New Dwelling

Engineering Drawing Index

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Engineering Drawing Index

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Locality Plan

Area Plan

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Revision Schedule

Rev	Date	Description
O	02/09/20	Amended Basix
N	30/07/20	VEA Stormwater
M	29/06/20	VEA Eng Amendment
L	09/06/20	VEA Eng

Client:

Address:

Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En01

Scale: @ A3

General Notes:

1. These drawings shall be read in conjunction with the architectural and other consultants drawings / specifications and with other such written instructions as may be issued during the construction. Any discrepancy shall be referred to the Engineer before commencing the work.
2. All dimensions are in millimeters, Unless noted otherwise.
3. These drawings shall not be scaled, refer to dimensions given only or refer to the Architectural drawings.
4. All levels and setting out dimensions shown on the drawings shall be checked on site prior to the commencement of work.
5. During construction the structure shall be maintained in a stable condition with no part being overstressed with temporary supports / bracing installed as required.
6. The engineer shall approve any proposed substitution prior to the commencement of works.

Earthworks:

1. The earthworks shall be carried out in accordance with the geotechnical report and engineering specifications.
2. The site shall be stripped a minimum depth of 150mm under pavements and buildings to remove the top soil. Any remaining uncontrolled fill matter, organic material, refuse or roots shall be removed.
3. If a vibrating type roller is used, consideration shall be given to the effects on adjacent properties.
4. All filling shall be under the supervision of the project geotechnical engineer who shall provide compaction certificates to the engineer for approval.

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I hereby certify that the above mentioned works are structurally adequate for their intended purpose. This certification is limited to the structural elements detailed, and based on the works being carried out in accordance with these structural/civil plans. The structure has been designed in accordance with the following:

- AS/NZS 1170.0:2002: Structural design actions - General principles
- AS/NZS 1170.1:2002: Structural design actions - Permanent, imposed & other actions
- AS/NZS 1170.2:2011: Structural design actions - Wind actions
- AS 4055-2012: Wind Loads For Housing
- AS 4100-1998: Steel Structures
- AS 1163-1991: Structural Steel Hollow Sections
- AS/NZS 1111-1996: ISO Metric Hexagon Commercial Bolts & Screws
- AS 3600-2009: Concrete Structures.
- AS 3700-2011: Masonry Structures
- AS 2870-2011: Residential slabs and footings – Construction
- AS 1684-2010: Residential timber framed construction
- AS 1720.1-2010: Timber Structures – Design Methods
- AS 3959-2009: Construction of buildings in bushfire prone areas
- Building Code of Australia (BCA)

All works to be carried out by a licensed builder in accordance with the current edition of the Building Code of Australia (BCA) and relevant Australian Standards for construction.
Based on the above parameters, I hereby certify that the structural components are adequate under the imposed loading provided that they are constructed in accordance with the relevant Australian Standards.
I certify that I am a qualified and practising Structural Engineer in accordance with the requirements of the Building Code of Australia and The Institution of Engineers, Australia.

M L Palmer

Murray Palmer
BEng (Civil & Structural) Hons
Member No: 3798337
Principal Engineer

Formwork:

1. All workmanship and materials shall be in accordance with AS3610 & AS3600, except where varied by the project documentation.
2. The design certification and the performance of the formwork shall be the responsibility of the contractor.
3. During construction support propping shall be required where there are loads from stacked materials, formwork and other supported slabs. Once the concrete has achieved its nominated 28 days strength, the imposed loads shall not exceed those given in the loading table.
4. With multistory construction, it is expected that support propping will extend a minimum of 3 levels below the slab being poured. Prop removal is to be programmed so as not to overstress previously cast floors and shall be submitted tot he engineer for approval.
5. The suspended slabs shall be propped until the 28 days strength has been achieved for the slabs. the formwork may be removed once 20 MPa strength has been achieved, however the slab will need to be back propped until 28 days strength has been achieved. No masonry or partition walls are to be constructed on suspended levels until all propping is removed.
6. All exposed corners shall have a 20mm chamfer UNO.
7. All finished shall be in accordance with the architectural specification.

Foundation Maintenance :

1. All soils are affected by water. Silts are weakened by water and some sands can settle if heavily watered, but most problems arise on clay foundations. Clays swell and shrink due to changes in moisture content and the potential amount of the movement is implied in the site classification in Australian Standard AS2870, which is specified as follows:

   A - Stable (Non-reactive) S - Slightly Reactive
   M - Moderatley Reactive H - Highly Reavtive
   E - Extremely Reavtive

2. All sites shall be maintained at essentially stable moisture conditions and extremes of wetting and drying prevented. This will require attention to the following.
3. Site drainage: The site shall be graded or drained so that water cannot pond against or near the house. The ground immediately adjacent to the house shall be graded to a uniform fall of 50mmminimum away from the house over the first meter. The subfloor space for the houses with suspended floors shall be graded or drained to prevent ponding. The site drainage requirements shall be maintained.
4. Gardens: The gardens shall not interfere with the drainage requirements or the subfloor ventilation and weep holes drainage requirements. Garden beds adjacent to the house should be avoided. Over watering of gardens close to the house shall be avoided.
5. Restrictions on trees / shrubs: Planting of trees shall be avoided near the footings of the house or neighboring house on reactive sites as they can cause damage due to drying the clay. To minimise the possibility of damage, tree planting should be restricted to a distance from the house of:
   - 1.50 x The mature height for Class E sites.
   - 1.00 x The mature height for Class H sites.
   - 0.75 x The mature height for Class M sites.
6. Where rows or groups of trees are involved, the distance from the building should be increased. Removal of trees from the site can also cause similar problems.
7. Repair of leaks: Leaks in plumbing, including stormwater and sewerage drainage should be repaired promptly.
8. The owners attention is drawn to CSIRO pamphlet "Guide to home owners on foundation maintenance & footing performance". Owner should comply with the recommendations of this pamphlet. The site around the building perimeter & service trenches are to be graded to drain away from the building perimeter.

Concrete:

1. All workmanship and materials shall be in accordance with AS3600 & AS2870, except where varied by the project documentation.
2. Concrete slabs and footings have been designed to satisfy the performance criteria of section 3 of AS2870 - Residential slabs and footings.
3. In areas of brittle floor coverings e.g. slate or tile, it would be recommended that one of the following measures be utilised:
   - Increase mesh size to SL92 or double mesh layer.
   - Use a rubberised flexible adhesive bedding.
   - Delay placing tiles for a minimum of 3 months.
4. Concrete quality shall be as follows
   (Subject to Subgrade being satisfied) :

Element	Slump (mm)	Maximum Aggregate size (mm)	Cement Type	Strength 28 Days (MPa)	Admixture
Footings	80	20	Normal Portland Type A Cement	25	-
Bored Piers & Pile Caps	80	20		25	-
Floor Slabs on Ground	80	20		25	-
Suspended Floor Slabs	80	20		32	-
Hollowcore Floor Slabs	80	20		32	-
Walls & Columns	80	20		32	-
Masonry Piers	150	7-14		20	-
Retaining Walls	80	20		32	-

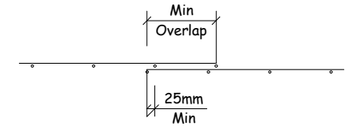
5. The engineer shall approve any admixtures to be used in the concrete mix.
6. The clear concrete cover to all reinforcement shall be as follows UNO:

Exposure Classification to AS3600	Strength 28 Days (MPa)	Against Formwork		Against Ground	
		Interior Surface	Exterior Surface	With Membrane	With no Membrane
A1	20	20	30	30	50
A2	25	40	30	40	50
B1	32	40	40		
B2	40	45	45		

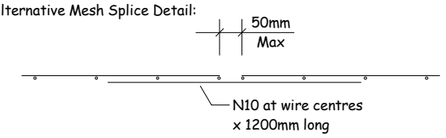
7. Cover to reinforcement shall be obtained by the use of approved bar chairs placed at maximum 750mm cts in each direction.
8. All concrete shall be mechanically vibrated and the vibrators SHALL NOT be used to spread the concrete.
9. Size of the concrete elements do not include thickness of the applied final finishes.
10. Approval shall be obtained from the engineer prior to the drilling of any holes or cutting in any chases other than those shown on the structural drawings.
11. Construction joints where not shown on the structural drawings shall be located in accordance with the engineers approval.
12. Curing of all concrete it to be achieved by keeping surfaces continuously wet for a period of 7 days (10 days in summer months), and prevention of loss of moisture for a total of 10 days followed by gradual drying out. Approved spray on compounds complying with AS3799 may be used provided that they do not interfere with the performance of the proposed floor finishes. Polythene sheeting or wet hessian may be used if protection from wind and traffic.
13. The suspended slabs shall be propped until 28 day strength has been achieved for slabs. The formwork may be removed once 20 MPa strength has been achieved, however the slab will need to be back propped until 28 days strength has been achieved. No masonry or partition walls are to be constructed on suspended levels until all propping is removed.
14. Conduits, pipes, etc. shall only be placed in the middle third of the slab depth and spaced at not less than 3 diameters. They shall no be placed within the cover of the reinforcement.
15. Reinforcement symbols:
    S - Denotes grade 250 S bars to AS1302
    N - Denotes grade 500 normal ductility deformed bars to AS4671
    R - Denotes grade 250 normal ductility round bars to AS4671
    SL - Denoted grade 500 low ductility square welded mesh to AS4671
    RL - Denoted grade 500 low ductility rectangular welded mesh to AS4671
    L - Denoted grade 500 low ductility trench welded mesh to AS4671.
16. Reinforcement is represented diagrammatically and is not necessarily shown in true projection.
17. Splices in reinforcement shall be made only in positions shown or otherwise approved by the engineer.
18. Laps and cogs shall be in accordance with AS3600 and not less than the below:

Minimum Splice Lengths		Minimum Overall Cog Lengths
N12	400mm	200mm
N16	600mm	225mm
N20	800mm	275mm
N24	1100mm	325mm
N28	1400mm	375mm

19. Site bending of deformed reinforcing bars shall be done without heating and using mechanical bending tools.
20. Welding of the reinforcement shall not be permitted unless shown on the structural drawings or approved by the engineer.
21. Joggles to the bar shall be 1 bar diameter over a length of 12 bar diameters.
22. Bundled bars shall be tied together at 30 bar diameter centers with 3 wraps of tie wire.
23. Mesh shall be lapped 2 transverse wires plus 25mm.



Alternative Mesh Splice Detail:



24. Trench mesh shall be lapped a minimum of 500mm.

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Client:

Address:

Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En02

Scale: @ A3

Safety in Design:

1. Workplace Health and Safety (WHS) is important to Vision Engineers and "Safety in Design" is a core component of our service. We recognise that identifying design solutions that eliminate hazards, not only improves WHS outcomes, but also has potential to reduce costs associated with fixing design problems.
2. Under the new harmonised model of Work Health Safety Legislation, there are a range of new legislation and regulatory requirements, supported by a suite of Codes of Practice clarifying how these obligations can be met. Vision Engineers is committed to its legislative obligations. The components designed by Vision Engineers have been designed in accordance with the relevant Australian Standards and to meet the performance criteria of the National Construction Code (NCC). In this instance we connot forsee any significant WHS implications or risks that can be avoided or mitigated by design.
3. The beams, columns and connections can reasonably be expected to be constructed in accordance with a construction process that is an "industry standard" construction process within the capabilities of a competent Licensed Contractor. Furthermore, this process is generally a low risk operation and the site is question does not pose any unique risks or hazards. Therefore, providing that all other parties associated with the design conduct their duties in a professional manner and in accordance with the relevant Safe Work Australia codes of practice, all requirements relating to the Work Health and Safety Act 2011 No 10 will be satisfied. If you require and further information please contact the Vision Engineers office.

Structural Steel:

1. All workmanship and materials shall be in accordance with AS4100 and AS/NZ4600.
2. The structural design has been baised on the following steel grades, UNO:
   - Hot rolled universal beams, columns, channels & angles: 300PLUS
   - Circular, square & rectangular hollow sections: C350/C450LOC
   - Cold formed open DuraGal profiles: 350/C450LO
   - Cold formed lipped Cee & Zed Purlins: G550/G500/G450
3. The structural design has been based on MBPMA nominal size Cee & Zed lipped purlins.
4. Qualifications for welding procedures and personnel shall conform to Section 4 of AS 1554.1. Non destructive testing of welds shall include 100% visual inspection and additional testing as shown on the drawings.
5. All welds shall be 6mm continuous fillet type GP, UNO. All butt welds shall be complete penetration in accordance with AS1554.1, UNO.
6. Bolt Designation:
   - 4.6/S - Commercial bolts to AS 1111, snug tightened.
   - 8.8/S - High strength structural bolts to AS1562, snug tightened.
   - 8.8/TB - High strength structural bolts to AS1562, full tensioned bearing joint.
   - 8.8/TF - High strength structural bolts to AS1562, fully tensioned friction joint.
7. All bolts shall be M16 8.8/S, with a minimum of 2 bolts per connection UNO.
8. Fin plates shall be a minimum of 10mm thick, grade 300PLUS steel, UNO.
9. Concrete encased steel work shall be wrapped with SL62 mesh and shall have a minimum 50mm of cover, UNO.
10. Steelwork to be encased in concrete shall have the following surface treatment, UNO:

Exposure Classification to AS3600	Steelwork Protection Required
A1 / A2	Power tool clean to AS1627 Class 1, 1 Coat Alkyd Primer (Zinc Phosphate)
B1	Abrasive blast to AS1627 Class 2.5 1 Coat Inorganic Zinc Silicate
B2	Hot Dipped Galvanised to AS1650

11. Where sealed tube members are hot dipped galvanised, the fabricator shall provide drill holes as neccessary to allow gases to escape.
12. All transport and erection damage, site welds etc., shall be reinstalled to an equivalent finish to adjacent steelwork.
13. If steel beams and posts are designated to be galvanised, then end plates, cap plates, and base plates shall also be galvanised.
14. All nuts and bolts shall be galvanised or marine grade stainless steel.

Timber:

1. All workmanship and materials shall be in accordance with AS1684 and AS1720.
2. AS1684 shall be applied to domestic construction in sheltered locations.
3. Softwood to be a minimum of F7 MGP10 and hardwood to be a minimum of F17 UNO.
4. External timber shall be either hardwood durability class 1 or 2 as per AS1720 or impregnated pine grade F7 MGP10. pressure treated to AS1604 and re-dried prior to use. Supplementary treatment shall be applied to all cut surfaces.
5. Two (2) copies of timber truss shop drawings shall be submitted to the engineer for approval, clearly indicating design loads and point loads applied to the structure.
6. All bolts in timber construction shall be M16 4.6/S UNO. Washers under heads and nuts shall be at least 2.5 times the bolt diameter.
7. All timber joints and notches shall be a minimum on 100mm away from loose knots, severe sloping grain, gum veins or other minor defects.

Masonry:

1. All workmanship and materials shall be in accordance with AS3700.
2. The design strength of masonry shall be:

Exposure Classification to AS3600	Brick Compressive Strength (MPa)	Brick Salt Resistance Grade	Durability Classification of Built in Components	Mortar Mix	
				GP Portland e Cement Lime: Sand	f'c (MPa)
A1 / A2	20	General Purpose	R3 (Galvanised)	1.0 : 1.0 : 6.0	2.8
B1	20			1.0 : 1.0 : 6.0	2.8
B2	20	Exposure	R3 (Stainless)	1.0 : 0.5 : 4.5	2.8

3. All masonry walls supporting concrete slabs and beams shall have a slip joint comprising of two layers of galvanized steel in between the concrete and masonry.
4. All masonry walls supporting or supported by concrete floors shall have vertical joints located to match and control / construction joints in the concrete.
5. Do not construct any masonry walls on suspended slabs until the slab formwork has been stripped and de-propped.
6. Non load bearing masonry walls shall be separated from concrete slab or beam above by 20mm thick compressible filler.
7. Provide vertical control joints at 6m maximum centers, and 4 meters maximum from corners in masonry walls, and between new and existing brickwork. The joint shall have expansion joint ties and suitably sealed with mastic sealant.
8. Masonry retaining walls are to be back filled with either of the following material:
   - Coarse grained soil with low silt content
   - Residual Soil Containing Stones
   - Fine silty sand
   - Granular materials with low clay content

Blockwork:

1. All workmanship and materials shall be in accordance with AS3700.
2. Reinforced concrete blockwork shall comply with the following, UNO:
   - Blocks: Minimum 10 MPa unconfined compressive strength conforming to AS4455.
   - Mortar: 1.0 : 1.0 : 6.0 ratio of cement: Lime: Sand UNO.
   - Blocks shall be either 'H' or 'Double U' configuration.
   - Provide clean out holes at the base of the wall & rod core holes to remove excess mortar.
   - Core filling shall be 20 MPa concrete with maximum 10mm aggregate size with a maximum slump of 120 ±20mm
   - Minimum cover of 55mm from the outside of the blockwork.
3. Masonry retaining walls are to be back filled with either of the following material:
   - Coarse grained soil with low silt content
   - Residual Soil Containing Stones
   - Fine silty sand
   - Granular materials with low clay content
4. Vertical control joints shall be provided at max 8m centers. They shall be reinforced with N20-400 dowels 600mm long. One end shall be greased and capped.
5. No admixtures shall be used in the mortar mix or the core fill mix without prior written consent from the engineer.

Precast Panels:

1. All workmanship and materials shall be in accordance with AS3600.
2. The precast panel concrete strength at 28 days shall be a minimum of 40 MPa. The concrete shall be a minimum of 2- MPa before removal from molds.
3. Dimensions shown as final concrete size and additional concrete must be provided to allow for loss of structural thickness due to surface treatment, etc.
4. Panel structural thickness shall be noted.
5. Refer to the architectural drawings for dimensions, rebates, etc.
6. All metal work and cast-in ferrules shall be hot dipped galvanized which are exposed to the external environment.
7. All cast-in ferrules shown on the drawings are to remain sealed until the erection of the panel and shall not be used for lifting.
8. Lifting ferrules are the contractors responsibility and extra reinforcement needs to be provided in accordance with the manufacturers recommendations.
9. Concrete cover shall be in accordance with structural drawings.
10. Fabric in the panels shall be one sheet, no lapping is permitted unless shown on the structural drawings.
11. Penetrations for services shall be neat formed holes, hole boring is not permitted.
12. Temporary steel packers may be used under the panels provided they have a minimum of 50mm cover from the concrete slab or grout.
13. A minimum of two (2) copies of all workshop drawings shall be supplied to the engineer for approval. The shop drawings shall show all cast-in inserts.

Permanent Metal Formwork:

1. The permanent metal formwork shall be installed in accordance with the manufacturers recommendations and shall NOT be substituted from the product specified without written approval from the engineer.
2. The permanent metal formwork shall be suitably propped.
3. The permanent metal formwork shall not be spliced or joined midspan.
4. The permanent metal formwork shall have a minimum end bearing of 50mm.
5. The permanent metal formwork shall be fixed to the supporting structure with spot welds or fasteners, there shall be a minimum of 1 fixing per sheet to the support each end adjacent to the side lap.
6. The permanent metal formwork may need to have the side lap fastened together midspan, this shall be carried out in accordance with the manufacturers specifications

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M Palmer

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BEng (Civil & Structural) Hons
Member No: 3798337
Principal Engineer

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Revision Schedule

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O	02/09/20	Amended Basix
N	30/07/20	VEA Stormwater
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Client:

Address:

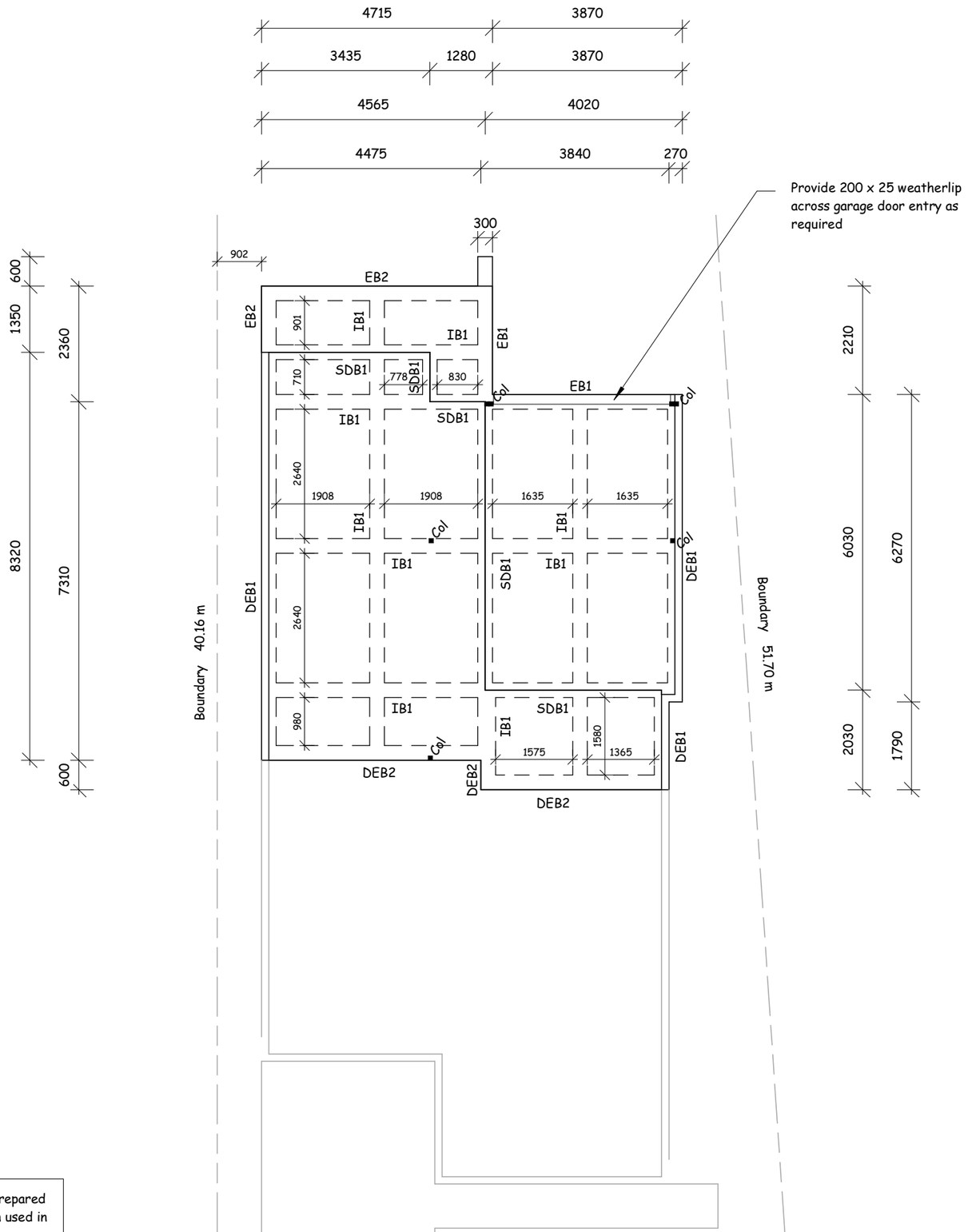
Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En03

Scale: @ A3

NORTH



Note: Geotechnical Report Reference 225-19A / BF prepared by CSG Engineers Pty Ltd dated 24/02/2020 has been used in the design of these structures.

General Notes

1. Bracing and tie-down details to the engineers details and AS1684.2
2. All timber and steel to be installed and treated to the manufacturers specifications, expecially for any exterior applications
3. All white ant protection to be strictly within the guidelines of AS3660 and installed by a qualified licenced pest control consultant
4. AJ denotes masonary articulation joint, to be installed to AS 3700 section 4.8 requirements

Finished Ground Level Note

Ensure ground surface is sloped away from subfloor/footing, provide additional drainage as required to ensure no water ponds near footings

Note: boundaries to be pegged and setout confirmed before commencement of construction

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Principal Engineer

FOOTING INSPECTION #1
REQUIRED The excavated footing shall be inspected by the design engineer prior to the placement of the damp-proofing membrane or steel reinforcement

FOOTING INSPECTION #2
REQUIRED The steel reinforcing shall be inspected by the design engineer prior to the placement of concrete

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BUILDERS NOTE :

Use Dimensions in preference to scale. Site verify all dimensions before ordering Materials. Footings information shown on these plans may have to be changed if Builders site excavations reveal non-virgin ground. Consultation of Plan Vision Australia Pty Ltd would then be necessary to determine the required changes.
Materials are under no circumstances to be ordered direct off plans.
Materials to be ordered are only to be ordered from a Builders or applicable product manufacturers seperate site confirmed Materials list.
Plans are not intended to be the absolute medium for construction information accuracy due to site discrepencies. See schedule of specifications for further details.

Wind Class: N3 (W41N) (Assumed)

Site Class: 'M' Soil Class: 'M'

Refer to Geotech report for more details

SURVEY NOTE :

Boundary dimensions have been taken from site information by others. Confirm boundaries before commencement of construction.

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N	02/09/20	Amended Basix
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New Dwelling

Client:

Address:

Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En04

Scale: 1 : 100 @ A3

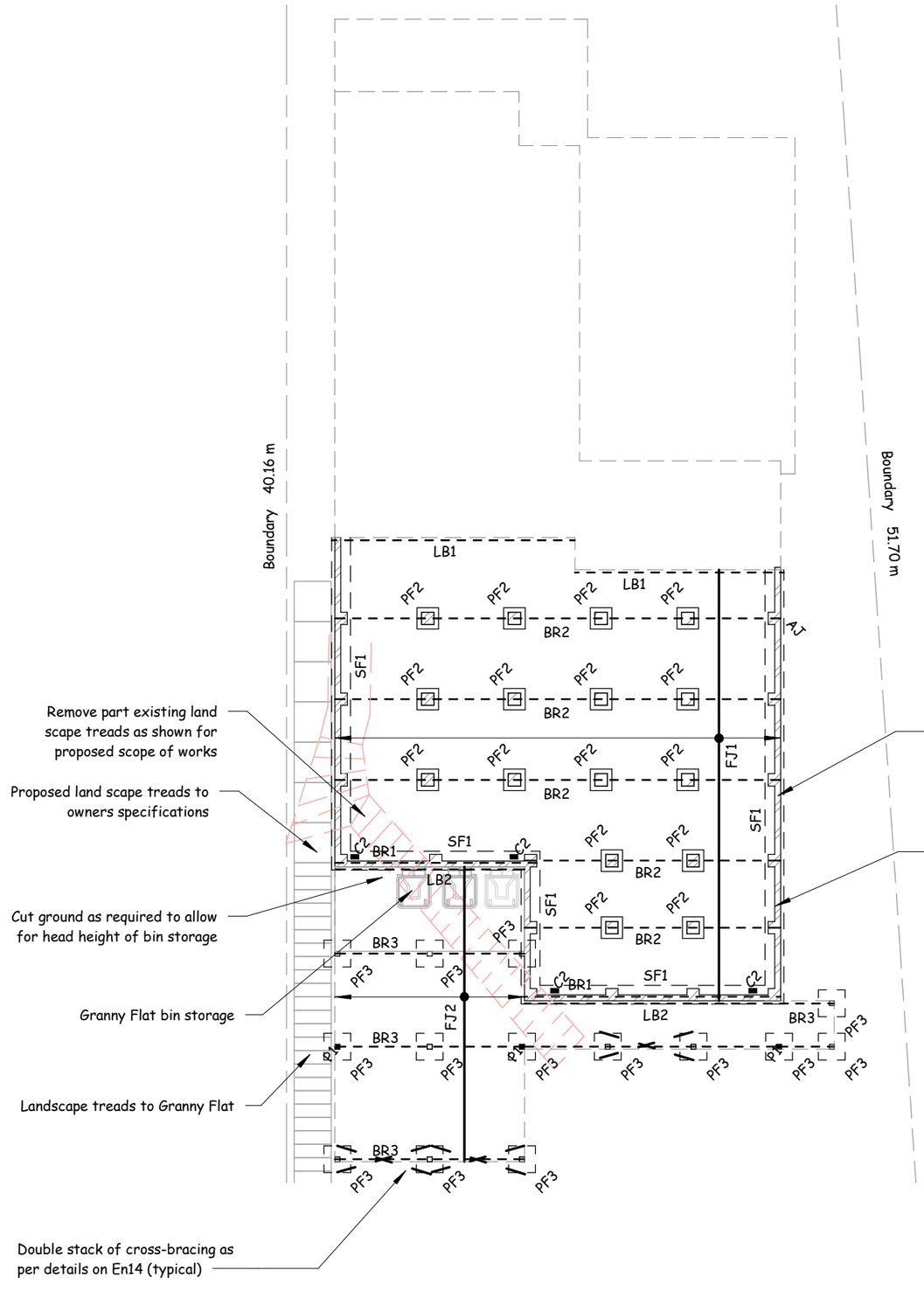
NORTH

Note: Geotechnical Report Reference 225-19A / BF prepared by CSG Engineers Pty Ltd dated 24/02/2020 has been used in the design of these structures.

FOOTING INSPECTION REQUIRED
The excavated footing shall be inspected by the design engineer prior to the placement of the damp-proofing membrane or steel reinforcement

General Notes
1. Bracing and tie-down details to the engineers details and AS1684.2
2. All timber and steel to be installed and treated to the manufacturers specifications, expecially for any exterior applications
3. All white ant protection to be strictly within the guidelines of AS3660 and installed by a qualified licenced pest control consultant
4. AJ denotes masonary articulation joint, to be installed to AS 3700 section 4.8 requirements

Note: boundaries to be pegged and setout confirmed before commencement of construction



Member Schedule (Footings Plan)		
Member	Description	Size
BR1	Bearer	2/100 x 75 Red Alert H2S SmartLVL (Continuous spans)
BR2	Bearer	100 x 75 Red Alert H2S SmartLVL (Continuous spans)
BR3	Bearer	190 x 45 MGP10 H3 (Continuous min 2 spans)
LB1	Ledger beam	140 x 45 MGP10 H3
LB2	Ledger beam	140 x 45 MGP10 H3
FJ1	Floor joist	100 x 45 Red Alert H2S SmartLVL @ 450 cts (Continuous spans)
FJ2	Floor joist	140 x 45 MGP10 H3 @ 450 cts (Single span)
P1	Post	100 SHS 5.0 HDG, Full height
P2	Subfloor Post	90 SQ F7 CAA or F17 KD HWD Post Durability Class 1
C2	Column	230 PFC
C4	Subfloor Column	100 SHS 5.0 HDG

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BUILDERS NOTE :
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Plans are not intended to be the absolute medium for construction information accuracy due to site discrepencies. See schedule of specifications for further details.

Wind Class: N3 (W41N) (Assumed)

Site Class: 'M' Soil Class: 'M'

Refer to Geotech report for more details

SURVEY NOTE :
Boundary dimensions have been taken from site information by others. Confirm boundaries before commencement of construction.

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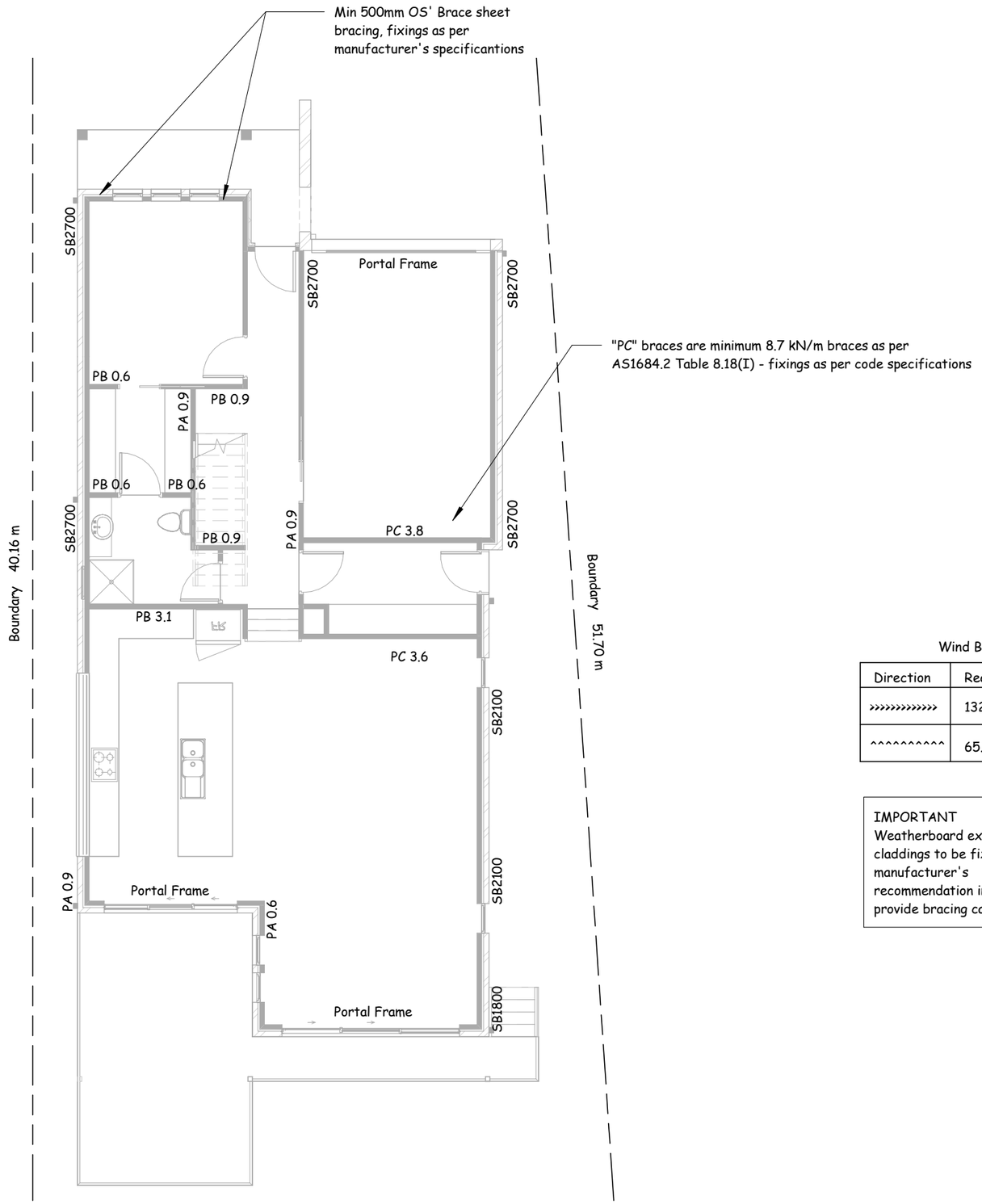
Sheet: En05

Scale: 1 : 100 @ A3

NORTH



General Notes

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2. All timber and steel to be installed and treated to the manufacturers specifications, expecially for any exterior applications
3. All white ant protection to be strictly within the guidelines of AS3660 and installed by a qualified licenced pest control consultant
4. AJ denotes masonary articulation joint, to be installed to AS 3700 section 4.8 requirements

Note: boundaries to be pegged and setout confirmed before commencement of construction

VEA
Vision Engineers Australia

M Palmer

Murray Palmer
BEng (Civil & Structural) Hons
Member No: 3798337
Principal Engineer

Wind Bracing N3

Direction	Required	Achieved
>>>>>>>>>>>>	132.2 kN	138.7 kN
^^^^^^^^^^	65.7 kN	69.7 kN

IMPORTANT
Weatherboard external claddings to be fixed as per manufacturer's recommendation in order to provide bracing capacities

VEA
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138 Dora Street, Dora Creek NSW 2264
M/ 0490 444 007

BUILDERS NOTE :

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Wind Class: N3 (W41N) (Assumed)

Site Class: 'M' Soil Class: 'M'
Refer to Geotech report for more details

SURVEY NOTE :

Boundary dimensions have been taken from site information by others. Confirm boundaries before commencement of construction.

Revision Schedule

Rev	Date	Description
N	02/09/20	Amended Basix
M	30/07/20	VEA Stormwater
L	29/06/20	VEA Eng Amendment
K	09/06/20	VEA Eng

New Dwelling

Client:

Address:

Date Started: 13-08-2019

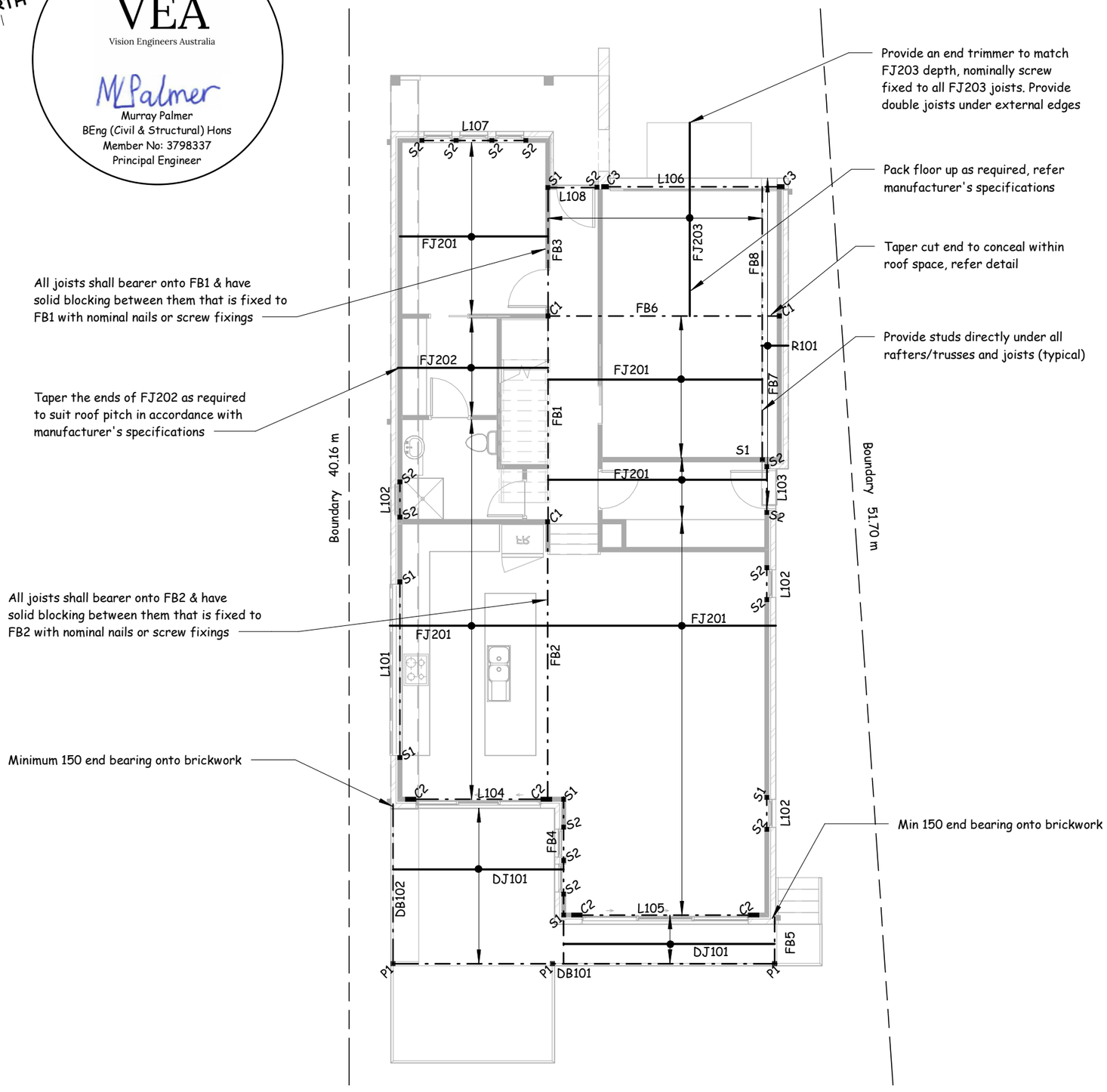
Drawing No: 719-6970

Sheet: En06

Scale: 1 : 100 @ A3

NORTH

VEA
Vision Engineers Australia
Murray Palmer
BEng (Civil & Structural) Hons
Member No: 3798337
Principal Engineer



General Notes

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4. AJ denotes masonary articulation joint, to be installed to AS 3700 section 4.8 requirements

Tie-Down Notes

1. Rafters shall have tie-down fixings in accordance with AS1684.2 Table 9.21 (B), (C) or (D) (typical).
2. Roof beams shall have tie-down fixings similar to AS1684.2 Table 9.20(A) – 6 nails each end – for where a roof beam sits on stud work.
3. Roof beams shall have tie-down fixings in accordance to AS1684.2 Table 9.20(I) – 2/M12 bolts with washers (typical).

Note: boundaries to be pegged and setout confirmed before commencement of construction

Member Schedule (Ground Floor Roof/First Floor Joist)		
Member	Description	Size
R101	Rafters	90 x 45 MGP10 @ 600 cts
RB102	Beam	300 x 75 SmartLVL15
FJ201	Floor Joists	Smart Joist SJ30040 @ Max 600 cts, Max 450 cts for wet areas
FJ202	Floor Joists	300 x 58 SmartLVL15 @ 450 cts, Tapered
FJ203	Floor Joists	Min 240 x 58 SmartLVL15 @ 450 cts
FB1	Beam	310 UB 32.0, HDG
FB2	Beam	310 UB 40.4, HDG
FB3	Beam	300 x 58 SmartLVL15
FB4	Beam	2/240 x 42 SmartLVL15, Nail laminated
FB5	Beam	240 x 42 SmartLVL15, Nail laminated
FB6	Beam	250 PFC, HDG
FB7	Beam	300 x 58 SmartLVL15
FB8	Beam	300 x 58 SmartLVL15
L101	Lintel	2/360 x 42 SmartLVL15, Nail laminated
L102	Lintel	140 x 45 MGP10
L103	Lintel	190 x 45 MGP10
L104	Lintel	250 PFC + 200 x 10 PL, HDG
L105	Lintel	250 PFC + 200 x 10 PL, HDG
L106	Lintel	250 PFC + 200 x 10 PL, HDG
L107	Lintel	130 x 42 SmartLVL15, Continuous spans
L108	Lintel	190 x 45 MGP10
C1	Column	89 SHS 5.0, HDG
C2	Column	230 PFC, HDG
C3	Column	150 PFC, HDG
P1	Post	100 SHS 5.0, HDG, Full height.
DB101	Deck Beam	230 PFC HDG, Single span
DB102	Deck Beam	2/240 x 58 SmartLVL15, Nail laminated
DJ101	Deck Joists	Smart Joist SJ24090 @ Max 450 cts
S1	Studs	3/90 x 45 MGP10, Nail laminated
S2	Studs	2/90 x 45 MGP10, Nail laminated

VEA
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138 Dora Street, Dora Creek NSW 2264
M/ 0490 444 007

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Plans are not intended to be the absolute medium for construction information accuracy due to site discrepencies. See schedule of specifications for further details.

Wind Class: N3 (W41N) (Assumed)

Site Class: 'M' Soil Class: 'M'

Refer to Geotech report for more details

SURVEY NOTE :

Boundary dimensions have been taken from site information by others. Confirm boundaries before commencement of construction.

Revision Schedule

Rev	Date	Description
N	02/09/20	Amended Basix
M	30/07/20	VEA Stormwater
L	29/06/20	VEA Eng Amendment
K	09/06/20	VEA Eng

New Dwelling

Client:

Address:

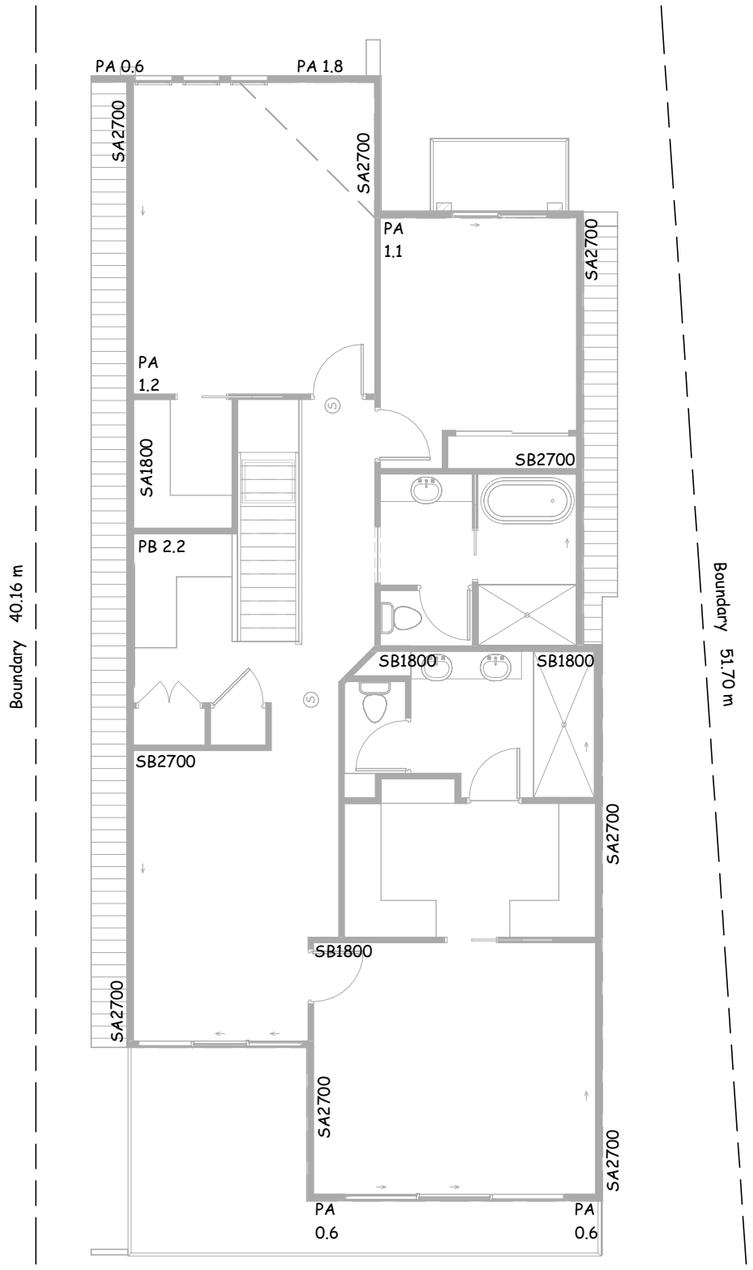
Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En07

Scale: 1 : 100 @ A3

NORTH



General Notes

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2. All timber and steel to be installed and treated to the manufacturers specifications, expecially for any exterior applications
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4. AJ denotes masonary articulation joint, to be installed to AS 3700 section 4.8 requirements

Tie-Down Notes

1. Rafters shall have tie-down fixings in accordance with AS1684.2 Table 9.21 (B), (C) or (D) (typical).
2. Roof beams shall have tie-down fixings similar to AS1684.2 Table 9.20(A) – 6 nails each end – for where a roof beam sits on stud work.
3. Roof beams shall have tie-down fixings in accordance to AS1684.2 Table 9.20(I) – 2/M12 bolts with washers (typical).

Note: boundaries to be pegged and setout confirmed before commencement of construction

Wind Bracing N3

Direction	Required	Achieved
>>>>>>>>>>>>	61.2 kN	63.0 kN
^^^^^^^^^^	27.0 kN	31.0 kN

IMPORTANT
Weatherboard external claddings to be fixed as per manufacturer's recommendation in order to provide bracing capacities

VEA
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Member No: 3798337
Principal Engineer

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M/ 0490 444 007

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Wind Class: N3 (W41N) (Assumed)

Site Class: 'M' Soil Class: 'M'

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SURVEY NOTE :

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Revision Schedule

Rev	Date	Description
N	02/09/20	Amended Basix
M	30/07/20	VEA Stormwater
L	29/06/20	VEA Eng Amendment
K	09/06/20	VEA Eng

New Dwelling

Client:

Address:

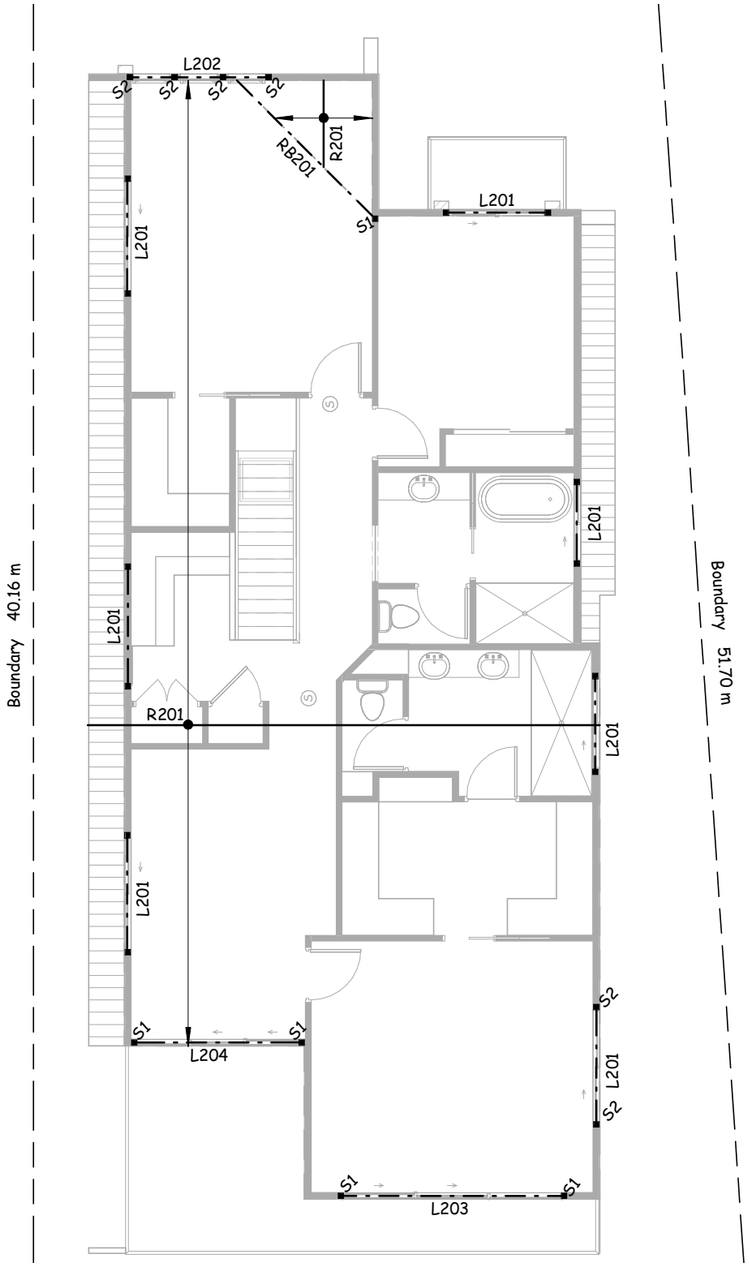
Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En08

Scale: 1 : 100 @ A3

NORTH



General Notes

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2. All timber and steel to be installed and treated to the manufacturers specifications, expecially for any exterior applications
3. All white ant protection to be strictly within the guidelines of AS3660 and installed by a qualified licenced pest control consultant
4. AJ denotes masonary articulation joint, to be installed to AS 3700 section 4.8 requirements

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Note: boundaries to be pegged and setout confirmed before commencement of construction

VEA
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BEng (Civil & Structural) Hons
Member No: 3798337
Principal Engineer

Member Schedule (First Floor Roof)		
Member	Description	Size
R201	Rafters	400 x 42 SmartLVL15 or Smart Joist SJ40090 @ 900 cts, alterntively use mono slope roof trusses
R202	Rafters	Min 150 x 42 SmartLVL15 @ 900 cts
RB201	Ridge beam	360 x 58 SmartLVL15
L201	Lintel	Lintels and jamb studs as per En20
L202	Lintel	150 x 58 SmartLVL15, Continuous spans
L203	Lintel	300 x 42 SmartLVL15
L204	Lintel	200 x 42 SmartLVL15
S1	Studs	3/90 x 45 MGP10, Nail laminated
S2	Studs	2/90 x 45 MGP10, Nail laminated

VEA
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138 Dora Street, Dora Creek NSW 2264
M/ 0490 444 007

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Wind Class: N3 (W41N) (Assumed)

Site Class: 'M' Soil Class: 'M'

Refer to Geotech report for more details

SURVEY NOTE :

Boundary dimensions have been taken from site information by others. Confirm boundaries before commencement of construction.

Revision Schedule

Rev	Date	Description
N	02/09/20	Amended Basix
M	30/07/20	VEA Stormwater
L	29/06/20	VEA Eng Amendment
K	09/06/20	VEA Eng

New Dwelling

Client:

Address:

Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En09

Scale: 1 : 100 @ A3

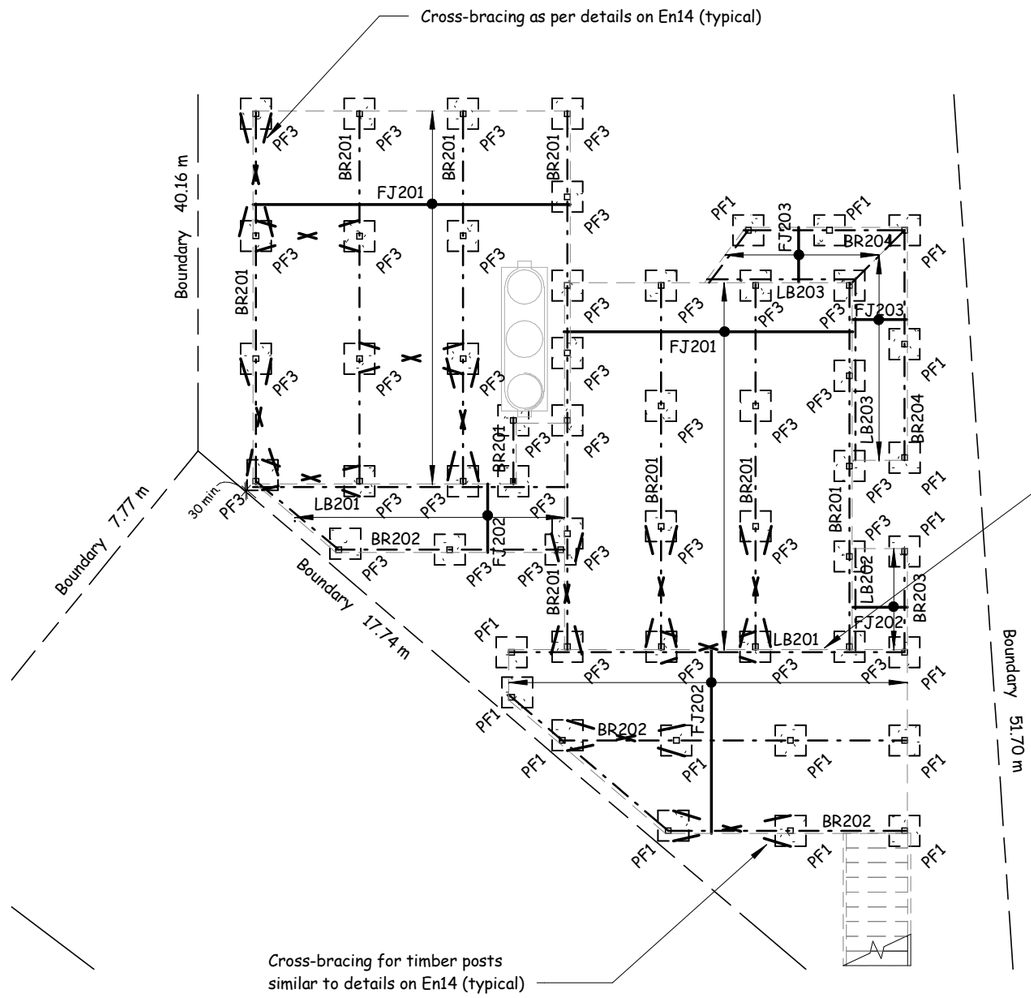
NORTH

Note: Geotechnical Report Reference 225-19A / BF prepared by CSG Engineers Pty Ltd dated 24/02/2020 has been used in the design of these structures.

FOOTING INSPECTION REQUIRED
The excavated footing shall be inspected by the design engineer prior to the placement of the damp-proofing membrane or steel reinforcement

General Notes
1. Bracing and tie-down details to the engineers details and AS1684.2
2. All timber and steel to be installed and treated to the manufacturers specifications, expecially for any exterior applications
3. All white ant protection to be strictly within the guidelines of AS3660 and installed by a qualified licenced pest control consultant
4. AJ denotes masonary articulation joint, to be installed to AS 3700 section 4.8 requirements

Note: boundaries to be pegged and setout confirmed before commencement of construction



Member Schedule (Grany Flat Footings Plan)		
Member	Description	Size
BR201	Bearer	130 x 58 Smart LVL15 (continuous spans)
BR202	Bearer	2/190 x 45 MGP10 H3, Nail laminated (continuous spans) Or 190 x 45 F17 (continuous spans)
BR203	Bearer	140 x 45 MGP10 H3
BR204	Bearer	140 x 45 MGP10 H3 (continuous spans)
LB201	Ledger Beam	190 x 45 MGP10 H3, 2/M12 coach screws @ max 450 cts
LB202	Ledger Beam	140 x 45 MGP10 H3, 2/M12 coach screws @ max 450 cts
LB203	Ledger Beam	140 x 45 MGP10 H3, 2/M12 coach screws @ max 450 cts
FJ201	Floor Joist	100 x 45 Red Alert H2S Smart LVL11 @ 450 cts (continuous spans)
FJ202	Floor Joist	90 x 45 MGP10 H3 @ 450 cts
FJ203	Floor Joist	90 x 45 MGP10 H3 @ 450 cts
C4	Subfloor Column	100 SHS 5.0 HDG
P2	Subfloor Deck Post	90 SQ F7 CAA or F17 KD HWD Post Durability Class 1

VEA
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M/ 0490 444 007

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Wind Class: N3 (W41N) (Assumed)

Site Class: 'M' Soil Class: 'M'

Refer to Geotech report for more details

SURVEY NOTE :
Boundary dimensions have been taken from site information by others. Confirm boundaries before commencement of construction.

VEA
Vision Engineers Australia
M Palmer
Murray Palmer
BEng (Civil & Structural) Hons
Member No: 3798337
Principal Engineer

Revision Schedule

Rev	Date	Description
N	02/09/20	Amended Basix
M	30/07/20	VEA Stormwater
L	29/06/20	VEA Eng Amendment
K	05/03/20	Client Changes

New Dwelling

Client:

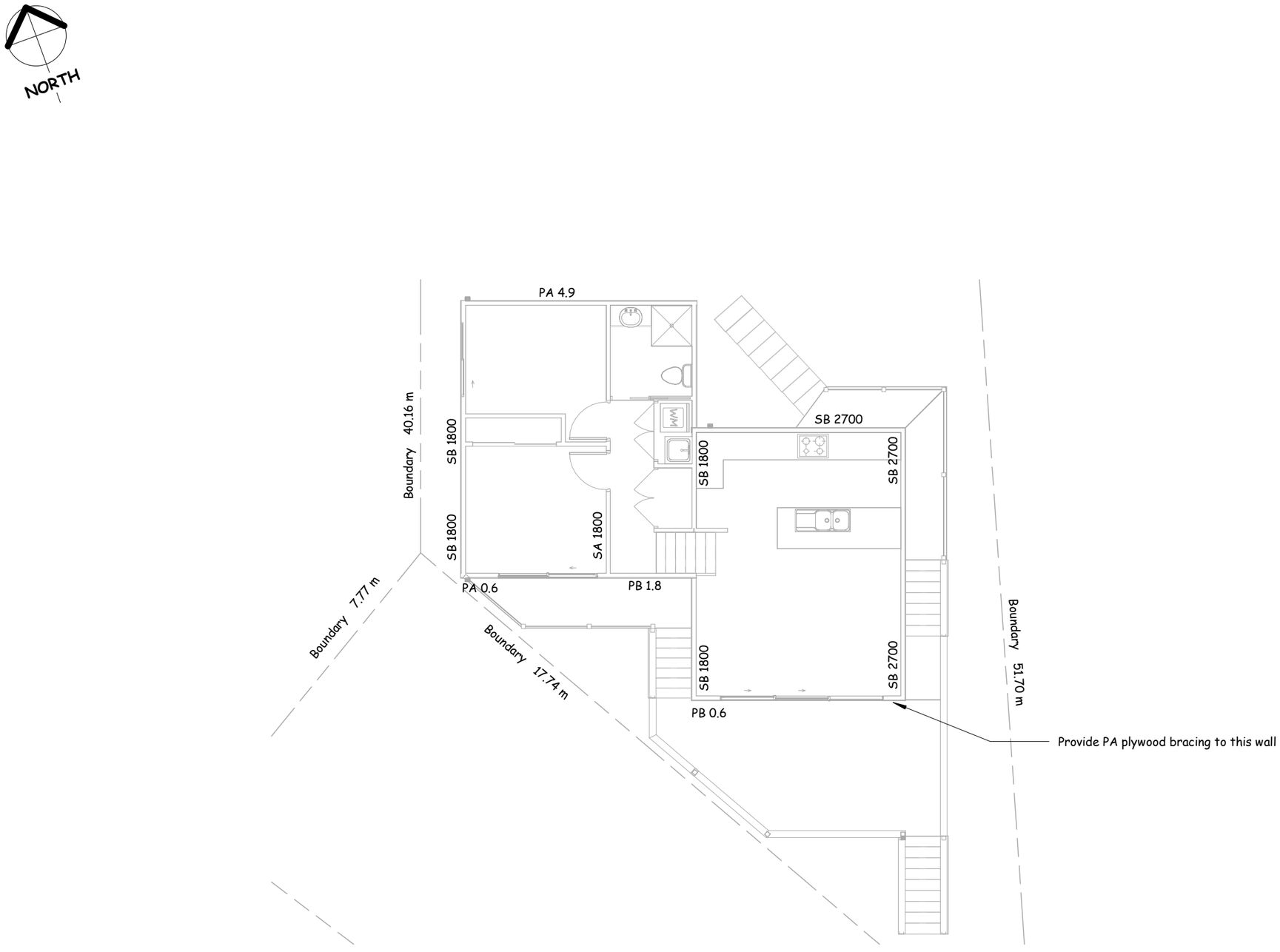
Address:

Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En10

Scale: 1 : 100 @ A3



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VEA
Vision Engineers Australia

M Palmer
Murray Palmer
BEng (Civil & Structural) Hons
Member No: 3798337
Principal Engineer

VEA
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138 Dora Street, Dora Creek NSW 2264
M/ 0490 444 007

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Wind Class: N3 (W41N) (Assumed)

Site Class: 'M' Soil Class: 'M'

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Revision Schedule

Rev	Date	Description
N	02/09/20	Amended Basix
M	30/07/20	VEA Stormwater
L	29/06/20	VEA Eng Amendment
K	05/03/20	Client Changes

New Dwelling

Client:

Address:

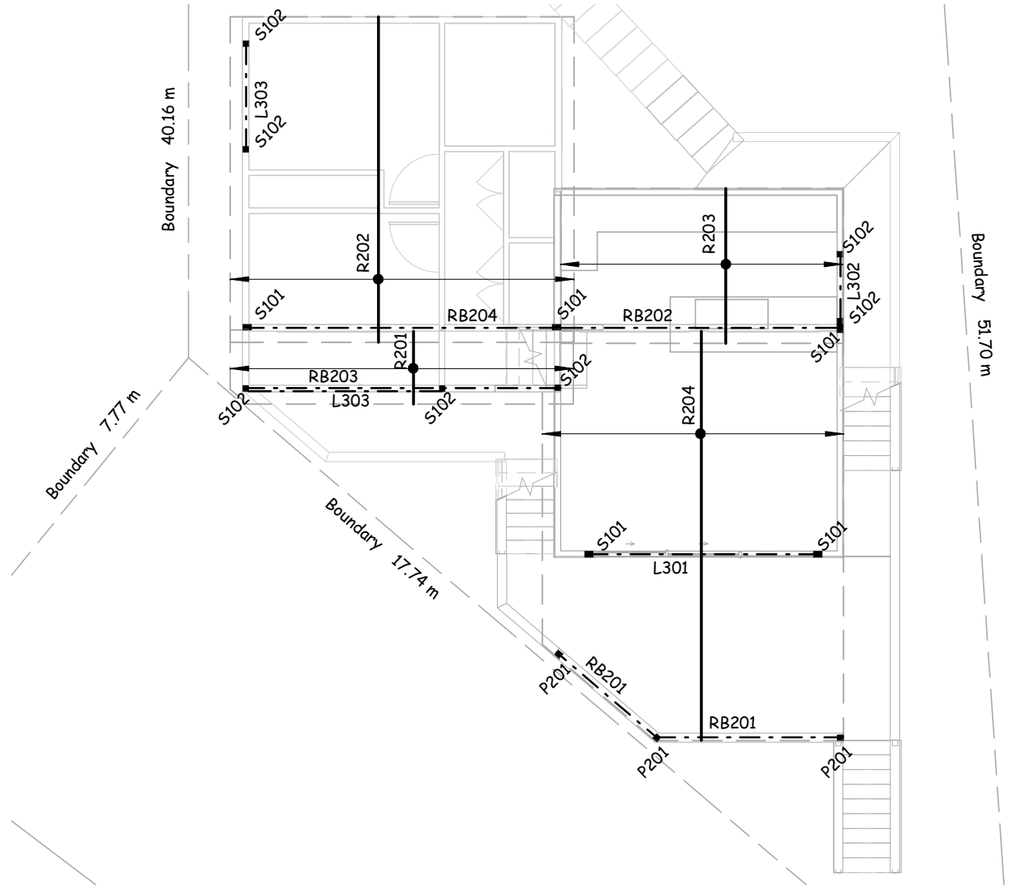
Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En11

Scale: 1 : 100 @ A3

NORTH



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Tie-Down Notes

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2. Roof beams shall have tie-down fixings similar to AS1684.2 Table 9.20(A) – 6 nails each end – for where a roof beam sits on stud work.
3. Roof beams shall have tie-down fixings in accordance to AS1684.2 Table 9.20(I) – 2/M12 bolts with washers (typical).

VEA
Vision Engineers Australia

M Palmer

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BEng (Civil & Structural) Hons
Member No: 3798337
Principal Engineer

Member Schedule (Granny Flat Roof Plan)		
Member	Description	Size
P201	Post	90 SQ LOSP F7 or F17 KD HWD
R201	Rafter	90 x 45 MGP10 H3 @ 600 cts
R202	Rafter	240 x 42 SmartLVL15 H3 @ 600 cts
R203	Rafter	140 x 45 MGP10 H3 @ 600 cts
R204	Rafter	130 x 42 SmartLVL15 H3 @ 600 cts (continuous spans)
RB201	Beam	190 x 45 MGP10 H3
RB202	Beam	2/240 x 42 SmartLVL15, Nail laminated
RB203	Beam	140 x 45 MGP10 H3 (continuous spans)
RB204	Beam	2/300 x 42 SmartLVL15, Nail laminated
L301	Lintel	240 x 58 SmartLVL15
L302	Lintel	90 x 45 MGP10
L303	Lintel	190 x 45 MGP10
S1	Studs	3/90 x 45 MGP10, Nail laminated
S2	Studs	2/90 x 45 MGP10, Nail laminated

VEA
Vision Engineers Australia

138 Dora Street, Dora Creek NSW 2264
M/ 0490 444 007

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Wind Class: N3 (W41N) (Assumed)

Site Class: 'M' Soil Class: 'M'

Refer to Geotech report for more details

SURVEY NOTE :

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Revision Schedule

Rev	Date	Description
N	02/09/20	Amended Basix
M	30/07/20	VEA Stormwater
L	29/06/20	VEA Eng Amendment
K	05/03/20	Client Changes

New Dwelling

Client:

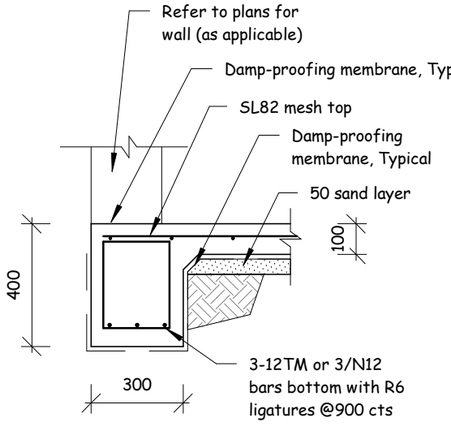
Address:

Date Started: 13-08-2019

Drawing No: 719-6970

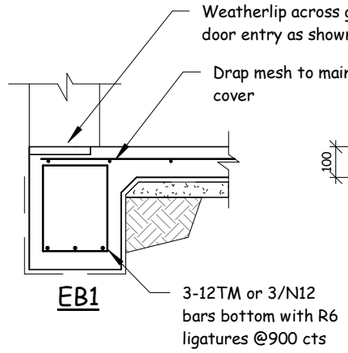
Sheet: En12

Scale: 1 : 100 @ A3



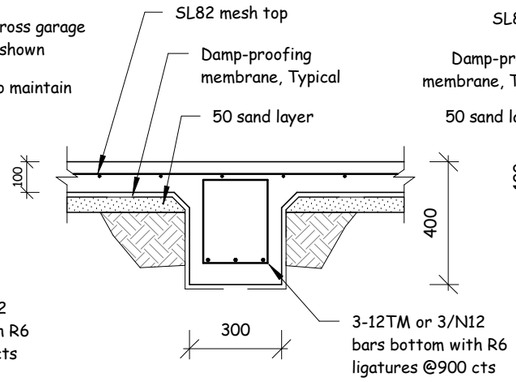
EB1

SCALE 1:20



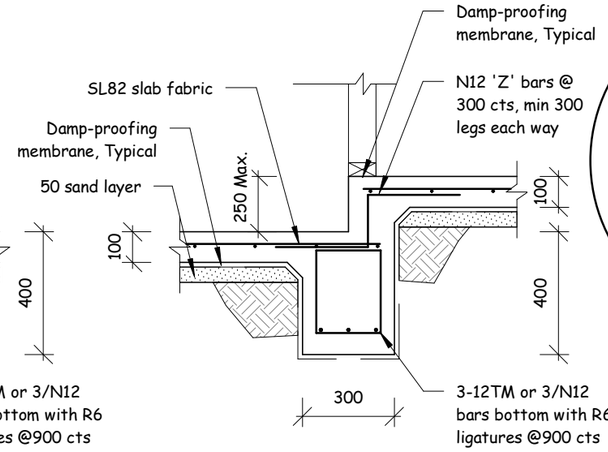
Typical Garage Door Rebate

SCALE 1:20



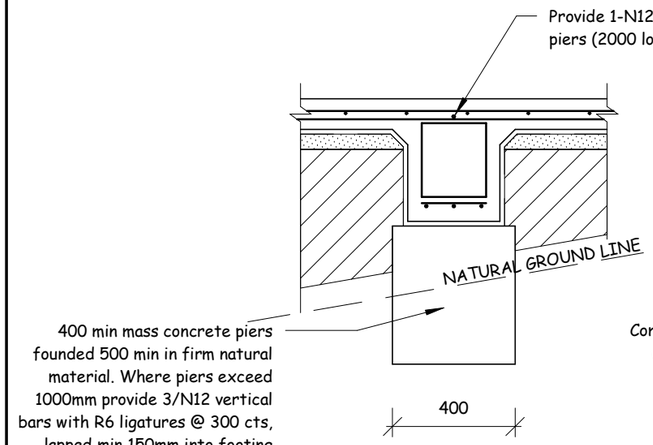
IB1

SCALE 1:20



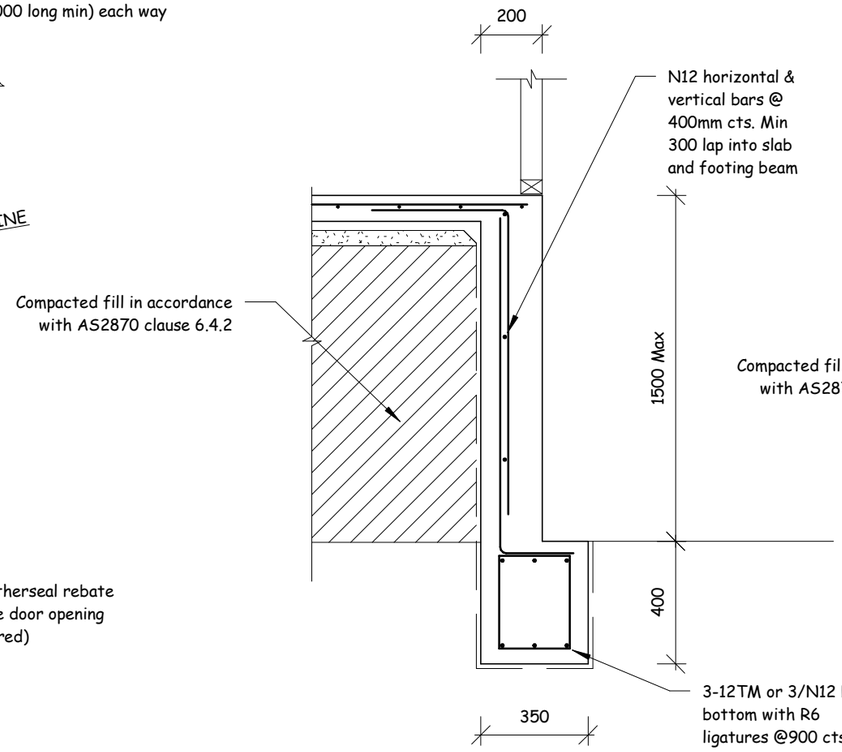
SDB1

SCALE 1:20



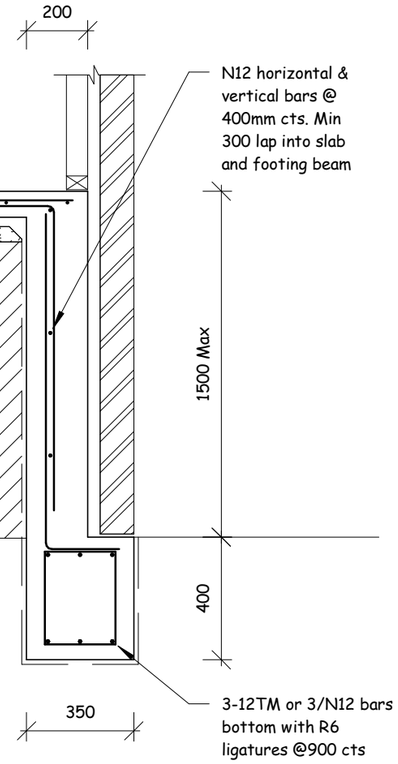
TYPICAL SLAB PIERING DETAILS

SCALE 1:20



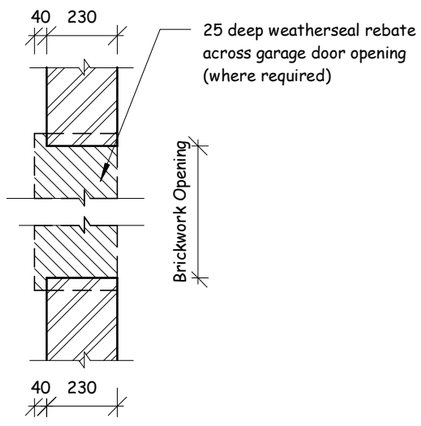
Dropped Edge Beam Detail DEB2

SCALE 1:20



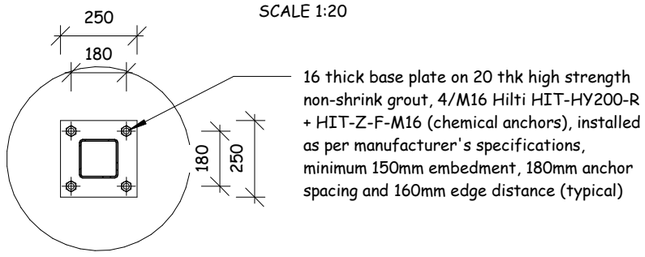
Dropped Edge Beam Detail DEB1

SCALE 1:20



Weatherseal Rebate Detail (Plan)

Scale 1:20



Typical C4/P1 Base Plate Connection Details

Scale 1:20

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Wind Class: N3 (W41N) (Assumed)

Site Class: 'M' Soil Class: 'M'

Refer to Geotech report for more details

SURVEY NOTE :

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Revision Schedule

Rev	Date	Description
N	02/09/20	Amended Basix
M	30/07/20	VEA Stormwater
L	29/06/20	VEA Eng Amendment
K	09/06/20	VEA Eng

New Dwelling

Client:

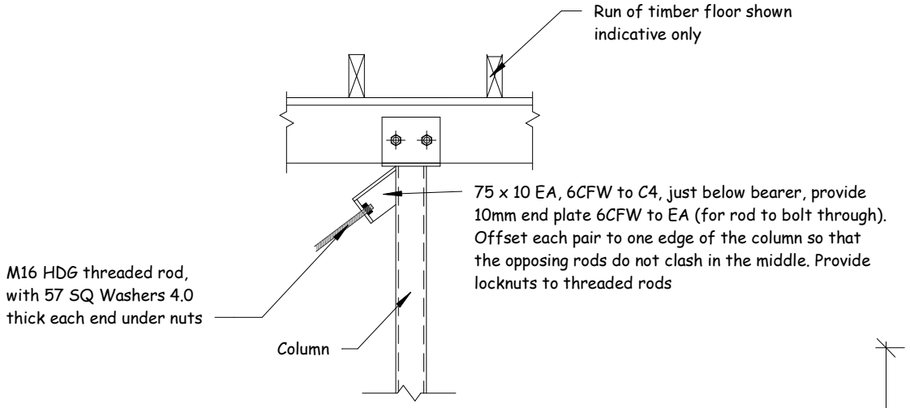
Address:

Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En13

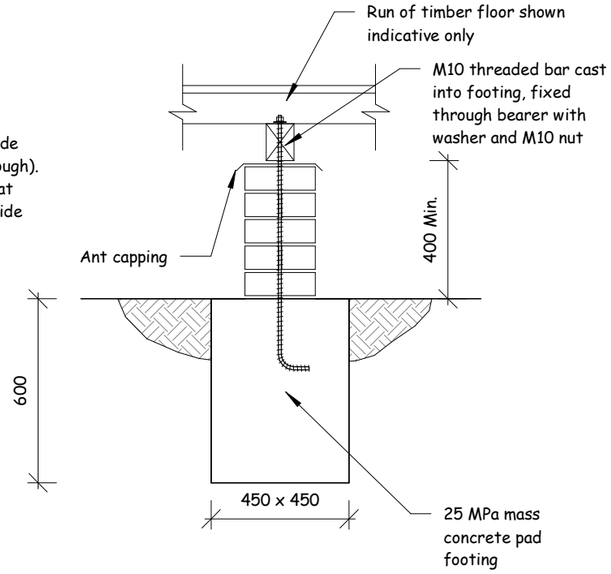
Scale: 1 : 20 @ A3



Typical 'CB' Cross Brace To SHS Detail

Scale NTS

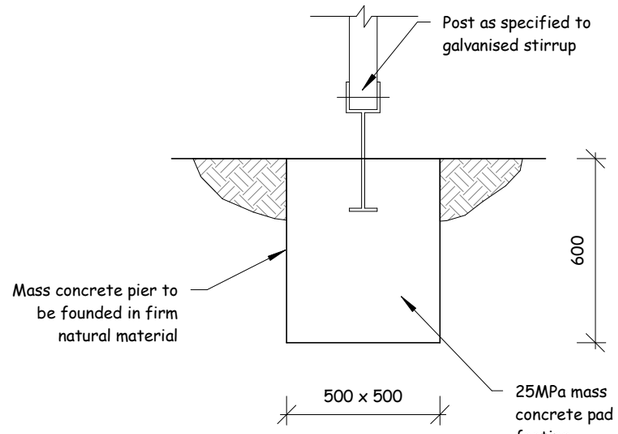
Notes:
1. Connections at base are similar, position angle bracket min 50mm above finish paving level to allow working room.
2. The cross bracing rods shall be re-tensioned periodically to ensure they are effective, as un-tensioned rods provide no lateral bracing capacity.



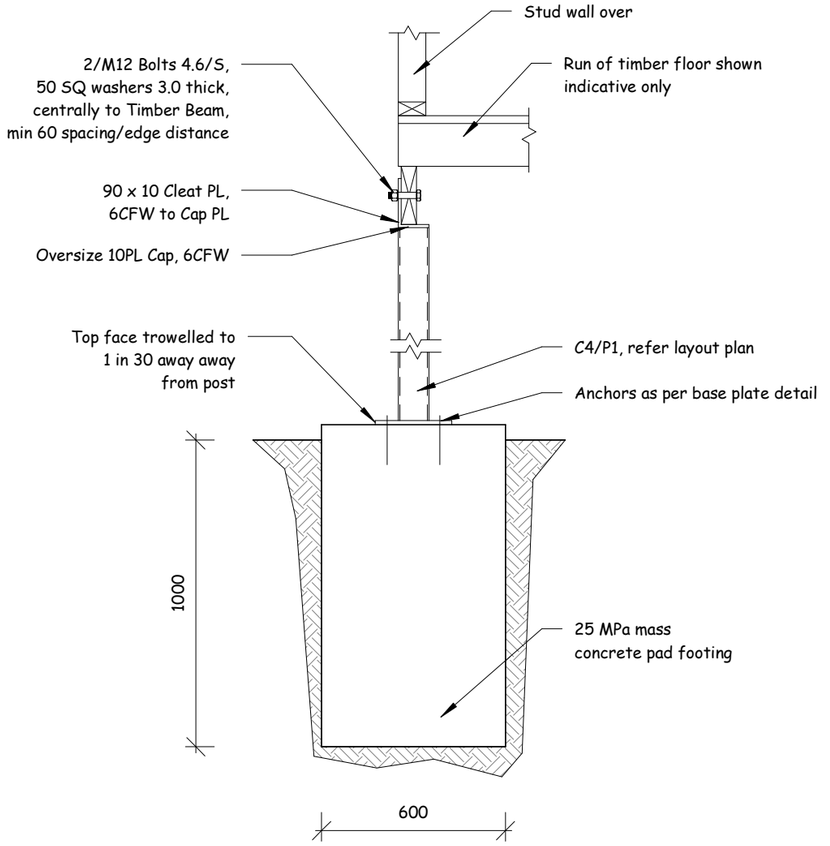
PF2 Detail

Scale 1:20

NOTE:
The cast in M10 rods may be changed to chemset M12 rods, provided the following specifications are followed:
M12 threaded rod with nut and washer to suit, fixed through floor frame as per details, Min 200 embedment into concrete footing, epoxy or Hilti HVU/Hit-HY200, installed as per manufacturer's specifications, including curing times, minimum edge distances, etc



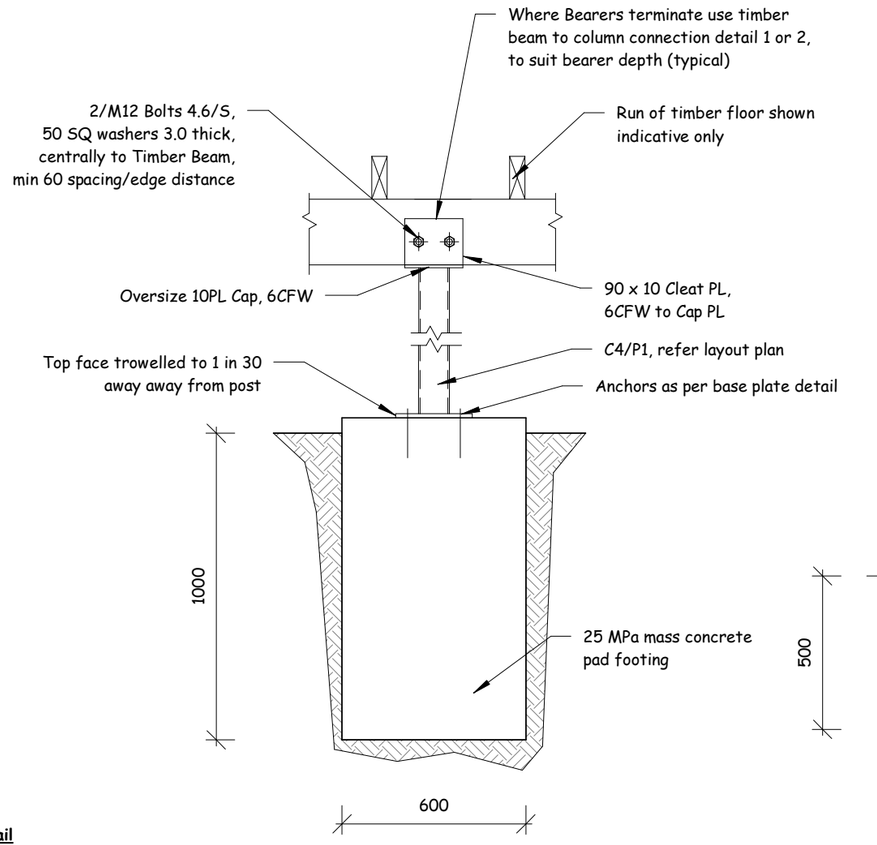
PF1 Detail



PF3 Detail 1

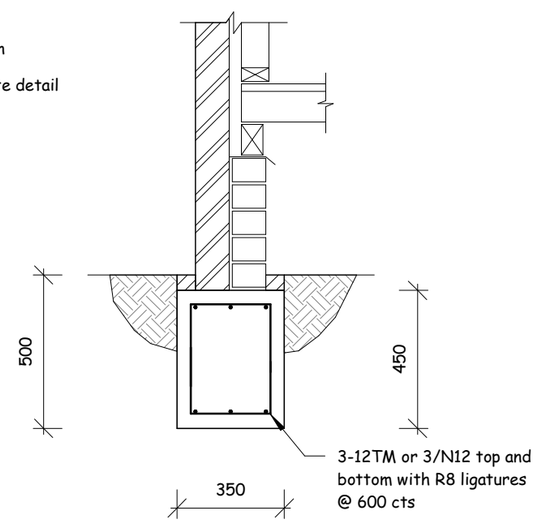
Scale 1:20

NOTE: Alternate Column Fixing Detail
Instead of chemical anchors to the PF1/PF2 footings, the columns may be embedded min 750 - max 900, base plate as specified for chemical anchors is still required. Columns located centrally with min 50 cover to any steel section.



PF3 Detail 2

Scale 1:20



SF1 Detail

Scale 1:20

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Site Class: 'M' Soil Class: 'M'
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VEA
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M Palmer
Murray Palmer
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Member No: 3798337
Principal Engineer

Revision Schedule

Rev	Date	Description
O	02/09/20	Amended Basix
N	30/07/20	VEA Stormwater
M	29/06/20	VEA Eng Amendment
L	09/06/20	VEA Eng

New Dwelling

Client:

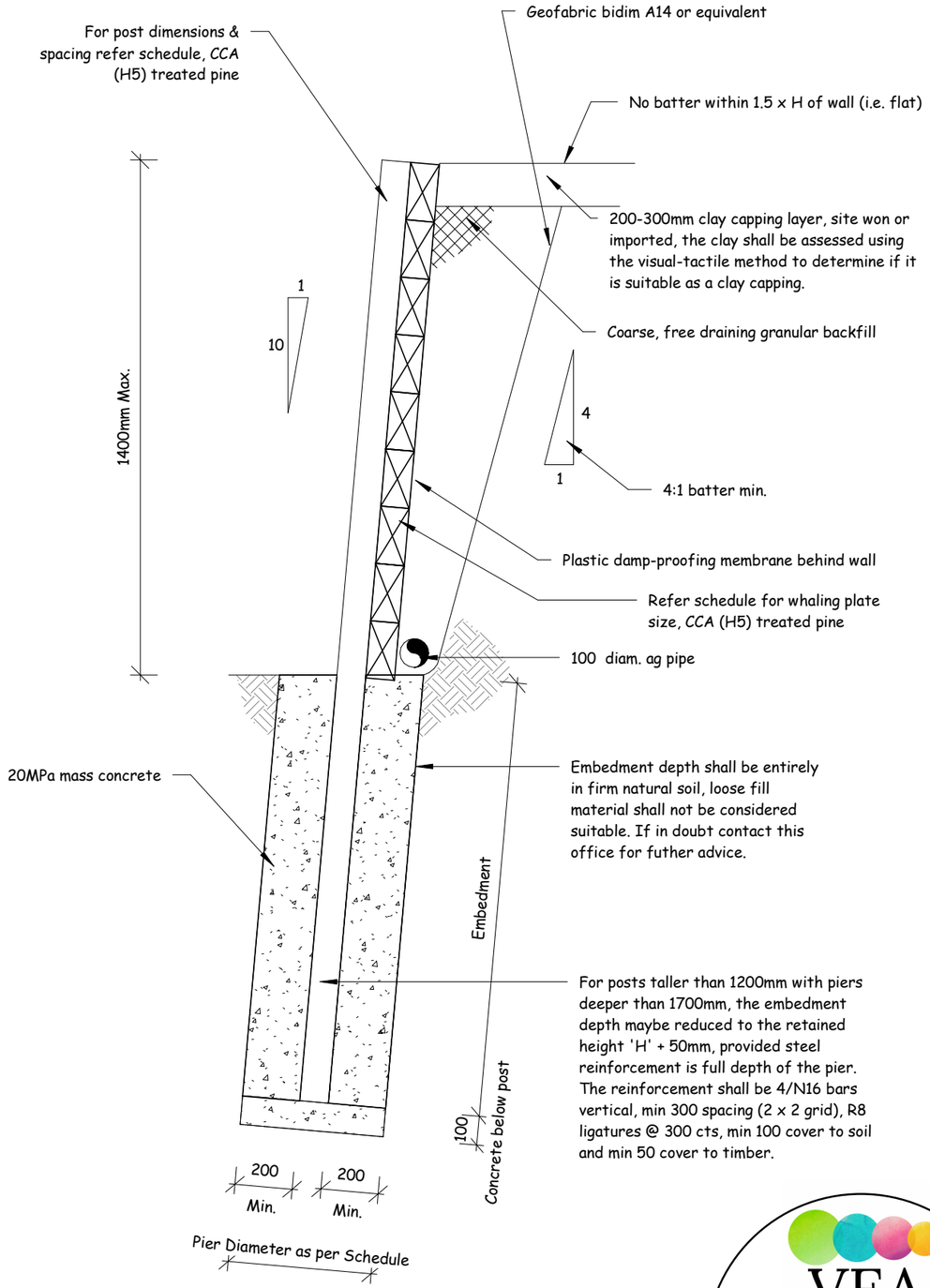
Address:

Date Started: 13-08-2019

Drawing No: 719-6970

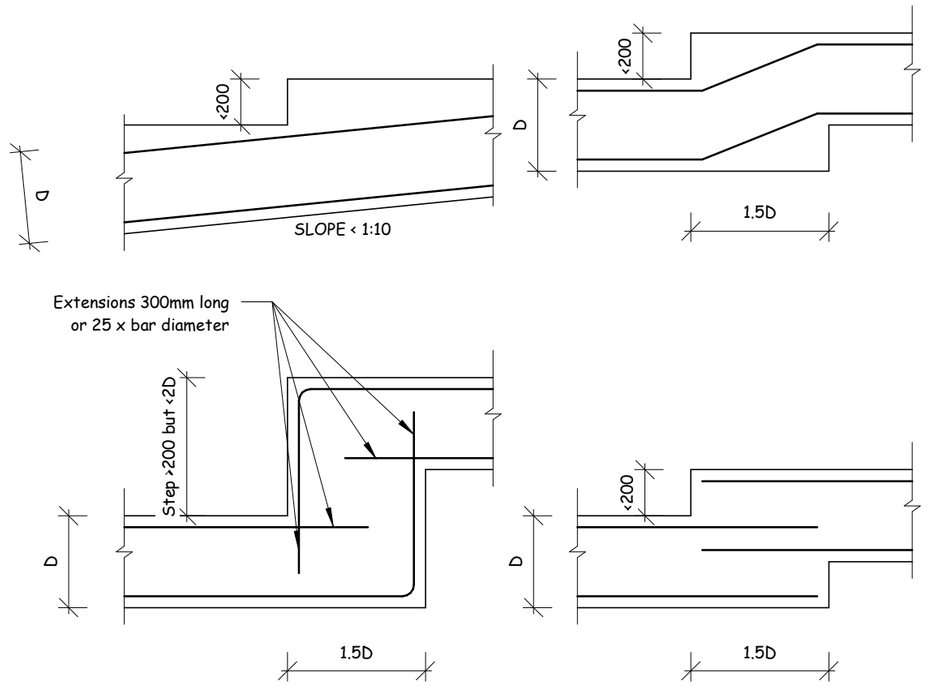
Sheet: En14

Scale: 1 : 20 @ A3



Timber Retaining Wall Detail (With Surcharge)

Scale NTS



Strip Footing Stepping Details

Scale 1:20

Retaining Wall Schedule				
Height 'H'	Min Pier Dia.	Embedment Depth	Min Post Size	Maximum Post Spacing
400	450	800	200(W) x 100(D)	1200
600	450	900	200(W) x 100(D)	1200
800	450	1100	200(W) x 100(D)	1200
1000	450	1400	100(W) x 200(D)	1200
1200	450	1600	100(W) x 200(D)	1200
1200(2)	600	1400	100(W) x 200(D)	1200
1400	450	1800	2/75(W) x 200(D)	1200
1400(2)	600	1500	2/75(W) x 200(D)	1200

Notes:

1. Posts shall be F7 CCA treated as per the Retaining Wall Schedule.
2. The post sizes provided are minimum post diameters, substituition for alternate materials or post diameters shall not be done without written confirmation from the design engineer.
3. Embedment depth is the minimum depth into firm natural soil. The total footing depth may exceed this, depending on the thickness of the fill layer.
4. All timbers shall be H5 treated (CCA) unless otherwise noted in writing by the design engineer.
5. Where footings cannot be excavated due to rock or other site issues, contact this office for further advice. Please note that subject to the particular site issue, additional costs may be incurred for site attendance and/or redesign of the footings to suit the particular site conditions.
6. For retaining walls upto 1500mm high a surcharge of 2.5kPa has been adopted, for walls greater than 1500mm 5kPa has been adopted for the design.
7. Whaling plates (sleepers) shall be as follows:
   a. Top 800mm use 200 x 50 Min F7 CCA
   b. Between 800 - 1600mm use 200 x 75 Min F7 CCA

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Site Class: 'M' Soil Class: 'M'

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Revision Schedule

Rev	Date	Description
J	02/09/20	Amended Basix
I	30/07/20	VEA Stormwater
H	29/06/20	VEA Eng Amendment
G	09/06/20	VEA Eng

New Dwelling

Client:

Address:

Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En15

Scale: As indicated @ A3

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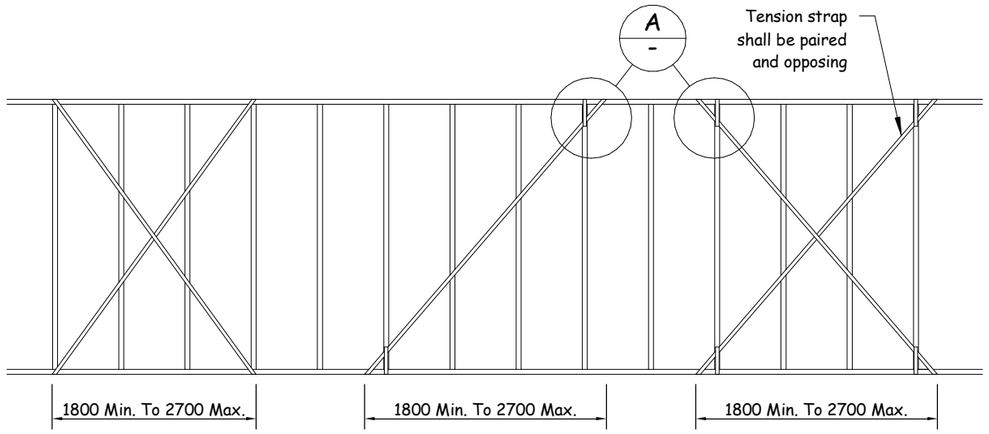
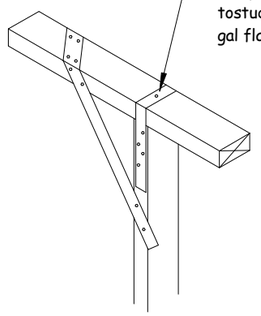
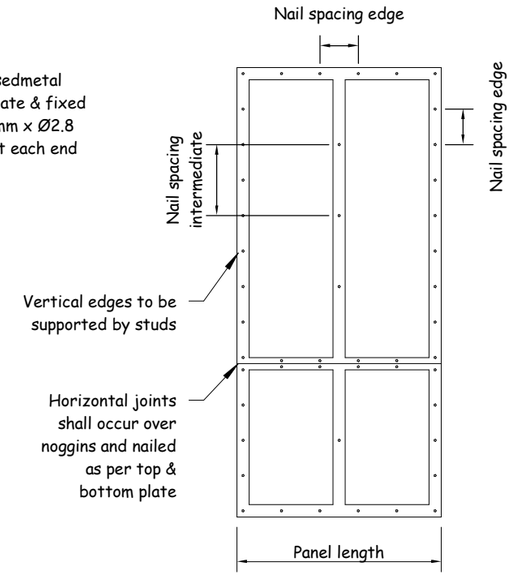
Principal Engineer



Type A Tension Strap | Type A Metal Angle | Type B Tension Strap



Detail A -



Sheet Bracing Details

Type A - Sheet Bracing (PA) Specifics - 3.4 kN/m [Table 8.18(G)]

Product	Australian Standard	Type / Grade	Minimum Thickness For Stud Spacing (mm)		Panel Length (mm)	Nail Size (mm)	Nail Spacing (mm)		Special Requirements
			450	600			Edge	Intermediate	
Plywood	AS2269	F8 F11 F14 F27	7 4.5 4 3	9 7 6 4.5	900	30mm x Ø2.8 Galv.	150	300	No nogging req'd Except at sheet Ends. Nails shall Be 7mm from all Edges
Hardboard (Masonite)	AS2458	G.P.	6.4	6.4	900	30mm x Ø2.8 Galv.	100	300	Nails to be 10mm From vertical Edges & 20mm from Horizontal edges. No nogging req'd Except at sheet Ends.

Type A - Sheet Bracing Notes

1. Panel lengths greater than those listed above can be considered as a number of bracing units directly proportioned to their installed length I.E. A 1200mm panel of plywood equals 1200 / 900 = 1.33 bracing units.
2. Nails should be driven just below the surface of the sheet using the hammer face only. Nails must not be punched
3. Plywood panel lengths of 600mm are equivalent to 1/3 of a type a bracing unit.
4. For stud spacing of 600mm c/c where noggins are installed and the plywood bracing panels are nailed to the noggins at 1500mm c/c,the plywood thickness may be as for stud spacing at 450mm c/c.
5. PA* indicates full length available.
6. Refer to AS1684.2 Table 8.18(G) for top & bottom plate fixing details.

Type A - Strap Bracing (SA) Specifics - 1.5 kN/m [Table 8.18(B)]

Type Of Diagonal Brace	Material & Size	Nailing Requirements		Special Requirements
		To Each Stud	To Each Plate	
Metal Angle	Galvanised angle, nom. Section 20x18x1.2mm min. Net section 42mm²	1x30xØ2.8mm Galv. Flat head nail	2x30xØ2.8mm Galv. Flat head nail	Drill holes if necessary to prevent nail splitting
Tension Strap	Galvanised flat metal tension strapping of min. Thickness 0.8mm & min. Net section of 15.2mm²	1x30xØ2.8mm Galv. Flat head nail	3x30xØ2.8m m Galv. Flat head nail	Straps must be properly tensioned

Type B - Sheet Bracing (PB) Specifics - 6.0 kN/m [Table 8.18(H)]

Product	Australian Standard	Type / Grade	Minimum Thickness For Stud Spacing (mm)		Panel Length (mm)	Nail Size (mm)	Nail Spacing (mm)		Special Requirements
			450	600			Edge	Intermediate	
Plywood	AS2269	F8 F11 F14 F27	7 6 4 4	9 7 6 4.5	900 / 1200	30mm x Ø2.8 Galv.	50 to plates & 150 to edge studs	300	No nogging req'd except at sheet ends. Nails shall be 7mm from all edges
Hardboard (Masonite)	AS2458	G.P.	6.4	6.4	900 / 1200	30mm x Ø2.8 Galv.	50 to plates & 150 to edge studs	300	Nails to be 10mm from vertical edges & 20mm from horizontal edges. No nogging req'd except at sheet ends.

Type B - Sheet Bracing Notes

1. Panel lengths greater than those listed above can be considered as a number of bracing units directly proportioned to their installed length I.E. A 1200mm panel of plywood equals 1200 / 900 = 1.33 bracing units.
2. Nails should be driven just below the surface of the sheet using the hammer face only. Nails must not be punched
3. PB* indicates full length available.
4. Refer to AS1684.2 Table 8.18(H) for top & bottom plate fixing details.

Type B - Strap Bracing (SB) Specifics - 3.0 kN/m[Table 8.18(D)]

Type Of Diagonal Brace	Material & Size	Nailing Requirements		Special Requirements
		To Each Stud	To Each Plate	
Tension Strap	Galvanised flat metal tension strap nom. Size 30x0.8mm & min. Section of 24mm²	2/30xØ3.15mm galv. Flat head nail	4/30xØ2.8mm galv. Flat head nail	Straps must be properly tensioned & strap must return over top plate & under the bottom plate. The stud nearest to each end of each diagonal strap shall be fixed to the plates with straps or framing anchors 4x30xø2.8mm nails at each end.

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Site Class: 'M' Soil Class: 'M'

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O	02/09/20	Amended Basix
N	30/07/20	VEA Stormwater
M	29/06/20	VEA Eng Amendment
L	09/06/20	VEA Eng

New Dwelling

Client:

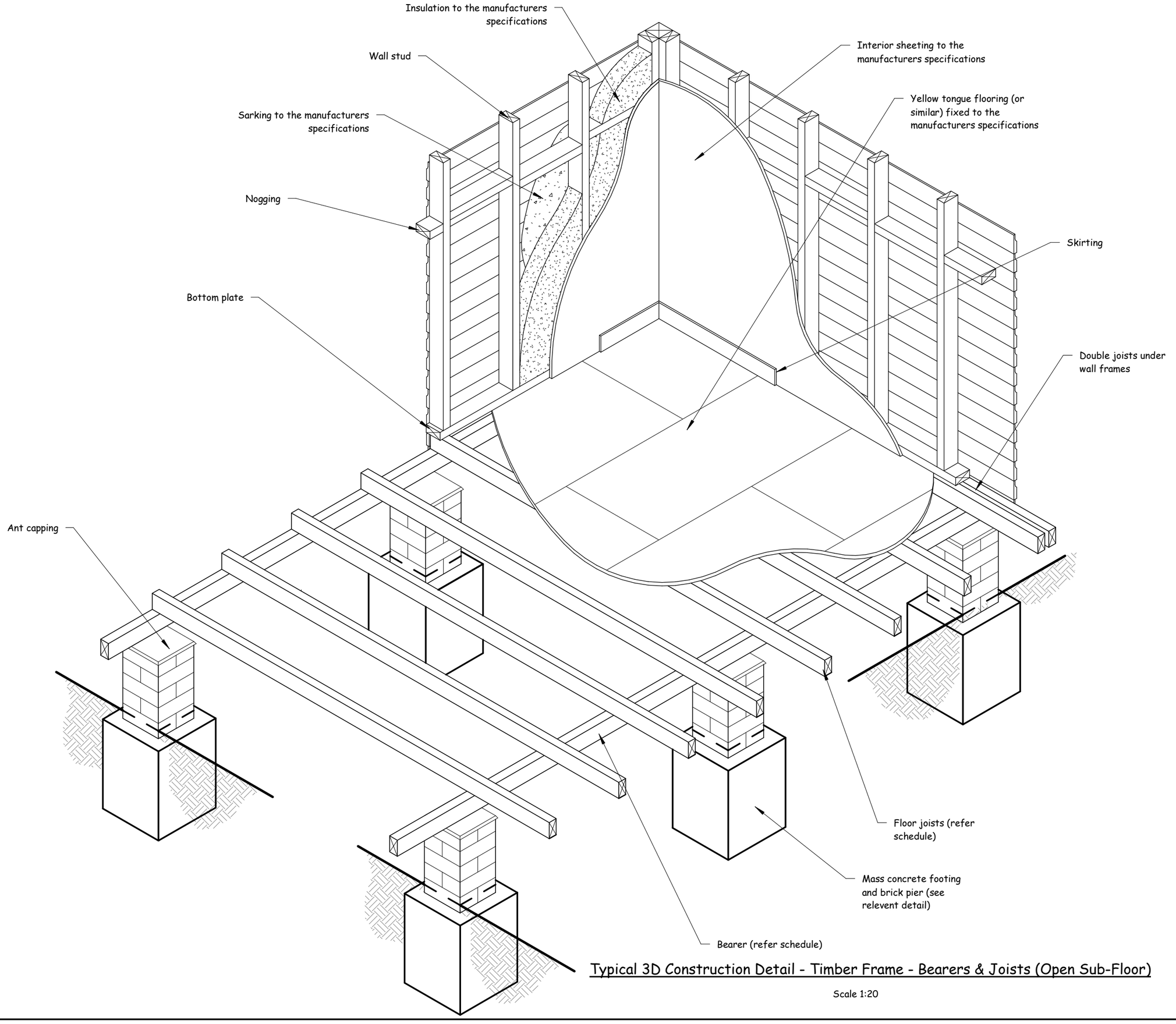
Address:

Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En16

Scale: 1 : 120 @ A3



Typical 3D Construction Detail - Timber Frame - Bearers & Joists (Open Sub-Floor)

Scale 1:20

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M/ 0490 444 007

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N	30/07/20	VEA Stormwater
M	29/06/20	VEA Eng Amendment
L	09/06/20	VEA Eng

New Dwelling

Client:

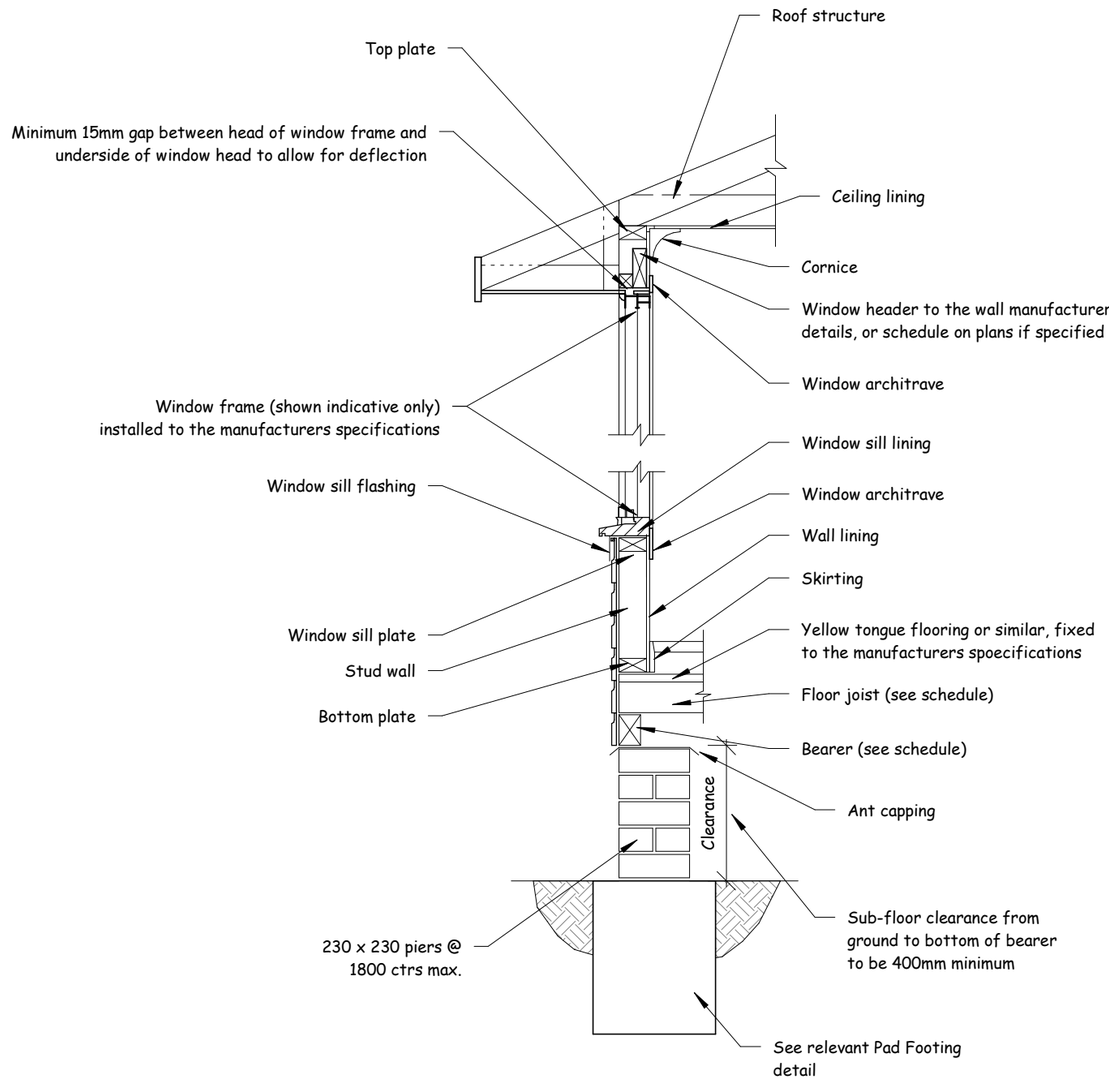
Address:

Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En17

Scale: 1 : 20 @ A3



Typical Wall Section - Timber Frame - Bearers & Joists

Scale 1:20

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L	09/06/20	VEA Eng

New Dwelling

Client:

Address:

Date Started: 13-08-2019

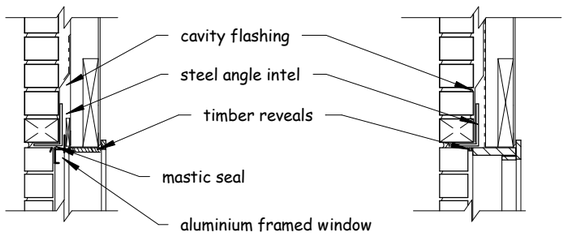
Drawing No: 719-6970

Sheet: En18

Scale: 1 : 20 @ A3

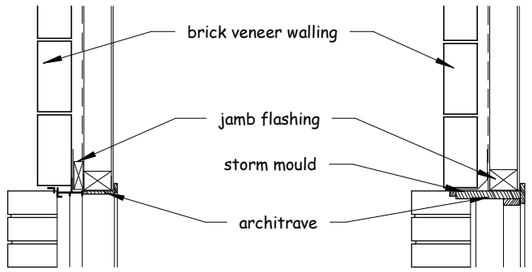
ALUMINIUM WINDOWS

TIMBER WINDOWS



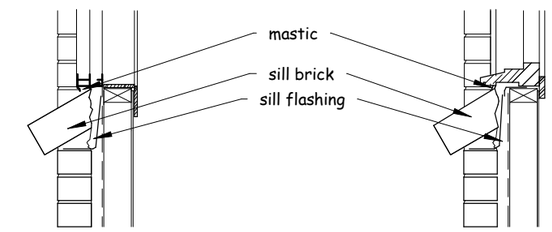
Head

Head



Jamb

Jamb



Sill

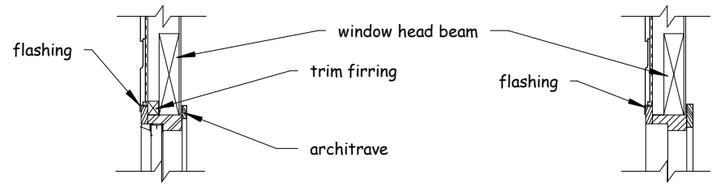
Sill

Typical Wall/Window Relationship Details - Brick Veneer

Scale 1:20

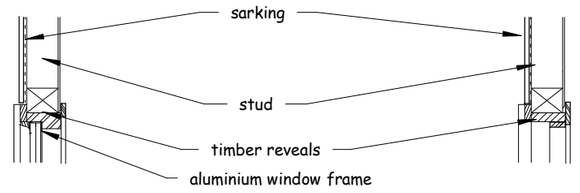
ALUMINIUM WINDOW

TIMBER WINDOW



Head

Head



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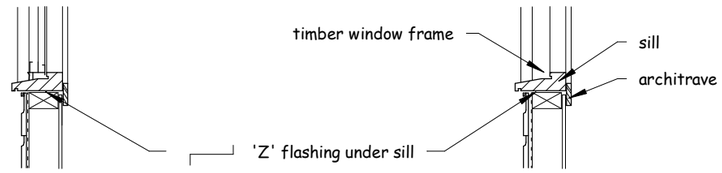

Sill

Sill

Typical Wall/Window Relationship Details - Weatherboard

Scale 1:20

VEA
Vision Engineers Australia

138 Dora Street, Dora Creek NSW 2264
M/ 0490 444 007

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L	09/06/20	VEA Eng

New Dwelling

Client:

Address:

Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En19

Scale: 1 : 20 @ A3

Typical Sheet Roof Lintels, Jamb and Tie-down Details

Jamb Stud Sizes

Jamb Studs A	Jamb Studs B	Jamb Studs C	Jamb Studs D
2/90 x 35 MGP10	2/90 x 45 MGP10	3/90 x 45 MGP10	2/90 x 63 Hyspan LVL13

Minimum size for non-loadbearing lintels

Timber grade	Span				
	Up to 1200	Up to 1800	Up to 2400	Up to 3000	Up to 3600
MGP10/F7	90 x 45	90 x 45	120 x 45	190 x 45	190 x 45
Hyspan LVL13	95 x 36	95 x 45	130 x 36	130 x 45	170 x 45
Smart LVL15	90 x 42	120 x 35	120 x 35	130 x 58	170 x 58
Jamb Studs	A	A	A	A	A

Jamb size studs above to be used up to a height of 2750mm

Single / Upper Storey Lintel (Design wind speed N3) - Sheet Roof with RLW up to 3000mm

Timber grade	Span				
	Up to 1200	Up to 1800	Up to 2400	Up to 3000	Up to 3600
MGP10/F7	120 x 45	190 x 45	240 x 45	2/240 x 45*	2/290 x 45*
Hyspan LVL13	90 x 45	130 x 45	200 x 45	240 x 45	300 x 45
Smart LVL15	90 x 42	130 x 42	200 x 42	240 x 42	300 x 42
Jamb Studs	A	A	B	C	C

* - Denotes nail laminated together as per AS1684.2
Jamb size studs above to be used up to a height of 2750mm

Single / Upper Storey Lintel (Design wind speed N3) - Sheet Roof with RLW 3001mm up to 4500mm

Timber grade	Span				
	Up to 1200	Up to 1800	Up to 2400	Up to 3000	Up to 3600
MGP10/F7	140 x 45	190 x 45	290 x 45	2/240 x 45*	2/290 x 45*
Hyspan LVL13	130 x 45	150 x 45	200 x 45	240 x 63	300 x 63
Smart LVL15	130 x 42	150 x 42	200 x 42	240 x 58	300 x 58
Jamb Studs	B	B	C	C	D

* - Denotes nail laminated together as per AS1684.2
Jamb size studs above to be used up to a height of 2750mm

Single / Upper Storey Lintel (Design wind speed N3) - Sheet Roof with RLW 4501mm up to 6000mm

Timber grade	Span				
	Up to 1200	Up to 1800	Up to 2400	Up to 3000	Up to 3600
MGP10	190 x 45	2/190 x 45*	2/240 x 45*	2/290 x 45*	-
Hyspan LVL13	130 x 45	170 x 45	200 x 63	300 x 45	360 x 63
Smart LVL15	130 x 42	170 x 42	200 x 58	300 x 42	360 x 58
Jamb Studs	B	B	C	D	D

* - Denotes nail laminated together as per AS1684.2
Jamb size studs above to be used up to a height of 2750mm

Single / Upper Storey Lintel (Design wind speed N3) - Sheet Roof with RLW 6001mm upto 7500mm

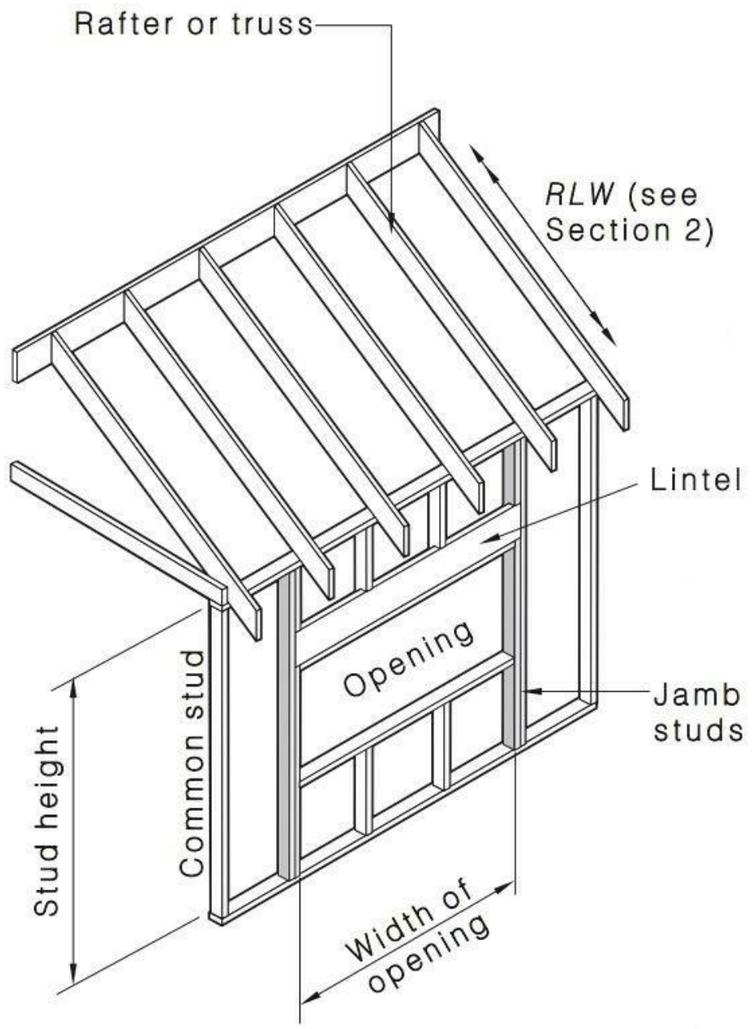
Timber grade	Span				
	Up to 1200	Up to 1800	Up to 2400	Up to 3000	Up to 3600
MGP10	190 x 45	2/190 x 45*	2/240 x 45*	-	-
Hyspan LVL13	130 x 45	200 x 45	240 x 45	300 x 63	400 x 63
Smart LVL15	130 x 42	200 x 42	240 x 58	300 x 58	400 x 58
Jamb Studs	C	C	D	D	D

* - Denotes nail laminated together as per AS1684.2
Jamb size studs above to be used up to a height of 2750mm

Tie-downs for lintels supporting sheet roof (AS1684.2 Table 9.20)

RLW	Lintel Span				
	Up to 1200	Up to 1800	Up to 2400	Up to 3000	Up to 3600
Up to 3000	9.20(A) 6 nails	9.20(A) 6 nails	9.20(B) M10	9.20(B) M10	9.20(B) M10
3001-4500	9.20(B) M10	9.20(B) M10	9.20(B) M10	9.20(B) M12	9.20(C) M12
4501-6000	9.20(B) M10	9.20(B) M12	9.20(C) M12	9.20(D) M16	9.20(D) M16
6001-7500	9.20(B) M12	9.20(C) M12	9.20(D) M16	9.20(D) M16	9.20(D) M16

For all lintels in non-loadbearing walls, the fixings shall be nominal as per AS1684.2 Table 9.4



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BUILDERS NOTE :

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Wind Class: N3 (W41N) (Assumed)

Site Class: 'M' Soil Class: 'M'

Refer to Geotech report for more details

SURVEY NOTE :

Boundary dimensions have been taken from site information by others. Confirm boundaries before commencement of construction.

Revision Schedule

Rev	Date	Description
O	02/09/20	Amended Basix
N	30/07/20	VEA Stormwater
M	29/06/20	VEA Eng Amendment
L	09/06/20	VEA Eng

New Dwelling

Client:

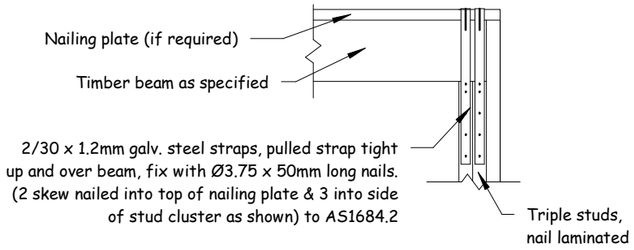
Address:

Date Started: 13-08-2019

Drawing No: 719-6970

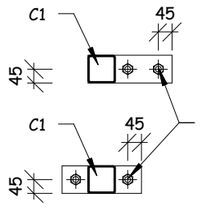
Sheet: En20

Scale: @ A3



Typical Timber Beam to Studs Connection Detail

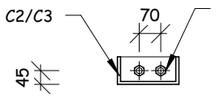
Scale NTS



12 thick base plate, 6CFW to column, on 20 thk non-shrink grout, inline with wall framing, 2/M12 Hilti Hit-HY200-R HIT-V rods, min 60 edge distance, min 60 anchor spacing, min 110 embedment, installed as per manufacturer's specifications (typical)

Typical P1/C1 SHS Base Plate Connection Details

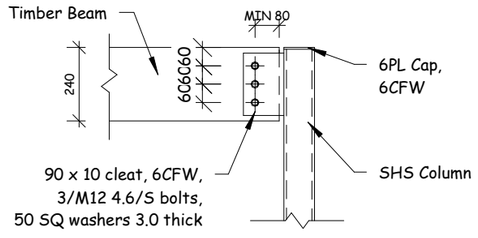
Scale 1:20



16 thick base plate, 6CFW to column, on 20 thk non-shrink grout, within wall framing, 2/M16 Hilti Hit-HY200-R HIT-V rods, min 70 edge distance, min 70 anchor spacing, min 150 embedment, installed as per manufacturer's specifications (typical)

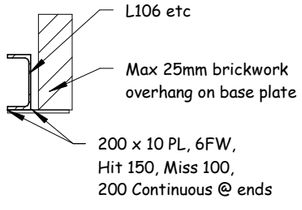
Typical C2/C3 PFC Base Plate Connection Details

Scale 1:20



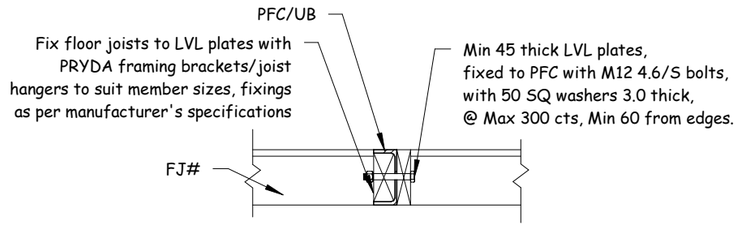
Timber Beam to Column Connection Detail

Scale NTS



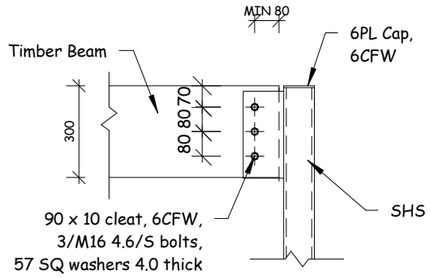
Typical Cross Section Thru Garage Lintel

Scale 1:20



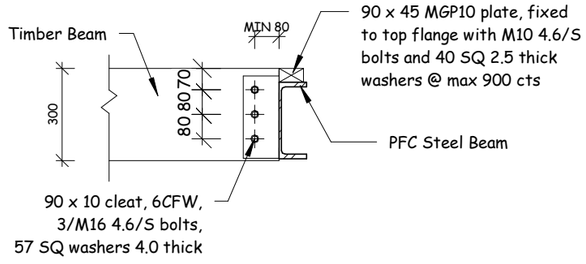
Typical Floor Joist to Steel Beam Detail

Scale NTS



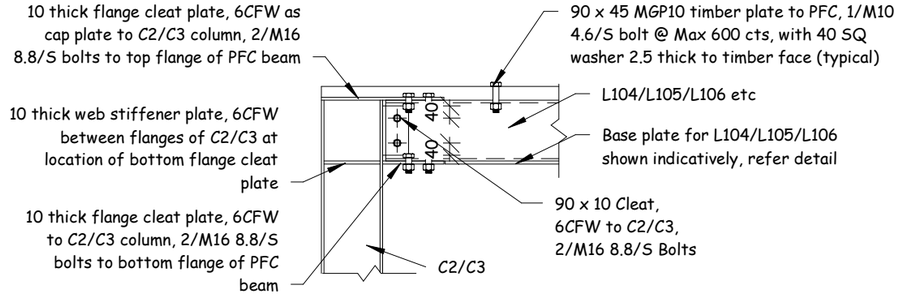
Timber Beam to Column Connection Detail

Scale NTS



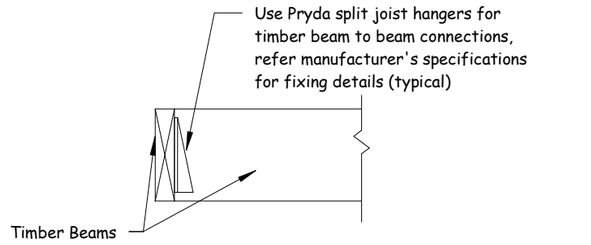
Timber Beam to PFC Connection Detail

Scale NTS



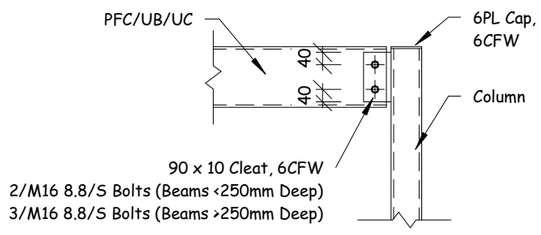
Typical GL101/GL201 to C1 Connection Detail

Scale NTS



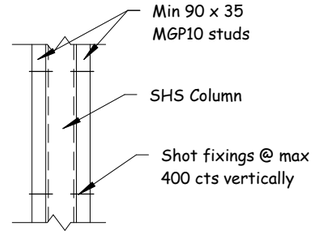
Timber Beam to Timber Beam Connection Detail

Scale NTS



Typical PFC/UB "Cleat" Connection To SHS Detail

Scale NTS



Column Shot Fixing Detail

Scale NTS

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Wind Class: N3 (W41N) (Assumed)

Site Class: 'M' Soil Class: 'M'

Refer to Geotech report for more details

SURVEY NOTE :

Boundary dimensions have been taken from site information by others. Confirm boundaries before commencement of construction.

Revision Schedule

Rev	Date	Description
D	02/09/20	Amended Basix
C	30/07/20	VEA Stormwater
B	29/06/20	VEA Eng Amendment
A	09/06/20	VEA Eng

New Dwelling

Client:

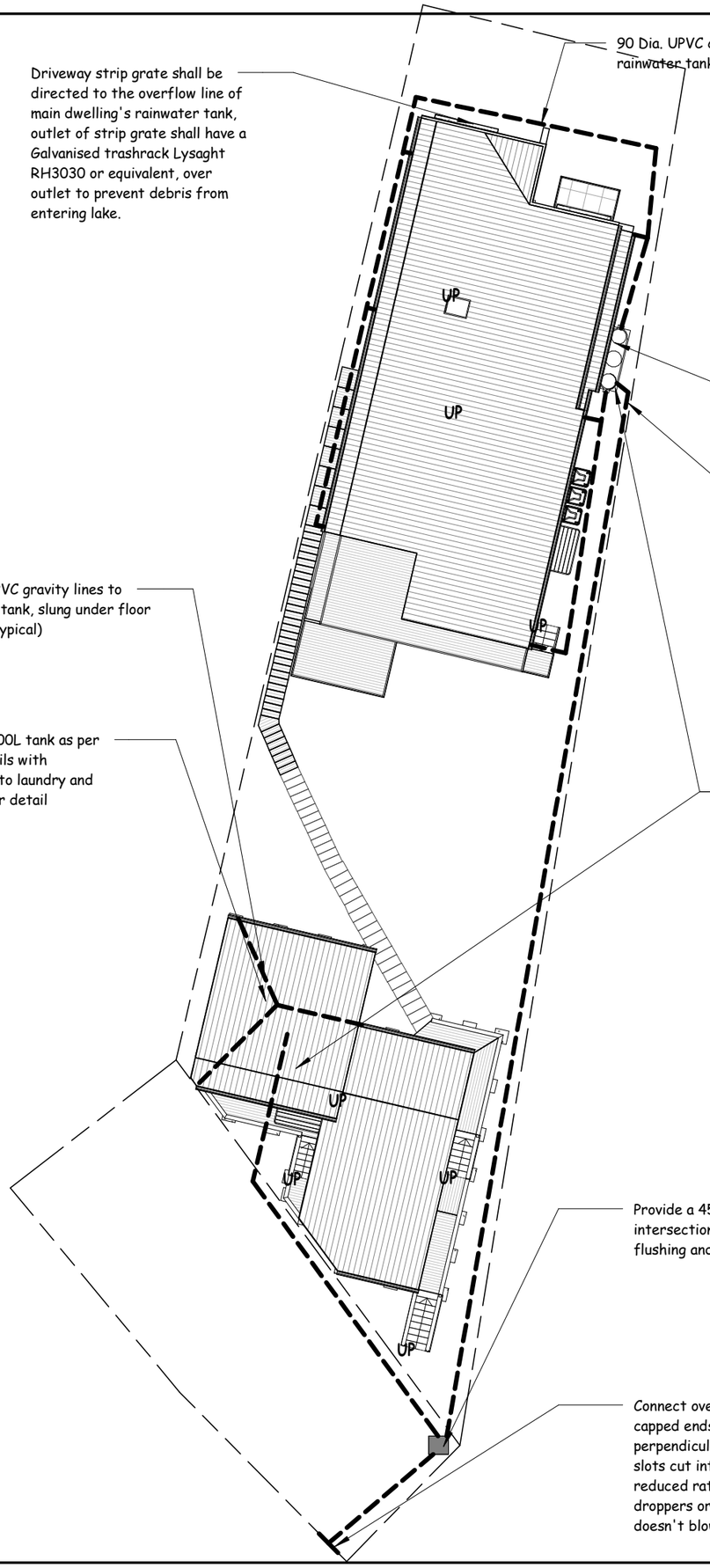
Address:

Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En21

Scale: 1 : 20 @ A3



Driveway strip grate shall be directed to the overflow line of main dwelling's rainwater tank, outlet of strip grate shall have a Galvanised trashrack Lysaght RH3030 or equivalent, over outlet to prevent debris from entering lake.

90 Dia. UPVC charged lines to rainwater tank (typical)

Minimum 3000L tank as per BASIX details with reticualtion to laundry and toilets, refer detail

100 Dia. overflow pipe to spreader at lake frontage boundary

90 Dia. UPVC gravity lines to rainwater tank, slung under floor framing (typical)

Minimum 3000L tank as per BASIX details with reticualtion to laundry and toilets, refer detail

All downpipes from each dwelling are to be directed (gravity or charged) into the water re-use tank for that dwelling, location of downpipes by plumber to AS3500 and to suit architectural features

Provide a 450 SQ x 450 deep junction pit at the intersection of the overflow pipes to allow for flushing and inspection of the overflow lines.

Connect overflow lines into a single 100 diameter spreader pipe, with capped ends. Spreader pipe shall be minimum 1000mm long and perpendicular to the overflow pipe. The spreader pipe shall have slots cut into it on both sides to allow water to filter though at a reduced rate. The spreader pipe shall be secured in place with star droppers or a rockery to ensure the gravity pressure of the water doesn't blow out the pipe under heavy storm conditions.

Re-Use Tank Notes:
Each tank shall be fitted with a first flush system, pump to supply toilets, laundry and one external tap with a diversion switch to mains supply on tank being empty. Back flow prevention to mains water shall be provided. Tank to overflow to stormwater system.

Excavation Note:
Builder to provide adequate shoring in order to maintain stability of existing neighbouring structures and fences during excavation works typical

Stormwater notes:

1. All works to be in accordance with AS3500.3
2. All pipes to have a 1% minimum fall U.N.O.
3. All down pipes (dp) by plumber to relevant standards and AS3500
4. All pipes to be upvc U.N.O
5. All upvc pipes to be sewer grade and to AS1260.
6. All reinforced concrete pipes (RCP) to be spigot and socket type with rubber rings class 2 to AS4058.
7. Pits to be CI&D reinforced pre-cast concrete pits or equivalent proprietary pits.
8. All lids and grates to be proprietary heavy duty in areas of vehicular traffic, light duty elsewhere, in accordance with AS3996.
9. Minimum cover to stormwater pipes to be as follow U.N.O:
   trafficable areas - 450mm, landscaped areas - 300mm.
   Pipes to be concrete encased if minimum covers cannot be obtained in trafficable areas, refer to clause 3.8 AS3500.3. Alternatively use upvc sewer grade pipes under road and buildings.
10. Provide Ø100 ag drains in filter socks to all landscaped areas, planter beds and stormwater pipe trenches. All ag drains to be bedded in coarse aggregate and to be connected to stormwater system.
11. All pits, detention tanks and proprietary pollution control devices to be cleaned of sediment at 3 month maximum intervals.
12. All existing services to be located prior to commencement of work.
13. Any footpaths, kerb and gutter or roadway disturbed by works to be reinstated to current council requirements.
14. Provide access ladder to tank as required, refer to AS1657.

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I hereby certify that the above mentioned works are adequate for their intended purpose.
This certification is limited to the stormwater system elements detailed, and based on the works being carried out in accordance with these civil plans.
The stormwater system has been designed in accordance with the following:

- AS/NZS 1170.0:2002: Structural design actions - General principles
- AS/NZS 1170.1:2002: Structural design actions - Permanent, imposed & other actions
- AS/NZS 3500.3:2015: Plumbing and Drainage – Storm water drainage
- AS 3959-2009: Construction of buildings in bushfire prone areas
- Building Code of Australia (BCA)
- Local Council Stormwater Regulations/Guidelines (where applicable)

All works to be carried out by a suitably licensed and competent plumber in accordance with the current edition of the Building Code of Australia (BCA) and relevant Australian Standards for construction.
Based on the above parameters, I hereby certify that the stormwater system is adequate under the specified design conditions, provided that they are constructed in accordance with the relevant Australian Standards.
I certify that I am a qualified and practising Civil/Structural Engineer in accordance with the requirements of the Building Code of Australia and The Institution of Engineers, Australia.

M Palmer

Murray Palmer
BEng (Civil & Structural) Hons
Member No: 3798337
Principal Engineer

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Wind Class: N3 (W41N) (Assumed)

Site Class: 'M' Soil Class: 'M'
Refer to Geotech report for more details

SURVEY NOTE :
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Revision Schedule

Rev	Date	Description
B	02/09/20	Amended Basix
A	30/07/20	VEA Stormwater

New Dwelling

Client:

Address:

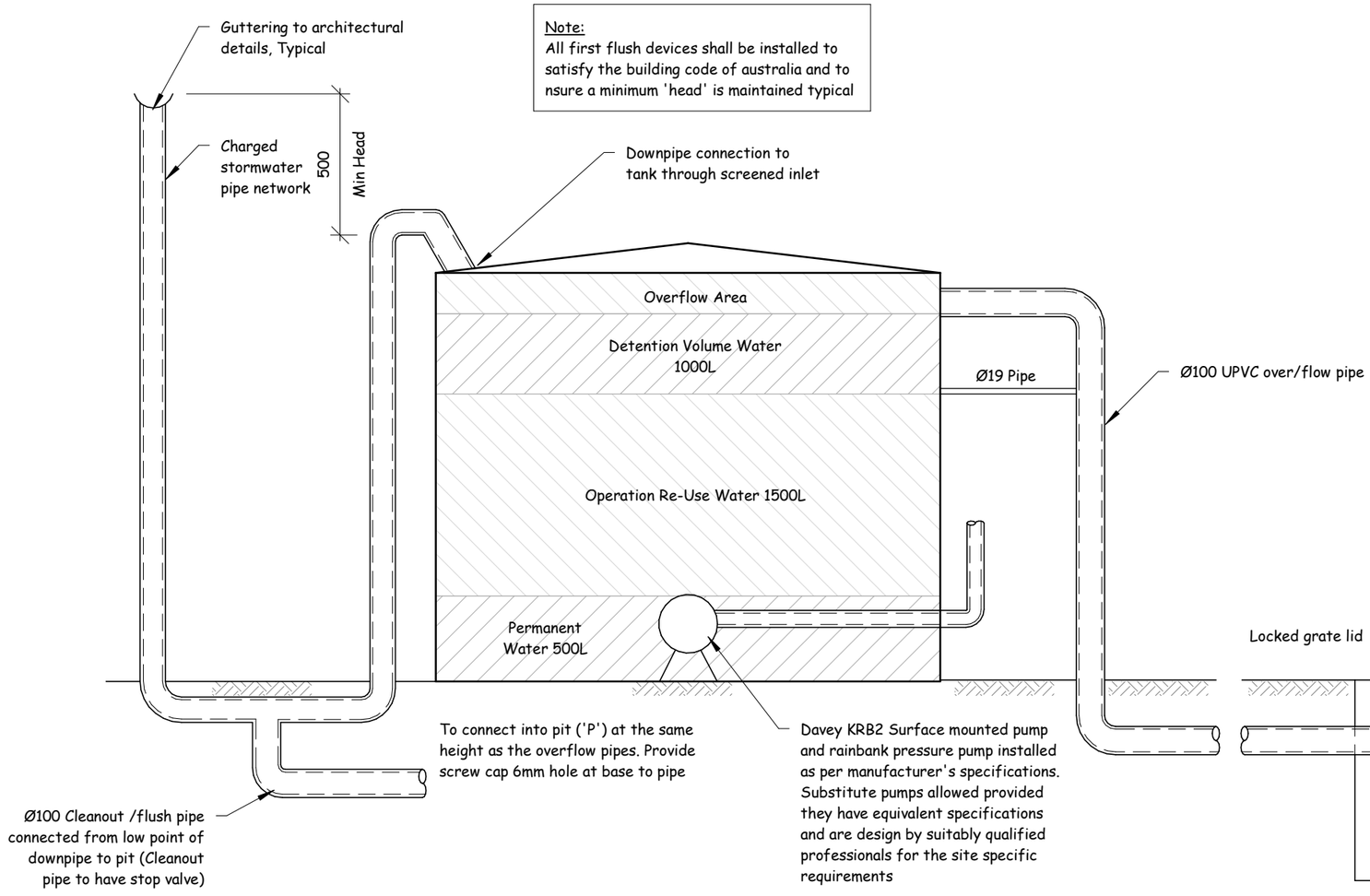
Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En22

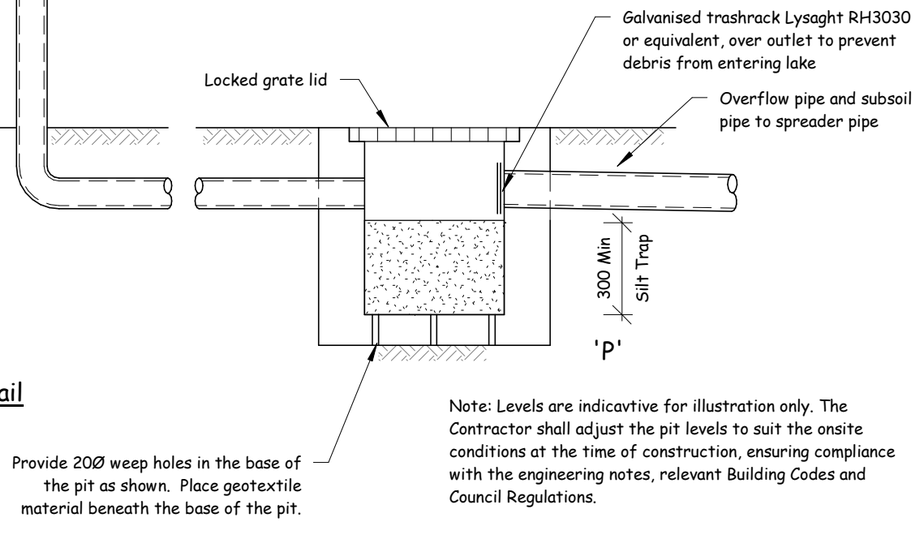
Scale: 1 : 200 @ A3

Note:
All first flush devices shall be installed to satisfy the building code of australia and to nsure a minimum 'head' is maintained typical

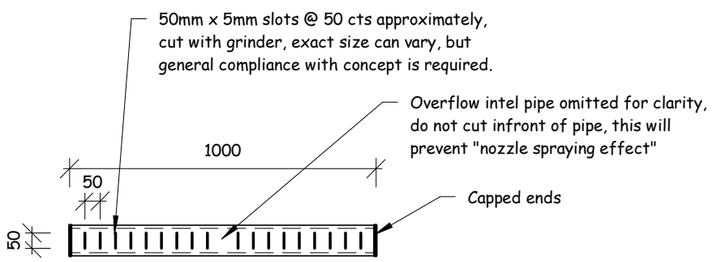


Typical 3000L Tank Detail

Scale 1:20



Note: Levels are indicavtive for illustration only. The Contractor shall adjust the pit levels to suit the onsite conditions at the time of construction, ensuring compliance with the engineering notes, relevant Building Codes and Council Regulations.



Typical Spreader Pipe Detail

Scale 1:20

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Address:

Date Started: 13-08-2019

Drawing No: 719-6970

Sheet: En23

Scale: 1 : 20 @ A3