



association of consulting and engineering

Building Code Clause(s).....

# PRODUCER STATEMENT – PS4 – CONSTRUCTION REVIEW

ISSUED BY:.....  
(Construction Review Firm)

TO:.....  
(Owner/Developer)

TO BE SUPPLIED TO:.....  
(Building Consent Authority)

IN RESPECT OF:.....  
(Description of Building Work)

AT:.....  
(Address)

Town/City:..... (Address)      **LOT**.....      **DP**.....      **SO**.....

We ..... (Construction Review Firm) have been engaged by .....

To provide CM1 CM2 CM3 CM4 CM5 (Engineering Categories) or  observation as per agreement with owner/developer.....

or  other ..... services  
(Extent of Engagement)

in respect of clause(s) ..... of the Building Code for the building work described in documents relating to Building Consent No. .... and those relating to

Building Consent Amendment(s) Nos. .... issued during the course of the works. We have sighted these Building Consents and the conditions of attached to them.

Authorised instructions/variation(s) No. .... (copies attached) or by the attached Schedule  have been issued during the course of the works.

On the basis of  this review  these review(s) and information supplied by the contractor during the course of the works and **on behalf of the firm** undertaking this Construction Review, **I believe on reasonable grounds** that  All or  Part only of the building works have been completed in accordance with the relevant requirements of the


Building Consent and Building Consent Amendments identified above, with respect to Clause(s)..... of the Building Code. I also believe on reasonable grounds that the persons who have undertaken this construction review have the necessary competency to do so.

I, ..... am:  CPEng.#  
(Name of Construction Review Professional)

I am a member of:  Engineering New Zealand and hold the following qualifications .....

The Construction Review Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000\*.

The Construction Review Firm is a member of ACE New Zealand:

**SIGNED BY**..... (Signature)   
(Name of Construction Review Professional)

**ON BEHALF OF** ..... Date .....  
(Construction Review Firm)

*Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000\*.*

This form is to accompany **Forms 6 or 8 of the Building (Form) Regulations 2004** for the issue of a Code Compliance Certificate.

**THIS FORM AND ITS CONDITIONS ARE COPYRIGHT TO ACE NEW ZEALAND AND ENGINEERING NEW ZEALAND**

# GUIDANCE ON USE OF PRODUCER STATEMENTS

Producer statements were first introduced with the Building Act 1991. The producer statements were developed by a combined task committee consisting of members of the New Zealand Institute of Architects, Institution of Professional Engineers New Zealand (now Engineering New Zealand), ACE New Zealand in consultation with the Building Officials Institute of New Zealand. The original suit of producer statements has been revised at the date of this form as a result of enactment of the Building Act (2004) by these organisations to ensure standard use within the industry.

The producer statement system is intended to provide Building Consent Authorities (BCAs) with reasonable grounds for the issue of a Building Consent or a Code Compliance Certificate, without having to duplicate design or construction checking undertaken by others.

**PS1 Design** Intended for use by a suitably qualified independent design professional in circumstances where the BCA accepts a producer statement for establishing reasonable grounds to issue a Building Consent;

**PS2 Design Review** Intended for use by a suitably qualified independent design professional where the BCA accepts an independent design professional's review as the basis for establishing reasonable grounds to issue a Building Consent;

**PS3 Construction** Forms commonly used as a certificate of completion of building work are Schedule 6 of NZS 3910:2013 or Schedules E1/E2 of NZIA's SCC 2011<sup>2</sup>

**PS4 Construction Review** Intended for use by a suitably qualified independent design professional who undertakes construction monitoring of the building works where the BCA requests a producer statement prior to issuing a Code Compliance Certificate.

This must be accompanied by a statement of completion of building work (Schedule 6).

The following guidelines are provided by ACE New Zealand and Engineering New Zealand to interpret the Producer Statement.

## Competence of Design Professional

This statement is made by a Design Firm that has undertaken a contract of services for the services named, and is signed by a person authorised by that firm to verify the processes within the firm and competence of its designers.

A competent design professional will have a professional qualification and proven current competence through registration on a national competence based register, either as a Chartered Professional Engineer (CPEng) or a Registered Architect.

Membership of a professional body, such as Engineering New Zealand (formerly IPENZ), provides additional assurance of the designer's standing within the profession. If the design firm is a member of the ACE New Zealand, this provides additional assurance about the standing of the firm.

Persons or firms meeting these criteria satisfy the term "suitably qualified independent design professional".

## \*Professional Indemnity Insurance

As part of membership requirements, ACE New Zealand requires all member firms to hold Professional Indemnity Insurance to a minimum level.

The PI Insurance minimum stated on the front of this form reflects standard, small projects. If the parties deem this inappropriate for large projects the minimum may be up to \$500,000.

## Professional Services during Construction Phase

There are several levels of service which a Design Firm may provide during the construction phase of a project (CM1-CM5 for Engineers<sup>3</sup>). The Building Consent Authority is encouraged to require that the service to be provided by the Design Firm is appropriate for the project concerned.

## Requirement to provide Producer Statement PS4

Building Consent Authorities should ensure that the applicant is aware of any requirement for producer statements for the construction phase of building work at the time the building consent is issued as no design professional should be expected to provide a producer statement unless such a requirement forms part of the Design firm's engagement.

## Attached Particulars

Attached particulars referred to in this producer statement refer to supplementary information appended to the producer statement.

## Refer Also:

- 1 Conditions of Contract for Building & Civil Engineering Construction  
NZS 3910: 2013
- 2 NZIA Standard Conditions of Contract SCC 2011
- 3 Guideline on the Briefing & Engagement for Consulting Engineering Services  
(ACE New Zealand/IPENZ 2004)
- 4 PN Guidelines on Producer Statements

[www.acenz.org.nz](http://www.acenz.org.nz)  
[www.engineeringnz.org](http://www.engineeringnz.org)



association of  
consulting and  
engineering



# Producer Statement Construction PS3

For guidance on how to use this template, please refer to information Sheet B-388 – Requirements for the Acceptance of PS3 Producer Statements and Construction Statements which is available from our website ([ccc.govt.nz/forms](http://ccc.govt.nz/forms)).

Companies Letterhead or Author's Name: .....

Tick applicable Contractor for:

<input checked="" type="checkbox"/> Building	<input type="checkbox"/> Emergency Lighting	<input type="checkbox"/> Cladding
<input type="checkbox"/> Waterproof Membranes	<input type="checkbox"/> Drainlayer	<input type="checkbox"/> Fire Alarm
<input type="checkbox"/> Mechanical (HVAC)	<input type="checkbox"/> Solar Heating	<input type="checkbox"/> Lift / Escalator ( <i>delete one</i> )
<input type="checkbox"/> Other (Specify): .....		

Issued by: ..... **WRIGHTWAY CONSTRUCTION LTD** ..... to Christchurch City Council.

## SECTION 1: OWNER

Owner: ..... **Wrightway Development 2018 Ltd** .....

Project Address: ..... **11 Kaiwara Street** .....

Description of Building Work: ..... **Foundations and Subfloor framing** .....

Scope of work covered by statement: **Partial Re-level, supply and install no23 Stainless steel brackets as per engineers design.**

System / Product used (if applicable): .....

I (Constructor): ..... **Doug McDougall** ..... have been engaged by  
..... **Wrightway Development 2018 Ltd** ..... (building consent applicant) to construct:

All  Part only

As specified in the attached particulars of Building Consent Number: **BCN20233997** ..... and its attached conditions and am satisfied on reasonable grounds that the building work specified above has been completed to the extent required by that Building Consent and complies with the Building Consent.

Specific reference to the Building Code:	<input checked="" type="checkbox"/> B1	<input checked="" type="checkbox"/> B2	C1	C2	C3	C4	C5	C6	D1	D2
What clauses of the Building Code are covered by the Producer Statement?	E1	E2	E3	F1	F2	F3	F4	F5	F6	F7
(Circle applicable clauses)	F8	G1	G2	G3	G4	G5	G6	G7	G8	G9
	G10	G11	G12	G13	G14	G15	H1			

I understand that this Producer Statement, if accepted, will be relied upon by Christchurch City Council for the purpose of establishing compliance with the Building Consent.

## SECTION 2: CONSTRUCTOR'S DETAILS

Name: ..... **Doug McDougall** ..... Registration Number: **BP125201** ..... or N/A

Qualifications / Experience: **Carpentry**

Address: ..... **1/954 Ferry Road, Woolston, Christchurch 8023** .....

Phone Number: HOME: ..... WORK: ..... MOBILE: **021 085 83684**

Fax: ..... Email: **contact@wrightwaynz.co.nz**

Signature: .....  ..... Date: **14.08.2023**

**NB: All sections of this PS3 must be completed.**



# Memorandum from licensed building practitioner: Record of building work

## Section 88, Building Act 2004

Please fill in the form as fully and correctly as possible.

If there is insufficient room on the form for requested details, please continue on another sheet and attach the additional sheet(s) to this form.

THE BUILDING	
Street address: <b>11 Kaiwara Street</b>	
Suburb: <b>Hoon Hay</b>	
Town/City: <b>Christchurch</b>	Postcode: <b>8025</b>

THE PROJECT
Building consent number: <b>BCN20233997</b>

THE OWNER(S)	
Name(s): <b>Wrightway Development 2018 Ltd</b>	
Mailing address: <b>Unit 1/954 Ferry Road</b>	
Suburb: <b>Ferrymead</b>	PO Box/Private Bag:
Town/City: <b>Christchurch</b>	Postcode: <b>8023</b>
Phone number: <b>0275378636</b>	Email address: <b>hamish@wrightwaynz.co.nz</b>

## RECORD OF WORK THAT IS RESTRICTED BUILDING WORK

### PRIMARY STRUCTURE

Work that is restricted building work	Description of restricted building work	Carried out or supervised
Tick <input checked="" type="checkbox"/>	If necessary, describe the restricted building work.	Tick <input checked="" type="checkbox"/> whether you carried out the restricted building work or supervised someone else carrying out the restricted building work.
Foundations and subfloor framing <input checked="" type="checkbox"/>	Partial Re-level, supply and install no23 Stainless steel brackets as per engineers design.	<input type="radio"/> Carried out <input checked="" type="radio"/> Supervised
Walls <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised
Roof <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised
Columns and beams <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised
Bracing <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised
Other <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised

## EXTERNAL MOISTURE MANAGEMENT SYSTEMS

Work that is restricted building work	Description of restricted building work	Carried out or supervised
Tick <input checked="" type="checkbox"/>	If necessary, describe the restricted building work.	Tick <input checked="" type="checkbox"/> whether you carried out the restricted building work or supervised someone else carrying out the restricted building work.
Damp proofing <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised
Roof cladding or roof cladding system <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised
Ventilation system (for example, subfloor or cavity) <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised
Wall cladding or wall cladding system <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised
Waterproofing <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised
Other <input type="checkbox"/>		<input type="radio"/> Carried out <input type="radio"/> Supervised

## ISSUED BY

Name and contact details of the licensed building practitioner who is licensed to carry out or supervise restricted building work.

Name: **Doug McDougall**

LBP number: **BP125201**

Class(es) licensed in:

**Carpentry**

Plumbers, Gasfitters and Drainlayers registration number (if applicable):

Mailing address (if different from below):

Street address/Registered office: **1/954 FERRY ROAD**

Suburb: **WOOLSTON**

Town/City: **CHRISTCHURCH**

PO Box/Private Bag

Postcode: **8023**

Phone number:

Mobile: **021 085 83684**

After hours:

Fax:

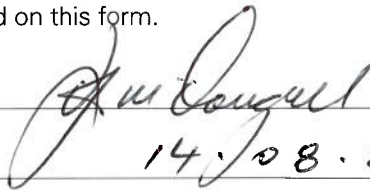
Email address: **contact@wrightwaynz.co.nz**

Website: **www.wrightwaynz.co.nz**

## DECLARATION

I, **Doug McDougall** carried out or supervised the restricted building work recorded on this form.

Signature: \_\_\_\_\_



Date: \_\_\_\_\_

**14.08.2023**

# Viden Group

## Engineering Advice Record

**Address:** 11 Kaiwara Street, Hoon Hay, Christchurch 8025  
**Client** Wrightway Construction  
**Project Ref:** 226-159  
**Date:** 21.07.2023  
**Advice By:** Mark Patterson  
**EA Record No.** EA01

### Alternative Foundation Connection Detailing

- Alternative foundation reconnection detailing is provided in A06 in the attached updated drawings set.
- Calculations are also appended to this document.

# Viden Group

## Structural Drawings

**Pages:**

**Address:**

**Client:**

**Project Ref.**

**Revision:**

**Date:**

## GENERAL

1. Drawings are to be read in conjunction with all notes, structural specification, and all other relevant information, including geotechnical reports, Building Consent Conditions, and architectural drawings.
2. The contractor is to carry out a thorough review to become familiar with the provided information. It is the contractor's responsibility to immediately notify the engineer of any conflicts or existing conditions not shown or different from those shown on drawings prior to commencement of work
3. Do not scale Engineers drawings, use written dimensions and Architectural set out.
4. All work shall be carried out in accordance with the drawings, Building Act, Council Regulations, and relevant NZ Standards.

## MATERIAL SPECIFICATION AND REQUIREMENTS

### CONCRETE

1. Contractor shall protect all utility lines, etc. encountered during excavation and backfilling.
2. See architects plans for locations of slab slopes, depressions, kerbs, drains, non-structural partitions, and other embedded items not shown on the structural plans.
3. All structural concrete shall be 25Mpa compressive strength at 28 days.
4. All concrete work and materials shall be carried out to comply with NZS3104, NZS3109, NZS3101 and Council regulations.
5. Cuts into any concrete element are not to be made unless specifically detailed.
6. All cold joint surfaces are to be scabbled / roughened to ensure adhesion unless specifically detailed otherwise. Minimum amplitude +/- 5mm.
7. Compacted hardfill AP40 in 150mm layers is to extend 1.0m beyond the building footprint unless specifically detailed.
8. A 25mm sand blinding layer is to be placed, screeded, and compacted over the building platform.
9. DPM (0.25mm polythene membrane) is to be lapped 200mm and taped at joints and penetrations.

### STRUCTURAL STEEL

1. All structural steel shall be a minimum of grade 300 (300MPa), unless otherwise specified.
2. All steel elements are to be manufactured to NZS3404, NZS3679, NZS1163 and all other relevant standards.
3. All steel element lengths and dimensions are to be confirmed by the Contractor and Fabricator.
4. All welding consumables are to be Structural Grade to NZS1554
5. Welding: 'sp' grade 5mm fillet weld all around Ex48 u.n.o.
6. Protection to all structural steel (including connections) shall meet the durability requirements of 50 years min.
7. All bolts are to be a minimum of the values outlined below, unless specifically detailed otherwise:
  - Steel to Steel OR Steel to Concrete - High Grade 8.8 (830MPa)
  - All other connections - Grade 4.6 (400MPa)

### MASONRY

1. Concrete to be minimum 20MPa ultimate compressive strength at 28 days.
2. Cover to the steel reinforcement to be greater than 75mm u.n.o.
3. Joints in reinforcing steel to be lapped for a minimum length of 40 bar diameters
4. Reinforcement spacing and construction joints as per NZS4229:2013 and NZS4230:2004.

### TIMBER:

1. All construction and work is to be carried out in accordance with design and construction standards not requiring specific engineering design, NZS3604:2011 and NZS4229:2013, as required; unless specifically altered by specific engineering design
2. 50mm x 30mm washer to all bolts against a Timber Face u.n.o

### REINFORCING STEEL

1. Steel shall be kept clean and free of rust.
2. Bend reinforcing bars cold. Re-bending is not permitted.
3. All reinforcement and mesh shall be Ductile Plus (or equivalent) Grade 200E or 500E and comply with NZS4671
  - SE – Deformed welded wire mesh (500MPa)
  - R – Plain bars (300MPa)
  - HR - Plain bars (500MPa)
  - D - Deformed bars (300MPa)
4. All reinforcement lap lengths are to be a minimum of the following unless specifically detailed:
  - SE – maximum of 250mm or grid width + 50mm
  - R – 80 x bar diameter
  - HR – 140 x bar diameter
  - D – 40 x bar diameter
  - HD – 70 x bar diameter
5. All reinforcement bends are to be to NZS3109 and NZS3101:
  - Minimum diameter of bend in main bars:
    - 6-20mm bar – 5 x bar diameter
    - 24 – 40mm bar – 6x bar diameter
  - Minimum diameter of bend in stirrups and ties:
    - 6-20mm plain bar – 2 x bar diameter
    - 6-20mm deformed bar – 4 x bar diameter
    - 24-40mm plain bar – 3x bar diameter
    - 24-40mm deformed bar – 6x bar diameter
6. All reinforcement hooks are to be standard to NZS3101 8.6.10:
  - A semi-circular turn plus an extension of at least four bar diameters but equal to or greater than 65mm at the free end of the bar; or
  - A 90 degree turn plus an extension of at least 12 bar diameters for a deformed bar and 16 bar diameters for plain bar at the free end of the bar; or
  - A stirrup hook, a 135 degree turn plus an extension of at least 6 bar diameters for a deformed bar and 8 bar diameters for plain bar at the free end of the bar

7. All reinforcement cover should align as closely as practicably possible to the following minimum distances:
  - Adjacent to unprotected ground - 75mm adjacent to formwork - 50mm
  - Adjacent to DPM - 50mm
  - Top cover (enclosed) - 25mm
  - Top cover (exposed) - 40mm

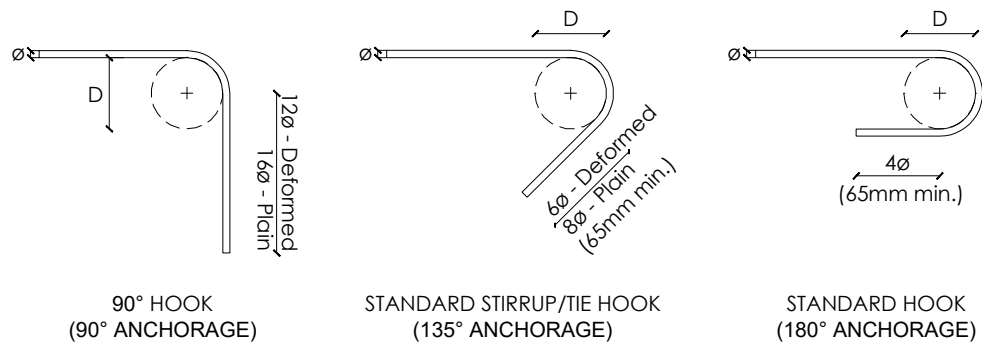
### NZS3604:2011 and NZS4229:2013

1. All construction and work are to be carried out in accordance with design and construction standards not requiring specific engineering design, NZS3604:2011 and NZS4229:2013, as required, unless specifically altered by specific engineering design (SED).
2. It is the Contractors responsibility to construct all relevant elements to all relevant standards and relevant Council regulations. This includes but is in no way limited to:
  - Timber framing, blocking, connections, and bracing.
  - Floor framing, blocking, connections, and diaphragms.
  - Roof framing, blocking, connections, diaphragms, and bracing.

### CONSTRUCTION MONITORING

1. In order to supply a PS4, the Structural Engineer construction monitoring as per the Construction Monitoring Inspection Schedule provided. Organise inspections at least 48 hours prior; ensure all work is finished at the time of inspection. Incomplete work will cause delays or re-inspections.
2. It is the Contractors responsibility to organise the required Construction Monitoring Service with the Structural Engineer. A PS4 will not be supplied in the event that all required Construction Monitoring has not occurred.
3. Confirmation and approval by the Engineer of assumed site parameters will be required prior to Structural Approval of any foundation elements.

# CONCRETE - REINFORCING BAR DETAILS



BAR SIZE	MAIN STEEL	STIRRUPS AND TIES PLAIN	STIRRUPS AND TIES DEFORMED
6	30	12	24
10	50	20	40
12	60	24	48
16	80	32	64
20	100	40	80
25	150	75	150
32	192	96	192
40	240	120	240

MINIMUM DIAMETERS OF BENDS OF REINFORCING BARS

LAP LENGTHS FOR DEFORMED BARS (mm)

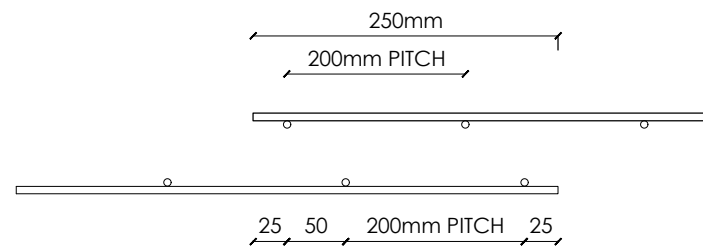
BAR SIZE	D BARS GRADE 300	HD BARS GRADE 500
10	400	600
12	480	720
16	640	960
20	800	1200
25	1000	1500
32	1280	1920

\* 30 MPa CONCRETE CONSIDERED

CONCRETE COVER (mm)

SURFACE CASE	CONCRETE COMPRESIVE STRENGTH (MPa)		
	25	30	40
CAST AGAINST THE GROUND	75	75	75
CAST AGAINST DPM	50	50	50
EXTERIOR ENVIRONMENT WITHIN 500m OF HIGH TIDE	50	45	40
OTHER EXTERIOR ENVIRONMENT	40	35	30
INTERIOR ENVIRONMENT	25	20	20

MESH LAPPING DETAIL

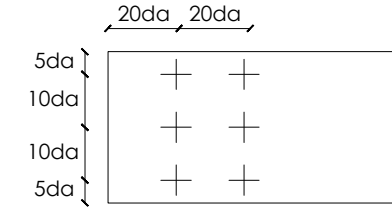


# STEEL CONNECTIONS

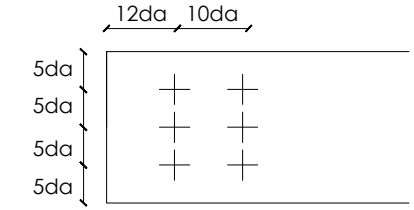
MINIMUM BOLT EDGE DISTANCES AND PITCH (mm)

BOLT SIZE	SHEARED OR HADN FLAME CUT	ROLLED PLATE, MACHINE FLAME CUT SAWN OR PANED EDGE	ROLLED EDGE OF ROLLED FLAT BAR OR SECTION	PITCH (PREFERRED)	PITCH (MINIMUM)
10	18	15	13	32	25
12	21	18	15	40	30
16	28	24	20	50	40
20	35	30	25	70	50
24	42	36	30	80	60
30	53	45	38	100	80
36	63	54	45	120	90

# TIMBER FIXINGS

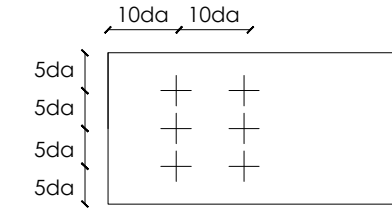


MINIMUM SPACING OF NAILS - NO PREBORING ALL TIMBER EXCEPT RADIATA PINE

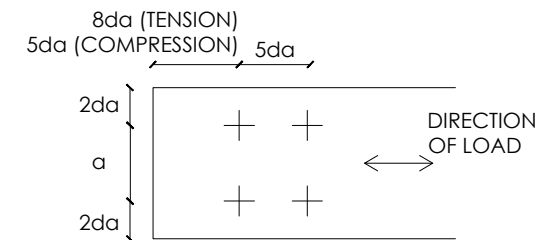


MINIMUM SPACING OF NAILS - NO PREBORING RADIATA PINE ONLY

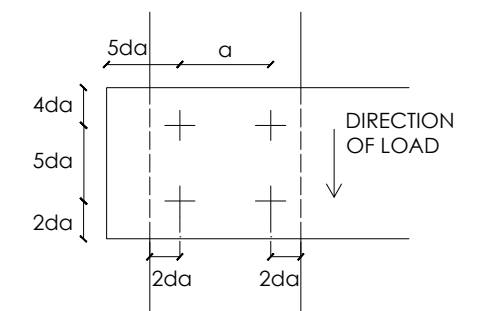
\* da: DIAMETER OF THE FASTENER



MINIMUM SPACING OF NAILS AND SCREWS PREBORING 0.8da - ALL TIMBER

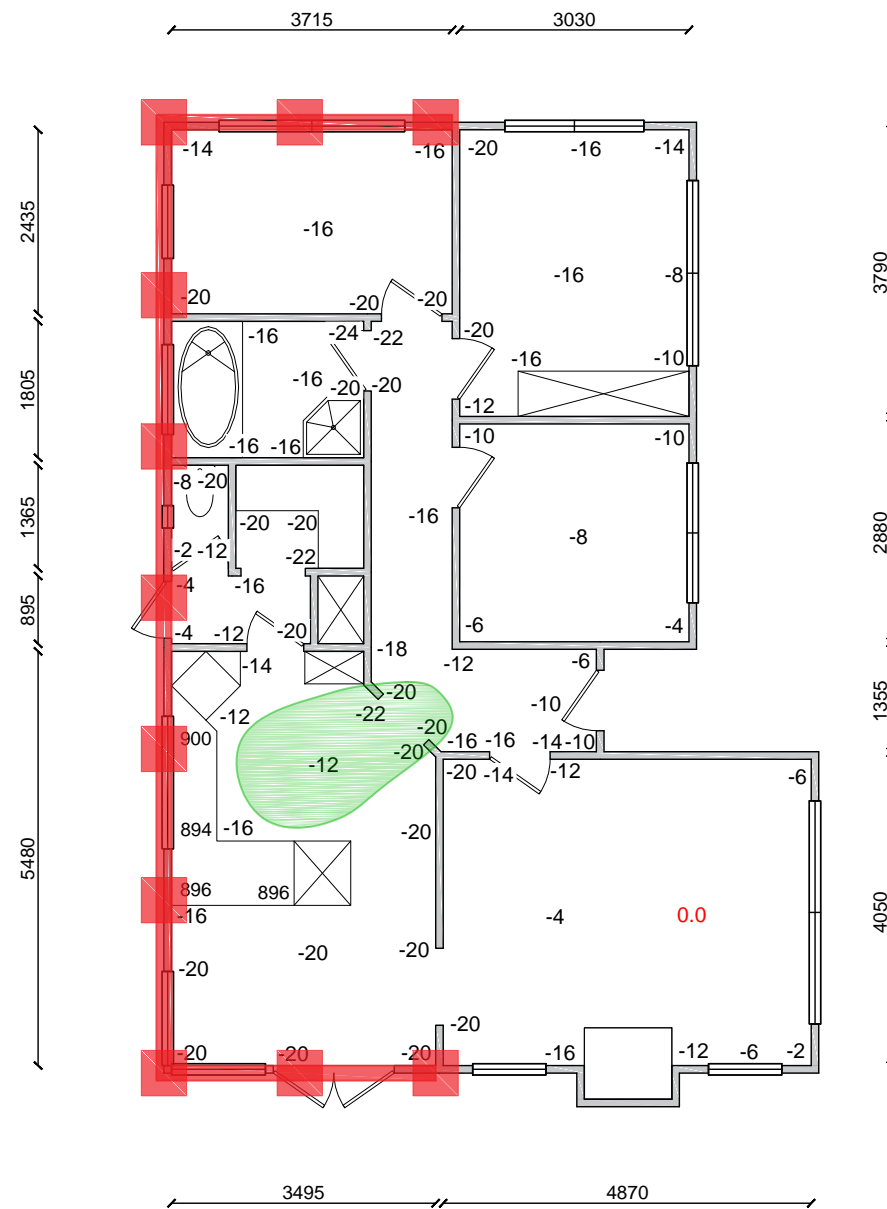


MINIMUM SPACING OF BOLTS LOADED PARALLEL TO GRAIN - ALL TIMBER



MINIMUM SPACING OF BOLTS LOADED PERPENDICULAR TO GRAIN - ALL TIMBER







 FLOOR PLAN

DWELLING TO BE RE-LEVELLED AS FAR AS IS ACHIEVABLE USING REPAIR STRATEGY OUTLINED BELOW.

THE FINAL LEVELS SHALL BE DETERMINED BY THE PERFORMANCE OF THE EXISTING STRUCTURE.

THE CONTRACTOR SHALL MONITOR THE EXISTING STRUCTURE DURING THE RE-LEVELLING PROCESS. IF DAMAGE IS RESULTING, WORK SHOULD BE STOPPED IMMEDIATELY

 REMOVE OVER-PINNING & UNDER-PIN  
UNDERPINS TO BE LOCATED AT 2m CRS MAX

 REPAIR JOISTS IN KITCHEN AREA

Note: Soil bearing capacity and appropriateness is to be confirmed during construction by a geotechnical engineer.

11 Kaiwara St  
Hoon Hay  
Christchurch 8025

ISSUE :  
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REPAIR PLAN

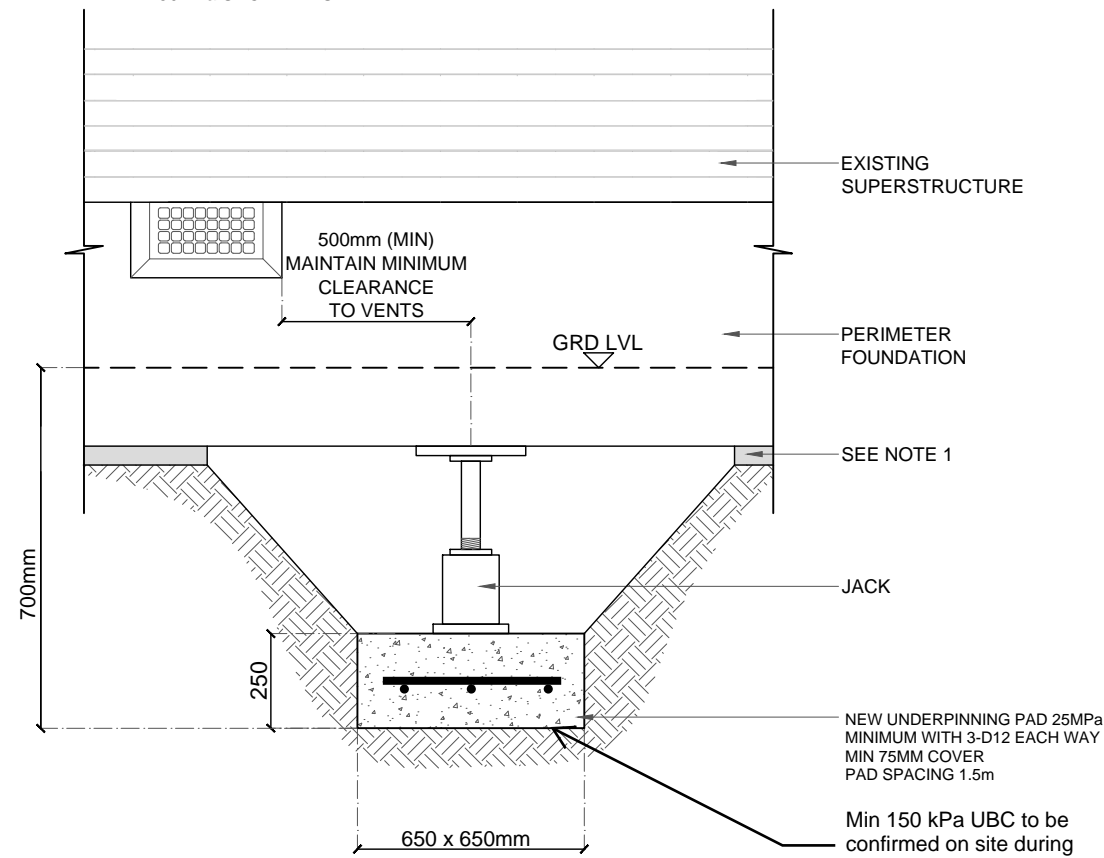
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DATE PRINTED 2018 Wednesday, 26 September

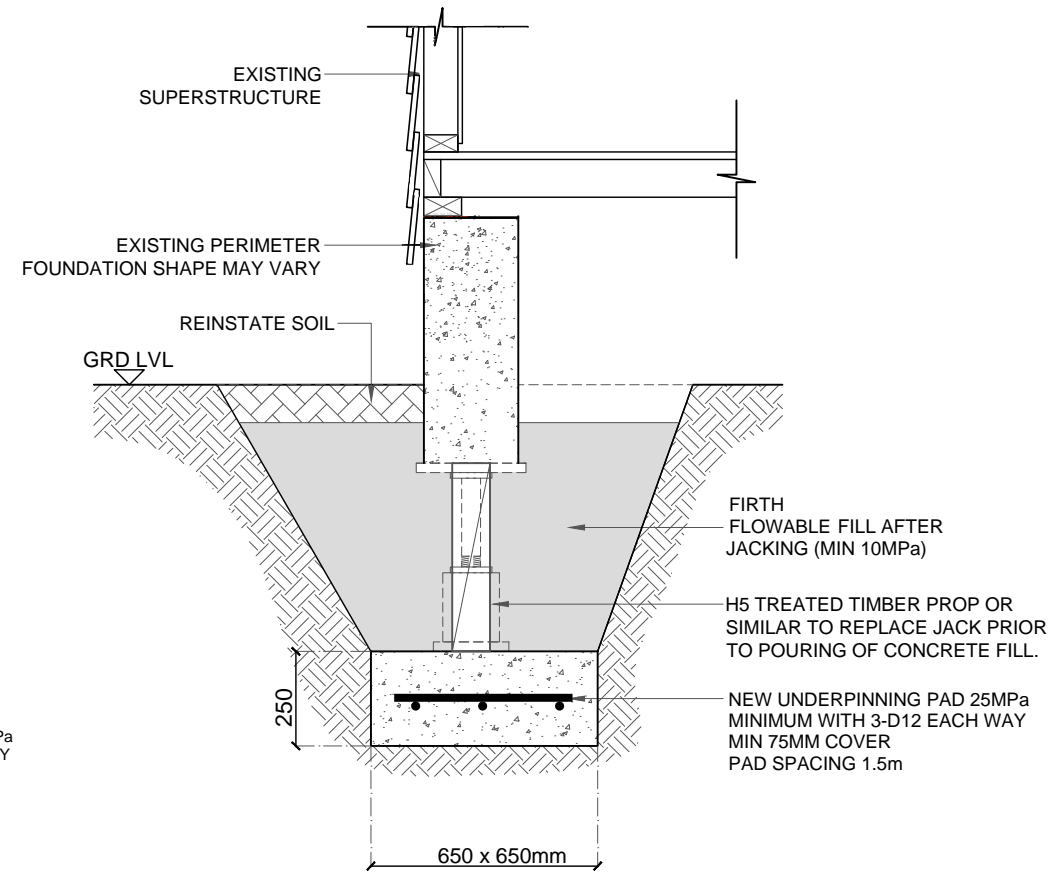


**NOTES**

1. GRUB OUT BELOW FOUNDATION BETWEEN JACKING PADS AND FILL WITH NON SHRINK FLOWABLE GROUT
2. INSPECTION OF GROUND AT BASE OF EXCAVATION REQUIRED BY ENGINEER
3. EXCAVATIONS TO BE TAKEN THROUGH ANY TOPSOIL OR FILL AND BE FOUNDED IN 150 kPa UBC MINIMUM.



**PERIMETER FOUNDATION JACKING USING REINFORCED CONCRETE JACKING PADS (ELEVATION)**



**PERIMETER FOUNDATION JACKING USING REINFORCED CONCRETE JACKING PADS (SECTION)**

**Note: Soil bearing capacity and appropriateness is to be confirmed during construction by a geotechnical engineer.**

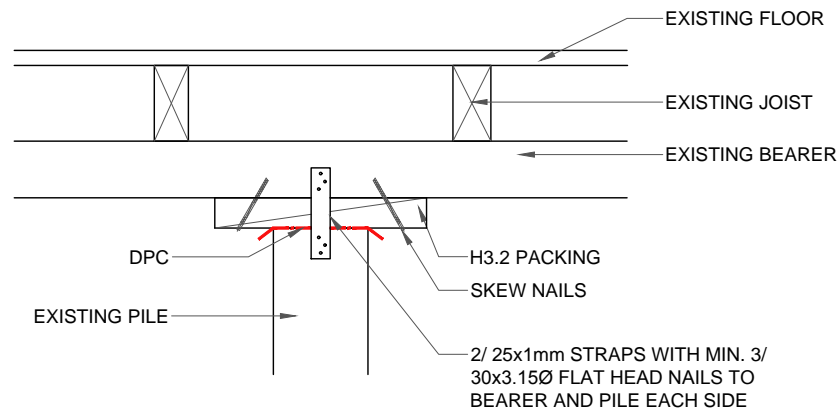
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Hoon Hay  
Christchurch 8025

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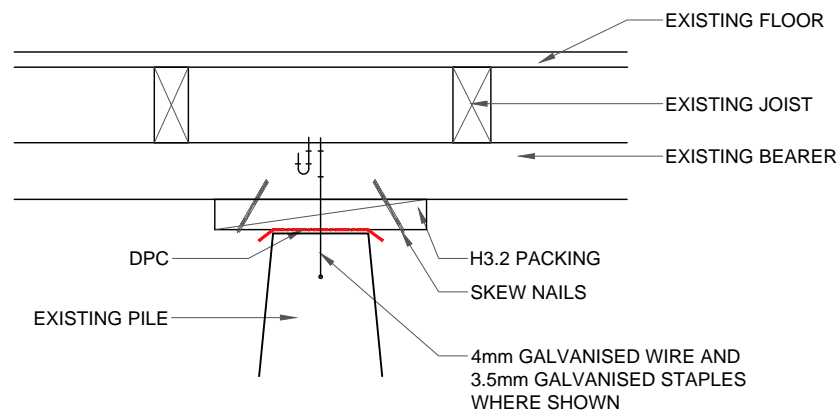
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○ TIMBER PILE PACKING DETAIL



○ CONC PILE PACKING DETAIL

JACK & PACK NOTES

1. ALL CONSTRUCTION AND FIXINGS IN ACCORDANCE WITH THE BUILDING CODE & NZS 3604:2011.
2. H3.2 PACKERS TO BE THE FULL WIDTH OF THE BEARER & EXTEND THE FULL WIDTH OF THE PILE TOP
3. REPLACE PILE IF 100mm OR MORE PACKING IS REQUIRED.
4. REPLACE PILE IF ANY PILE IS LEANING 15mm OFF PLUMB OR LOOSE IN IT'S FOOTING
5. ALL STEEL FIXINGS AS REQUIRED BY NZS 3604:2011 (FIXINGS WITHIN 600mm OF GROUND LEVEL MUST BE STAINLESS STEEL)
6. CONTRACTOR SHALL MONITOR EXISTING STRUCTURE DURING RE-LEVELLING PROCESS. IF DAMAGE IS RESULTING DUE TO FLOOR RE-LEVELLING, WORK SHOULD BE STOPPED IMMEDIATELY.

11 Kaiwara St  
Hoon Hay  
Christchurch 8025

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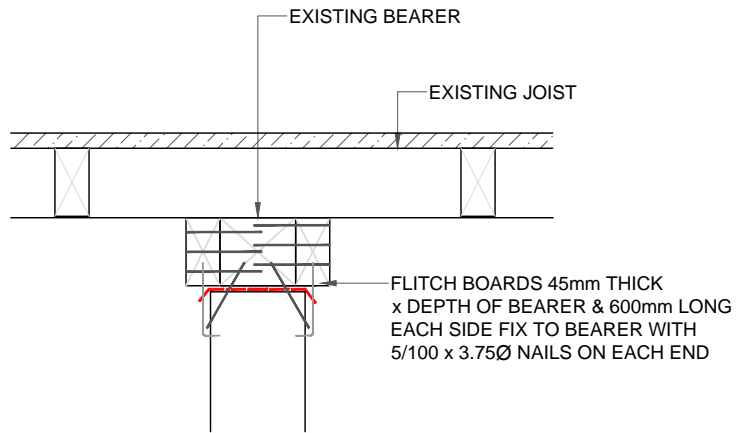
PILE PACKING DETAILS

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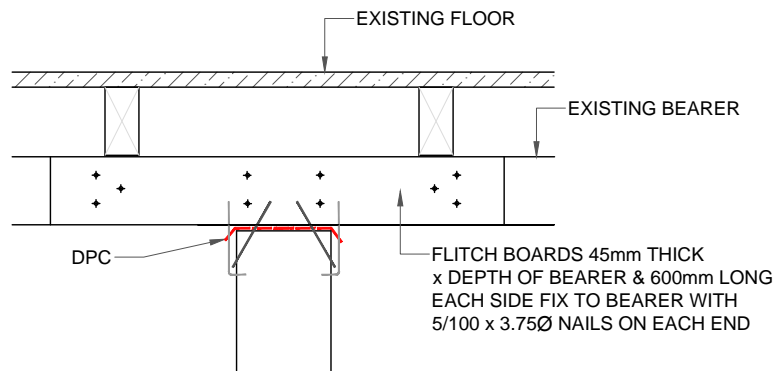
A-04

DATE PRINTED  
2018

Wednesday, 26 September



SECTION OF BEARER



ELEVATION OF BEARER

NOTES:

1. ALL CONSTRUCTION AND FIXINGS IN ACCORDANCE WITH THE BUILDING CODE & NZS 3604:2011.
2. ALL STEEL FIXINGS TO BE TYPE 304 STAINLESS STEEL.
3. ALL NEW TIMBER SHALL BE RADIATA PINE SG8 GRADE.
4. WHERE HARDWOOD TIMBER PREVENTS NAIL DRIVING DRILL PILOT HOLES TO 0.8 x DIA OF FIXING TO ASSIST PLACEMENT.
5. ALL DIMENSIONS SHOWN ARE MINIMUM UNLESS NOTED OTHERWISE
6. TO BE READ IN CONJUNCTION WITH SPECIFICATION.

11 Kaiwara St  
Hoon Hay  
Christchurch 8025

ISSUE :

DRAWN BY : MT

REVISION :

SCALE : 1:10 @A4

PAGE TITLE :

FLITCHING DETAIL

PAGE :

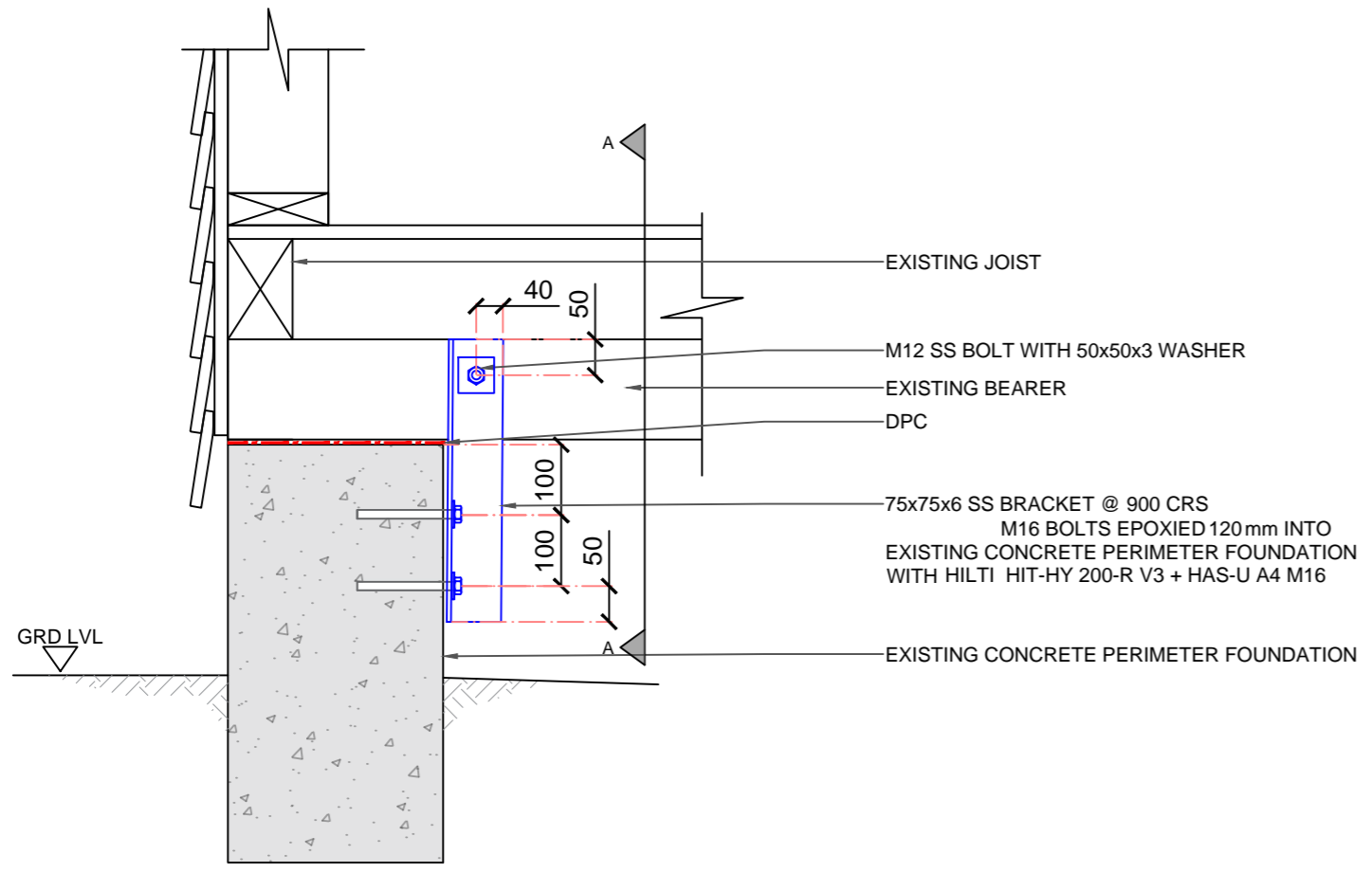
A-05

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2018

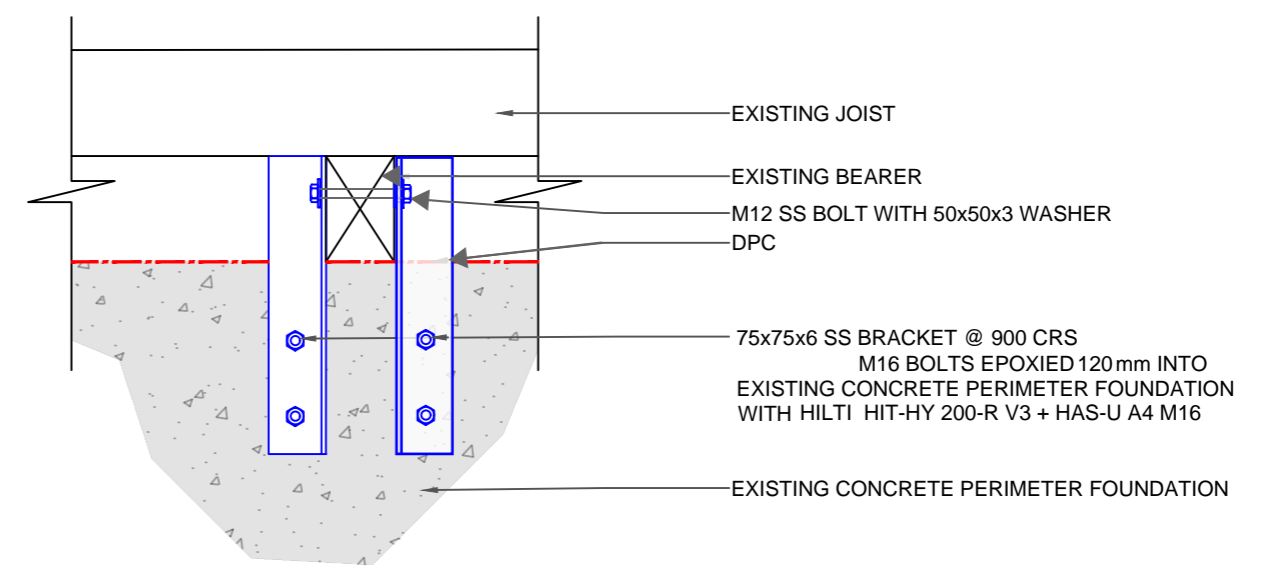
Wednesday, 26 September

**VIDEN GROUP**  
consulting engineers

These plans has been prepared on specific instructions from a particular client in connection with a specific project. The plans are not to be relied upon by any other person or for any other purpose. We accept no liability to third parties nor do we contemplate that these plans will be relied upon by third parties.



EXISTING BEARER TO EXISTING PERIMETER FOUNDATION CONNECTION DETAIL  
scale 1:10



SECTION A-A  
scale 1:10

11 Kaiwara St  
Hoon Hay  
Christchurch 8025

ISSUE :  
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DRAWN BY :  
REVISION :  
SCALE : @A3  
PAGE TITLE : Perimeter Foundation Connection  
PAGE : A06  
DATE PRINTED :

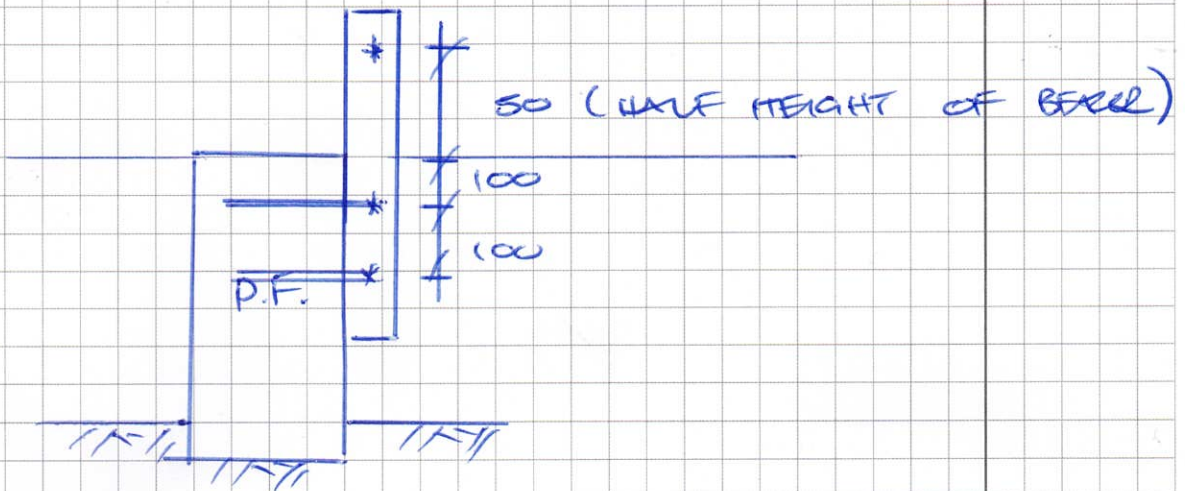
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consulting engineers

## BEAM CONNECTION

ONLY FROM CONNECTION IF A S/S WEDGE CAN BE USED TO CONNECT BEAMS TO SUBFLOOR ELEMENT.

FROM 260411 MINIMUM STRENGTH REQUIREMENTS ARE AS FOLLOWS:

- (1) - IN PLANE OF WALL = 5kN.
- (2) - OUT OF " " " = 4kN.
- (3) - VERTICAL LOADS = 8kN.



∞ MAX FORCE ON BOLTS

$$(1) \quad 5kN \times \frac{0.25}{0.1} = 12.5kN$$

(2) OUT OF PLANE

$$4kN \times \frac{0.25}{1.0} = 10.0kN.$$

WILL COVER.

(3) VERTICAL = 4 kN / ANCHOR

Project Name 9 LOWEN AVE Designed M.P.

Project Number

Description REPAIR & SUBFLOOR FIXING

Checked

REFER TO PROFITS AND/OR DESIGN GIP.  
FA CAPACITY O.K. BS OBS. (SMALL  
LOAD, SMALL LEVER ARM.)

NOTE THE FOLLOWING FOR THE DESIGN

(1) LIFT: CONCR BOLT USED FOR LIFT.

(2) USE ROW FOR COI OF PLANE  
CROSS DOWN/METER

USE 2/MIG M16 HIT-HY 200-R + HD U  
TH M16'S B A 75 FA FOR  
CONNECTION DESIGN

**Specifier's comments:**

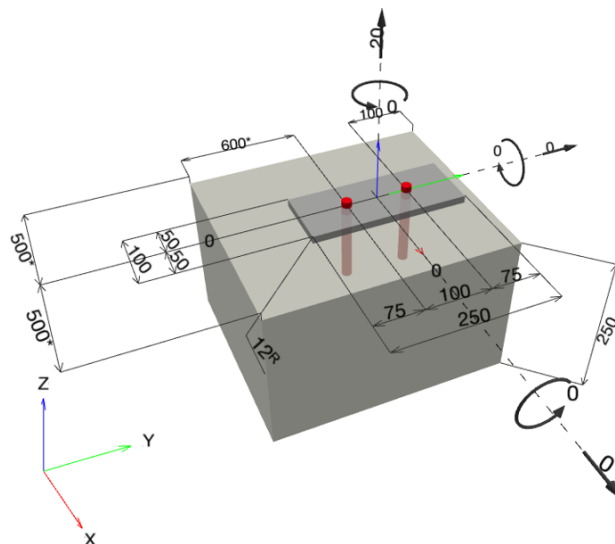
**1 Input data**



<b>Anchor type and diameter:</b>	<b>HIT-HY 200-R V3 + HAS-U A4 M16</b>
Return period (service life in years):	50
Item number:	2223849 HAS-U A4 M16x165 (element) / 2262131 HIT-HY 200-R V3 (adhesive)
Effective embedment depth:	$h_{ef,act} = 120.0 \text{ mm}$ ( $h_{ef,limit} = - \text{ mm}$ )
Material:	A4
Evaluation Service Report:	ETA 19/0601
Issued   Valid:	2/06/2023   -
Proof:	Design Method New Zealand NZS 3101, chapter 17.5.5 – ETAG Design; EOTA TR 029+ Seismic (EOTA TR 045)
Seismic performance category:	C1
Seismic proof type:	5.3 a2) Elastic design
Seismic load percentage $\leq 20\%$ :	no
Stand-off installation:	$e_b = 0.0 \text{ mm}$ (no stand-off); $t = 12.0 \text{ mm}$
Anchor plate <sup>R</sup> :	$l_x \times l_y \times t = 100.0 \text{ mm} \times 250.0 \text{ mm} \times 12.0 \text{ mm}$ ; (Recommended plate thickness: not calculated)
Profile:	no profile
Base material:	cracked concrete, C20/25, $f_{c,cube} = 25.00 \text{ N/mm}^2$ ; $h = 250.0 \text{ mm}$ , Temp. short/long: 40/24 °C
<b>Installation:</b>	<b>hammer drilled hole, Installation condition: Dry</b>
Reinforcement:	no reinforcement or reinforcement spacing $\geq 150 \text{ mm}$ (any $\emptyset$ ) or $\geq 100 \text{ mm}$ ( $\emptyset \leq 10 \text{ mm}$ ) no longitudinal edge reinforcement Reinforcement to control splitting according to EOTA TR 029, 5.2.2.6 present.

<sup>R</sup> - The anchor calculation is based on a rigid anchor plate assumption.

**Geometry [mm] & Loading [kN, kNm]**



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Design: Concrete - Aug 5, 2022	Date: 9/08/2023
Fastening point:	

**1.1 Load combination**

Case	Description	Forces [kN] / Moments [kNm]	Seismic	Fire	Max. Util. Anchor [%]
1	Combination 1	N = 20.000; V <sub>x</sub> = 0.000; V <sub>y</sub> = 0.000; M <sub>x</sub> = 0.000; M <sub>y</sub> = 0.000; M <sub>z</sub> = 0.000;	C1	no	93

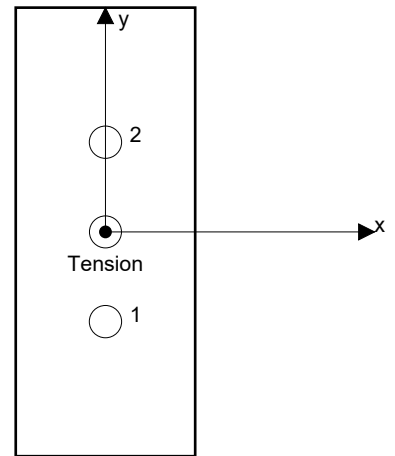
**2 Load case/Resulting anchor forces**

**Anchor reactions [kN]**

Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	10.000	0.000	0.000	0.000
2	10.000	0.000	0.000	0.000

max. concrete compressive strain: - [%]  
 max. concrete compressive stress: - [N/mm<sup>2</sup>]  
 resulting tension force in (x/y)=(0.0/0.0): 20.000 [kN]  
 resulting compression force in (x/y)=(0.0/0.0): 0.000 [kN]



Anchor forces are calculated based on the assumption of a rigid anchor plate.

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### 3 Tension load (EOTA TR 029, Section 5.2.2, EOTA TR 045, Section 5.6)

	Load [kN]	Capacity [kN]	Utilization $\beta_N$ [%]	Status
Steel Strength*	10.000	58.770	18	OK
Combined pullout-concrete cone failure**	20.000	22.582	89	OK
Concrete Breakout Failure**	20.000	21.646	93	OK
Splitting failure**	N/A	N/A	N/A	N/A

\* highest loaded anchor    \*\*anchor group (anchors in tension)

#### 3.1 Steel Strength

$$N_{Sd,seis} \leq N_{Rd,s,seis} = \frac{N_{Rk,s,seis}}{\gamma_{M,s,seis}} \quad \text{EOTA TR 029, Table 5.2.2.1, EOTA TR 045, Eq.(5.7)}$$

$$N_{Rk,s,seis} = \alpha_{gap} \cdot \alpha_{seis} \cdot N_{Rk,s,seis}^0 \quad \text{EOTA TR 045, Eq.(5.8)}$$

$N_{Rk,s,seis}^0$ [kN]	$\alpha_{gap}$	$\alpha_{seis}$	$N_{Rk,s,seis}$ [kN]
109.900	1.000	1.000	109.900
$\gamma_{M,s,seis}$	$N_{Rd,s,seis}$ [kN]	$N_{Sd,seis}$ [kN]	
1.870	58.770	10.000	

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**3.2 Combined pullout-concrete cone failure**

$$N_{Sd,seis} \leq N_{Rd,p,seis} = \frac{N_{Rk,p,seis}}{\gamma_{M,p,seis}} \quad \text{EOTA TR 029, Table 5.2.2.1, EOTA TR 045, Eq. (5.7)}$$

$$N_{Rk,p,seis} = \alpha_{gap} \cdot \alpha_{seis} \cdot N_{Rk,p}^0 \cdot \frac{A_{p,N}^0}{A_{p,N}^0} \cdot \psi_{s,Np} \cdot \psi_{g,Np} \cdot \psi_{ec1,Np} \cdot \psi_{ec2,Np} \cdot \psi_{re,Np} \quad \text{EOTA TR 029, Eq. (5.2), EOTA TR 045, Eq. (5.8)}$$

$$N_{Rk,p}^0 = \pi \cdot d \cdot h_{ef} \cdot \tau_{RK} \quad \text{EOTA TR 029, Eq. (5.2a)}$$

$$A_{p,N}^0 = s_{cr,Np} \cdot s_{cr,Np} \quad \text{EOTA TR 029, Eq. (5.2b)}$$

$$s_{cr,Np} = 20 \cdot d \cdot \left( \frac{\tau_{RK,ucr}}{7.5} \right)^{0.5} \leq 3 \cdot h_{ef} \quad \text{EOTA TR 029, Eq. (5.2c)}$$

$$c_{cr,Np} = \frac{s_{cr,Np}}{2} \quad \text{EOTA TR 029, Eq. (5.2d)}$$

$$\psi_{s,Np} = 0.7 + 0.3 \cdot \frac{c}{c_{cr,Np}} \leq 1.00 \quad \text{EOTA TR 029, Eq. (5.2e)}$$

$$\psi_{g,Np} = \psi_{g,Np}^0 - \left( \frac{s}{s_{cr,Np}} \right)^{0.5} \cdot (\psi_{g,Np}^0 - 1) \geq 1.00 \quad \text{EOTA TR 029, Eq. (5.2f)}$$

$$\psi_{g,Np}^0 = \sqrt{\bar{n}} - (\sqrt{\bar{n}} - 1) \cdot \left( \frac{d \cdot \tau_{RK}}{k \cdot \sqrt{h_{ef}} \cdot f_{ck,cube}} \right)^{1.5} \geq 1.00 \quad \text{EOTA TR 029, Eq. (5.2g)}$$

$$\psi_{ec1,Np} = \frac{1}{1 + \frac{2 \cdot e_{c1,N}}{s_{cr,Np}}} \leq 1.00 \quad \text{EOTA TR 029, Eq. (5.2h)}$$

$$\psi_{ec2,Np} = \frac{1}{1 + \frac{2 \cdot e_{c2,N}}{s_{cr,Np}}} \leq 1.00 \quad \text{EOTA TR 029, Eq. (5.2h)}$$

$$\psi_{re,Np} = 0.5 + \frac{h_{ef}}{200} \leq 1.00 \quad \text{EOTA TR 029, Eq. (5.2i)}$$

$A_{p,N} [mm^2]$	$A_{p,N}^0 [mm^2]$	$\tau_{RK,ucr,25} [N/mm^2]$	$s_{cr,Np} [mm]$	$c_{cr,Np} [mm]$	$c_{min} [mm]$
136,800	129,600	18.00	360.0	180.0	100.0
$\psi_{c,seis}$	$\tau_{RK,seis} [N/mm^2]$	$k$	$\psi_{g,Np}^0$	$\psi_{g,Np}$	
1.000	7.00	2.300	1.067	1.032	
$e_{c1,N} [mm]$	$\psi_{ec1,Np}$	$e_{c2,N} [mm]$	$\psi_{ec2,Np}$	$\psi_{s,Np}$	$\psi_{re,Np}$
0.0	1.000	0.0	1.000	0.867	1.000
$N_{Rk,p}^0 [kN]$	$\alpha_{gap}$	$\alpha_{seis}$	$N_{Rk,p,seis} [kN]$		
42.223	1.000	0.850	33.872		
$\gamma_{M,p,seis}$	$N_{Rd,p,seis} [kN]$	$N_{Sd,seis} [kN]$			
1.500	22.582	20.000			

Group anchor ID

1, 2

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**3.3 Concrete Breakout Failure**

$$N_{Sd,seis} \leq N_{Rd,c,seis} = \frac{N_{Rk,c,seis}}{\gamma_{M,c,seis}} \quad \text{EOTA TR 029, Table 5.2.2.1, EOTA TR 045, Eq. (5.7)}$$

$$N_{Rk,c,seis} = \alpha_{gap} \cdot \alpha_{seis} \cdot N_{Rk,c}^0 \cdot \frac{A_{c,N}}{A_{c,N}^0} \cdot \psi_{s,N} \cdot \psi_{re,N} \cdot \psi_{ec1,N} \cdot \psi_{ec2,N} \cdot \psi_{M,N} \quad \text{EOTA TR 029, Eq. (5.3), EOTA TR 045, Eq. (5.8)}$$

$$N_{Rk,c}^0 = k_1 \cdot \sqrt{f_{ck,cube}} \cdot h_{ef}^{1,5} \quad \text{EOTA TR 029, Eq. (5.3a)}$$

$$A_{c,N}^0 = s_{cr,N} \cdot s_{cr,N} \quad \text{EOTA TR 029, Eq. (5.3b)}$$

$$\psi_{s,N} = 0.7 + 0.3 \cdot \frac{c}{c_{cr,N}} \leq 1.00 \quad \text{EOTA TR 029, Eq. (5.3c)}$$

$$\psi_{re,N} = 0.5 + \frac{h_{ef}}{200} \leq 1.00 \quad \text{EOTA TR 029, Eq. (5.3d)}$$

$$\psi_{ec1,N} = \frac{1}{1 + \frac{2 \cdot e_{c1,N}}{s_{cr,N}}} \leq 1.00 \quad \text{EOTA TR 029, Eq. (5.3e)}$$

$$\psi_{ec2,N} = \frac{1}{1 + \frac{2 \cdot e_{c2,N}}{s_{cr,N}}} \leq 1.00 \quad \text{EOTA TR 029, Eq. (5.3e)}$$

$A_{c,N}$ [mm <sup>2</sup> ]	$A_{c,N}^0$ [mm <sup>2</sup> ]	$c_{cr,N}$ [mm]	$s_{cr,N}$ [mm]		
136,800	129,600	180.0	360.0		
$e_{c1,N}$ [mm]	$\psi_{ec1,N}$	$e_{c2,N}$ [mm]	$\psi_{ec2,N}$	$\psi_{s,N}$	$\psi_{re,N}$
0.0	1.000	0.0	1.000	0.867	1.000
$k_1$	$N_{Rk,c}^0$ [kN]	$\alpha_{gap}$	$\alpha_{seis}$	$N_{Rk,c,seis}$ [kN]	
7.200	47.323	1.000	0.750	32.469	
$\gamma_{M,c,seis}$	$N_{Rd,c,seis}$ [kN]	$N_{Sd,seis}$ [kN]			
1.500	21.646	20.000			
Group anchor ID					
1, 2					

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#### 4 Shear load (EOTA TR 029, Section 5.2.3, EOTA TR 045, Section 5.6)

	Load [kN]	Capacity [kN]	Utilization $\beta_v$ [%]	Status
Steel Strength (without lever arm)*	N/A	N/A	N/A	N/A
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength*	N/A	N/A	N/A	N/A
Concrete edge failure in direction **	N/A	N/A	N/A	N/A

\* highest loaded anchor    \*\*anchor group (relevant anchors)

#### 5 Warnings

- The anchor design methods in PROFIS Engineering require rigid anchor plates per current regulations (AS 5216:2021, ETAG 001/Annex C, EOTA TR029 etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Engineering calculates the minimum required anchor plate thickness with CBFEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid anchor plate assumption is valid is not carried out by PROFIS Engineering. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- Check your national regulations for proper selection of the seismic performance category!
- Checking the transfer of loads into the base material is required in accordance with EOTA TR 029, Section 7!
- The design is only valid if the clearance hole in the fixture is not larger than the value given in Table 4.1 of EOTA TR029! For larger diameters of the clearance hole see Chapter 1.1. of EOTA TR029!
- The accessory list in this report is for the information of the user only. In any case, the instructions for use provided with the product have to be followed to ensure a proper installation.
- Bore hole cleaning must be performed according to instructions for use (blow twice with oil-free compressed air (min. 6 bar), brush twice, blow twice with oil-free compressed air (min. 6 bar)).
- Characteristic bond resistances depend on short- and long-term temperatures.
- Edge reinforcement is not required to avoid splitting failure
- The characteristic bond resistances depend on the return period (service life in years): 50

**Fastening meets the design criteria!**

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### 6 Installation data

Anchor plate, steel: S 235; E = 210,000.00 N/mm<sup>2</sup>; f<sub>yk</sub> = 235.00 N/mm<sup>2</sup>

Profile: no profile

Hole diameter in the fixture: d<sub>f</sub> = 18.0 mm

Plate thickness (input): 12.0 mm

Recommended plate thickness: not calculated

Drilling method: Hammer drilled

Cleaning: Compressed air cleaning of the drilled hole according to instructions for use is required

Anchor type and diameter: HIT-HY 200-R V3 + HAS-U A4 M16

Item number: 2223849 HAS-U A4 M16x165 (element) / 2262131 HIT-HY 200-R V3 (adhesive)

Maximum installation torque: 80 Nm

Hole diameter in the base material: 18.0 mm

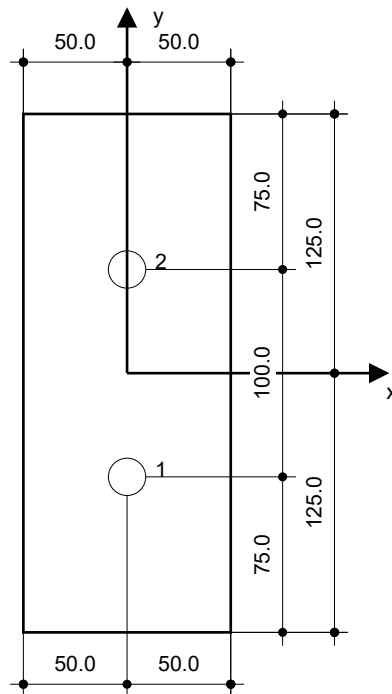
Hole depth in the base material: 120.0 mm

Minimum thickness of the base material: 156.0 mm

Hilti HAS-U threaded rod with HIT-HY 200-R V3 injection mortar with 120 mm embedment h<sub>ef</sub>, M16, Stainless steel, Hammer drilled installation per ETA 19/0601

#### 6.1 Recommended accessories

Drilling	Cleaning	Setting
<ul style="list-style-type: none"> <li>• Suitable Rotary Hammer</li> <li>• Properly sized drill bit</li> </ul>	<ul style="list-style-type: none"> <li>• Compressed air with required accessories to blow from the bottom of the hole</li> <li>• Proper diameter wire brush</li> </ul>	<ul style="list-style-type: none"> <li>• Dispenser including cassette and mixer</li> <li>• For deep installations, a piston plug is necessary</li> <li>• Torque wrench</li> </ul>



#### Coordinates Anchor [mm]

Anchor	x	y	c <sub>-x</sub>	c <sub>+x</sub>	c <sub>-y</sub>	c <sub>+y</sub>
1	0.0	-50.0	500.0	500.0	600.0	200.0
2	0.0	50.0	500.0	500.0	700.0	100.0



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## 7 Remarks; Your Cooperation Duties

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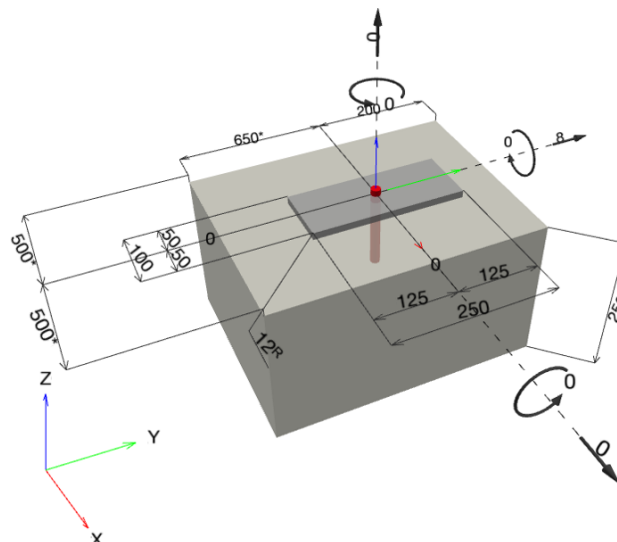
**1 Input data**



<b>Anchor type and diameter:</b>	<b>HIT-HY 200-R V3 + HAS-U A4 M16</b>
Return period (service life in years):	50
Item number:	2223849 HAS-U A4 M16x165 (element) / 2262131 HIT-HY 200-R V3 (adhesive)
Effective embedment depth:	$h_{ef,act} = 120.0 \text{ mm}$ ( $h_{ef,limit} = - \text{ mm}$ )
Material:	A4
Evaluation Service Report:	ETA 19/0601
Issued   Valid:	2/06/2023   -
Proof:	Design Method New Zealand NZS 3101, chapter 17.5.5 – ETAG Design; EOTA TR 029+ Seismic (EOTA TR 045)
Seismic performance category:	C1
Seismic proof type:	5.3 a2) Elastic design
Seismic load percentage $\leq 20\%$ :	no
Stand-off installation:	$e_b = 0.0 \text{ mm}$ (no stand-off); $t = 12.0 \text{ mm}$
Anchor plate <sup>R</sup> :	$l_x \times l_y \times t = 100.0 \text{ mm} \times 250.0 \text{ mm} \times 12.0 \text{ mm}$ ; (Recommended plate thickness: not calculated)
Profile:	no profile
Base material:	cracked concrete, C20/25, $f_{c,cube} = 25.00 \text{ N/mm}^2$ ; $h = 250.0 \text{ mm}$ , Temp. short/long: 40/24 °C
<b>Installation:</b>	<b>hammer drilled hole, Installation condition: Dry</b>
Reinforcement:	no reinforcement or reinforcement spacing $\geq 150 \text{ mm}$ (any $\emptyset$ ) or $\geq 100 \text{ mm}$ ( $\emptyset \leq 10 \text{ mm}$ ) no longitudinal edge reinforcement Reinforcement to control splitting according to EOTA TR 029, 5.2.2.6 present.

<sup>R</sup> - The anchor calculation is based on a rigid anchor plate assumption.

**Geometry [mm] & Loading [kN, kNm]**



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**1.1 Load combination**

Case	Description	Forces [kN] / Moments [kNm]	Seismic	Fire	Max. Util. Anchor [%]
1	Combination 1	N = 0.000; V <sub>x</sub> = 0.000; V <sub>y</sub> = 8.000; M <sub>x</sub> = 0.000; M <sub>y</sub> = 0.000; M <sub>z</sub> = 0.000;	C1	no	67

**2 Load case/Resulting anchor forces**

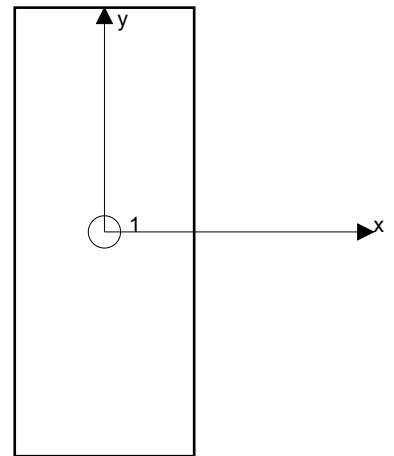
**Anchor reactions [kN]**

Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	0.000	8.000	0.000	8.000

max. concrete compressive strain: - [%]  
 max. concrete compressive stress: - [N/mm<sup>2</sup>]  
 resulting tension force in (x/y)=(0.0/0.0): 0.000 [kN]  
 resulting compression force in (x/y)=(0.0/0.0): 0.000 [kN]

Anchor forces are calculated based on the assumption of a rigid anchor plate.





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---

### 3 Tension load (EOTA TR 029, Section 5.2.2, EOTA TR 045, Section 5.6)

	Load [kN]	Capacity [kN]	Utilization $\beta_N$ [%]	Status
Steel Strength*	N/A	N/A	N/A	N/A
Concrete Breakout Failure**	N/A	N/A	N/A	N/A
Splitting failure**	N/A	N/A	N/A	N/A

\* highest loaded anchor    \*\*anchor group (anchors in tension)

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#### 4 Shear load (EOTA TR 029, Section 5.2.3, EOTA TR 045, Section 5.6)

	Load [kN]	Capacity [kN]	Utilization $\beta_v$ [%]	Status
Steel Strength (without lever arm)*	8.000	17.612	46	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength**	8.000	26.816	30	OK
Concrete edge failure in direction y+**	8.000	12.106	67	OK

\* highest loaded anchor    \*\*anchor group (relevant anchors)

##### 4.1 Steel Strength (without lever arm)

$$V_{Sd,seis} \leq V_{Rd,s,seis} = \frac{V_{Rk,s,seis}}{\gamma_{Ms,V,seis}} \quad \text{EOTA TR 029, Table 5.2.3.1, EOTA TR 045, Eq. (5.7)}$$

$$V_{Rk,s,seis} = \alpha_{gap} \cdot \alpha_{seis} \cdot V_{Rk,s,seis}^0 \quad \text{EOTA TR 045, Eq. (5.8)}$$

$V_{Rk,s,seis}^0$ [kN]	$\alpha_{gap}$	$\alpha_{seis}$	$V_{Rk,s,seis}$ [kN]
54.950	0.500	1.000	27.475
$\gamma_{M,s,seis}$	$V_{Rd,s,seis}$ [kN]	$V_{Sd,seis}$ [kN]	
1.560	17.612	8.000	

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**4.2 Pryout Strength (Concrete Breakout Strength controls)**

$$V_{Sd,seis} \leq V_{Rd,cp,seis} = \frac{V_{Rk,cp,seis}}{\gamma_{M,c,p,seis}} \quad \text{EOTA TR 029, Table 5.2.3.1, EOTA TR 045, Eq. (5.7)}$$

$$V_{Rk,cp,seis} = k \cdot \alpha_{gap} \cdot \alpha_{seis} \cdot N_{Rk,c}^0 \cdot \frac{A_{c,N}}{A_{c,N}^0} \cdot \psi_{s,N} \cdot \psi_{re,N} \cdot \psi_{ec1,N} \cdot \psi_{ec2,N} \quad \text{EOTA TR 029, Eq. (5.3), (5.7a), EOTA TR 045, Eq. (5.8)}$$

$$N_{Rk,c} = N_{Rk,c}^0 \cdot \frac{A_{c,N}}{A_{c,N}^0} \cdot \psi_{s,N} \cdot \psi_{re,N} \cdot \psi_{ec1,N} \cdot \psi_{ec2,N} \quad \text{EOTA TR 029, Eq. (5.3)}$$

$$N_{Rk,c}^0 = k_1 \cdot \sqrt{f_{ck,cube}} \cdot h_{ef}^{1.5} \quad \text{EOTA TR 029, Eq. (5.3a)}$$

$$A_{c,N}^0 = s_{cr,N} \cdot s_{cr,N} \quad \text{EOTA TR 029, Eq. (5.3b)}$$

$$\psi_{s,N} = 0.7 + 0.3 \cdot \frac{c}{c_{cr,N}} \leq 1.00 \quad \text{EOTA TR 029, Eq. (5.3c)}$$

$$\psi_{re,N} = 0.5 + \frac{h_{ef}}{200} \leq 1.00 \quad \text{EOTA TR 029, Eq. (5.3d)}$$

$$\psi_{ec1,N} = \frac{1}{1 + \frac{2 \cdot e_{c1,V}}{s_{cr,N}}} \leq 1.00 \quad \text{EOTA TR 029, Eq. (5.3e)}$$

$$\psi_{ec2,N} = \frac{1}{1 + \frac{2 \cdot e_{c2,V}}{s_{cr,N}}} \leq 1.00 \quad \text{EOTA TR 029, Eq. (5.3e)}$$

$A_{c,N}$ [mm <sup>2</sup> ]	$A_{c,N}^0$ [mm <sup>2</sup> ]	$c_{cr,N}$ [mm]	$s_{cr,N}$ [mm]	k-factor	$k_1$
129,600	129,600	180.0	360.0	2.000	7.200
$e_{c1,V}$ [mm]	$\psi_{ec1,N}$	$e_{c2,V}$ [mm]	$\psi_{ec2,N}$	$\psi_{s,N}$	$\psi_{re,N}$
0.0	1.000	0.0	1.000	1.000	1.000
$N_{Rk,c}^0$ [kN]	$\alpha_{gap}$	$\alpha_{seis}$	$V_{Rk,cp,seis}^0$ [kN]	$V_{Rk,cp,seis}$ [kN]	
47.323	0.500	0.850	94.646	40.225	
$\gamma_{M,c,p,seis}$	$V_{Rd,cp,seis}$ [kN]	$V_{Sd,seis}$ [kN]			
1.500	26.816	8.000			

Group anchor ID

1

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**4.3 Concrete edge failure in direction y+**

$$V_{Sd,seis} \leq V_{Rd,c,seis} = \frac{V_{Rk,c,seis}}{\gamma_{M,c,seis}} \quad \text{EOTA TR 029, Table 5.2.3.1, EOTA TR 045, Eq. (5.7)}$$

$$V_{Rk,c,seis} = \alpha_{gap} \cdot \alpha_{seis} \cdot V_{Rk,c}^0 \cdot \frac{A_{c,V}}{A_{c,V}^0} \cdot \psi_{s,V} \cdot \psi_{h,V} \cdot \psi_{\alpha,V} \cdot \psi_{ec,V} \cdot \psi_{re,V} \quad \text{EOTA TR 029, Eq. (5.7), EOTA TR 045, Eq. (5.8)}$$

$$V_{Rk,c}^0 = k_1 \cdot d_{nom}^\alpha \cdot h_{ef}^\beta \cdot \sqrt{f_{ck,cube}} \cdot c_1^{1.5} \quad \text{EOTA TR 029, Eq. (5.8a)}$$

$$\alpha = 0.1 \cdot \left(\frac{h_{ef}}{c_1}\right)^{0.5} \quad \text{EOTA TR 029, Eq. (5.8b)}$$

$$\beta = 0.1 \cdot \left(\frac{d_{nom}}{c_1}\right)^{0.2} \quad \text{EOTA TR 029, Eq. (5.8c)}$$

$$A_{c,V}^0 = 4.5 \cdot c_1^2 \quad \text{EOTA TR 029, Eq. (5.8d)}$$

$$\psi_{s,V} = 0.7 + 0.3 \cdot \frac{c_2}{1.5 \cdot c_1} \leq 1.00 \quad \text{EOTA TR 029, Eq. (5.8e)}$$

$$\psi_{h,V} = \left(\frac{1.5 \cdot c_1}{h}\right)^{0.5} \geq 1.00 \quad \text{EOTA TR 029, Eq. (5.8f)}$$

$$\psi_{\alpha,V} = \sqrt{\frac{1}{(\cos \alpha_V)^2 + \left(\frac{\sin \alpha_V}{2.5}\right)^2}} \geq 1.00 \quad \text{EOTA TR 029, Eq. (5.8g)}$$

$$\psi_{ec,V} = \frac{1}{1 + \frac{2 \cdot e_{c,V}}{3 \cdot c_1}} \leq 1.00 \quad \text{EOTA TR 029, Eq. (5.8h)}$$

$h_{ef}$ [mm]	$d_{nom}$ [mm]	$k_1$	$\alpha$	$\beta$		
120.0	16.00	1.700	0.077	0.060		
$c_1$ [mm]	$A_{c,V}$ [mm <sup>2</sup> ]	$A_{c,V}^0$ [mm <sup>2</sup> ]				
200.0	150,000	180,000				
$\psi_{s,V}$	$\psi_{h,V}$	$\alpha_V$ [°]	$\psi_{\alpha,V}$	$e_{c,V}$ [mm]	$\psi_{ec,V}$	$\psi_{re,V}$
1.000	1.095	0.00	1.000	0.0	1.000	1.000
$V_{Rk,c}^0$ [kN]	$\alpha_{gap}$	$\alpha_{seis}$	$V_{Rk,c,seis}$ [kN]			
39.783	0.500	1.000	18.158			
$\gamma_{M,c,seis}$	$V_{Rd,c,seis}$ [kN]	$V_{Sd,seis}$ [kN]				
1.500	12.106	8.000				

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## 5 Warnings

- The anchor design methods in PROFIS Engineering require rigid anchor plates per current regulations (AS 5216:2021, ETAG 001/Annex C, EOTA TR029 etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Engineering calculates the minimum required anchor plate thickness with CBFEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid anchor plate assumption is valid is not carried out by PROFIS Engineering. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- Check your national regulations for proper selection of the seismic performance category!
- Checking the transfer of loads into the base material is required in accordance with EOTA TR 029, Section 7!
- The design is only valid if the clearance hole in the fixture is not larger than the value given in Table 4.1 of EOTA TR029! For larger diameters of the clearance hole see Chapter 1.1. of EOTA TR029!
- The accessory list in this report is for the information of the user only. In any case, the instructions for use provided with the product have to be followed to ensure a proper installation.
- Bore hole cleaning must be performed according to instructions for use (blow twice with oil-free compressed air (min. 6 bar), brush twice, blow twice with oil-free compressed air (min. 6 bar)).
- Characteristic bond resistances depend on short- and long-term temperatures.
- Edge reinforcement is not required to avoid splitting failure
- The characteristic bond resistances depend on the return period (service life in years): 50

## Fastening meets the design criteria!

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### 6 Installation data

Anchor plate, steel: S 235; E = 210,000.00 N/mm<sup>2</sup>; f<sub>yk</sub> = 235.00 N/mm<sup>2</sup>

Profile: no profile

Hole diameter in the fixture: d<sub>f</sub> = 18.0 mm

Plate thickness (input): 12.0 mm

Recommended plate thickness: not calculated

Drilling method: Hammer drilled

Cleaning: Compressed air cleaning of the drilled hole according to instructions for use is required

Anchor type and diameter: HIT-HY 200-R V3 + HAS-U A4 M16

Item number: 2223849 HAS-U A4 M16x165 (element) / 2262131 HIT-HY 200-R V3 (adhesive)

Maximum installation torque: 80 Nm

Hole diameter in the base material: 18.0 mm

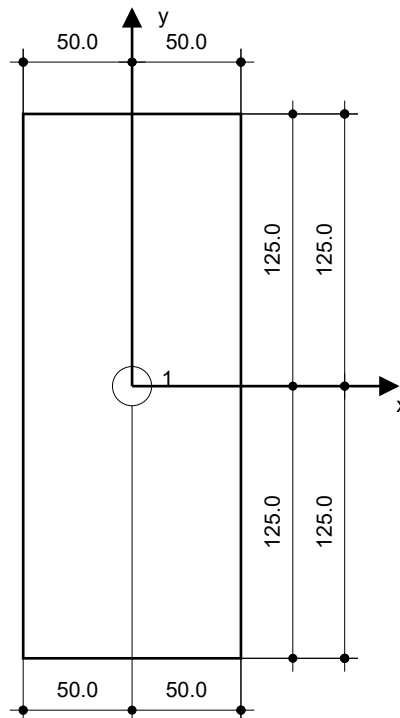
Hole depth in the base material: 120.0 mm

Minimum thickness of the base material: 156.0 mm

Hilti HAS-U threaded rod with HIT-HY 200-R V3 injection mortar with 120 mm embedment h<sub>ef</sub>, M16, Stainless steel, Hammer drilled installation per ETA 19/0601

#### 6.1 Recommended accessories

Drilling	Cleaning	Setting
<ul style="list-style-type: none"> <li>• Suitable Rotary Hammer</li> <li>• Properly sized drill bit</li> </ul>	<ul style="list-style-type: none"> <li>• Compressed air with required accessories to blow from the bottom of the hole</li> <li>• Proper diameter wire brush</li> </ul>	<ul style="list-style-type: none"> <li>• Dispenser including cassette and mixer</li> <li>• For deep installations, a piston plug is necessary</li> <li>• Torque wrench</li> </ul>



#### Coordinates Anchor [mm]

Anchor	x	y	c <sub>-x</sub>	c <sub>+x</sub>	c <sub>-y</sub>	c <sub>+y</sub>
1	0.0	0.0	500.0	500.0	650.0	200.0



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## 7 Remarks; Your Cooperation Duties

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- You must take all necessary and reasonable steps to prevent or limit damage caused by the Software. In particular, you must arrange for the regular backup of programs and data and, if applicable, carry out the updates of the Software offered by Hilti on a regular basis. If you do not use the AutoUpdate function of the Software, you must ensure that you are using the current and thus up-to-date version of the Software in each case by carrying out manual updates via the Hilti Website. Hilti will not be liable for consequences, such as the recovery of lost or damaged data or programs, arising from a culpable breach of duty by you.

# SITE REPORT



Job No: K230471	Time On: 1330	Time Off: 1420	Date: 4 July 2023				
Address: 11 Kaiwara Street, Hoon Hay			Visit No.: 1				
Project: Dwelling foundation releveling works			KGA Engineer: WM				
Weather		Last Rain		Ground Conditions		Wind	
Fine	<input checked="" type="checkbox"/>	5+ Days	<input type="checkbox"/>	Dry	<input type="checkbox"/>	Still	<input checked="" type="checkbox"/>
Overcast	<input type="checkbox"/>	1 - 4 Days	<input type="checkbox"/>	Moist	<input checked="" type="checkbox"/>	Breezy	<input type="checkbox"/>
Rain/drizzle	<input type="checkbox"/>	<1 Day	<input checked="" type="checkbox"/>	Wet	<input checked="" type="checkbox"/>	Windy	<input type="checkbox"/>

<b>Reason for Visit:</b> Inspect foundation underpin pad excavations				
<b>Site Contact:</b> Mark (Viden), Mike (Wrightway)			Contact number:	
<b>Shear Vane Used</b>	<b>Correction</b>	<b>Calibration date</b>	<b>Works In Progress</b>	<b>Plant on site</b>
			See Photos	See Photos
Results shown are corrected / dial readings				
<b>Health &amp; Safety (Read &amp; Understood)</b>				
KGA Job SSSP Read & Signed by KGA Engineer		<input checked="" type="checkbox"/>	Contractor Hazard board sighted & photo or photo of site	
Take 5 for visit today		<input checked="" type="checkbox"/>	Safe Act?	
New Hazards on site not listed in SSSP:				

## Observations / Comments / Results:

<ul style="list-style-type: none"> <li>Onsite to observe the excavations for the perimeter foundation underpins.</li> <li>All excavations have been completed. They are 700-800mm deep and expose natural silt-based soils. The excavations are generally tidy and free of loose debris.</li> <li>About 50-100mm of water is ponding at the base of the excavations, likely related to elevated groundwater following recent rainfall.</li> <li>Use Scala penetrometer equipment to test the ground bearing capacity at the base of the excavations at five randomly selected locations.</li> <li>The Scala penetrometer results indicate that a geotechnical ultimate bearing capacity in excess of 150kPa is available within the excavations. A thin layer (up to 100mm thick) of softened soils was present in some of the excavations related to the ponding water.</li> <li>All water and loose/softened soils must be removed prior to concreting (booked for 5 July).</li> <li>Okay to proceed provided that the above is followed.</li> </ul>
--

*\* Please note the above comments do **NOT** constitute instruction and any recommended works should not be undertaken without prior approval of the client. \**



**Photos**



1



2



3



4



5



6

# Viden Group

## Construction Monitoring Record

**Address:** 11 Kaiwara Street, Hoon Hay, Christchurch 8025  
**Client** Wrightway Construction  
**Project Ref:** 226-159  
**Date:** 04.07.2023  
**Site Contact:** mike@wrightwaynz.co.nz  
**Reason for Visit:** Underpinning pads pre-pour assessment  
**Visit By:** Yanina Ramseyer  
**CM Record No.** CM01

### Observations: Pre-pour foundation Assessment

A site visit was undertaken to check the excavation of the releveling pads according to the details provided.

The geotechnical engineer has checked the ground conditions and 150kPa was achieved at the bottom of the excavation. KGA recommends removing all the water and soft/loose soils before pouring concrete.

During our inspection, a representative number of the pads' excavations size, spacing and reinforcement were checked. They generally comply with the details provided by Viden, with a minimum of 650x650x700 depth excavations every 2000mm maximum and with 3/HD12 bars each way. We also noted some water ponding at the base of the excavation. It will require to be pumped out just before pouring concrete.

### Actions Required:

- Remove the water and soft/loose soil before pouring.

Once the above is completed, I have no objections to pouring.

### Next Inspection: (contractor to advise when next inspection is due)

Subfloor fixings monitoring

Photos



1.



2.



3.



4.



5.



6.

**From:** Mark Patterson  
**Sent:** Wednesday, 5 July 2023 9:15 am  
**To:** Yanina Ramseyer  
**Subject:** FW: 11 Kaiwara Street, Hoon Hay - Drawings

FYI

---

**From:** William Mathieson <[william@kga.co.nz](mailto:william@kga.co.nz)>  
**Sent:** Tuesday, July 4, 2023 5:40 PM  
**To:** Mark Patterson <[mark.patterson@viden.co.nz](mailto:mark.patterson@viden.co.nz)>; Mike Bradshaw <[mike@wrightwaynz.co.nz](mailto:mike@wrightwaynz.co.nz)>  
**Cc:** Kristian Fairley <[Kristian@kga.co.nz](mailto:Kristian@kga.co.nz)>  
**Subject:** RE: 11 Kaiwara Street, Hoon Hay - Drawings

Hi team,

Just letting you know that the ground conditions in the underpin pads is generally okay. A geotechnical UBC of 150kPa is available. There is 50-100mm of water ponding at the base of the excavations that will require pumping out just before concreting. Any soft/loose soils must also be scraped out before the concrete goes in please.

I will send you our site report sometime tomorrow.

Kind regards,

**Will Mathieson**  
Engineering Geologist



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**From:** Kristian Fairley <[Kristian@kga.co.nz](mailto:Kristian@kga.co.nz)>  
**Sent:** Monday, July 3, 2023 4:35 PM  
**To:** Mark Patterson ([mark.patterson@viden.co.nz](mailto:mark.patterson@viden.co.nz)) <[mark.patterson@viden.co.nz](mailto:mark.patterson@viden.co.nz)>; Mike Bradshaw <[mike@wrightwaynz.co.nz](mailto:mike@wrightwaynz.co.nz)>  
**Cc:** William Mathieson <[william@kga.co.nz](mailto:william@kga.co.nz)>  
**Subject:** RE: 11 Kaiwara Street, Hoon Hay - Drawings

Hi team,

As I am away Tuesday/Wednesday for work, William (Cc'd) will be attending site on my behalf. However, due to the capacity of the team, William won't be able to attend site until 1pm to 2pm.

For all further correspondence regarding this project, please direct this through William.

Kind Regards,

Kristian Fairley



**KGA GEOTECHNICAL GROUP LIMITED**

P (03) 343 5302 ex 217 | M 022 618 8611

E [kristian@kga.co.nz](mailto:kristian@kga.co.nz) | [www.kga.co.nz](http://www.kga.co.nz)

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---

**From:** Kristian Fairley

**Sent:** Monday, July 3, 2023 3:09 PM

**To:** Mark Patterson ([mark.patterson@viden.co.nz](mailto:mark.patterson@viden.co.nz)) <[mark.patterson@viden.co.nz](mailto:mark.patterson@viden.co.nz)>; Mike Bradshaw <[mike@wrightwaynz.co.nz](mailto:mike@wrightwaynz.co.nz)>

**Cc:** William Mathieson <[william@kga.co.nz](mailto:william@kga.co.nz)>

**Subject:** 11 Kaiwara Street, Hoon Hay - Drawings

Hi team,

Could one of you please pass on the drawings for this project.

Oh, and while I have you – what is the status of 136 Lonsdale Street in New Brighton? It has been sitting on my pile for a while now. Any update would be greatly appreciated.

Kind Regards,

Kristian Fairley



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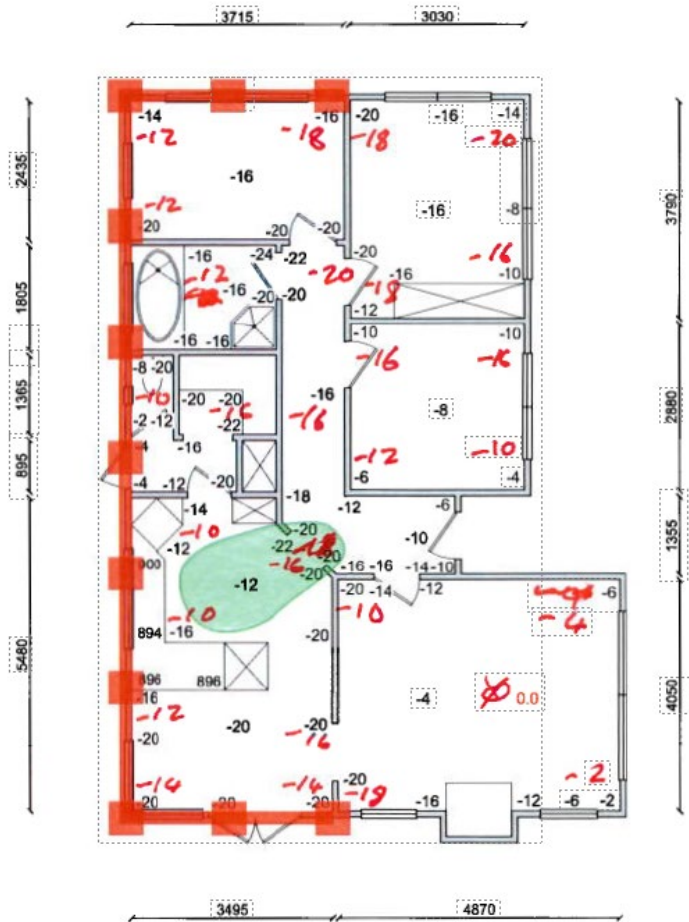
# Viden Group

## Construction Monitoring Record

**Address:** 11 Kaiwara Street, Hoon Hay, Christchurch 8025  
**Client** Wrightway Construction  
**Project Ref:** 226-159  
**Date:** 31.07.2023  
**Site Contact:** mike@wrightwaynz.co.nz  
**Visit By:** Mark Patterson  
**CM Record No.** CM02

### **Observations: Final Levels**

Final Levels were provided to close out the floor releveling of the dwelling, See below. The releveling contractor has confirmed this is as far as the dwelling could be releveling without causing significant damage. Hence the recommended performance based releveling has been completed. I have no objections to the final levels achieved as a result of the above.



 FLOOR PLAN

**Actions Required:**

- 

**Next Inspection: (contractor to advise when next inspection is due)**

-

## Photos

1.	2.
3.	4.
5.	6.

**From:** Mike Bradshaw <mike@wrightwaynz.co.nz>  
**Sent:** Friday, July 28, 2023 12:15 PM  
**To:** William Mathieson <william@kga.co.nz>; Mark Patterson <mark.patterson@viden.co.nz>  
**Cc:** Kristian Fairley <Kristian@kga.co.nz>; Janet McDougall <janet@wrightwaynz.co.nz>  
**Subject:** RE: 11 Kaiwara Street, Hoon Hay - Drawings

Hi Mark

Please scratch the previous levels. Window sill levels stay the same

See new attached levels, note there was another layer of carpet in 2 of the rooms, Hence the difference in levels by 6mm. which I have taken off.

This is best we can get it performance based.

**Mike Bradshaw**

Project Manager

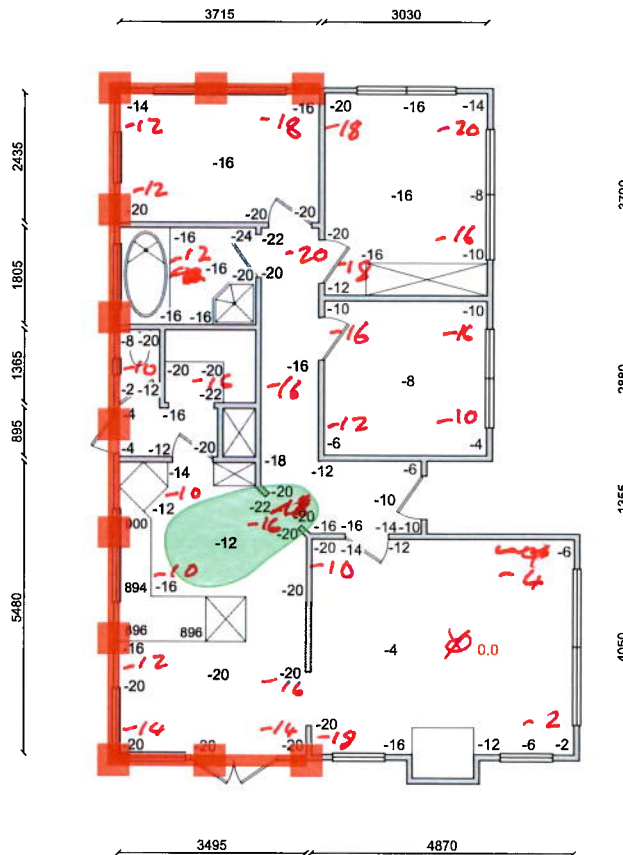
027 557 2877 | [mike@wrightwaynz.co.nz](mailto:mike@wrightwaynz.co.nz)



Chc. 027 537 8636 | Akl. 027 590 8820 | W. [www.wrightwaynz.co.nz](http://www.wrightwaynz.co.nz)  
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FLOOR PLAN

DWELLING TO BE RE-LEVELLED AS FAR AS IS ACHIEVABLE USING REPAIR STRATEGY OUTLINED BELOW.

THE FINAL LEVELS SHALL BE DETERMINED BY THE PERFORMANCE OF THE EXISTING STRUCTURE.

THE CONTRACTOR SHALL MONITOR THE EXISTING STRUCTURE DURING THE RE-LEVELLING PROCESS. IF DAMAGE IS RESULTING, WORK SHOULD BE STOPPED IMMEDIATELY

- REMOVE OVER-PINNING & UNDER-PIN  
UNDERPINS TO BE LOCATED AT 2m CRS MAX
- REPAIR JOISTS IN KITCHEN AREA

11 Kaiwara St  
Hoon Hay  
Christchurch 8025

ISSUE :

DRAWN BY : MT  
REVISION :  
SCALE : 1:100 @A3  
PAGE TITLE :  
REPAIR PLAN

PAGE : A-02



DATE PRINTED : Wednesday, 26 September 2018

# Viden Group

## Construction Monitoring Record

**Address:** 11 Kaiwara Street, Hoon Hay, Christchurch 8025  
**Client** Wrightway Construction  
**Project Ref:** 226-159  
**Date:** 14.08.2023  
**Site Contact:** mike@wrightwaynz.co.nz  
**Visit By:** Mark Patterson  
**CM Record No.** CM03

### Observations: Final

A site visit was carried out to close out the subfloor connections. The following was noted:

- Stainless steel subfloor brackets were in place and generally as per our details. The dimension from the top of the perimeter foundation to the first bolt was ~130mm as opposed to the 100mm detailed. Bolts have just been epoxied in and to be tightened once epoxy is dry. However, it was agreed this met the design intent.
- All piles have been tied to the bearer with stainless steel straps and packers have been replaced.
- Final levels have been approved previously.
- Recommendation in the report to repair floor joists is not required, no damage was confirmed by the relevening contractor. However, there is a small hump that is going to be removed prior to completion.

### Actions Required:

- -

### Next Inspection: (contractor to advise when next inspection is due)

- -

## Photos



1.



2.



3.



4.



5.



6.



7.