

PART 2.6 Energy Efficiency  
National Construction Code Series  
Building Code of Australia 2016, Volume 2  
BCA Compliance – Performance Solution

Report Reference: 212-00517

Date: 16/09/2019

CLIENT DETAILS

<b>Name:</b>	Glen Duncan	<b>Phone No:</b>	(08) 8338 2211
<b>Company:</b>	Spectra Building Designers	<b>Fax No:</b>	(08) 8338 2188
<b>Address:</b>	1/159 Port Road, HINDMARSH, SA 5007	<b>Email:</b>	glen@spectragroup.net.au

PROPOSED PROJECT DETAILS

<b>Applicant:</b>	S. Tatarelli	<b>LGA:</b>	Campbelltown City Council
<b>Dwelling Type:</b>	Double Storey Dwelling	<b>Building Class:</b>	1A
<b>Address:</b>	Dw.3, No.5 Athos Place, PARADISE, SA 5075	<b>NCC Climate Zone</b>	5
<b>Total Floor Area:</b>	241 m <sup>2</sup>		

ENERGY EFFICIENCY ASSESSMENT

Compliance with P2.6.1 is verified when a proposed building, compared with a reference building has a heating and cooling load equal to or less than that of a reference building.

<b>Heating:</b>	PASS	<b>Cooling:</b>	PASS
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REFERENCE BUILDING ENERGY LOADS

Software Calculations

<b>Heating:</b>	76.1 MJ/m <sup>2</sup>	<b>Cooling:</b>	30.9 MJ/m <sup>2</sup>
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PROPOSED BUILDING ENERGY LOADS

Software Calculations

<b>Heating:</b>	75.4 MJ/m <sup>2</sup>	<b>Cooling:</b>	28.9 MJ/m <sup>2</sup>
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SPECIFICATIONS REQUIRED FOR BUILDING

<b>Roof:</b>	R4.0 + Sisalation throughout
<b>External Walls:</b>	R2.0 throughout
<b>Internal Walls:</b>	R1.5 (around garage & wet areas)
<b>Floor:</b>	None
<b>Glazing:</b>	Aluminium glazing – refer page 3

David Lenkic  
Design & Thermal Performance Assessor

## PART 2.6 Energy Efficiency

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### REFERENCE BUILDING DETAILS

The reference building must be simulated using approved software that satisfies the minimum: deemed to satisfy provisions of the BCA Volume 2 Part 3.12.10 including sections:

3.12.1	Building Fabric
3.12.2	External glazing and shading
3.12.3	Building sealing
3.12.4	Air Movement

Roof 3.12.1.2	Colour:	Light
	Ventilation:	Unvented
	Min Total Required R Value:	4.10
	Total R Value of Roof Materials:	0.39
	Min Added R Value:	3.71
External Walls 3.12.1.4	Wall Materials:	Brick Veneer/Hebel/Colorbond cladding
	Min Total Required R Value:	2.80
	Total R Value of Wall Materials:	0.48/0.96/0.24
	Min Added R Value:	2.32/1.84/2.56
Floors 3.12.1.5	Min Total Required R Value:	1.00 (for elevated floor only)
	Total R Value of Floor Materials:	0.51
	Min Added R Value:	0.49

### PROPOSED BUILDING DETAILS

The proposed building has been simulated using approved software to achieve the required heating and cooling loads less than that of the Reference building.

Roof	Colour:	Light
	Ventilation:	Unvented
	Total R Value of Roof Materials:	R4.0 + Sisalation throughout
External Walls	Wall Materials:	Brick Veneer/Hebel/Colorbond cladding
	Wall Floor to Ceiling Height:	As per plans
	Min Total Required R Value:	R2.0 throughout
Internal Walls	Total R Value of Wall Materials:	R1.5 (around garage & wet areas)
Floor	Type:	CSOG/Timber
	Min Total Required R Value:	None

## PART 2.6 Energy Efficiency

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WINDOWS	U-VALUE	SHGC
Aluminium single glazing 3mm clear for awning windows	6.29	0.60
Aluminium single glazing 3mm clear for fixed windows	6.16	0.75
Aluminium single glazing 5mm clear for sliding door	6.16	0.71
Aluminium single glazing 4mm clear for hinged doors	6.10	0.62

DESCRIPTION	ORIENTATION	HEIGHT (M)	WIDTH (M)	U-VALUE	SHGC
Entry	SW	0.30	1.12	6.16	0.75
Family	NE	2.40	3.61	6.16	0.71
Meals	SE	0.60	2.41	6.29	0.60
Kitchen	SE	2.10	0.61	6.16	0.75
Laundry	SW	2.40	0.82	6.10	0.62
WC	SE	1.20	0.61	6.29	0.60
Garage	SE	0.60	2.41	6.29	0.60
Hallway	SE	2.40	0.82	6.10	0.62

DESCRIPTION	ORIENTATION	HEIGHT (M)	WIDTH (M)	U-VALUE	SHGC
Bedroom 1	SW	2.40	2.41	6.29	0.60
WIR	SW	1.50	0.61	6.29	0.60
Bedroom 3	NE	0.60	2.41	6.29	0.60
Bedroom 2	SE	0.60	2.41	6.29	0.60
Bath	SE	0.60	1.51	6.29	0.60
Landing	SE	0.60	1.81	6.29	0.60
Ens	SE	0.60	1.81	6.29	0.60

## Section 3.12.1 - Building Fabric

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### Section 3.12.1.1 - Building fabric thermal insulation

Building fabric thermal insulation must be installed in compliance with BCA 2016, Volume 2, Section 3.12.1.1, as follows:

- (a) Where required, insulation must comply with AS/NZS 4859.1 and be installed so that it—
  - (i) abuts or overlaps adjoining insulation other than at supporting members such as columns, studs, noggings, joists, furring channels and the like where the insulation must butt against the member; and
  - (ii) forms a continuous barrier with ceilings, walls, bulkheads, floors or the like that inherently contribute to the thermal barrier; and
  - (iii) does not affect the safe or effective operation of a domestic service or fitting.
- (b) Where required, reflective insulation must be installed with—
  - (i) the necessary airspace, to achieve the required R-Value between a reflective side of the reflective insulation and a building lining or cladding; and
  - (ii) the reflective insulation closely fitted against any penetration, door or window opening; and
  - (iii) the reflective insulation adequately supported by framing members; and
  - (iv) each adjoining sheet of roll membrane being—
    - (A) overlapped not less than 150 mm; or
    - (B) taped together.
  - (c) Where required, bulk insulation must be installed so that—
    - (i) it maintains its position and thickness, other than where it crosses roof battens, water pipes, electrical cabling or the like; and
    - (ii) in a ceiling, where there is no bulk insulation or reflective insulation in the external wall beneath, it overlaps the external wall by not less than 50 mm.

### Section 3.12.1.2 - Roofs

- (c) A roof that—
    - (i) is required to achieve a minimum Total R-Value; and
    - (ii) has metal sheet roofing directly fixed to metal purlins, metal rafters or metal battens; and
    - (iii) does not have a ceiling lining or has a ceiling lining fixed directly to those metal purlins, metal rafters or metal battens (see BCA 2016, Figure 3.12.1.1(b)), must have a thermal break, consisting of a material with an R-Value of not less than 0.2, installed between the metal sheet roofing and its supporting metal purlins, metal rafters, or metal battens.
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## Section 3.12.1.4 - External Walls

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(b) An external wall that—

(i) has lightweight external cladding such as weatherboards, fibre-cement or metal sheeting fixed to the metal frame; and

(ii) does not have a wall lining or has a wall lining that is fixed directly to the metal frame (see BCA 2016, Volume

2, Figure 3.12.1.3(a) and (b)), must have a thermal break, consisting of a material with an R-Value of not less than 0.2, installed between the external cladding and the metal frame.

## Section 3.12.1.5 – Floor

(c) A concrete slab-on-ground—

(i) with an in-slab or in-screed heating or cooling system, must have insulation with an R-Value of not less than 1.0, installed around the vertical edge of its perimeter; and

(ii) when in climate zone 8, must be insulated—

(A) around the vertical edge of its perimeter with insulation having an R-Value of not less than 1.0;  
and

(B) underneath the slab with insulation having an R-Value of not less than 2.0.

(d) Insulation required by

(c)(i) must—

(i) be water resistant; and

(ii) be continuous from the adjacent finished ground level—

(A) to a depth of not less than 300 mm; or

(B) for at least the full depth of the vertical edge of the concrete slab-on-ground (see Figure 3.12.1.4)

(e) The requirements of (a)(ii), and (c)(i) do not apply to an in-screed heating or cooling system used solely in a bathroom, amenity area or the like.

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## Section 3.12.3 - Building Sealing

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### Section 3.12.3.1 - Chimneys and flues

There are no chimneys or flues for open solid-fuel burning appliances.

### Section 3.12.3.2 - Roof lights

There are no roof lights.

### Section 3.12.3.3 - External windows and doors

It has been specified that all the external windows and doors (where they exist) comply with Section 3.12.3.3.

### Section 3.12.3.4 - Exhaust fans

It has been specified that all the exhaust fans comply with Section 3.12.3.4.

### Section 3.12.3.5 - Construction of roofs, walls and floors

It has been specified that all construction of roofs, walls and floors comply with Section 3.12.3.5.

### Section 3.12.3.6 - Evaporative coolers

There are no evaporative coolers.

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### Section 3.12.5 - Services

#### Section 3.12.5.0

#### Plumbing Code of Australia (PCA) Part SA B2.2 - General requirements

- (a) The design, construction, installation, replacement, repair, alteration and maintenance of a heated water service must be in accordance with the following:

- (i) AS/NZS 3500.4 with the following variations:

- (A) After clause 1.9.2(b) insert (c), (d), (e) and (f) as follows:

- (c) Heated water services in buildings constructed after 19 October 1995 shall have temperature control in accordance with items (a) and (b).

- (d) All new solar water installations (including solar heater replacements) shall be in accordance with items (a) and (b).

- (e) Where an existing building is altered or extended in such a way that sanitary fixtures used primarily for personal hygiene purposes are installed in a location where, before the alteration or extension, no such fixture existed, the delivery temperature at the fixture shall be in accordance with items (a) and (b).

- (d) Where a water heater is replaced, a temperature control device is required where such a device was in place prior to the installation of the replaced water heater. The device must meet the requirements of items (a) and (b).

- (B) Substitute clause 5.8(c) as follows:

- 5.8(c) All new or replacement unvented storage water heaters shall be fitted with new temperature/pressure relief and expansion control valves as shown in Figure 5.7.

- (C) Substitute clause 5.11.2.1 as follows:

- 5.11.2.1 The drain lines from the outlet of the temperature/pressure-relief valve and the expansion control valve on an individual water heater shall not be interconnected; and

- (D) Substitute clause 5.11.3(e) as follows:

- 5.11.3(e) All drain lines shall discharge separately over a gully, tundish or other visible approved outlet.

(ii) Section 3 of AS/NZS 3500.5 with the following variations:

(A) After clause 3.2.2 insert 3.2.2.1 as follows:

3.2.2.1 The requirements of Clause 3.2.2 apply to the following:

- (a) Heated water services in buildings constructed after 19 October 1995.
- (b) All new solar water heater installations (including solar water replacements).
- (c) Where an existing building is altered or extended in such a way that sanitary fixtures used primarily for personal hygiene purposes are installed in a location where, before the alteration or extension, no such fixture existed.
- (d) Where a water heater is replaced, a temperature control device is required where such a device was in place prior to the installation of the replaced water heater.

(B) Substitute clause 3.19(c)(i) as follows:

- (c)(i) All new or replacement unvented storage water heaters shall be fitted with new temperature/pressure relief and expansion control valves as shown in Figure 5.7.

(C) Substitute clause 3.21.2(a) and (b) as follows:

(a) The drain lines from the outlet of the temperature/pressure-relief valve and the expansion control valve on an individual water heater shall not be interconnected;

and

(b) All drain lines shall discharge separately over a gully, tundish or other visible approved outlet.

(iii) The requirements of this Part.

(b) \* \* \* \* \*

(c) A solar heated water supply system for food preparation and sanitary purposes, where installed in a new building in climate zones 1, 2 or 3, is not required to comply with—

(i) Section 8 of AS/NZS 3500.4; or

(ii) for new Class 1a and Class 10 buildings, Section 3.33 of AS/NZS 3500.5.



#### section 3.12.5.1

Thermal insulation for central heating water piping and heating and cooling ductwork must—

- (a) be protected against the effects of weather and sunlight; and
- (b) be able to withstand the temperatures within the piping or ductwork; and
- (c) use thermal insulation material in accordance with AS/NZS 4859.1

#### Section 3.12.5.2

Central heating water piping that is not within a conditioned space must be thermally insulated to achieve the minimum material R-Value

as follows:

1. All internal flow and return internal piping that is—
  - (i) within an unventilated wall space; or
  - (ii) within an internal floor between storeys; or
  - (iii) between ceiling insulation and a ceiling,  
in addition to any hot water piping encased within a concrete floor slab (except that which is part of a floor heating system) must have an R-Value greater than 0.4.
2. All piping located within a ventilated wall space, an enclosed building sub-floor or a roof space that is:
  - (a) flow and return *piping*; or
  - (b) cold water supply *piping*—within 500 mm of the connection to the central water heating system; or
  - (c) relief valve piping *piping*—within 500 mm of the connection to the central water heating system,  
must be greater than 0.6, as required for climate zone 5.
3. All piping outside the building or in an unenclosed building sub-floor or roof space that is:
  - (a) flow and return *piping*; or
  - (b) cold water supply *piping*—within 500 mm of the connection to the central water heating system; or
  - (c) relief valve piping *piping*—within 500 mm of the connection to the central water heating system,  
must be greater than 0.6, as required for climate zone 5.

#### Section 3.12.5.3

- (a) Heating and cooling ductwork and fittings must—
  - (i) achieve a minimum material R-Value of 0.4 for fittings, and 1 for ductwork, required for climate zone 5 as per table 3.12.5.2.
  - (ii) be sealed against air loss—
- (A) by closing all openings in the surface, joints and seams of ductwork with adhesives, mastics, sealants or gaskets in accordance with AS 4254 for a Class C seal; or
- (B) for flexible ductwork, with a draw band in conjunction with a sealant or adhesive tape.
- (b) Duct insulation must—
  - (i) abut adjoining duct insulation to form a continuous barrier; and
  - (ii) be installed so that it maintains its position and thickness, other than at flanges and supports; and

(iii) where located outside the building, under a suspended floor, in an attached Class 10a building or in a roof space—

(A) be protected by an outer sleeve of protective sheeting to prevent the insulation becoming damp;  
And

(B) have the outer protective sleeve sealed with adhesive tape not less than 48 mm wide creating an airtight and waterproof seal.

(c) The requirements of (a) do not apply to heating and cooling ductwork and fittings located within the insulated building envelope including a service riser within the conditioned space, internal floors between storeys and the like.

#### Section 3.12.5.4

An electric resistance space heating system that serves more than one room must have—

(a) separate isolating switches for each room; and

(b) a separate temperature controller and time switch for each group of rooms with common heating needs; and

(c) power loads of not more than 110 W/m<sup>2</sup> for living areas, and 150 W/m<sup>2</sup> for bathrooms.

#### Section 3.12.5.5

(a) The lamp power density or illumination power density of artificial lighting, excluding heaters that emit light, must not exceed—

(i) 5 W/m<sup>2</sup> in a Class 1 building; and

(ii) 4 W/m<sup>2</sup> on a verandah, balcony or the like attached to a Class 1 building; and

(ii) 3 W/m<sup>2</sup> in a Class 10a building associated with a Class 1 building.

(b) The illumination power density allowance in (a) may be increased by dividing it by the illumination power density adjustment factor for a control device in BCA 2016, Table 3.12.5.3 as applicable.

(c) When designing the lamp power density or illumination power density, the power of the proposed installation must be used rather than nominal allowances for exposed batten holders or luminaires.

(d) Halogen lamps must be separately switched from fluorescent lamps.

(e) Artificial lighting around the perimeter of a building must —

(i) be controlled by a daylight sensor; or

(ii) have an average light source efficacy of not less than 40 Lumens/W.

#### Section 3.12.5.6

##### Plumbing Code of Australia (PCA) Part SA B2.4 - Water heater in a heated water supply system

(a) A water heater in a hot water supply system must be—

(i) a solar heater complying with (b); or

(ii) a heat pump water heater complying with (b); or

(iii) a gas water heater complying with (c); or

(iv) an electric resistance heater only in the circumstances described in (d); or

(v) a wood combustion water heater with a tank volume not more than 700 litres and no additional heating mechanisms.

(b) A solar heater and a heat pump heater must have the following performance:

(i) An electric boosted solar heated water service or heat pump heated water service (air source or solar boosted) with a single tank and a volume of 400 litres or more and not more than 700 litres—

(A) at least 38 *Renewable Energy Certificates* in zone 3; and/or

(B) at least 36 *Renewable Energy Certificates* in zone 4.

(ii) An electric boosted solar heated water service or heat pump heated water service (air source or solar boosted) with a single tank and a volume of more than 220 litres and less than 400 litres—

(A) at least 27 *Renewable Energy Certificates* in zone 3; and/or

(B) at least 26 *Renewable Energy Certificates* in zone 4.

(iii) An electric boosted solar heated water service or heat pump heated water service (air source or solar boosted) with a single tank and a volume of not more than 220 litres—

(A) at least 17 *Renewable Energy Certificates* in zone 3; and/or

(B) at least 16 *Renewable Energy Certificates* in zone 4.

(iv) A natural gas or LPG boosted solar heated water service with a total tank volume of not more than 700 litres and at least 1 or more *Renewable Energy Certificates* in any zone.

(v) A wood combustion boosted solar water heater, with no additional heating mechanism and a total tank volume not more than 700 litres.

(c) A gas heater must be rated at not less than 5 stars in accordance with AS 4552.

(d) An electric resistance water heater may be installed when—

(i) the building has—

(A) a water heater that complies with (b) or (c); and

(B) not more than 1 electric resistance water heater installed; and

(ii) the electric resistance water heater—

(A) has no storage capacity or a *rated hot water delivery* of not more than 50 litres; and

(B) it does not supply *heated water* to more than 1 room; and

(C) it does not supply *heated water* to a bath or a shower.

### 3.12.5.7

#### Swimming pool heating and pumping

(a) Heating for a swimming pool must be by—

(i) a solar heater not boosted by electric resistance heating; or

(ii) a heater using reclaimed energy; or

(iii) a gas heater; or

(iv) a heat pump; or

(v) a combination of

(i) to (iv).

(b) Where some or all of the heating required by (a) is by a gas heater or a heat pump, the swimming pool must have—

(i) a cover unless located in a conditioned space; and

(ii) a time switch to control the operation of the heater.

(c) A time switch must be provided to control the operation of a circulation pump for a swimming pool.

(d) For the purposes of 3.12.5.7, a swimming pool does not include a spa pool

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**Project Information**

Mode	New Home
Climate	16 Adelaide (Kent Town)
Site Exposure	suburban
Client Name	S. Tatarelli
Rated Address	Dw.3, No.5 Athos Place PARADISE
Accredited Rater	David Lenkic
Date	13/09/2019
Reference	REFERENCE BUILDING

**Energy Usage**

Type	Energy MJ/m <sup>2</sup>
Total	107.0
Heating	76.1
Cooling	30.9

**Areas**

Area	Size (m <sup>2</sup> )
Net Conditioned Floor Area (NCFA)	151.8
Unconditioned Room Area	22.0
Garage Area	22.3

**Project Information**

Mode	New Home
Climate	16 Adelaide (Kent Town)
Site Exposure	suburban
Client Name	S. Tatarelli
Rated Address	Dw.3, No.5 Athos Place PARADISE
Accredited Rater	David Lenkic
Date	13/09/2019
Reference	PROPOSED BUILDING

**Energy Usage**

Type	Energy MJ/m <sup>2</sup>
Total	104.3
Heating	75.4
Cooling	28.9

**Areas**

Area	Size (m <sup>2</sup> )
Net Conditioned Floor Area (NCFA)	151.8
Unconditioned Room Area	22.0
Garage Area	22.3

## GLAZING CALCULATOR (first issued with BCA 2013)

212-00517  
16 September-2019  
Single glazing

Climate zone

5

C<sub>u</sub>C<sub>shgc</sub>

CONSTANTS

13.464

0.122

Building materials (sa.gov.au)

Building materials (sa.gov.au)

W.3, No.5 Kings place, PARADISE, SA 5075

Gordon Sharplin

HE 192 (South Australia)

PH: 0403 777 778 - mail.energyworx.com.au

Number of rows for table below

Direct contact  
Suspended  
Area of storey  
Area of glazing131m<sup>2</sup>131m<sup>2</sup>17.8m<sup>2</sup> (14% of area of storey)

Wall insulation option chosen for 3.12.14

No wall insulation concession used

C<sub>u</sub> (only) C<sub>shgc</sub> x Area  
ALLOWANCES 13.5 16.0

8 (as currently displayed)

GLAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS													SHADING		CALCULATION DATA			CALCULATED OUTCOMES - OK (if inputs are valid)			
Glazing element		Orientation		Size		Performance			P&H or device		Exposure		Size		Conductance - PASSED		Solar heat gain - PASSED				
ID	Description (optional)	Facing sector	Height (m)	Width (m)	Area (m²)	Total System U-Value (AFRC)	Total System SHGC (AFRC)	P (m)	H (m)	P/H	Es	Area used (m²)	U x area / window access	Element share of % of allowance used	SHGC x Es x area	Element share of % of allowance used					
1	Entry	SW	0.30	1.12		4.38	0.89	1.00	0.30	3.33	0.21	0.34	0.22	2% of 100%	0.1	1% of 52%					
2	Family	NE	2.40	3.61		4.38	0.89	3.60	2.70		0.96	8.66	5.75	43% of 100%	2.5	30% of 52%					
3	Meals	SE	0.60	2.41		4.38	0.89				0.96	1.45	0.96	7% of 100%	1.2	15% of 52%					
4	Kitchen	SE	2.10	0.61		5.95	0.83				0.96	1.28	1.16	9% of 100%	1.0	12% of 52%					
5	Laundry	SW	2.40	0.82		5.95	0.83	1.00	2.70	0.37	0.64	1.97	1.78	13% of 100%	1.0	13% of 52%					
6	WC	SE	1.20	0.61		4.38	0.89	1.00	1.50	0.67	0.45	0.73	0.49	4% of 100%	0.3	4% of 52%					
7	Garage	SE	0.60	2.41		5.95	0.83				0.96	1.45	1.30	10% of 100%	1.2	14% of 52%					
8	Hallway	SE	2.40	0.82		5.95	0.83	1.00	2.70	0.37	0.59	1.97	1.78	13% of 100%	1.0	12% of 52%					

## IMPORTANT NOTICE AND DISCLAIMER IN RESPECT OF THE GLAZING CALCULATOR

If inputs (including air movement levels) are valid

The Glazing Calculator has been developed by the ABCB to assist in developing a better understanding of glazing energy efficiency parameters.

While the ABCB believes that the Glazing Calculator, if used correctly, will produce accurate results, it is provided "as is" and without

any representation or warranty of any kind, including that it is fit for any purpose or of merchantable quality, or functions as intended or at all.

Your use of the Glazing Calculator is entirely at your own risk and the ABCB accepts no liability of any kind.



PARADISE, SA 5075

5

CONSTANTS	12.118	0.110
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### Wall insulation option chosen for 3.12.1.4

**110m<sup>2</sup>**

**No wall insulation concession used**

ALLOWANCES	12.1	12.1
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7 (as currently displayed)

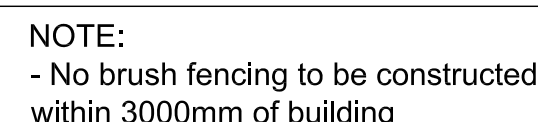
**If inputs (including air movement levels) are valid**

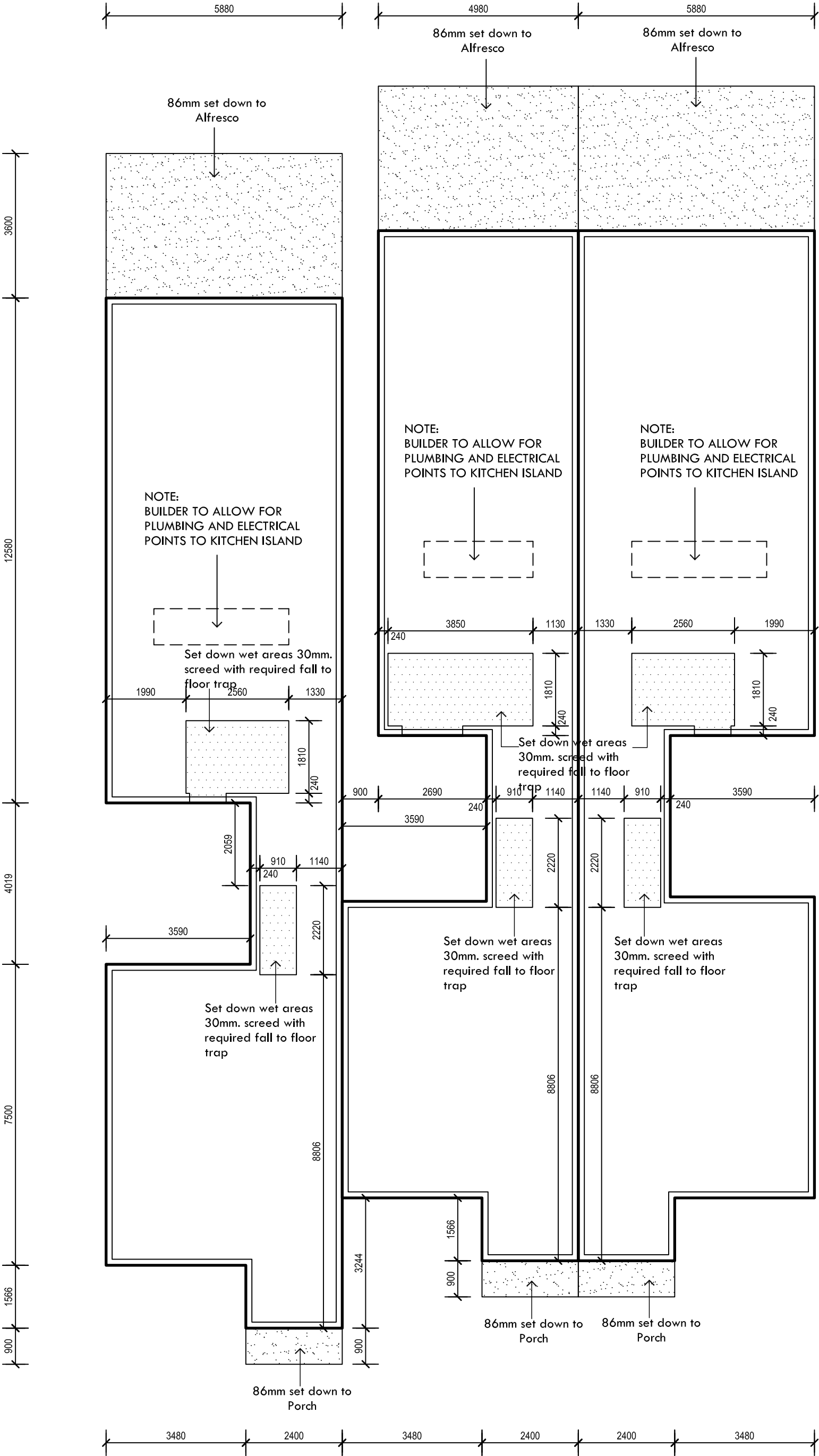
While the ABCB believes that the Glazing Calculator, if used correctly, will produce accurate results, it is provided "as is" and without

Your use of the Glazing Calculator is entirely at your own risk and the ABCB accepts no liability of any kind.



FOR CERTIFICATION ONLY





212-00517  
16 September 2019  
Single glazing

TERMITE RISK MANAGEMENT IS TO COMPLY WITH PART 3.1.3 BCA96 WHERE THE SLAB IS EXPOSED TO GROUND OF A TERMITES RISK TO BE AS PART SYSTEM, THE SLAB MUST BE DESIGNED & CONSTRUCTED TO COMPLY WITH AS 2870

SLABS MUST HAVE PENETRATIONS, CONTROL JOINTS AND THE PERIMETER PROTECTED

THE SLAB ON GROUND MAY BE USED AS PERIMETER PROTECTION PROVIDED THAT THE SLAB IS EXPOSED 75 mm ABOVE FINISHED GROUND LEVEL AND THE SLAB EDGE DOES NOT HONEYCOMBED, ROUGH OR CONTAIN RIPPLES

CHEMICAL TERMITICIDE TO UNDERSIDE OF CONCRETE SLAB IN ACCORDANCE WITH 3660.1 (BIFLEX OR SIMILAR)  
OR  
STAINLESS STEEL MESH BARRIER EITHER FULL  
OR  
PARTIAL PROTECTION TERMIMESH OR SIMILAR)  
OR  
GRADED STONE BARRIER  
OR  
KORDON TERMITE BARRIER

NOTE: BUILDER TO SELECT IN CONSULTATION WITH OWNER

CONCRETOR'S NOTE:  
PROVIDE ELECTRICAL CONDUIT UNDER SLAB TO KITCHEN ISLAND BENCH FOR DISHWASHER & DOUBLE POWERPOINT

NOTE: 86mm EDGE REBATE TO PERIMETER OF HOUSE.

REINFORCED CONCRETE FOOTING AND SLAB SYSTEM AS PER ENGINEERS DESIGN AND DETAILS.

FOOTING EDGE IS TO BE EXPOSED A MINIMUM OF 75mm ABOVE PAVING LEVEL OR ALTERNATIVE PERIMETER TERMITE TREATMENT IS REQUIRED.

ALLOW FOR SUB-FLOOR STORM WATER PIPES PRIOR TO POURING OF SLAB.

AMENDMENTS			
REV	DATE	DESCRIPTION	DRAWN

SUITE 1 / 159 PORT ROAD  
HINDMARSH SA 5007  
T: 8338 2211 F: 83382188

PROJECT  
PROPOSED RESIDENTIAL DEVELOPMENT  
AT:  
5 ATHOS PLACE  
PARADISE, SA 5075

CLIENT  
SOFIA TATARELLI

DRAWN  
F.B./G.D.  
SCALE  
1:100@A3

DATE  
AUG 2018  
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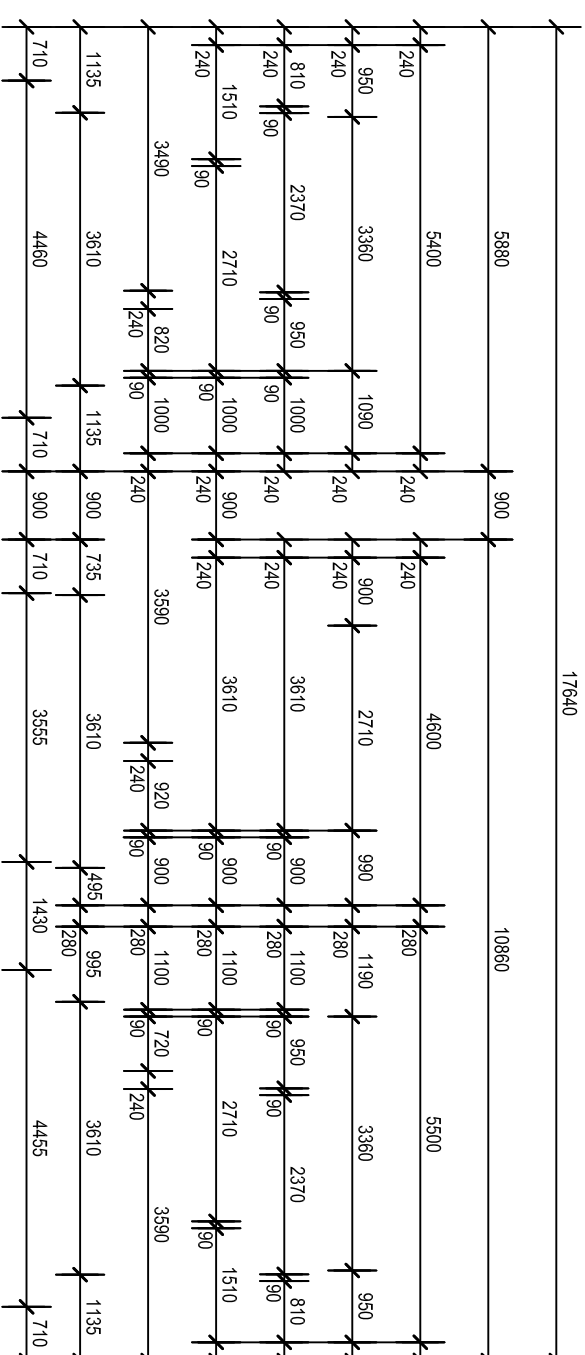
PROJECT No.  
23.2018  
SHEET No.  
02 OF 15

CONTRACTORS ARE TO VERIFY ALL DIMENSIONS AND LEVELS ON SITE BEFORE COMMENCING ANY WORK OR MAKING SHOP DRAWINGS. FIGURED DIMENSIONS SHALL TAKE PREFERENCE OVER SCALED DIMENSIONS AND ANY DISCREPANCY SHALL BE REPORTED TO THE DESIGNERS IMMEDIATELY

CONCRETE SLAB FLOOR PLAN  
1:100

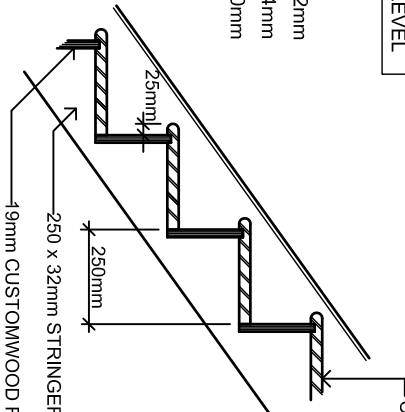


W.C. door to be easily removable from outside of compartment



GROUND LEVEL - FIRST LEVEL

CHECK ON SITE PRIOR TO CONSTRUCTION	
F / FLOOR HEIGHT	3122mm
RISERS	17 @ 183.64mm
GOES	16 @ 250mm

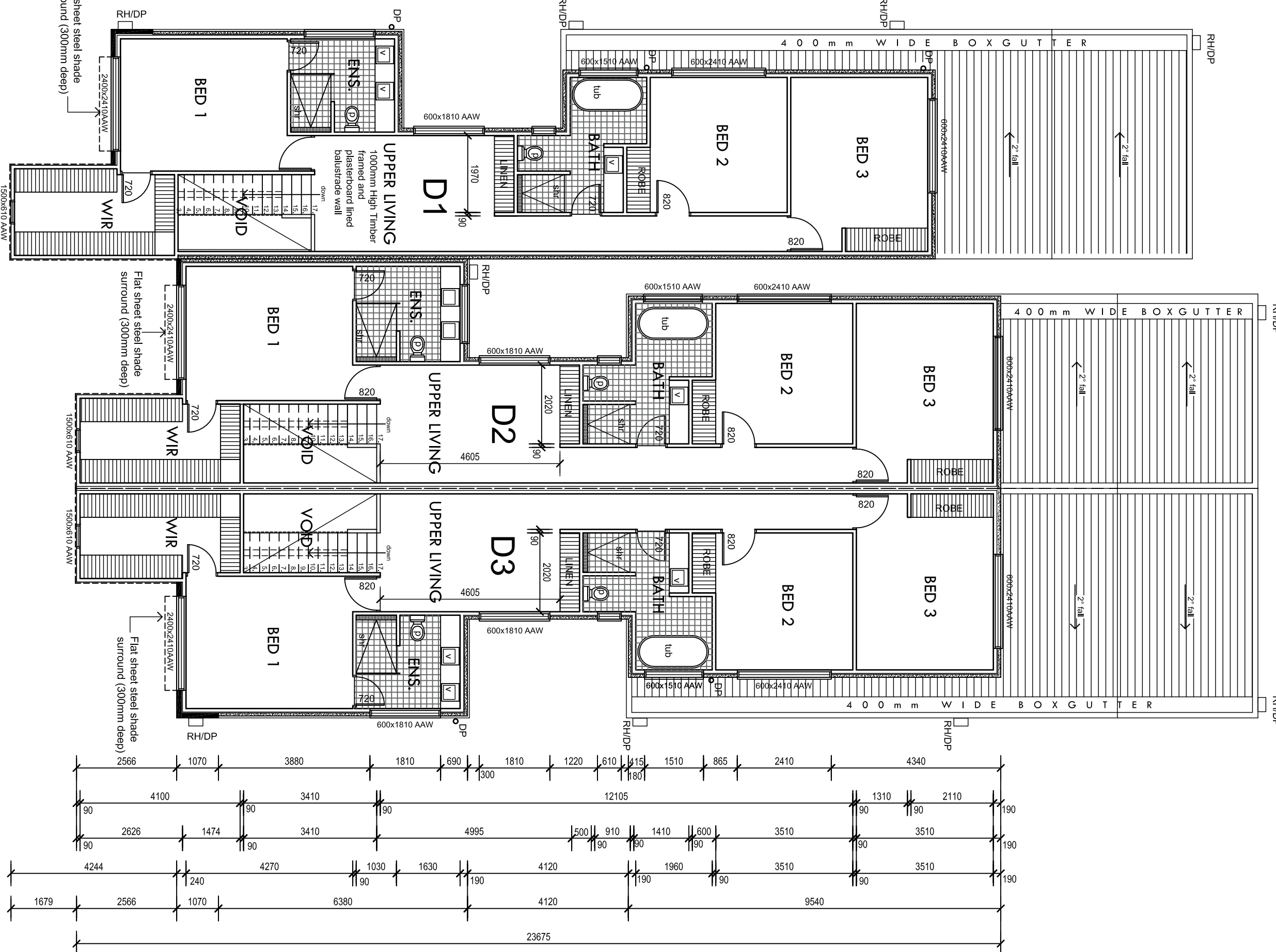
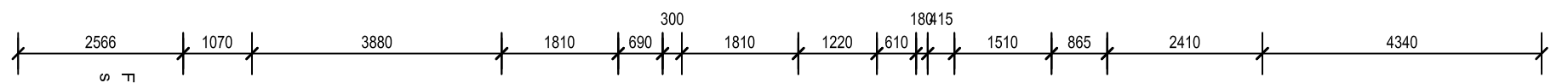
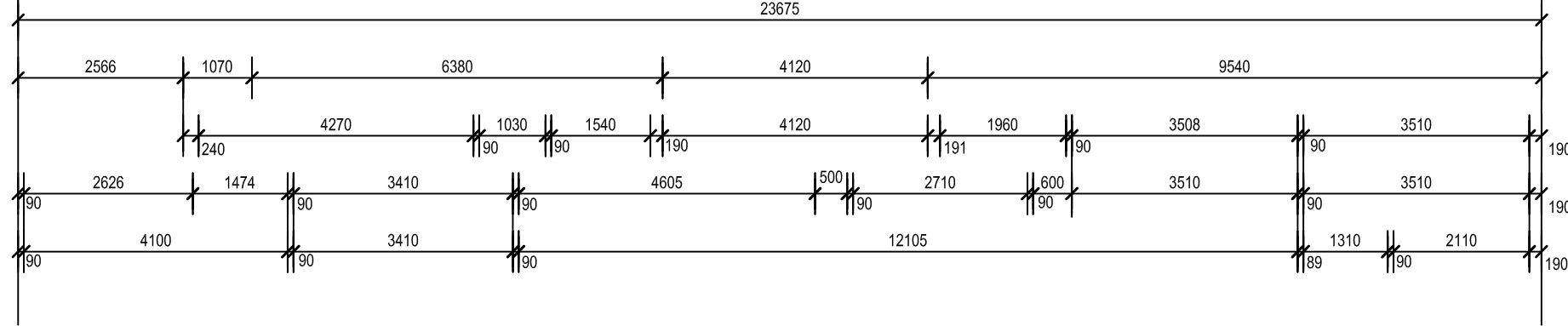
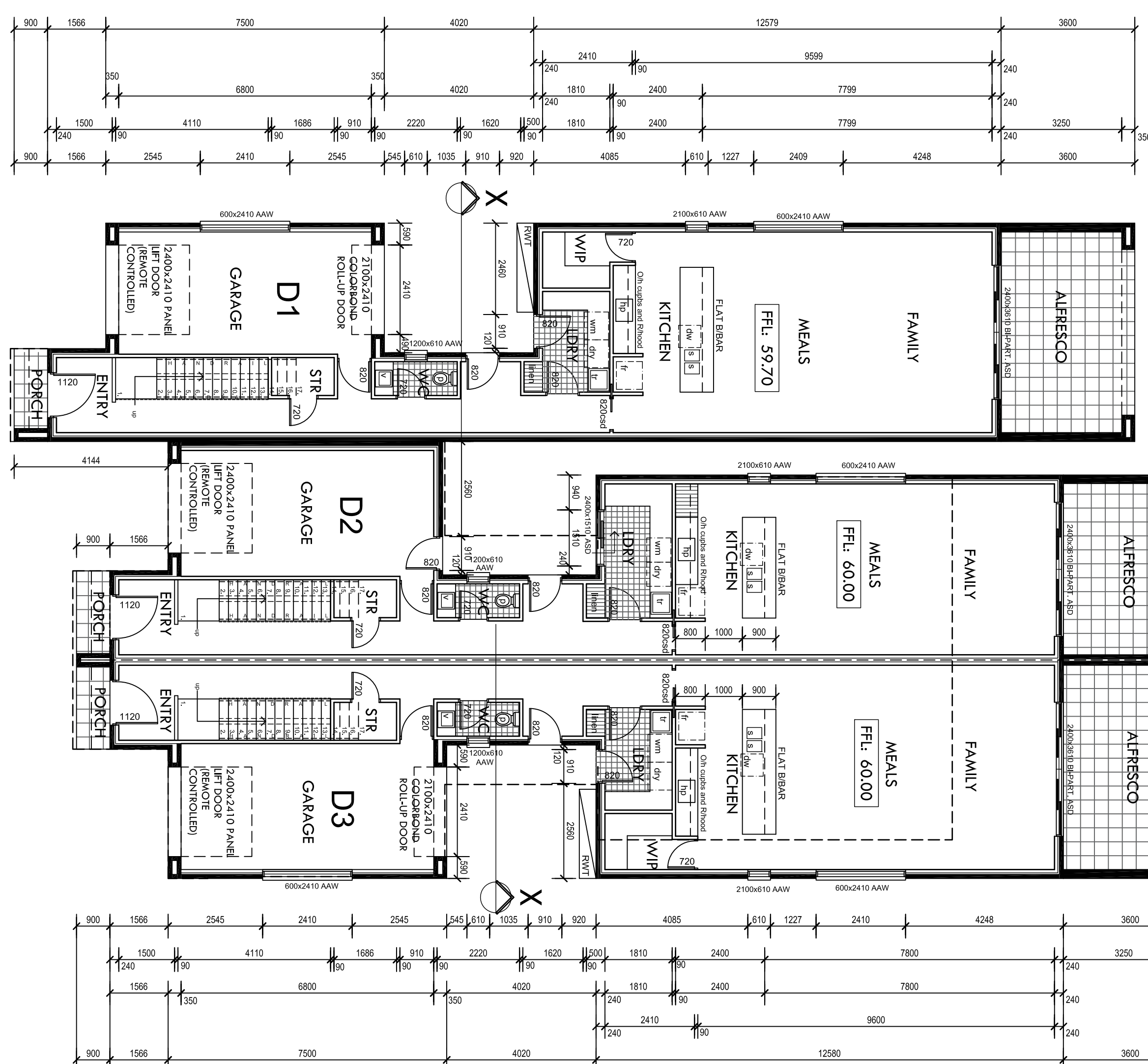


**NOTE:**  
STAIRS AND BALUSTRADES TO  
CONSTRUCTED IN ACCORDA  
WITH TOP STAIRS OR EQUAL  
APPROVED MANUFACTURER.

NOTE:  
TRENDS TO HAVE SURFACE OR  
NOSING STRIP WITH A  
SLIP-RESISTANCE CLASSIFICATION  
NOT LESS THAN THAT LISTED IN  
TABLE 3.9.1.1 WHEN TESTED IN  
ACCORDANCE WITH AS-4586

MANUFACTURERS STAIRS ARE TO COMPLY WITH PART 3.9.1 OF BCA-2015  
MAX. 18 RISERS TO EACH FLIGHT. RISER MUST NOT ALLOW 125 SPHERE TO  
PASS THROUGH RISER DIMENSIONS:

BALUSTRADE MUST NOT ALLOW 125 SPHERE TO PASS TH  
TO HAVE NON-SLIP FINISH OR SUITABLE NON-SKID STRIP



ADDITIONAL ENERGY NOTES:

- [illegible]

or  
-tanned together

- it maintains its position and thickness

- in the ceiling where there is no bulk external walls beneath it. It overlies

openable window and other such opening when serving a habitable room

- for the bottom edge of an external swing door, must be a draft protection device

For an open cage or an external spring door or the cages of an operable window or other such opening, maybe a foam or rubber compressive strip,

All exhaust fans must be fitted with a sealing device such as a self-closing damper filter or the like when serving a habitable room.

## ENERGY RATING NOTES:

Refer to Energy report for  
Insulation Requirements.

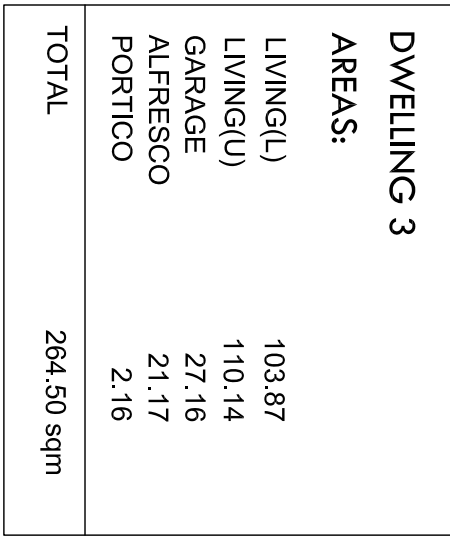
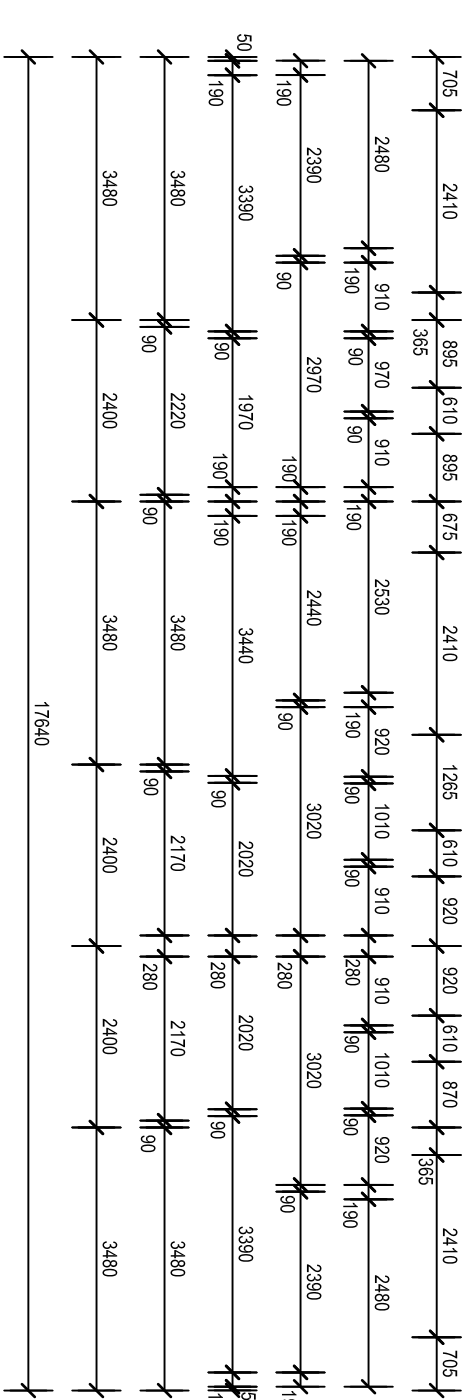
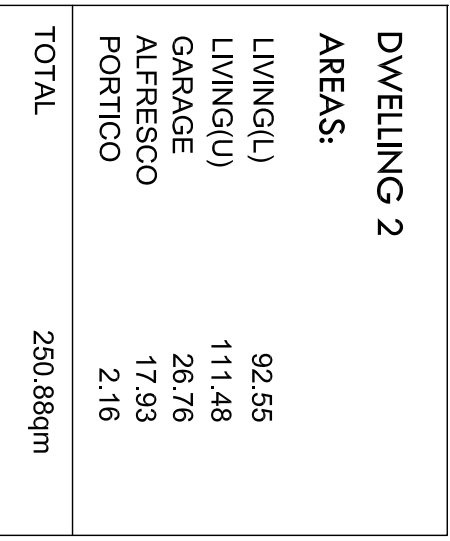
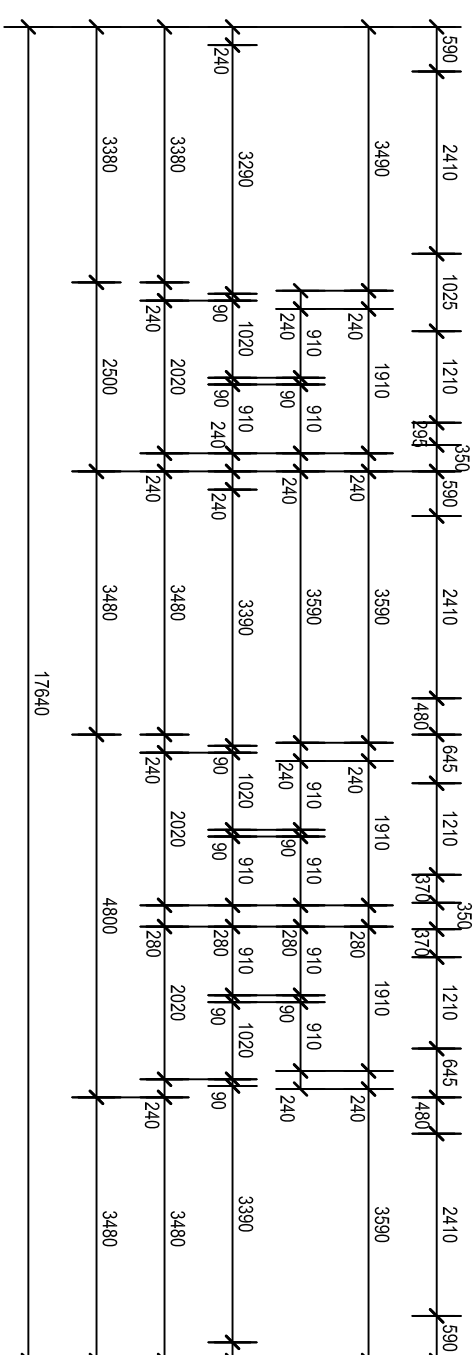
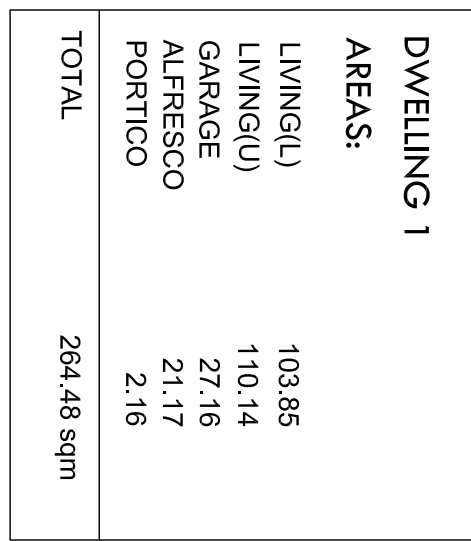
All gaps are to be sealed by  
means of Caulking, stitching,  
architraves, cornice or the like.

All glazing shall achieve the  
following performance values:  
Total glazing system U-value  
(glazing and frame) of not more  
than 3.8

Total glazing system U-value  
(glazing and frame) within the  
range from 0.50 to 0.60

Hot water supply system  
designed and installed in  
accordance with Section 6A of  
AS/NZS 3500.4.2 or clause  
3.38 of AS/NZS 3500.5

3.38 of AS/NZS 3500.5




# LOWER FLOOR PLAN 1:100

## UPPER FLOOR PLAN 1 : 100

FOR CERTIFICATION ONLY

[illegible]



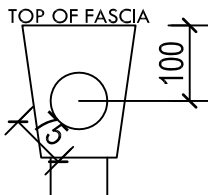
Gordon Sharplin  
HE 192 (South Australia - sa.gov.au)  
Ph: 0403 777 778 - mail.energyworx.com.au



212-00517  
16 September-2019  
Single glazing

## Gutter Detail

'OG' GUTTERS



- BCA-P3.5.2.5 RAINHEADS
- A 75mm DIAMETER HOLE IN THE OUTWARD FACE OF THE RAINHEAD; AND
  - THE CENTRELINE OF THE HOLE POSITIONED 100mm BELOW THE TOP OF THE FASCIA

### NOTES


PROVIDE FLASHINGS, SEAL AND ADEQUATELY FLASH ALL PENETRATIONS, JUNCTIONS AND JOINTS. INSTALL ROOF DECK, FLASHINGS AND FITTINGS IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS AND DETAILS TO ENSURE A NEAT WEATHER TIGHT ROOF.

ZINCALUME PARAPET CAPPING TO THE TOP OF ALL PARAPET WALLS.

ALL EXTERNAL, EXPOSED FLASHINGS TO HAVE A ZINCALUME FINISH.

CO-ORDINATE INSTALLATION OF ROOF CLADDING WITH ALL SERVICES TO ALLOW FOR ANY PENETRATIONS.

EXTRA BRACING FOR SOLAR HOT WATER PANELS

- RWH SELECTED 'FIELDERS' OR EQUAL RAINWATER HEAD, GALVANISED FINISH.
- DP 90mm ROUND PVC DOWNPIPE
- B/G 350 WIDE x 100 DEEP ZINCALUME BOX GUTTER, WITH 1:200 GRADED FALL. ARROWS INDICATE DIRECTION OF FALL.
- SPD 90mm ROUND PVC DOWNPIPE WITH SPREADER END
-  KLIPLOK ROOF SHEETING AT 2° ROOF PITCH. ARROW INDICATES DIRECTION OF FALL.

AMENDMENTS			
REV	DATE	DESCRIPTION	DRAWN

SPECTR

SUITE 1 / 159 PORT ROAD  
HINDMARSH SA 5007  
T: 8338 2211 F: 8338 2188

PROJECT  
PROPOSED RESIDENTIAL DEVELOPMENT  
AT:  
5 ATHOS PLACE  
PARADISE, SA 5075

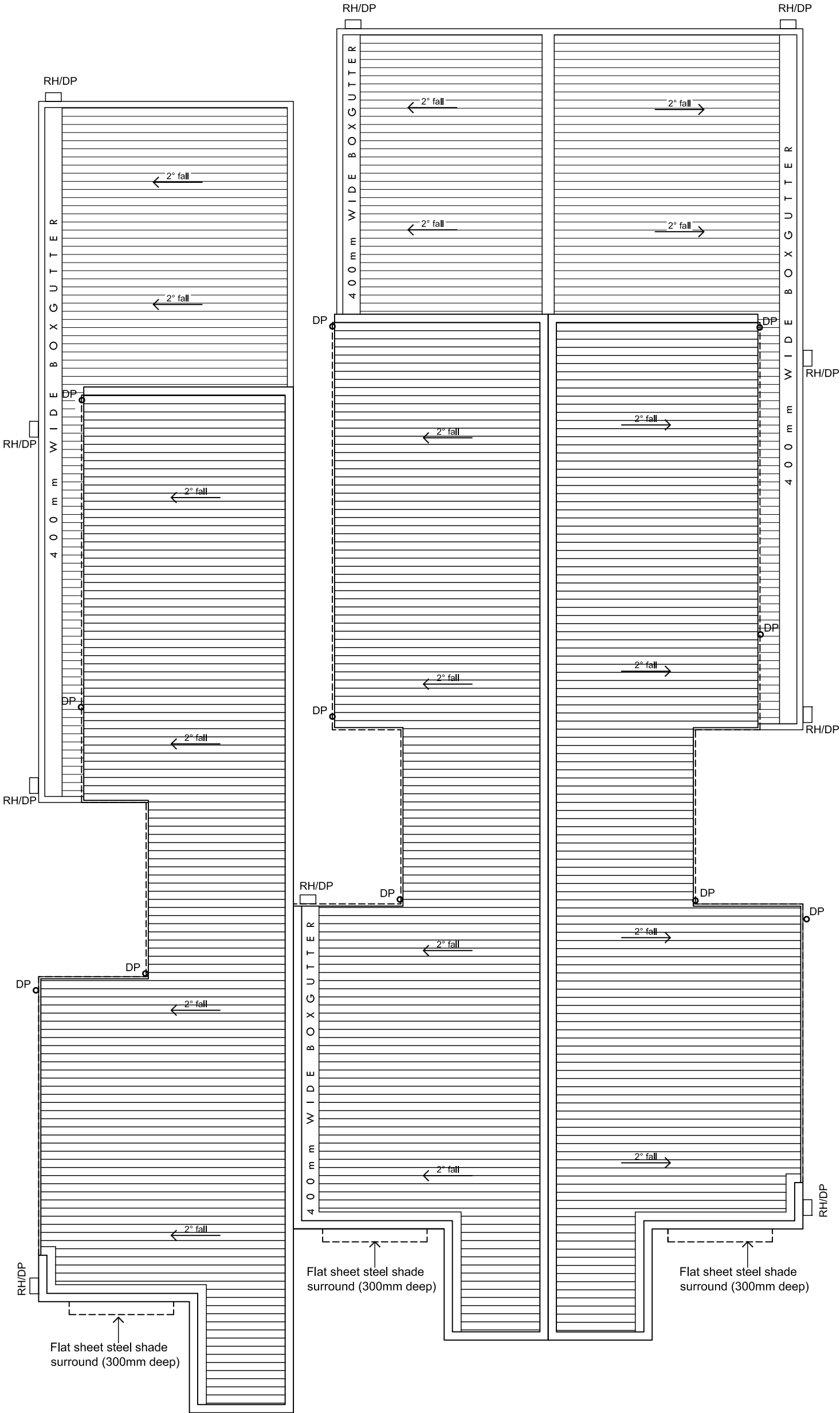
CLIENT  
SOFIA TATARELLI

DRAWN  
F.B./G.D.  
SCALE  
1:100@A3

DATE  
AUG 2018  
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PROJECT No.  
23.2018  
SHEET No.  
04 OF 15

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## ROOF PLAN

SCALE 1:100



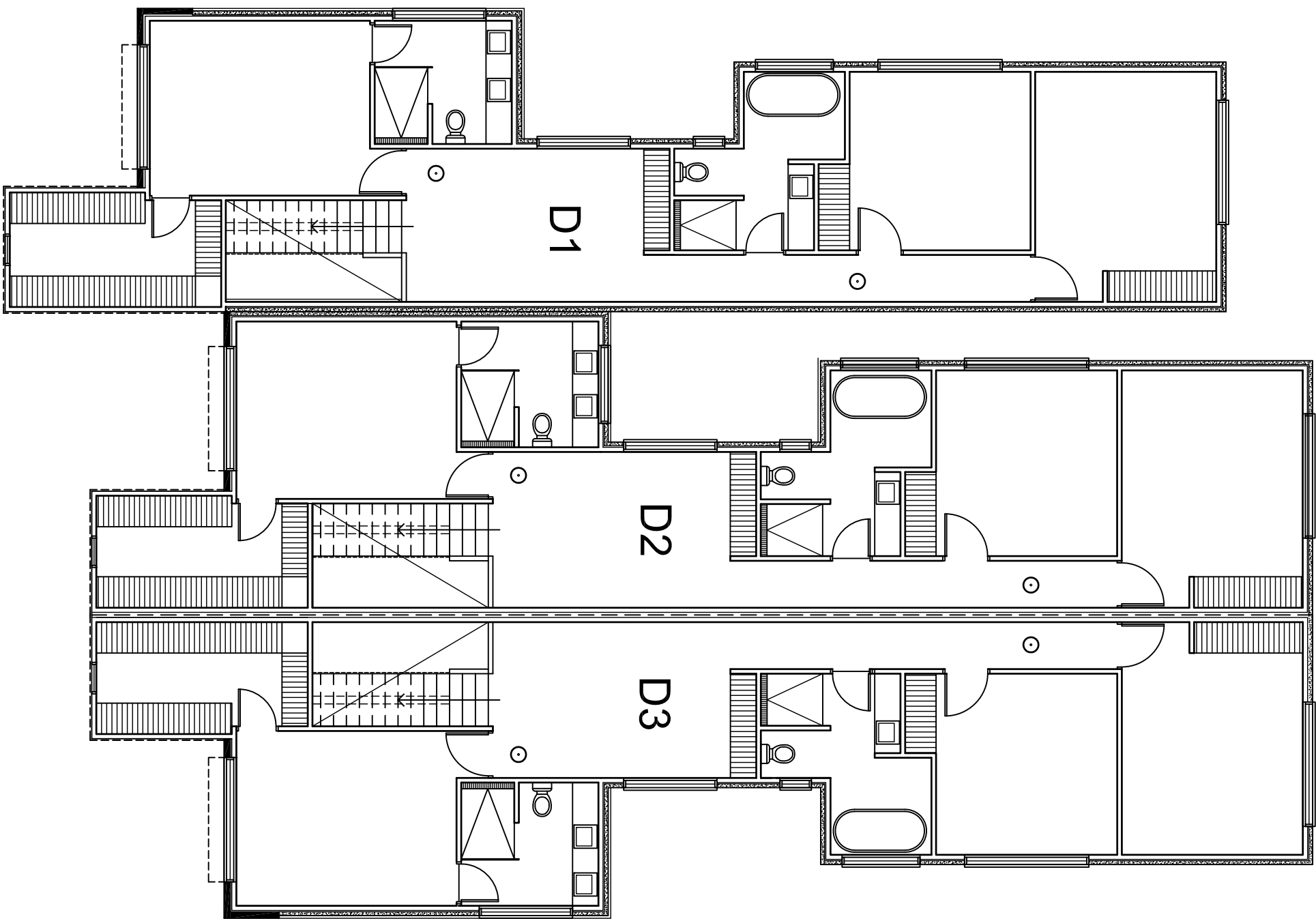
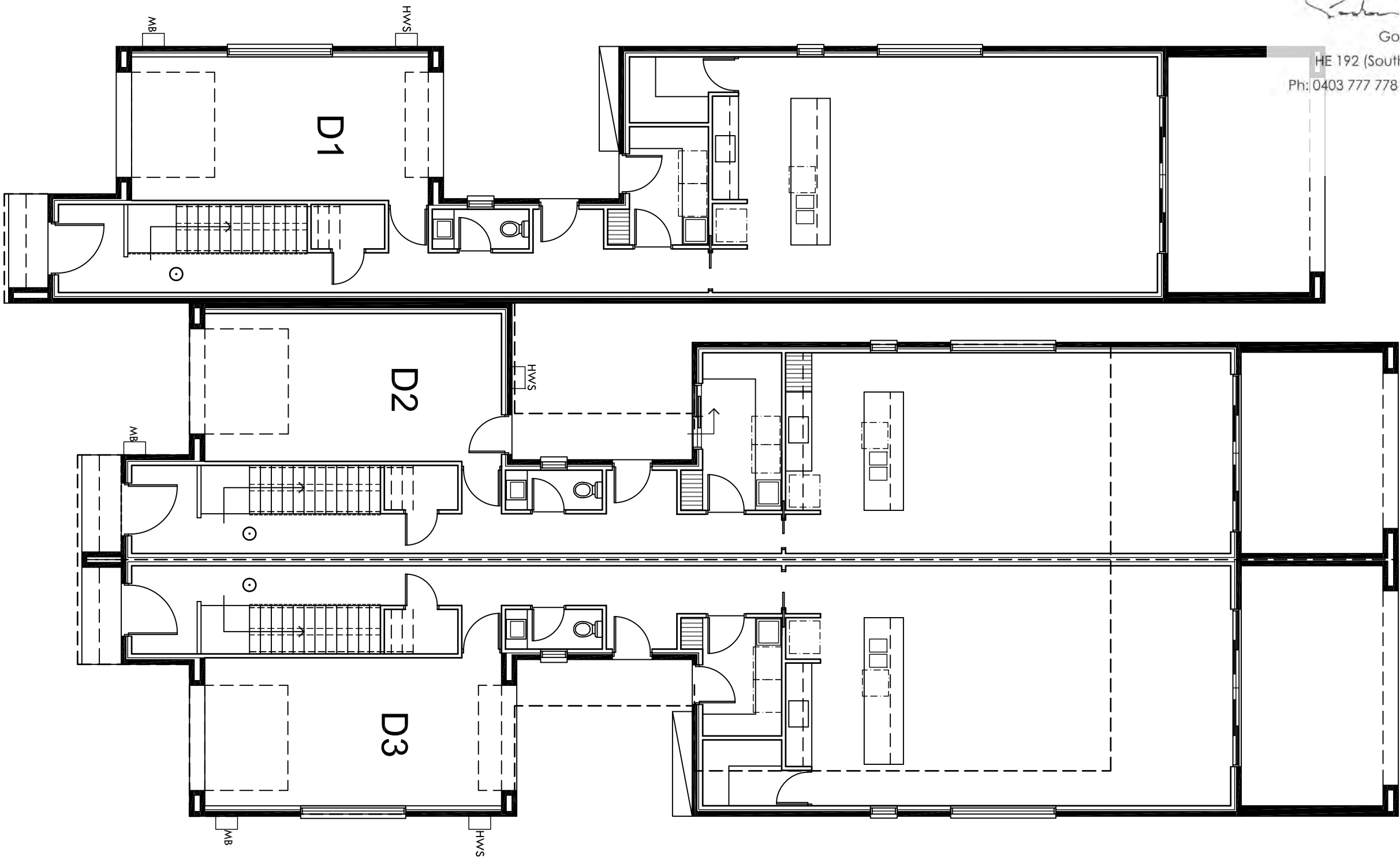
*Gordon Sharplin*

Gordon Sharplin

HE 192 (South Australia - sa.gov.au)

Ph: 0403 777 778 - mail.energyworx.com.au

212-00517  
16 September-2019  
Single glazing



NO.	ELECTRICAL LEGEND:
LOWER/UPPER/TOTAL	
	△ SINGLE G.P.O @ 200mm FFL
	△△ DOUBLE G.P.O @ 200mm FFL
	▲ SINGLE G.P.O @ 1100mm FFL
	▲▲ DOUBLE G.P.O @ 1100mm FFL
	▲ SINGLE G.P.O @ 1400mm FFL
	▲▲ DOUBLE G.P.O @ 1400mm FFL
	△ SINGLE G.P.O AS SPECIFIED
	△△ DOUBLE G.P.O AS SPECIFIED
	X LIGHT SWITCH
	X 2 2-WAY LIGHT SWITCH (PAIR)
	X 3 3-WAY LIGHT SWITCH (SET)
	(P) PENDANT LIGHT
	⊗ RECESSED LED LIGHT
	⊙ COMPACT FLURO
	○ BATTEN LIGHT
	▽ STAR LIGHT
	⌂ WALL MOUNTED LIGHTS
	⌂ IXL (4) (INCLUDES SWITCH)
	⌂ IXL (2) (INCLUDES SWITCH)
	⌂ EXHAUST FAN
	⌂ T.V. POINT
	⌂ TELEPHONE
	⌂ DATA POINT
	⌂ CEILING FAN WITH LIGHT
	✂ CEILING FAN WITHOUT LIGHT

- MS DENOTES MOTION SENSOR  
CONNECTED TO LIGHTS
- WP DENOTES WATER PROOF  
EXTERNAL G.P.O
- ⊙ DENOTES SMOKE DETECTOR  
HARD WIRED IN ACCORDANCE  
WITH AS 3786
- NOTE:  
ALL SMOKE ALARMS TO BE  
INTERLINKED
- NOTE:  
MECHANICAL VENTILATION TO WET  
AREAS WITH NO NATURAL  
VENTILATION BE CONNECTED TO  
LIGHT SWITCH

AMENDMENTS		
REV	DATE	DESCRIPTION

SPECTRA	
SUITE 1/158 PORT ROAD HINDMARSH SA 5002 T: 8338 2211 F: 8338 2186	
PROJECT PROPOSED RESIDENTIAL DEVELOPMENT	
AT 5 ATHOS PLACE PARADISE, SA 5075	
CLIENT SORIA TATARELI	
DRAWN FB/GJD	DATE AUG 2018
SCALE 1:100@A2	CORRISH
PROJECT No 23.2018	SHEET No 05 OF 15
CONTRACTORS ARE TO VERIFY ALL DIMENSIONS AND LEVELS ON SITE BEFORE COMMENCING ANY WORK ON THE PROJECT. DIMENSIONS SHOWN ON THIS PLAN SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS ON ANY OTHER DRAWING. DIMENSIONS SHALL BE DIMENSIONS UNLESS OTHERWISE SPECIFIED TO THE CONTRACTORS IMMEDIATELY.	

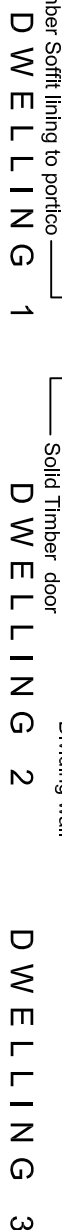
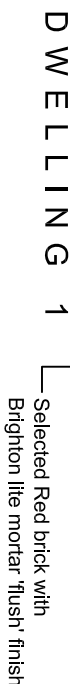
LOWER ELETRICAL PLAN 1 : 100

UPPER ELETRICAL PLAN 1 : 100

FOR CERTIFICATION ONLY

212-00517  
16 September-2019  
Single glazing

# WESTERN ELEVATION



AMENDMENTS			
REV	DATE	DESCRIPTION	DRAWN

AMENDMENTS			
REV	DATE	DESCRIPTION	DRAWN

SUITE 1 / 159 PORT ROAD  
HINDMARSH SA 5007  
T: 8338 2211 F: 83382188

PROJECT  
PROPOSED RESIDENTIAL DEVELOPMENT  
AT:  
5 ATHOS PLACE  
PARADISE, SA 5075

SOFIA TATARELLI

DRAWN	DATE
ER/GD	AUG 2018

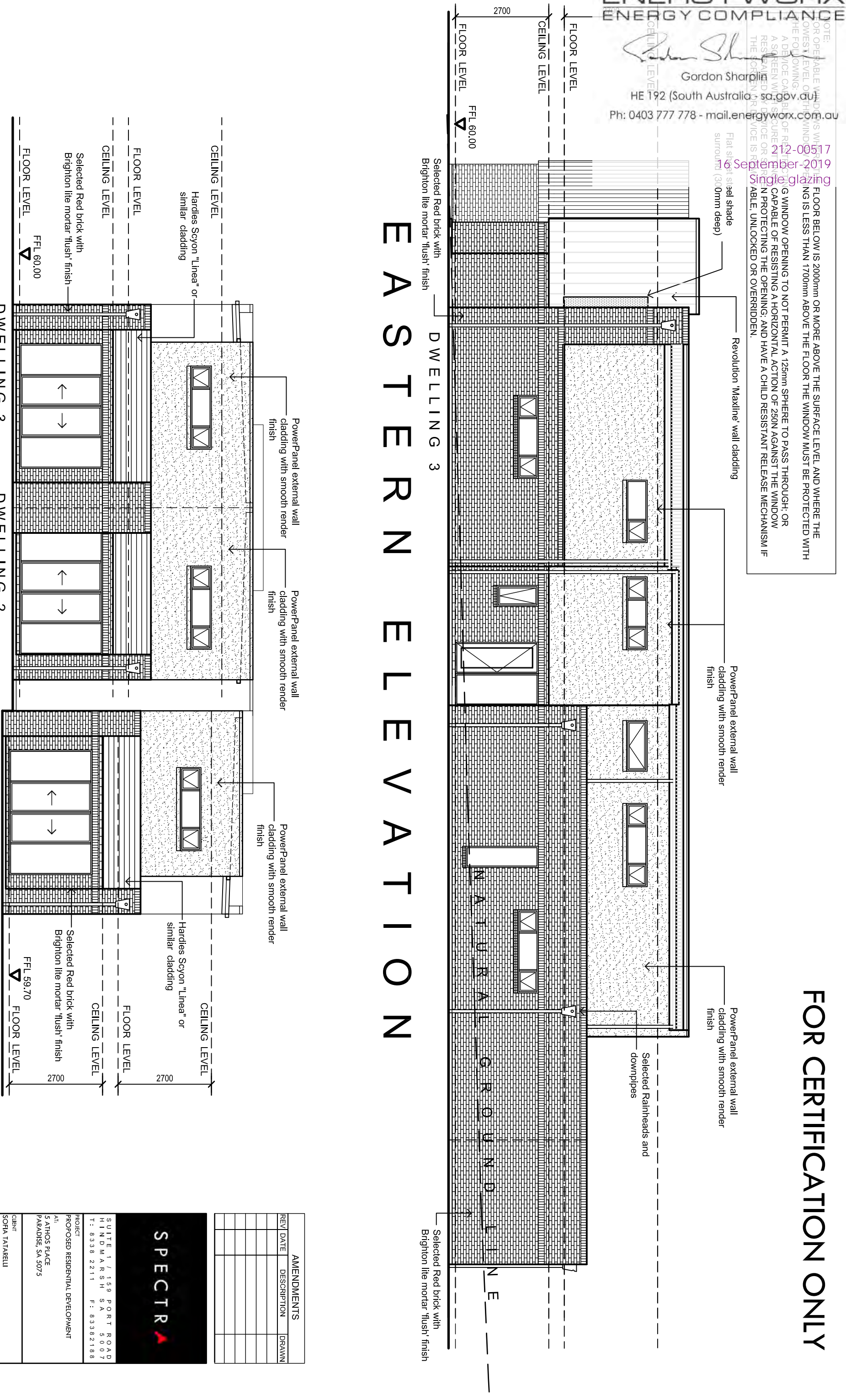
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PROJECT No.	SHEET No.
23.2018	06 OF 15

NOTE:  
ALL UPPER FLOOR WINDOWS TO  
BE @ 2400HH UNLESS  
OTHERWISE NOTED. OBSCURE  
GLAZING TO MINIMUM 1700HH  
TO ALL UPPER WINDOWS  
(EXCLUDING STREET FACING)

CONTRACTORS ARE TO VERIFY ALL DIMENSIONS AND LEVELS ON SITE BEFORE COMMENCING ANY WORK OR MAKING SHOP DRAWINGS. FIGURED DIMENSIONS SHALL TAKE PREFERENCE OVER SCALED DIMENSIONS AND ANY DISCREPANCY SHALL BE REPORTED TO THE DESIGNERS IMMEDIATELY

EASTERN ELEVATION



REAR ELEVATION

NOTE:  
ALL UPPER FLOOR WINDOWS TO BE @ 2400HH UNLESS OTHERWISE NOTED. OBSCURE GLAZING TO MINIMUM 1700HH TO ALL UPPER WINDOWS (EXCLUDING STREET FACING)

AMENDMENTS		
REV	DATE	DESCRIPTION

SPECTRA

SUITE 1 / 159 PORT ROAD  
HINDMARSH SA 5007  
T : 8338 2211 F : 8338 2188

PROJECT

PROPOSED RESIDENTIAL DEVELOPMENT

AT

3 ATHOS PLACE  
PARADISE, SA 5075

CLIENT

SOPIA TATARELLI

DRAWN

FB/G/D

DATE

AUG 2018

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PROJECT No.

23.2018

SHEET No.

07 OF 15

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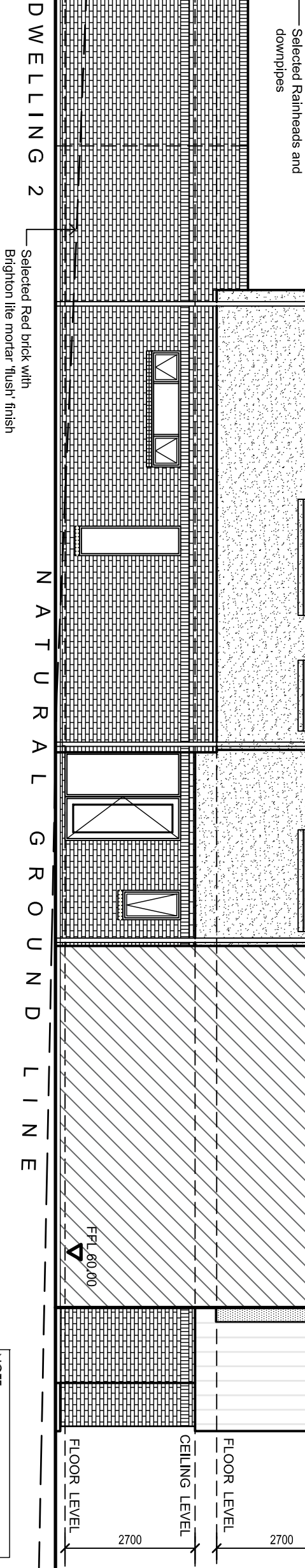
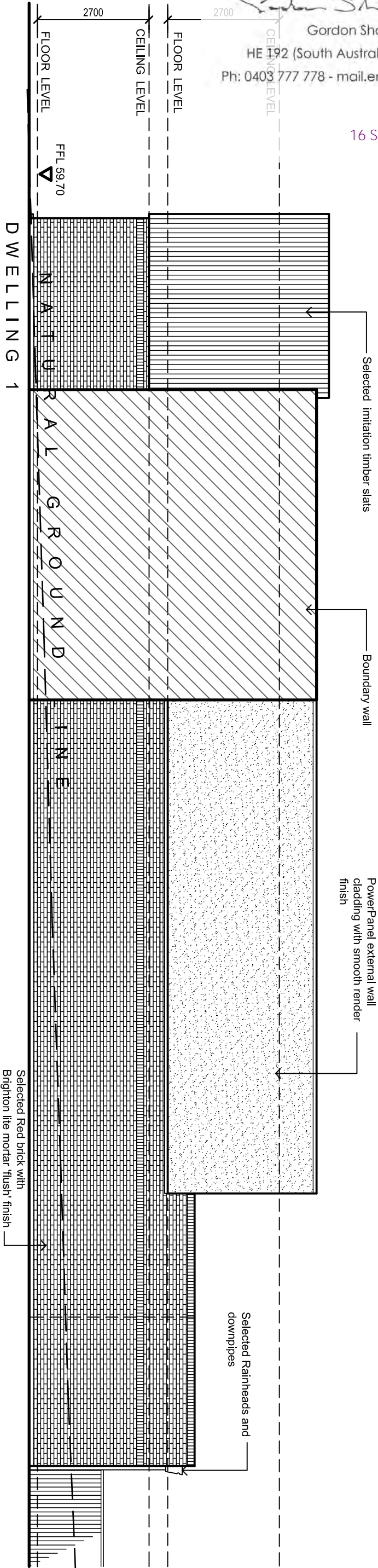


NOTE:  
FOR OPERABLE WINDOWS WHERE THE FLOOR BELOW IS 2000mm OR MORE ABOVE THE SURFACE LEVEL AND WHERE THE FLOOR BELOW IS LESS THAN 1700mm ABOVE THE FLOOR THE WINDOW MUST BE PROTECTED WITH THE FOLLOWING:  
A DEVICE CAPABLE OF RESTRICTING THE WINDOW FROM BEING OPENED TO A POINT WHERE IT IS CAPABLE OF RESISTING A HORIZONTAL ACTION OF 250N AGAINST THE WINDOW.  
A SCREEN WITH A SECURE FITTING WHICH IS CAPABLE OF RESISTING A HORIZONTAL ACTION OF 250N AGAINST THE WINDOW.  
A RESISTANT DEVICE OR SPRING MECHANISM WHICH IS CAPABLE OF RESISTING A HORIZONTAL ACTION OF 250N AGAINST THE WINDOW.  
THE SCREEN OR DEVICE IS REMOVABLE, UNLOCKED OR OVERRIDDEN.

Gordon Sharp  
HE 192 (South Australia)  
Ph: 0403 777 778 - mail.energyworx.com.au

212-00517  
16 September 2019  
Single glazing

EASTERN ELEVATION



WESTERN ELEVATION

NOTE:  
ALL UPPER FLOOR WINDOWS TO BE @ 2400HH UNLESS OTHERWISE NOTED. OBSCURE GLAZING TO MINIMUM 1700HH TO ALL UPPER WINDOWS (EXCLUDING STREET FACING)

AMENDMENTS		
REV	DATE	DESCRIPTION

SPECTRA

SUITE 1 / 159 PORT ROAD  
HINDMARSH SA 5007  
T : 8398 2211 F : 8398 2188

PROJECT

PROPOSED RESIDENTIAL DEVELOPMENT

AT

3 ATHOS PLACE  
PARADISE, SA 5075

CLIENT

SOFIA TATARELLI

DRAWN

FB/GJD

DATE

AUG 2018

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23.2018

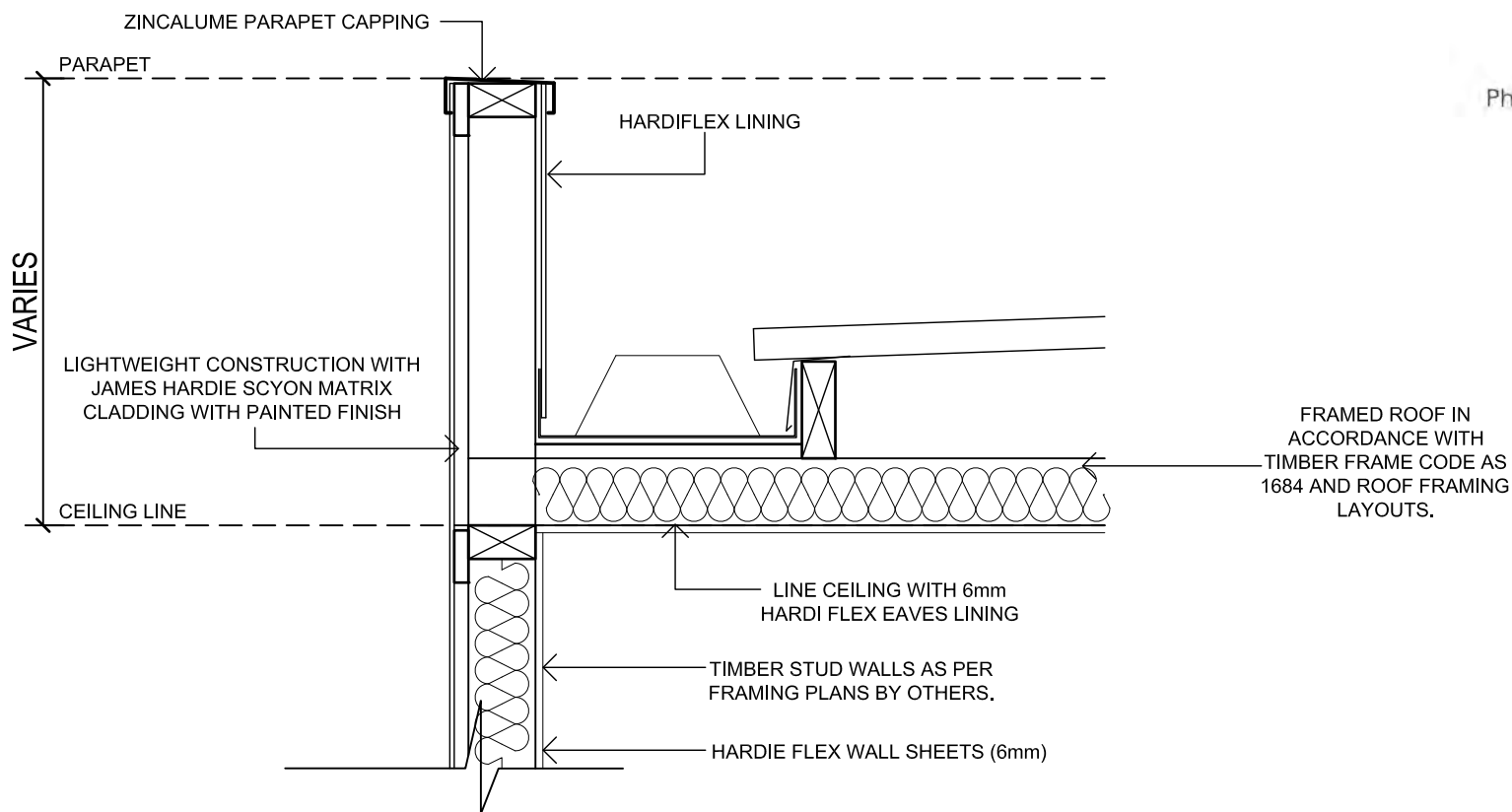
SHEET No.

08 OF 15

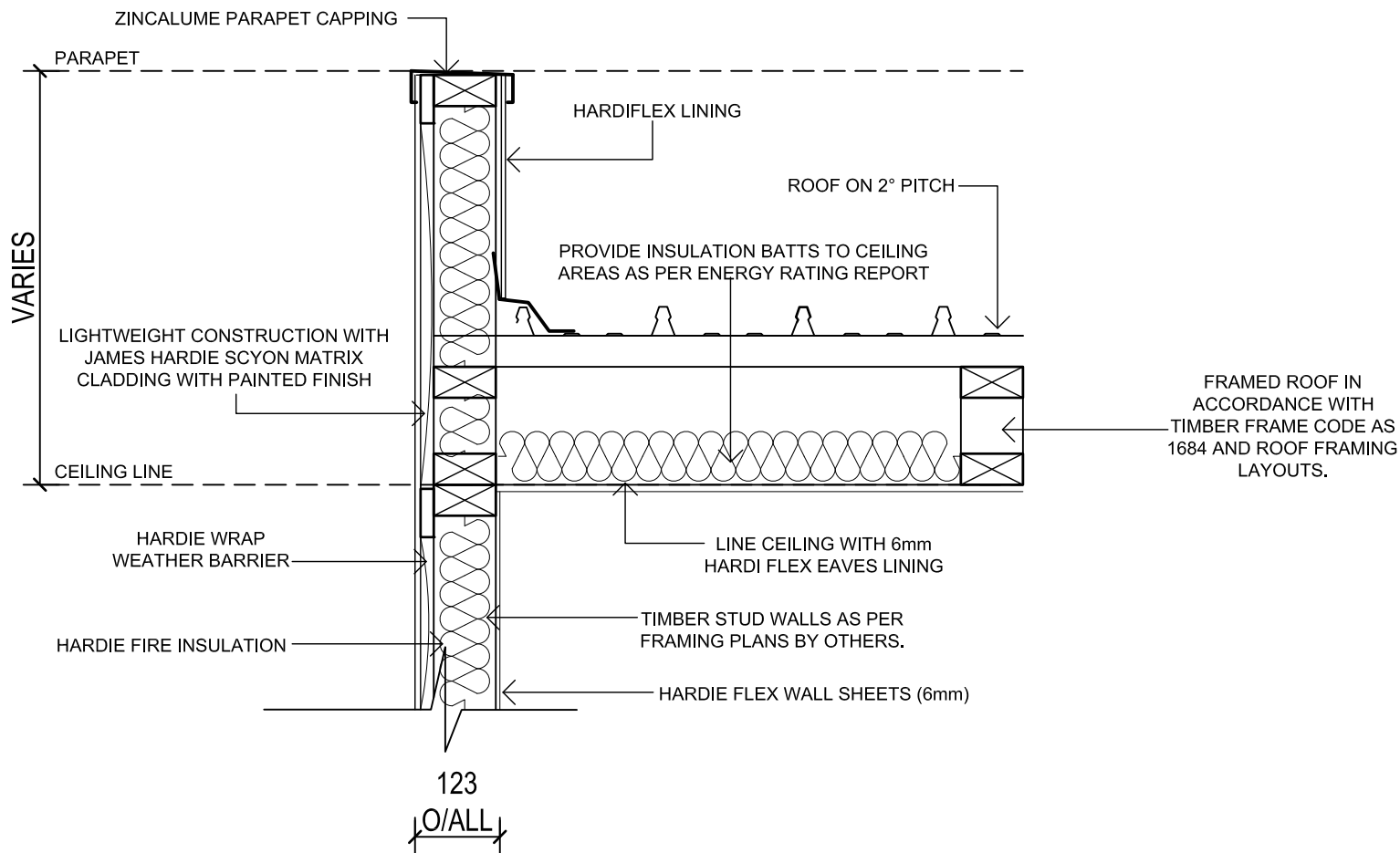
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212-00517  
16 September-2019  
Single glazing



PARAPET DETAIL (LIGHTWEIGHT)  
SCALE 1:10



PARAPET/WALL DETAIL (HARDIE SMART BOUNDARY WALL)  
FRL 60/60/60  
SCALE 1:10

AMENDMENTS			
REV	DATE	DESCRIPTION	DRAWN



SUITE 1 / 159 PORT ROAD  
HINDMARSH SA 5007  
T: 8338 2211 F: 8338 2188

PROJECT  
PROPOSED RESIDENTIAL DEVELOPMENT  
AT:  
5 ATHOS PLACE  
PARADISE, SA 5075

CLIENT  
SOFIA TATARELLI

DRAWN  
F.B./G.D.

DATE  
AUG 2018

SCALE  
1:10@A3

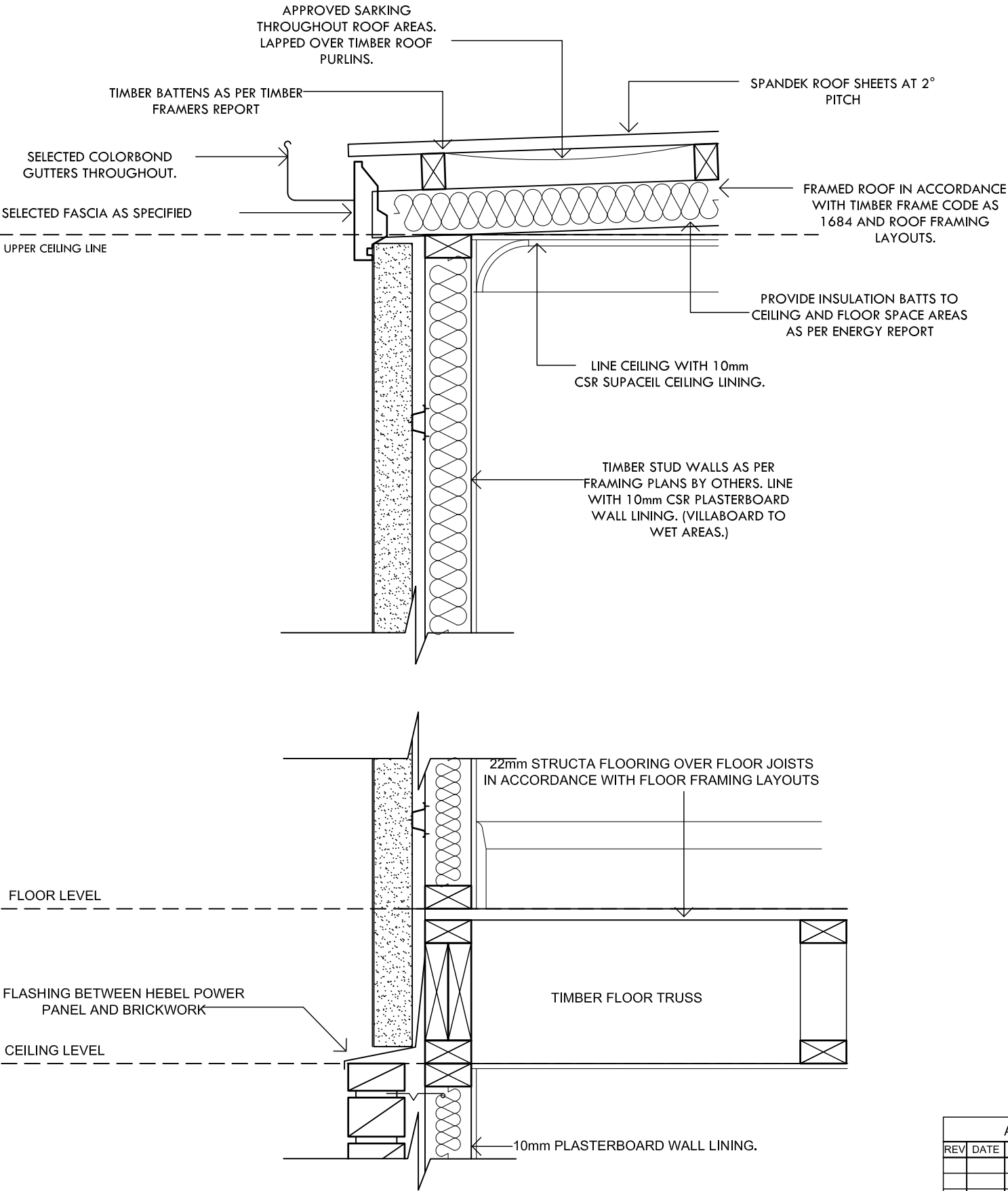
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PROJECT No.  
23.2018

SHEET No.  
09 OF 15

CONTRACTORS ARE TO VERIFY ALL DIMENSIONS AND LEVELS ON SITE BEFORE COMMENCING ANY WORK OR MAKING SHOP DRAWINGS, FIGURED DIMENSIONS SHALL TAKE PREFERENCE OVER SCALED DIMENSIONS AND ANY DISCREPANCY SHALL BE REPORTED TO THE DESIGNERS IMMEDIATELY

212-00517  
16 September-2019  
Single glazing



HEBEL WALL SECTION  
SCALE 1:10

AMENDMENTS			
REV	DATE	DESCRIPTION	DRAWN

SPECTR

SUITE 1 / 159 PORT ROAD  
HINDMARSH SA 5007  
T: 8338 2211 F: 8338 2188

PROJECT  
PROPOSED RESIDENTIAL DEVELOPMENT  
AT:  
5 ATHOS PLACE  
PARADISE, SA 5075

CLIENT  
SOFIA TATARELLI

DRAWN  
F.B./G.D.

DATE  
AUG 2018

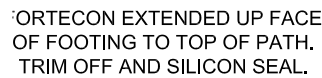
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
PROJECT No.  
23.2018

SHEET No.  
10 OF 15

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SCALE 1:10

<div>SPECTR </div>	
SUITE 1 / 159 PORT ROAD HINDMARSH SA 5007 T: 83338 2211 F: 83382188	
PROJECT PROPOSED RESIDENTIAL DEVELOPMENT AT: 5 ATHOS PLACE PARADISE, SA 5075	
CLIENT SOFIA TATARELI	
DRAWN F.B./G.D	DATE AUG 2018
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