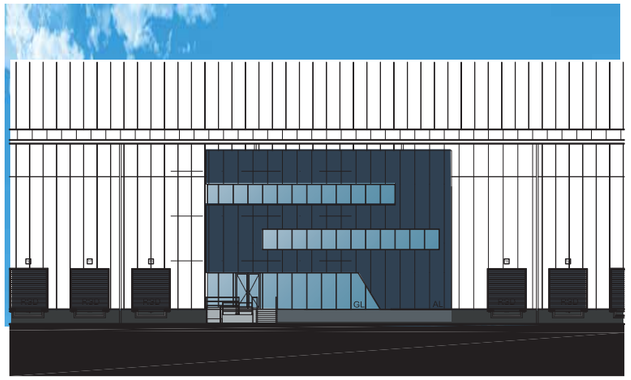
LAST SAVED BY: karen choi

AU0012 MDP DA01 120 A

FILE LOCATION: X:\Projects\AU0012 - NewCold Sydney\Architecture\Harris Ave, Marsden Park\AU0012 MDP DA01

REVISIONS

A	PRELIMINARY	31.03.17
B	METAL SCREEN @ FIRE TANK	13.04.17
C	REVISION – COUNCIL COMMENTS	12.07.17
D	REVISION – COUNCIL COMMENTS	16.07.17
E	REVISION – COUNCIL COMMENTS FACADE TREATMENT	21.07.17
F	REVISION – COUNCIL COMMENTS FACADE TREATMENT	07.08.17
G	REVISION – URBIS COMMENTS FACADE TREATMENT	23.08.17



SOUTH OFFICE ELEVATION
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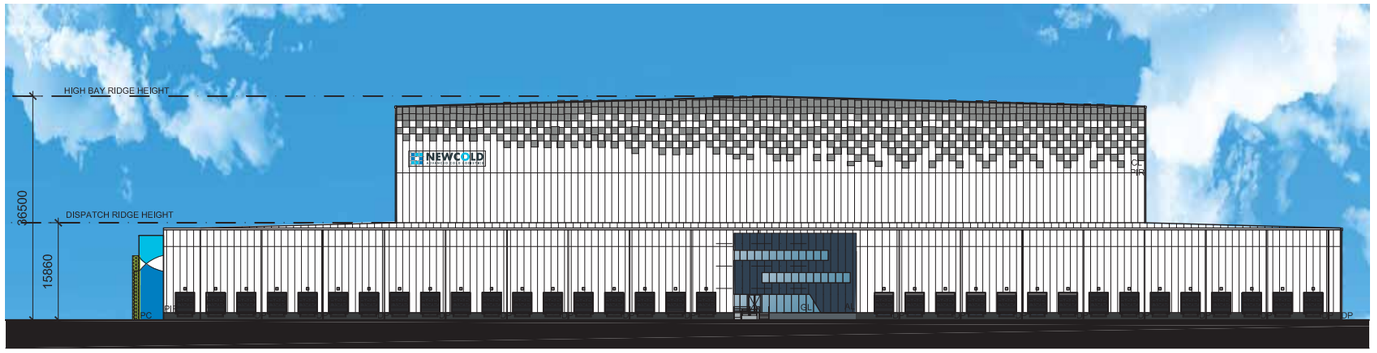

SOUTH ELEVATION
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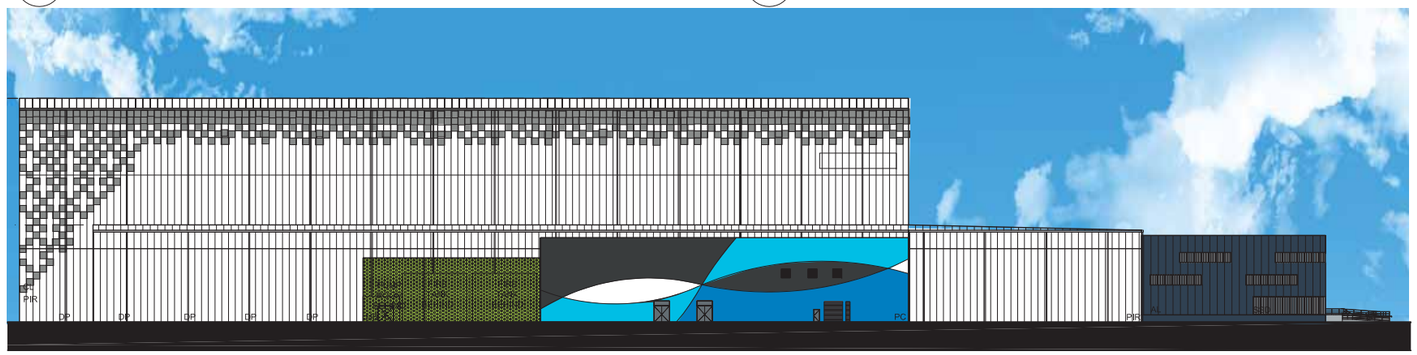
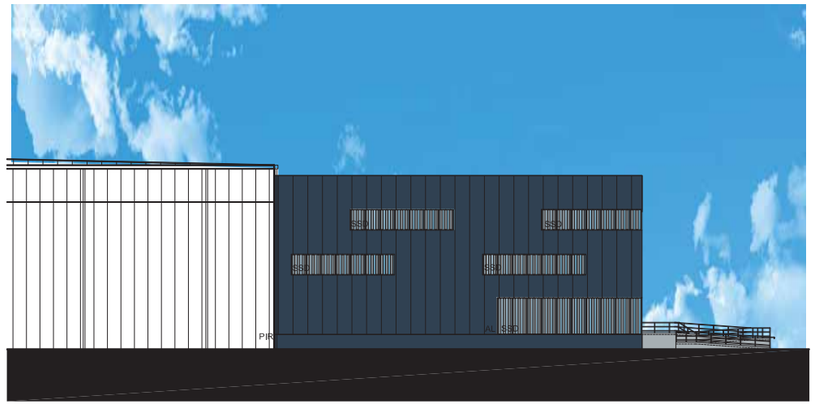


WEST ELEVATION
Scale 1:1000



WEST OFFICE ELEVATION
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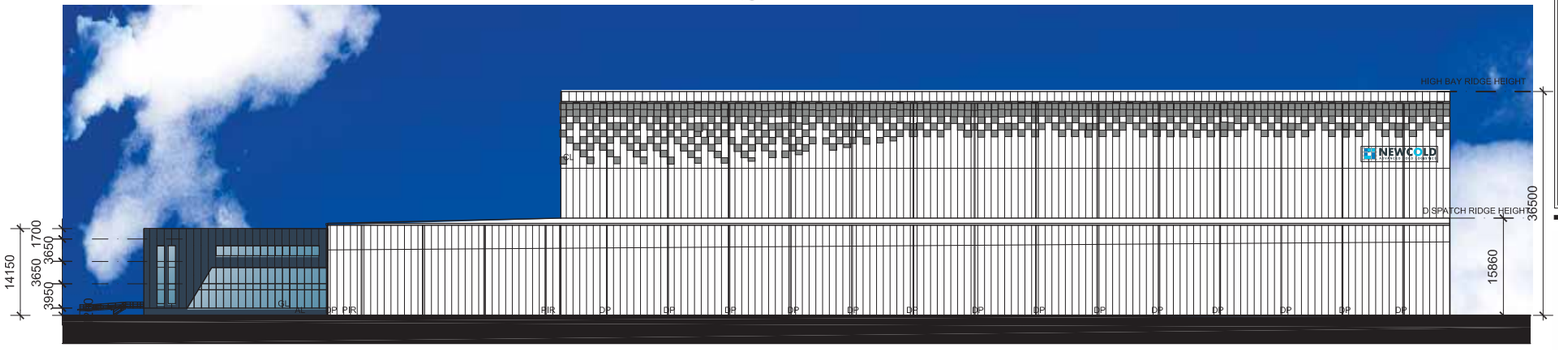
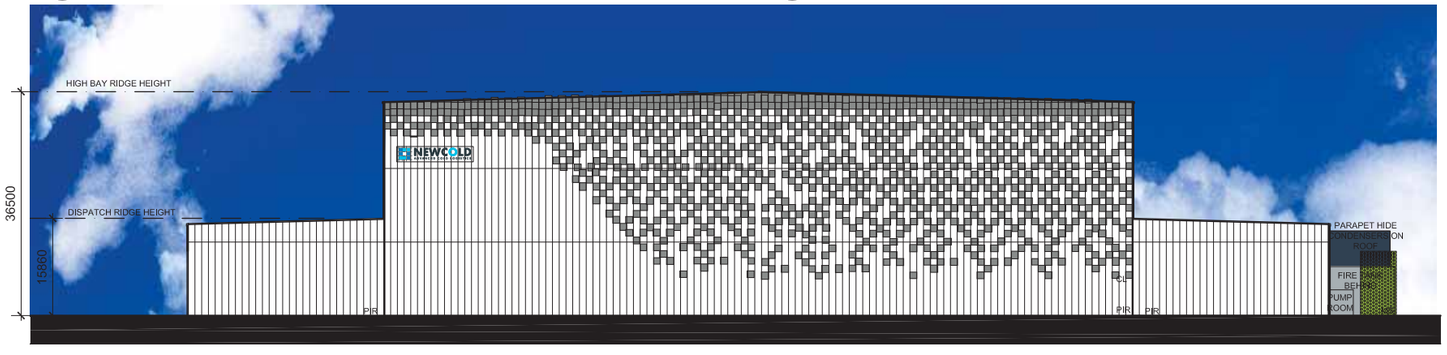


EAST OFFICE ELEVATION
Scale 1:500

EAST ELEVATION
Scale 1:1000



NORTH ELEVATION
Scale 1:1000

LEGEND:

AL - ALUMINIUM CLADDING
CL - CLADDING
COL - COLUMN
DP - DOWN PIPE
FC - FIBRE CEMENT
GL - GLASS
MC - METAL CLADDING
MS - METAL SCREEN
PC - PRECAST CONCRETE
PIR - PIR INSULATED PANEL
RSD - ROLLER SHUTTER DOOR
RS - ROOF SHEETING
TS - TRANSLUCENT SHEETING
SSD - SUN SHADING

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PROJECT

NEWCOLD SYDNEY

HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE
PROPOSED ELEVATIONS

0 5 10 15 20 25 50m

SCALE: 1:1000 @ A3

CREATE DATE: 23.08.2017 PLOT DATE: 23.08.2017

LAST SAVED BY: karen chol

AU0012 MDP DA01 200 G

FILE LOCATION: X:\Projects\AU0012 - NewCold Sydney\Architecture\Harris Ave, Marsden Park\AU0012 MDP DA01

REVISIONS

A	PRELIMINARY	31.03.17
B	REVISION – COUNCIL COMMENTS	07.08.17

*INDICATIVE PERSPECTIVE BASED ON LEVEL SITE

HOLLINSWORTH ROAD OFFICE PERSPECTIVE
Scale 1:

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PROJECT

NEWCOLD SYDNEY
HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE
PROPOSED PERSPECTIVE

0 5 10 15 20 25 50m
SCALE: 1 : 1000 @ A3

CREATE DATE : 18.08.2017 PLOT DATE : 18.08.2017
LAST SAVED BY: karen choi

AU0012 MDP DA01 900 B

FILE LOCATION: X:\Projects\AU0012 - NewCold Sydney\Architecture\Harris Ave, Marsden Park\AU0012 MDP DA01

REVISIONS

A	PRELIMINARY	31.03.17
B	REVISION – COUNCIL COMMENTS	07.08.17

*INDICATIVE PERSPECTIVE BASED ON LEVEL SITE

HOLLINSWORTH ROAD PERSPECTIVE
Scale 1:

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PROJECT

NEWCOLD SYDNEY
HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE
PROPOSED PERSPECTIVE

0 5 10 15 20 25 50m

SCALE: 1:1000 @ A3

CREATE DATE: 18.08.2017 PLOT DATE: 18.08.2017
LAST SAVED BY: karen choi

AU0012 MDP DA01 500 B

REVISIONS

A	PRELIMINARY	31.03.17
B	REVISION – COUNCIL COMMENTS	07.08.17

*INDICATIVE PERSPECTIVE BASED ON LEVEL SITE

DARLING STREET PERSPECTIVE
Scale 1:

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PROJECT

NEWCOLD SYDNEY
HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE
PROPOSED PERSPECTIVE

SCALE: @ A3

CREATE DATE : 18.08.2017 PLOT DATE : 18.08.2017
LAST SAVED BY: karen choi

AU0012 MDP DA01 920 B

FILE LOCATION: X:\Projects\AU0012 - NewCold Sydney\Architecture\Harris Ave, Marsden Park\AU0012 MDP DA01

*INDICATIVE PERSPECTIVE BASED ON LEVEL SITE

PHOTOMONTAGE 1
Scale 1:

REVISIONS

A	PRELIMINARY	18.04.17
B	REVISION – COUNCIL COMMENTS	07.08.17

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PROJECT

NEWCOLD SYDNEY
HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE
PROPOSED PHOTOMONTAGE
CNR HOLLINSWORTH RD & RICHMOND RD

SCALE: @ A3

CREATE DATE : 18.08.2017 PLOT DATE : 18.08.2017
LAST SAVED BY: karen choi

AU0012 MDP DA01 930 B

FILE LOCATION: X:\Projects\AU0012 - NewCold Sydney\Architecture\Harris Ave, Marsden Park\AU0012 MDP DA01

*INDICATIVE PERSPECTIVE BASED ON LEVEL SITE

PHOTOMONTAGE 2
Scale 1:

REVISIONS

A	PRELIMINARY	07.08.17
B	REVISION – COUNCIL COMMENTS	07.08.17

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PROJECT

NEWCOLD SYDNEY
HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE
PROPOSED PHOTOMONTAGE
CNR SOUTH ST & RICHMOND RD

SCALE: @ A3

CREATE DATE : 18.08.2017 PLOT DATE : 18.08.2017
LAST SAVED BY: karen choi

AU0012 MDP DA01 940 B

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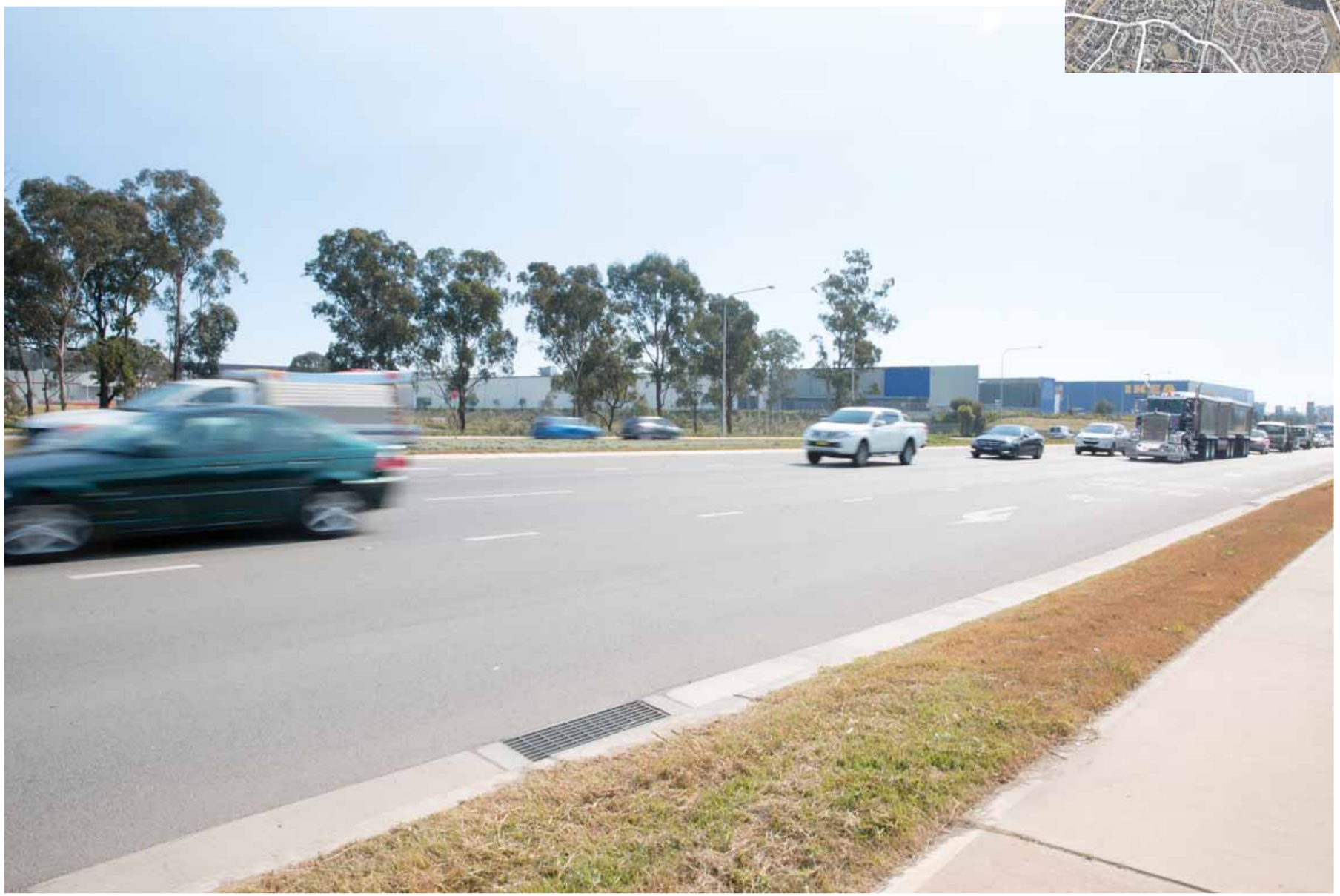
REVISIONS

A	PRELIMINARY	07.08.17



*INDICATIVE PERSPECTIVE BASED ON LEVEL SITE

PHOTOMONTAGE 3
Scale 1:

FILE LOCATION: X:\Projects\AU0012 - NewCold Sydney\Architecture\Harris Ave, Marsden Park\AU0012 MDP DA01

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PROJECT

NEWCOLD SYDNEY
HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE
PROPOSED PHOTOMONTAGE
CNR RICHMOND RD & ALDERTON DR

0 5 10 15 20 25 50m
SCALE: 1 : 1000 @ A3

CREATE DATE : 18.08.2017 PLOT DATE : 18.08.2017
LAST SAVED BY: karen choi

AU0012 MDP DA01 950 A

REVISIONS

A	PRELIMINARY	07.08.17

*INDICATIVE PERSPECTIVE BASED ON LEVEL SITE

PHOTOMONTAGE 4
Scale 1:

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PROJECT

NEWCOLD SYDNEY
HARRIS AVE
MARSDEN PARK, NSW

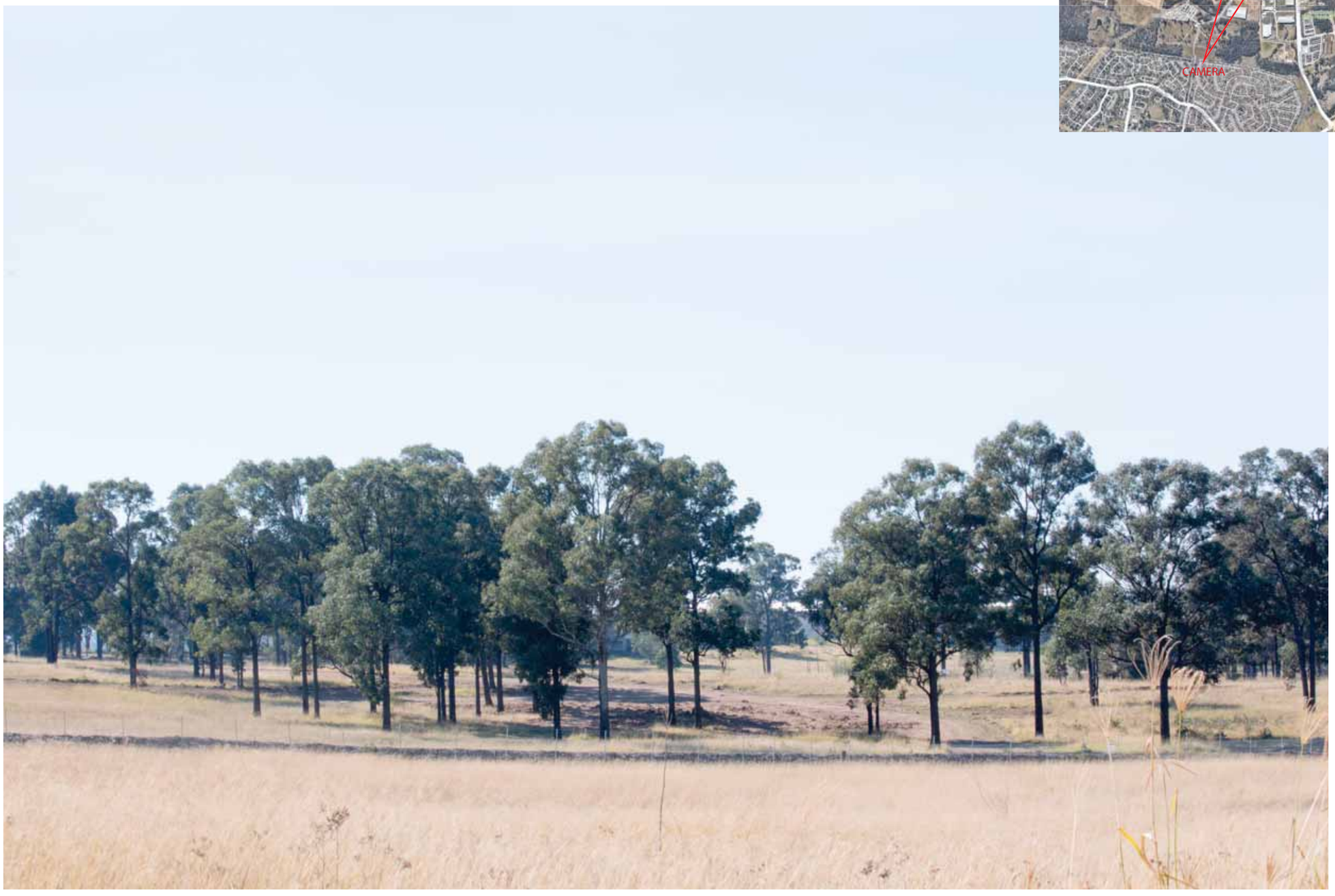
DRAWING TITLE
PROPOSED PHOTOMONTAGE
END OF HOLLINSWORTH RD

0 5 10 15 20 25 50m
SCALE: 1:1000 @ A3

CREATE DATE: 18.08.2017 PLOT DATE: 18.08.2017
LAST SAVED BY: karen choi

AU0012 MDP DA01 960 A

FILE LOCATION: X:\Projects\AU0012 - NewCold Sydney\Architecture\Harris Ave, Marsden Park\AU0012 MDP DA01



*INDICATIVE PERSPECTIVE BASED ON LEVEL SITE

PHOTOMONTAGE 5
Scale 1:

REVISIONS

A	PRELIMINARY	07.08.17

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PROJECT

NEWCOLD SYDNEY
HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE
PROPOSED PHOTOMONTAGE
RESIDENTIAL AREA NEAR DANIELS RD

0 5 10 15 20 25 50m

SCALE: 1:1000 @ A3

CREATE DATE: 18.08.2017 PLOT DATE: 18.08.2017
LAST SAVED BY: karen choi

AU0012 MDP DA01 970 A

FILE LOCATION: X:\Projects\AU0012 - NewCold Sydney\Architecture\Harris Ave, Marsden Park\AU0012 MDP DA01

BENCHMARK

by Kingspan

Dri-Design

—

Information Pack

POWERED BY QuadCore™ TECHNOLOGY

BENCHMARK® by Kingspan

INTRODUCING DRI-DESIGN

Dri-Design façade cassettes install at least twice as fast as most comparable systems and can install as direct fix or ventilated cavity cassettes. No sealants, gaskets or butyl tape in the cassette joints, means no dirty streaks or a legacy of maintenance for the building owner.

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BENCHMARK DRI-DESIGN

Façade System

1) System Overview

The Kingspan BENCHMARK Dri-Design façade system is an innovative and high quality metallic rainscreen façade solution.

Manufactured using world leading automated machinery, accelerated manufacture, quality and tolerances are all guaranteed.

Available in a range of cassette types and geometries, coupled with various material types and ancillary components, the Dri-Design façade system accommodates huge scope for impressive and varied architectural aesthetics.

Fixed either directly to the QuadCore panel face or a ventilated substructure, the Dri-Design façade system is perfectly suited to fast installations and *NHBC driven specifications.

*Note: NHBC & BBA approval pending.

2) Product Data

Façade Data

Dri-Design façade cassettes install at least twice as fast as most comparable systems and can install as direct fix or ventilated cavity cassettes. No sealants, gaskets or butyl tape in the cassette joints, means no dirty streaks or a legacy of maintenance for the building owner.

Materials Available

Aluminium:	2.0mm & 3.0mm

Dimensions

The below sizes are maximum standard sizes for aluminium. Larger sizes can be manufactured, please contact BENCHMARK Technical for further information on other sizes and materials;

1525x765mm
1220x1220mm
610x1825mm
3050x610mm

Joint Width: 14mm (Standard).

Flat Cassette:	32mm Deep
Shadow Cassette:	33-100mm Deep (1mm increments)
Taper:	32-75mm Deep from a single edge
Double Taper:	32-75mm Deep from 2 edges
Perforations:	Project Specific
Embossed:	Project Specific
Corner:	Max Leg Length 1200mm

Product Tolerances

Length:	±2mm
Width:	±2mm
Thickness:	±2mm
Squareness:	±2mm

Storage

The Dri-Design cassettes are packed on a pallet with cardboard on top. Cardboard is also placed between each set of cassettes. A completed pack is wrapped in cardboard and wood is fixed around the top and sides. Packaging is completed by shrink wrapping the entire pallet in polythene.
Protect BENCHAMRK aluminium Dri-Design pallets during storage against rain, penetration of moisture and condensation. Avoid any condensation forming (e.g. when transporting cold cassettes to warmer rooms). Only pallets of identical size should be stacked. Store the pallets stacked one over the other (do not store panels standing vertically), with a maximum of 2 pallets of the same format stacked on top of each other (heavy pallets at the bottom). Storage exceeding 6 months should be avoided, as it may become difficult to remove any protective films which may be applied. When stacking the cassettes nothing should be placed in-between them, as this could result in surface damage.

Cassette Types

Flat

Shadow

Taper

Internal/External Corner

Perforated

Finishes Available

Polyester Powder Coated
Anodised

Material Properties

	Material Properties	Fire	Environmental
Aluminium	Aluminium alloy 1050H14 available in an anodized finish, pre-painted aluminium sheets, post painted aluminium sheets and post powder coated. Also grades 3103 H14 & 5005 H34/J57S as required.	Aluminium has Class 1 surface spread of flame to BS 476-7:1987, and are Class 0, as defined by building regulations.	Aluminium can be fully recycled and used for the production of new material.

Handling

The pallets must be handled carefully during transport and unloading. Do not handle open pallets. Upon delivery, the pallets must be examined for any damage due to moisture (panels that have become wet must be dried to avoid any spots or corrosion forming).
Individual cassettes must be lifted off the pallet by two people holding all four corners and not drawn over each other. Carry the cassettes vertically. Wear gloves to avoid staining.
To avoid possible reflection differences, it is recommended to install the panels in the same direction as marked on the protective peel-off-foil. Please note that should the protective foil partially come off during processing, dirtied edges can occur over time.

Site Installation Procedure

Site assembly instructions are available from the Kingspan BENCHMARK Field Service Department.

Quality & Durability

Benchmark components are manufactured from the highest quality materials to rigorous quality control standards, complying with ISO 9001:2000 standard, ensuring long-term reliability and service life.
Sea Freight
Fully timber crated packs are available on projects requiring delivery by sea freight shipping, at additional cost. Alternatively, steel containers can be used.
Special loading charges apply.

Guarantees & Warranties

Benchmark will provide external coating and product guarantees on an individual project basis.

3) Additional Design Information

Stiffeners

Whilst it is the design intend that Dri-Design cassettes require no additional components to install and perform as required, there are design instances where additional vertical stiffeners may be required to limit the deflection of the cassette face under windloading,

The stiffeners are extruded aluminium profiles that are factory installed.
The number of stiffeners and centres are determined on a project by project basis.

Note: Cassette viewed from rear.

Windclips

Large scale portrait orientation cassettes are assessed on a project specific basis in conjunction with other design factors to ensure adequate fixity of the Dri-Design cassettes to the panel face or other sub-structure.
Small folded clips may be required to be installed @ typically 400mm centres in the vertical joint.
The function of these clips if to provide additional restraint to the Dri-Design cassettes.

Fixing Centres

All Dri-Design cassettes feature the same generic fixing patterns direct from the factory.

2 central fixed points 100mm apart, then additional oversized points at 75mm centres.
It is determined on a project specific basis as to what centres in multiples of 75mm the fixings need to be installed at.
Note: not all projects will require fixing centres of 75mm, further reducing installation duration and cost.

4) High Precision Manufacturing, High Quality Product

The key to Dri-Design's advantage over other metallic façade products, including those in the BENCHMARK range is 2 fold;
1 – Advanced product design
2 – Advanced manufacturing methods

Product Design

The Dri-Design cassettes have been designed to be manufactured from a single sheet of material, ensuring joint finishes are impeccable, consistent and require no additional supporting or fixings as with ACM type cassettes.
All fixings points, guttering channels and anti-rattle components are designed into the single cassette.
The result is an advanced and market leading metallic façade product with accelerated installation whilst requiring less components and therefore cost than other comparable system types.

Manufacturing

Due to the advanced cassette design, Dri-Design façade cassettes cannot be manufactured with press brakes or other forms of manual folding.
Kingspan has invested considerable capital in 2 Salvagnini machines;
- L3 Fiber Laser Cutter
- P4 Panel Bender

L3 Fiber Laser Cutter

http://www.salvagninigroup.com/product/fiber-laser/l3

P4 Panel Bender

http://www.salvagninigroup.com/product/panel-benders/p4

Result

The combination of advanced product design, fast material cutting and precise folding mean Dri-Design cannot be matched on the following points;
- Product tolerances
- Speed of manufacture
- Repeatability
- Overall quality

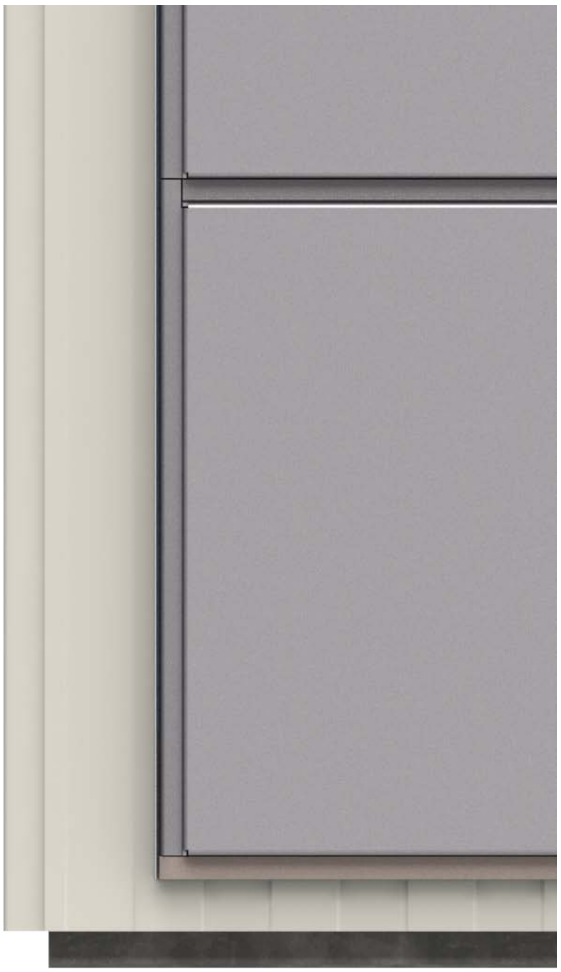
5) System Variations

Whilst the basic geometry od the Dri-Design cassettes do not change, there are a range of trimming and finishing options available, as below;

- J Base Extrusion
- Extrusions
- Flashing

Base J

The J Base extrusion is offered in 2 sizes, 12.5mm upstand and 25mm upstand. The first option produces a gap that is the same as the standard vertical and horizontal joints at 14mm.
This option could be considered to be the most aesthetically pleasing option, coupled with the right-hand return cassette option, it allows for the entire perimeter of the Dri-Design façade area to emulate the horizontal and vertical joints.



Note: Base J extrusion illustrated in a different colour for ease of identification.

Extrusions

The range of capping and support extrusions provide structural support and perimeter trimming when the J Base extrusion is not used.
This range of extrusions creates a 'framed' aesthetic and with integrated EPDM bubble gaskets, rattle cause by structural vibrations or wind loading are eliminated.

Note: Extrusions illustrated in a different colour for ease of identification.

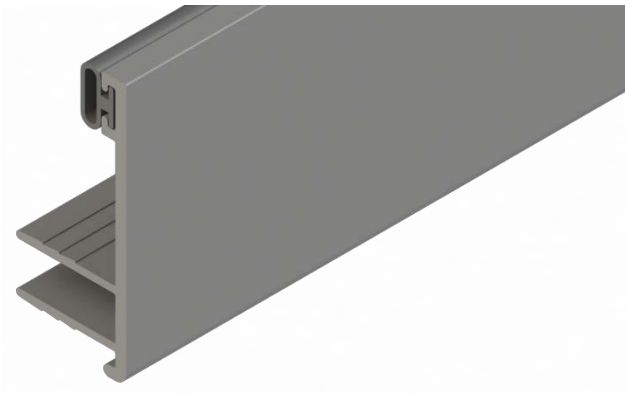
Flashings

Due to project specific requirements, there may be a need for a custom design flashing detail to achieve a the customer's desired geometry.
There are also a range of flashings that emulate the aesthetics and function of the extrusions, but due to the nature of how they are manufactured, the folded edges are not as sharp as their extrusion counterparts and may not be the most aesthetically pleasing option.

6) System Components/Extrusions

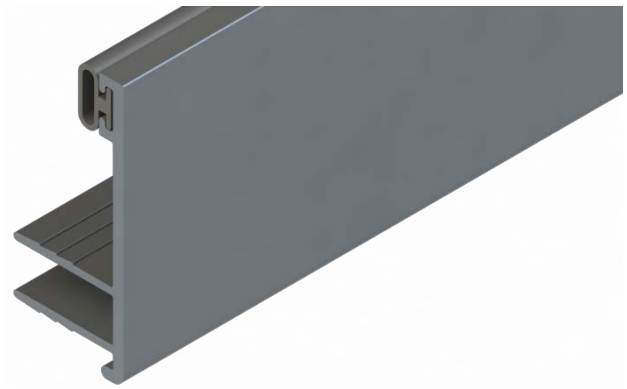
Note: All extrusions are supplied in 3m lengths and can be finished in PPC or Anodised as required.

Base J Extrusion – Used to support the base of the bottom cassette on the elevation. Provides a uniform joint size with both horizontal & vertical joints. 12.5mm updand.
SAP Code: BMDD-JEXT05SMFAC/P

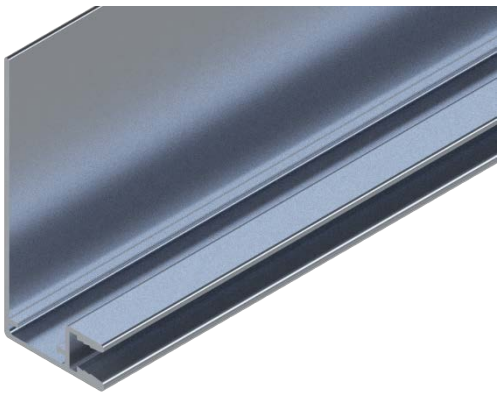


J Extrusion Face Cap (PPC Finish) – Used in conjunction with the J Reciever extrusion to provide perimeter support to the perimer cassettes.
SAP Code: BMDD-JEXTFACECAP/P

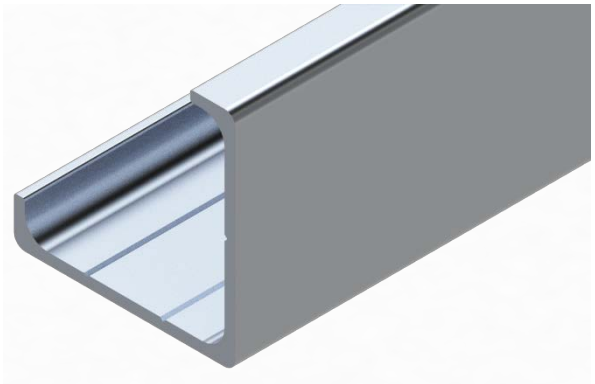
Large Base J Extrusion – Used to support the base of the bottom cassette on the elevation. 25mm upstand.
SAP Code: BMDD-JEXT1SMFAC/P



J Extrusion Face Cap (Anodised Finish) – Used in conjunction with the J Reciever extrusion to provide perimeter support to the perimer cassettes.
SAP Code: BMDD-JEXTFACECAP/P



J Reciever Extrusion (Mill Finish Only) – Used as a reciever channel for the Face Cap sections.
SAP Code: BMDD-JEXTBACK3M



Start/Cut Extrusion (Mill Finish Only) – Site cut to length, used to support the edge of a Dri-Design cassette when using a face cap extrusion.
SAP Code: BMDD-START/CUTEXT3

BENCHMARK DRI-DESIGN

Façade System

100mm Return J Extrusion (Mill Finish Only) – Installed in locations that require a projection, example window head.
SAP Code: BMDD-4RETJEXT/P

External/Outside Corner Reciever Extrusion (Mill Finish Only) – Used to form a 90° external corner.
SAP Code: BMDD-OUTCOREXTBK3M

Internal/Inside Corner Receiver Extrusion (Mill Finish Only) – Used to form a 90° internal corner.
SAP Code: BMDD-INCOREXTBK3M

External/Outside Corner Receiver Extrusion – 90° external corner cap.
SAP Code: BMDD-OSCOREXTCAP/P

Internal/Inside Corner Receiver Extrusion – 90° internal corner cap.
SAP Code: BMDD-INCOREXTCAP/P

Extrusion Gasket – Used as an anti-rattle seal between the capping extrusions and the Dri-Design cassette face.
SAP Code: BMDD-EXTGAS100M

Compression Spring – Installed behind cassettes abutting J Extrusion Face Caps to reduce rattle and maintain cassette geometry. Ordered to project specific lengths.
SAP Code: FLASHING

Factory Mitring Information

The snap on face caps may be required to be mitred to ensure a tight butt between horizontal and vertical sections at corners. As specified on the Order Form, associated extrusions can be ordered with LH, RH or both ends mitred, but are only available in 3m lengths, to then be cut down on site.

7) Additional System Componnets

Fablok Fixing – Used to fix Omega profiles back to the panel face typically for NHBC specifications.

Omega Profile – Used to form a cavity between the cassette and panel face, typically in line with NHBC specification requirements.

Fablok Fixing Tool – Used to retain the collar whilst driving the Fablok fixing.

Centralising Drill Bit – Used to ensure a central hole is drilled through the top flange of the cassette into the panel face.

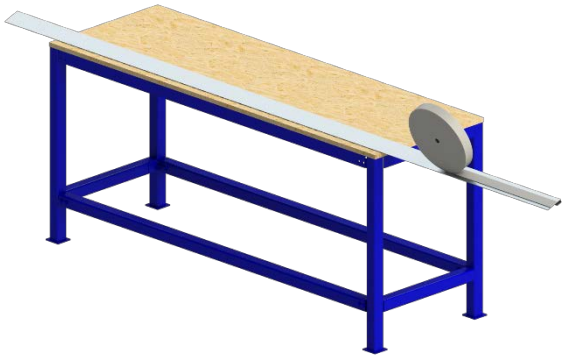
Rivet Nosepiece – Used to correctly seat the fixed rivets to accommodate thermal expansion (0.3mm offset).

PVC Foam Tape – Applied to the top flange of direct fixed cassettes and applied to the 2 legs of the omega profiles when typically used in NHBC specifications.

Rivet Fixing – *With Washer* - Used to fix the Dri-Design cassettes direct to the QuadCore Karrier panel face.
Without Washer – Used to fix the Dri-Design cassettes to the aluminium top hat substrate.

8) **Typical Installation** – Direct to panel face.

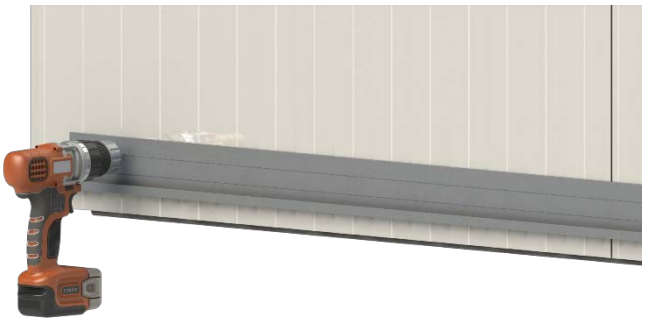
1. Apply PVC foam tape to rear of the top flange.



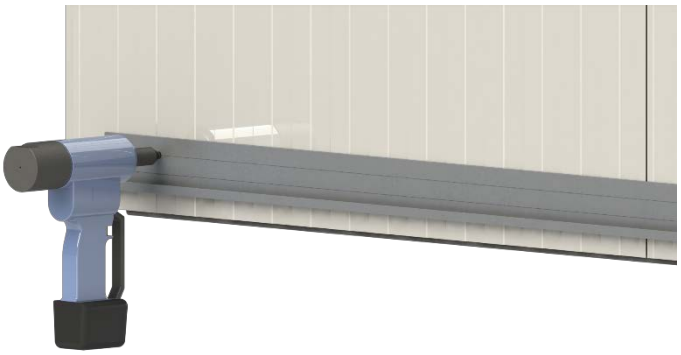
2. Apply PVC foam tape to the rear of the Base J Channel.

3. Drill 6mm diameter weep holes @ 400mm centers.

4. Position the Base J Channel to project specific SOP.

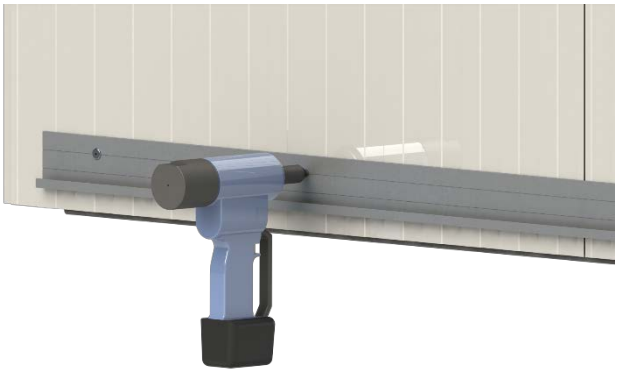


5. Drill through the Base J Channel into the panel face with 4.9mm drill bit.



6. Rivet the Base J Channel back to the panel face.

7. Continue to drill the Base J Channel @ 400mm centers.



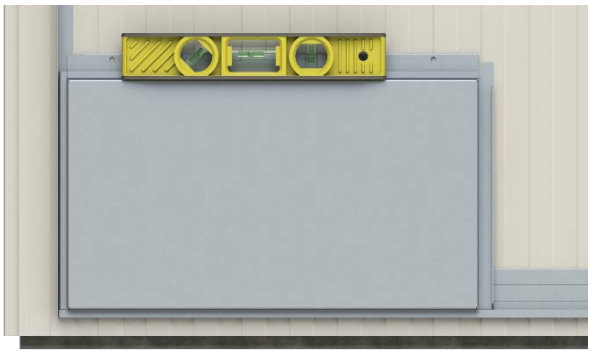
8. Continue to rivet.

9. Position and level/plum jamb flashings.

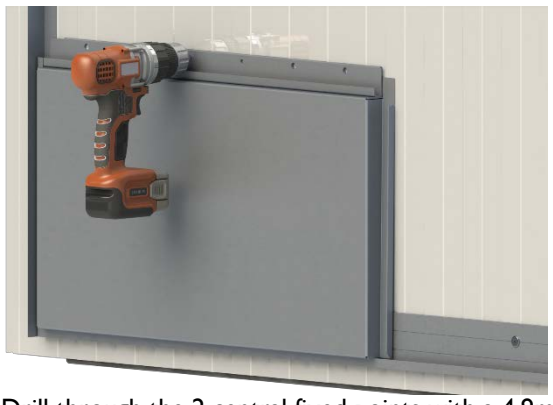
10. Drill through the jamb flashing into the panel face with 4.9mm drill bit.

11. Rivet the jamb flashing back to the panel face.

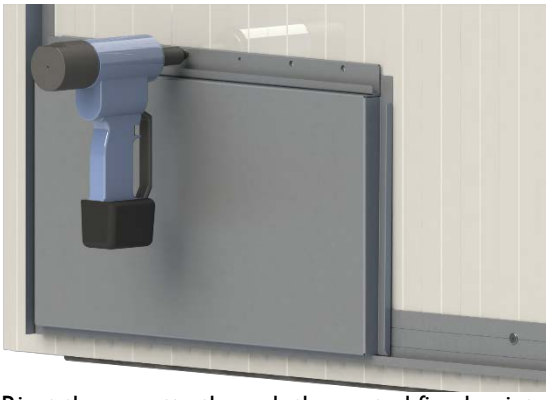
12. Continue to rivet the jamb flashing back to the panel face @ 400mm centers.



13. Seat the first cassette on the Base J Channel and ensure a 2mm gap between the jamb flashing to accommodate thermal expansion. Ensure cassette is seated level.

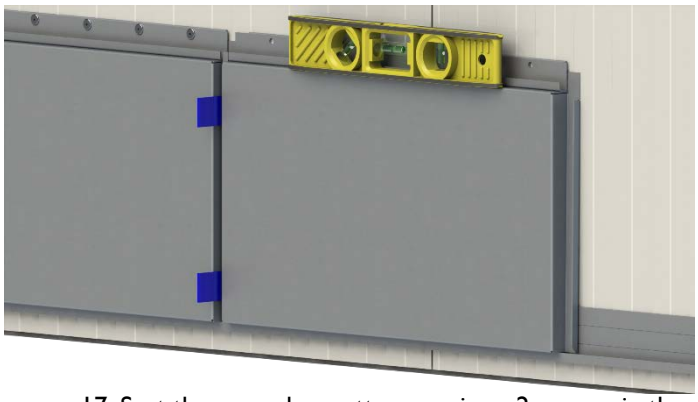


14. Drill through the 2 central fixed points with a 4.9mm drill bit.



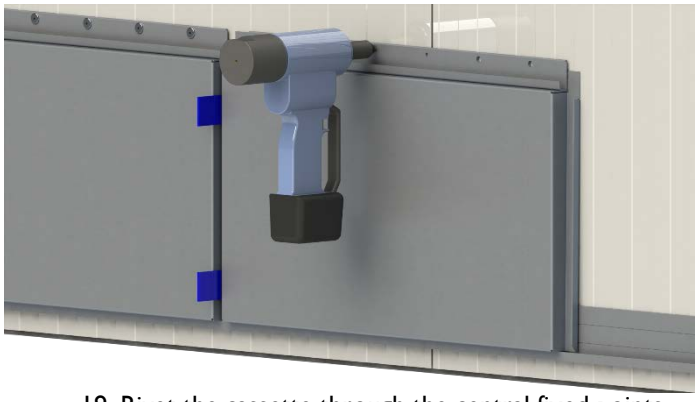
15. Rivet the cassette through the central fixed points back to the panel face.

16. Drill the remaining oversized holes with the centralising drill bit.



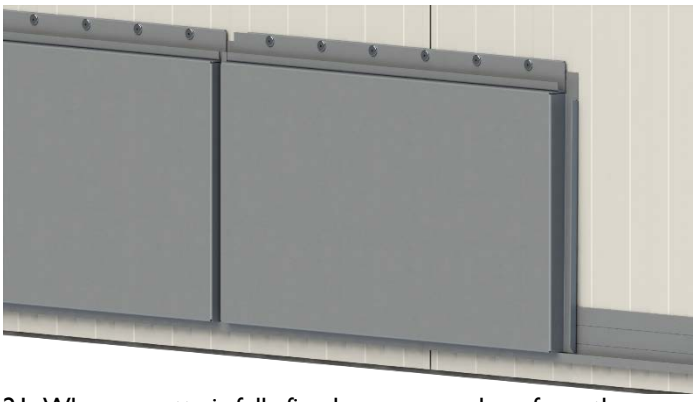
17. Seat the second cassette, ensuring a 2mm gap in the vertical joint and ensure the cassette is level.

18. Drill through the 2 central fixed points with a 4.9mm drill bit.



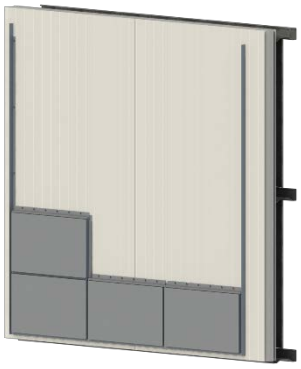
19. Rivet the cassette through the central fixed points back to the panel face.

20. Drill the remaining oversized holes with CDB.



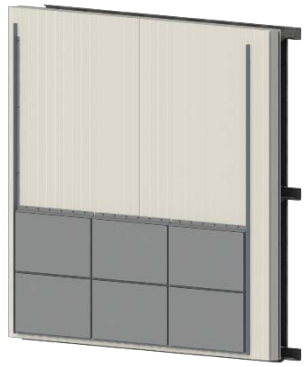
21. When cassette is fully fixed, remove packers from the vertical joint.

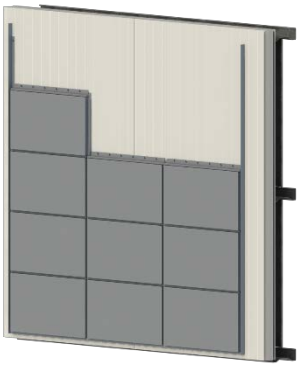
22. Continue to install remaining cassettes in line with the previous points.

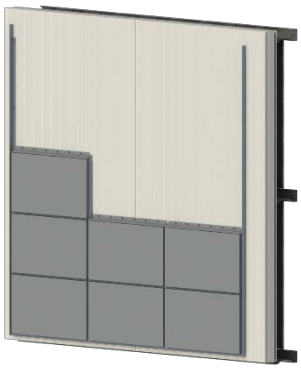


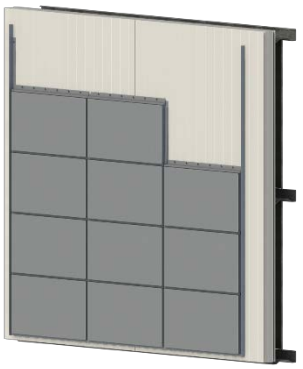
BENCHMARK DRI-DESIGN

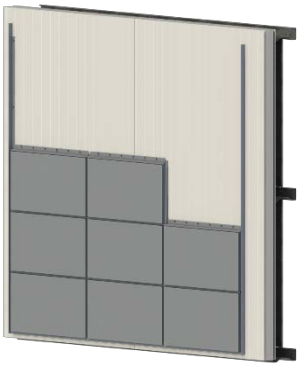
Façade System

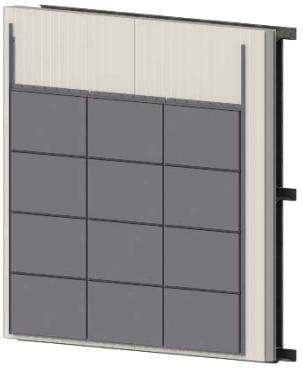


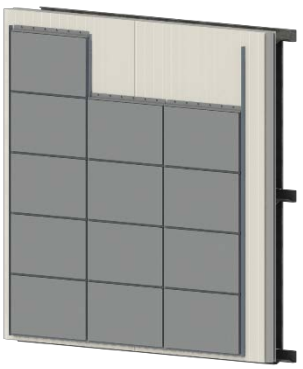


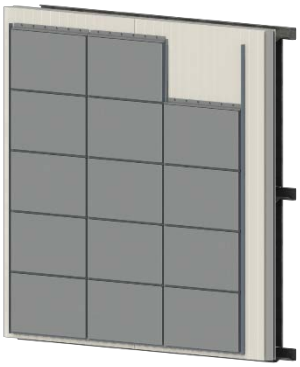


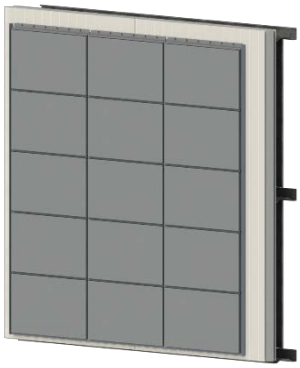












9) NHBC Specification

Certain project types will require the adoption of NHBC approved construction detailing and a ventilated cavity between the QuadCore panel face and the rear of the Dri-Design cassettes. Adoption of such details require additional substrate components and increased cost. For further information, see the current NHBC compliant construction details.

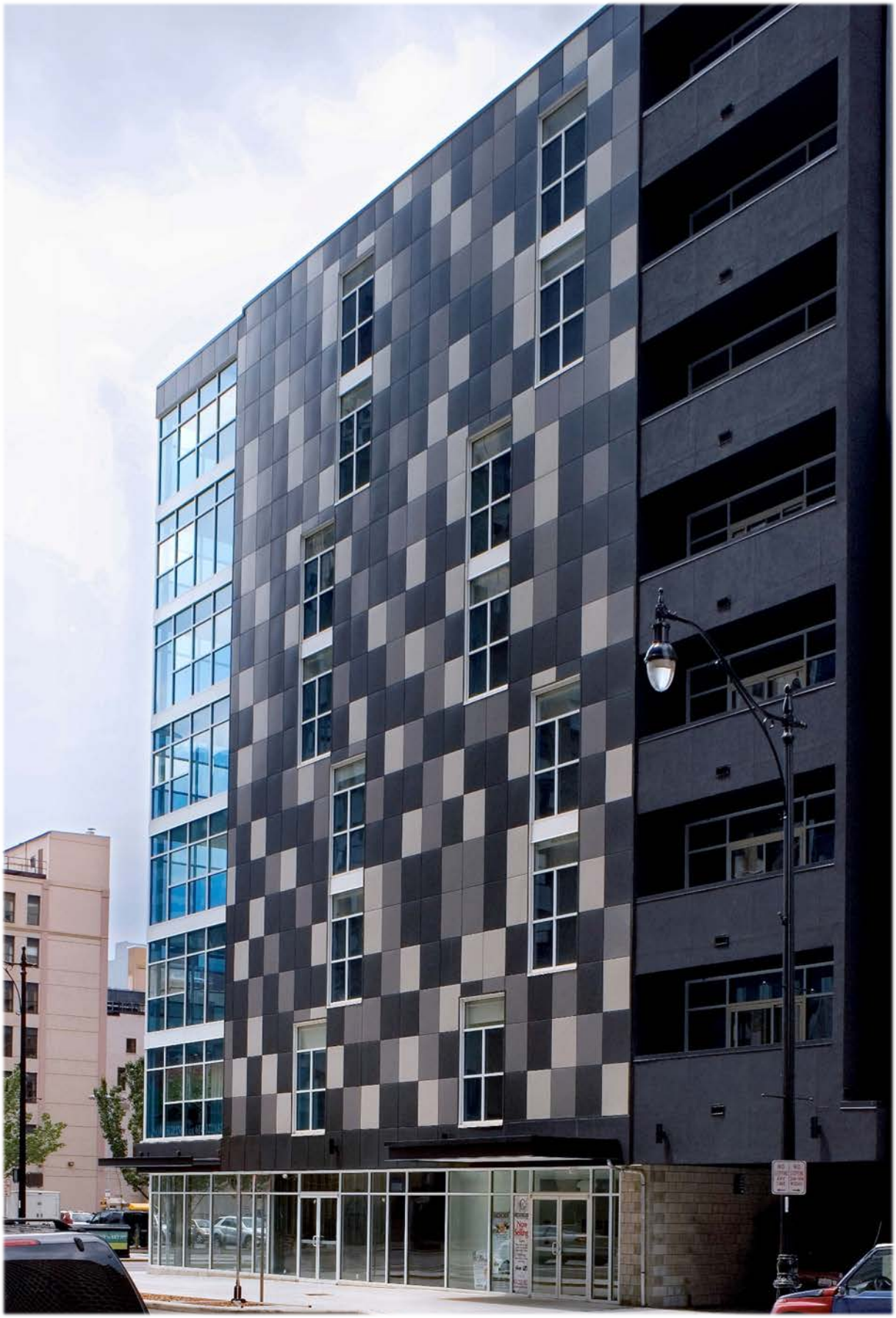
10) Existing Projects

Beth Tfiloh Lower School in Baltimore, USA.

BENCHMARK DRI-DESIGN

Façade System

Carlyles Watch, Columbus, Ohio, USA



BENCHMARK DRI-DESIGN

Façade System

Fort Belvoir Community Hospital, Fort Belvoir, VA, USA

BENCHMARK DRI-DESIGN

Façade System

Iowa Western Community College Performing Arts Center, Council Bluffs, Iowa, USA

BENCHMARK DRI-DESIGN

Façade System

Longwater Place, Norwell, Mass, USA

11) Maintenance Guidelines for Aluminium Dri-Design Cassettes

Introduction

Aluminium has a natural beauty and lustre. Its surface can be treated in various ways to produce different effects, while in the hands of the skilled architect it lends itself to some excellent effects and variations and contrasts with other materials.
For this reason and because aluminium is so well proven in service, it is now by far the most common material for exterior work such as windows, doors, curtain walls and shop fronts.
The surface finish of aluminium can be spoiled by improper care and the purpose of this booklet is to summarise the methods of maintaining aluminium after proper erection on site. Usually this care is no more than periodic cleaning, on a similar basis to which the glass in the windows is cleaned, and it is often merely lack of appreciation of this factor which can spoil the effects so proudly established in the first place.
Anodising and Coating / Painting substantially enhances appearance and renders the surface more resistant to various forms of attack and facilitates cleaning and maintenance.
Our aim here is to highlight the cleaning aspect since it applies to so many users of architectural aluminium products.
Grime which causes deterioration cannot be prevented from settling on exposed surfaces. If cleaned reasonably frequently then the mildest methods of washing will produce satisfactory results. There are many ways to clean aluminium, from using plain water to harsh abrasives. The type of cleaning that should be used is governed by the finish, degree of soiling, and the size, shape and location of the surface to be cleaned.
The mildest method possible should be used, particularly for aluminium which has been anodised.
The following cleaning materials and procedures are listed in ascending order of harshness. The mildest treatment should be tried on a small area and if not satisfactory only then should the next be examined.
• Plain water
• Mild soap or detergent
• Solvent cleaning, e.g. kerosene, turpentine, white spirit
• Non-etching chemical cleaner
• Wax-base polish cleaner
• Abrasive wax
• Abrasive cleaner

Mill & Brush Finish Aluminium Sheets

It is generally accepted that the build-up of dirt and grime on Aluminium Surfaces is inevitable, but if cleaned regularly then only the mildest methods of cleaning will be required to maintain a satisfactory appearance.
As a basic guide and depending on the level of dirt and grime use the following:
• Water
• A mild detergent diluted with water.
• A proprietary Cleaner (see appendix)
Where possible use a lint free cloth, this will prevent any "fluff" or bits being left on the aluminium surface. Do not leave pools of water / cleaner on the surface. After applying any cleaner wash down the aluminium / product thoroughly and dry with a dry cloth. Again use lint free if possible. Leaving bits on the surface of the aluminium will attract dirt, grime and prevent streakiness. When cleaning extrusions ensure that you clean away any build-up of cleaner and grime from corners / angles or folds in the material.
If using a proprietary cleaner always follow the suppliers / manufacturer's instructions. Remembering the more abrasive the cleaner the more likely you are of marking the Aluminium Surface.
The Aluminium Oxide that forms on the surface of Aluminium is a self-protecting surface, and although aesthetically displeasing it is protecting the aluminium. Removal of it will allow more of it to form.
Cleaning frequency is not easily determined; this will depend on the application, location of product, accessibility and whether aesthetic appearance is important. How frequently you clean will require some self-judgement, but where there is no evidence of severe build up or obvious discoloration of the surface every 6 months should maintain Aluminium in its original finish. Should the product / material be placed in close proximity to the sea, or highly polluted areas – man made or not, this frequency may need to be increased.
To improve the longevity of surface finish quality you may want to consider anodised sheet or extrusion, which gives a more aesthetically pleasing finish and additional protection.

Anodised Aluminium Sheets and Extrusions

Anodised finish provides both improved aesthetic appearance and protection of the sheet and extrusion.
However grime and dirt is still likely to build up on surfaces and in angles and corners.
There is no maintenance-free surface coating for aluminium used within the building industry. Therefore continued maintenance of anodised sheet and extrusion is critical in enhancing the lifetime of the coating.
Consider the atmospheric conditions; they will impact on the amount of build-up on the surface finish.The same materials used to clean Mill & Brushed Finish Aluminium can be used on the anodised surface.
Because however anodised finish is generally used for aesthetic reasons, cleaning should be done so that it is not detrimental to the overall finish.The frequency of cleaning is again determined by the application, location of product and accessibility. It is recommended that external applications should be cleaned at least every 6 months to maintain surface aesthetics.
For internal applications it may be good practice to clean aluminium surfaces at the same time / frequency windows are cleaned. This would allow just water to be used, rather than waiting and having to use a more intense cleaning method.
Should the product / material be placed in close proximity to the sea, or highly polluted areas – man made or not, this frequency may need to be increased.

Painted & Coated Aluminium Sheet & Extrusion

Like anodised material; painted and coated aluminium sheet and extrusion will need to be cleaned and maintained to ensure continued aesthetic quality.
Painted and coated aluminium is likely to be a different colour to base aluminium so scratches will reveal the original colour of the product. When cleaning; follow the guidelines shown above with particular emphasis on using less abrasive proprietary cleaners.
Where possible cleaning materials should be a neutral detergent with a ph from 5 to 8.
If abrasives are used then the appearance of the aluminium finish may be altered. If there is a grain in the finish then cleaning should always be with the grain.
To maintain the original finish, for example gloss, polishing may be required. Where a reduction in gloss is observed then an approved renovating cream may be applied using a non-abrasive cloth. T-Cut or a similar automotive paint restorer may be used provided that is not too abrasive.
Frequency of cleaning / maintenance, again dependent on a variety of previously mentioned factors but if access is possible then every 6 months should maintain surface quality. Should the product / material be placed in close proximity to the sea, or highly polluted areas – man made or not, this frequency may need to be increased.

Fabricated Aluminium Panels & Products

As the fabricated items have been manufactured using the materials / finished mentioned above, the cleaning routines listed above apply here.
It is recommended that consistency is applied across all the panels and products being cleaned do not use one method on some and another on the rest.
If there is a grain in the finish always clean with the grain and use the least abrasive cleaning agent you can get away with.
For installed external applications, the recommended periodical cleaning frequency is 6 months. Should the product / material be placed in close proximity to the sea, or highly polluted areas – man made or not, this frequency may need to be increased. Aggressive stains may appear as a result of a lack of cleaning and this will accelerate degradation through corrosion. Although most coatings come with a specified guarantee, regular thorough cleaning and maintenance will prolong the life of the product and maintain visual appearance.

It is generally recommended that you do not use strong solvents that contain –
Chlorinated Hydrocarbons; Esters; Ketones or Abrasive Cleaners / Polishes
Fabricated Stainless Steel Products

Like Aluminium the attractive and hygienic surface appearance of fabricated stainless steel products cannot be regarded as completely maintenance free. All grades and finishes of stainless steel may stain, discolour or attain an adhering layer of grime in normal use.
Build-up of grime and dirt will give the same results as discussed with Aluminium, so the general guidelines discussed above should be applied to Stainless Steel. Listed below is a set of cleaning guidelines / recommendations, please note they are only meant as a guide.

Routine cleaning – All finishes Soap or mild detergent and water. Sponge rinse with clean water (preferably warm), wipe dry if necessary. Follow polish lines.
Finger prints – All finishes Soap and warm water, or a proprietary cleaner. Rinse with clean water and wipe dry. Follow polish lines.
Stubborn stains and discolouration - Mild cleaning solutions off the shelf or a proprietary cleaner. Use rag, sponge or soft fibre brush. Rinse with clean water and wipe dry. Follow polish lines.
Oil & Grease marks - Proprietary cleaners – normally solvent based. Rinse with clean water and wipe dry. Follow polish lines.
Scratches on polished finish, Slight scratches – use impregnated nylon pads. Do not use ordinary steel wool – iron particles can become embedded and cause further problems. Stainless steel and "scotch brite" scouring pads are satisfactory for deeper scratches.

Precautions when using solvents – do not use in confined spaces, where appropriate gloves and do not smoke. If possibility of splashing wear eye protection. This applies to use on either Stainless Steel or Aluminium

Frequency of cleaning / maintenance, again dependent on a variety of previously mentioned factors but if access is possible then every 6 months should maintain surface quality. Internal applications can be cleaned more frequently using the milder cleaning agents.
Coated stainless steel will provide the same levels of protection as that provided to Aluminium. Follow the same guidelines shown for aluminium. Again coating warranties should provide confidence in the maintenance of surface aesthetics but regular cleaning will enhance / prolong the quality and life of the product.

General Coating information

Painted & Coated products may have been supplied with Syntha Pulvin or Interpon Approval and Anodised
products coated to BS 3987 standard. If you require more detailed information on their cleaning and maintenance recommendations, contact Syntha Pulvin or Interpon direct. But the cleaning & maintenance information supplied within this booklet should help maintain the surface quality of the product supplied to you.

Potential Cleaning & Maintenance Products and Suppliers

An exhaustive list of cleaning products would be difficult to produce, but please find below a list of potential products and suppliers. This information is provided without any prejudice and should be treated as guidance only.

Henkel produces the following products aimed at helping to clean and protect Aluminium surfaces:

P3 – RIMOL 768; Neutral Cleaner for anodised / painted Aluminium
TURCO 1495; Polish – removing corrosion / dirt on anodised Aluminium
TURCO ALBRITE EXTRA; Acid cleaner – removing corrosion / dirt on anodised / painted aluminium. (Does Not attack glass)
TURCO GUARD; Transparent and permanent protection coating for metals (UV resistant)

Full Technical data sheets are available from Henkel.

There are also many suppliers across the UK who can provide products and advice, they include:

Chemi-com ICS Ltd UK
www.deltacleaning.co.uk
www.TotalCleaningSupplies.co.uk
Chemiclean Products Birmingham, West Midlands, UK
www.kitchenporter.co.uk
A & M Cleaning Supplies Watford, UK
www.besacleaning.co.uk
Bridge Chemicals & Cleaning Supplies Stoke-On-Trent, UK
Buck Hickman InOne Coventry, UK
Capital Cleaning (Kent) Ltd Kent, UK
Chemetall P.L.C. Milton Keynes, UK
Edge Performance Aldershot, Hampshire, UK
Everyday Essentials Northern Ireland (NI) Carrickfergus, Co. Antrim, UK
Gramos Applied Ltd Smethwick, West Midlands, UK
Nielsen Chemicals Swadlincote, Derbyshire, UK
Pressure Cleaning Equipment & Repair Ltd Redhill, UK
Vizio Ltd Ashbourne, Derbyshire, UK
Wirral Fospray Ltd Deeside, Flintshire, UK

Also the nationwide Hardware Companies such as Viking, B&Q and Wickes which will also stock cleaners suitable for aluminium.

Alternatively use Kelly search to find a suitable supplier using the following search queries:
Aluminium Cleaning Products, Non Acidic
Cleaning Chemicals, Biodegradable, Aluminium
Cleaning Chemicals, Biodegradable, Anodized Aluminium
Cleaning Chemicals, Biodegradable, Coloured Aluminium

Anodised Finish Specific Information

Anodised finish provides both improved aesthetic appearance and protection of the sheet.
However grime and dirt is still likely to build up on surfaces and in angles and corners.
There is no maintenance-free surface coating for aluminium used within the building industry.
Therefore continued maintenance of anodised sheet and extrusion is critical in enhancing the lifetime of the coating.
Consider the atmospheric conditions; they will impact on the amount of build-up on the surface finish.
The same materials used to clean Mill & Brushed Finish Aluminium can be used on the anodised surface.
Because however anodised finish is generally used for aesthetic reasons, cleaning should be done so that it is not detrimental to the overall finish.
The frequency of cleaning is again determined by the application, location of product and accessibility. Following the annual inspection of the façade, a decision can be made on whether cleaning is required.
Should the product / material be placed in close proximity to the sea, or highly polluted areas – man made or not, this frequency may need to be increased.

12) Insulated Panel COSHH

Product Health & Safety Data Sheet (COSHH)

BENCHMARK INSULATED ROOF & WALL PANELS

Data References
- Consumer Protection Act 1987
- Health and Safety at Work Act 1974
- Control of Substances Hazardous to Health (COSHH) Regulations 1988
- Environmental Protection Act 1991

Uses
The products are used for roof and wall cladding industrial and commercial building.

Refer to Benchmark installation guides for use. To be used in accordance with approved practices and building regulations. If any other use is to be considered, please contact Benchmark Technical Design Bureau.

Composition
Panels comprising coated steel or aluminium outer and liner sheets autoadhesively bonded to a rigid PIR core.

Health Hazards
Consideration of the composition of this product indicates that in normal use it does not present a health hazard. The reaction of the insulation core has no known toxic effects.

Storage, Handling and Use
Good practices suggest the following precautions.

Storage
1. Do not stack more than 2.5 metres in height. Ensure stability of stack and provide adequate aisle space for access between stacks. Store packs off the ground and on a slope, so that should rain water penetrate the wrapping, water will drain away.
2. Support the packs evenly with bearers spaced at 2m. Bearers should always be placed one directly above another.

Installation
1. During the fixing operation or whilst handling, laceration of the skin is possible on the edge of the sheet.
2. Product is supplied in heavy bundles and injury may result from incorrect lifting or handling.
3. Cutting the product may cause flying swarf which could injure skin, particularly eyes. Cutting can also produce dust which can cause irritation if inhaled.

Precautions
- Protective clothing particularly gloves should be worn to avoid skin lacerations.
- Eye protection should be used when cutting.
- Handling sheets and bundles should be in accordance with HSE recommendations.
- If subject to abnormally high temperatures ensure adequate ventilation.
- In a fire, breathing apparatus should be worn.

COSHH
Employers must ensure that there are measures in place that will control or limit the exposure of their employees to any substance hazardous to health.

Occupational Exposure Standards (O.E.S.) for nuisance dusts, e.g. urethane foam, are detailed in Health and Safety Executive Guidance Note EH40 (current issue).

Further information on dust hazards may be obtained from EH 44/84 'Dust in the Workplace' – general principles of protection.

Disposal Precautions
Waste foam should be disposed of regularly in a designated location in accordance with the requirements of Local Authorities and the Environmental Protection Act 1991. It is important that the accumulation of waste foam is avoided to prevent wind dispersal. Packaging material is combustible. Store away from sources of ignition prior to disposal.

Ensure polythene wrapping/packaging is kept away from children. Observe usual precautions with polythene bags.

BENCHMARK

Greenfield Business Park No. 2,
Greenfield, Holywell, Flintshire,
CH8 7GJ North Wales, UK
Tel: +44 (0) 1352 716100
Fax: +44 (0) 1352 710161
Email: info@kingspanbenchmark.com
Website: www.kingspanbenchmark.com

13) NBS – Sample

121Q METAL COMPOSITE PANEL CLADDING TO WALLS

- Drawing reference(s): _____
- Supports: Hot or cold formed steel angles to floor slab, to structural engineers design.
  - Bearing width: Min 50mm intermediate, Min 130mm horizontal joint.
  - Panel span determined wind loads from attachment clause and BENCHMARK QuadCore Karrier load span tables, consult the BENCHMARK Technical Services Department Tel: 0800 970 9036, e-mail: technical@kingspanbenchmark.com.
- Panels:
  - Profile reference: BENCHMARK QuadCore Karrier
  - Manufacturer: BENCHMARK, Greenfield Business Park No 2, Greenfield, Holywell, Flintshire, North Wales CH8 7GJ. Tel: 0800 970 9036 (technical), 01352 716100 (sales). Email: info@kingspanbenchmark.com Web: www.kingspanbenchmark.com
  - Orientation: Vertical
  - Cover width: 1100mm
  - External facings:
    - Material: Metallic protected steel to BS EN 10346: 2009.
    - Profile: Equi-Bead
    - Thickness: nominal 0.63mm
    - Finish/Colour: Kingspan XL Forté™, Merlin Grey
  - Internal facings:
    - Material: Metallic protected steel to BS EN 10346: 2009.
    - Thickness: nominal 0.5mm
    - Finish/Colour: Kingspan CleanSafe 15, White
  - Core insulation: Kingspan QuadCore, HCFC, CFC & HFC free formulation. Receiving BREEAM Credit (Pollution 4: Insulant GWP) 2006 credit.
- Panel thickness: 50, 60, 80, 100, 125, 150, 175, 200, 220mm.
- Male/female panel joint sealant:
  - Factory applied weather seal set in rebate.
  - Non-curing gun grade sealant over male joints at panel ends.
- End Laps:
  - Where an end lap must be used the panels must butt-jointed to each other and sealed with a coated steel flashing, sealed to the face of the panel with 2 runs of 9 x 3mm diameter butyl rubber sealant, Class A, ref: NFRC TB36..
  - Nominal 10mm gap between panels to be filled with fire rated gun applied canister urethane insulation.
  - Horizontal panel joint to have 2 runs of non-curing gun grade sealant, site applied at the end of each panel and the horizontal supporting steelwork.
- Fasteners: As determined by fasteners clause
  - Number and location:
  - For panels: As determined by attachment clause, but with each panel through fixed to each support using not less than two fasteners located evenly across the panel width, as recommended by BENCHMARK.
- Thermal Transmittance (U Value): calculated using the method required by the Building Regulations Part L2A (England & Wales) and Building (Scotland) Regulations Section 6: 0.38, 0.31, 0.23, 0.18, 0.15, 0.12, 0.10, 0.09, 0.08 W/m^2K. Manufacturers 40 year structural & thermal guarantee required.
- Air leakage rate: $3m^3/hr/m^2$ at 50 Pa, based on the assumption that the full building envelope is constructed using BENCHMARK Facades.
- Other requirements:
  - Internal face of panel at panel perimeter to be air sealed along the full length by an unbroken 6mm diameter bead of non-curing gun grade sealant.
  - Any joints in the secondary steel frame and cleader angles, which are forming part of the building air seal line, must be sealed with a Film backed Butyl tape or similar.
  - Manufacturers guarantee:-
    - 40 year maintenance and inspection free coating guarantee. Manufacturers coating guarantee to be available on project completion and be fully transferrable for future changes of building ownership.
    - 40 year thermal performance guarantee.
    - 40 year structural performance guarantee.

- Panels manufactured under the following standards:-
  - ISO 9001, Quality Management Systems.
  - ISO 14001, Environmental Management Systems.
  - ISO 18001, Occupational Health and Safety Management Systems.
  - ISO 50001, Energy Management Certificate

BENCHMARK recommend that the appointed cladding sub-contractor attends the appropriate product installation training course at our offices in Holywell prior to commencing installation on site.

125D METALLIC FAÇADE TO WALLS

- Drawing reference(s): _____
- Support: BENCHMARK Quadcore Karrier
- Type: Architectural Facade comprising a cassette façade system.
  - Product reference: BENCHMARK Dri-Design Cassette System
  - Manufacturer: BENCHMARK, Greenfield Business Park No 2, Greenfield, Holywell, Flintshire, North Wales CH8 7GJ. Tel: 0800 970 9036 (technical), 01352 716100 (sales). Email: info@kingspanbenchmark.com Web: www.kingspanbenchmark.com
  - Material: Aluminium
  - Thickness: 2mm.
  - Cassette Size: _____. Face width to be determined from wind loads obtained from Attachment clause.
  - Drawing reference(s): _____
  - Cassette Depth: 32mm
  - Colour: RAL colours. BS colours. Bespoke. Consult with BENCHMARK for availability of colours and to obtain samples *(insert details)*. _____
  - Finish: Aluminium – mill finish, polyester powder coated, post-anodised.
  - Fasteners:
    - Number and location: As determined by attachment clause. Male edge of cassettes are secured to the face of the Quadcore Karrier by means of BENCHMARK DD Rivet. Male edge of cassette sealed to face of panel with BENCHMARK PVC foam tape ref: SVG2540.
  - Joint type: Vertical and horizontal labyrinth joints.
  - Joint width: 13mm
  - Backing wall: BENCHMARK Quadcore Karrier

197A ATTACHMENT:

- Determine the number and location of cladding fasteners recommended by the cladding manufacturer to resist wind loads calculated in accordance with BS EN 1991-1-4:2005 Eurocode 1 – Actions on structures Part 1-4.

- Calculate wind loads on roof and wall cladding appropriate to location, exposure, roof height, building shape and size in accordance with NA of BS EN 1991-1-4:2005 the UK National Annex to Eurocode 1 – Actions on structures Part 1-4.

  Wind Speed (V_{bmap}): ___ m/s
  Altitude Factor (C_{alt}): ___
  Direction Factor (C_{dir}): ___
  Seasonal Factor (C_{season}): ___
  Probability Factor (C_{prop}): ___
  Orography Factor $C_o(Z)$: ___
  Exposure Factor $C_e(Z)$: ___
  Correction Factor $_{cr,t}$: ___
  Peak Velocity Pressure q_p: ___ kN/m^2

220T FASTENERS:

- Recommended manufacturer: To be by Architect / cladding sub-contractor.
- Panel fasteners: Self-drilling, self-tapping screws with spreader plate
  - Type(s), size(s) and drilling capacity: As recommended by fastener manufacturer to suit type and thickness of supports, and thickness of cladding panels.
  - Screw material: Austenitic grade 316 stainless steel.
  - Spreader plate material: Galvanised steel with EPDM foam

  - Spreader plate size: minimum 40mm diameter.
  - Heads: Hex or low profiled.
- Fasteners for vertical joint flashings/trims: As panel fasteners.
- Flashing fasteners: Stitching screws with bonded washers.
  - Screw/washer material: As panel fasteners.
  - Washer size: 14 mm diameter.
  - Heads: With low profiled heads to match colour of the flashing.

275 CONTINUITY THERMAL INSULATION

- Junctions between the roof panel system and walls / penetrations insulated with PIR board insulation any gaps filled with fire rated gun applied canister urethane insulation.
- Placement: Secure and continuous with cladding/ covering insulation.

310A PURPOSE MADE COLD FORMED METAL ACCESSORIES – EXTERNAL FOR PANEL:

- Drawing reference(s): _____
- Material/finish: As external face of panel.
  - Thickness: 0.63 mm
  - Colour: To match external face of panel.
  - Workmanship as section Z11.
  - Fixing:
    Stitch to external face of panels at 450 mm centres using secondary fasteners as specified for the cladding system.
    End laps formed by overlapping or butt straps, depending upon shape.
- Sealing:
    Single line of 9 x 3mm butyl sealant, Class A, ref: NFRC TB36, site applied between flashing and panel.
    End laps air sealed with Single line of 9 x 3mm butyl sealant, Class A, ref: NFRC TB36 or non-curing gun grade sealant.

310B PURPOSE MADE COLD FORMED METAL ACCESSORIES – EXTERNAL FOR FACADE:

- Drawing reference(s): _____
- Material/finish: Same material and finish as facade
- Thickness: Same as facade
- Colour: To match facade
- Workmanship: as section Z11.
- Fixing:
    Stitch to external face of panels at 450 mm centres using low profile colour head stainless steel stitcher screws.
    End laps formed by butt straps. Only one flashing end to be stitched to butt strap and a 3mm gap should be left between flashing ends.
- Sealing:
    Single line of 9 x 3mm butyl sealant, Class A, ref: NFRC TB36, site applied between flashing and panel.
    End laps air sealed with Single line of 9 x 3mm butyl sealant, Class A, ref: NFRC TB36 or non-curing gun grade sealant.

311A PURPOSE MADE COLD FORMED METAL ACCESSORIES – INTERNAL:

- Drawing reference(s): _____
- Material/finish: As internal face of panel.
- Thickness: 0.4mm
- Colour: White.
- Workmanship as section Z11.
- Fixing:
    Stitch to internal face of panels at max. 450 mm centres using secondary fasteners as specified for the cladding system.
- Sealing:
    Single line of non-curing gun grade sealant, site applied between flashing and panel.
    End laps to be air sealed with Film backed Butyl tape or similar or gun grade sealant.

580A INSULATED PANEL IDENTIFICATION & LABELLING

- When the roofing and /or the wall cladding to this building is completed, a label identifying the composition of the insulated panels is to be fitted.
- This label illustrates the type of Insulated panels fitted, to assist Insurers, Fire Officers, Owners and Occupiers identify the envelope composition.

  It is a recommendation of the Total BENCHMARK Guarantee that the insulated panel identification label, which has a specific project registration number, is installed in an agreed location. The project architect, cladding subcontractor or owner should place / affix or communicate the positioning / placing of these labels in an appropriate and accessible location on the building.

- Finish: Aluminium – mill finish, polyester powder coated, post-anodised.
- Fasteners:
  - Number and location: As determined by attachment clause. Male edge of cassettes are secured to the face of the Quadcore Karrier by means of BENCHMARK DD Rivet. Male edge of cassette sealed to face of panel with BENCHMARK PVC foam tape ref: SVG2540.
- Joint type: Vertical and horizontal labyrinth joints.
- Joint width: 13mm
- Backing wall: BENCHMARK Quadcore Karrier

197A ATTACHMENT:

- Determine the number and location of cladding fasteners recommended by the cladding manufacturer to resist wind loads calculated in accordance with BS EN 1991-1-4:2005 Eurocode 1 – Actions on structures Part 1-4.

- Calculate wind loads on roof and wall cladding appropriate to location, exposure, roof height, building shape and size in accordance with NA of BS EN 1991-1-4:2005 the UK National Annex to Eurocode 1 – Actions on structures Part 1-4.

Wind Speed (V_{bmap}): ___ m/s
Altitude Factor (C_{alt}): ___
Direction Factor (C_{dir}): ___
Seasonal Factor (C_{season}): ___
Probability Factor (C_{prop}): ___
Orography Factor $C_o(Z)$: ___
Exposure Factor $C_e(Z)$: ___
Correction Factor $_{cr,t}$: ___
Peak Velocity Pressure q_p: ___ kN/m^2

220T FASTENERS:

- Recommended manufacturer: To be by Architect / cladding sub-contractor.
- Panel fasteners: Self-drilling, self-tapping screws with spreader plate
- Type(s), size(s) and drilling capacity: As recommended by fastener manufacturer to suit type and thickness of supports, and thickness of cladding panels.
- Screw material: Austenitic grade 316 stainless steel.
- Spreader plate material: Galvanised steel with EPDM foam
- Spreader plate size: minimum 40mm diameter.
- Heads: Hex or low profiled.
- Fasteners for vertical joint flashings/trims: As panel fasteners.
- Flashing fasteners: Stitching screws with bonded washers.
- Screw/washer material: As panel fasteners.
- Washer size: 14 mm diameter.
- Heads: With low profiled heads to match colour of the flashing.

275 CONTINUITY THERMAL INSULATION

- Junctions between the roof panel system and walls / penetrations insulated with PIR board insulation any gaps filled with fire rated gun applied canister urethane insulation.
- Placement: Secure and continuous with cladding/ covering insulation.

310A PURPOSE MADE COLD FORMED METAL ACCESSORIES – EXTERNAL FOR PANEL:

- Drawing reference(s): _____
- Material/finish: As external face of panel.
- Thickness: 0.63 mm
- Colour: To match external face of panel.
- Workmanship as section Z11.
- Fixing:
  Stitch to external face of panels at 450 mm centres using secondary fasteners as specified for the cladding system.
  End laps formed by overlapping or butt straps, depending upon shape.
- Sealing:
  Single line of 9 x 3mm butyl sealant, Class A, ref: NFRC TB36, site applied between flashing and panel.
  End laps air sealed with Single line of 9 x 3mm butyl sealant, Class A, ref: NFRC TB36 or non-curing gun grade sealant.

3 10B PURPOSE MADE COLD FORMED METAL ACCESSORIES – EXTERNAL FOR FACADE:

- Drawing reference(s): _____
- Material/finish: Same material and finish as facade
- Thickness: Same as facade
- Colour: To match facade
- Workmanship: as section Z11.
- Fixing:
  Stitch to external face of panels at 450 mm centres using low profile colour head stainless steel stitcher screws.
  End laps formed by butt straps. Only one flashing end to be stitched to butt strap and a 3mm gap should be left between flashing ends.
- Sealing:
  Single line of 9 x 3mm butyl sealant, Class A, ref: NFRC TB36, site applied between flashing and panel.
  End laps air sealed with Single line of 9 x 3mm butyl sealant, Class A, ref: NFRC TB36 or non-curing gun grade sealant.

311A PURPOSE MADE COLD FORMED METAL ACCESSORIES – INTERNAL:

- Drawing reference(s): _____
- Material/finish: As internal face of panel.
- Thickness: 0.4mm
- Colour: White.
- Workmanship as section Z11.
- Fixing:
  Stitch to internal face of panels at max. 450 mm centres using secondary fasteners as specified for the cladding system.
- Sealing:
  Single line of non-curing gun grade sealant, site applied between flashing and panel.
  End laps to be air sealed with Film backed Butyl tape or similar or gun grade sealant.

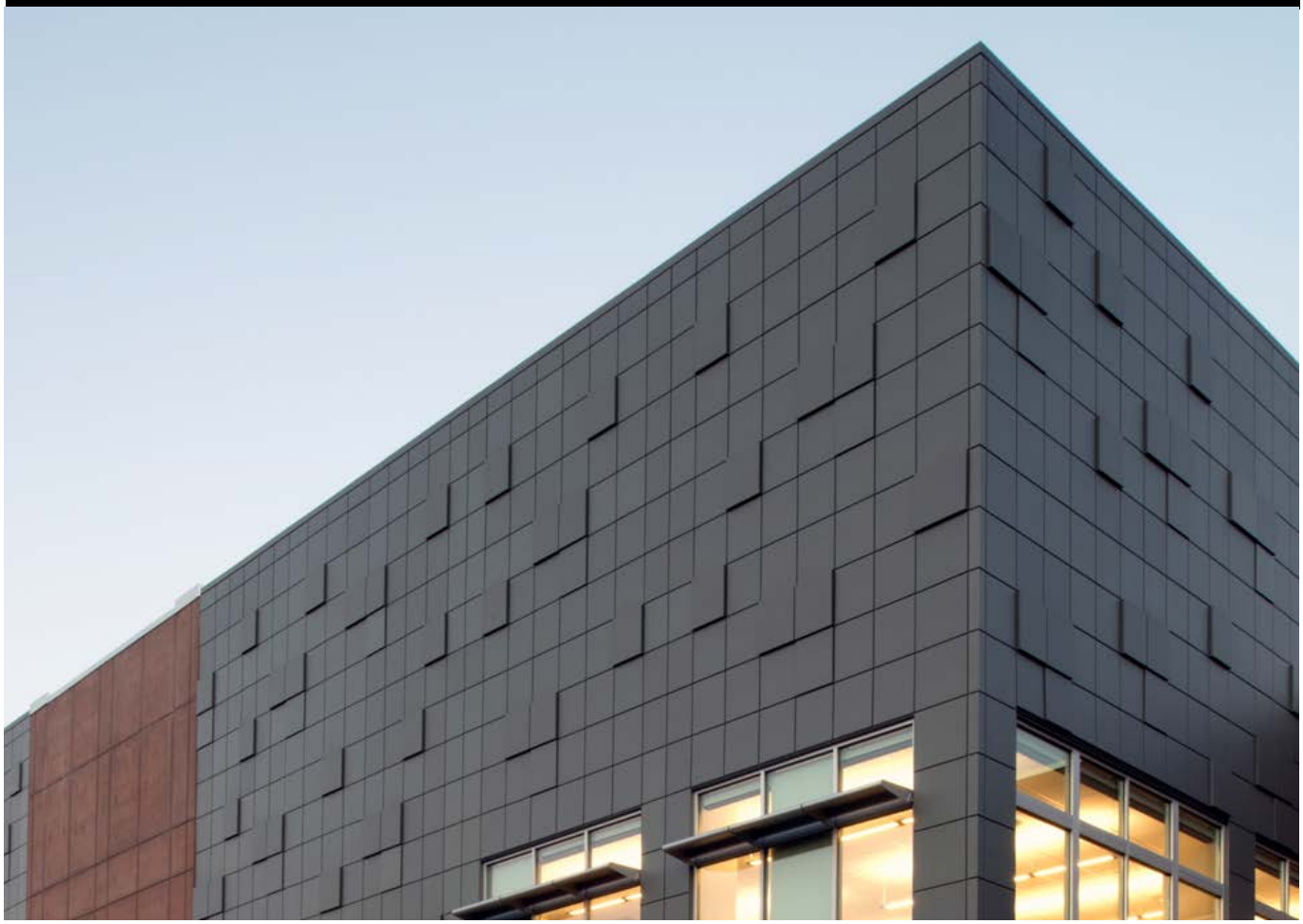
580A INSULATED PANEL IDENTIFICATION & LABELLING

- When the roofing and /or the wall cladding to this building is completed, a label identifying the composition of the insulated panels is to be fitted.
- This label illustrates the type of Insulated panels fitted, to assist Insurers, Fire Officers, Owners and Occupiers identify the envelope composition. It is a recommendation of the Total BENCHMARK Guarantee that the insulated panel identification label, which has a specific project registration number, is installed in an agreed location. The project architect, cladding subcontractor or owner should place / affix or communicate the positioning / placing of these labels in an appropriate and accessible location on the building.

14) Order Form

Dri-Design Order Form

BENCHMARK
By Kingspan



Client/Company Name:		Contact Name:	
Order Number:		Contact Phone Number:	
Invoice Address:		Date:	
		Quotation Number:	
		Notes:	
Delivery Address:			
Delivery Date Required:		Client's Signature:	

Order Number:

QuadCore Karrier Panel

1. Cover Width	
Cover Width	1100mm

2. Top Sheet		
Profile		Equi-Bead
Thickness		0.7mm
Substrate		Steel
Coating		Kingspan XL Forte
Colour (Standard) *please specify*		Merlin Grey
Colour (Non-Standard) *please specify*		

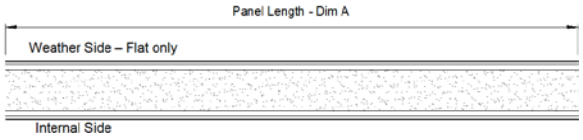
3. Backing Tray	
Profile	Equi-Bead
Thickness	0.5mm
Substrate	Steel
Coating	CleanSafe 15

4. Factory Applied Vapour Seal	
FAV	Standard

5. Panel Insulation	
Insulation Thickness	

6. Accessories	
Base Support Channel (Hz only)	
VJ1 60x10 Bubble Gasket (25m roll)	

QuadCore Karrier Diagram



Notes
Standard Lengths: 1.8m -14.5m.
*Longer Lengths: 14.5m - 19.7m.
*Shorter Lengths: Below 1.8m.
*Non-standard lengths subject to additional charge.

7. QuadCore Karrier Panel Dimensions

Quantity	*Panel Length - Dim A (mm)	Panel Reference	Special Requirements

Benchmark, Kingspan Limited, Greenfield Business Park,
Greenfield, Holywell, Flintshire, CH8 7GJ
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Website: www.kingspanbenchmark.com
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Order Number:

8. QuadCore Karrier Panel Dimensions Continued			
Quantity	Panel Length - Dim A (mm)	Panel Reference	Special Requirements

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Order Number:

9. Dri-Design Cassette - Specification			
*Material	Thickness (mm)	**Finish Type	Colour

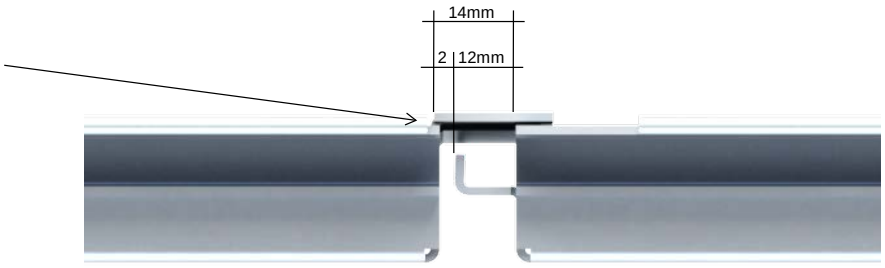
Notes

*Please refer to the Benchmark website for material thicknesses available.

**Please refer to the Benchmark website for full material and associated finish/colour range available.

10. Dri-Design Cassette - Diagrams

Cassette Size



Standard Vertical Joint Size - 14mm

2mm introduced to allow for thermal movement.

Standard Horizontal Joint Size - 14mm

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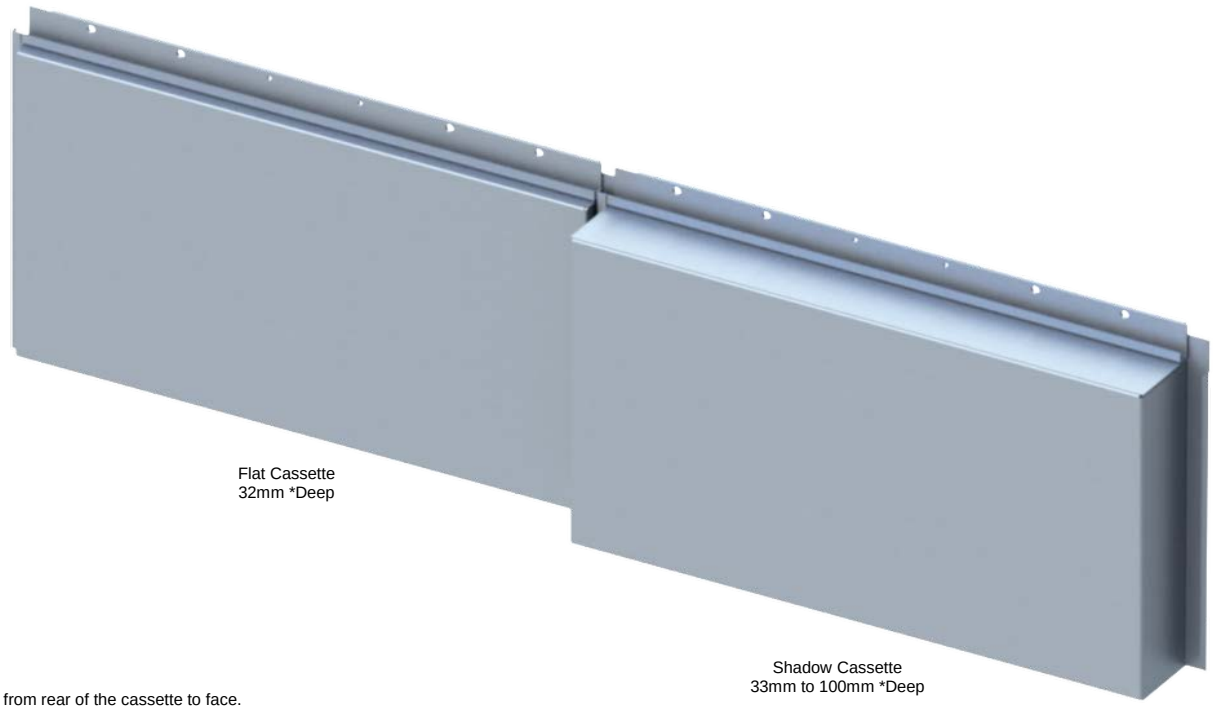
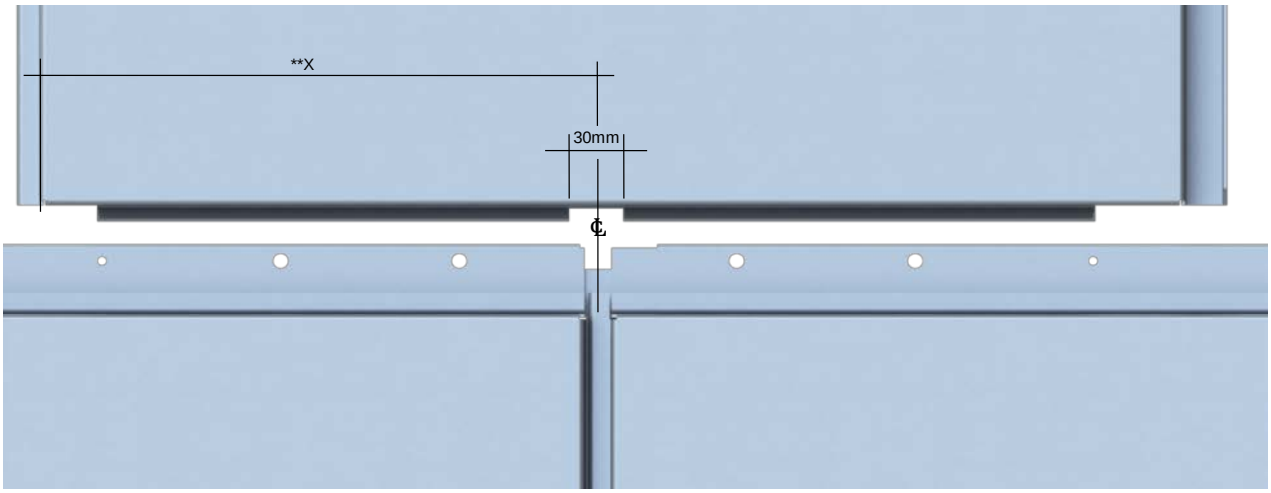
11. Dri-Design Cassette - Diagrams Continued

Cassette Depth



*Depth is measured from rear of the cassette to face.

Staggered Notch Location



** Dimension X is taken from the LH edge of the cassette face to the centre of the below staggered module.
Notch is always 30mm.

NOTE: Direction of lay - Left to Right only.

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Order Number:

12. Dri-Design - Standard Cassette Types

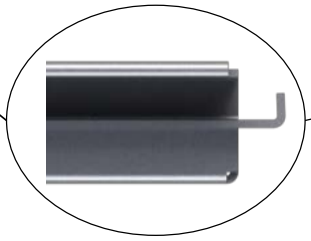
Type 1: Flat

Type 2: Shadow

Type 3: Flat RH Closure

Type 4: Shadow RH Closure

Type X: Customer Designed Cassette



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Order Number:

13. Dri-Design Cassette - Quantity, Size & Type

Quantity	Complete both Module & Face dimensions. (Note: Orders will not be processed if not fully completed)				*Cassette Type	**Shadow Depth (mm)	***Staggered Notch Location X (mm)	Cassette Reference
	Module Width (mm)	Module Height (mm)	Face Width (mm)	Face Height (mm)				

Order Number:

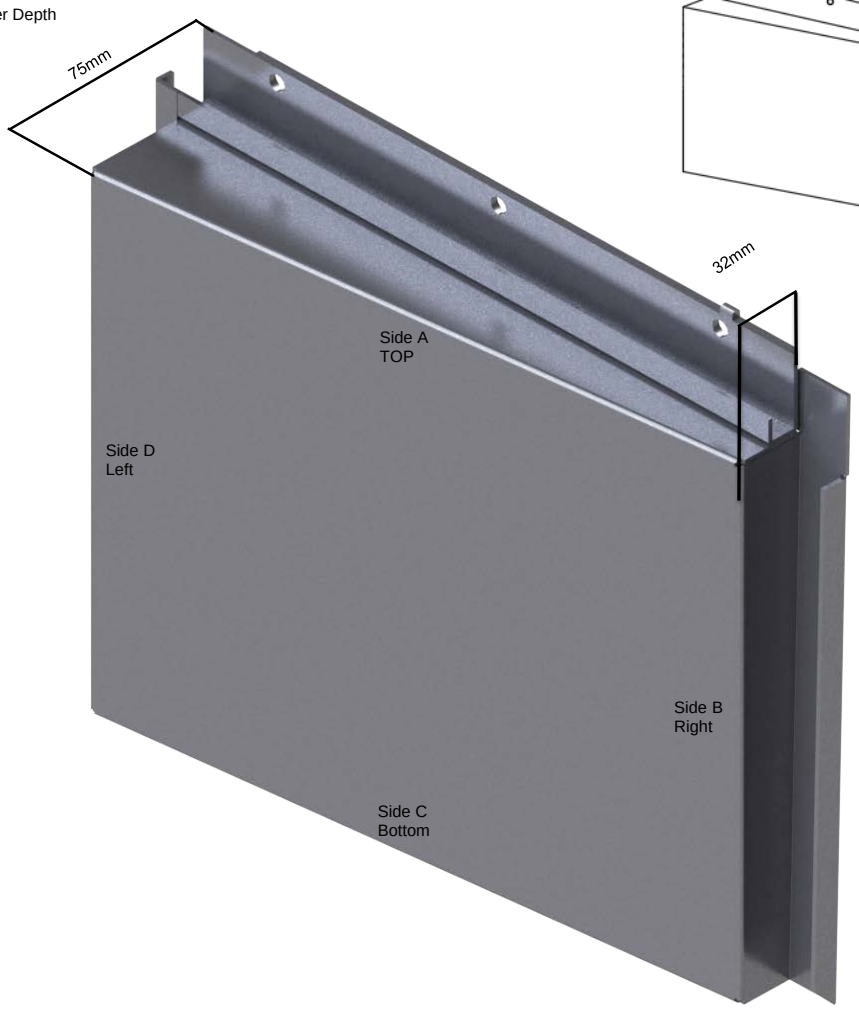
14. Dri-Design Cassette - Quantity, Size & Type Continued

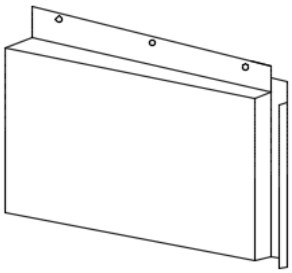
Quantity	Complete both Module & Face dimensions. (Note: Orders will not be processed if not fully completed)				*Cassette Type	**Shadow Depth (mm)	***Staggered Notch Location X (mm)	Cassette Reference
	Module Width (mm)	Module Height (mm)	Face Width (mm)	Face Height (mm)				

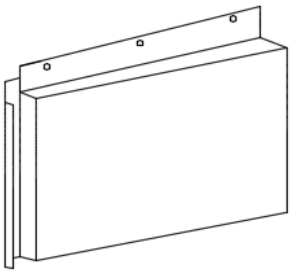
Order Number:

15. Dri-Design Tapered Cassette - Diagrams

Type 5: Tapered Cassette Depth

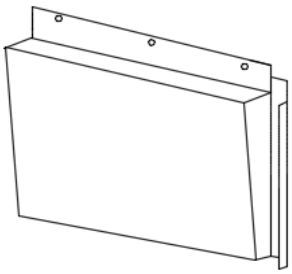


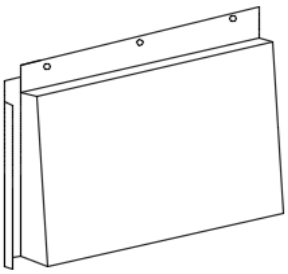




Above Left: Tapered Right to Left
Above Right: Tapered Left to Right

Below Left: Tapered Bottom to Top
Below Right: Tapered Top to Bottom





Type 6: Tapered Cassette RH Closure

*Taper Depth: 32 to 75mm

NOTE: only one side may be specified

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Order Number:

16. Dri-Design Tapered Cassette - Quantity, Size & Type Continued

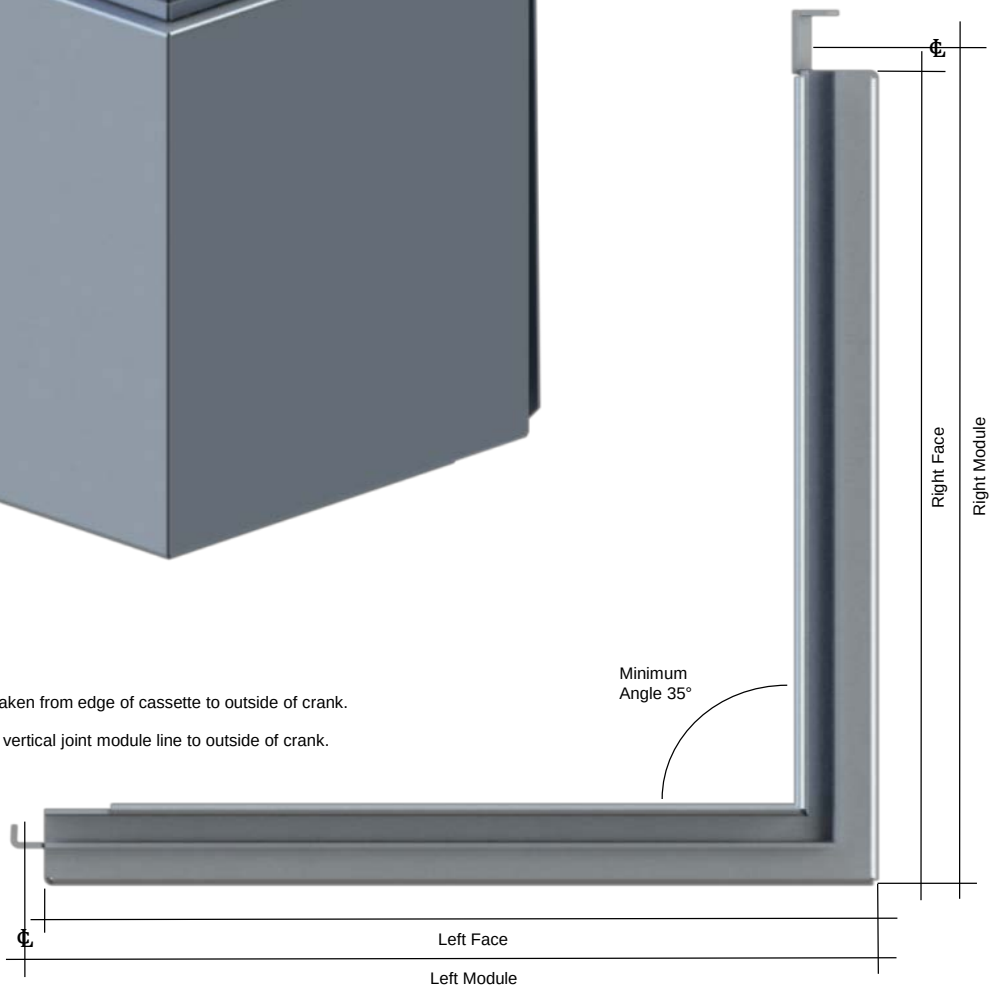
Quantity	Complete both Module & Face dimensions. (Note: Orders will not be processed if not fully completed)				*Cassette Type	Taper Side	**Taper Depth (mm)	***Staggered Notch Location X (mm)	Cassette Reference
	Module Width (mm)	Module Height (mm)	Face Width (mm)	Face Height (mm)					

Order Number:

17. Dri-Design External Corner Cassette - Diagram

External Corner Cassette*

*Available for Flat and Shadow cassettes only



Note:

Left & Right Face dimensions are taken from edge of cassette to outside of crank.

Module dimensions are taken from vertical joint module line to outside of crank.

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Order Number:

18. Dri-Design Corner Cassette - Quantity, Size & Type

Quantity	Complete both Module & Face dimensions						*Cassette Type	Angle (°)	**Shadow Depth (mm)	***Staggered Notch Location X (mm)	Cassette Reference
	Left Module (mm)	Right Module (mm)	Face Module Height (mm)	Left Face (mm)	Right Face (mm)	Face Height (mm)					

Notes

*See Section 12 for details on cassette type and Section 17 for corner details.

**Shadow depth applies to shadow type cassettes only. See Section 11.

***Staggered Notch allows for staggered vertical joints. See Section 11 for guidance on location.

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Order Number:

19. Accessories							
Image	Code	Part	Description	Application	Quantity Required	Quantity	Units
Fixings							
	Direct to Panel - KSMR-ACM/W	Rivet with Washer	4.8 x 18. 16mm head	Used to secure Dri-Design cassettes directly to QuadCore Karrier panel	Dependant upon size of cassette & project windloadings		*Boxes of 100
	Omega Support - KSMR-ACM	Rivet	4.8 x 18. 16mm head	Used to secure Dri-Design cassettes to KSAL30-OMEGA/P profile	Dependant upon size of cassette & project windloadings		*Boxes of 100
	KSAFL6	Expanding fastener	Fixing to attach KSAL30-OMEGA/P profile to QuadCore Karrier panel	Installed through 8.5mm dia. holes into QuadCore Karrier panel face to attach KSAL30-OMEGA/P profile	Quantity dependent on wind loads - Please contact Benchmark Technical		Each
Support							
	KSAL30-OMEGA/P	Omega Profile	Aluminium Omega profile, depth 30mm, powder coated black	Horizontal support for fixing cassettes	Project Dependent		3m length
Tools							
	KSMT-CDB	Centralising Drill Bit	Centralising drill bit holder	Used to ensure a central hole is drilled through the Dri-Design cassette into the panel face	Project Dependent		Each
	KSATOOL	Expanding fastener holding sleeve/drive	Attachment tool used to retain and drive fastener whilst fixing	Hand-held tool, to drive KSAFL6 fastener and screw drive, retaining collar of fastener	Project Dependent		Each
	KSMR-NP/RF	Metallic Rivets Nosepiece	Standoff Nosepiece	Nosepiece for metallic rivets to allow for thermal expansion	Project Dependent		Each
Misc.							
	SVG2540	Isolation Tape	Single sided self-adhesive PVC isolation tape	Used to isolate Dri-Design cassette from QuadCore Karrier panel	Supplied in 25 linear metre long rolls		No. of Rolls
	KSSVG25	Isolation tape	Single sided self-adhesive PVC isolation tape	Used to isolate Omega profile from the QuadCore Karrier panel face	Supplied in 25 linear metre long rolls		No. of Rolls
Notes							
*Minimum Order Quantity of 1000 rivets (i.e. 10 boxes) with multiples of 100 rivets (i.e 1 box) thereafter.							

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Order Number:

20. Accessories - Extrusions

Image	Code	Part	Description	Application	Quantity Required	Finish	Quantity	Units
	BMDD-EXTGAS100M	Extrusion Gasket	Site installed gasket for use with capping profiles (*)	Used as an anti-rattle seal between the capping extrusions and the Dri-Design cassette face	To suit meterage of capping profiles ordered. Supplied in 100 linear metre long rolls	NA		No. of Rolls
	BMDD-JEXTBACK3M	J Extrusion - Receiver	Receiver extrusion for use with BMDD-JCAPPC & BMDD-JCAPANOD	Installed at the base of an elevation to support the bottom of the Dri-Design cassette	Project Dependent	Mill Only		3m Length
	BMDD-JEXTFACECAP/P	J Extrusion Face Cap *(PPC Finish Only)*	Polyester Powder Coated face cap extrusion	Push fit into BMDD-JBACK receiver extrusion	Project Dependent	PPC Finish	*Mitred Quant	3m Length
	BMDD-JEXTFACECAP/P	J Extrusion Face Cap *(Anodised Finish Only)*	Anodiesed face cap extrusion	Push fit into BMDD-JBACK receiver extrusion	Project Dependent	Anodised Finish	*Mitred Quant	3m Length
	BMDD-START/CUTEXT3	Start/Cut Extrusion	Support channel	Site cut to length, used to support the edge of a Dri-Design cassette when using a face cap extrusion	Project Dependent	Mill Only		3m Length
	BMDD-JEXT05SMFAC/P	Base J Support	Base J support. 12.5mm upstand	Used to seat the bottom of a Dri-Design cassette when not using capping extrusions	Project Dependent			3m Length
	BMDD-JEXT1SMFAC/P	Base J Support	Base J support. 25mm upstand	Used to seat the bottom of a Dri-Design cassette when not using capping extrusions	Project Dependent			3m Length

Notes

*Mitred extrusions are supplied in 3m lengths only.

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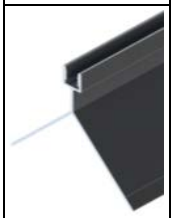
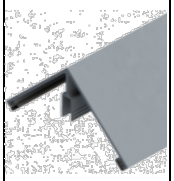
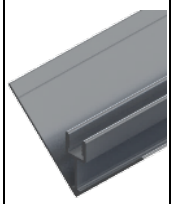
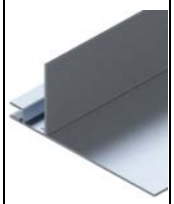
Order Number:

21. Accessories - Extrusions Continued

Image	Code	Part	Description	Application	Quantity Required	Finish	Quantity		Units
	BMDD-OUTCOREXTBK3M	External Corner Receiver Extrusion	Receiver for use with BMDD-OSCORNERCAP	Used to form a 90° external corner	Project Dependent	Mill Only			3m Length
	BMDD-OSCOREXTCAP/P	External Corner Extrusion Face Cap	Face cap for use with BMDD-OSCORNERBK	90° external corner cap	Project Dependent				3m Length
	BMDD-INCOREXTBK3M	Internal Corner Receiver Extrusion	Receiver for use with BMDD-ISCORNERCAP	Used to form a 90° internal corner	Project Dependent	Mill Only			3m Length
	BMDD-INCOREXTCAP/P	Internal Corner Extrusion Face Cap	Face cap for use with BMDD-ISCORNERBK	90° internal corner cap	Project Dependent				3m Length
	BMDD-4RETJEXT/P	100mm Return J Extrusion	Receiver extrusion for use with BMDD-JCAPPC & BMDD-JCAPANOD	Installed in locations that require a projection, example window head	Project Dependent	Mill Only			3m Length
	Flashing	Compression Spring	Folded aluminium compression spring	Installed behind cassettes abutting J Extrusion Face Caps to reduce rattle and maintain cassette geometry	Project Dependent	Mill Only	*	Quantity	Length (mm)
							Face		
							Width		

Notes

* Recommended length - 'cassette Face/Width - 40mm'.

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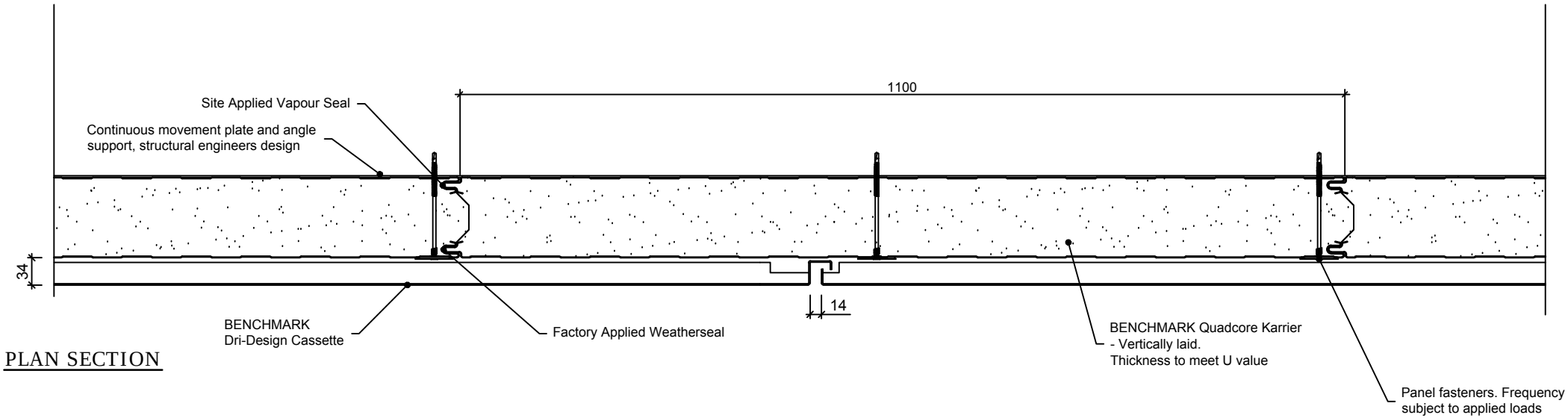
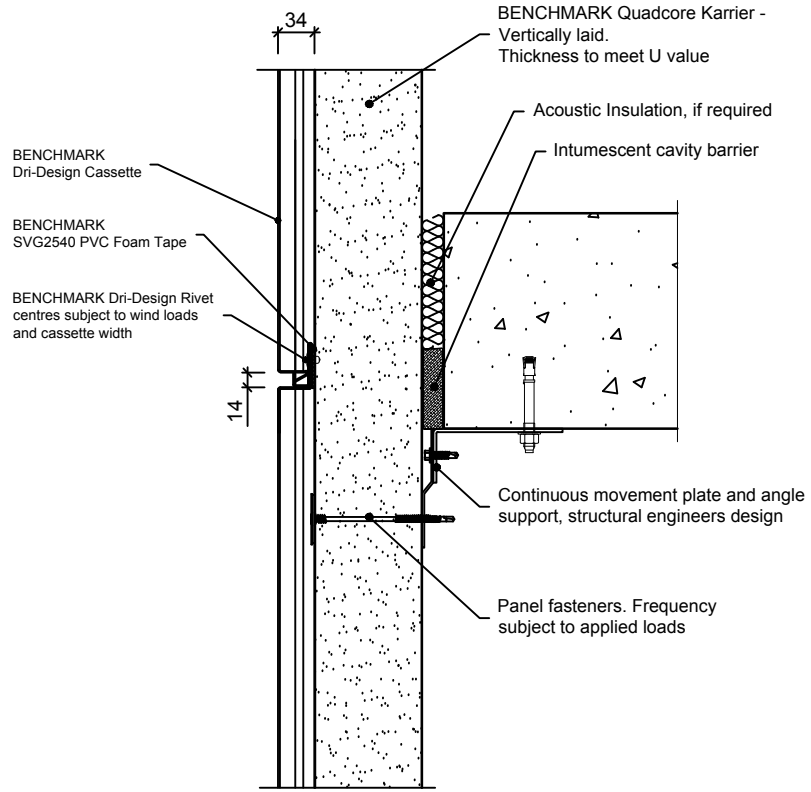
15) Construction Details (Typical)



PLAN SECTION



VERTICAL SECTION

Project:

System: BENCHMARK Dri-Design and Quadcore Karrier

Drawing Title: System Layout

Drawn By: AE | Date: 31/03/2017

Drawing Nº. DD QK Vt FF 001 | Rev: 0

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Flintshire. CH8 7GJ
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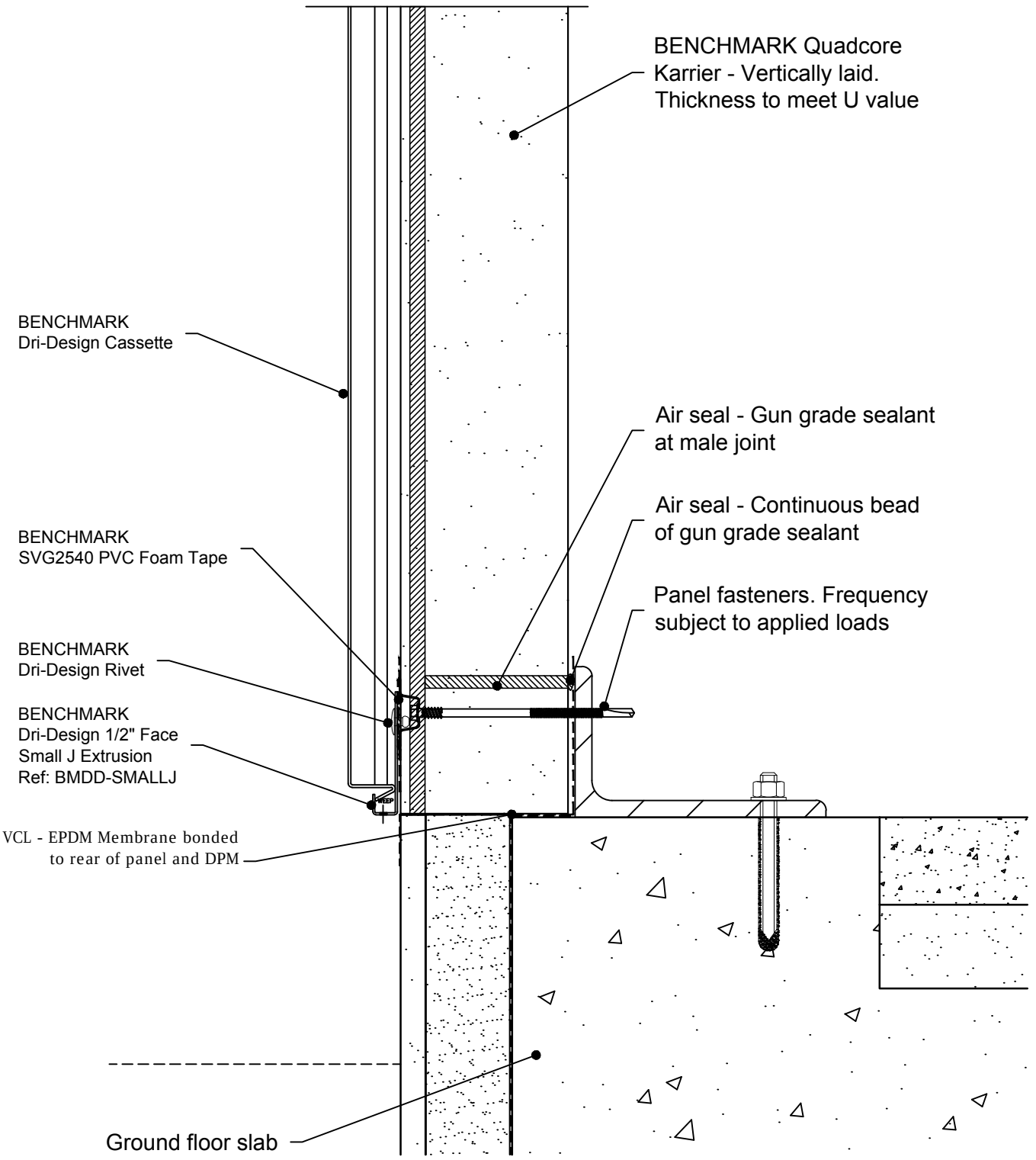
0 100mm



Project:

System: BENCHMARK Dri-Design and Quadcore Karrier

Drawing Title: Drip Detail

Drawn By: AE 53 Date: 31/03/2017

Drawing Nº. DD QK Vt FF 002 Rev: 0

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Flintshire. CH8 7GJ
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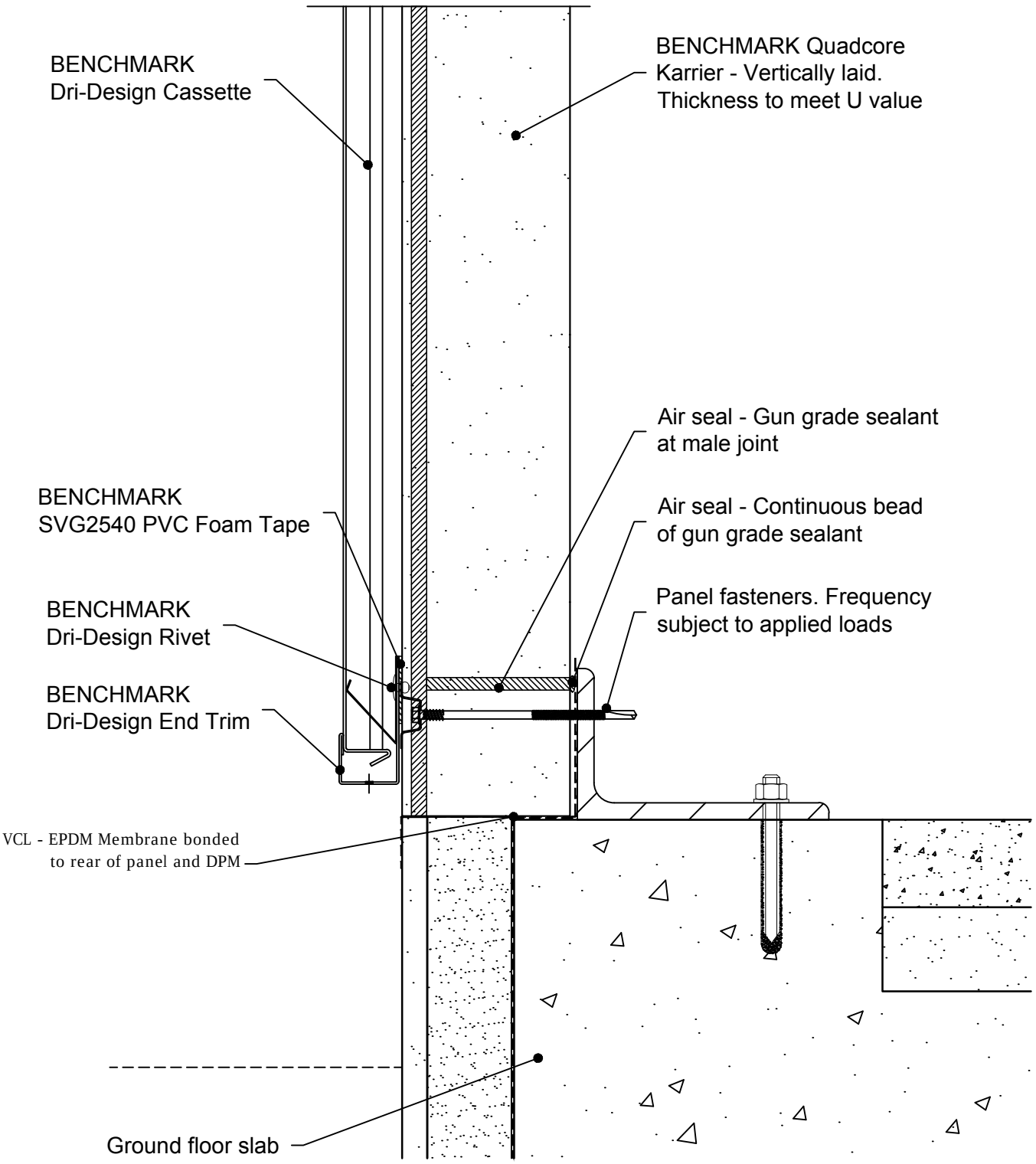

Project:	
System: BENCHMARK Dri-Design and Quadcore Karrier	
Drawing Title: Drip Detail	
Drawn By: AE 54	Date: 31/03/2017
Drawing N°. DD QK Vt FF 002F	Rev: 0

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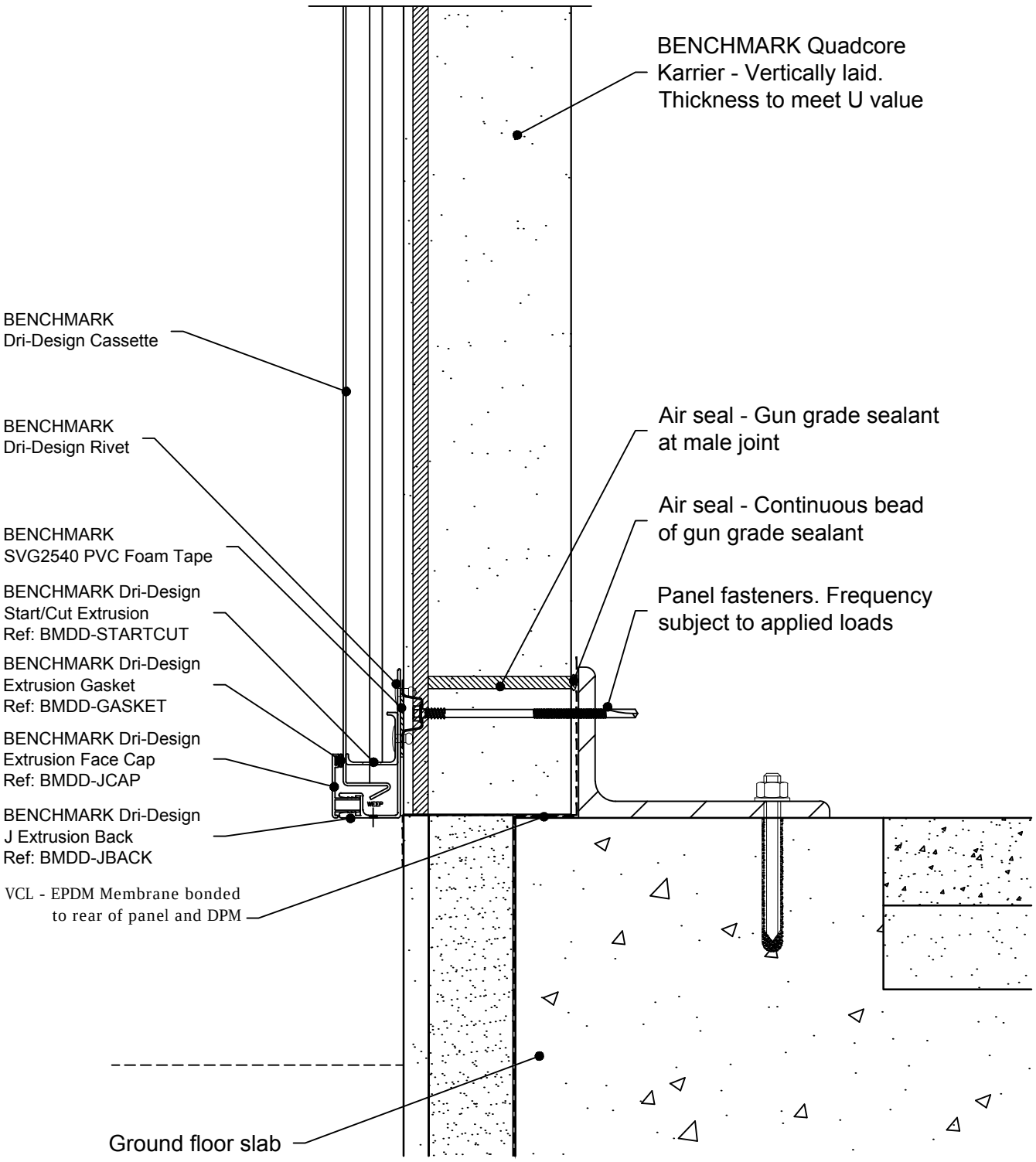
0 100mm



Project:

System: BENCHMARK Dri-Design and Quadcore Karrier

Drawing Title: Drip Detail

Drawn By: AE | Date: 31/03/2017

Drawing Nº. DD QK Vt FF 002E | Rev: 0

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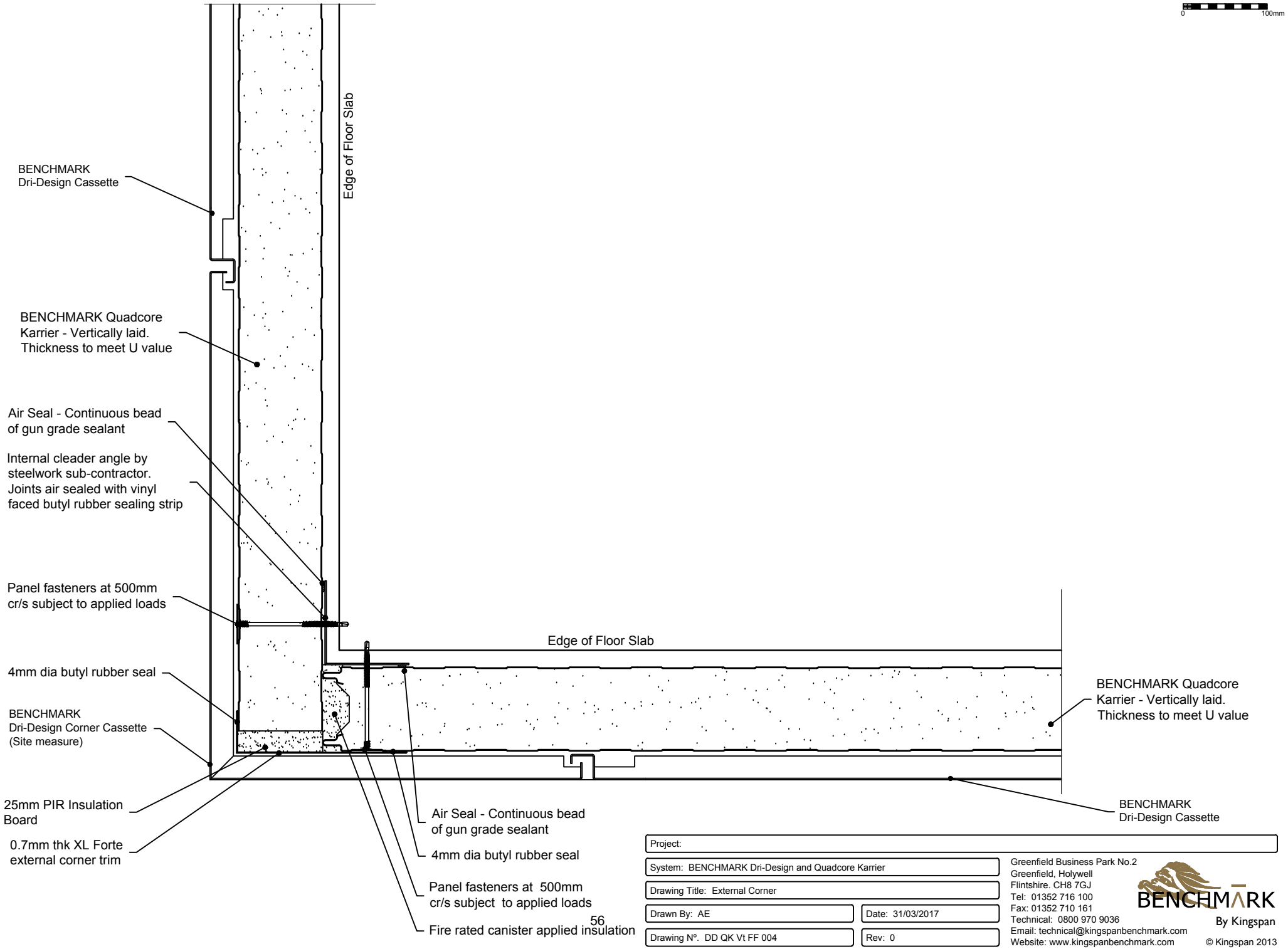

Project:

System: BENCHMARK Dri-Design and Quadcore Karrier

Drawing Title: External Corner

Drawn By: AE

Date: 31/03/2017

Drawing Nº. DD QK Vt FF 004

Rev: 0

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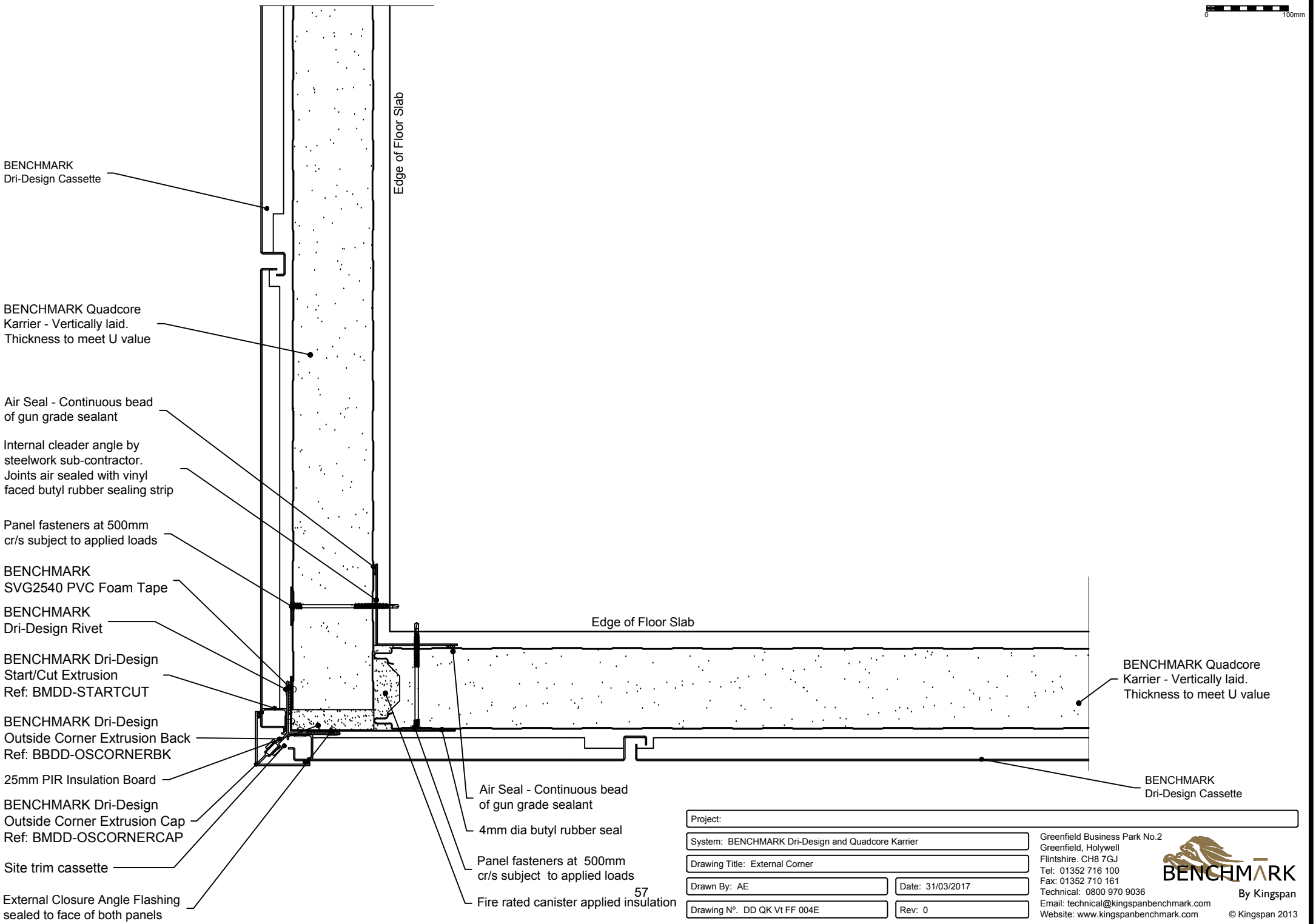

Project:

System: BENCHMARK Dri-Design and Quadcore Karrier

Drawing Title: External Corner

Drawn By: AE | Date: 31/03/2017

Drawing N°. DD QK Vt FF 004E | Rev: 0

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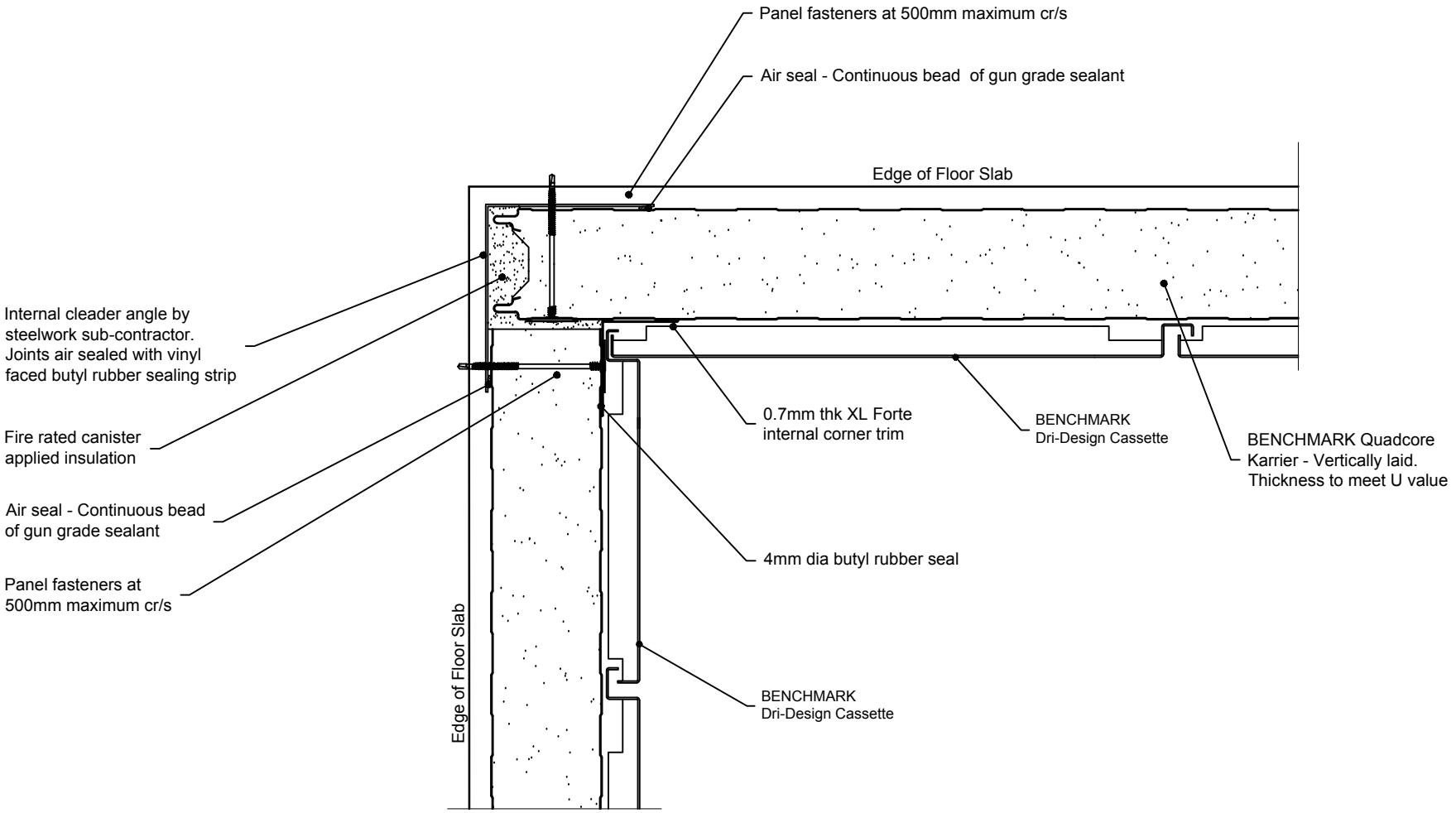

Project:	
System: BENCHMARK Dri-Design and Quadcore Karrier	
Drawing Title: Internal Corner	
Drawn By: AE	Date: 31/03/2017
Drawing Nº. DD QK Vt FF 005	Rev: 0

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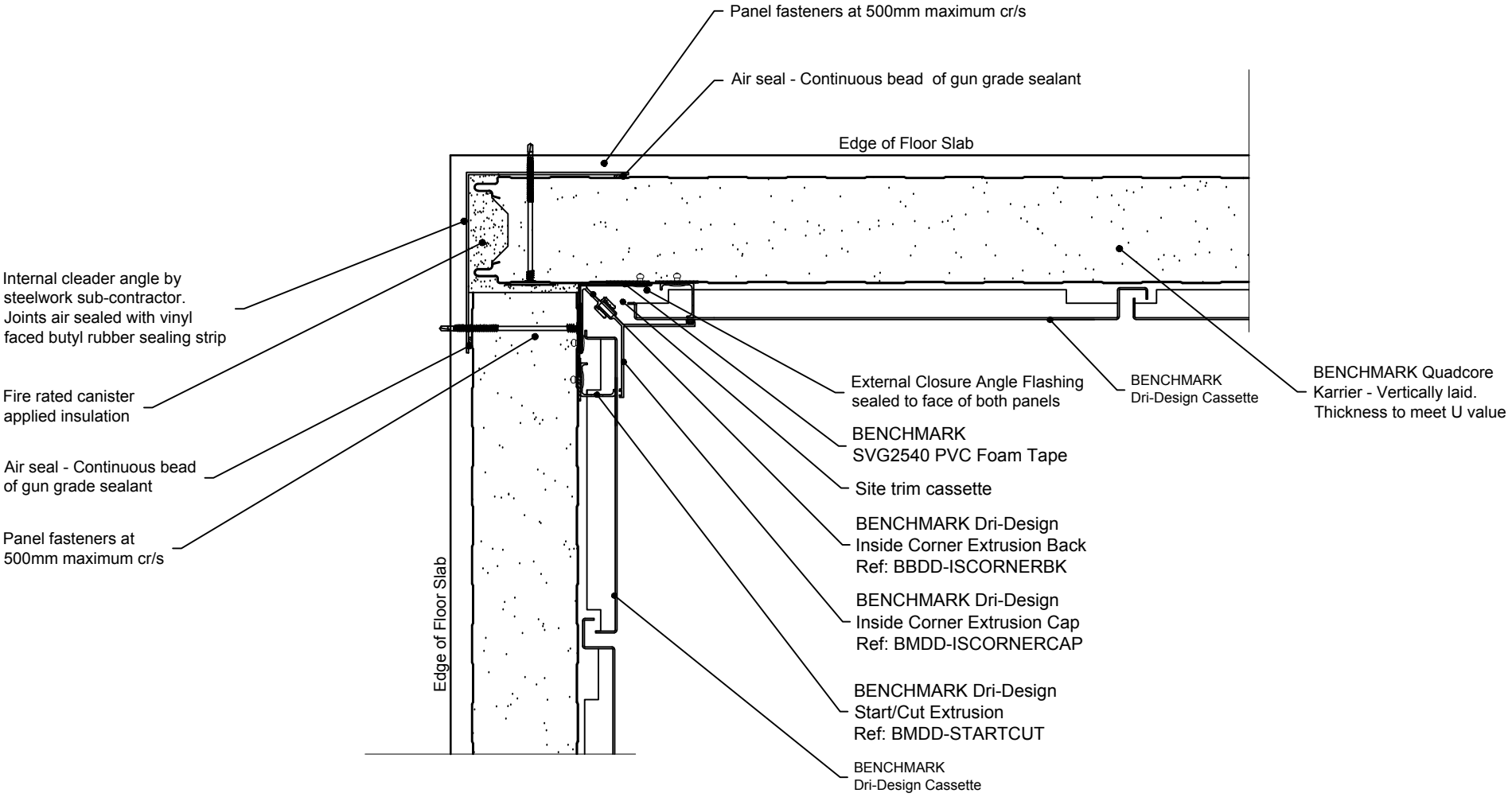

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System: BENCHMARK Dri-Design and Quadcore Karrier	
Drawing Title: Internal Corner	
Drawn By: AE	Date: 31/03/2017
Drawing Nº. DD QK Vt FF 005E	Rev: 0

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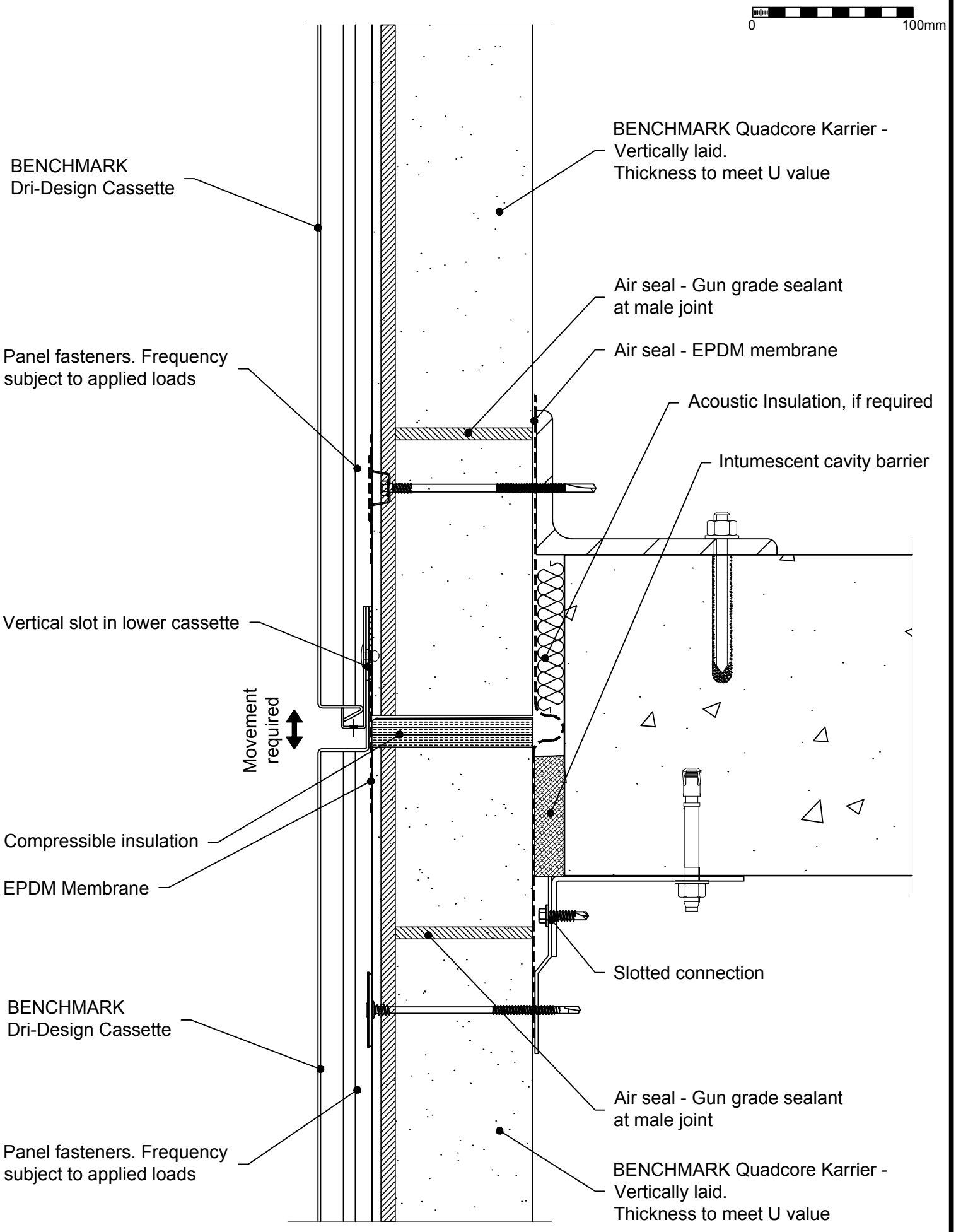

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Drawing Title: Movement Joint Detail	
Drawn By: AE 60	Date: 31/03/2017
Drawing Nº. DD QK Vt FF 025	Rev: 0

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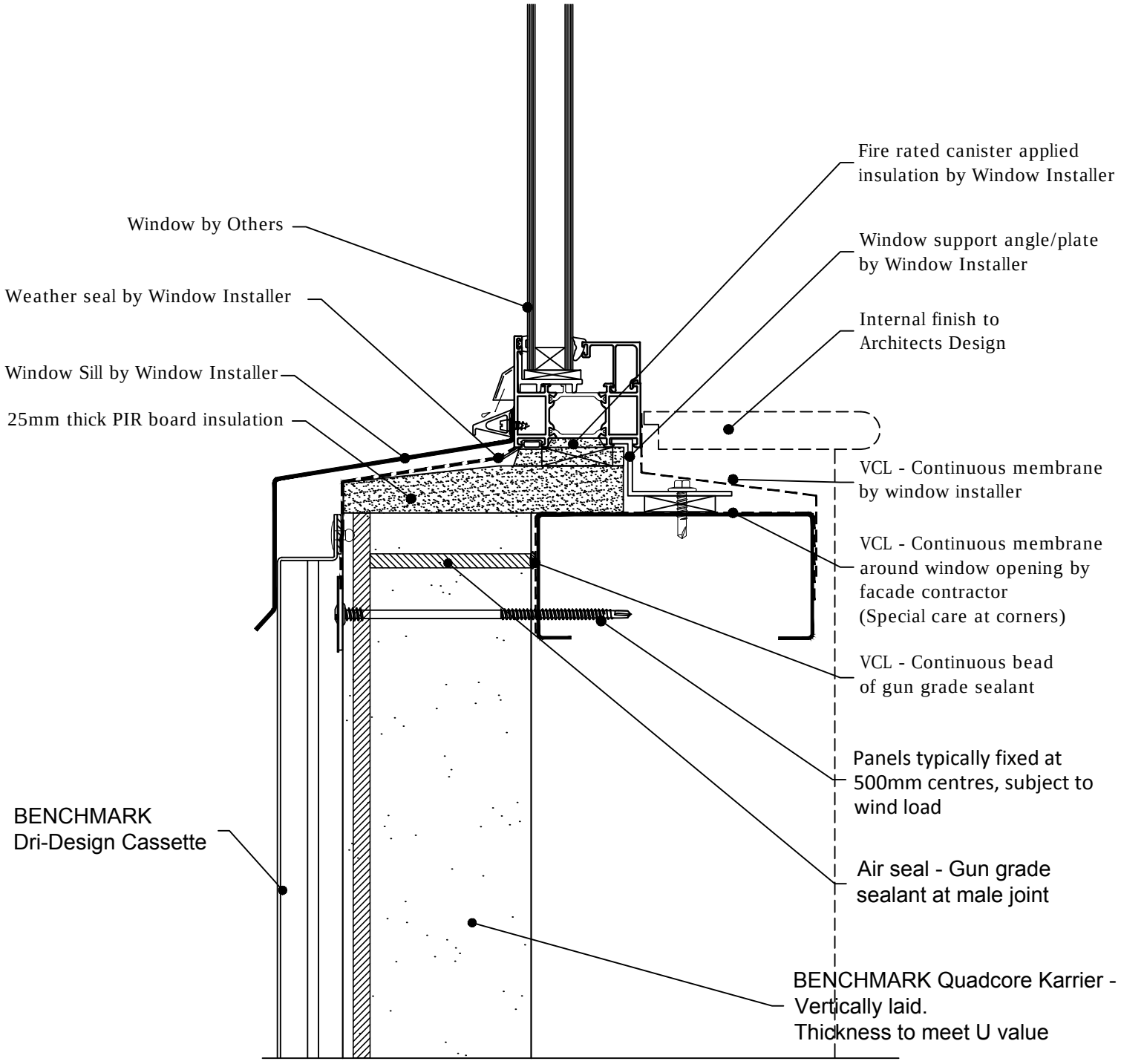

Project:	
System: BENCHMARK Dri-Design and Quadcore Karrier with Marley Equitone	
Drawing Title: Window Sill	
Drawn By: AE	Date: 31/03/2017
Drawing Nº. FC FF DD QK Vt FF 007	Rev: 0

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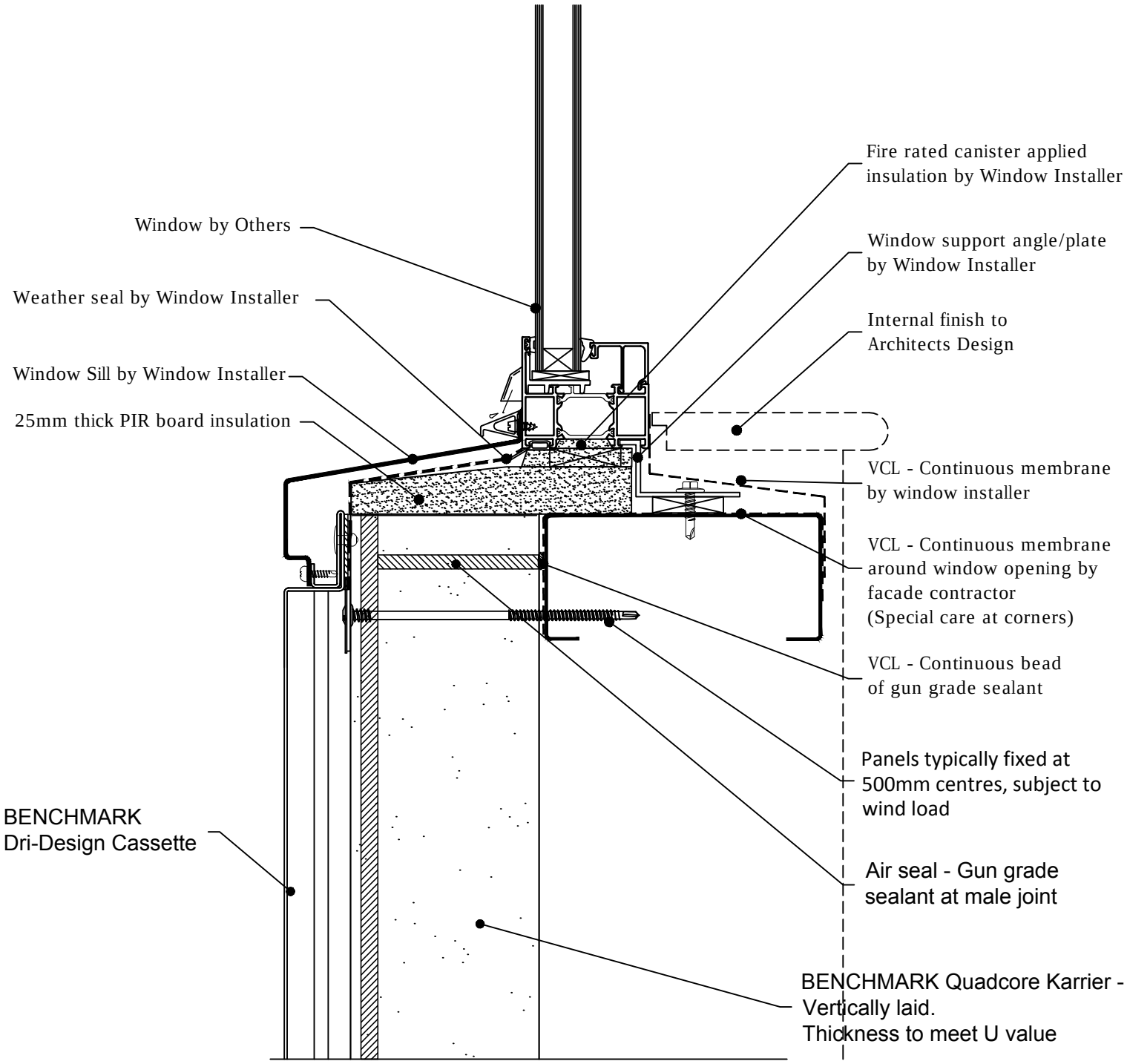

Project:	
System: BENCHMARK Dri-Design and Quadcore Karrier with Marley Equitone	
Drawing Title: Window Sill	
Drawn By: AE	Date: 31/03/2017
Drawing Nº. FC FF DD QK Vt FF 007F	Rev: 0

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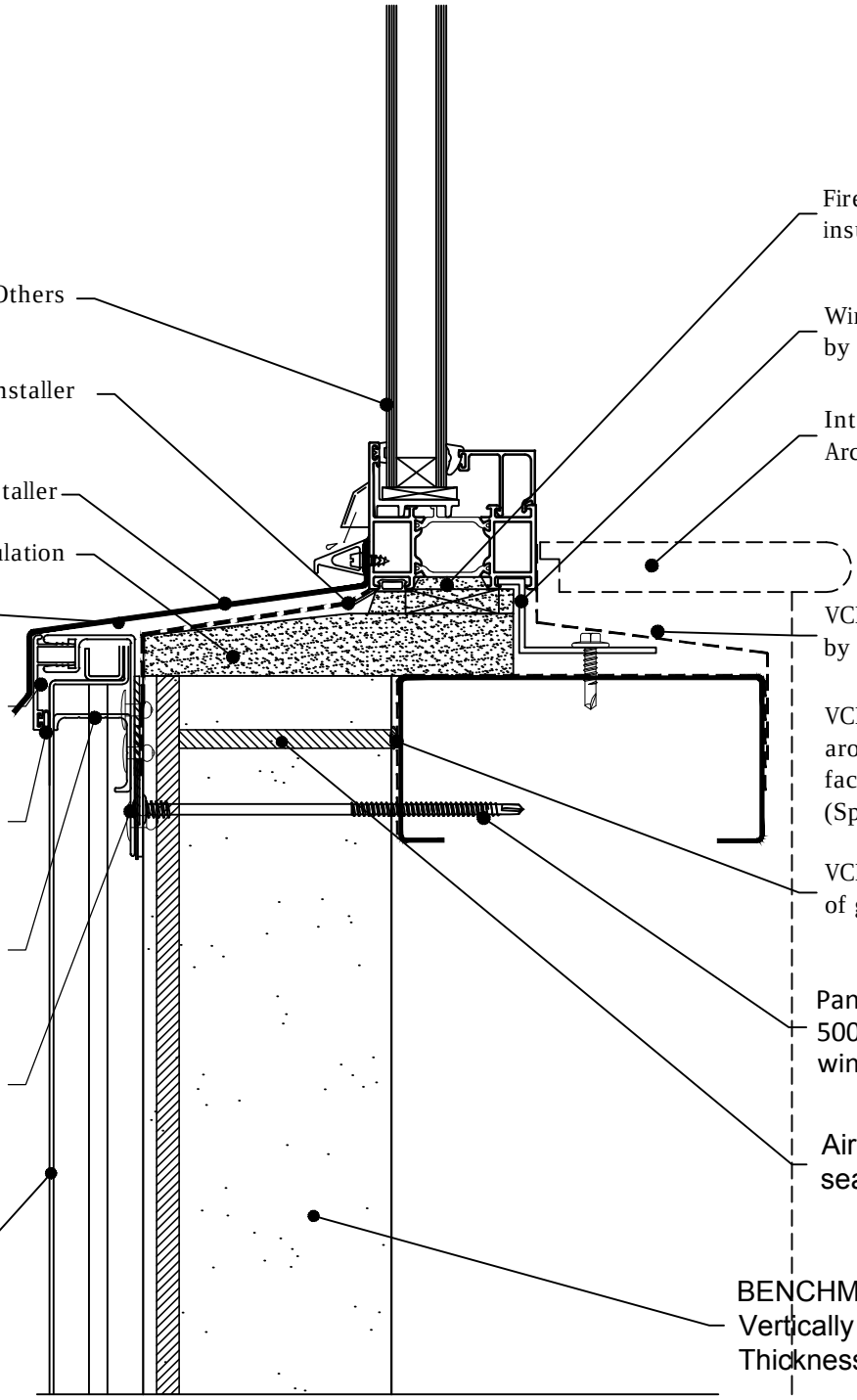

Project:

System: BENCHMARK Dri-Design and Quadcore Karrier with Marley Equitone

Drawing Title: Window Sill

Drawn By: AE

Date: 31/03/2017

Drawing N°. FC FF DD QK Vt FF 007E

Rev: 0

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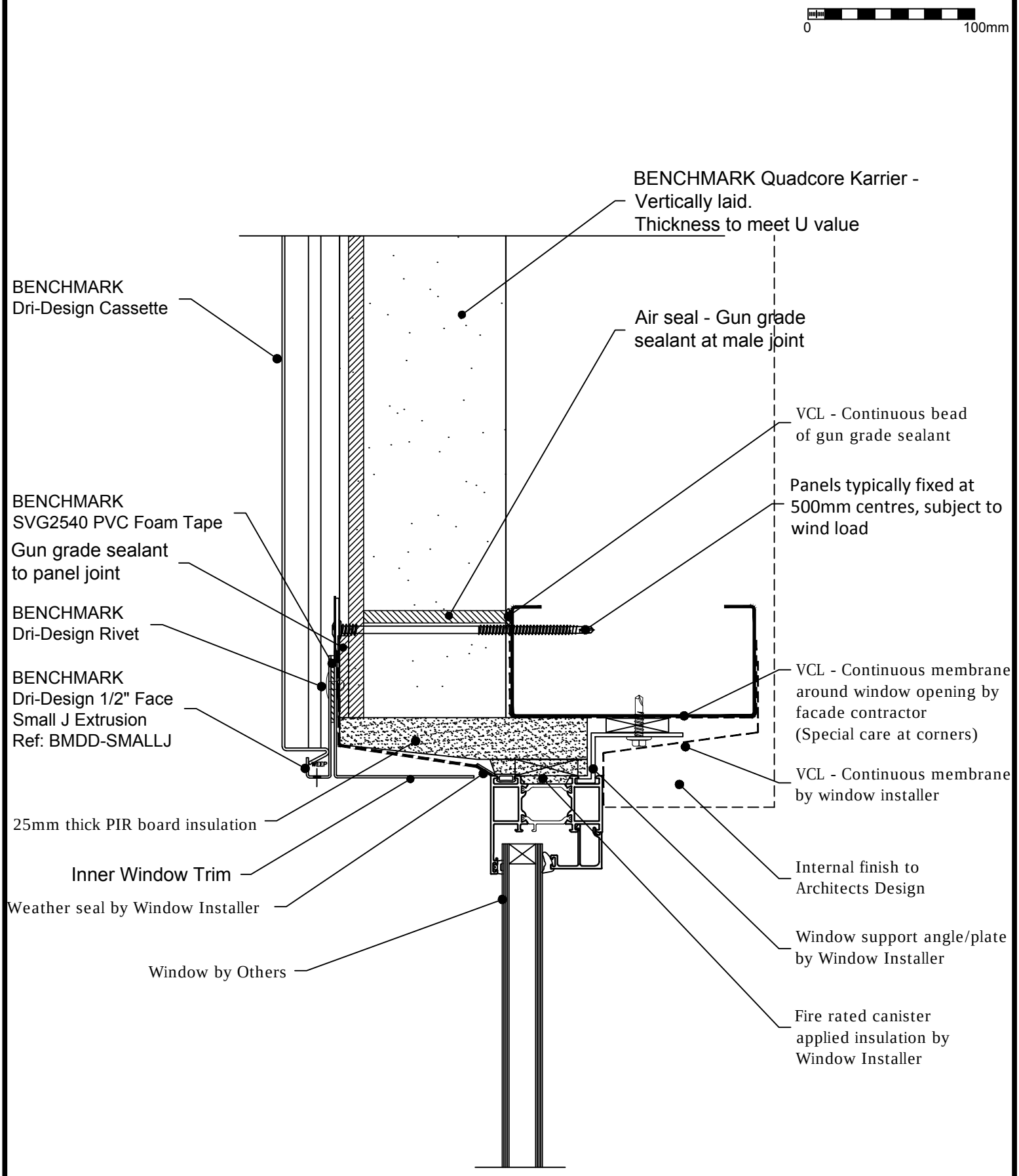

Project:

System: BENCHMARK Dri-Design and Quadcore Karrier

Drawing Title: Window Head

Drawn By: AE

Date: 31/03/2017

Drawing Nº. DD QK Vt FF 008

Rev: 0

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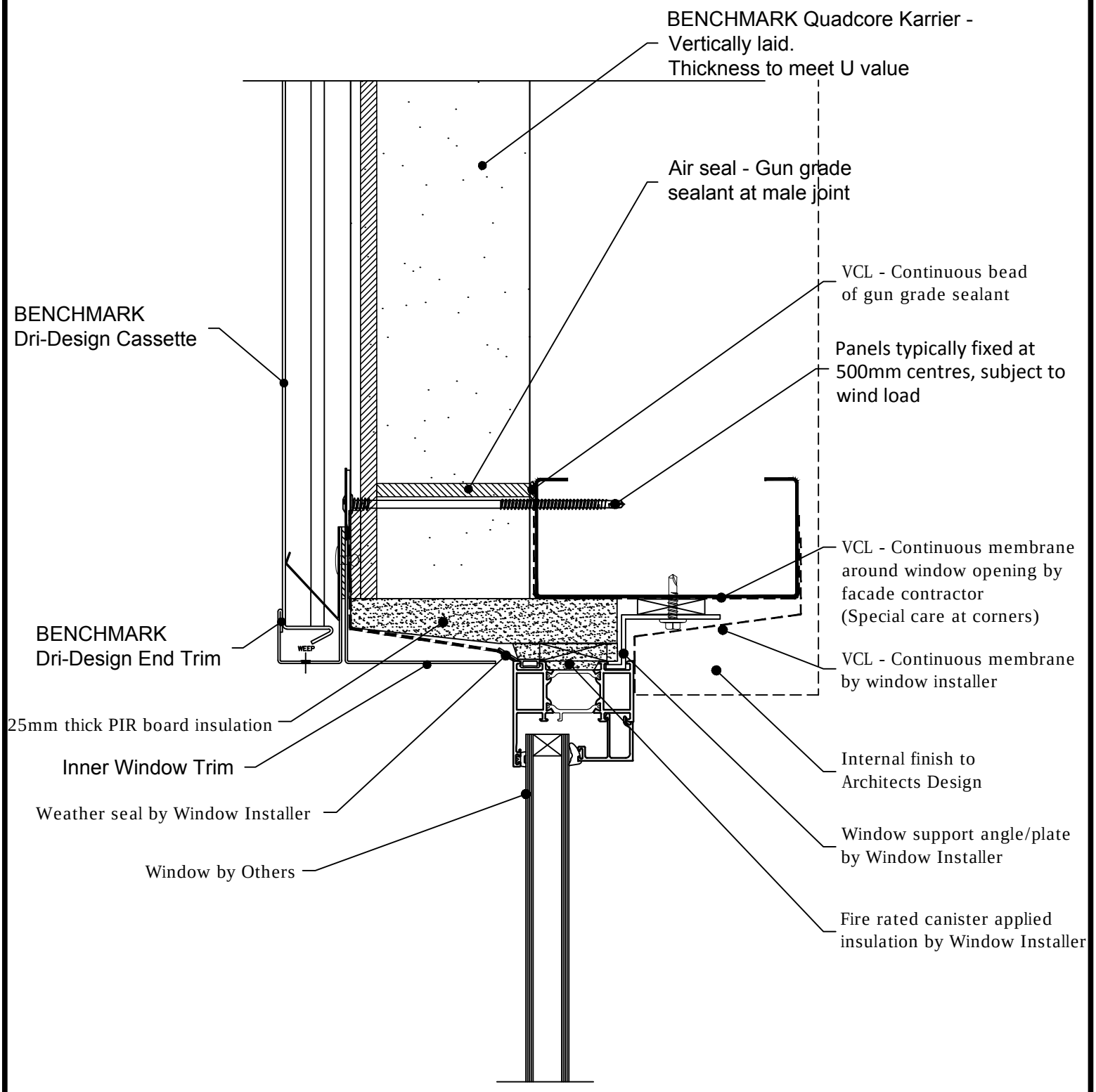

Project:	
System: BENCHMARK Dri-Design and Quadcore Karrier	
Drawing Title: Window Head	
Drawn By: AE	Date: 31/03/2017
Drawing N°. DD QK Vt FF 008F	Rev: 0

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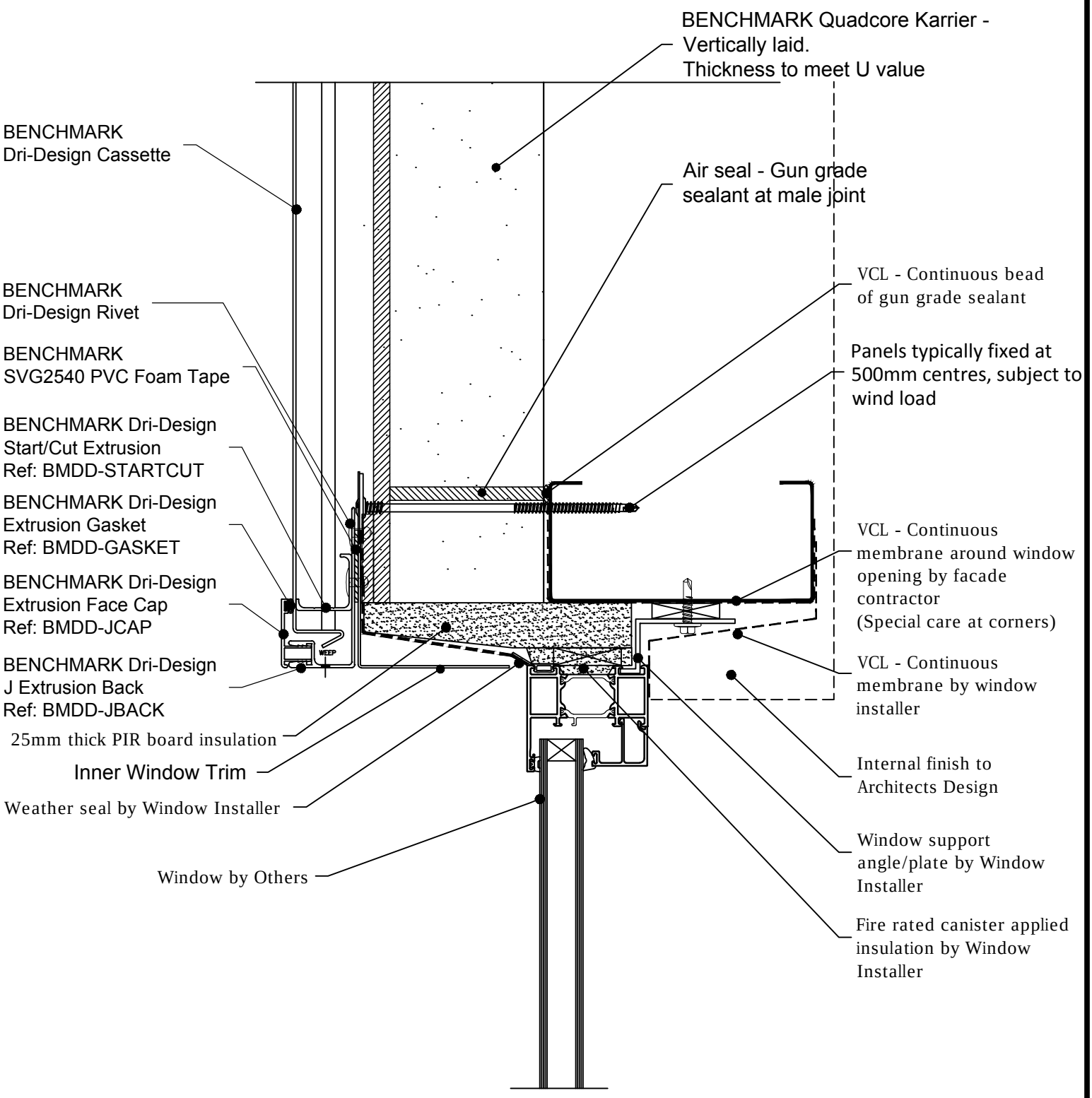

Project:	
System: BENCHMARK Dri-Design and Quadcore Karrier	
Drawing Title: Window Head	
Drawn By: AE	Date: 31/03/2017
Drawing Nº. DD QK Vt FF 008E	Rev: 0

66

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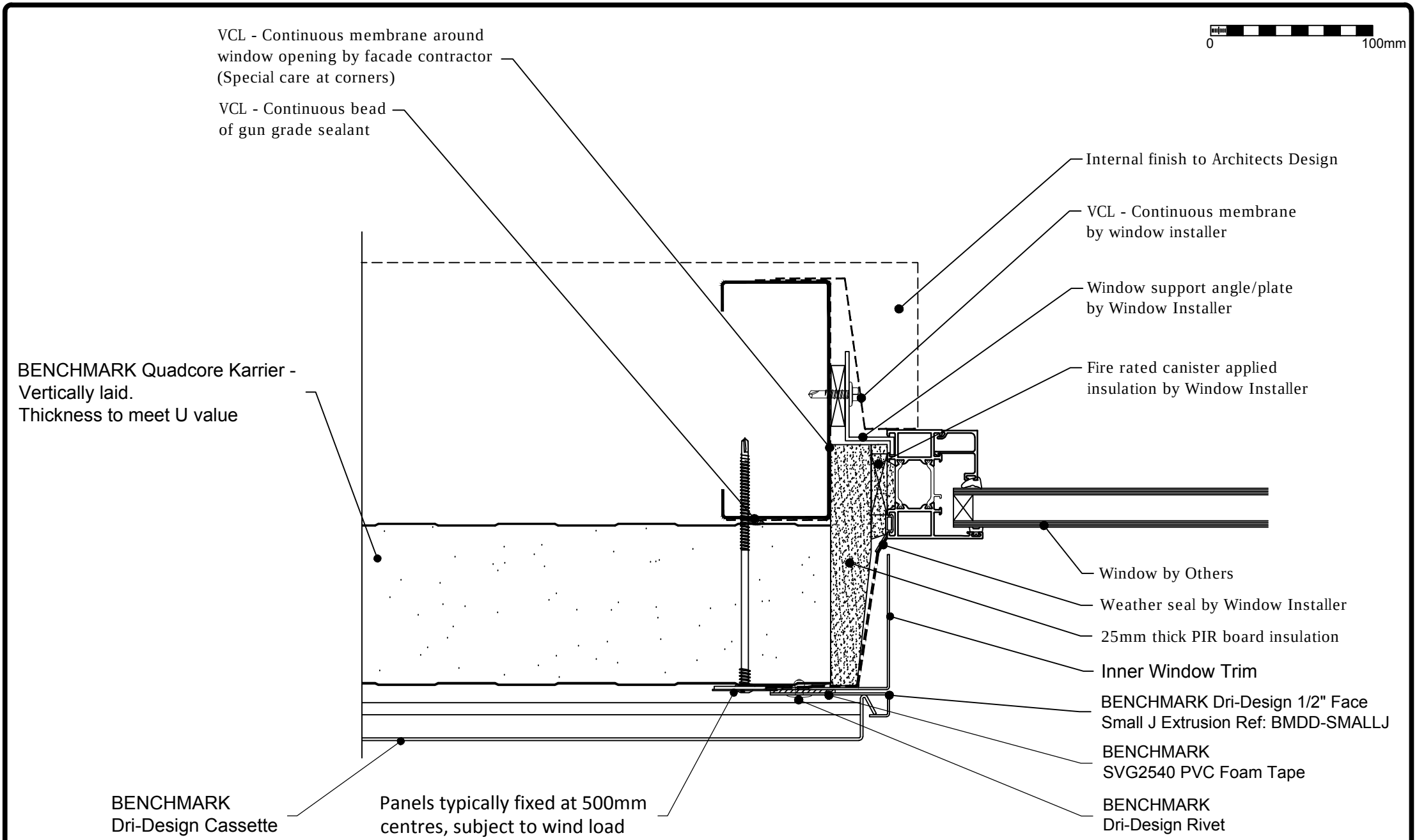

Project:	
System: BENCHMARK Dri-Design and Quadcore Karrier	
Drawing Title: Window Jamb	
Drawn By: AE	Date: 31/03/2017
Drawing Nº. DD QK Vt FF 009	Rev: 0

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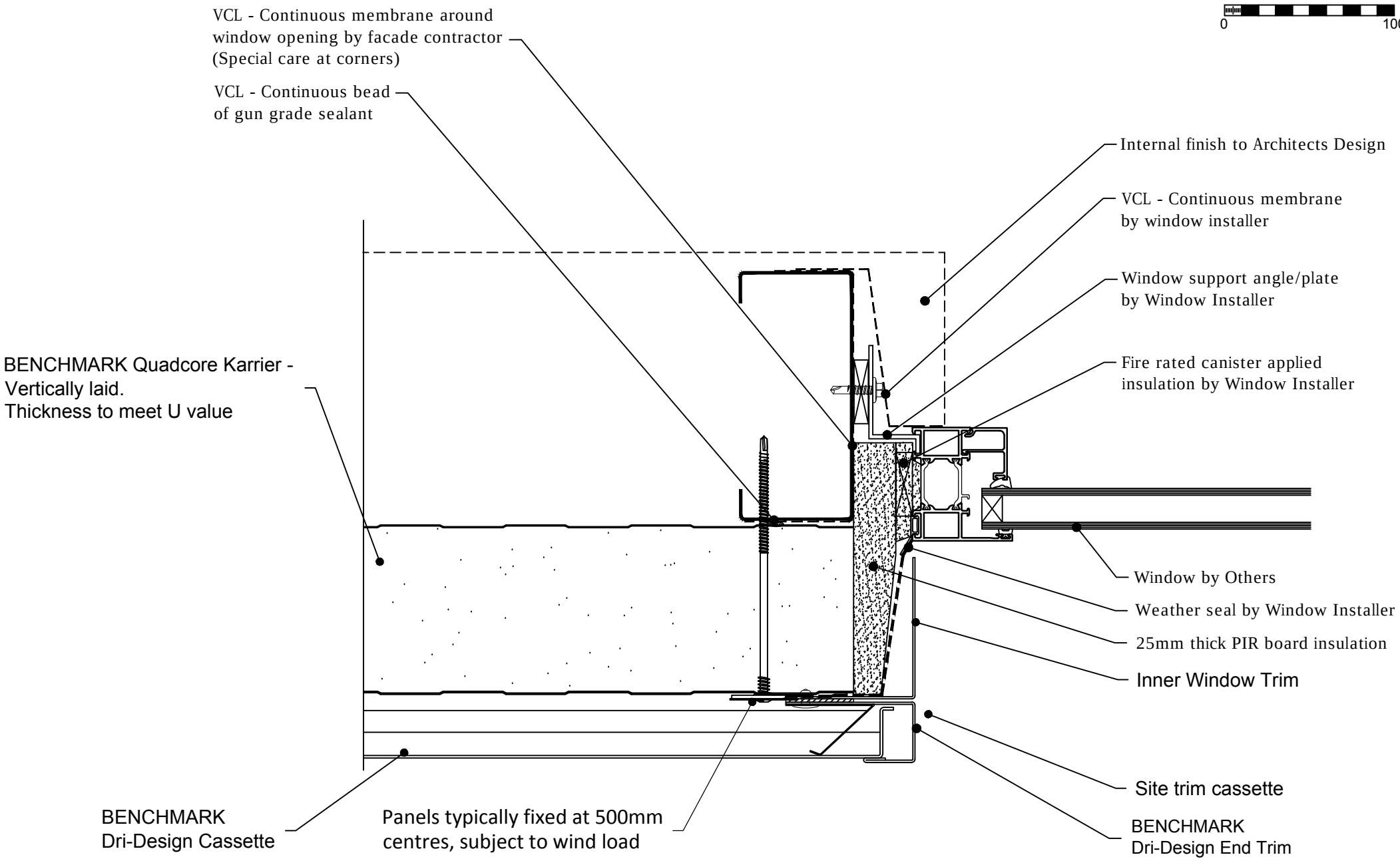

Project:	
System: BENCHMARK Dri-Design and Quadcore Karrier	
Drawing Title: Window Jamb	
Drawn By: AE	Date: 31/03/2017
Drawing Nº. DD QK Vt FF 009F	Rev: 0

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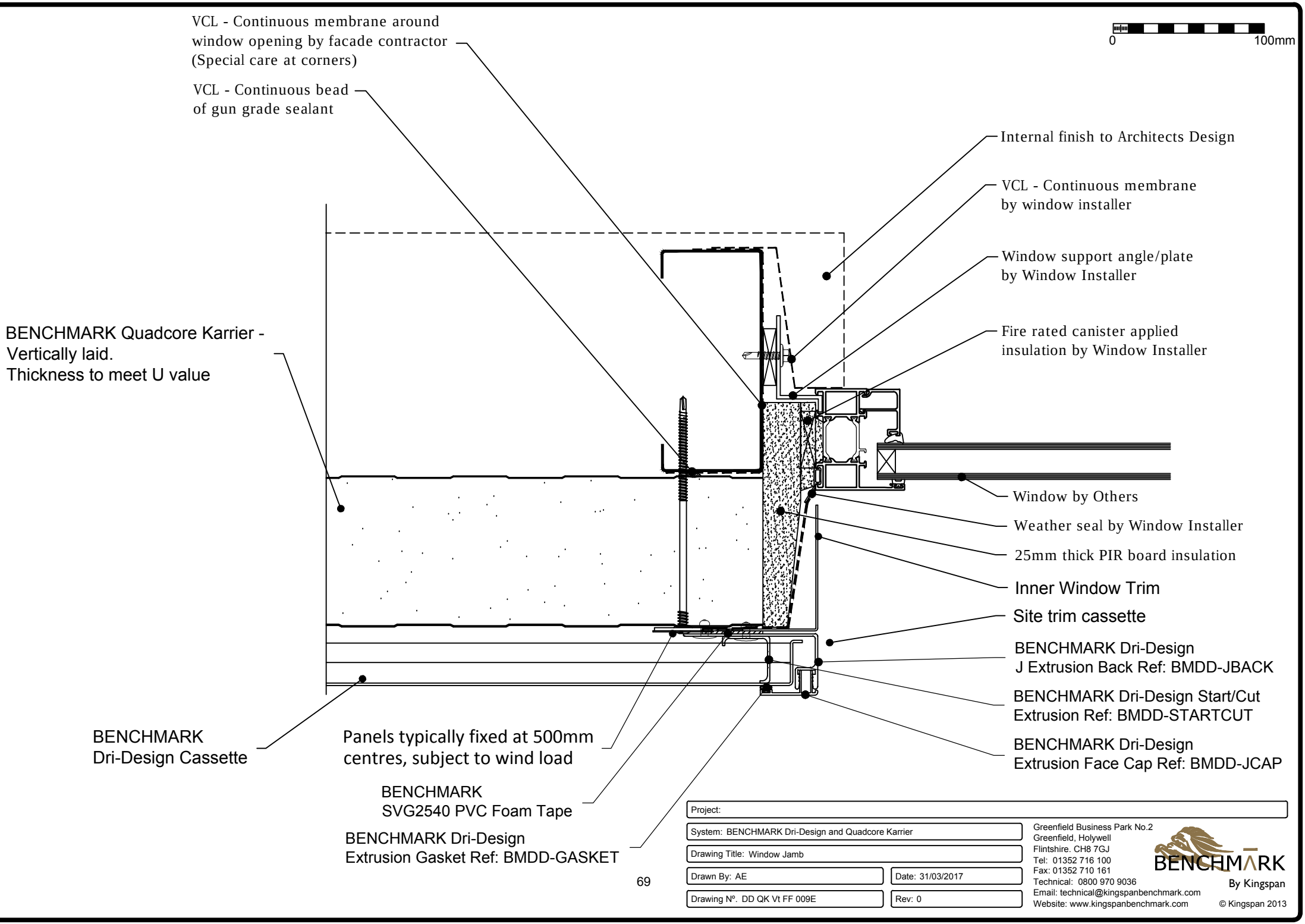

Project:

System: BENCHMARK Dri-Design and Quadcore Karrier

Drawing Title: Window Jamb

Drawn By: AE | Date: 31/03/2017

Drawing Nº. DD QK Vt FF 009E | Rev: 0

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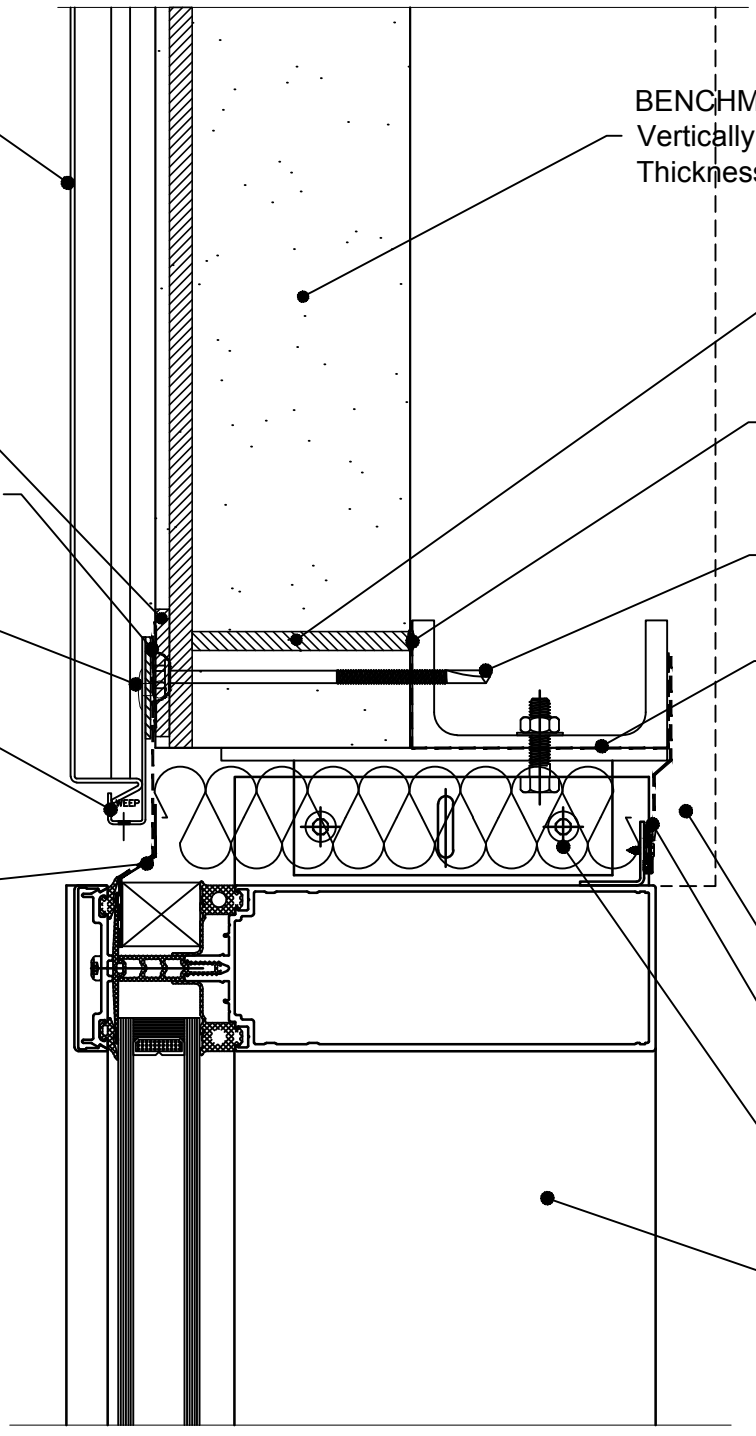

Project:	
System: BENCHMARK Dri-Design and Quadcore Karrier	
Drawing Title: Curtain Wall Head	
Drawn By: AE 70	Date: 31/03/2017
Drawing Nº. DD QK Vt FF 012	Rev: 0

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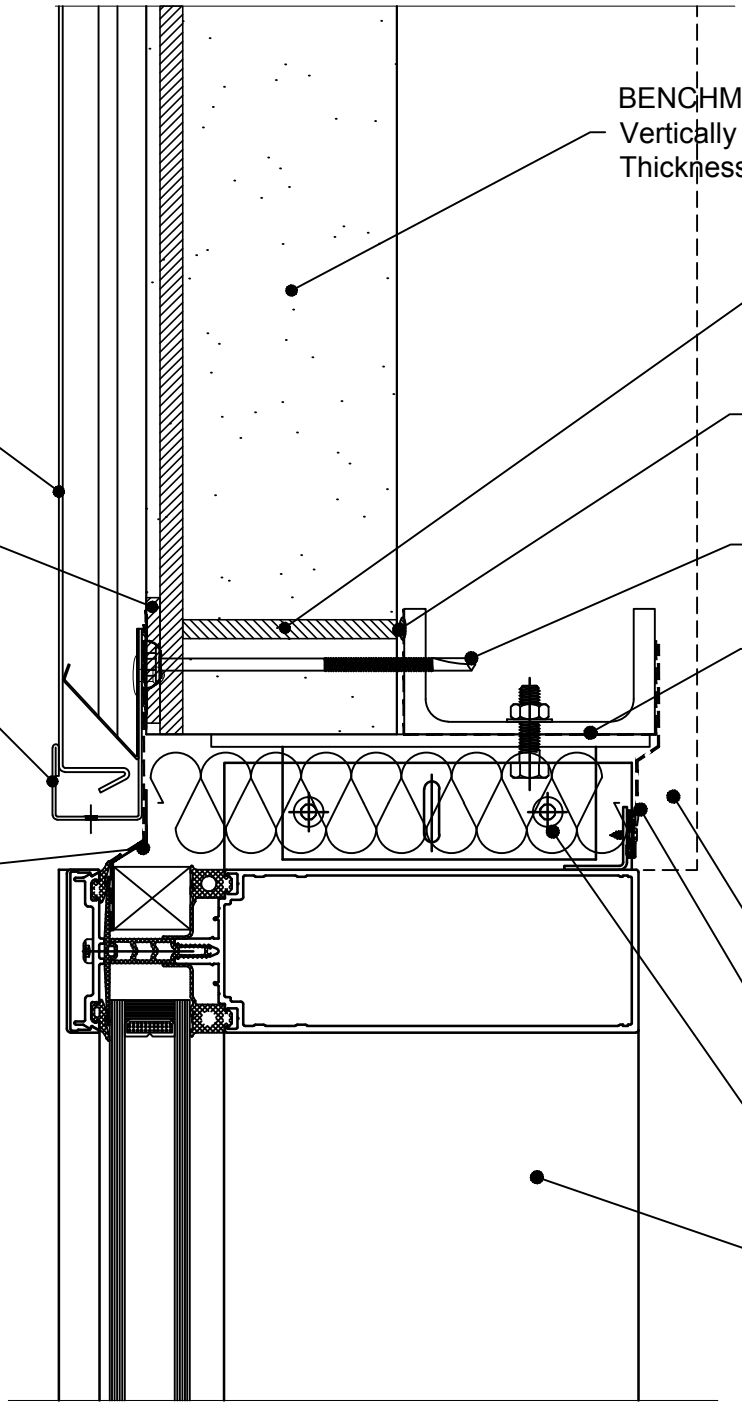

Project:	
System: BENCHMARK Dri-Design and Quadcore Karrier	
Drawing Title: Curtain Wall Head	
Drawn By: AE	Date: 31/03/2017
Drawing Nº. DD QK Vt FF 012F	Rev: 0

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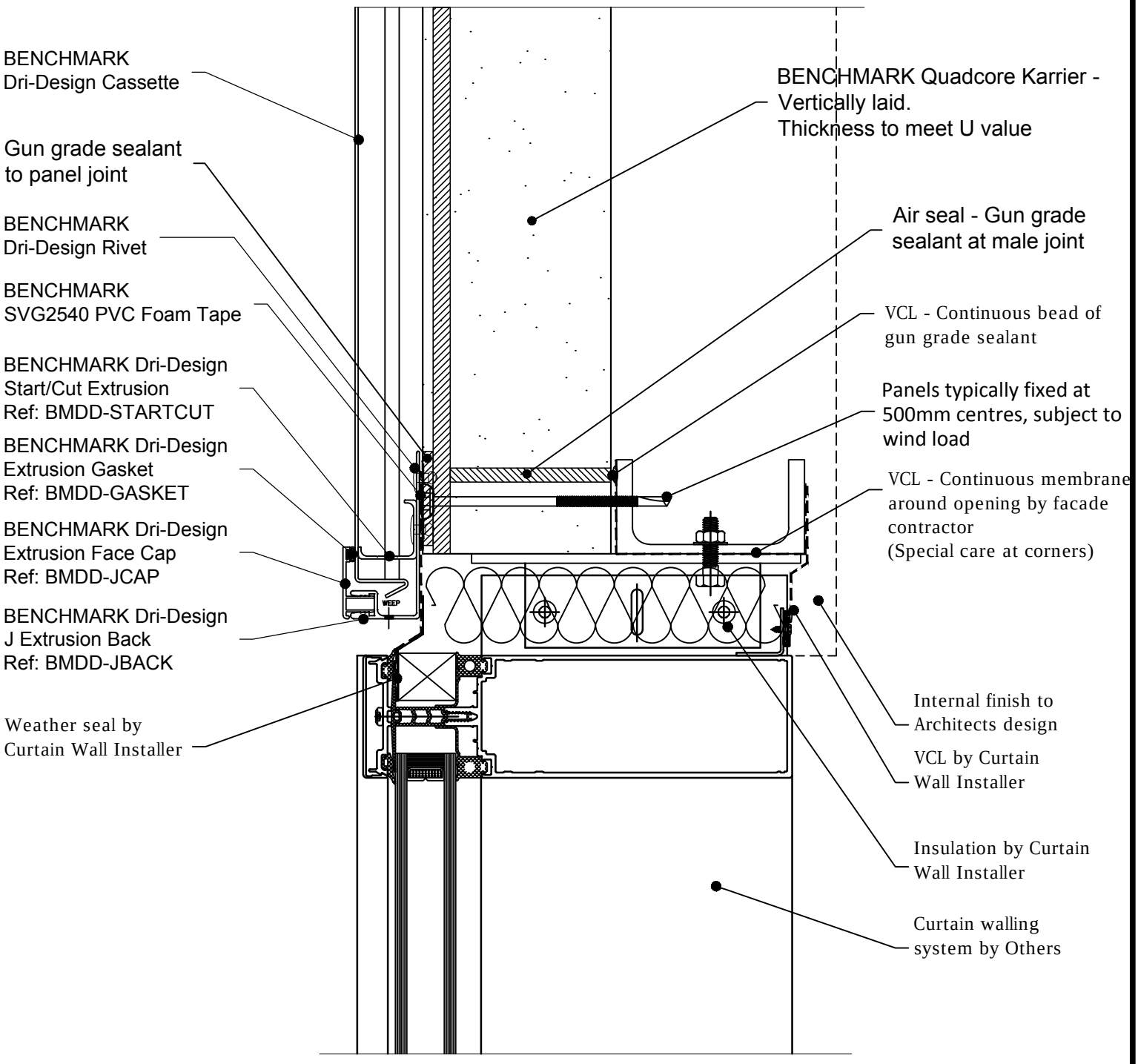

Project:

System: BENCHMARK Dri-Design and Quadcore Karrier

Drawing Title: Curtain Wall Head

Drawn By: AE | Date: 31/03/2017

Drawing Nº. DD QK Vt FF 012E | Rev: 0

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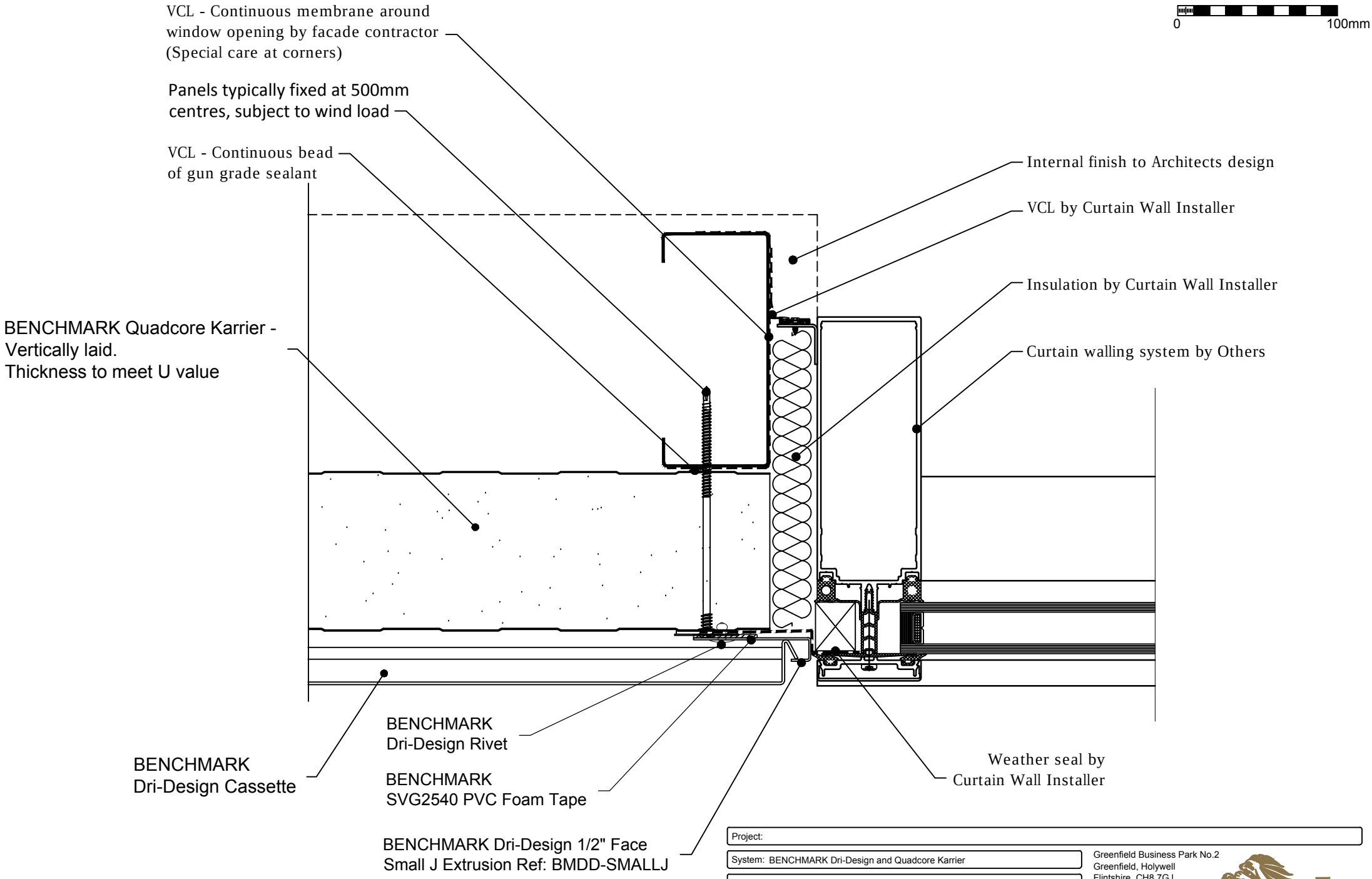

Project:

System: BENCHMARK Dri-Design and Quadcore Karrier

Drawing Title: Curtain Wall Jamb

Drawn By: AE | Date: 31/03/2017

Drawing Nº. DD QK Vt FF 013 | Rev: 0

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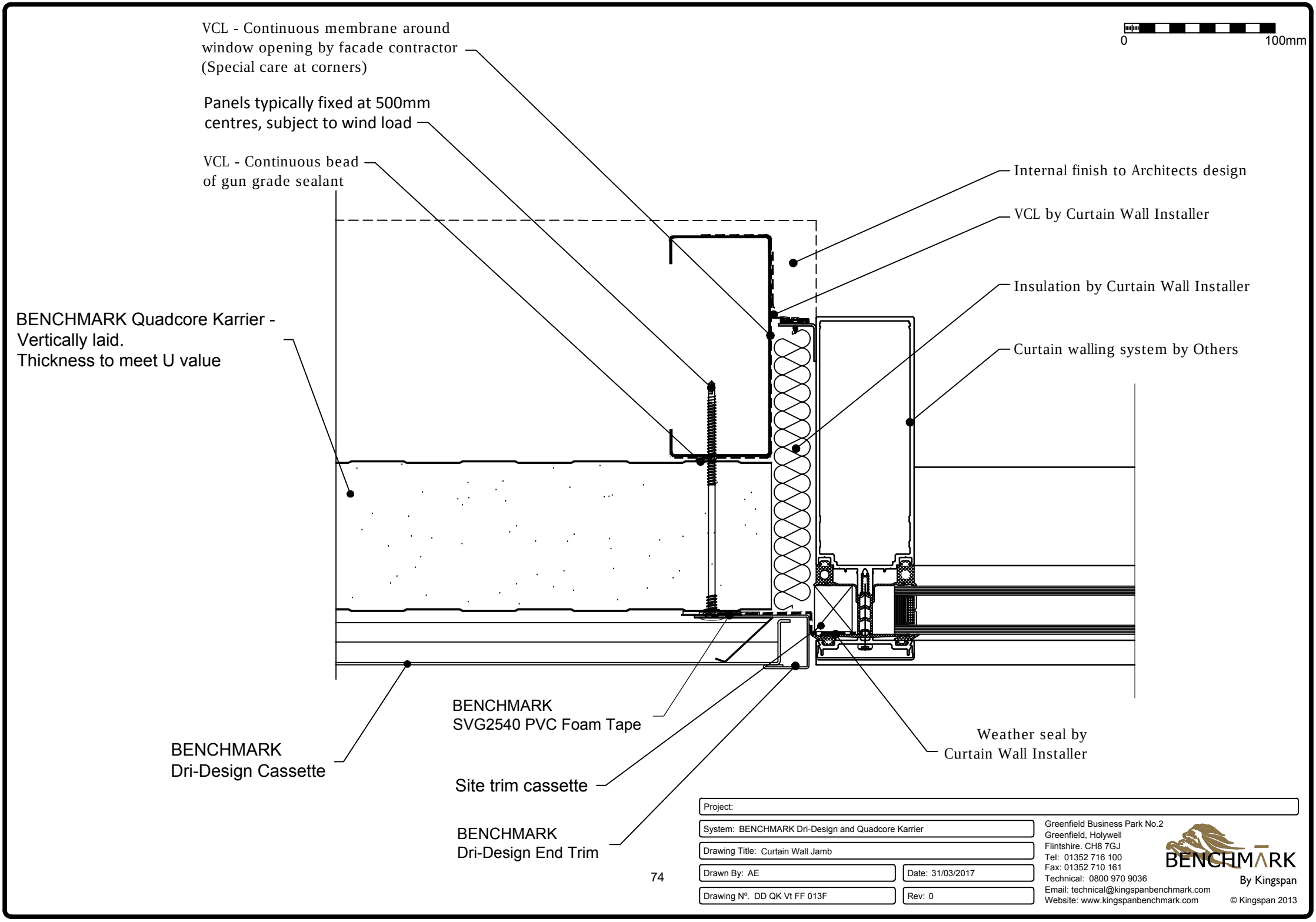

Project:

System: BENCHMARK Dri-Design and Quadcore Karrier

Drawing Title: Curtain Wall Jamb

Drawn By: AE

Date: 31/03/2017

Drawing Nº. DD QK Vt FF 013F

Rev: 0

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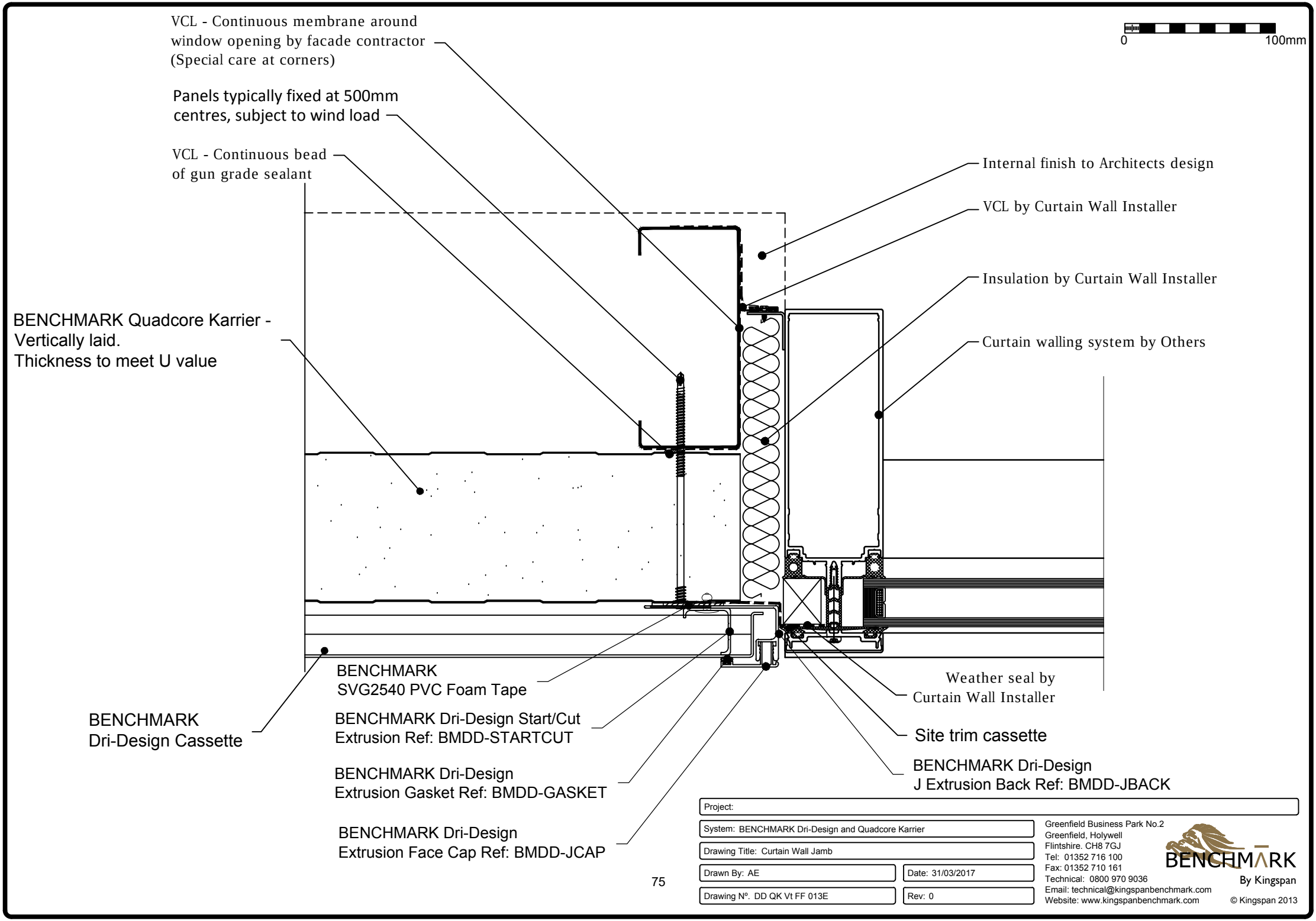

Project:

System: BENCHMARK Dri-Design and Quadcore Karrier

Drawing Title: Curtain Wall Jamb

Drawn By: AE

Date: 31/03/2017

Drawing Nº. DD QK Vt FF 013E

Rev: 0

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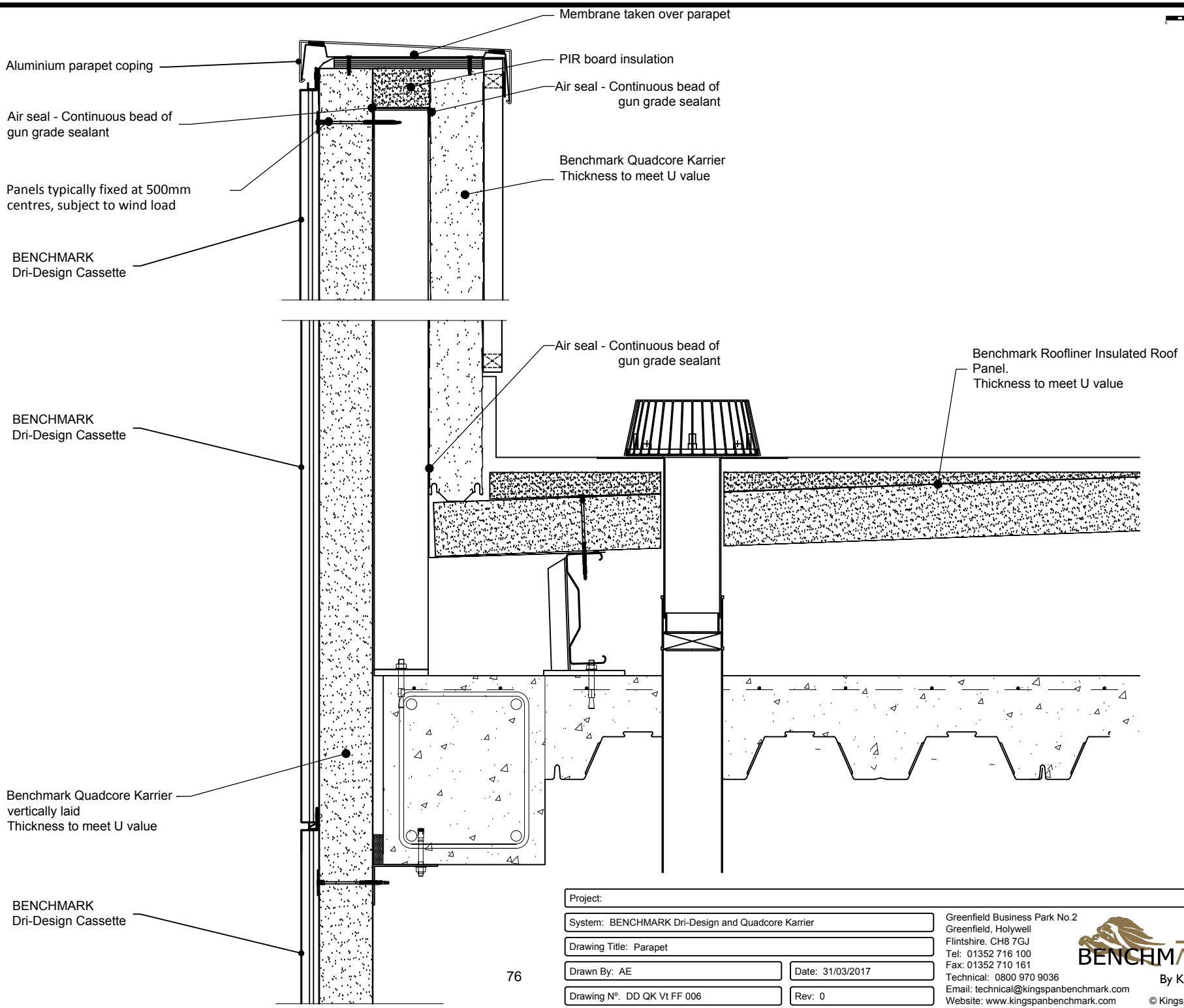

Project:

System: BENCHMARK Dri-Design and Quadcore Karrier

Drawing Title: Parapet

Drawn By: AE | Date: 31/03/2017

Drawing Nº. DD QK Vt FF 006 | Rev: 0

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16) BS4814 Desktop Study

DESIGN NOTE 01

PROJECT: DRI-DESIGN - 8414 STUDY
TITLE: REACTION TO FIRE EXTERNAL WALL CLADDING ASSESSMENT

DN01

CREATED BY:	SHONAH MACDONALD	**DATE:**	12.03.2017
CHECKED BY:	SCOTT HALL	**DATE:**	12.03.2017
APPROVED BY:	SCOTT HALL	**DATE:**	12.03.2017

1.0 Executive Summary

The aim of this design note is to assess the spread of fire on the external wall cladding for the Dri-Design system by Kinspan. Approved Document B details in clause 12.5 that;

> *The external envelope of a building should not provide a medium for fire spread if it is likely to be a risk to health or safety. The use of combustible materials in the cladding system and extensive cavities may present such a risk in tall buildings.*
>
> *External walls should either meet the guidance given in paragraphs 12.6 to 12.9 or meet the performance criteria given in the BRE Report Fire performance of external thermal insulation for walls of multi storey buildings (BR 135) for cladding systems using full scale test data from BS 8414-1:2002 or BS 8414-2:2005.*

In the case of the proposed cladding system the product is a kingspan panel system which is a variation of the following systems tested under the BS 8414/BRE 135 criteria;

- Metallic Hook on Cassette. Test reports No 299571 and 297804.

In the case of this system the overall external cladding proposed is:

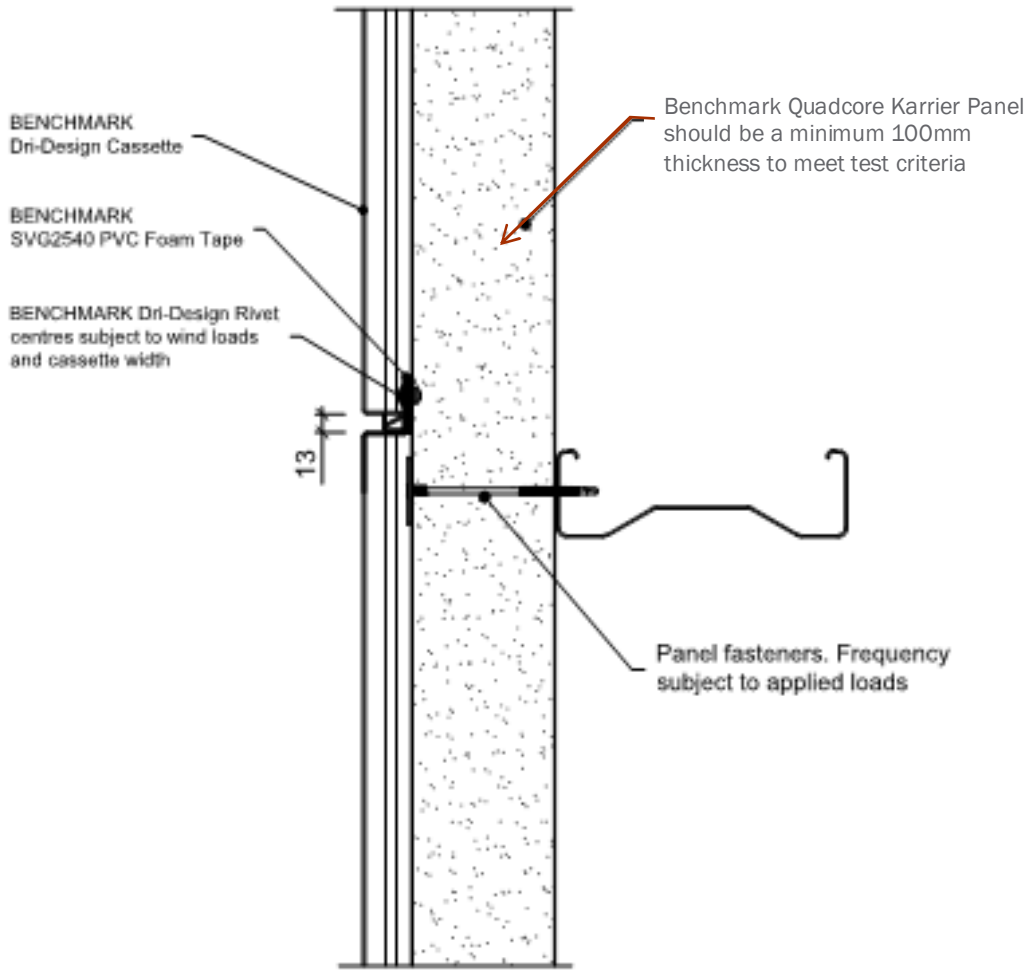
- Kingspan Benchmark insulated Quadcore Karrier Panels minimum 100mm thick PIR insulation;
- Fixed directly to the panels or with a top hat to create a cavity;
- Both cassettes are manufactured from 2 or 3mm aluminium (1050 H14 or J57s).

The key factors in the assessment is the change from a hook on metal cassette to a fixed dri-design folded metal cassette and if the change above still within the criteria which has been assessed and tested under the BS 8414/BRE 135 criteria.

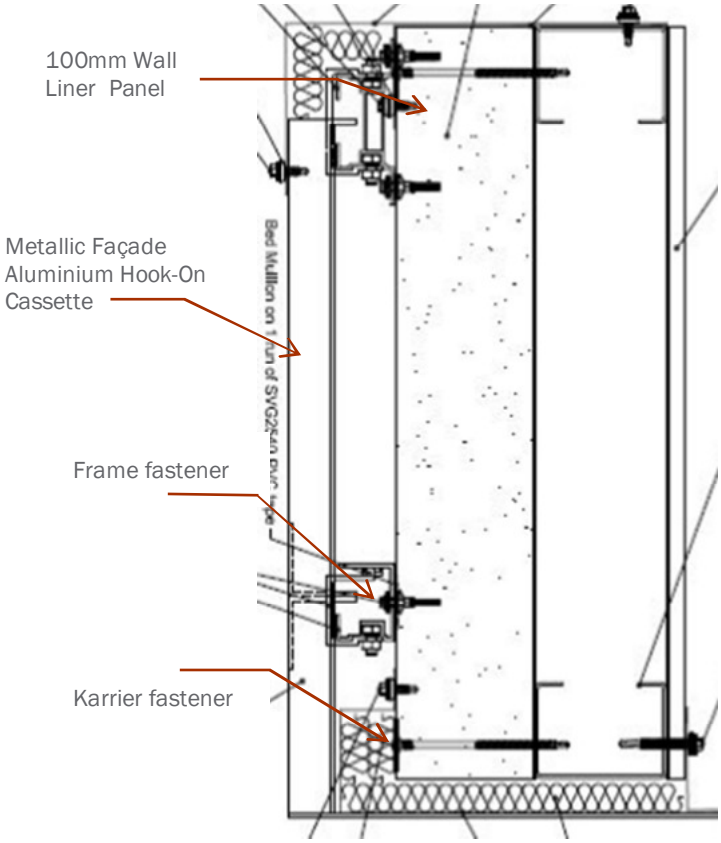
In order to check the above points it is proposed to conduct a desktop study within the framework of option 3 – BCA Guidance Note 18, this is set out in the following sections.

2.0 External Cladding Overview

Both the proposed design external cladding and tested design external cladding are detailed as follows:



Proposed Panel Detail



Tested Panel Detail Metallic Hook on Cassette

From the above figures it can be seen that the main difference between the proposed panel detail and test panel detail is that the proposed panel detail has a fixed folded metal cassette rather than a framed hook-on cassette.

3.0 Assessment

From BR 135 the general points to be considered in the assessment are:

- The installation and fixing methods employed should be sufficiently robust to withstand the potential thermal exposure and fire-spread characteristics associated with an external fire exposure without exhibiting significant fire spread or system collapse, such as:
    - loss of strength as the system is heated
    - forces generated by retained thermal expansion of fixings and components
    - movements and distortions arising from thermal expansion if unrestrained.
- The robustness of the sub-frames and their interconnection to the primary structure is of critical concern in relation to the overall fire performance of the external cladding system.

- The fire performance characteristics of the external finish should be considered with the substrate to which the finish is applied, to ensure that the system does not provide a route for significant fire propagation.
- The system should not delaminate or spall to provide a potential entry route for fire to access unprotected cavities or combustible materials.

Supporting substrates and frameworks

The two primary systems considered in BR 135 are:

- masonry-backed systems – BS 8414-1 [2] and Annex A of BR 135.
- lightweight frame systems – BS 8414-2 [3] and Annex B of BR 135.

The system in the case of this building is the lightweight frame system. From BR 135, when determining the fire performance of an external cladding system secured to the face of a framed wall system, the performance of the complete wall system from the internal room face to the outer surface of the weatherproofing system must be considered. For the chosen system the overall set-up has been considered and tested, with the main change from a hook fastener to a fixed fastener. This detail is highlighted in the mechanical fixing section of this report.

System-specific details: rendered systems

As the external render finish begins to break down and move under the applied heat it will tend to develop cracks and fissures in its surface, allowing the fire to penetrate the external finish and attack the insulation layer beneath. If the external finish and any supporting mesh are not adequately restrained as the system expands, the fixings may become detached from the insulation layer and the primary substrate, and the system will begin to delaminate and fall away. As the system exposes increasing quantities of insulation material, this may lead to increased fire spread through the system, together with the production of falling debris and the potential for system collapse.

In the case of this system the panels are fixed at a maximum of 600mm centres. This density of fixing ensures the external panels are adequately restrained and the number of fixings is no less than the fixings of the hook-up system which is fully tested.

Fixing details

To prevent rapid fire spread and system collapse, all external cladding systems should be installed with suitable through-fixing methods to ensure that the system will not suffer disproportionate collapse during a fire. The system in this project is mechanical fixings

There mechanical fixing method is a direct rivet onto the panel. This system meets general service requirements, such as resistance to thermal bridging and corrosivity, it also has the mechanical strength to support the external insulation and cladding systems under normal operating conditions.

Due to the number and spacing of the fixing they are also capable of holding the systems in place in the event of fire to prevent excessive fire spread and system collapse. The provision of a fixed fastening rather than hook-up fastening will only increase the stability of the overall system. In both cases the actual fixings are not fire rated, however the number and spacing of the fixing ensures that although local points may fail the overall system will remain in place within the parameters of the BR 135 report, as indeed the hook set-up has been tested to.

The stability of the finish coats should also be considered in order to avoid excessive system delamination, which may generate voids into which the fire may spread. For this purpose, the fixed mechanical fixings are actually an advantage as it secures the panel directly to the board.

Fire barriers

The fire barriers are the same for the hook-up and fixed fastening arrangement and are not affected by the panel fixing method.

Insulation systems

The relative fire performance of the insulation materials has not changed with the proposed system and the PIR wall lining has been tested at 100mm, 150mm and 220mm depths. In this case the panel should be a minimum of 100mm thick which is within the parameters of the panels already tested.

It is noted that the cut edges in the tests were treated with flashing and non-combustible insulation infill, however this is not the specific detail being tested, It is the general panel as a whole that is being tested and there are a number of details where the foam ends are covered just by a flashing without incombustible infill, as per Kingspan's tested systems. These details in mirror the panel itself i.e. foam with a metal cover which is the same as the cut edges and does not affect the overall performance of the system.

Railing system

The railing system in the proposed system follow the same principles of the tested systems with railings in that in each case they are mechanically fastened to the wall lined panel or with a simple top hat design. Given that the proposed and tested systems work on the same principles it is felt that the behaviour in a fire condition with the systems will be the within the same accepted tested criteria.

External panels and finishes

The materials used for the external panels are non-combustible in both the proposed and tested systems and will not contribute to a fire condition.

4.0 Conclusion

The main changes from the proposed system to the tested systems are the folded metal panel with direct fixings. From the above assessment under BR135 this does not affect the overall fire performance of the system and the test results for the product.

It is the conclusion of this report that the proposed external cladding system achieves the guidance of clause 12.5 of Approved Document B and the Standard for B4 External Fire Spread.

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Annexure B: EMKC letter dated Thursday 13 July 2017

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Thursday 13 July 2017

NSW Department of Planning and Environment (the Department)
Level 22, 320 Pitt St, Sydney 2000
Via email

Attention: Mr. Chris Ritchie, Director, Industry Assessments

Dear Chris,

Re: NewCold Marsden Park - SSDA Amendment – Architectural Update

Thank you for your time Thursday 6 July 2017, we found our meeting to be most productive. Further to our meeting we have produced a number of design concepts that should assist in addressing the potential concerns of the Department in addition to those concerns raised by Blacktown Council in their submission dated Sunday 9 July 2017.

Executive Summary

Further to our telephone conversation Tuesday 11 July 2017, we are pleased to detail a selection of design concepts that we are in a position to produce formal architectural drawings for by COB Monday 17 July 2017. The intention of this letter correspondence is to seek the Department's feedback on the enclosed design concepts and for a meeting to be arranged with Blacktown Council and the Department in attendance by no later than Friday 21 July 2017.

As you are aware, the land selection process for NewCold has been a very difficult one and failure to agree on a clear path forward by COB Monday 24 July 2017 is likely to result in NewCold being unable to proceed with its acquisition of the land in which it has invested in excess of AUD 400k on to date, predominately related to the subject SSDA amendment application.

We assure you and the Department that we will do our utmost to reach a design solution that is acceptable to the Department, whilst achieving NewCold's required operational requirements.

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Architectural design

EMKC has carefully reviewed the feedback provided by the Department during our meeting Thursday 6 July 2017 and the content of the submission made by Blacktown Council dated Sunday 9 July 2017. A set of design concepts have been produced that addresses these items and a brief summary provided, please refer enclosed.

The design concepts provide a range of design options for the consideration of and for discussion with the Department. Each of the design concepts incorporate the following amendments compared with the design provided in the SSDA amendment application:

1. **Amendment to height of "low bay" warehouse component**
    a. Revised ridge height of 16m, compared with the previous 20.86m
    b. Subsequent reduction in building volume by approximately 76,749 cubic metres

2. **Review of façade treatment for the "high bay" warehouse component**
    a. As noted in the SSDA amendment application, the "high bay" warehouse dimensions and volume are critical to NewCold's proposed operation and cannot be varied
    b. We acknowledge and recognise the concerns raised by the Department in relation to the visual presentation of the "high bay" warehouse and have made significant design modifications to address these concerns, including:
        i. Introduction of new materials by Kingspan that are able to be affixed to the Kingspan PIR panels, thereby creating visual interest and reducing the visual impact of the "high bay" warehouse
        ii. Introduction of feature elements and revised colour/patterns
        iii. Departure from NewCold's global design standards
    c. We note that the proposed finishes are manufactured by Kingspan in the Blacktown Local Government Area. If the proposed finishes are not viewed favourably, we are in a position to select alternative imported products.

3. **Addressing the importance of building presentation to street frontages**
    a. Alteration of the office design to create further visual interest to the Hollinsworth Road
    b. Alteration of the "technical room" to create further visual interest to the Harris Avenue interface
    c. Departure from NewCold's global design standards

4. **Significant increasing in landscaping**
    a. Approximately 9,045sqm allocated for landscaping and the employee communal area, compared with 7,042sqm previously
    b. We acknowledge Blacktown Council's concerns in regards to landscaping and will work with Blacktown Council to reach a design solution that is agreeable by the parties

5. **Alteration of signage to meet the requirements set out by Blacktown Council**

6. **Increasing in car parking to 133 spaces, compared with 104 spaces previously**

Design concepts

A number of design concepts have been produced, incorporating the items referred to above. The following design concepts for the review of and for discussion with the Department:

1. Amended site layout

2. Amended elevations
    a. Note: the amended elevations will be updated to incorporate one or a combination of the concept perspectives once agreed)

3. Concept perspectives (3x options)

As noted above, we are in a position to produce formal architectural drawings by COB Monday 17 July 2017.

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Further matters

Please note the following important items that relate to the correspondence and submissions received to date:

1. NewCold do not store any loose materials, products or other items externally.

2. It is proposed to implement a covered walkway from the car park to the office. Whilst the travel distance is not insignificant, this protects the safety of the employees working in the facility in addition to the safety of visitors and contractors. We are confident that a suitable design solution will be reached between the parties, whilst ensuring that heavy vehicles and pedestrians are adequately separated. We will propose a design solution as part of the formal architectural drawings that are currently being prepared.

3. NewCold's "high bay" warehouse technology reduces energy consumption by in excess of 50% compared with traditional cold storage facilities. The dimensions and volume of the "high bay" warehouse are critical to both NewCold's operations and to achieve the exceptional environmental outcomes strived for by NewCold globally.

4. The amended site layout addresses the concerns raised by Roads and Maritime Services in their submission dated Tuesday 13 June 2017.

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Conclusion

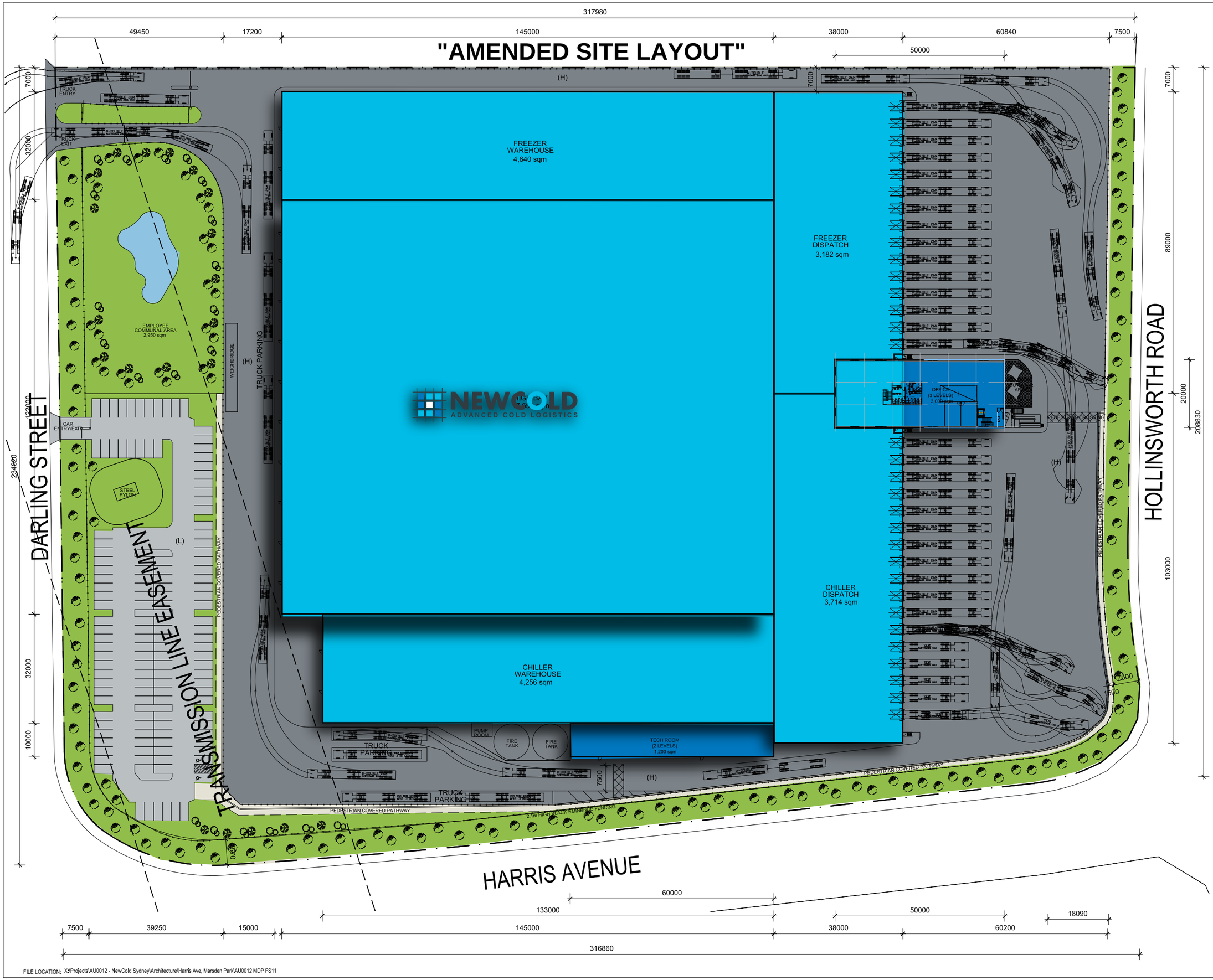
We appreciate the time and resources that the Department has invested into this SSDA amendment application and reiterate the absolute importance of reaching a resolution on the aforementioned design matters with both the Department and Blacktown Council by COB Monday 24 July 2017.

We look forward to your considered review of the enclosed and to meeting to discuss further with you next week.

Yours sincerely,

Edward McKenna
Director | EMKC
+61 405 446 410 | Edward.McKenna@em-kc.com

"AMENDED SITE LAYOUT"



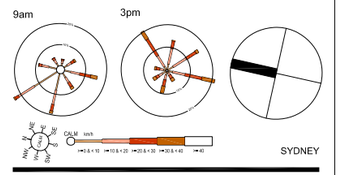
NEWCOLD ADVANCED COLD LOGISTICS

REVISIONS

A	PRELIMINARY	31.03.17
B	INDICATIVE RACKING DETAILS	13.04.17
C	CHECK W SURVEY AND TITLE	27.04.17
D	REVISION – COUNCIL COMMENTS	12.07.17

DEVELOPMENT SUMMARY

SITE AREA	70,300 sqm
HIGH BAY	17,690 sqm
CHILLER DISPATCH	3,714 sqm
FREEZER DISPATCH	3,182 sqm
CHILLER WAREHOUSE	4,256 sqm
FREEZER WAREHOUSE	4,640 sqm
NEWCOLD OFFICE (3 LEVELS)	3,000 sqm
NEWCOLD TECH ROOM (2 LEVELS)	1,200 sqm
TOTAL BUILDING AREA	37,682 sqm
EFFICIENCY	53.60 %
COMMUNAL AREA REQUIRED (3% SITE AREA)	2,109 sqm
SWIRE APPROVED COMMUNAL AREA	1,085 sqm
OFFICE OUTDOOR AREA	104 sqm
EMPLOYEE COMMUNAL AREA	2,950 sqm
TOTAL COMMUNAL AREA PROVIDED	3,054 sqm
CARPARKING PROVIDED	133 spaces
HEAVY DUTY PAVEMENT (H)	18,536 sqm
LIGHT DUTY PAVEMENT (L)	3,646 sqm
COVERED PATHWAY	981 sqm



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PROJECT

NEWCOLD SYDNEY

HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE

PROPOSED SITE PLAN

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SCALE: 1 : 1000 @ A3

CREATE DATE : 13.07.2017 PLOT DATE : 13.07.2017

LAST SAVED BY: karen choi

AU0012 MDP FS11 002 D

FILE LOCATION: X:\Projects\AU0012 - NewCold Sydney\Architecture\Harris Ave, Marsden Park\AU0012 MDP FS11

"AMENDED ELEVATIONS" (EXCLUDING FEATURE FINISHES)

REVISIONS

A	PRELIMINARY	31.03.17
B	METAL SCREEN @ FIRE TANK	13.04.17
C	REVISION – COUNCIL COMMENTS	12.07.17

SOUTH OFFICE ELEVATION
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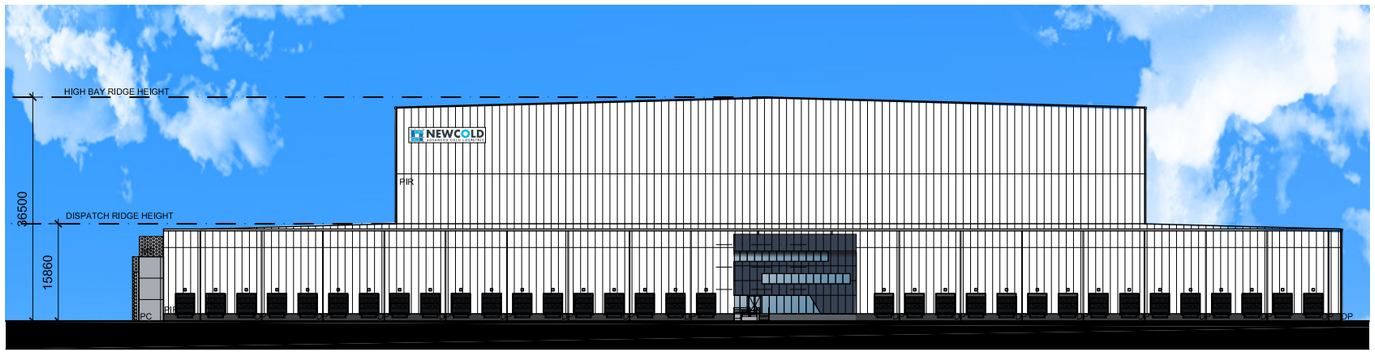

SOUTH ELEVATION
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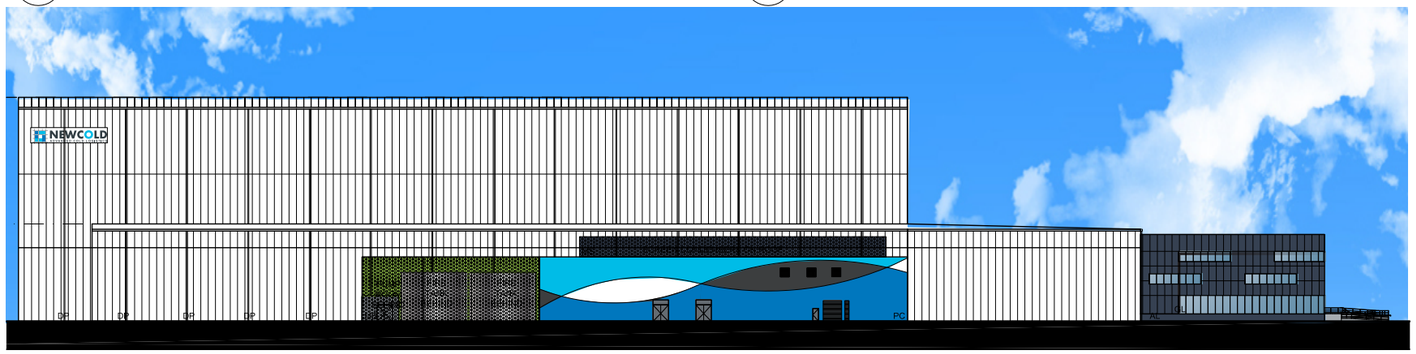

WEST ELEVATION
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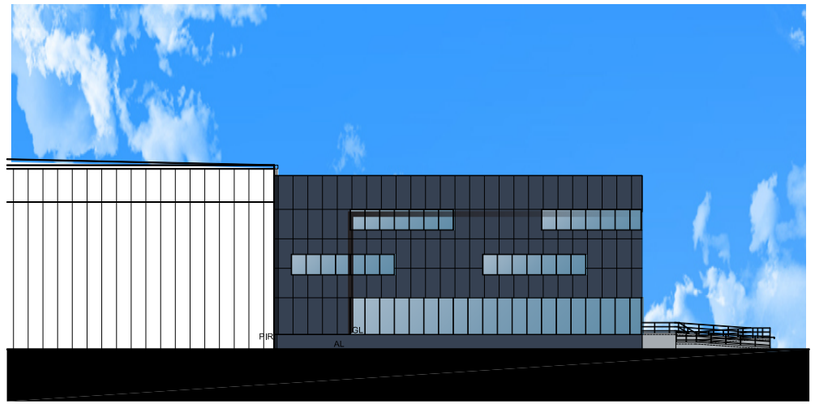
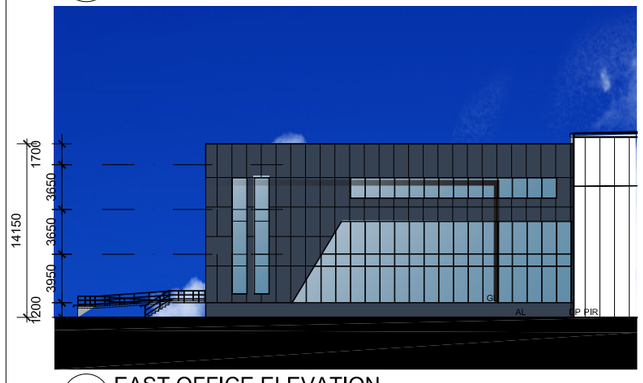
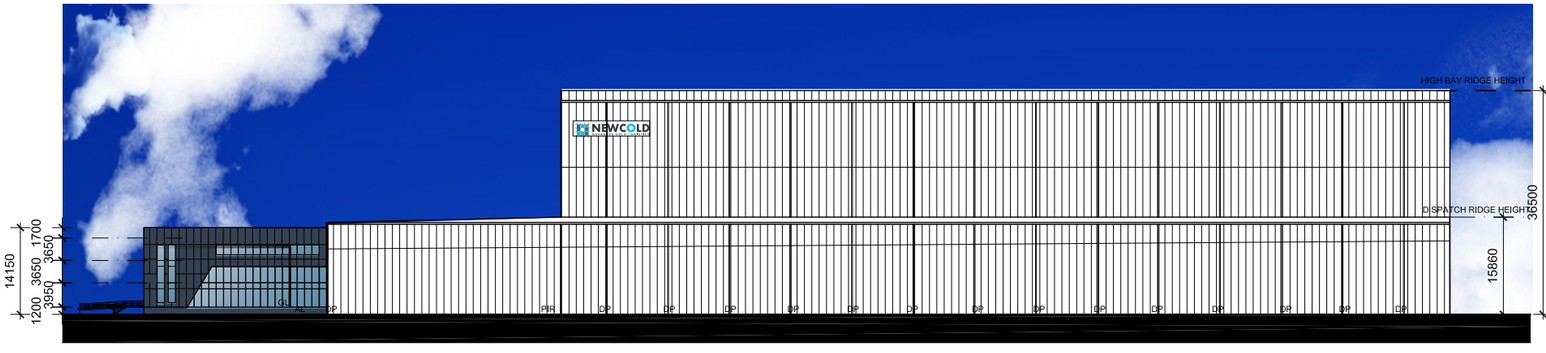


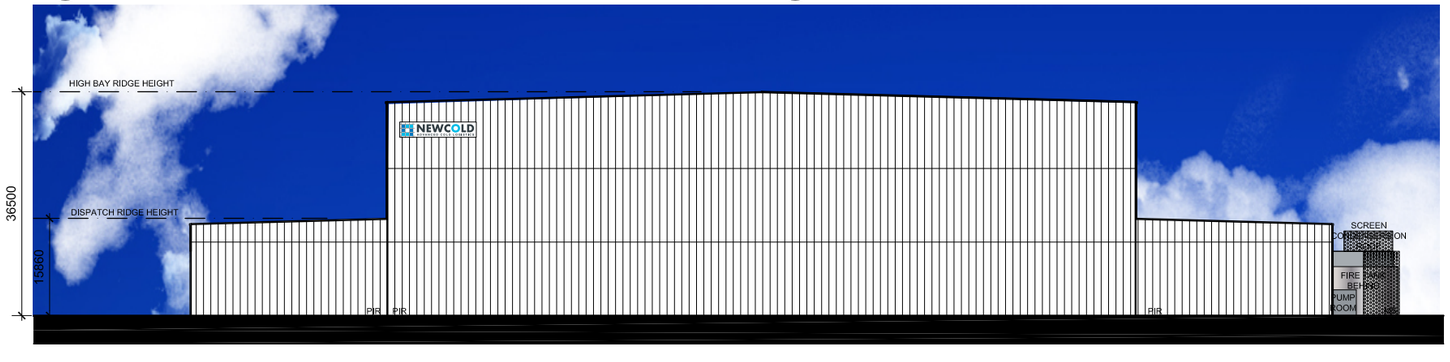
WEST OFFICE ELEVATION
Scale 1:500



EAST OFFICE ELEVATION
Scale 1:500



EAST ELEVATION
Scale 1:1000



NORTH ELEVATION
Scale 1:1000

LEGEND:

AL - ALUMINIUM CLADDING
COL - COLUMN
DP - DOWN PIPE
FC - FIBRE CEMENT
GL - GLASS
MC - METAL CLADDING
MS - METAL SCREEN
PC - PRECAST CONCRETE
PIR - PIR INSULATED PANEL
RSD - ROLLER SHUTTER DOOR
RS - ROOF SHEETING
TS - TRANSLUCENT SHEETING

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PROJECT

NEWCOLD SYDNEY
HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE
PROPOSED ELEVATIONS

0 5 10 15 20 25 50m

SCALE: 1:1000 @ A3

CREATE DATE: 13.07.2017 PLOT DATE: 13.07.2017

LAST SAVED BY: karen chol

AU0012 MDP FS11 200 C

FILE LOCATION: X:\Projects\AU0012 - NewCold Sydney\Architecture\Harris Ave, Marsden Park\AU0012 MDP FS11

"CONCEPT PERSPECTIVES" - OPTION 1

REVISIONS

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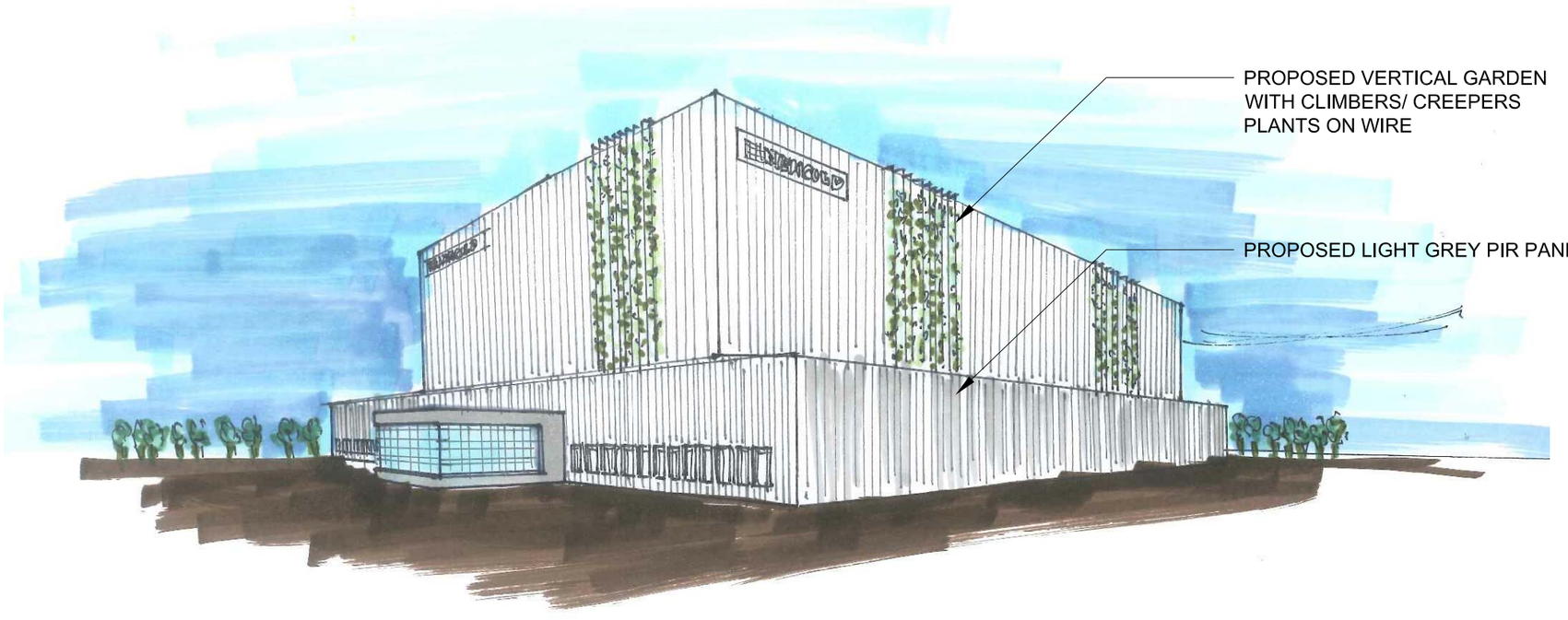
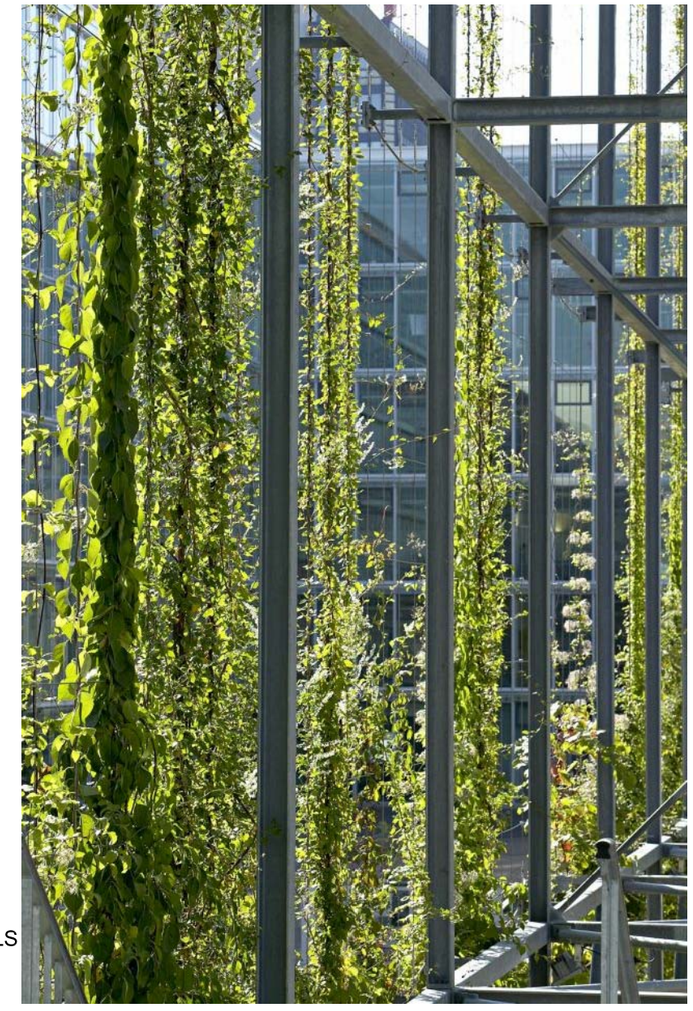


FACDE OPTION A
Scale 1:



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PROJECT

NEWCOLD SYDNEY
HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE
PROPOSED FACADE OPTION A

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SCALE: 1 : 1000 @ A3

CREATE DATE : 13.07.2017 PLOT DATE : 13.07.2017
LAST SAVED BY: karen choi

AU0012 MDP FS11 950 A

FILE LOCATION: X:\Projects\AU0012 - NewCold Sydney\Architecture\Harris Ave, Marsden Park\AU0012 MDP FS11

"CONCEPT PERSPECTIVES" - OPTION 2

REVISIONS

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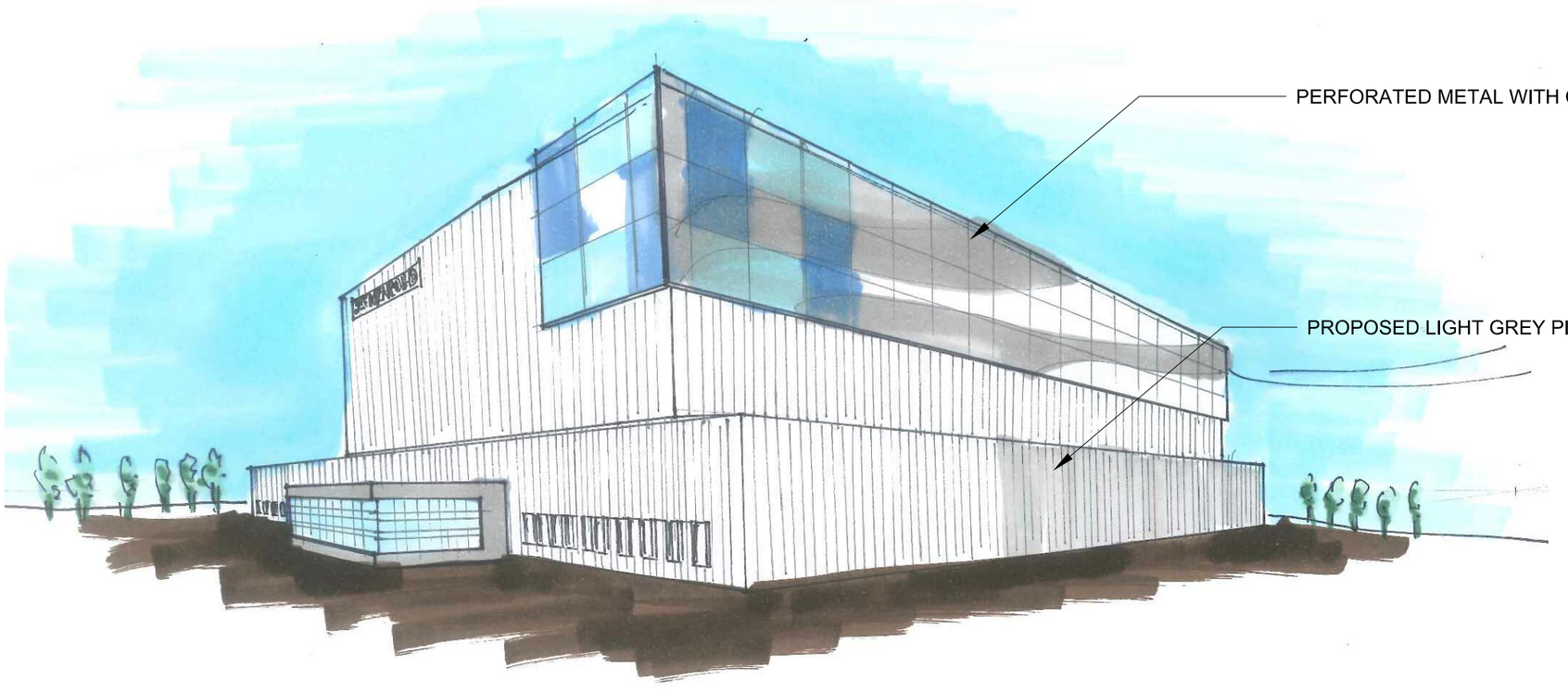

FACDE OPTION B
Scale 1:

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PROJECT

NEWCOLD SYDNEY
HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE
PROPOSED FACADE OPTION B

0 5 10 15 20 25 50m

SCALE: 1 : 1000 @ A3

CREATE DATE : 13.07.2017 PLOT DATE : 13.07.2017
LAST SAVED BY: karen choi

AU0012 MDP FS11 960 A

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"CONCEPT PERSPECTIVES" - OPTION 3

REVISIONS

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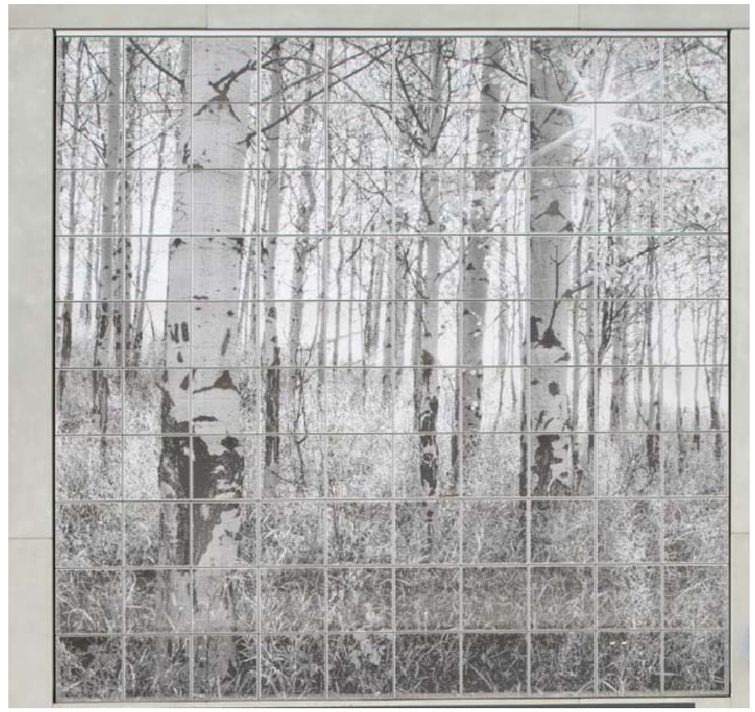

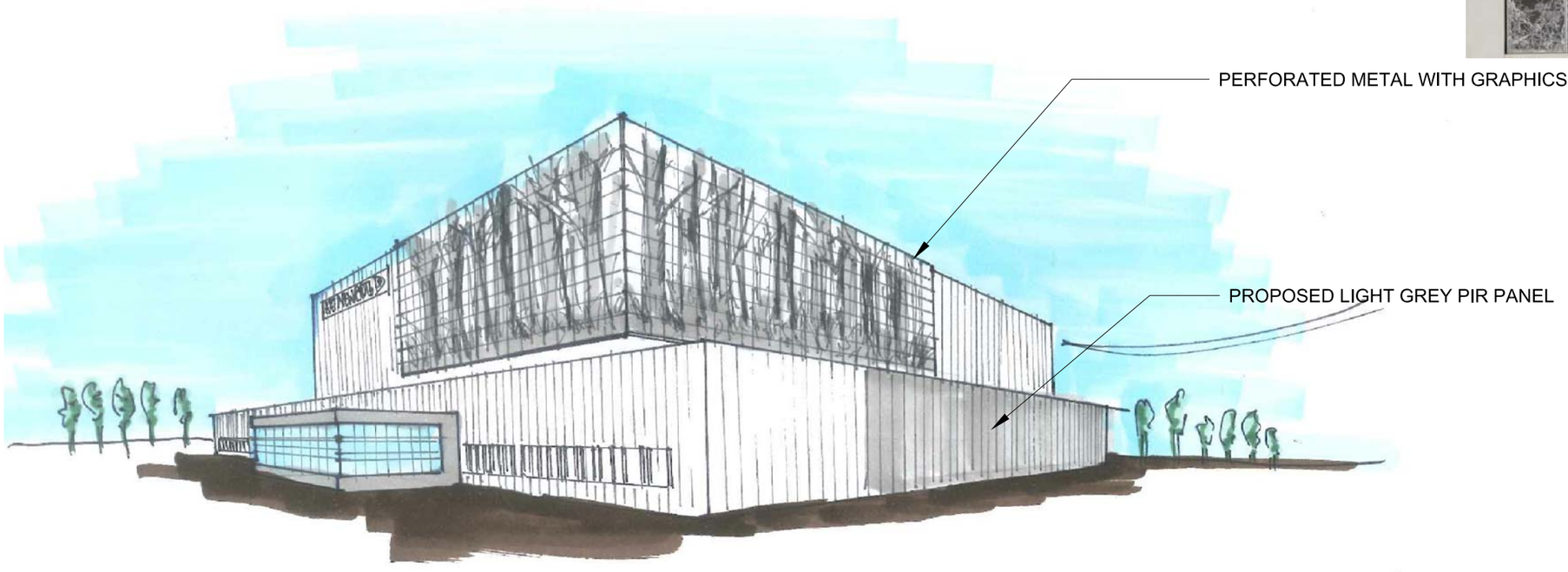

FACDE OPTION C
Scale 1:

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PROJECT

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HARRIS AVE
MARSDEN PARK, NSW

DRAWING TITLE
PROPOSED FACADE OPTION C

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CREATE DATE: 13.07.2017 PLOT DATE: 13.07.2017

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