move.

council records

2b gossling street
okato

Statement of Passing Over:

This information has been supplied by the vendor or the vendor's agents and move (powered by ownly Ltd licensed REAA 208) is merely passing over this information as supplied to us. We cannot guarantee its accuracy as we have not checked, audited, or reviewed the information and all intending purchasers are advised to conduct their own due diligence investigation into this information. Where you have been supplied with a Council Property File or a LIM Report, please note there may be matters relating to pre-1992 consents or permits in this file which may need further investigation in order to determine their relevance. To the maximum extent permitted by law we do not accept any responsibility to any party for the accuracy or use of the information herein.

Natural Source
Treatment Plant
Pumpstation
Storage Unit
Hydrant
Manhole
Alert Valve
Air Valve
Non-Return Valve
Standard Valve
Manifold Valve
Backflow
Meter
Restricted Flow
Wellup
Inlet
Outlet
Soakhole
End Point
Node
Misc Point
Trunk
Rise
Main
Lateral
Open Drain
Stream
Overland Flow Path
Misc Polygon
Proposed Bund and Ponding Areas
Storm Water Mgmt Plan

Yellow = Privately Owned
Grey = Out of Service/Closed
Stormwater
Water Supply
Waste Water

Te Kaunihera o Ngāmotu
New Plymouth District Council

HORIZONTAL DATUM
New Zealand Geodetic Datum 2000

MAP PROJECTION
New Zealand Transverse Mercator

0 3.25 6.5 13
m

MILES Print Map

Date: 27/06/2025

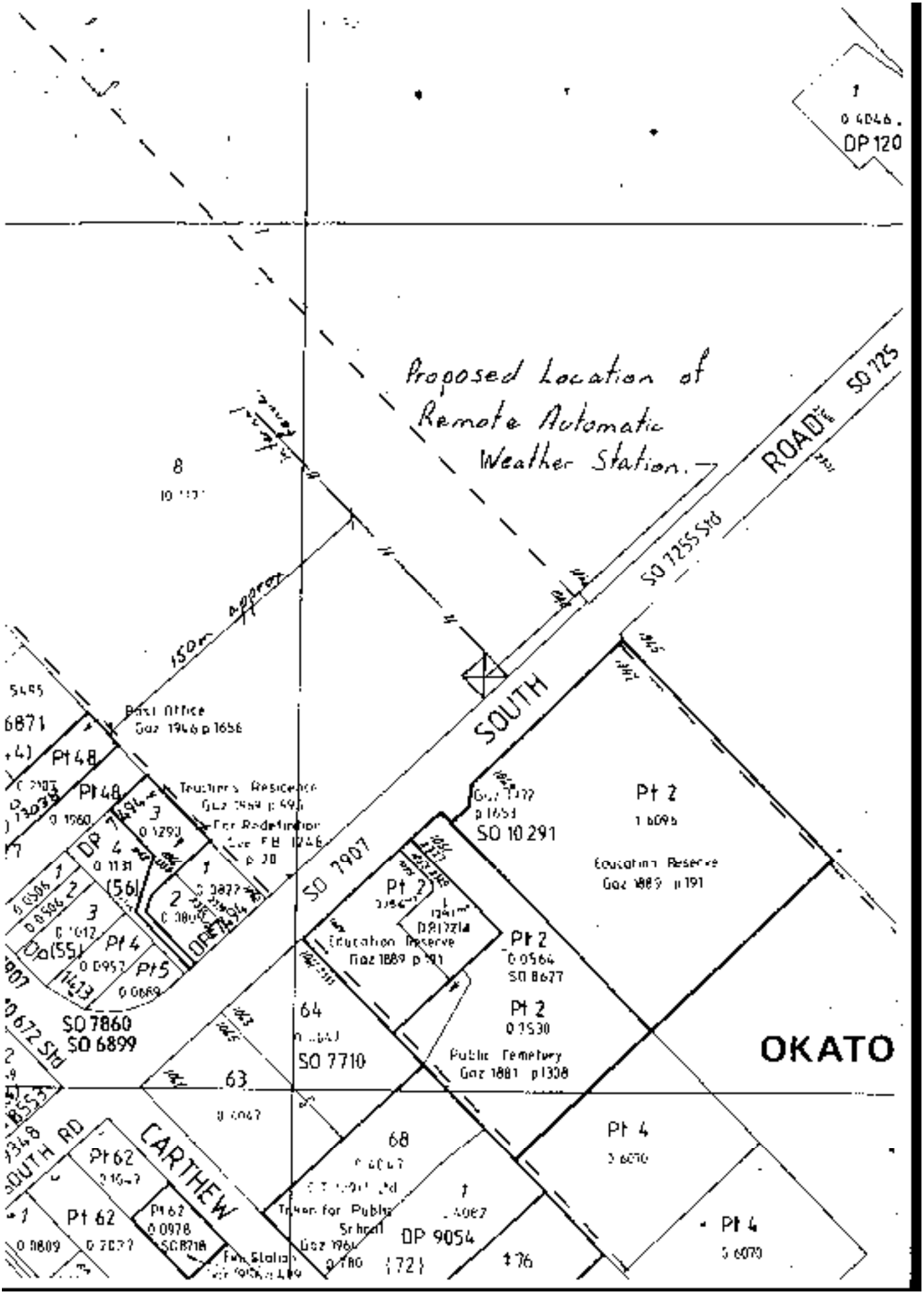
1:282

BUILDING CONSENT

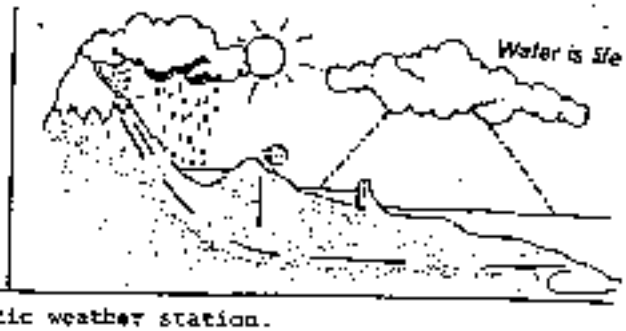
16014P

PROPERTY ID 006261

16014P



Scott Technical Instruments Ltd.
NEW ZEALAND



Details of arrays being output from automatic weather station.

Sample of output arrays.

```
161,3,1994,170,900,3.936,86.3,45.48,348.8,804,30.35,349.8,1.2,
152,3,1994,170,500,3.71,88.4,31.44,369.3,3.126,51.10.51,1220,7.6
160,3 1994,170,1000,4.343,84.5,37.33,341.7,0
161,3,1994,170,1000,4.042,85.7,48.96,346.7,943,35.92,346.2.0,
160,3,1994,170,1100,4.319,86.8,36.47,352.9,1.2
161,3,1994,170,1100,4.443,86.6,53.04,39.26,1047,31.46,365.9,1.2,
160,3,1994,170,1200,4.388,85.4,23.81,344.5,.6
161,3,1994,170,1200,4.277,85.2,53.28,352.6,1117,35.83,356.2,.6.
163,3,1994,170,1200,4.388,85.4,23.81,344.5,9.4
```

~~Hourly~~ [10 minutes before the hour averages] Fireweather data.

```
A  S  Y     J     T     T     R     W X   W     R F
R  T  E     U     I     E     R     I P   I     A O
R  N  A     L     M     M           N H   N     I r
A     R     I     E     P           D     D     N
Y  N        A                                   F n
I  O        N                       S     D     A o
D                                   P     I     L u
                  D                 E     R     L r
                  A                 E     E
                  Y                 D     C
~~160,3,1994~~,170,900,2.179,86.4,16.52,224.5,0
```

Hourly meteorological data output.

```
A  S  Y     J     T     A     A     N J &   D     T     A     A     R
R  T  E     U     Y     V     V     A S     I     I     V     V     A
R  N  A     L     M                 X E     R     M                 I
A     R     I     E     T     R       C     E     E     W     W     N
Y  N        A           E     R     W       C           I     I     P
I  O        N           M           N       T     O     N     N     A
D                       S           D       I     F     D     D     L
                  D                         O                       L
                  A                 S K     M S     S     D
                  Y                 P P     A P     P     I
                                    D H     X D     D     R
161,3,1994,170,900,3.936,86.3,45.48,348.8,804,30.35,349.8,1.2,
```

~~Strobes~~ 24 hour summary of meteorological data

```
A  S  Y     J     T   INSTANT READINGS      M     T     M     T   24-
R  T  E     U     I     T   R   W     W     I     I     A     M   H
R  N  A     L     M     E       I     I     N     M     X     E   R.
A     R     I     Z     M       N     N           E
Y  N        A           P       D     D     T           T
I  O        N                               E     O     E     O   T
D                                 S     D     M     F     M     F   O
                  D               P     I     P           P       T
                  A               P     R                 M       A
                  Y               E                       I       L
                                  D                       N       A
~~160,3,1994~~,170,900,3.71,88.4,31.44,369.3,3.126,0051,10.51,1220,7.6
```

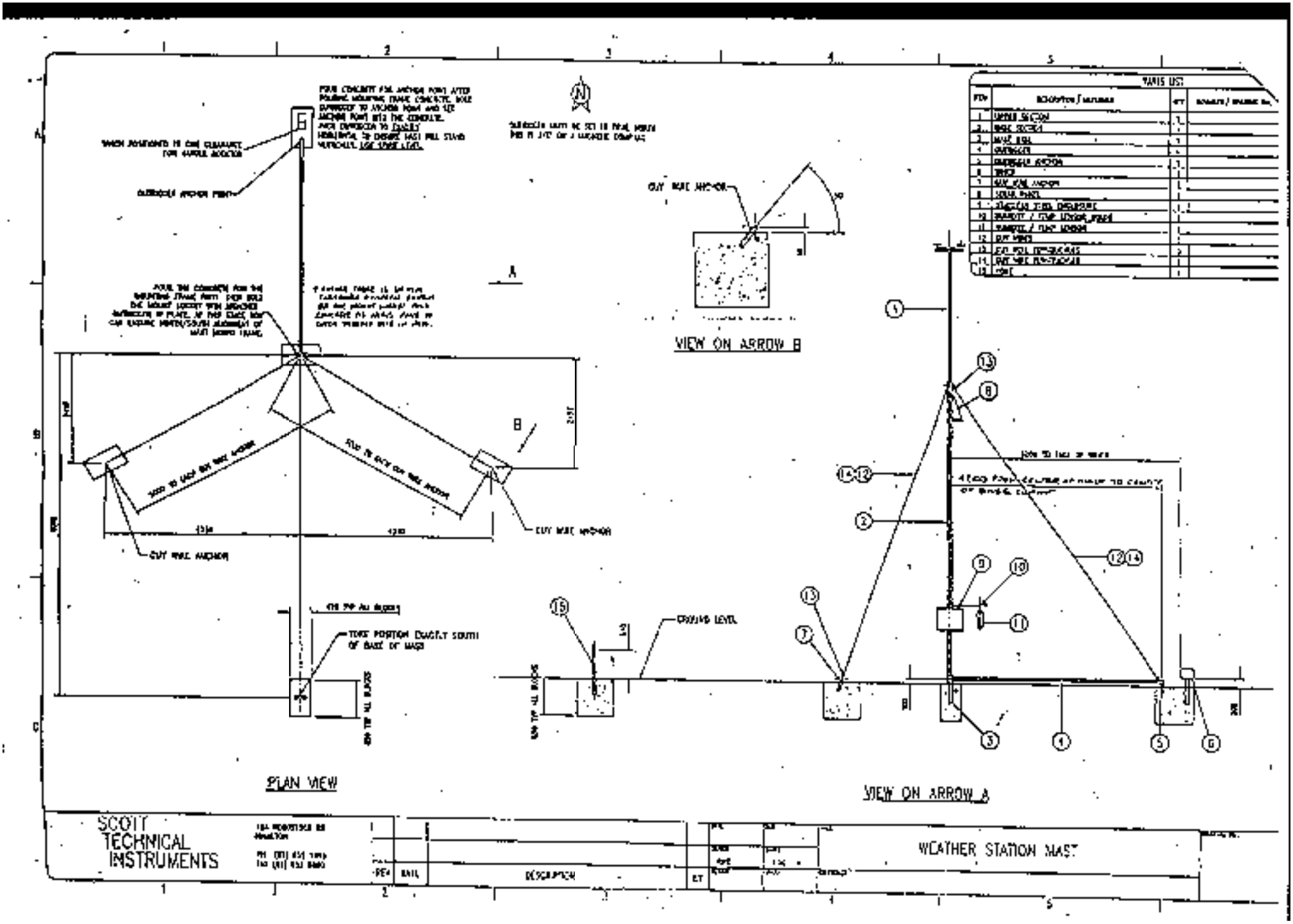
Special Hourly (10 minutes before the hour averages) Fireweather data. which NZ Fire calls from Wellington.

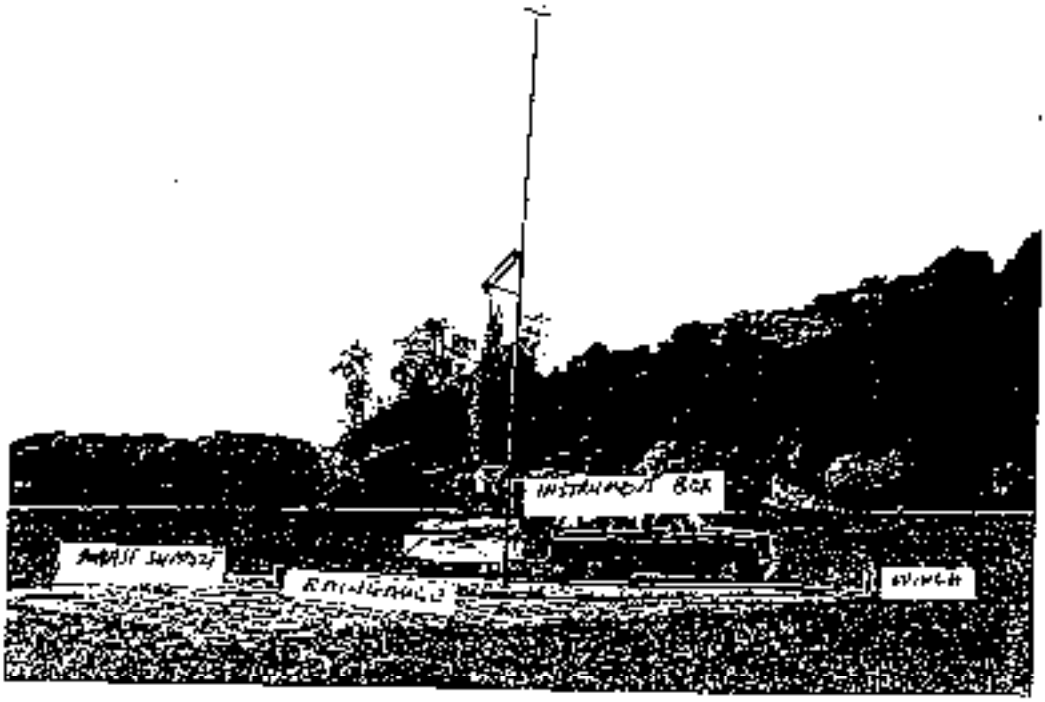
```
163,3,1994,170,1200,4.388,85.4,23.81,344.5,9.4
```

SERVICING SCIENCE AND INDUSTRY
Equipment — Design — Installation — Service — Operation — Data Reduction
Hydrology — Meteorology — Oceanography — Environmental — Agriculture — Industrial — Traffic

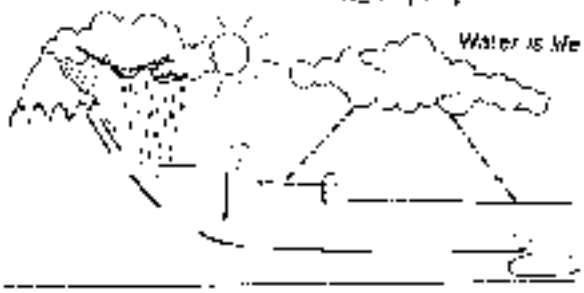
HEAD OFFICE
15A WOODSTOCK ROAD, HAMILTON
Phone (07) 855-9838, FAX (07) 855-0600

S.I. OFFICE
21A LINWOOD AVENUE, P.O. Box 625, CHRISTCHURCH
Phone (03) 389 4600, FAX (03) 389 6965
Cellphone 025 324-184


PARTS LIST
VIEW ON ARROW B
PLAN VIEW
VIEW ON ARROW A
GUY WIRE ANCHOR
GROUND LEVEL
SCOTT TECHNICAL INSTRUMENTS
WEATHER STATION MAST
DESCRIPTION



Scott
Technical
Instruments Ltd.
NEW ZEALAND



1-10-96.

Mr.L.Barnes,
Engineering Department
New Plymouth District Council
Private Bag
New Plymouth.

Subject: Automatic weather station at Okato.

Dear Lester,

As per your fax request a Producer Statement - Design certificate covering the 10 M. mast for this station to support your consent application is attached.

Please advise when approval has been received as the NRFA are keen to have the station operating as soon as possible.

Regards for now,

C.Thurgood.

OFFICE COPY

PLANS AND SPECIFICATIONS APPROVED FOR THE USE, SITING, COVERAGE AND CONSTRUCTION, AS IN ACCORDANCE WITH ALL RELEVANT ACTS REGULATIONS AND BY-LAWS ADMINISTERED BY THE NEW PLYMOUTH DISTRICT COUNCIL

DATE

APPROVED: _____

THESE PLANS AND SPECIFICATIONS ARE THE PROPERTY OF THE NEW PLYMOUTH DISTRICT COUNCIL

WORKS & SERVICES DEPT.
RECEIVED -3 OCT 1996
REGISTER
COPY | INFO | DISCUSS | REPLY | ACTION
FILE REF:

RECEIVED
15 OCT 1996

Our Ref: 96187

Association Consulting Engineers of New Zealand	Institution Professional Engineers of New Zealand

P.I.M. No. .....

Building Regulation Clause(s) .....

PRODUCER STATEMENT - DESIGN

ISSUED BY: *Lyall Bruce Green*

TO: *Territorial Authorities*

IN RESPECT OF: *Engineering Design of Proposed 10m Meteorological Mast*

AT: Nationwide

LOT: DP:

Lyall Green Consultants Ltd. has been engaged by *Scott Technical Instruments* to provide *Structural Engineering Design* in respect of the requirements of Clause(s) B1/VM1,VM4 of the Building Regulations 1992 for .....

☐ All ☒ Part only as specified

.... of the building work. The design has been prepared in accordance with *verification methods* of the approved documents issued by the Building Industry Authority and the work is described on *Scott Technical Instruments* drawings titled and numbered *STI-RAWS-10m* and the specification and other documents according to which the building is proposed to be constructed.

As an independent design professional covered by a current policy of Professional Indemnity Insurance to a maximum value of $200,000, I BELIEVE ON REASONABLE GROUNDS that subject to:

(i) the site verification of the following design assumptions
- a) safe soil bearing pressure = 75kPa
- b) maximum site wind speed = 70m/s
- c) continuous annual maintenance inspection and repair
- d) design life = 15 years

and (ii) all proprietary products meeting the performance specification requirements, the drawings, specifications, and other documents according to which the building is proposed to be constructed comply with the relevant provisions of the building code.

* *Unless specifically noted, compliance of the drawings to Non Specific codes such as NZS 3604 and NZS 4229 have not been checked by this practice.*

* *This certificate does not cover stability or suitability of the site.*

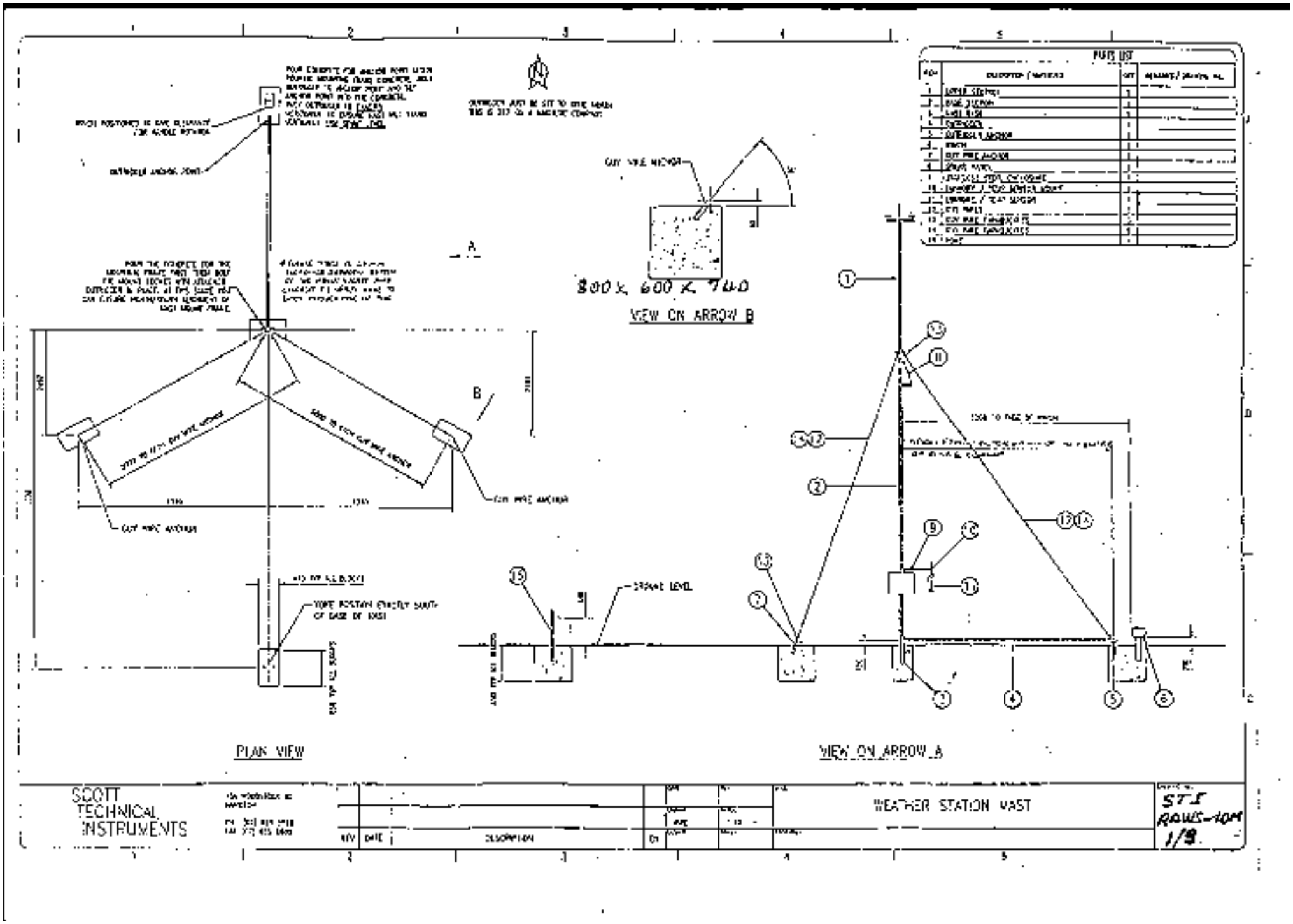
Signed:

REGISTERED ENGINEER
P O Box 5254, Hamilton

Date: 30/9/96

FRB/AERB Reg. No. 7664

Member of ACENZ & IPENZ


PLAN VIEW
VIEW ON ARROW A
VIEW ON ARROW B
PARTS LIST
SCOTT TECHNICAL INSTRUMENTS
WEATHER STATION MAST
STI RAWS-10M 1/9

INT. 10/03

NEW PLYMOUTH DISTRICT COUNCIL

PLANNING & ENVIRONMENTAL SERVICES DEPARTMENT

WORKS & SERVICES DEPT.				
RECEIVED 14 OCT 1996				
REGISTER 1233				
COPY	INFO	DISCUSS	REPLY	ACTION
RC				✓
C Manager				✓
FILE REF:				

All correspondence to:
PLANNING & ENVIRONMENTAL SERVICES MANAGER
Our ref. P P192/AH
If calling ask for:
Mr Fernando
RC 15267
ID 006261

10 October 1996

New Plymouth District Council
Private Bag 2025
NEW PLYMOUTH

Attention: Lester Barnes

Dear Sir

APPLICATION FOR RESOURCE CONSENT TO ERECT A 10 METRE MAST FOR USE AS A REMOTE AUTOMATIC WEATHER STATION

In accordance with the provisions of Section 114 of the Resource Management Act 1991 I enclose a copy of the decision made under delegated authority, to an application for consent to erect a 10 metre mast for use as a remote automatic weather station.

The applicant or consent holder has the right of objection in respect of this decision, and your attention is drawn to the last paragraph of the Resource Consent in this regard.

Any such objections shall be made in writing to the Local Authority, within 15 working days of the date the decision was made. If there is no objection in respect of this decision the consent may be acted upon immediately.

If not acted upon, this consent will lapse on the expiry of a period of three years after the date of the commencement of the consent unless otherwise specified in the decision, or unless extended by resolution of Council following application to Council. Council can only extend the time if it is satisfied that substantial progress or effort towards giving effect to the consent has been made and you are continuing to make such progress. Any application for an extension of time must be lodged with Council within a period of three months after the expiry period.

Also attached please find Council's invoice for the cost of processing the abovementioned application, recoverable under the provisions of Section 36 of the Act.

Yours faithfully

R Kratz
DISTRICT PLANNER

LIARDET STREET PRIVATE BAG 2025 NEW PLYMOUTH 4620 NEW ZEALAND
TELEPHONE (06) 759 6060 FAX (06) 759 6118

NEW PLYMOUTH DISTRICT COUNCIL
PLANNING & ENVIRONMENTAL SERVICES DEPARTMENT

RESOURCE CONSENT

PURSUANT TO SECTION 105 OF THE RESOURCE MANAGEMENT ACT 1991

Mr Fernando
ID 006261

REFERENCE: RC 15267

Consent is hereby ***GRANTED*** to ***THE NEW PLYMOUTH DISTRICT COUNCIL*** to ***ERECT A 10 METRE HIGH MAST FOR USE AS A REMOTE WEATHER STATION NOT IN COMPLIANCE OF HEIGHT IN RELATION TO BOUNDARY AND FRONT YARD REQUIREMENTS*** on the property at ***2286 SOUTH ROAD, OKATO***, being ***SEC 8 OKATO IN BELT, PT SEC 27 AND 28 OKATO DISTRICT, BLOCK VI, CAPE SURVEY DISTRICT***.

The consent is subject to the following conditions:

1. The use and development of the land shall be as described within the application and shall be substantially in accordance with Plan endorsed RC 15267/A.

2. The applicants shall pay the Council's costs of any monitoring that may be necessary to ensure compliance of the use with the conditions specified.

This consent has been granted for the following reasons:

1. This Resource Application for Land Use Consent is a DISCRETIONARY Activity.

2. The application is for a landuse consent to erect a 10 metre mast for use as a remote automatic weather station on a site located within the urban protection area of the rural zone.

   The proposed mast will be sited not in compliance of height in relation to boundary and front yard requirements of the District Plan

3. The New Plymouth District Plan, Section III allows as a conditional use public utilities and essential services.

   And Ordinance 4.1.1 states.

   "All buildings shall be at least 10 metres (by dispensation 2 metres) from the boundary of a public road."

   And Ordinance 4.2.1 states:

   "Buildings shall not exceed 10 metres in height above ground level (by dispensation 15 metres) nor a height equal to 3 metres (by dispensation) plus the horizontal distance between the part of the building between the part of the building being measured and the nearest site boundary".

LIARDET STREET PRIVATE BAG 2025 NEW PLYMOUTH 4620 NEW ZEALAND
TELEPHONE (06) 759 6060 FAX (06) 759 6118

The proposal would fall within this definition and falls within the Council's dispensation powers.

Council consequently considers the activity to be a discretionary activity in terms of the Resource Management Act 1991.

4. The proposed mast will be 10 metres in height and will be sited 5 metres from the boundary of the public road (South Road).

   The District Plan requires that all buildings be sited no closer than 10 metres from the boundary of a public road.

   At the proposed height and distance from the road the mast will not comply with the height provisions of the New Plymouth District Plan, Section III. To comply with the height in relation to boundary provisions of the New Plymouth District Plan Section III, the proposed mast should be a maximum height of 8 metres. Therefore the height encroachment is 2 metres.

5. Council is satisfied that the proposal meets the general objectives and policies for the District. Notwithstanding the scale of the proposal, Council is satisfied that any adverse effects on the environment will not be more than minor, as it is considered that the visual effect of the proposed mast will be no more intrusive than a transmitter pole or other similar permitted structure within the rural zone.

6. The written consents of the affected adjoining owners have been obtained and it is therefore considered that the adjoining owners believe that the development proposed will not be of detrimental effect.

7. The proposal is considered to have no detrimental effect on either the natural environment, adjoining properties, or the overall character of the area.

The proposed use will therefore be in accordance with the Purpose and Principles set out in the Resource Management Act 1991.

This Resource Consent shall lapse on 11 October 1999 unless the consent is given effect to before that date; or unless an application is made within three (3) months of the expiry of that date for the Council to grant an extension of time for establishment of the use. Any such application for an extension of time shall be subject to the provisions of Section 125 of the Act.

This consent is subject to the Right of Objection as set out in Section 357 of the Resource Management Act 1991.

DATED THIS 11 DAY OF OCTOBER 1996

R A Kratz
DISTRICT PLANNER

Appendix 1. Selection of Automatic Weather Station Sites.

1. Equipment.

The Automatic Weather Station consists of a 10 Metre pipe mast with a counterbalance pole and 3 staywires, designed to allow it to be lowered and raised again for sensor servicing, with internal cabling for the following attachments:

- Vector Instruments wind direction and velocity sensors mounted on a cross arm at the mast top.
- Vaisala temperature and relative humidity sensors mounted in a radiation screen 1400 mm. above ground level.
- Bracket mounted solar panel 5 M. above ground level.
- Lockable stainless steel enclosure housing Datalogger, battery and communications equipment.
- Hydrological Services tipping bucket raingauge mounted on a concrete slab at ground level with a buried cable to mast.

The Base Station consists of communications and data processing software with either an internal or external telephone modem connected, either direct or through a PABX, to the public telephone system installed on the clients PC.

2. Site requirements.

The main aim is to establish a station to record representative weather information for the general area of interest.

As it takes some years (10 for temperature and humidity and 30 years for rainfall and wind) to establish representative weather information it is important the station is installed in an area where it is unlikely to be disturbed for at least this period of time.

Continued all weather access for servicing is also important.

3. Selection of Site:

The, approximately 15 M. X 15 M., site should be, if possible, level and grassed with either level or only slightly sloping surrounds. While these requirements maybe harder to meet in hill country wind swept ridge tops should be avoided.

Obstructions such as trees, hedges (remember they are going to grow during the life of the station) and buildings should be, preferably, 4 and at least 2 times their height away from the mast and raingauge.

4. Fencing of installation.

It is recommended that a fence to protect the raingauge and staywires is erected either in conjunction with the mast installation or, preferably as the area to be protected will be obvious, afterwards.

A 1 M. high standard post and wire, or wire netting, fence with a gate allowing the mast to be lowered to the south [remember true North is 20 Degrees west of magnetic north, through the opening for sensor servicing will be sufficient protection if public interference is not likely to be a problem.

If a higher fence is required a larger area will be required to provide sensor clearance and it should be built with chain wire to allow free flow of the air.

5. Equipment protection.

Lightning protection including earth straps and spark gaps are part of the supplied equipment.

6. System operation.

The attached sheet "Details of arrays being output from automatic weather station" outlines the data being recorded in the weather station.

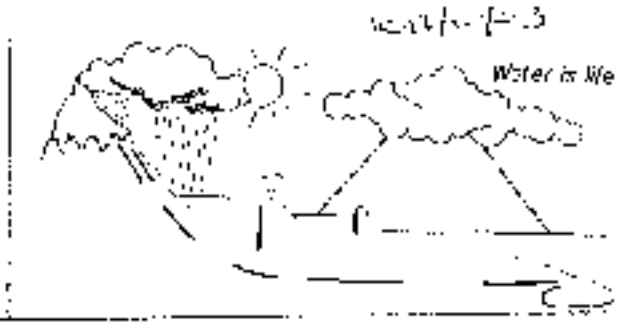
While most authorities are only interested in the Fire weather indicie data some are also using the meteorological data to gather forest performance information, providing data to local papers, interested landowners or as a service to the public.

Additional sensors such as solar radiation ($ 450), soil and grass temperature ($110 each), soil moisture [$150] or leaf wetness [$110] can be added when the station is installed or later.

System operation consists of calling the remote weather stations/s from the Base Station PC to recover stored data. This can be completed each day, or at other intervals, as the program only recovers new data and the remote station is capable of storing approximately 30 days of data before old data is automatically overwritten by new data.

Recovered data is stored to disk and automatically converted for input into the Fire Indicie calculation program. Running this program provides a screen display and printer output of the calculated indicie data which is also automatically saved to a separate directory.

Scott
Technical
Instruments Ltd.
NEW ZEALAND



1-10-96.

Mr.L.Barnes,
Engineering Department
New Plymouth District Council
Private Bag
New Plymouth.

Subject: Automatic weather station at Okato.

Dear Lester,

As per your fax request a Producer Statement - Design certificate covering the 10 M. mast for this station to support your consent application is attached.

Please advise when approval has been received as the NRFA are keen to have the station operating as soon as possible.

Regards for now,

C.Thurgood.

WORKS & SERVICES DEPT.
RECEIVED -3 OCT 1996
REGISTER 100
COPY | INFO | DISCUSS | BY | ACTION
FILE REF:

RECEIVED
15 OCT 1996

HEAD OFFICE
15A WOODSTOCK ROAD, HAMILTON
Phone (07) 855 9695, FAX (07) 855 0600
Cellphone 025 372 456

S.I. OFFICE
21A DINWOOD AVENUE P.O. Box 873, CHRISTCHURCH
Phone (03) 389 4600, FAX (03) 389 0406
Cellphone 025 324-174

Our Ref: 96187

Association Consulting Engineers of New Zealand	Institution Professional Engineers of New Zealand

P.I.M. No. .....

Building Regulation Clause(s) .....

PRODUCER STATEMENT - DESIGN

ISSUED BY: *Lyall Bruce Green*

TO: *Territorial Authorities*

IN RESPECT OF: *Engineering Design of Proposed 10m Meteorological Mast*

AT: Nationwide

LOT: DP:

Lyall Green Consultants Ltd. has been engaged by *Scott Technical Instruments* to provide *Structural Engineering Design* in respect of the requirements of Clause(s) B1/VM1,VM4 of the Building Regulations 1992 for .....

[ ] All [✓] Part only as specified

.... of the building work. The design has been prepared in accordance with *verification methods* of the approved documents issued by the Building Industry Authority and the work is described on *Scott Technical Instruments* drawings titled and numbered *STI-RAWS-10m* and the specification and other documents according to which the building is proposed to be constructed.

As an independent design professional covered by a current policy of Professional Indemnity Insurance to a minimum value of $200,000, I BELIEVE ON REASONABLE GROUNDS that subject to:

(ii) the site verification of the following design assumptions
- a) safe soil bearing pressure – 75kPa
- b) maximum site wind speed = 70m/s
- c) continuous annual maintenance inspection and repair
- d) design life = 15 years

and (iii) all proprietary products meeting the performance specification requirements, the drawings, specifications, and other documents according to which the building is proposed to be constructed comply with the relevant provisions of the building code.

* *Unless specifically noted, compliance of the drawings to Non Specific codes such as NZS 3604 and NZS 4229 have not been checked by this practice.*

* *This certificate does not cover stability or suitability of the site.*

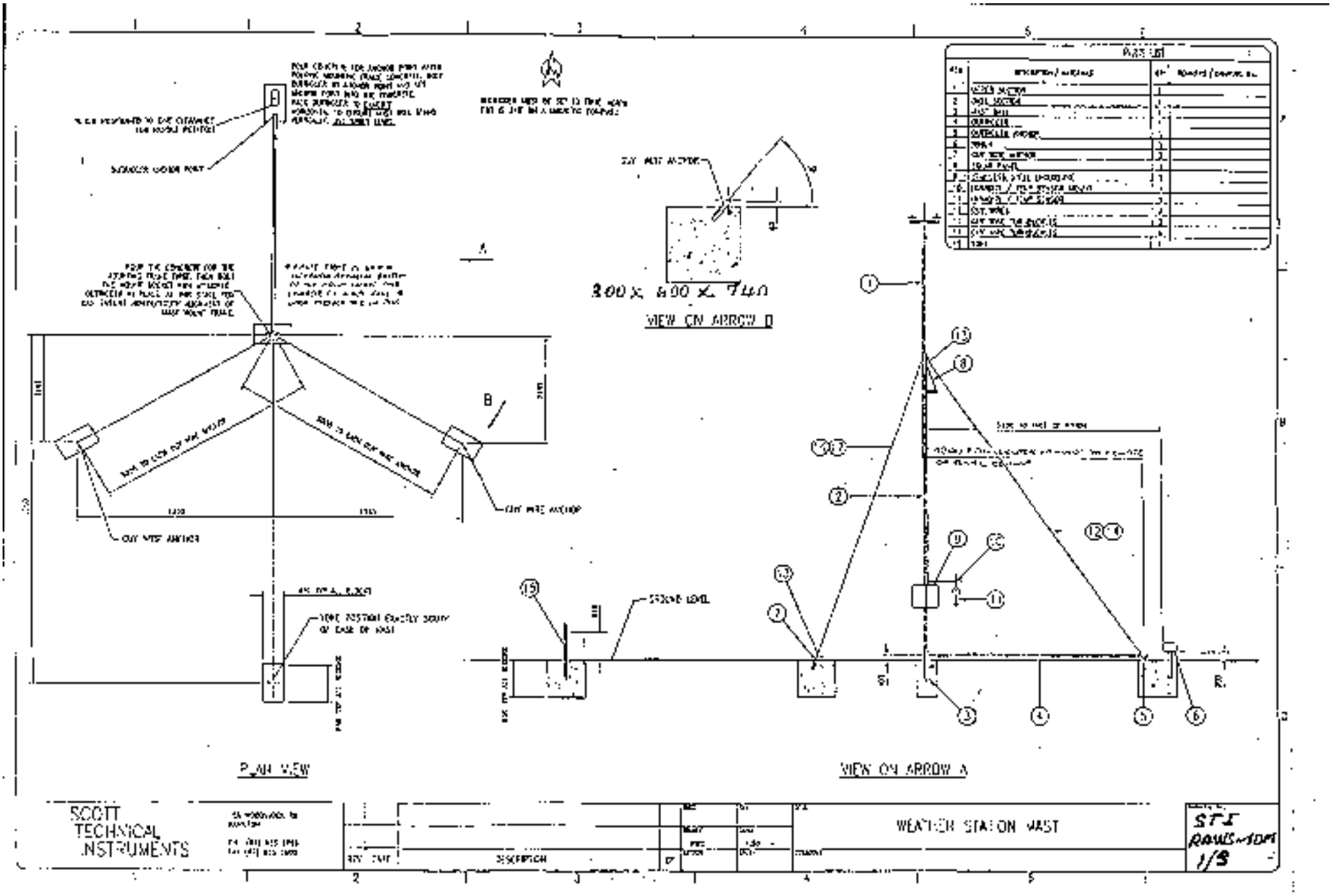
Signed.

REGISTERED ENGINEER
P O Box 5254, Hamilton

Date: 30/9/96

ERB/AERB Reg. No. 7664

Member of ACENZ & IPENZ


PLAN VIEW
VIEW ON ARROW A
VIEW ON ARROW D
200 x 600 x 700
SCOTT TECHNICAL INSTRUMENTS
WEATHER STATION MAST
STI RAWS-100M 1/S

W.T. 10/03

NEW PLYMOUTH DISTRICT COUNCIL

PLANNING & ENVIRONMENTAL SERVICES DEPARTMENT

WORKS & SERVICES DEPT.				
RECEIVED 14 OCT 1996				
REGISTER 1223				
COPY	INFO	DISCUSS	REPLY	ACTION
RC				✓
L Murray				✓
FILE REF:				

10 October 1996

All correspondence to:
PLANNING & ENVIRONMENTAL SERVICES MANAGER
Our ref. P.P192/AH
If calling ask for:
Mr Fernando
RC 15267
ID 006261

New Plymouth District Council
Private Bag 2025
NEW PLYMOUTH

Attention: Lester Barnes

Dear Sir

APPLICATION FOR RESOURCE CONSENT TO ERECT A 10 METRE MAST FOR USE AS A REMOTE AUTOMATIC WEATHER STATION

In accordance with the provisions of Section 114 of the Resource Management Act 1991 I enclose a copy of the decision made under delegated authority, to an application for consent to erect a 10 metre mast for use as a remote automatic weather station.

The applicant or consent holder has the right of objection in respect of this decision, and your attention is drawn to the last paragraph of the Resource Consent in this regard.

Any such objections shall be made in writing to the Local Authority, within 15 working days of the date the decision was made. If there is no objection in respect of this decision the consent may be acted upon immediately.

If not acted upon, this consent will lapse on the expiry of a period of three years after the date of the commencement of the consent unless otherwise specified in the decision, or unless extended by resolution of Council following application to Council. Council can only extend the time if it is satisfied that substantial progress or effort towards giving effect to the consent has been made and you are continuing to make such progress. Any application for an extension of time must be lodged with Council within a period of three months after the expiry period.

Also attached please find Council's invoice for the cost of processing the abovementioned application, recoverable under the provisions of Section 36 of the Act.

Yours faithfully

R Kratz
DISTRICT PLANNER

LIARDET STREET PRIVATE BAG 2025 NEW PLYMOUTH 4620 NEW ZEALAND
TELEPHONE (06) 759 6060 FAX (06) 759 6118

NEW PLYMOUTH DISTRICT COUNCIL

PLANNING & ENVIRONMENTAL SERVICES DEPARTMENT

RESOURCE CONSENT

PURSUANT TO SECTION 105 OF THE RESOURCE MANAGEMENT ACT 1991

Mr Fernando
ID 006261

REFERENCE: RC 15267

Consent is hereby ***GRANTED*** to ***THE NEW PLYMOUTH DISTRICT COUNCIL*** to ***ERECT A 10 METRE HIGH MAST FOR USE AS A REMOTE WEATHER STATION NOT IN COMPLIANCE OF HEIGHT IN RELATION TO BOUNDARY AND FRONT YARD REQUIREMENTS*** on the property at ***2286 SOUTH ROAD, OKATO***, being ***SEC 8 OKATO IN BELT, PT SEC 27 AND 28 OKATO DISTRICT, BLOCK VI, CAPE SURVEY DISTRICT.***

The consent is subject to the following conditions:

1. The use and development of the land shall be as described within the application and shall be substantially in accordance with Plan endorsed RC 15267/A.

2. The applicants shall pay the Council's costs of any monitoring that may be necessary to ensure compliance of the use with the conditions specified

This consent has been granted for the following reasons:

1. This Resource Application for Land Use Consent is a DISCRETIONARY Activity.

2. The application is for a landuse consent to erect a 10 metre mast for use as a remote automatic weather station on a site located within the urban protection area of the rural zone.

   The proposed mast will be sited not in compliance of height in relation to boundary and front yard requirements of the District Plan.

3. The New Plymouth District Plan, Section III allows as a conditional use public utilities and essential services.

   And Ordinance 4.1.1 states:

   "All buildings shall be at least 10 metres (by dispensation 2 metres) from the boundary of a public road."

   And Ordinance 4.2.1 states

   "Buildings shall not exceed 10 metres in height above ground level (by dispensation 15 metres) nor a height equal to 3 metres (by dispensation) plus the horizontal distance between the part of the building between the part of the building being measured and the nearest site boundary".

LIARDET STREET PRIVATE BAG 2025 NEW PLYMOUTH 4620 NEW ZEALAND
TELEPHONE (06) 759 6060 FAX (06) 759 6118

The proposal would fall within this definition and falls within the Council's dispensation powers.

Council consequently considers the activity to be a discretionary activity in terms of the Resource Management Act 1991.

4. The proposed mast will be 10 metres in height and will be sited 5 metres from the boundary of the public road (South Road).

The District Plan requires that all buildings be sited no closer than 10 metres from the boundary of a public road.

At the proposed height and distance from the road the mast will not comply with the height provisions of the New Plymouth District Plan, Section III. To comply with the height in relation to boundary provisions of the New Plymouth District Plan Section III, the proposed mast should be a maximum height of 8 metres. Therefore the height encroachment is 2 metres.

5. Council is satisfied that the proposal meets the general objectives and policies for the District. Notwithstanding the scale of the proposal, Council is satisfied that any adverse effects on the environment will not be more than minor, as it is considered that the visual effect of the proposed mast will be no more intrusive than a transmitter pole or other similar permitted structure within the rural zone.

6. The written consents of the affected adjoining owners have been obtained and it is therefore considered that the adjoining owners believe that the development proposed will not be of detrimental effect.

7. The proposal is considered to have no detrimental effect on either the natural environment, adjoining properties, or the overall character of the area

The proposed use will therefore be in accordance with the Purpose and Principles set out in the Resource Management Act 1991.

This Resource Consent shall lapse on 11 October 1999 unless the consent is given effect to before that date; or unless an application is made within three (3) months of the expiry of that date for the Council to grant an extension of time for establishment of the use. Any such application for an extension of time shall be subject to the provisions of Section 125 of the Act.

This consent is subject to the Right of Objection as set out in Section 357 of the Resource Management Act 1991.

DATED THIS 11 DAY OF OCTOBER 1996

R A Kratz
DISTRICT PLANNER

Appendix 1. Selection of Automatic Weather Station Sites.

1. Equipment.

The Automatic Weather Station consists of a 10 Metre pipe mast with a counterbalance pole and 3 staywires, designed to allow it to be lowered and raised again for sensor servicing, with internal cabling for the following attachments:

- Vector Instruments wind direction and velocity sensors mounted on a cross arm at the mast top.
- Vaisala temperature and relative humidity sensors mounted in a radiation screen 1400 mm, above ground level.
- Bracket mounted solar panel 5 M. above ground level.
- Lockable stainless steel enclosure housing Datalogger, battery and communications equipment.
- Hydrological Services tipping bucket raingauge mounted on a concrete slab at ground level with a buried cable to mast.

The Base Station consists of communications and data processing software with either an internal or external telephone modem connected, either direct or through a PABX, to the public telephone system installed on the clients PC.

2. Site requirements.

The main aim is to establish a station to record representative weather information for the general area of interest.

As it takes some years (10 for temperature and humidity and 30 years for rainfall and wind) to establish representative weather information it is important the station is installed in an area where it is unlikely to be disturbed for at least this period of time.

Continued all weather access for servicing is also important.

3. Selection of Site:

The, approximately 15 M. X 15 M., site should be, if possible, level and grassed with either level or only slightly sloping surrounds. While these requirements maybe harder to meet in hill country wind swept ridge tops should be avoided.

Obstructions such as trees, hedges (remember they are going to grow during the life of the station) and buildings should be, preferably, 4 and at least 2 times their height away from the mast and raingauge.

4. Fencing of installation.

It is recommended that a fence to protect the raingauge and staywires is erected either in conjunction with the mast installation or, preferably as the area to be protected will be obvious, afterwards.

A 1 M. high standard post and wire, or wire netting, fence with a gate allowing the mast to be lowered to the south (remember true North is 20 Degrees west of magnetic north, through the opening for sensor servicing will be sufficient protection if public interference is not likely to be a problem.

If a higher fence is required a larger area will be required to provide sensor clearance and it should be built with chain wire to allow free flow of the air.

5. Equipment protection.

Lightning protection including earth straps and spark gaps are part of the supplied equipment.

6. System operation.

The attached sheet "Details of arrays being output from automatic weather station" outlines the data being recorded in the weather station.

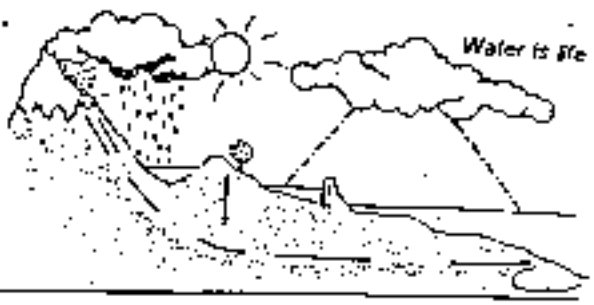
While most authorities are only interested in the Fire weather indicie data some are also using the meteorological data to gather forest performance information, providing data to local papers, interested landowners or as a service to the public.

Additional sensors such as solar radiation ($ 450), soil and grass temperature ($110 each), soil moisture ($150) or leaf wetness ($110) can be added when the station is installed or later.

System operation consists of calling the remote weather stations/s from the Base Station PC to recover stored data. This can be completed each day, or at other intervals, as the program only recovers new data and the remote station is capable of storing approximately 30 days of data before old data is automatically overwritten by new data.

Recovered data is stored to disk and automatically converted for input into the Fire Indicie calculation program. Running this program provides a screen display and printer output of the calculated indicie data which is also automatically saved to a separate directory.

Scott Technical Instruments Ltd.
NEW ZEALAND



Details of arrays being output from automatic weather station.

Sample of output arrays.

```
161,3,1994,170,900,3.936,86,3,45.48,348.8,804,30.35,349.8,1.2,
162,3,1994,170,900,3.71,88,4,31.44,345.3,3.126,51.10.51,1220,7.6
160.3 1994,170,1000,4.363,84.5,37.33,343,7.0
161.3.1994,170,1000,4.062,85.7,48.96,346.7,943,35.92,346,2.8,
160.3.1994,170,1200,4.319,86.8,36.47,352.9,1.2
161.3.1994,170,1200,4.443,86.6,53.04,39.26,1047,31.46,345.9,1.2,
160,3,1994.170,1200,4,388,85,4,23.81,344.5,.6
161,3,1994,170,1200,4,277,85,2,53.28,352.6,1117,35.83,356.2,.6,
162,3,1994.170,1200,4.368,85.4,23.81,344.5,9.4
```

Hourly (10 minutes before the hour averages) Fireweather data.

```
A  S  Y    J    T    T    R    W K  W    R F
R  T  E    U    I    E    H    I P  I    A o
R  N  A    L    M    M         N K  N    I y
A     R    I    E    P         O    D    N
Y  N       A                             r h
T  O       N                   S    D    A o
D                              P    I    L u
           D                   E    R    L r
           A                   E    E
           Y                   D    C
161,3,1994,171,900,2.179,84,4,16,52,334.5,0
```

Hourly meteorological data output.

```
A  S  Y    J    T    A    A    M 3 K  D    T    A    A    R
R  T  E    U    I    V    V    A S    E    I    V    V    A
R  N  A    L    M                X E    R    M                I
A     R    I    E    T    R         C    E    E    W    W    N
Y  N       A         E    H    W         C         I    I    F
I  O       N         M         N         T    O    N    K    A
D                    F         D         I    F    D    D    L
                                         O                   L
           D                   S X    N    M S    S    D
           A                   P P         A P    P    I
           Y                   D H         X D    D    K
161,3,1994,170,900,3.936.86.3,45.48,348.8.804,30.35,349.8,1.2,
```

24 Hour summary of meteorological data

```
A  S  Y    J    T    INSTANT READINGS    M    T    M    T    24
R  T  E    U    I    T  R  W    W    I    I    A    M    H
R  N  A    L    M    E  H  I    I    N    M    X    I    R.
A     R    I    E    M       N    M         E
Y  N       A         P       O    D    T         T         T
I  O       N                             E    O    E    O    O
D                                        M    F    M    F    T
           D                   S    D    P         P         A
           A                   P    I    R         R    M    L
           Y                   E    R              I    A
                               E                   N    X    R
                               D                              A
170,500,3.93,88 4,31.44,349 3.3.126,0051,10.51,1220,7.6
```

Special Hourly (10 minutes before the hour averages) Fireweather data. which NZ Fire calls from Wellington.

```
163,3,1994,170,1200,4.388.85.6,23.81.344.5,9.6
```

SERVICING SCIENCE AND INDUSTRY
Equipment — Design — Installation — Service — Operation — Data Reduction
Hydrology — Meteorology — Oceanography — Environmental — Agriculture — Industrial — Traffic

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154 WOODSTOCK ROAD, HAMILTON.
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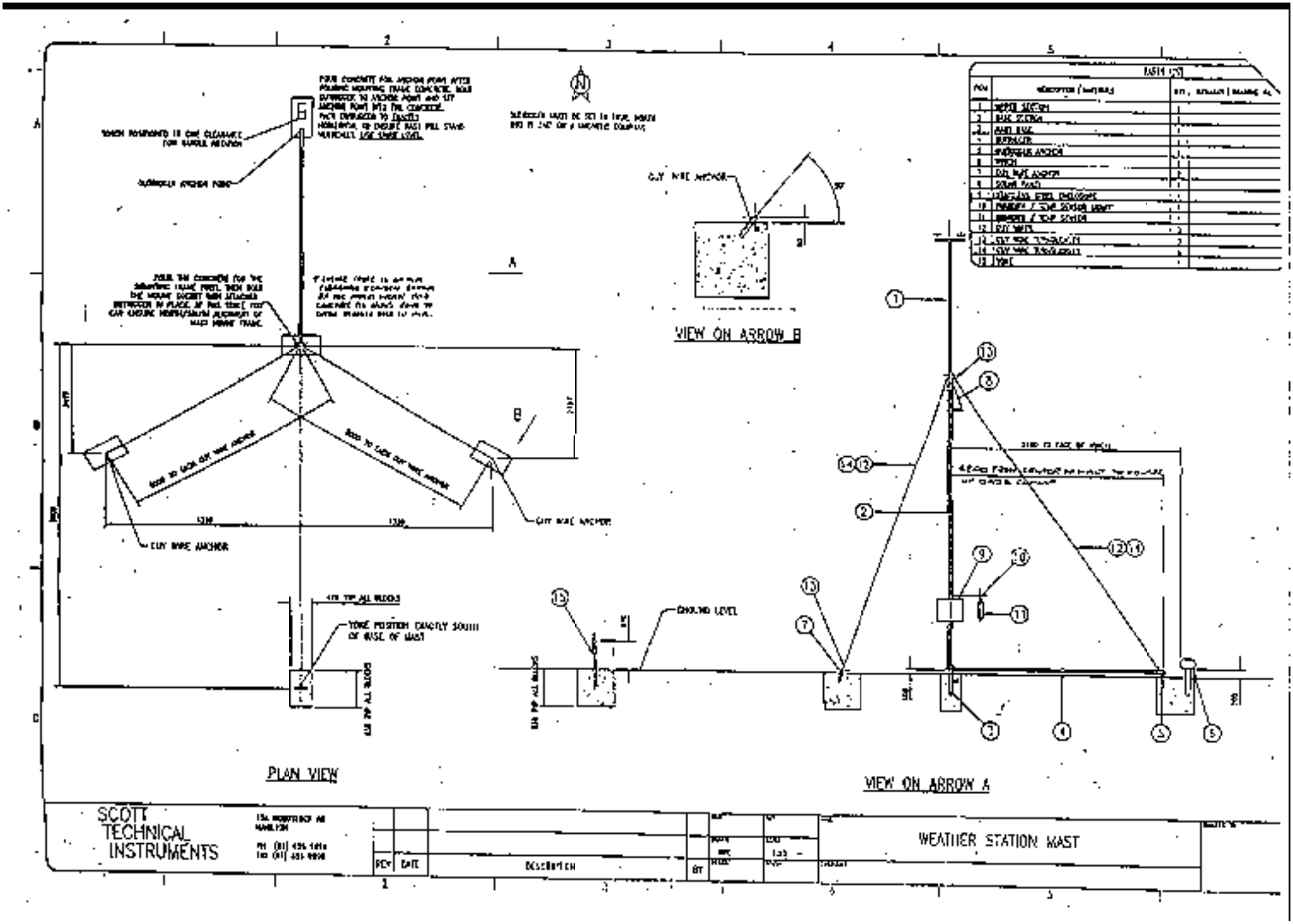
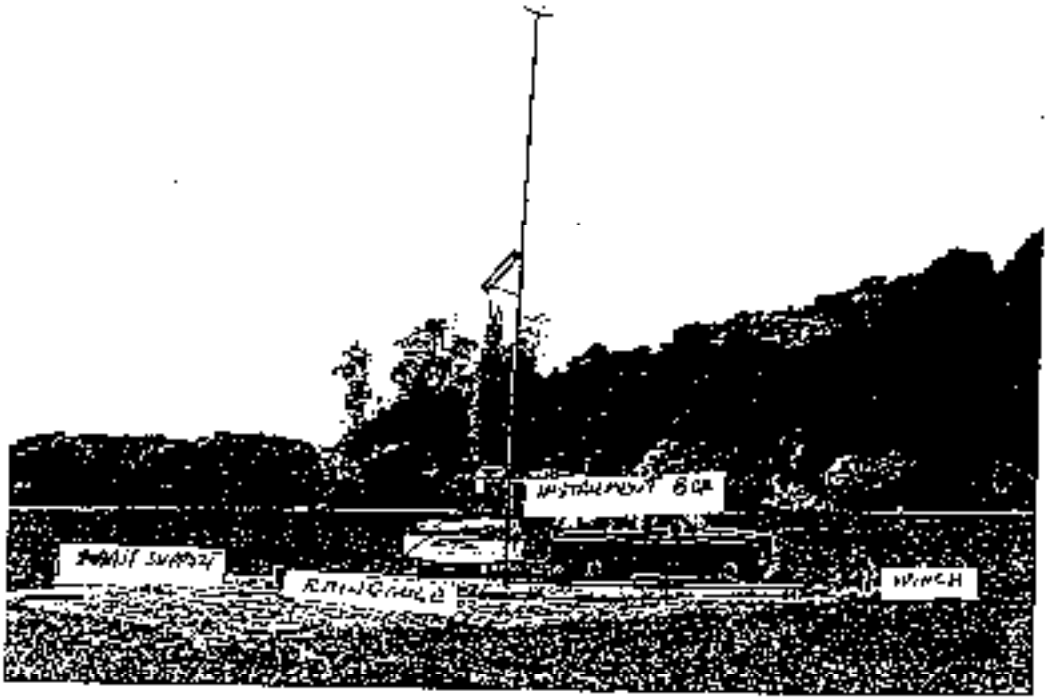
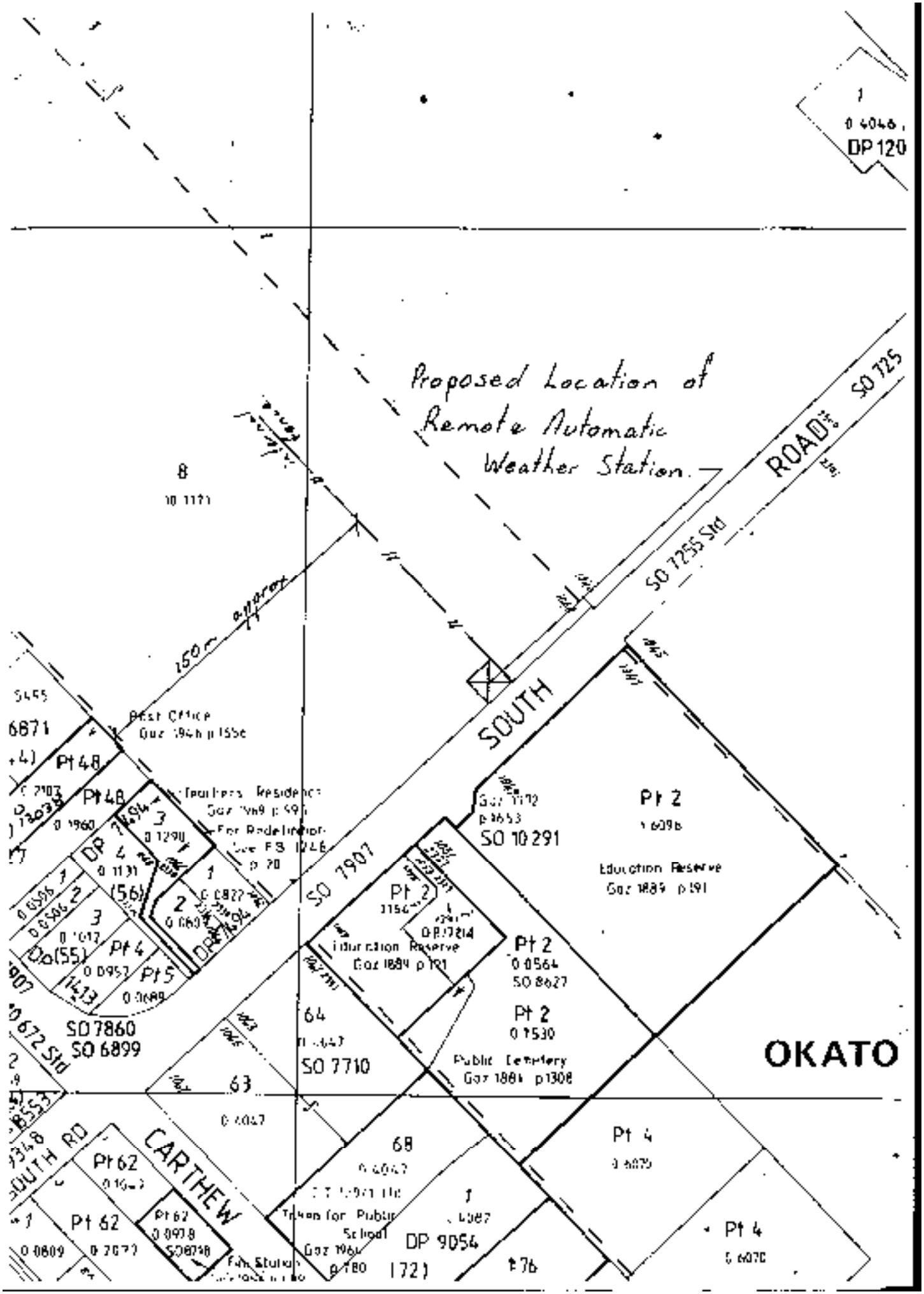
S.I. OFFICE
21A LINWOOD AVENUE, P.O. Box 523, CHRISTCHURCH
Phone (03) 389 4606, FAX (03) 389 4966
Cellphone 025 324-414


PLAN VIEW
VIEW ON ARROW A
VIEW ON ARROW B
GUY WIRE ANCHOR
GROUND LEVEL
SCOTT TECHNICAL INSTRUMENTS
WEATHER STATION MAST
REV
DATE
DESCRIPTION



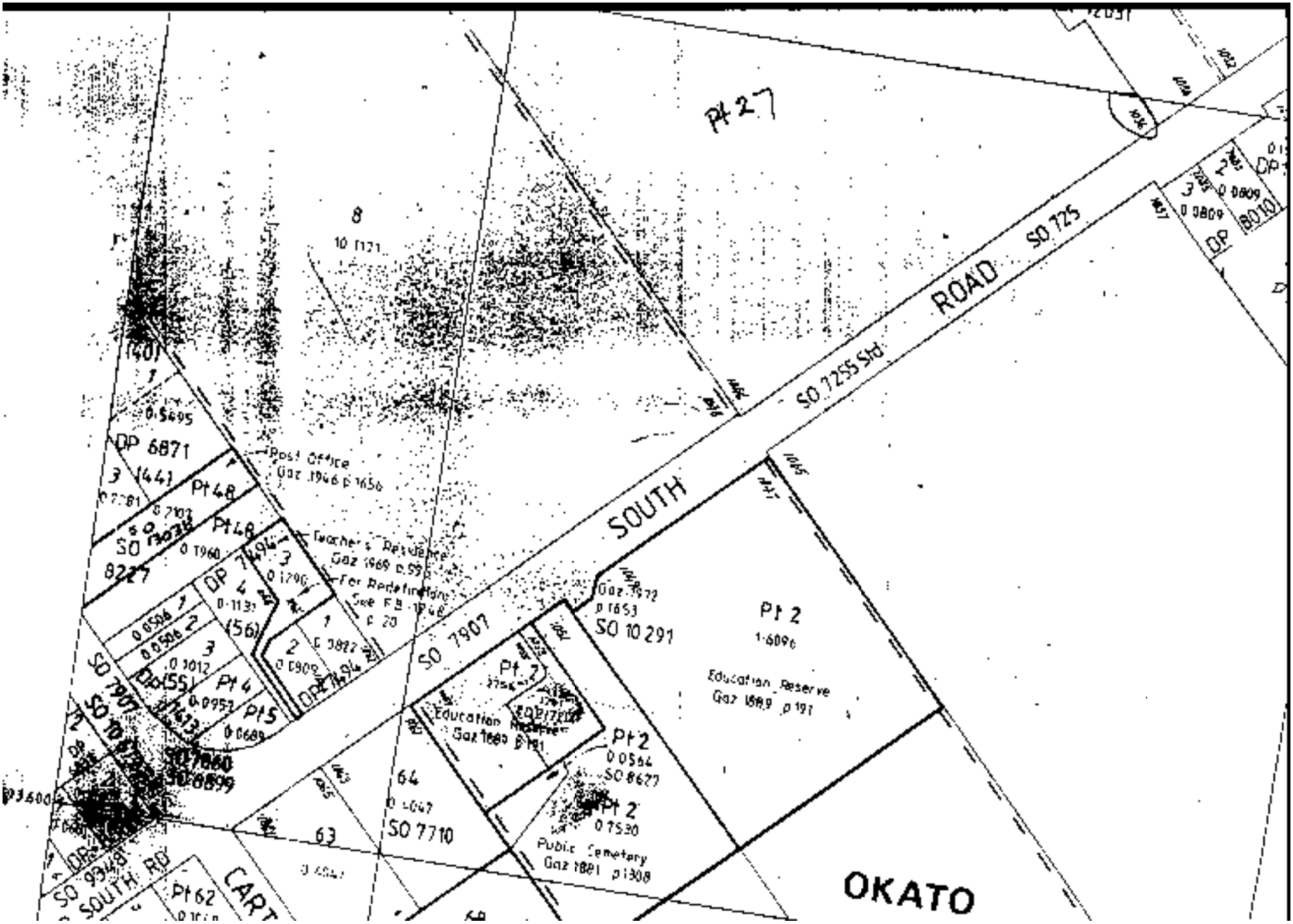


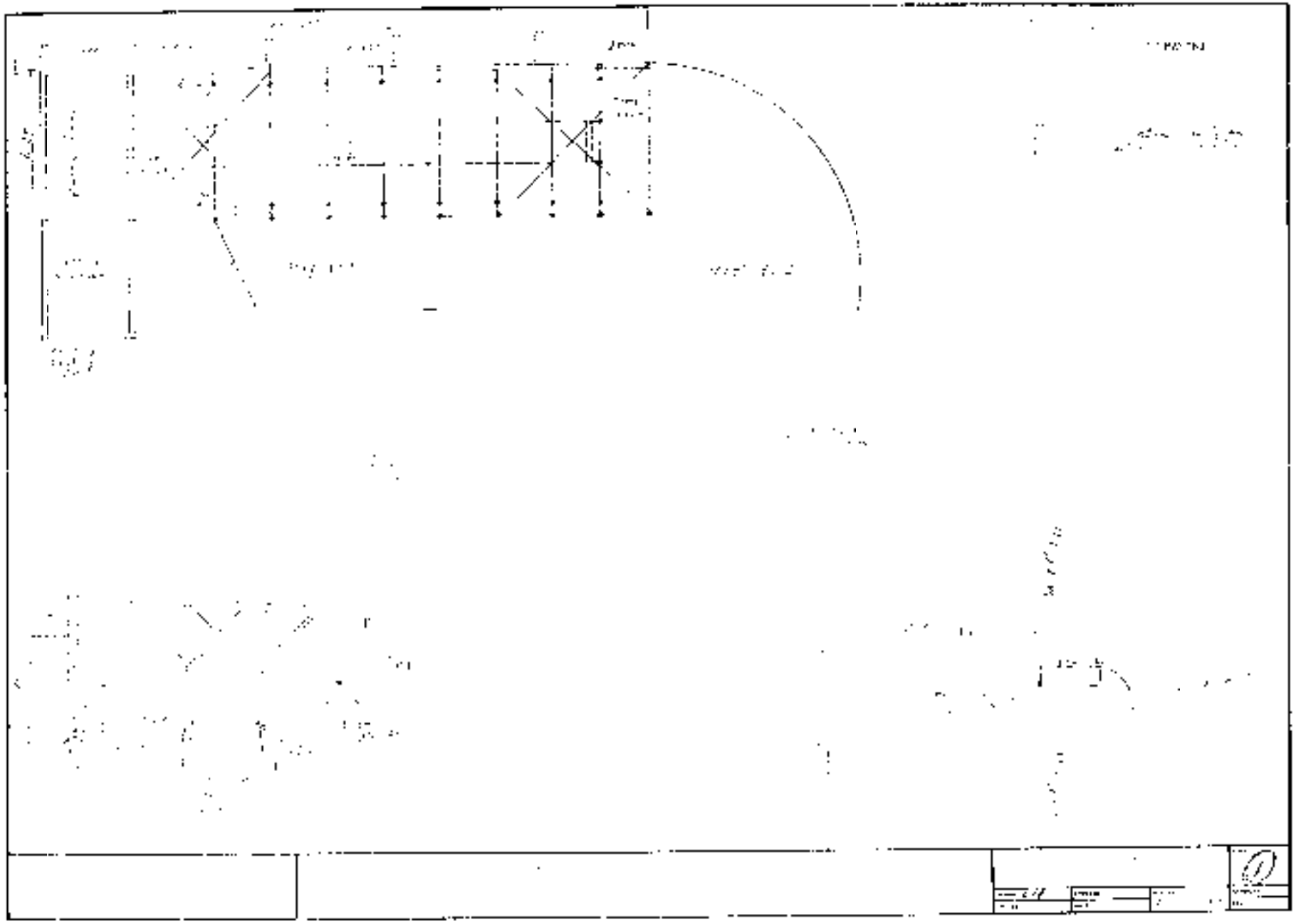
BUILDING CONSENT

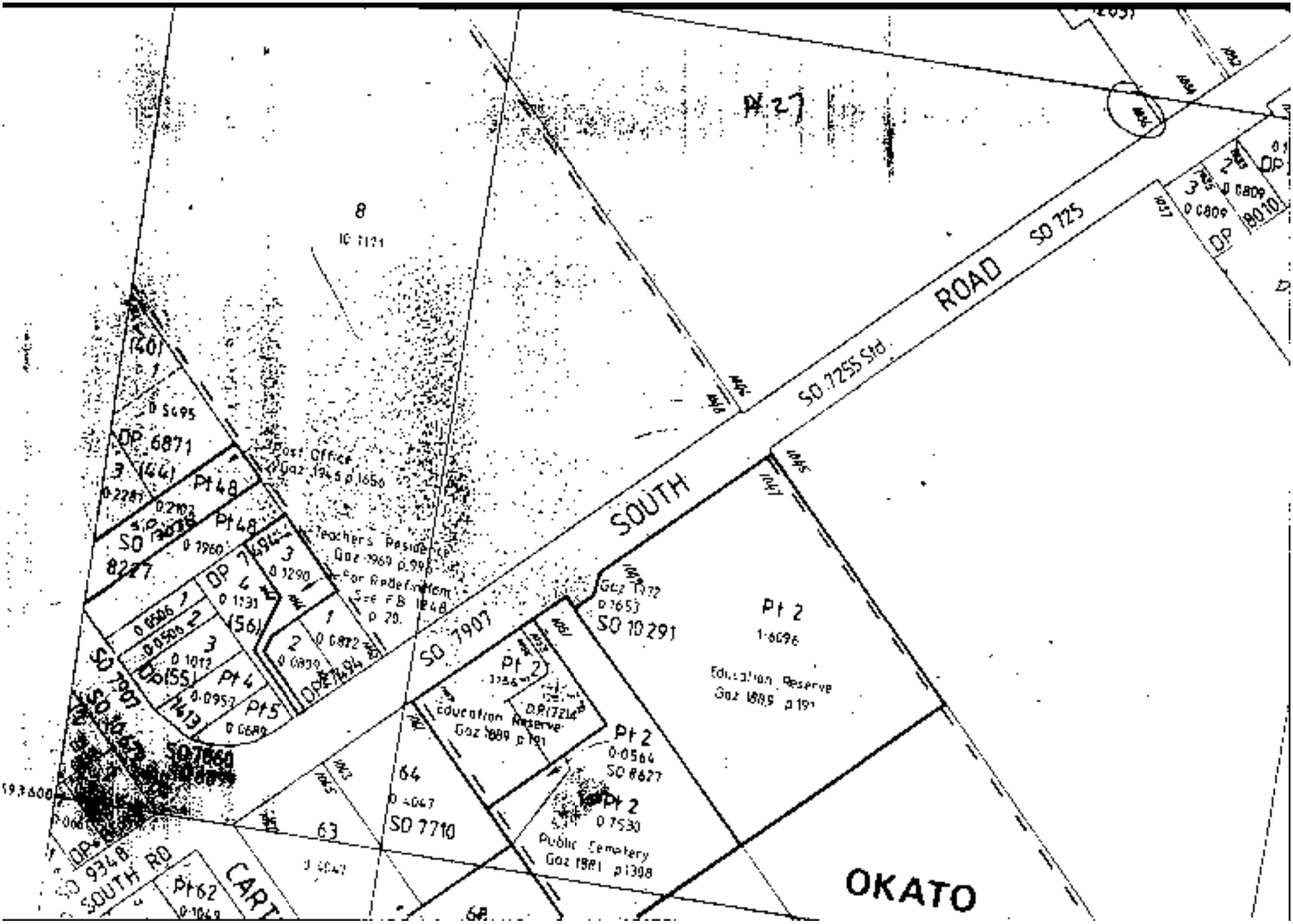
936P

PROPERTY ID 006261

936P


Pt 27
8
10 1121
SO 7255
SO 7255 Std
ROAD
SOUTH
DP 6871
Pt 48
Post Office
Gaz 1946 p 1656
Teachers Residence
Gaz 1969 p 59
For Redefinition
See F.B. 1946
p 20
SO 7907
Pt 7
Education Reserve
Gaz 1880 p 191
Gaz 1972
p 1653
SO 10 291
Pt 2
1·6096
Education Reserve
Gaz 1969 p 197
Pt 2
0 0564
SO 8677
Pt 2
0 7530
Public Cemetery
Gaz 1881 p 1308
64
SO 7710
63
SO 9348
SOUTH RD
Pt 62
OKATO




SOUTH ROAD
SO 7255 Std.
SO 725
Pt 27
8
Post Office
Teachers Residence
Education Reserve
Public Cemetery
Pt 2
SO 10291
SO 7907
SO 7710
SO 8627
DP 6871
DP 7494
SO 8227
SO 7860
SOUTH RD
OKATO

SPECIFICATIONS FOR COWSHED FOR
MR & MRS L. McFETRIDGE, MAIN RD, OKATO

Blockwalls: 200m block walls on shed, wall height approx 2.600 high. yard wall is 150m blocks.
Footings 300 x 300 with 2 12m D.F. steel, with starters at .600 ¢ for wall
Wall steel 1 12m D F steel at 1200 high, with double bond beam at the top with 1x 12m D F steel
Roof 300 x 100 rafters at 2 200 ¢ with 100 x 50 purlin cut in between rafters, with long run iron on top. End of rafters on yard side will be on a 50m galv. pipe with a steel plate with 2 12m bolts. Pipe will have 400 x 400 footing welded to mesh. Floor will be 100m with mesh welded to all pipe work. Pit walls will be lined with haraiglage.

Te Kaunihera-ā-Rohe o Ngāmotu
NEW PLYMOUTH DISTRICT COUNCIL
newplymouthnz.com

Code Compliance Certificate

Form 7, Section 95, Building Act 2004

The Building

Street Address of building: 2282 South Road OKATO 4652
Legal Description of land where building is located: PT SEC 27 OKATO DIST
Current, lawfully established use: Dwelling
Year first constructed: Unknown

The Owner

Name of owner:	Lyndsay John McFetridge	Phone number: (Bus.)	06 752 4219
Contact Person:	Lyndsay John McFetridge	(Pvt.)	027 273 3940
Mailing Address:	2282 Main South Road, RD 4 NEW PLYMOUTH	Facsimile number:	06 752 4300

Building Work

Building Consent number:	**BC03/50661**
Description of work:	**Dwelling alterations**
Issued by:	New Plymouth District Council

Code Compliance

The building consent authority named below is satisfied, on reasonable grounds, that –
(a) the building work complies with the building consent.

This is a final code compliance certificate issued in respect of all of the building work under the above building consent.

CODE COMPLIANCE CERTIFICATE

_____

Team Leader Inspectorate

Date Issued: 22 March 2012

PLANS

BC20/127182

Prepared by:

-PROPOSED NEW DWELLING-

Cameron & Rachel McDonnell

2b Gossling St.

Okato

New Plymouth

Drawing titles

1 Site plan
2 Floor plan
3 Elevations
4 Sections
5 Foundation plan & details
6 Roof plan & details
7 Cladding details
8 Miscellaneous details
9 Bracing plan
10 Electrical plan
11 Drainage plan & details

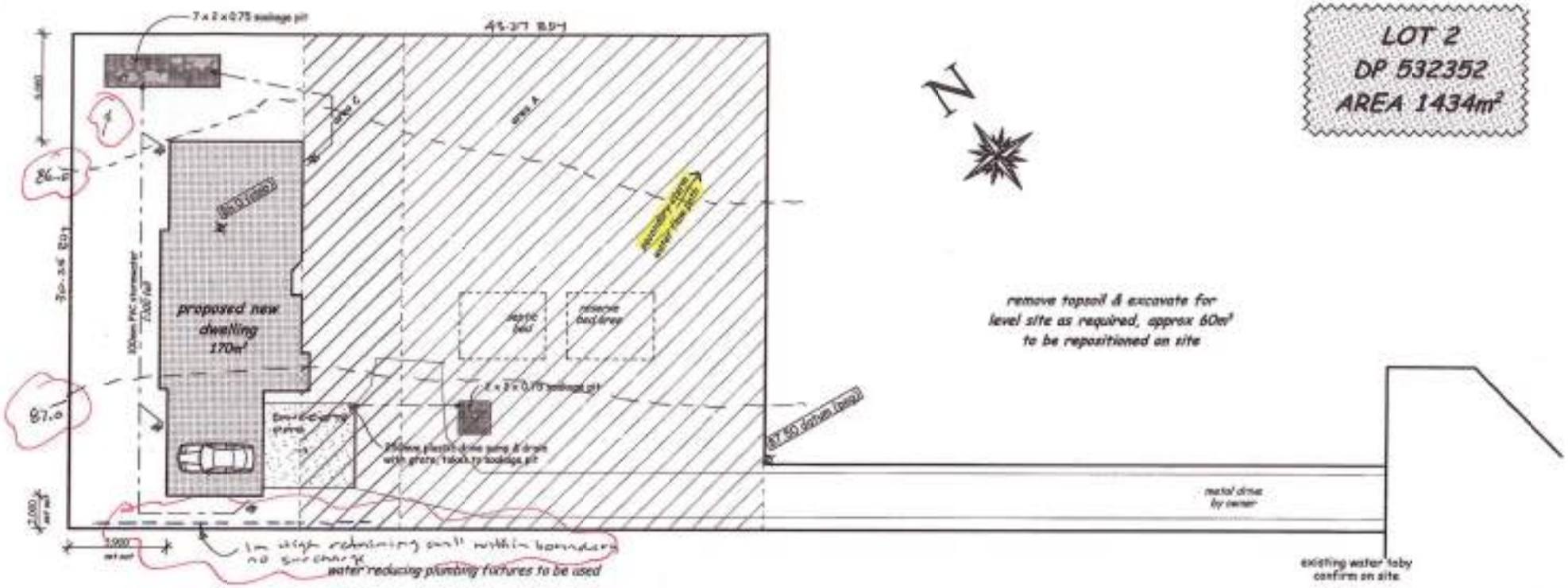
Truss fixing plan

NPDC Approved for
13 OCT 2020
Building Consent

NPDC OFFICE COPY
This Building Consent is approved under the Building Act and is limited to new work as shown on these plans and related specifications.
Approved 13-10-2020 Date
BC 20/127/182.

RoughanDesign
Architectural Designers
www.roughandesign.co.nz

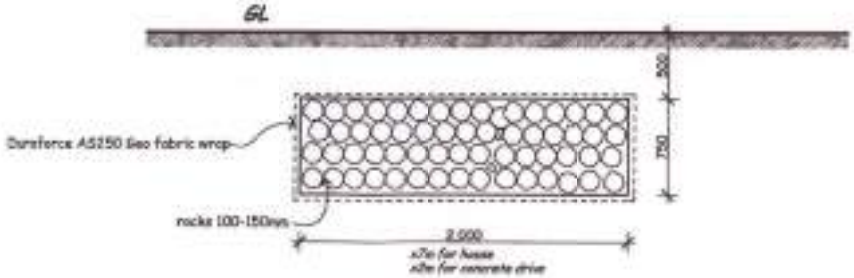
phone 06 753 3365
fax 06 753 3384
mobile 0274 490 715
788 Carrington Road,
New Plymouth RD1



NPDC Approved for
13 OCT 2020
Building Consent

Site Description

Climate Zone: zone 2
Earthquake Zone: zone 1
Exposure Zone: zone C
Wind region: A
Wind Zone: High



section thru soakage pit

GENERAL NOTES:

- Check and verify all dimensions on site prior to commencing.
- All work and construction shall comply with standards NZS 3604:2011 NZ Building Code & New Plymouth District Council requirements.
- All exposed exterior structural fixings to be stainless steel finish.
- All wall framing to be H1.2 treated, SG 8 Lazer framing
- Any external timbers to be H3.2 treated, if in contact with the ground H5 treated
- Install a minimum of a battery smoke detector located on the escape route & within 3m of any bedroom doors.

Site conditions to be adhered to

- Any close board fencing must not exceed 1.2m high. The material colours are to be visually recessive, below 30% light reflectance value (RLV)
- Within area 'c' the maximum height of any vegetation is RL90.0

sediment control: The contractor is to prevent any surface water run off during construction

site plan

RoughanDesign
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768 Carrington Road,
New Plymouth 4310

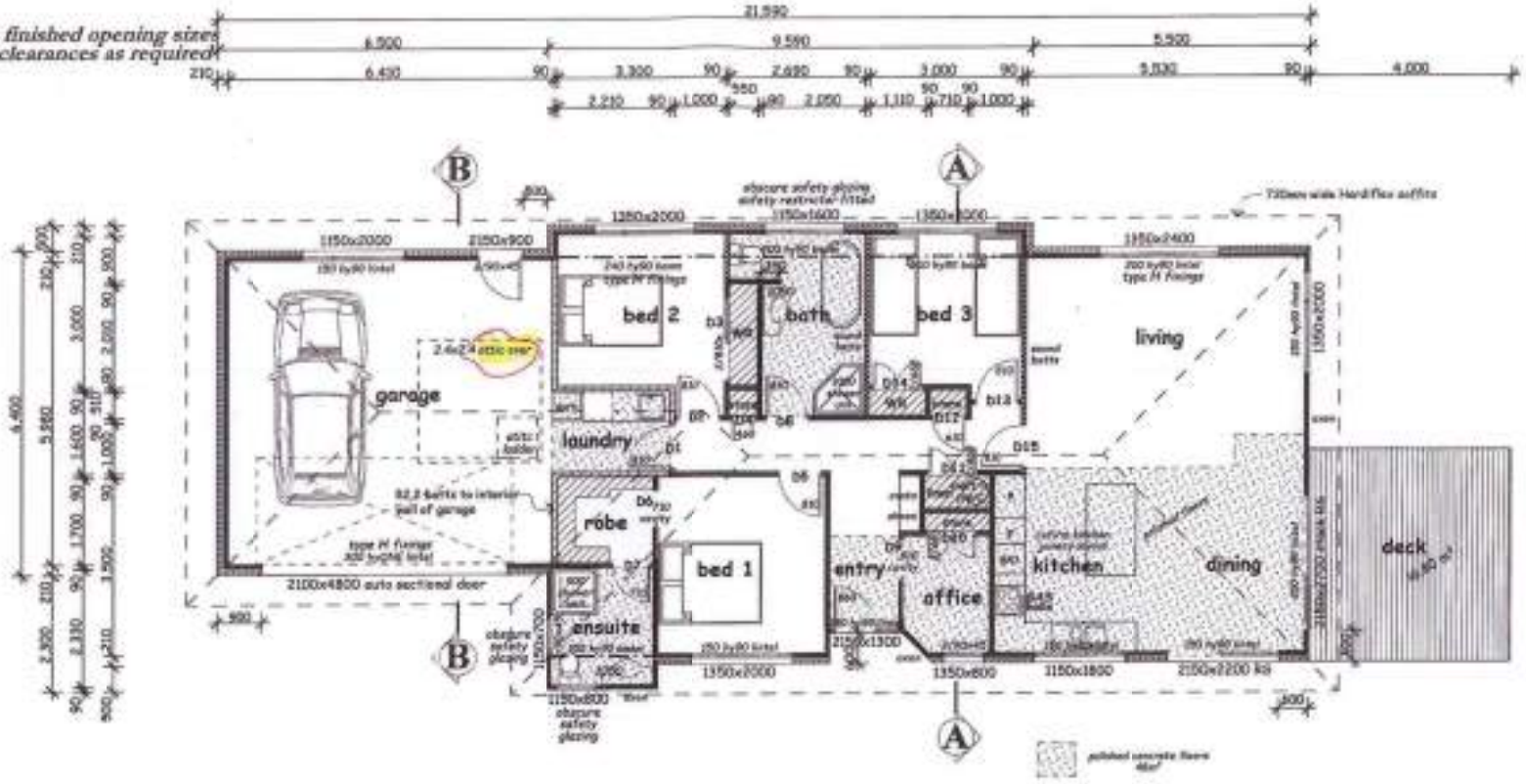
-PROPOSED NEW DWELLING-
Cameron & Rachel McDonnell
2b Gossling St. Okato, New Plymouth

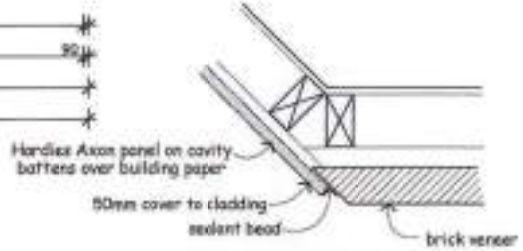
1:250

Sheet 1 Series of 11

Date: September 2020 | Revision A Oct 20 | Job # 3389/20

window dimensions shown are finished opening sizes
Precut are to allow additional clearances as required





Detail 1
PLAN external corner
Brick to Axon
1:10

2400mm stud
2150mm window head heights
(confirm height, to underside of soffit)
Insulation: walls-R2.2, ceiling-R3.2

-to wet areas install Aqualine Gib linings finished with 2 coats of acrylic paint, polished concrete floors
- Rangehood to be fitted to cook top
- Intermittent extraction fan to be fitted above shower
- Copper piping to all water pipes

All lintel fixings shall be type G unless specified

Bathroom and ensuite glazing
- *windows shall have safety glass to inner IGU pane*
- *all mirrors are to be of safety glass*
- *shower screens/doors are to have safety glazing*

All windows tinted double glazing, single to garage

AMENDMENT
127182 - 02

floor plan

confirm dimensions on site

RoughanDesign
architectural designers
phone 06 753 3585
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188 Carrington Road, New Plymouth RD1
www.roughandesign.co.nz

-PROPOSED NEW DWELLING-
Cameron & Rachel McDonnell
2b Gossling St. Okato, New Plymouth

1:100 area 170m²
high wind zone

Sheet 2 Series of 11
Date: September 2009 | Revision B Aug 2020 | Job # 3389/09

Risk factor	Risk severity: Low		Medium		High		Very high		summed for each risk factor
Wind zone	0		0		1	1	2		1
Number of storeys	0	0	1		2		4		0
Roof/wall intersection design	0	0	1		3		5		0
Eaves width	0		1	1	2		3		1
Envelope complexity	0		1	1	3		6		1
Deck design	0	0	2		4		6		0
							total risk score		3

applicable to all elevations as they are similar

north
1:100

west

east

south

NPDC Approved for
13 OCT 2020
Building Consent

General Notes:

- All work to comply with NZS 3604 (2011) & District Council requirements
- Aluminium to comply with NZS 4211
- All glazing to low level elements, to comply with the requirements of NZS 4223.3:2016 - clauses 4-6 *(fit safety glass to doors /window panels within 800 of the floor)*

the proposed deck is under 1000mm off finished ground. A barrier is not required. The deck is exempt work and not included in this consent. Construction is to comply with NZS 3604

elevations

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388 Carrington Road,
New Plymouth RD1

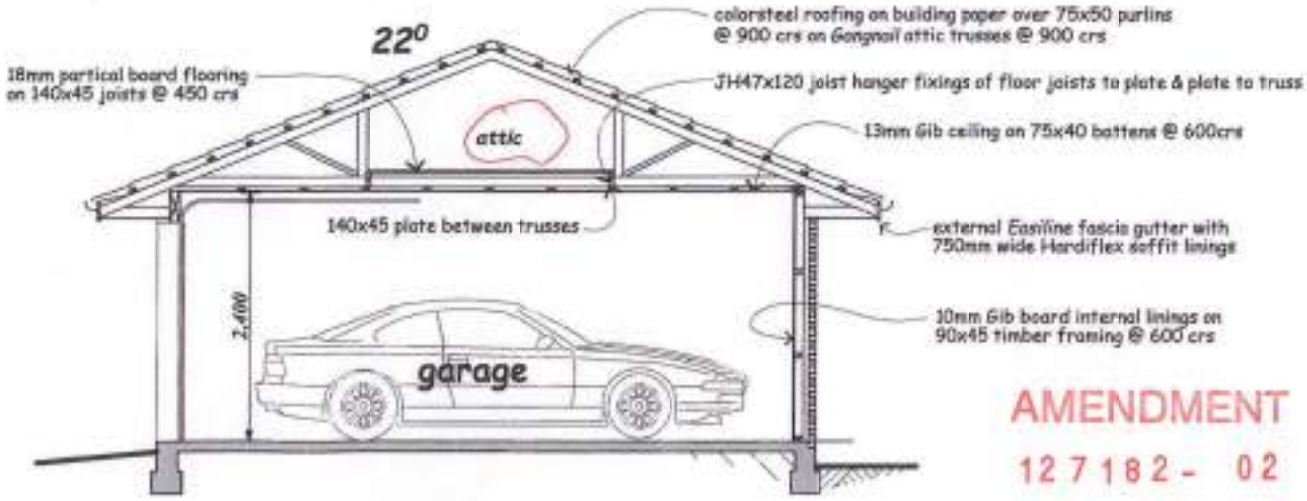
- PROPOSED NEW DWELLING -
Cameron & Rachel McDonnell
2b Gossling St. Okato, New Plymouth

Date: September 2020 | Revision

Sheet 3 of 11
Job # 5389120

section A - A

SCALE 1:50



AMENDMENT
127182 - 02

section B - B

sections A & B

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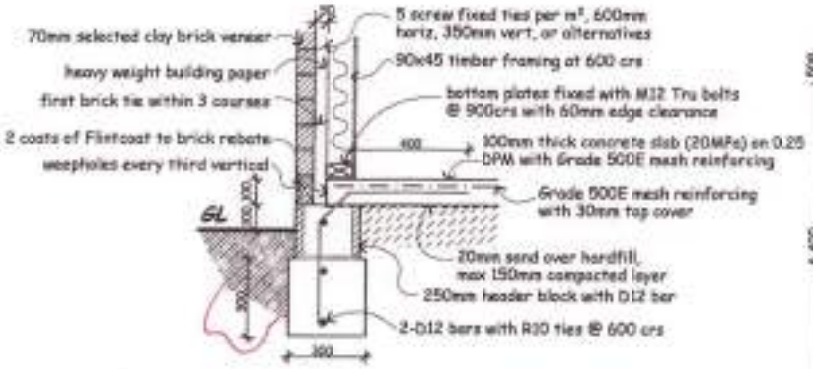
388 Carrington Road,
New Plymouth 4310

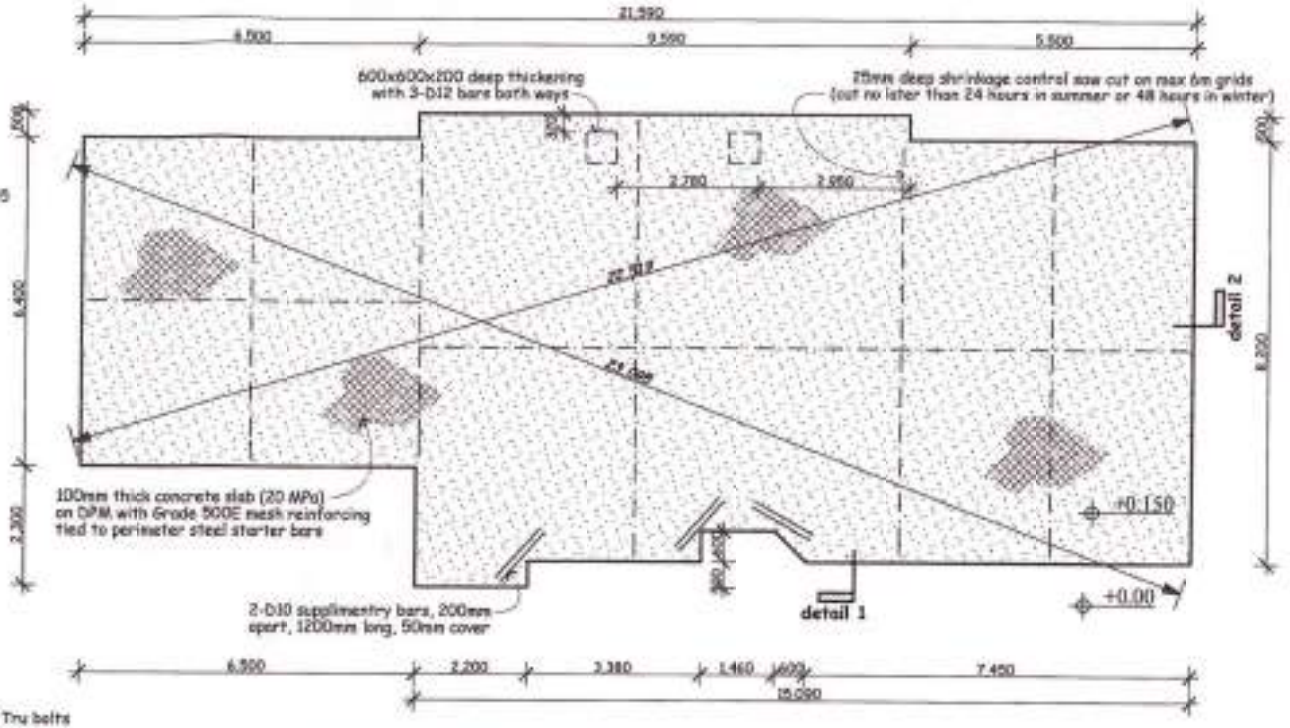
- PROPOSED NEW DWELLING -
Cameron & Rachel McDonnell
2b Gossling St. Okato, New Plymouth

Sheet 4
Series of 13
Date September 2020
Revision B Aug 2021
Job # 3389/20



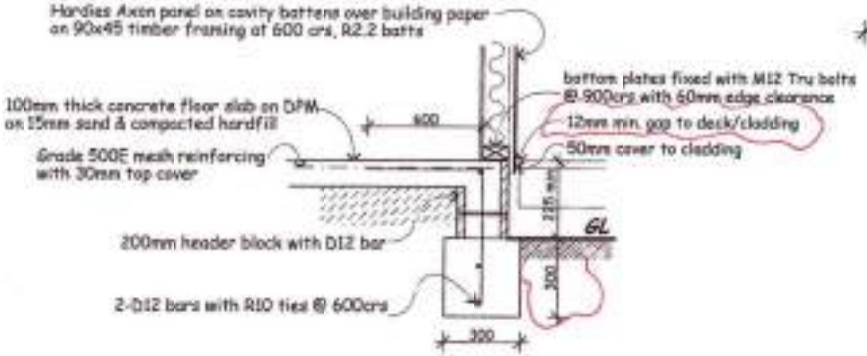
detail 1 *1:20*

detail suitable for up to 3 blocks high

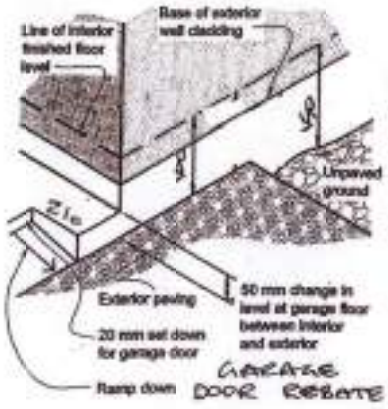


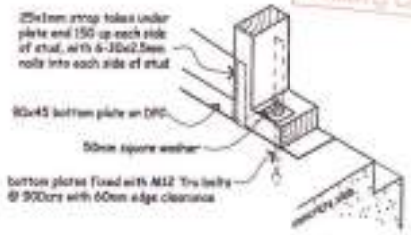
foundation plan

1:100



detail 2





fixing of lintel studs to prevent uplift

foundation plan/details

RoughanDesign
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788 Carrington Road,
New Plymouth 4310

- PROPOSED NEW DWELLING -

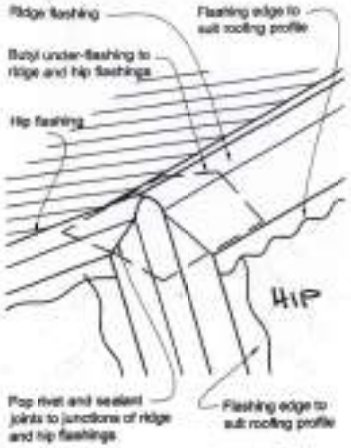
Cameron & Rachel McDonnell

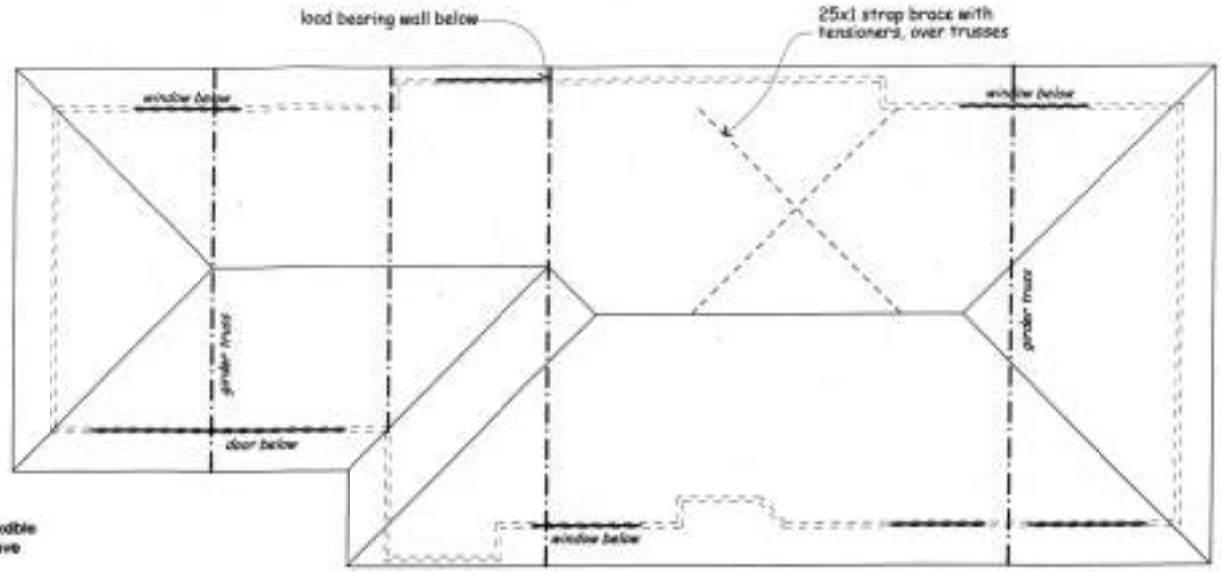
2b Gossling St. Okato, New Plymouth

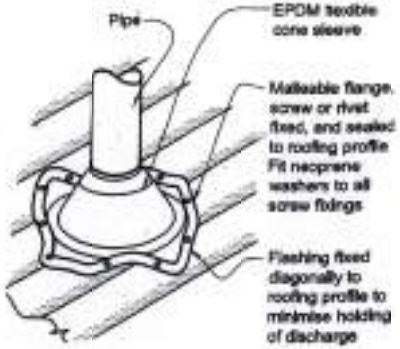
Date: September 2020 | Revision A Oct 2020

Sheet 5 of 21

Job # 3389/20

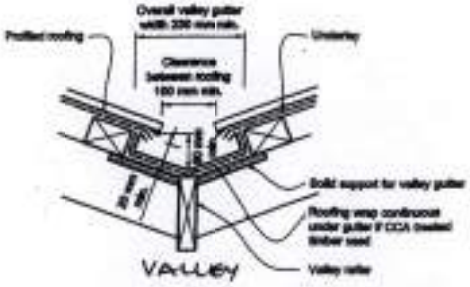


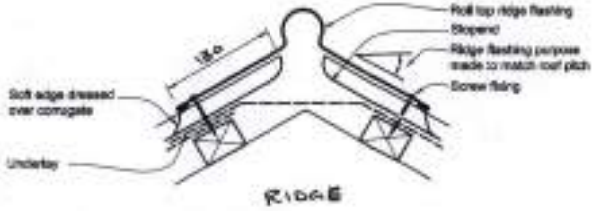




roof plan

1:100





- Roof purlin fixings: 1/10g self-drilling screw, 80mm long
- Refer the Mitex Truss layout fixing types and locations

roof plan & details

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-PROPOSED NEW DWELLING-

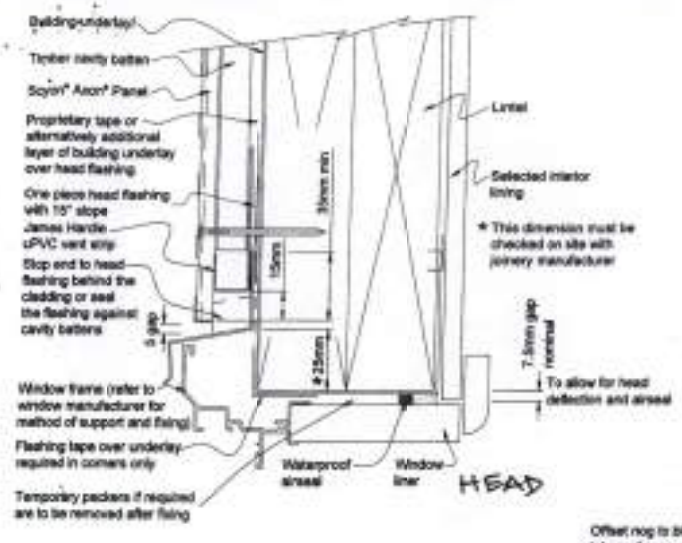
Cameron & Rachel McDonnell

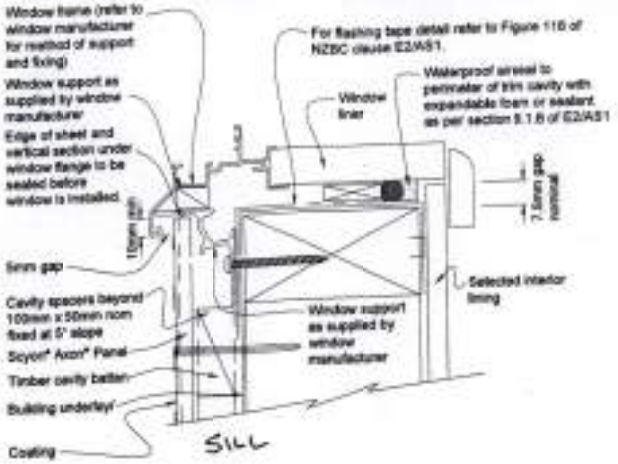
2b Gossling St. Okato, New Plymouth

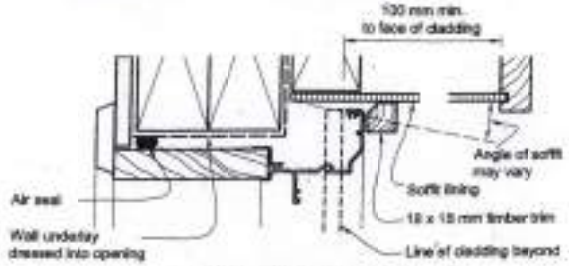
Date: September 2020 | Revision

Sheet 6 of 12

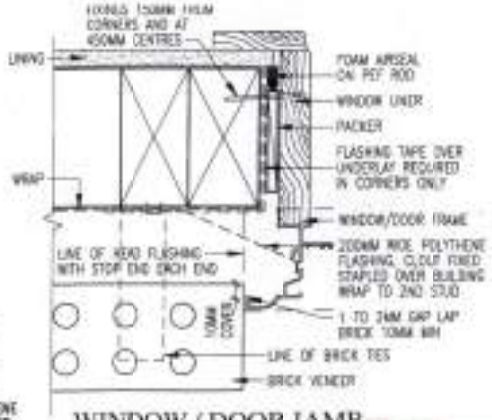
Job # 3389/20



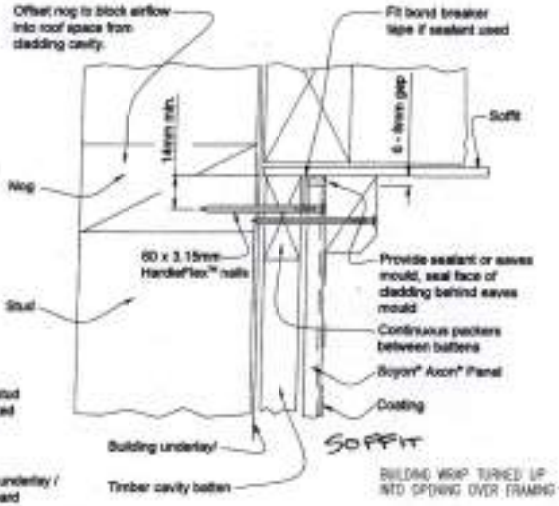


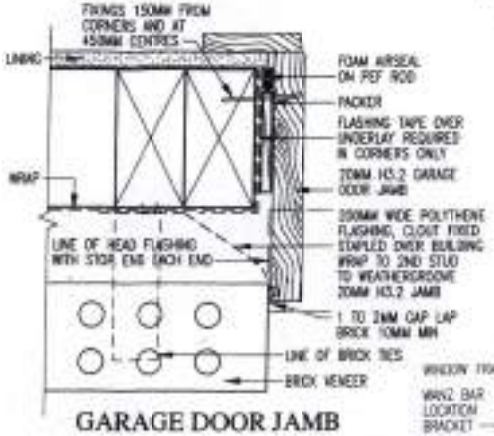


SOFFIT AT WINDOW/DOOR HEAD

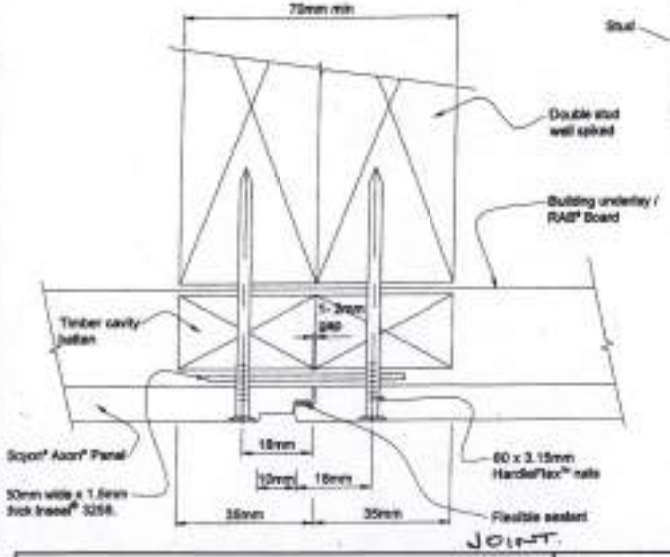


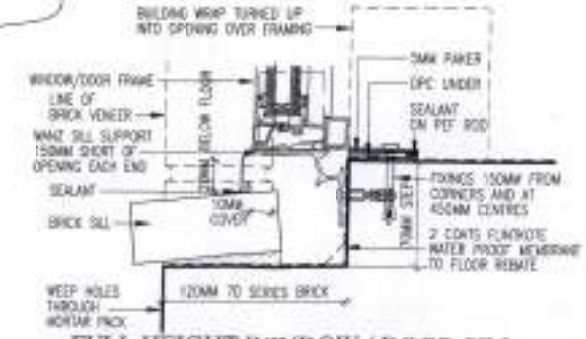
WINDOW / DOOR JAMB



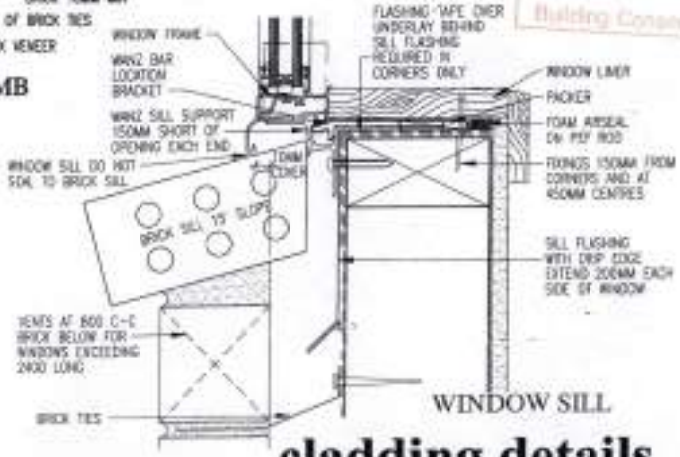


GARAGE DOOR JAMB





FULL HEIGHT WINDOW / DOOR SILL



WINDOW SILL

cladding details

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2b Gossling St. Okato, New Plymouth

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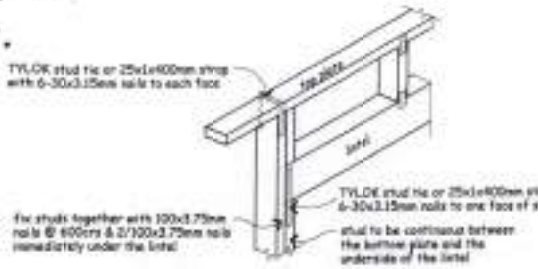
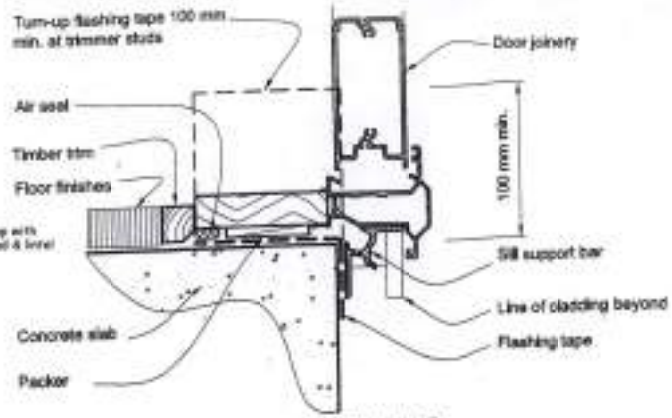
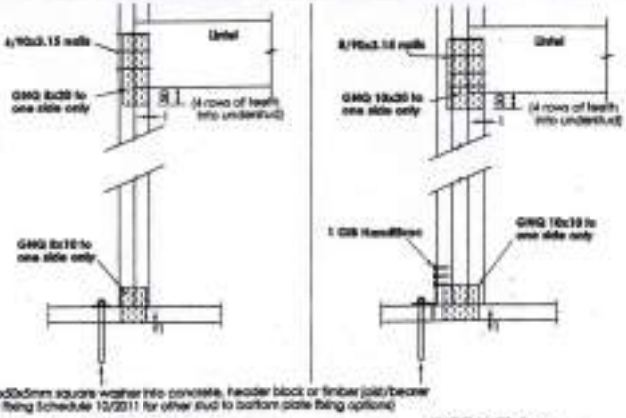


lintel stud fixing to prevent uplift

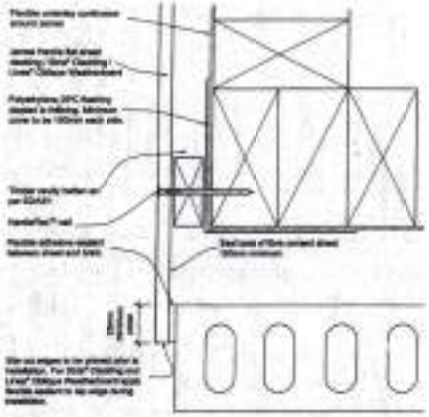


CONCRETE SLAB



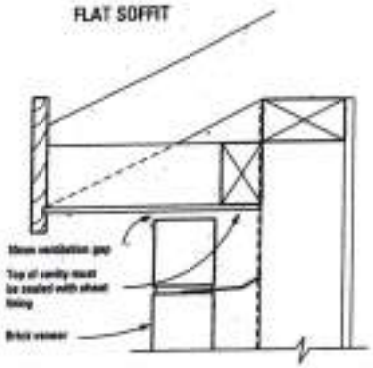
TYPE G fixing
UPLIFT = 7.5 kN

TYPE H fixing
UPLIFT = 13.5 kN

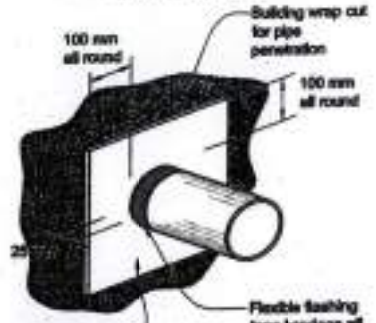


EXTERNAL JUNCTION

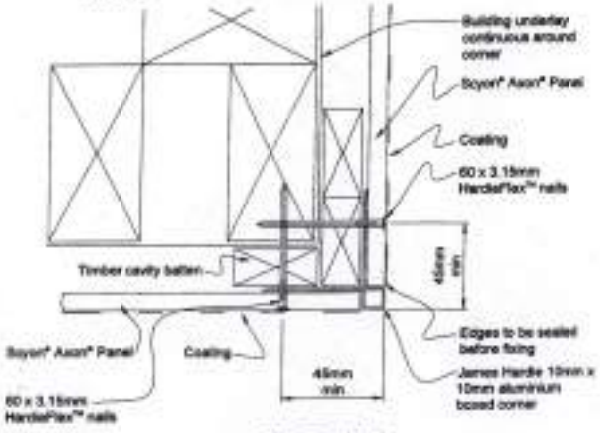
FLAT SOFFIT



Top Plate Connections

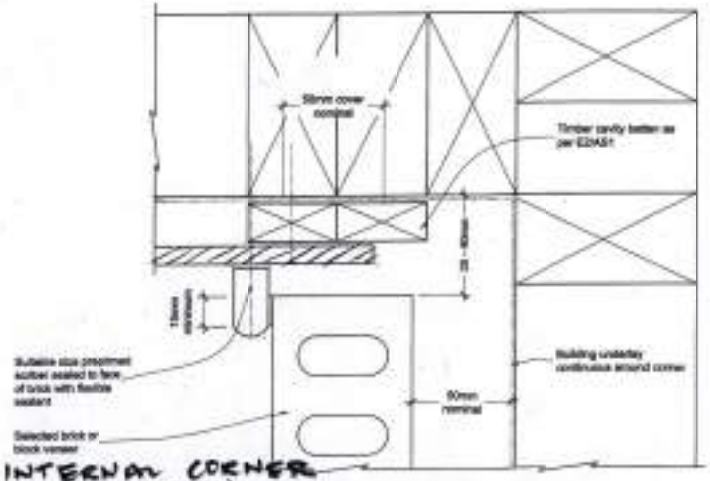


PIPE / WIRING PENETRATION

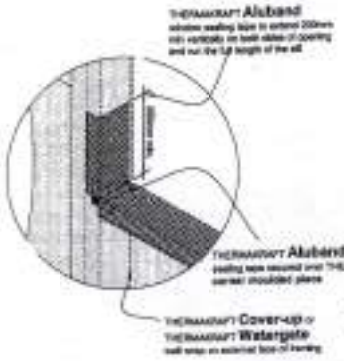


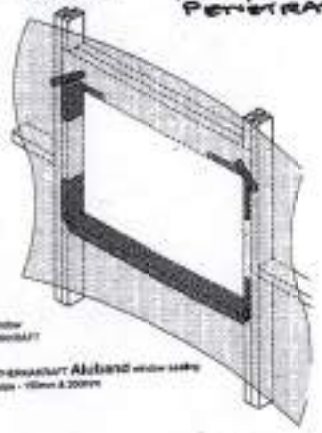
CORNER

Note:
- Refer to Figure 27 for jointing with 'Y' mould.
- Do not run corner mould continuous over floor joists.



INTERNAL CORNER JUNCTION





miscellaneous details

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-PROPOSED NEW DWELLING-

Cameron & Rachel McDonnell

2b Gossling St. Okato, New Plymouth

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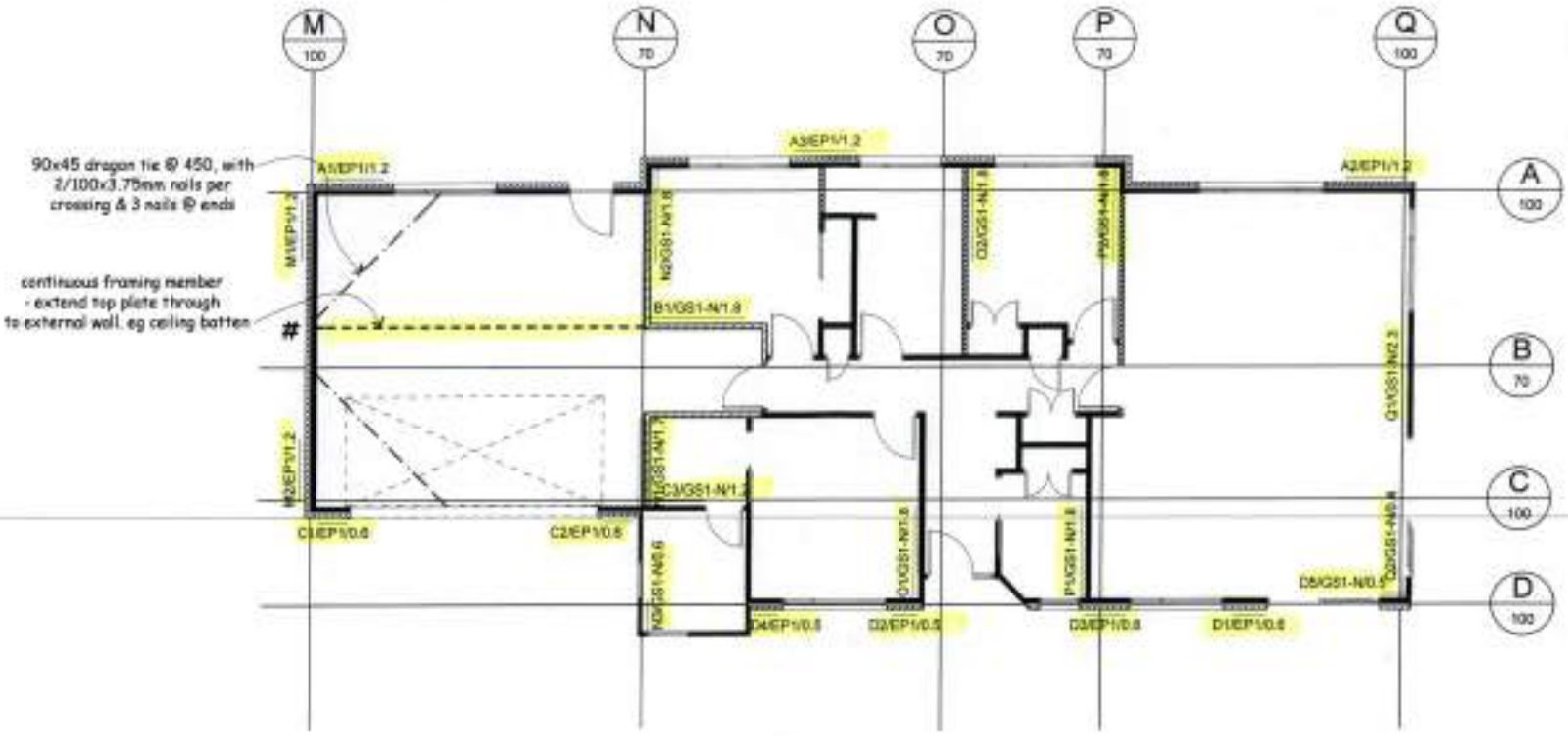

Top plate jointing at right angles

typical exterior wall intersections are to be
6kn = Tylok 6T10 plate or 1 sheet brace strap fixed
with 6-30mm x 3.15dia. per end per strap (12 nails total)
wall intersections lablled with # = 12kn = 2 sheet brace straps fixed with
6 x Lumberlok nails 30mm x 3.15dia. per end per strap (24 nails total)

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13 OCT 2020
Building Consent

BRACING KEY

GS1-N - Standard Gib sheet one side
EP1 - 7mm Ply sheet with Gib Handibrac hold-down at each end

Refer Manufacturers guides for nailing and connections

refer Gib EzyBrace calculation sheet for bracing schedule

bracing plan

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1:100

Sheet *9* Series of 11

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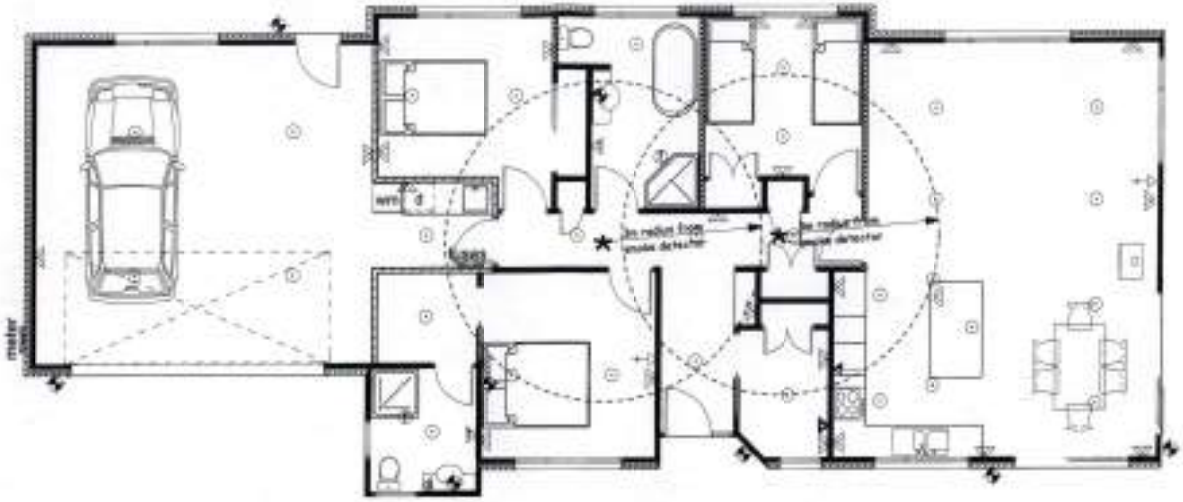
The number of electrical fittings shown are a guide only
Confirm with the Builder for the number of fittings quoted for



All electrical work shall comply with G9/AS1 and NZCP 51:2004

All downlights are to comply with AS/NZS 60598.2.2:2001
Insulation may abut & cover the luminaire, IC-F fire rated

The electrician is to supply the electrical certificate for the building completion certificate

Electrical Key

- Ceiling Light
- Wall Light
- Power Outlet (double shown)
- heated towel rail
- bathroom heater
- Shaver Point
- smoke detector
- light/heat/fan unit (fan vented to exterior)
- down light
- T.V. Aerial socket
- Telephone
- Range Connection

electrician to allow for
3 sets of two way switching
single sockets for dishwasher, range hood, security, garage door

CONFIRM POSITIONS AND HEIGHTS OF FITTINGS WITH OWNERS ON SITE

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13 OCT 2020
Building Consent

1:100 **electrical plan**

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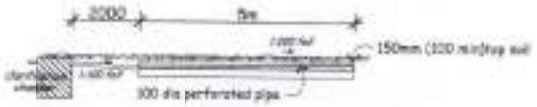
2b Gossling St. Okato, New Plymouth

Date: September 2020 | Revision

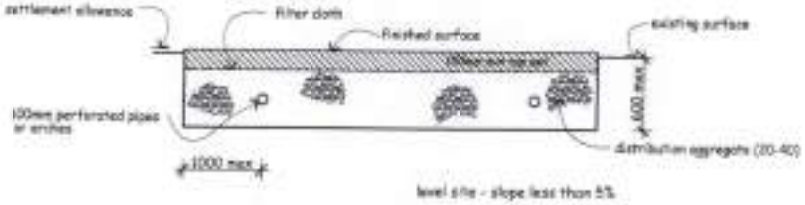
Sheet 10 of 11
Job # 3389/20

25383

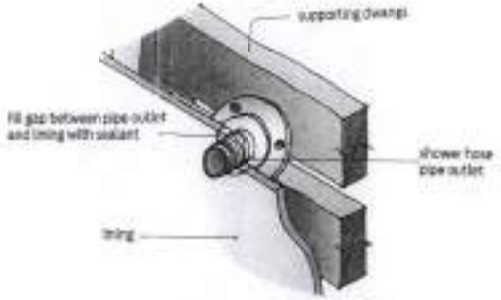
Notes
- *The bed shall be located at least 25m from any watercourse, wetland area or cliff top*
- *All beds shall be located at least 50m from any well or bore*
- *All beds shall be located at least 3m from the dwelling & soak holes and 1.5m from a boundary*
- *The bed shall be laid in an area set aside for lawn or pasture*

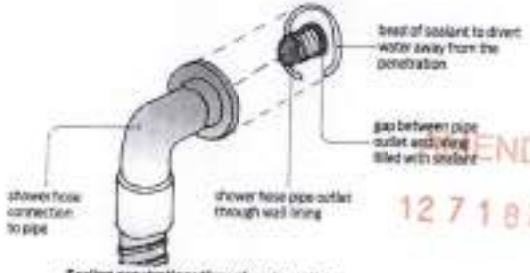


longitudinal cross section of effluent bed

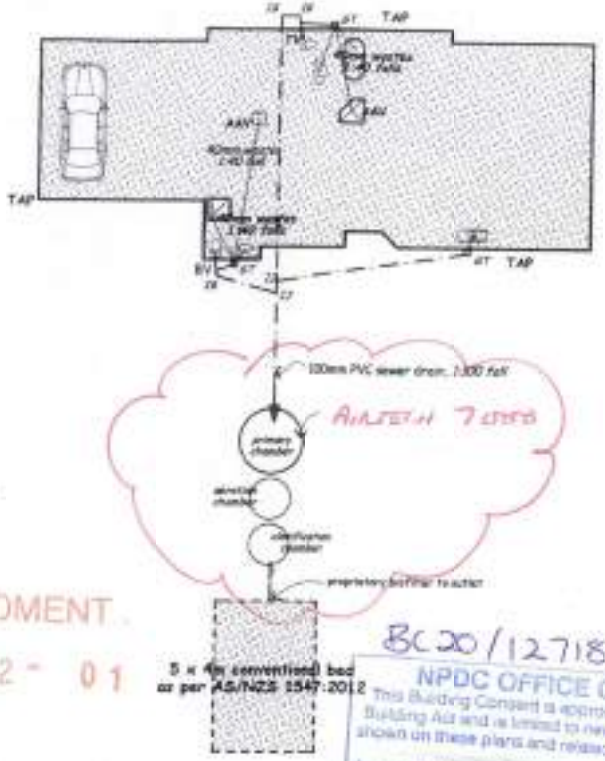


section through convential bed





Sealing penetrations through wet area lining.

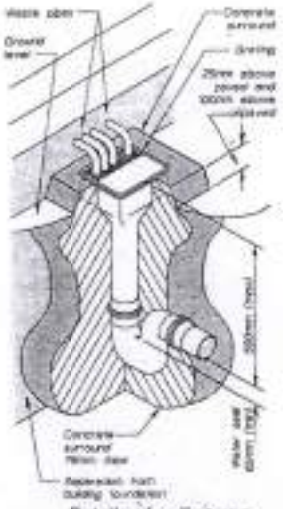


AMENDMENT
127182 - 01

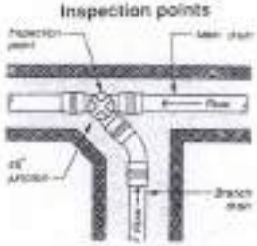
BC20/127182
NPDC OFFICE COPY
This Building Consent is approved under the Building Act and is limited to new work shown on these plans and related specifications.
Approved _____ Date _____

drainage plan
1:200

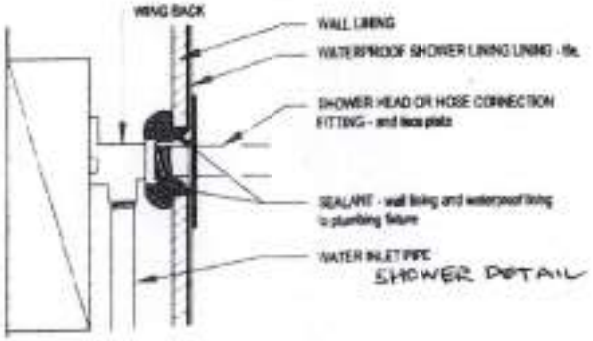
- Gulley traps to be 25mm above paving or 100mm above unpaved areas



Details of gully traps



Bedding and backfilling



GENERAL NOTES:

- *All work and construction shall comply with standards NZS 3604:2011 NZ Building Code & New Plymouth District Council requirements.*
- *Foul water sanitary plumbing shall comply with NZBC G13/AS1, G13/AS2*
- *Stormwater drainage to comply with NZBC E1/AS1*
- *Size all wastes to comply with above. Lay all drains to acceptable falls.*

drainage plan & details

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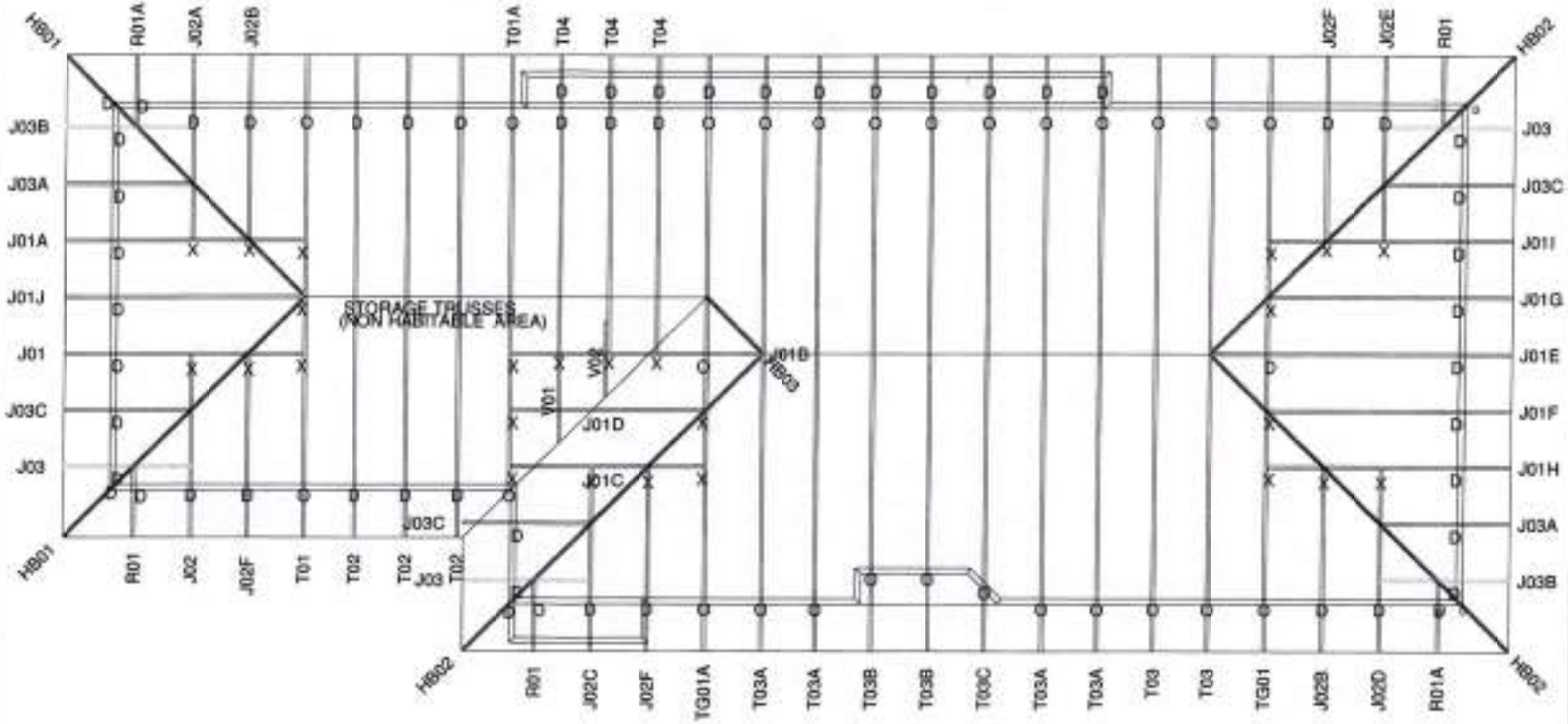
- PROPOSED NEW DWELLING -
Cameron & Rachel McDonnell
2b Gossling St. Okato, New Plymouth

Date: September 2020 | Revisions | Job # 3389/20

Sheet 11A
Sheets of 12

Truss Fixings

Qty	X - LUMBERLOK JH47x90 Joist Hanger
Qty	Z - LUMBERLOK JH47x120 Joist Hanger
Qty	P - LUMBERLOK JH47x190 Joist Hanger
Qty	E - LUMBERLOK JH95x165 Joist Hanger
Qty	O - Pair of LUMBERLOK CT200 Ceiling Ties
Qty	H - Pair of LUMBERLOK CT200 Ceiling Ties and 16kN Truss to top Plate set = 27kN
Qty	M - Pair of LUMBERLOK Multi Grips
Qty	NP - LUMBERLOK Nailon Plate
Qty	N - LUMBERLOK N21 Diagonal Cleat
Qty	K - LUMBERLOK TTP 16kN Truss to Top Plate set
Qty	G - LUMBERLOK TTP 9kN Truss to Top Plate set
Qty	D - Pair of LUMBERLOK Wire Dogs
Qty	S - Pair of LUMBERLOK SPH140 Split Hangers
Qty	B - CT600
Qty	Valley Board 150 x 25



NOTES:

READ PRE-CUT PLANS IN CONJUNCTION WITH ARCHITECTURAL PLANS

TimberCo Ltd WILL NOT ACCEPT ANY CHARGES FOR REMEDIAL WORK UNLESS WRITTEN AUTHORISATION IS OBTAINED FROM TimberCo Ltd

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13 OCT 2020
Building Consent

A4

TIMBERCO
7 Sunley Street New Plymouth
PH (06) 7534393
FAX (06) 7534394

Site Address :
McDONNELL
2b GOSLING ST
OKATO

Sheet Title :
Truss Layout

Date : 24 Aug 2020 | Drawn : Wayne Silby
Scale : 1 | System : MiTek 2020

Job Details:

Roof Pitch	: 22.00deg	Truss Centres	: 900mm
Roof Material	: Galv Iron .5mm	Roof Live Load	: 0.250kPa
Ceiling Material	: Gib Board 13mm	Floor Live Load	:
Wind Zone	: High	Wind Speed	: 44m/s
Roof Snow Load	: 0.000kPa	Overhang	: 600mm

MiTek

Job Title :
COBMCDO

Revision Number

THESE PLAN HAVE BEEN

SUPERSEDED

REPLACEMENT PLANS WILL BE IN THE APPROVED OFFICE COPY

BC: 127182 ADDRESS: 2B Gosling St

Amendment No & Date of Amendments that these superseded plans to relates to are:

AMENDMENT

1. 127182 - 01

AMENDMENT

2. 127182 - 02

3.

4.

5.

6.

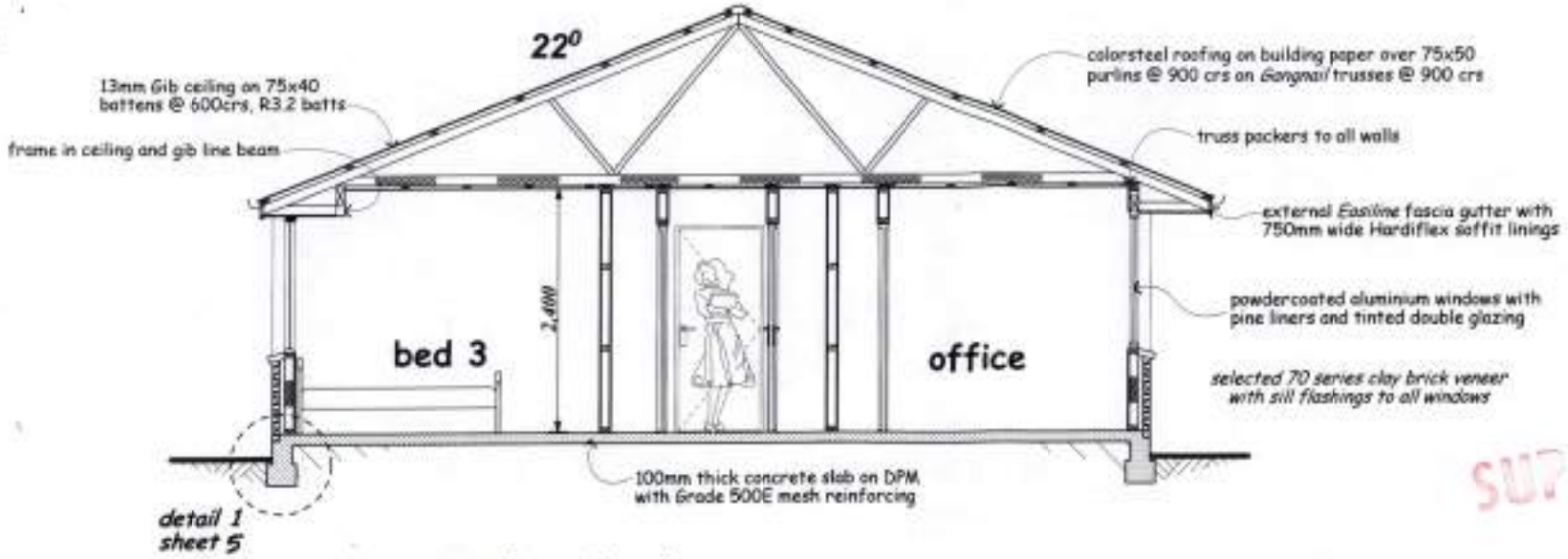
7.

8.

9.

10.

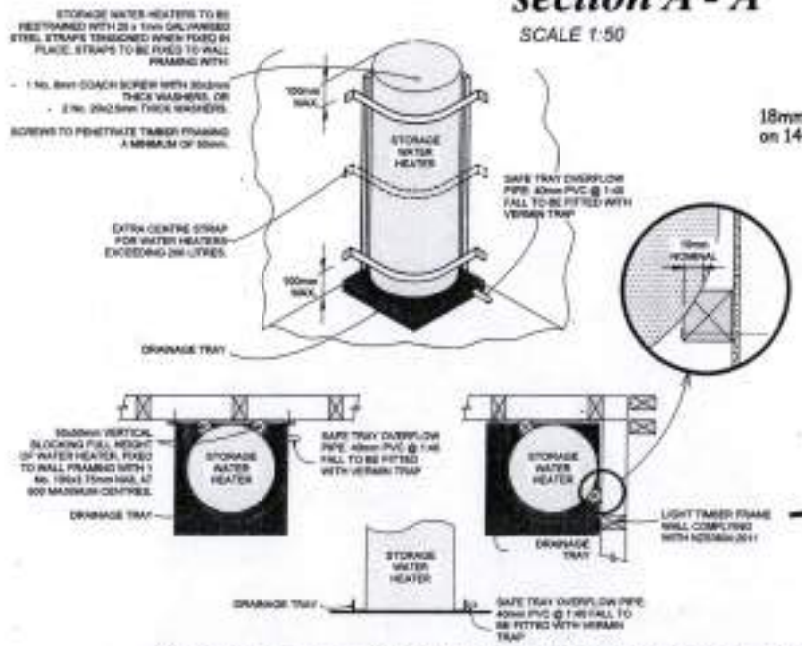
THESE ARE TO BE **KEPT AND SCANNED** AT THE END OF THE PROJECT FOR FUTURE REFERENCE



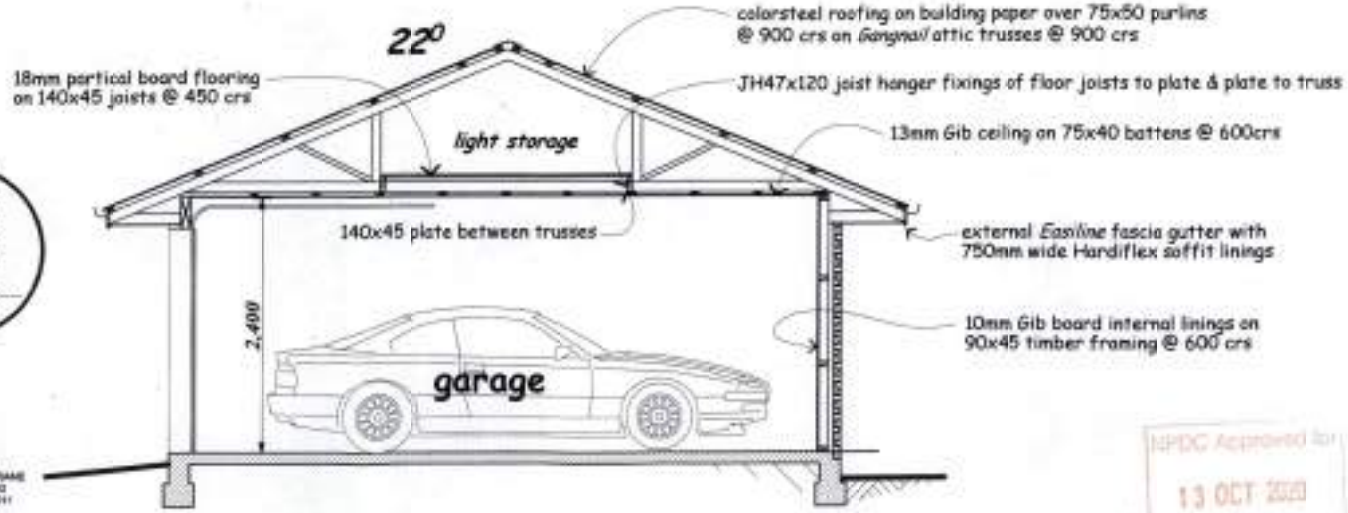
SUPERSEDED

section A - A

SCALE 1:50



SEISMIC RESTRAINT OF WATER HEATERS WITH DRAINAGE TRAY



section B - B

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sections A & B

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Date: September 2020 | Revision

Sheet 4 of 11

Job # 1389/20

window dimensions shown are finished opening sizes
Precut are to allow additional clearances as required

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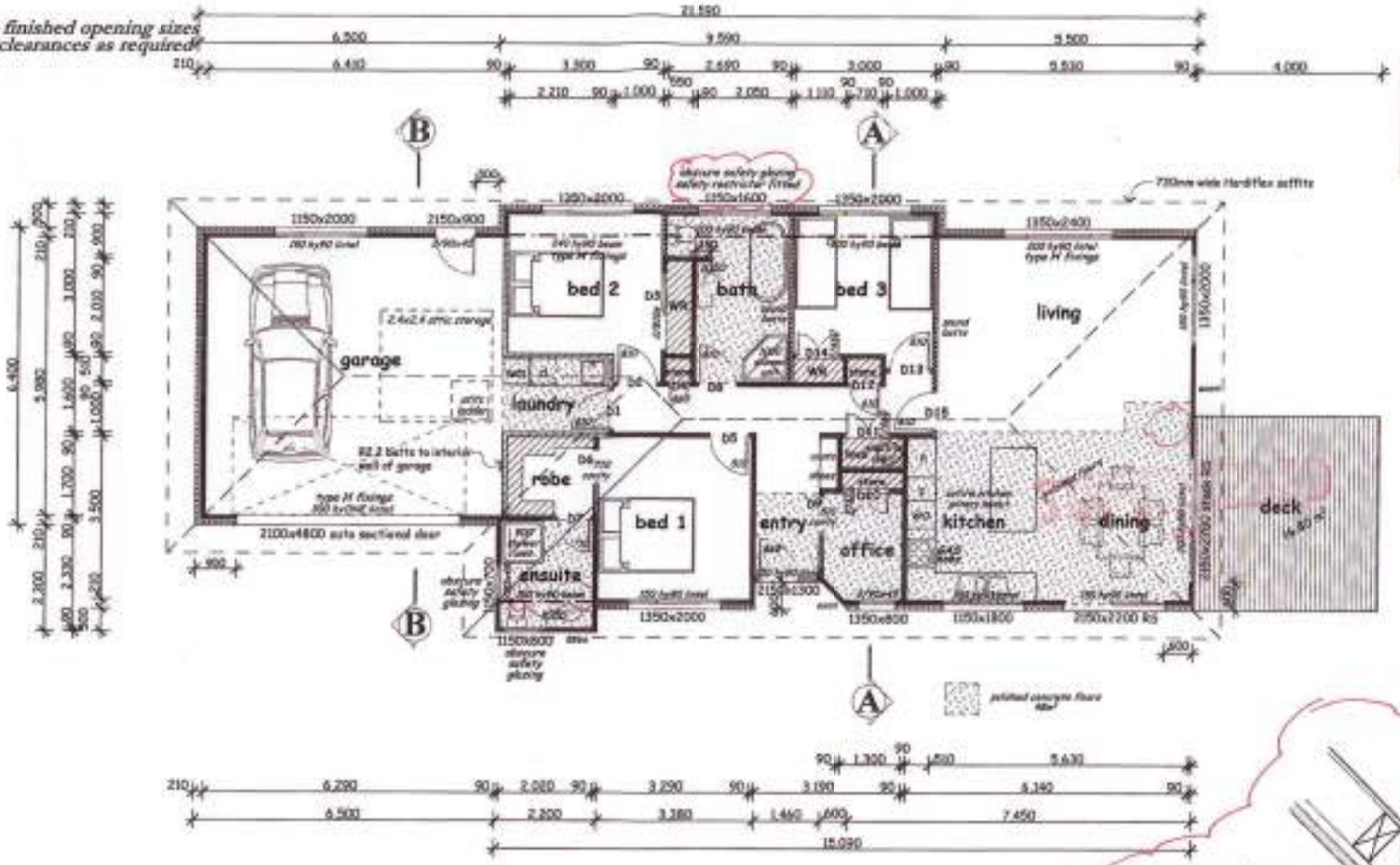
Building Consent



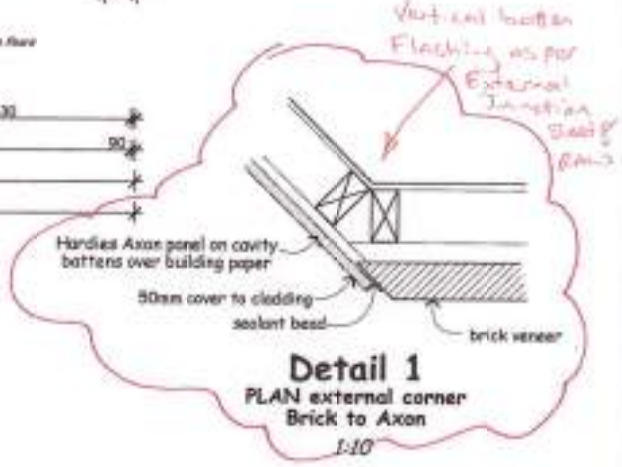
2400mm stud
2150mm window head heights
(confirm height, to underside of soffit)
Insulation: walls-R2.2, ceiling-R3.2

-to wet areas install Aqualine Gib linings finished with 2 coats of acrylic paint, polished concrete floors
- Rangehood to be fitted to cook top
- Intermittent extraction fan to be fitted above shower
- Copper piping to all water pipes

All lintel fixings shall be type 6 unless specified

Bathroom and ensuite glazing
- *windows shall have safety glass to inner ISU pane*
- *all mirrors are to be of safety glass*
- *shower screens/doors are to have safety glazing*

All windows tinted double glazing, single to garage



Detail 1
PLAN external corner
Brick to Axon
1:10

floor plan

confirm dimensions on site

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1:100 area 170m²
high wind zone
Date: September 2020 | Revision A | Sheet 2 of 13 | Job # 2089/20

S15 RESIDENTIAL TREATMENT SYSTEM

Application and Use

For efficient wastewater treatment of domestic wastewater suitable for land based application where reticulation is not available.

Specification

- Voltage: 240 V/50Hz
- Daily Flow Rate: 1,500L
- House size: 5 Bedroom
- Air Blower: AP-60
- Operation: Continuous, 80% or Holiday mode (fully automated)
- Alarms: High Level, Blower fault and 24 hour mute reset
- Effluent quality: 20:30 BOD:TSS
- Standards achieved: 1546.1:2008, 1546.3:2008, Rotorua OSET trial

Dimensions

- Weight: 565 kg
- Height: 2170 mm
- Diameter: 1650 mm
- Overall Length: 6200 mm

Capacity

- Primary Chamber: 3600 litres
- Aeration Chamber 2100 litres
- Clarification Chamber: 2100 litres
- Normal Operating Capacity: 6220 litres
- Emergency Storage Capacity: 1580 litres
- Irrigation Pump: Grundfos Hi Lift or Bianco B-42
- Air Blower: Gardner Denver

SYSTEM SIZE OPTIONS

Domestic Applications

S15

S20

S25

Commercial Applications

C20

C30

C40

Please note that the above is a guide only and every application has some unique elements that need to be assessed before a system specification can be confirmed. The above is intended as a general guide.

THE CYCLE OF WATER

Wastewater discharged from the home (or commercial premises) includes the water from sinks, showers, toilets, washing machines, dishwashers and the like. This water must be handled correctly before being released into the environment

The Integra system receives al wastewater from your home or other building and treats it to a very high level releasing a clear odourless liquid when the process is complete.

The water that is discharged into the environment is evaporated off where it can consolidate in the sky and start its life all over again as rain water

Through drip line (run either sub surface or on the surface of the ground under mulch) the treated wastewater is released into the environment where it can irrigate lawns or planted areas, keeping them lush all year round.

OUR MOST COMMONLY ASKED QUESTIONS

1 Water Use
[illegible] water the treated [illegible] is not suitable for human consumption. This means you cannot use it in any application where people could be at risk. The disposal outlet or dripper line must be either below the surface of the ground or underneath 150mm of mulch. This ensures safe disposal of the fluid without risk to health of humans or other animals.

2 Cleaning Products
Just like with ordinary septic tanks there is a list of do's and don'ts around what household chemicals are safe for use with your system. If the wrong products end up in the system they can 'kill' the system and this will likely result in bad smells until the system comes back to life. Your Integra system will come with a comprehensive guide.

3 Cost of Operation
All [illegible] have an operating cost of some sort. In the case of the Integra system it is running a compressor and blower and requires a [illegible] twice per year. The cost of electricity has been estimated at approximately $175 per year and each service should be around $350 but this is up to your service agent.

4 Guarantees
The Integra wastewater treatment system vessels carry a 15 year guarantee, but anyone can offer a guarantee and hope for the best. Integra can however declare that not a single vessel has failed in the field. Facts are louder than words. Third party components are provided with a two year manufacturers warranty.

5 Certification & Acceptance
Any vessel sold in New Zealand or the Pacific Islands should meet or exceed the standard for construction of underground septic tanks (AS/NZS 1546.1) and the standard for on-site wastewater management (AS/NZS 1547). The Integra system is certified to comply or exceed both of these standards.

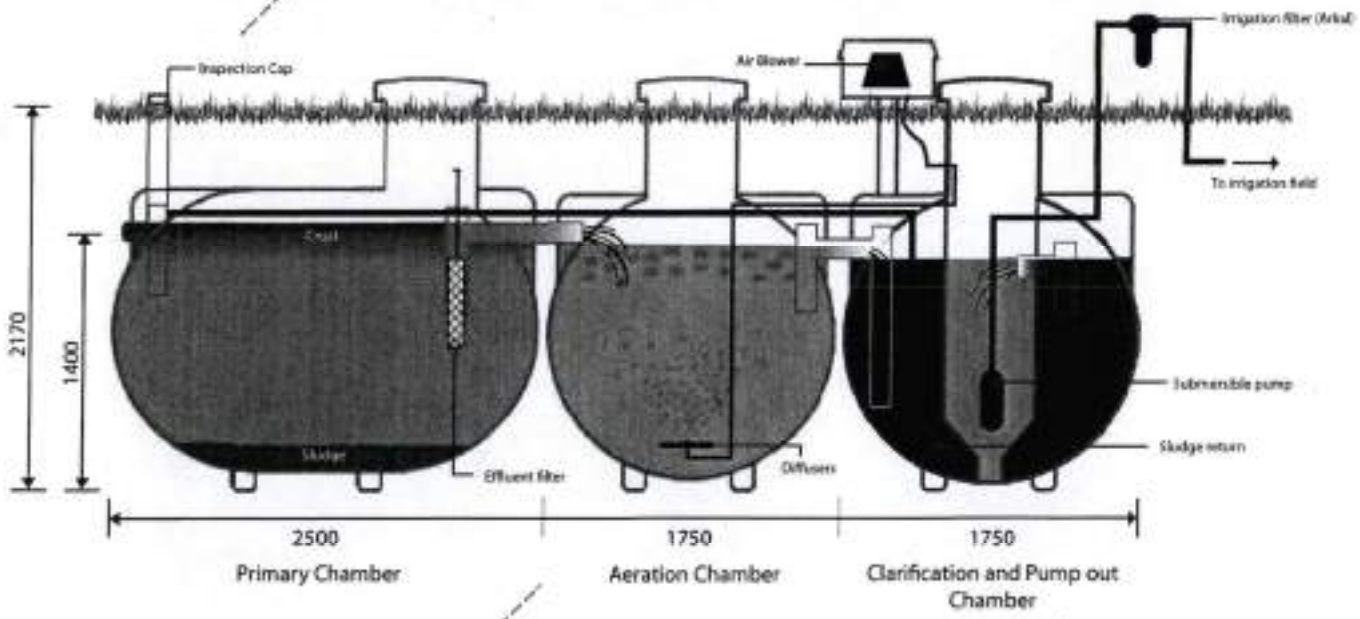
6 Smell
[illegible] any systems on the market run intermittent blowers. This can cause belching when the blower is kicking on, causes a rush of odorous air from the vent of the system. The Integra system runs a very quiet and low energy blower 24 hours a day to ensure no belching occurs and all while having a [illegible] consumption than many other systems.

SIMPLE IS BEST

The simplicity of the Integra wastewater treatment system means less moving parts, less [illegible] suppliers and standard off components where possible means the good system is reliable for years to come. Unlikely with something that [illegible]

HOW THE INTEGRA SYSTEM WORKS

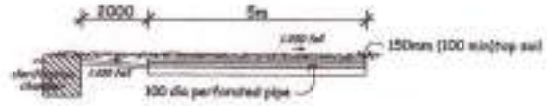
The primary chamber receives all the wastewater from your home. The configuration of the chamber allows sludge to settle and crust to form and provides an anaerobic (no oxygen) environment where solids are consumed by bacteria.



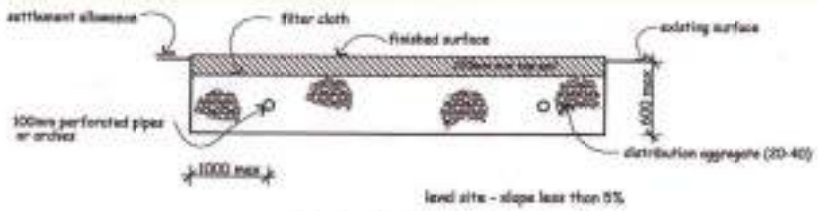
The aeration chamber receives the mid-water from the primary chamber and uses oxygen pumped through a diffuser to allow a different set of bacteria to have a go at breaking down any remaining solids that have made it through.

The clarification chamber allows a calm environment for any remaining solids to settle out and be returned to the primary chamber to be further processed. The clean, clear water then spills over into the central vessel where it is pumped out to the disposal field

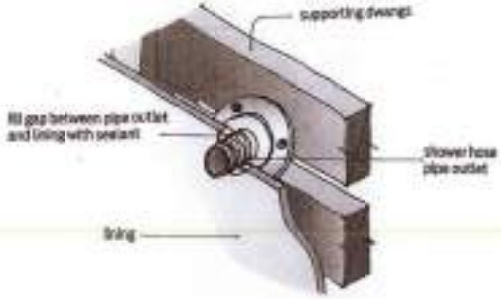
Notes
- *The bed shall be located at least 25m from any watercourse, wetland area or cliff top*
- *All beds shall be located at least 50m from any well or bore*
- *All beds shall be located at least 3m from the dwelling & soak holes and 1.5m from a boundary*
- *The bed shall be laid in an area set aside for lawn or pasture*

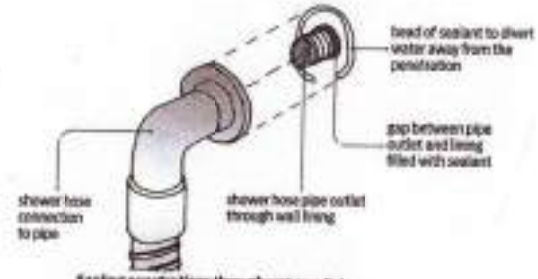


longitudinal cross section of effluent bed

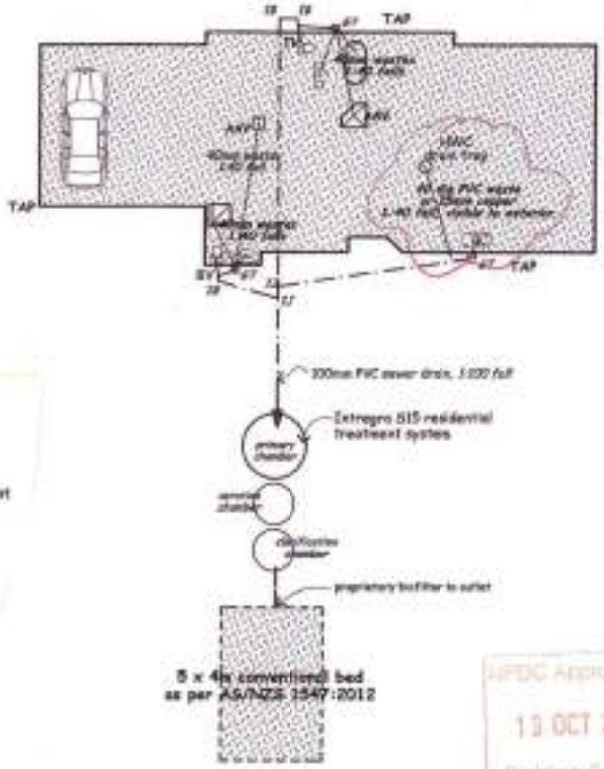


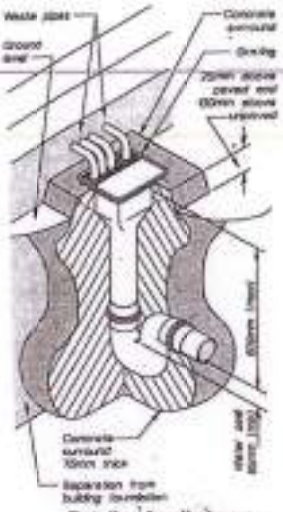
section through convential bed



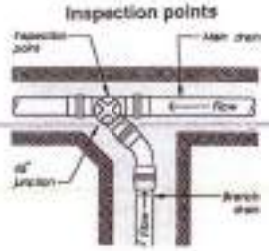


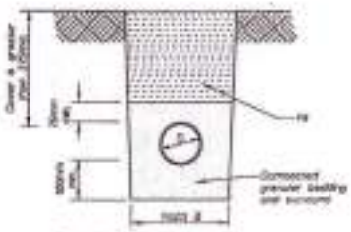
Sealing penetrations through wet area lining.



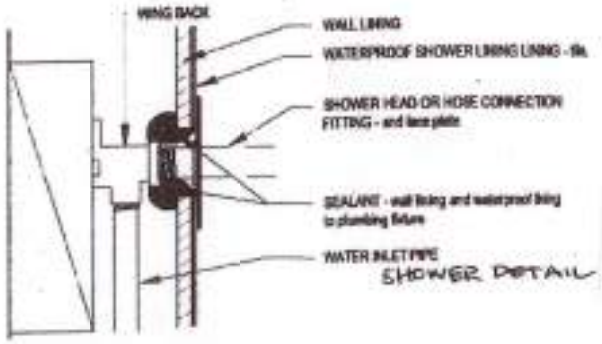


Details of gully traps





Bedding and backfilling



drainage plan

1:200

- Gulley traps to be 25mm above paving or 100mm above unpaved areas

GENERAL NOTES:

- *All work and construction shall comply with standards NZS 3604:2011 NZ Building Code & New Plymouth District Council requirements.*
- *Foul water sanitary plumbing shall comply with NZBC G13/AS1, G13/AS2*
- *Stormwater drainage to comply with NZBC E1/AS1*
- *Size all wastes to comply with above. Lay all drains to acceptable falls.*

drainage plan & details

RoughanDesign
architectural Designers
www.roughandesign.co.nz
phone 06 753 3361
fax 06 753 3364
mobile 0274 490 115
288 Carrington Road,
New Plymouth 4311

-PROPOSED NEW DWELLING-

Cameron & Rachel McDonnell

2b Gossling St. Okato, New Plymouth

Date: September 2020 | Revision A Oct 2020

Dwg 11 | Series of 11 | Job # 3389/20

12 Images

SCANNED

BUILDING PERMITS

62865

ID 006261

LLP 083275

12 Images

BUILDING PERMITS

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ID 006261

LLP 083275

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ID 006261

LLP 083275

12 Images

SCANNED

BUILDING PERMITS

62865

ID 006261

LLP 083275

NEW PLYMOUTH DISTRICT COUNCIL

COPY

CODE COMPLIANCE CERTIFICATE No:4368
Section 43(3), Building Act 1991

Building Consent No: 16914

OWNER : MR Lyndsay John MCPETRIDGE

Mailing Address: PRINCIPAL RURAL FIRE OFFICER, N.P.D.C, PRIVATE BAG 2025, NE
Phone: 7524279 (Pvt.)
Contact: MRS Patricia Anne MCPETRIDGE
Mailing Address: PRINCIPAL RURAL FIRE OFFICER, N.P.D.C, PRIVATE BAG 2025, NE
Application received: 15/10/96

PROJECT LOCATION

Street Address: 2286 SOUTH ROAD, OAKURO
Property ID: 006261
Assessment No: 1632/224.00
Legal: CN

PROJECT

The project is for New building
Intended Use(s): weather station mast
Intended life: Indefinite but not less than 50 years

COUNCIL CHARGES

The Council's total charges payable on the uplifting of this code compliance certificate in accordance with the attached details are: $0.00

This is a final code compliance certificate issued in respect of all of the building work under the above building consent

1: Code Compliance Certificate Cond.

No Special Conditions

Approving Officer D. Hughes
Date 21/11/96

LIARDET STREET PRIVTE BAG 2025 NEW PLYMOUTH 4620 NEW ZEALAND
TELEPHONE (06) 759 6060 FAX (06) 759 6118

NEW PLYMOUTH DISTRICT COUNCIL

Code Compliance Certificate No:
Section 43(3), Building Act 1991
Building Consent No:, 936

OWNER DETAILS : MR Lyndsay John MCPETRIDGE

Mailing Address: 97 OXFORD ROAD, OKATO
Contact: MR Bruce Robert BARRON
Mailing Address: 97 OXFORD ROAD, OKATO
Application received:

PROJECT LOCATION

Street Address: 1036 SOUTH ROAD, OKATO
Property ID: 006261
Assessment No: 11632/224.00
Legal: SEC 8 OKATO TN BELT PT SECS 27 & 28 OKATO DIST BLK VI CAPE SD

PROJECT

The project is for New building
Intended Use(s): Milking Cows
Intended life: Indefinite but not less than 50 years

COUNCIL CHARGES

The Council's total charges payable on the uplifting of this building consent in accordance with the attached details, are: $0.00

LIARDET STREET PRIVATE BAG 2025 NEW PLYMOUTH 4620 NEW ZEALAND
TELEPHONE (06) 759 6099 FAX (06) 758 3257

Signed for and on behalf of the Council:

Name: ...[illegible]...

Position: Building Insp... Date: 6/8/93

Te Kaunihera-ā-Rohe o Ngāmotu
New Plymouth District Council

Code Compliance Certificate

Form 7, Section 95, Building Act 2004

The Building

Street address of building:	2 B Gossling Street OKATO 4335
Legal description of land where building is located:	LOT 2 DP 532352
Current, lawfully established use:	Residential
Year first constructed:	2020

The Owner

Name of owner:	Cameron John Mcdonnell	Email Address: rachmcdonnell1@gmail.com
Owner Mailing address:	20 B Carthew Street OKATO 4335	Phone No (Pvt): 027 439 9249
Applicant :	Rachel Julie Mcdonnell	

Building Work

Building consent number:	**BC20/127182**
Description of work:	**Three bedroom dwelling with attached double garage**
Issued by:	New Plymouth District Council

Code Compliance

The building consent authority named below is satisfied, on reasonable grounds, that–
(a) the building work complies with the building consent.

This is a final code compliance certificate issued in respect of all of the building work under the above building consent.

Talimai Filo
Building Administration Officer

On behalf of: New Plymouth District Council
Date issued: 14 September 2021

TARANAKI

BUILDING CONSENT

50661P

PROPERTY ID **006261**

50661P

EXTRA INFORMATION/AMENDMENTS

Charge: $ 0.2

Job:

Consent No: 50661

Address: 225t South Road
Otaio

The changes covered by this amendment are:

changes to kitchen area

Formal Declaration – **(Please read carefully prior to signing)**

*This **AMENDMENT** to the abovementioned Building Consent is made by me as **owner** of the property:*

Signature: _____ Date: _____

OR *I am the applicant **authorised by the owner** to make this **AMENDMENT**:*

Signature: _____ Date: _____

Office use only

Approved	Refused

Records	
Building	
Oldcher 24.9.03	
Public Health	
District Planning	

EXTRA INFORMATION/AMENDMENTS

Charge: $

Job:

Consent No: 50660

Address: 225b [illegible] Road

The changes covered by this amendment are:

info required / provided as per local inspection by [illegible]

FB3285

Formal Declaration – (Please read carefully prior to signing)

*This **AMENDMENT** to the abovementioned Building Consent is made by me as **owner** of the property:*

Signature: Date:

OR *I am the applicant **authorised by the owner** to make this **AMENDMENT**:*

Signature: Date:

Office use only

Approved	Refused

Records	

Building	
[illegible]	

Public Health	

District Planning	

EXTRA INFORMATION/AMENDMENTS

Charge: $

Job: [illegible]

Consent No: [illegible]

Address: Otaio

The changes covered by this amendment are:

Info as per requested of letter dated 11 July (for amendment dated 2 July)

Formal Declaration – (Please read carefully prior to signing)

*This **AMENDMENT** to the abovementioned Building Consent is made by me as owner of the property:*

Signature: Date:

OR *I am the applicant authorised by the owner to make this **AMENDMENT**:*

Signature: Date:

Office use only

Approved / Refused

Records	
Building	
Public Health	
District Planning	

EXTRA INFORMATION/AMENDMENTS

Charge: $

Job:

Consent No: 55661

Address: 22.56 South Road

The changes covered by this amendment are:

As per request from inspection date 27/6/03

Formal Declaration – (Please read carefully prior to signing)

*This **AMENDMENT** to the abovementioned Building Consent is made by me as **owner** of the property:*

Signature: Date:

OR *I am the applicant **authorised by the owner** to make this **AMENDMENT:***

Signature: Date:

Office use only

Approved	Refused

Records	
Building	
	OJS. 11.7.03
Public Health	
District Planning	

Please provide the following information

Confirm that the garage door lintel does not support a girder truss (if it does calculations from an Engineer will be required to support the design)

Please show how the cantilevered lintel achieves a 2 hr fire separation (or provide Engineered design)

(thread [illegible] Monday 7th)

EXTRA INFORMATION/AMENDMENTS

Charge: $ 01

Job:

Consent No: 50161

Address: 2256 South Road

The changes covered by this amendment are:

Change to garage door -- now only one door instead of 2.

Note Don - Roof steel took these plans from on site at his last inspection.

Formal Declaration – (Please read carefully prior to signing)

*This **AMENDMENT** to the abovementioned Building Consent is made by me as owner of the property:*

Signature: Date:

OR *I am the applicant authorised by the owner to make this **AMENDMENT:***

Signature: Date:

Office use only

Approved	Refused

Records	
Building	
Public Health	
District Planning	

INACTIVE
NO CCC ISSUED

50660/5066' 1/4/03

OFFICE COPY

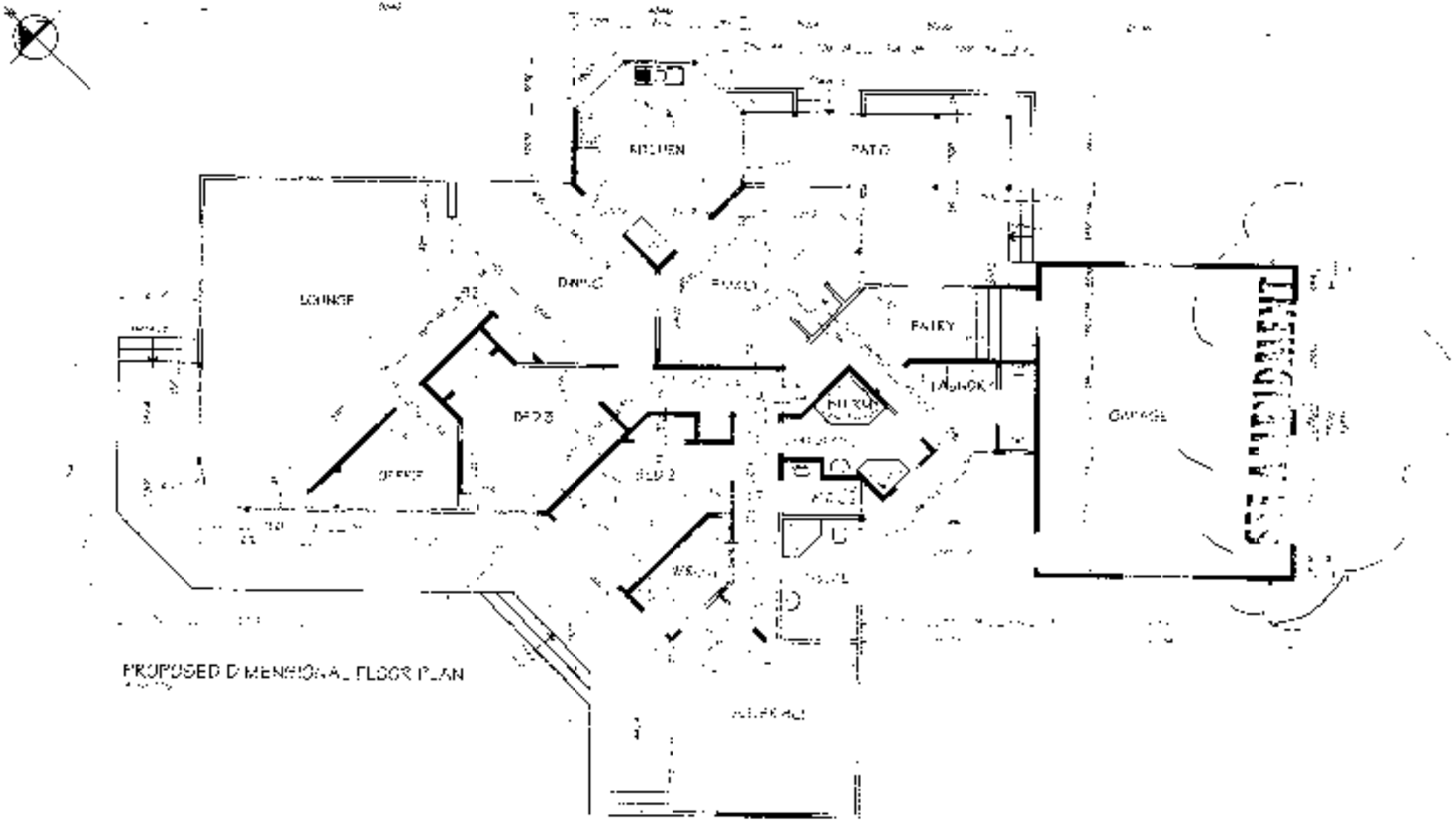
[illegible] FOR THE USE OF THE CONSERVE [illegible] AS IN ACCORDANCE WITH ALL RELEVANT ACTS [illegible] OR LAWS ENACTED BY THE NEW ZEALAND

DATE 6-5-03

[illegible] THE PROPERTY OF [illegible]

Owen McCluggage Design
[illegible]

HOUSE ALTERATIONS FOR
PATRICK MURRAY McFETRIDGE
2230 SOUTH ROAD - OKATO



Owen McCluggage Design

HOUSE ALTERATIONS FOR
PAT & LYNDSAY McFETTERIDGE
2286 SOUTH ROAD - OKATO

PROPOSED DIMENSIONAL PLAN		A2
A4		

REJECTED

NEW CONSTRUCTION KEY

GENERAL NOTES

KITCHEN

PATIO

FAMILY

LOUNGE

PASSAGE

BED 3

BED 2

BED 1

GARAGE

WASHER DRY

PROPOSED NOTATIONAL FLOOR PLAN

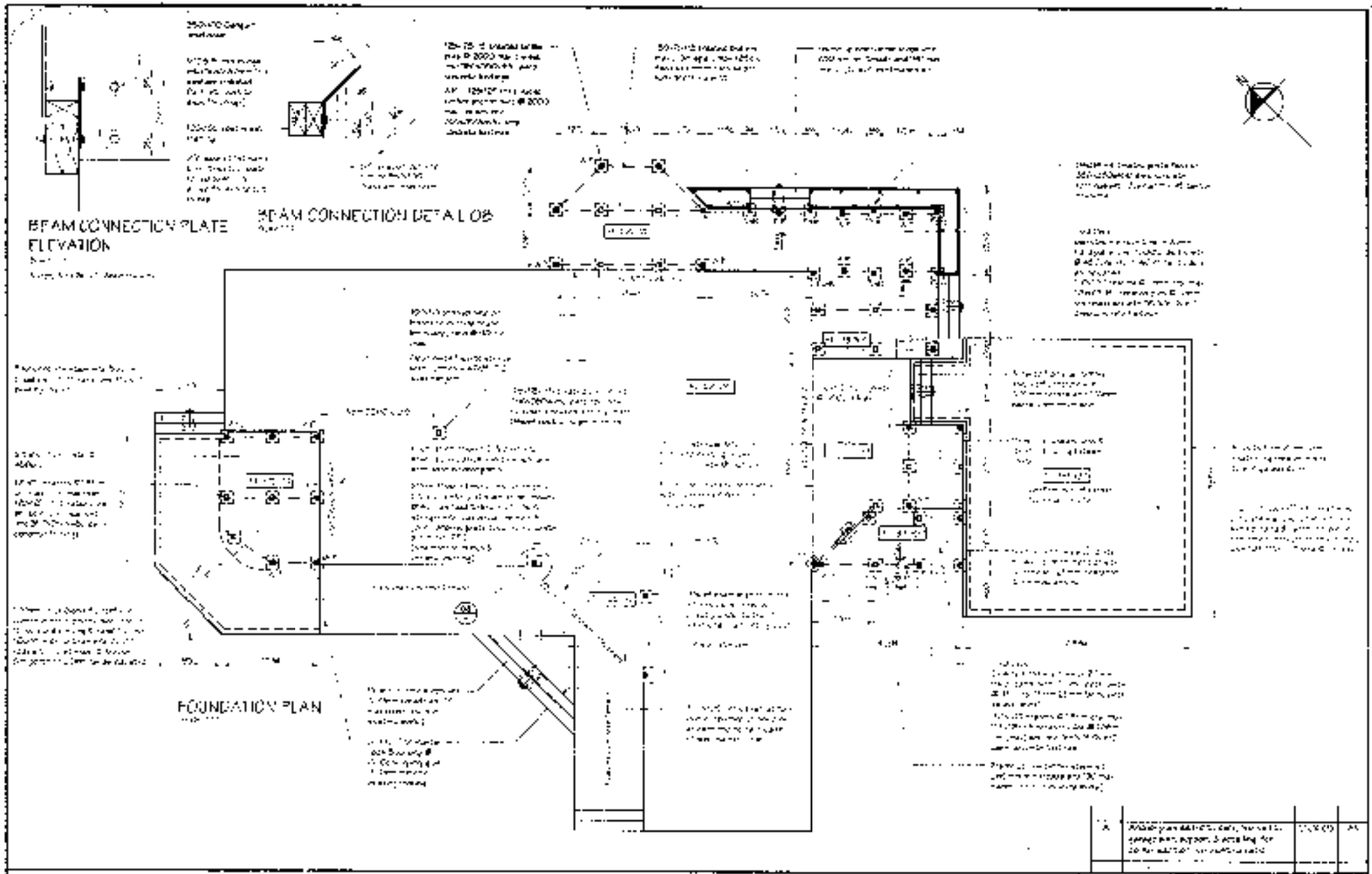
CANTILEVERED LINTEL FIXING

DO NOT SCALE

Owen McCluggage Design

HOUSE ALTERATIONS FOR
PAT & LYNDSAY McFETERIDGE
2286 SOUTH ROAD - OKATO

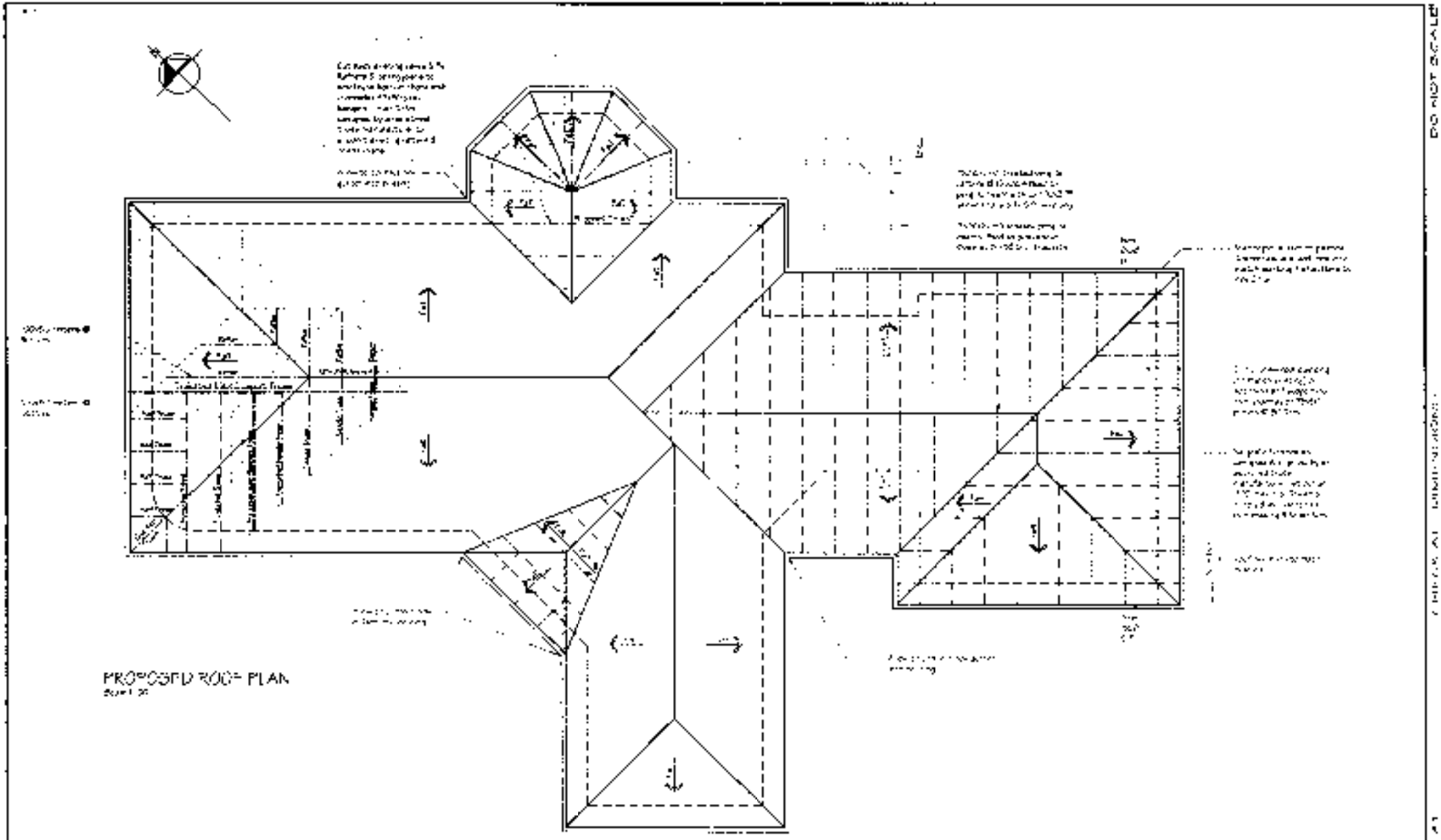
PROPOSED FLOOR PLAN	A3
A5 22.04.03	A
	334 217



Owen McGuggage Design

HOUSE ALTERATIONS FOR
PAT & LYNDSAY McFETERIDGE
2286 SOUTH ROAD - OKATO

FOUNDATION PLAN		A4
AR		A
		A3 PC



Owen McCluggage Design

HOUSE ALTERATIONS FOR
PAT & LYNDSAY McPETERIDGE
2236 SOUTH ROAD - OKATO

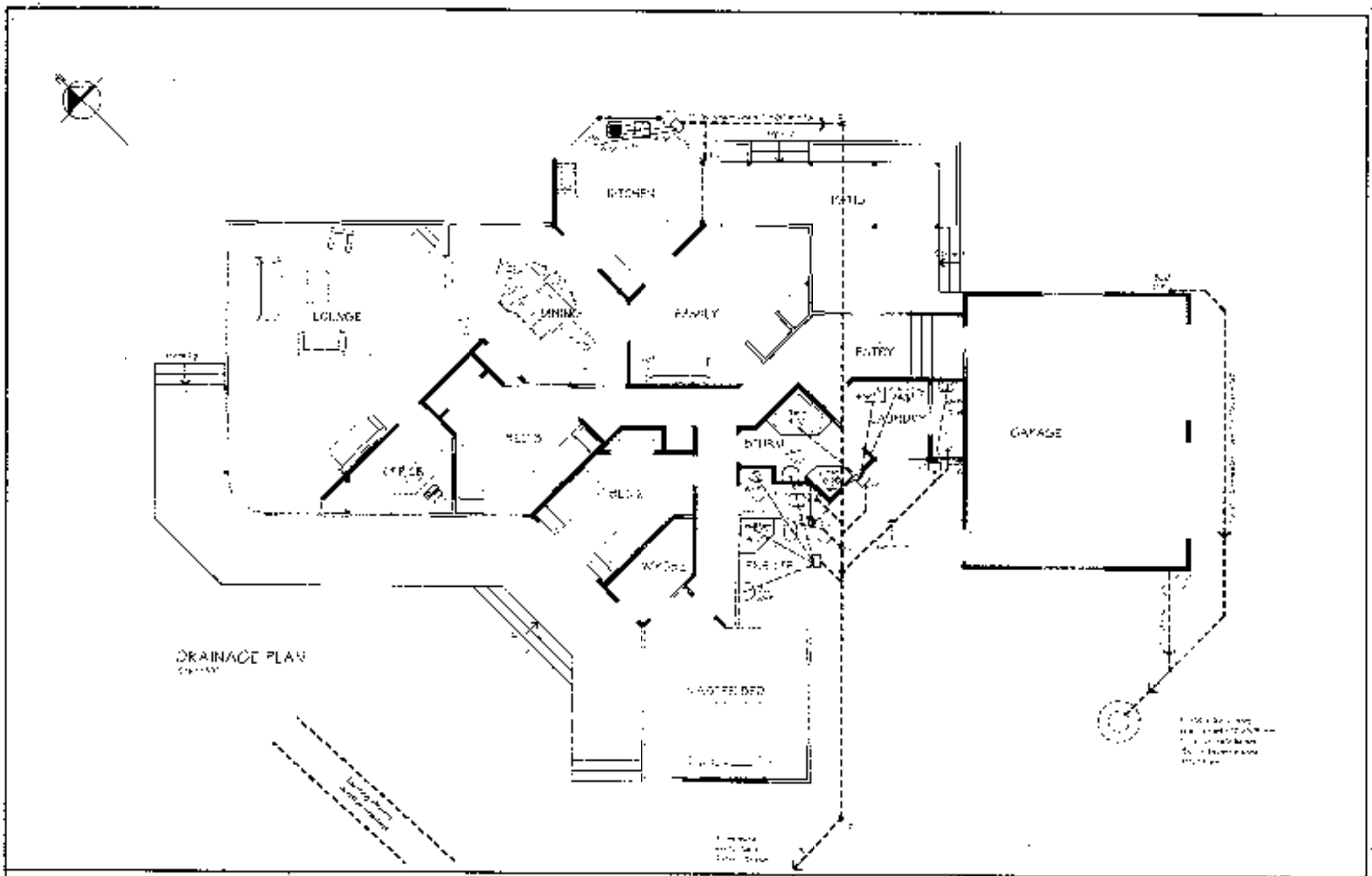
PROPOSED ROOF PLAN

A01

A

DO NOT SCALE

ORIGINAL SIZE A1

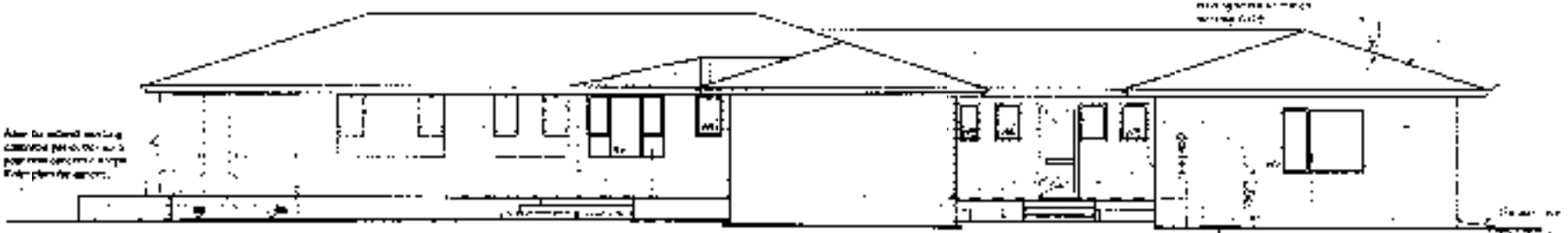


Owen McCluggage Design

HOUSE ALTERATIONS FOR
PAT & LYNDSAY McPETER DGE
22865 SOUTH ROAD - OKATO

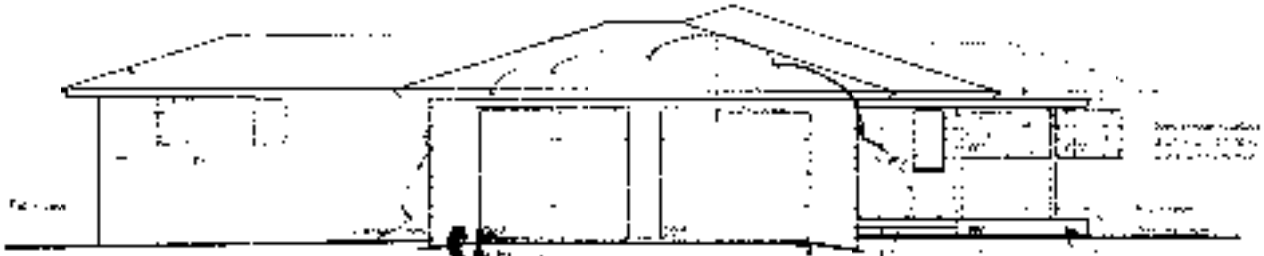
DRAINAGE PLAN

A6

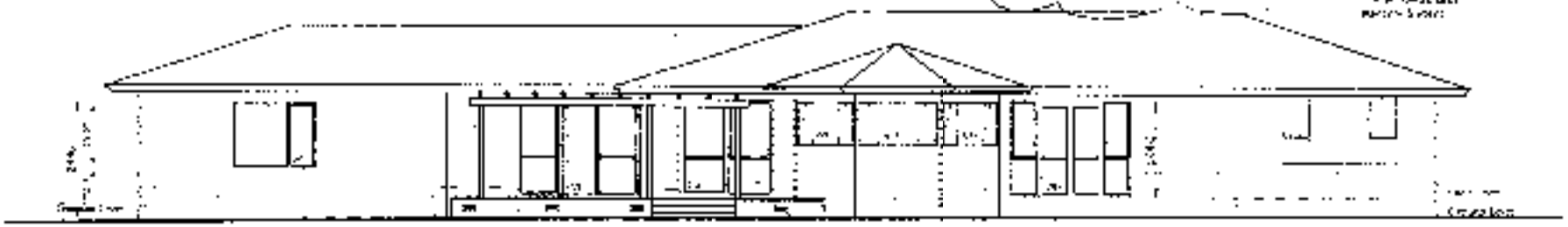


SOUTH ELEVATION

WEST ELEVATION



EAST ELEVATION



NORTH ELEVATION

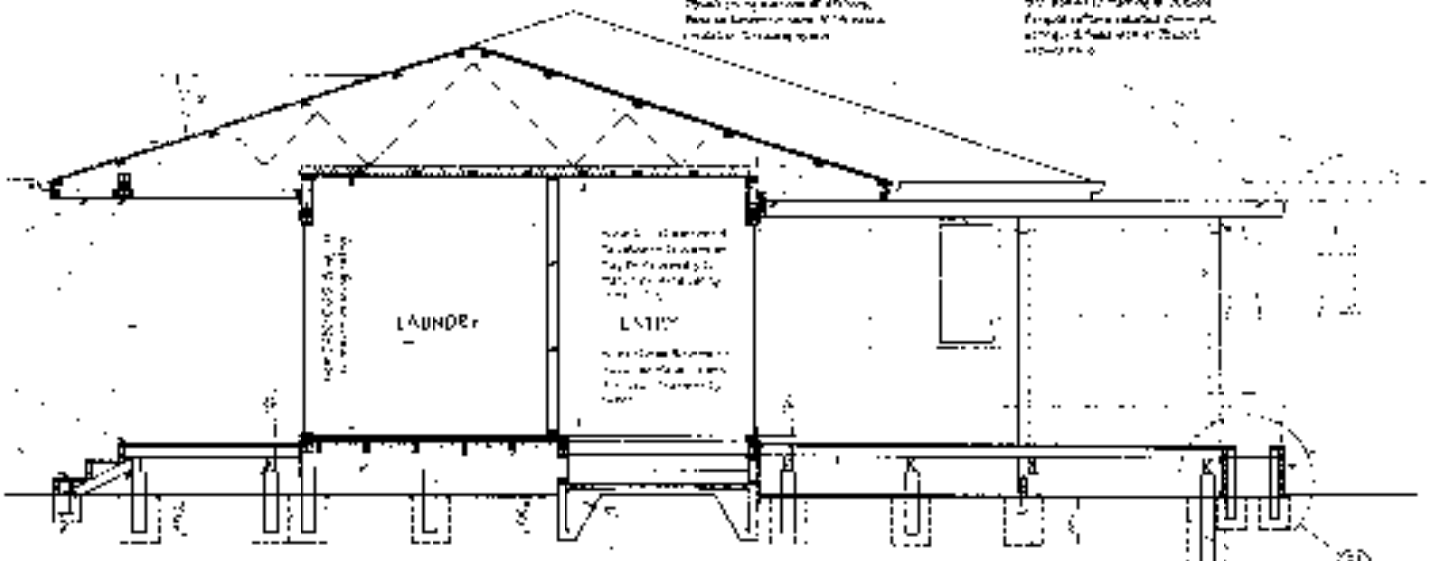
A	Drafter's [illegible] added Dwg Rev [illegible]	[illegible]	[illegible]

Owen McCloggage Design

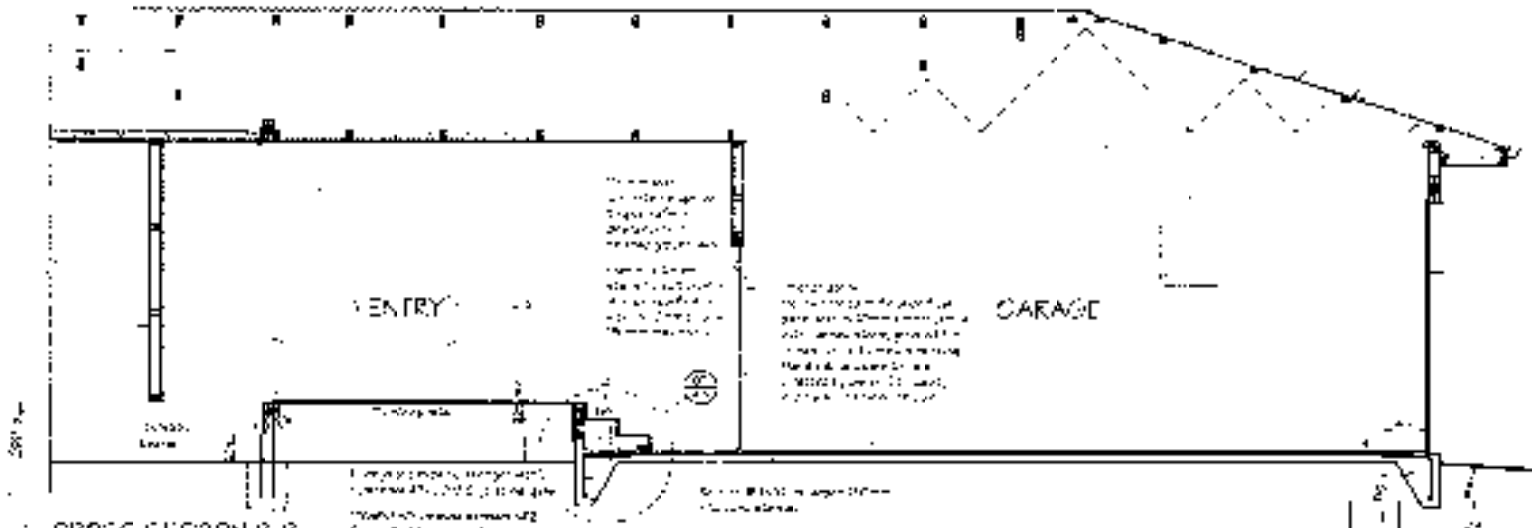
HOUSE ALTERATIONS FOR
PAT & LYNDSAY McPETERIDGE
2286 SOUTH ROAD - OKATO

PROPOSED ELEVATIONS		A/7
AK	[illegible]	A
1:100		[illegible]

ORIGINAL SIZE - A1 CHECK ALL DIMENSIONS



CROSS SECTION A-A



CROSS SECTION B-B

A	Permit & Set Up - Initial Issue Issued	22.04.05	A
Issued	Issued		

Daven McCluggage Design

D.P. McCluggage

11 Young Street, New Plymouth

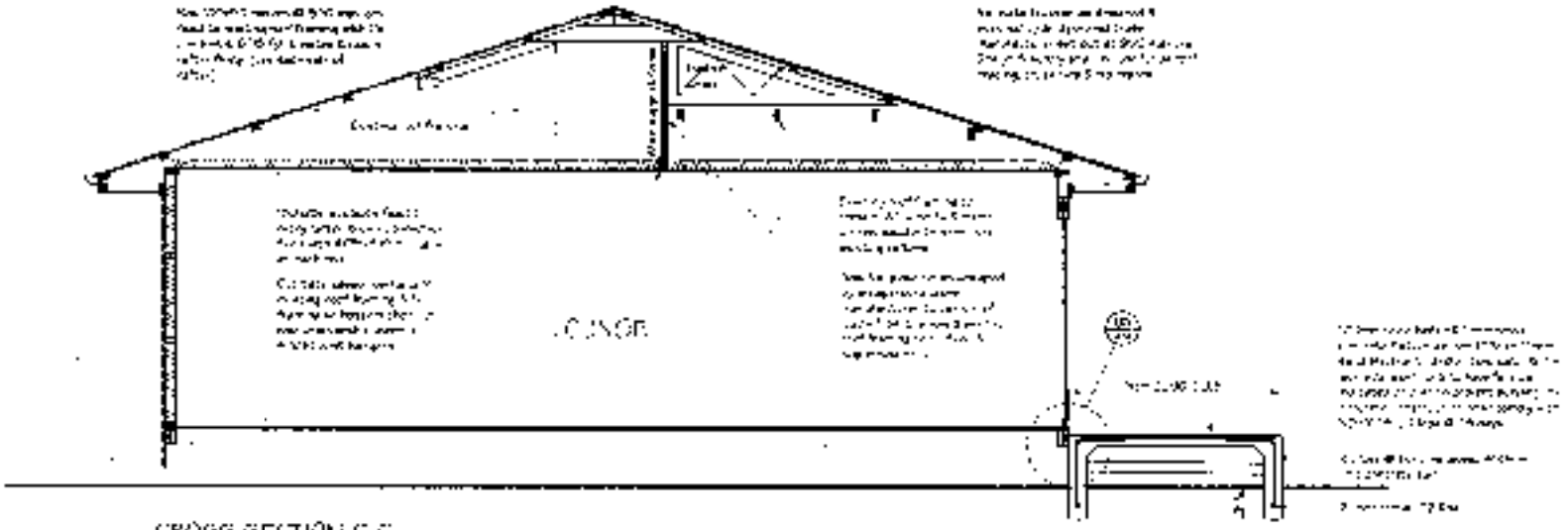
HOUSE ALTERATIONS FOR
PAT & LYNDSAY McPETER DGE
2286 SOUTH ROAD - OKATO

CROSS SECTIONS A-A & B-B	A5
A5	22.04.05
	324 210

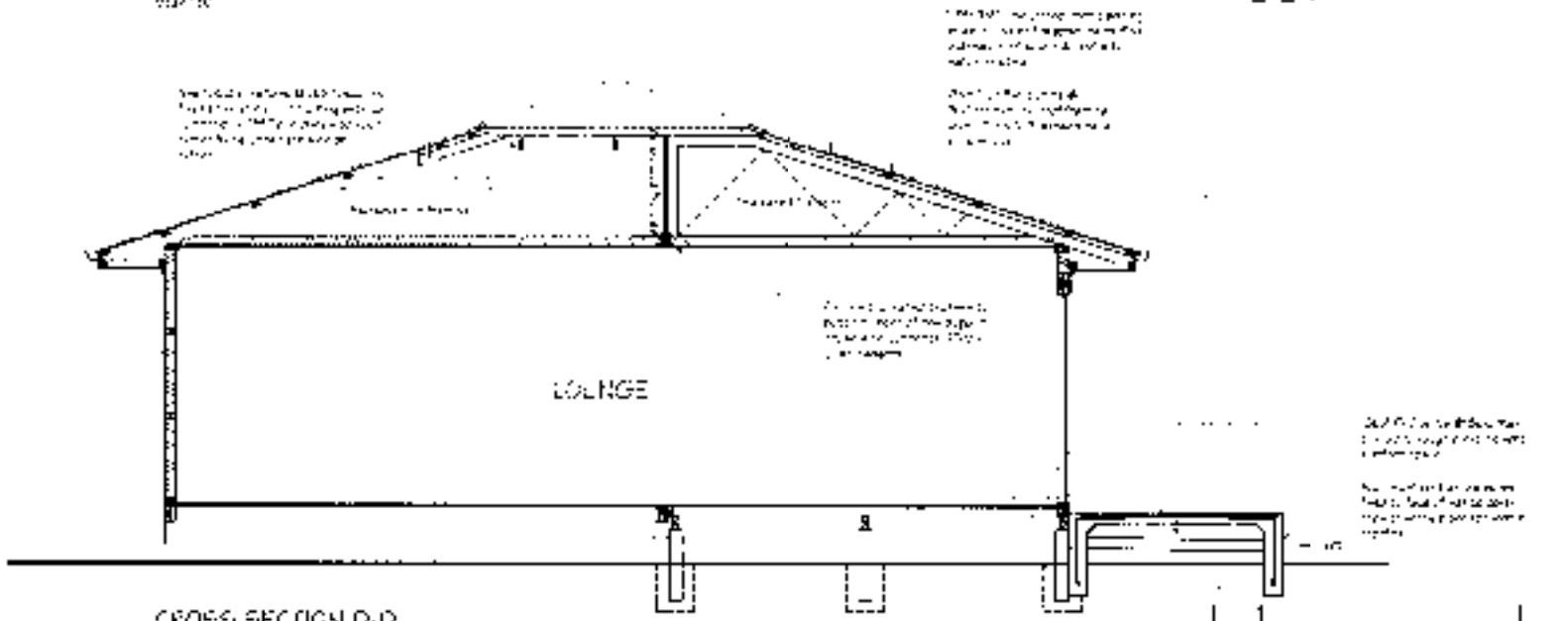
DO NOT SCALE

CHECK ALL DIMENSIONS

PAGE SIZE - A1



CROSS SECTION C-C



CROSS SECTION D-D

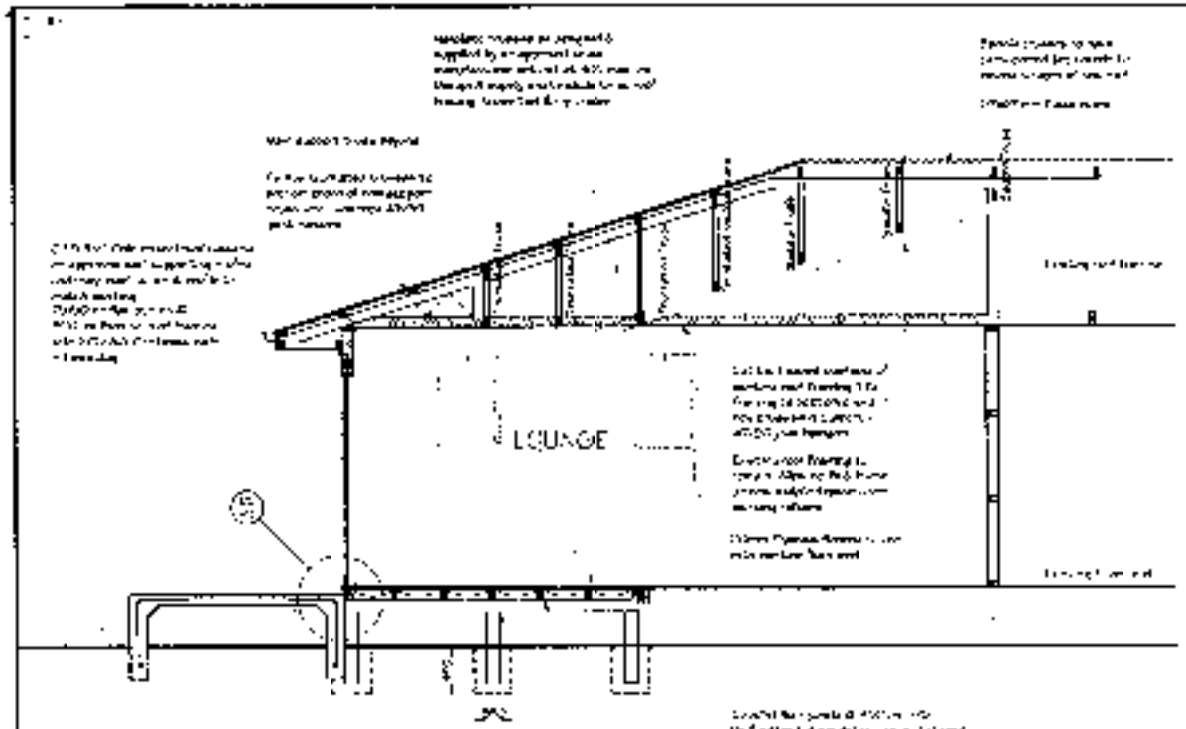
A	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]

Owen McCluggage Design

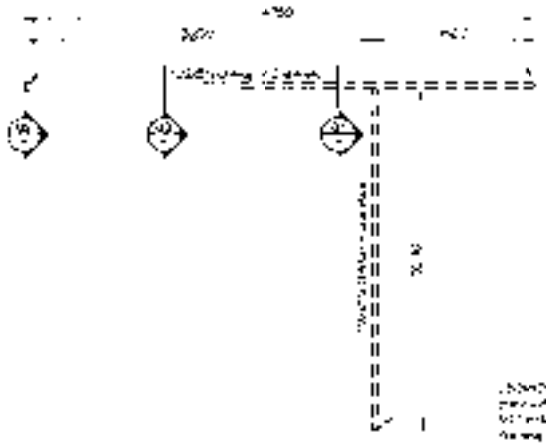
HOUSE ALTERATIONS FOR
PAT & LYNDSAY McPETERIDGE
22565 SOUTH ROAD - OKATO

CROSS SECTIONS C-C & D-D		A9
AK	[illegible]	A
[illegible]	[illegible]	[illegible]

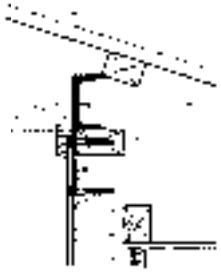
CONSTRUCTION PRINT [illegible]



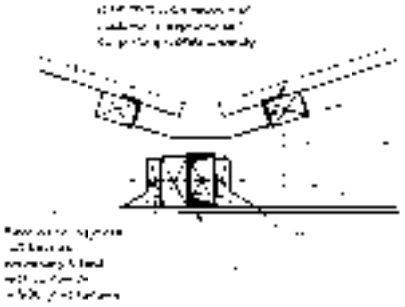
CROSS SECTION E-E



STEEL BEAM LAYOUT PLAN

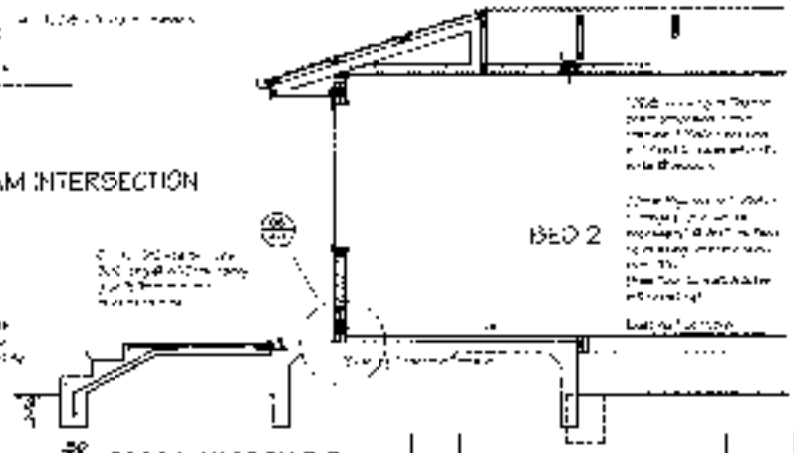


02
STEEL BEAM END FIXING DETAIL



03
STEEL BEAM/ CEILING DETAIL

01
STEEL BEAM INTERSECTION



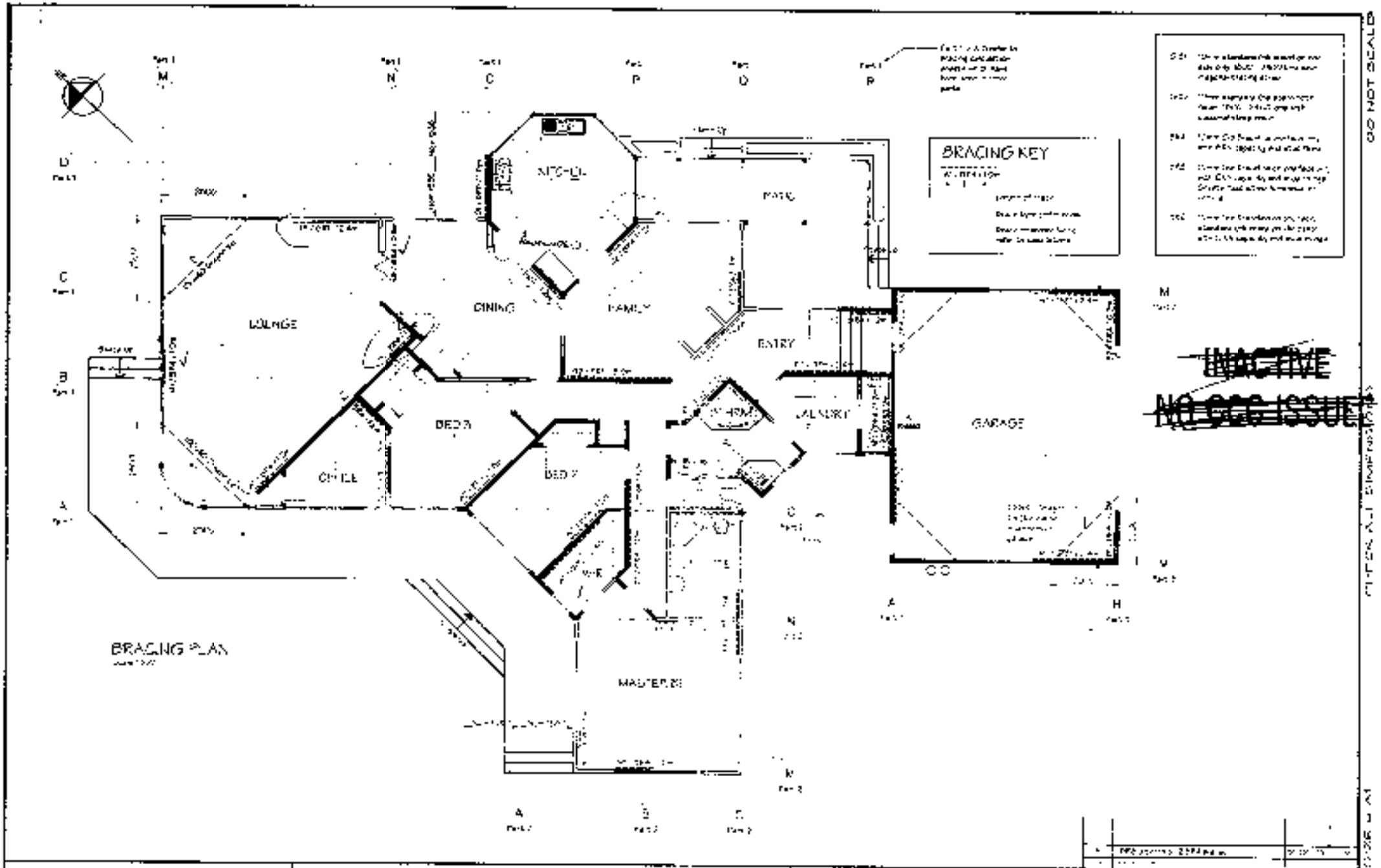
CROSS SECTION F-F

A	Double Glazing		
Issue	Issue Date		

Owen McCluggage Design
O.P. McCluggage

HOUSE ALTERATIONS FOR
PAT & LYNDSAY McFETERIDGE
2286 SOUTH ROAD - OKATO

CROSS SECTION E-E, F-F		A10
OP	22.04.08	A
	1:20	334-21

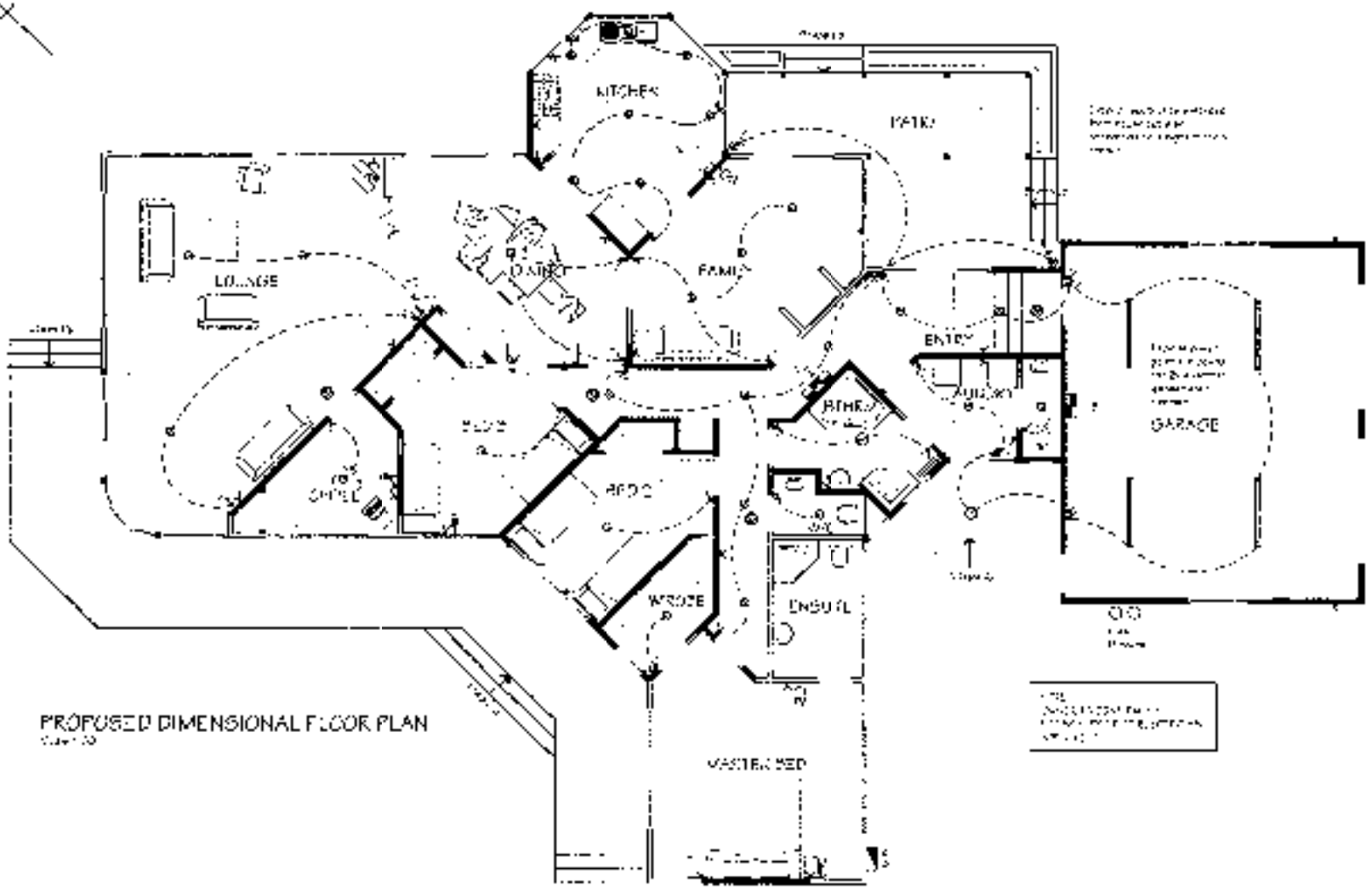


Owen McCluggage Design

O.P. McCluggage

HOUSE ALTERATIONS FOR
PAT & LYNDSAY McFETERIDGE
2286 SOUTH ROAD - OKATO

BRACING PLAN	A1
A1	24.09.03
	334-210



PROPOSED DIMENSIONAL FLOOR PLAN

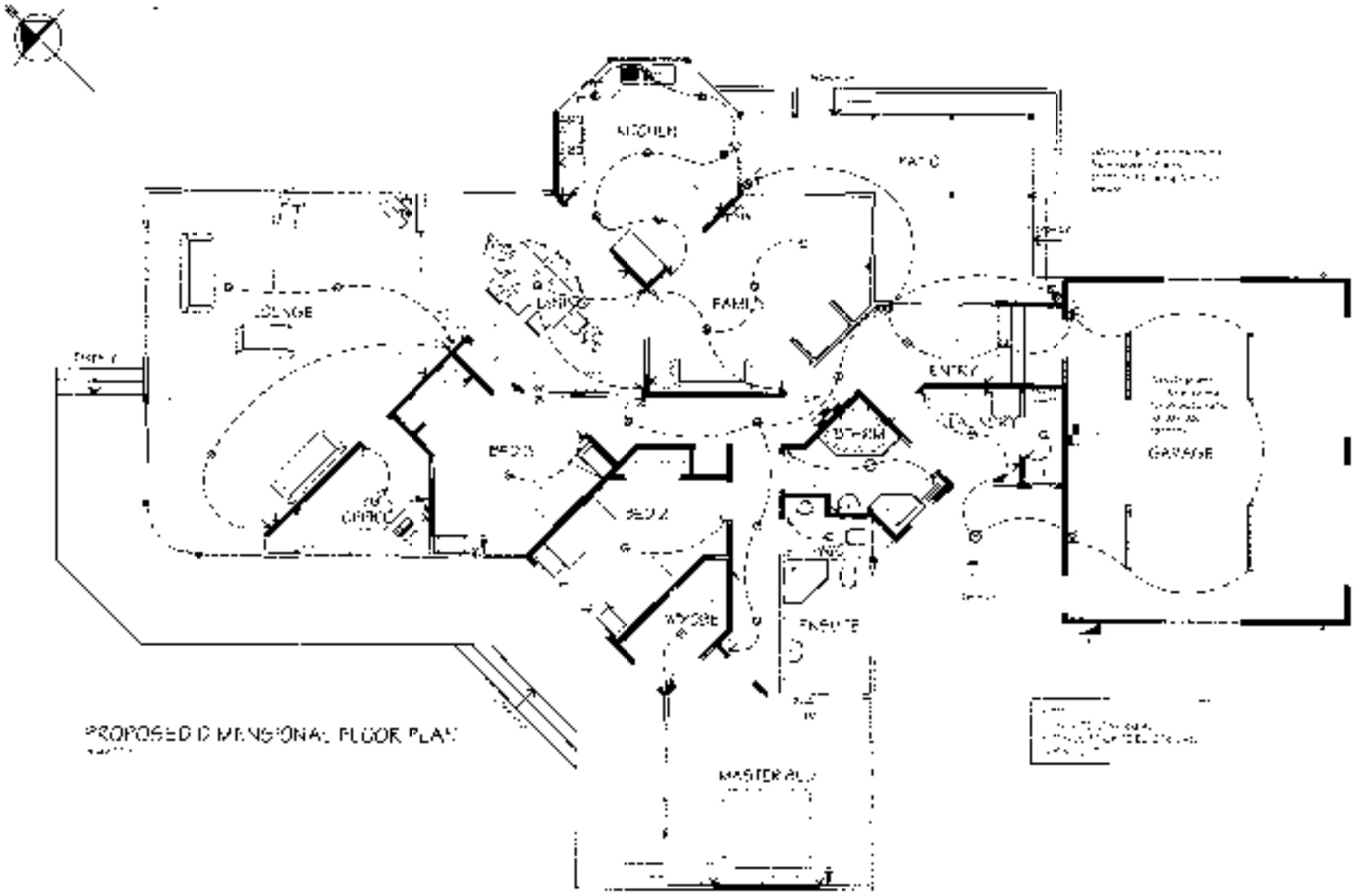
ELECTRICAL KEY

A	Site location updated Exist. & proposed - construction Construction notes updated	[illegible]	[illegible]

Owen McCloggage Design

O.P. McCloggage

HOUSE ALTERATIONS FOR PAT & LYNDSAY McPETERIDGE 2286 SOUTH ROAD - OKATO	PROPOSED DIMENSIONAL PLAN	A12
	AS	22.04.05
		1:100



ELECTRICAL KEY

Owen McCluggage Design

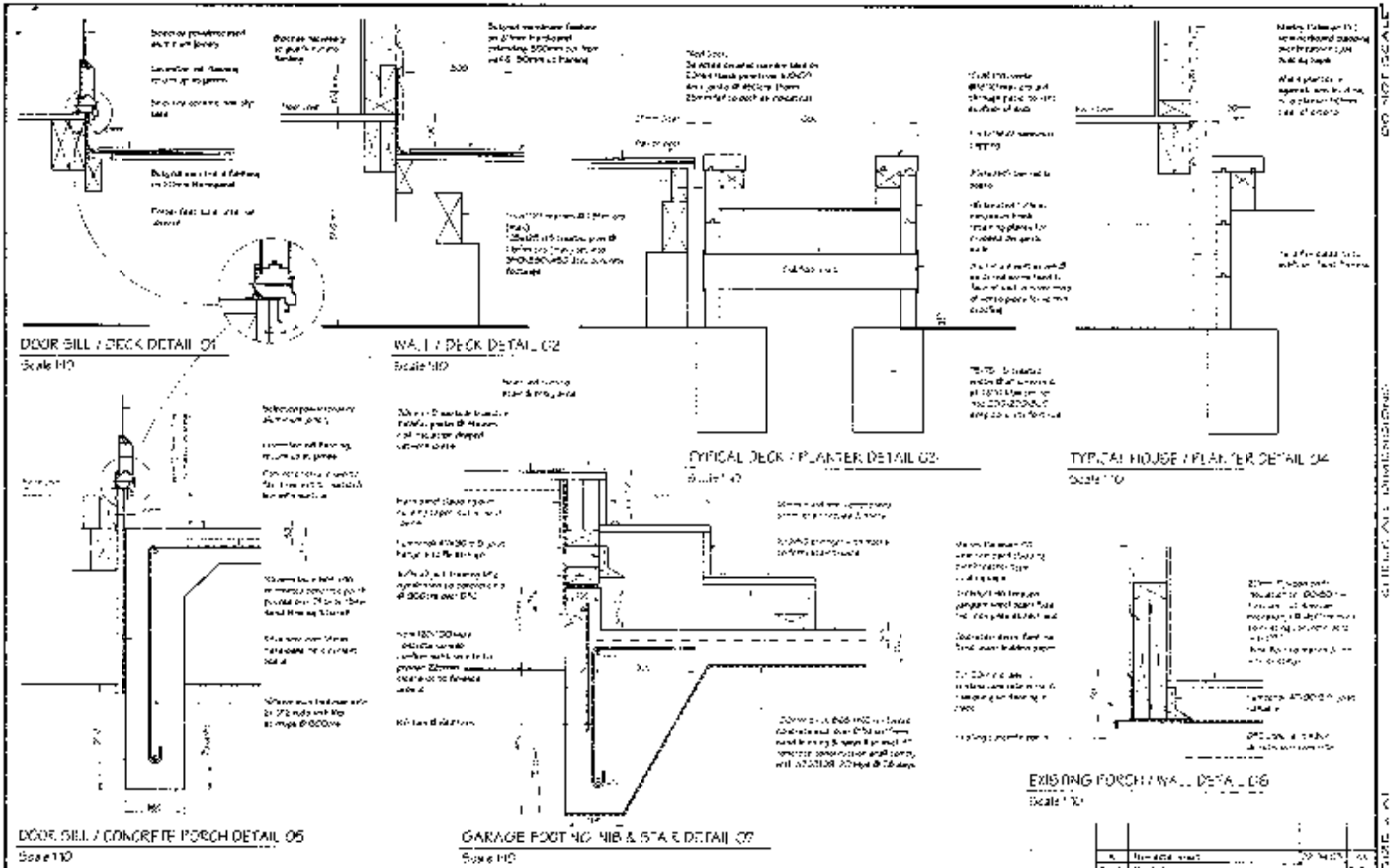
O.P. McCluggage

HOUSE ALTERATIONS FOR
PAT & LYNDSAY McPETER DGF
2286 SOUTH ROAD - OKATO

PROPOSED DIMENSIONAL PLAN

A12

Ar



Owen McCloggage Design

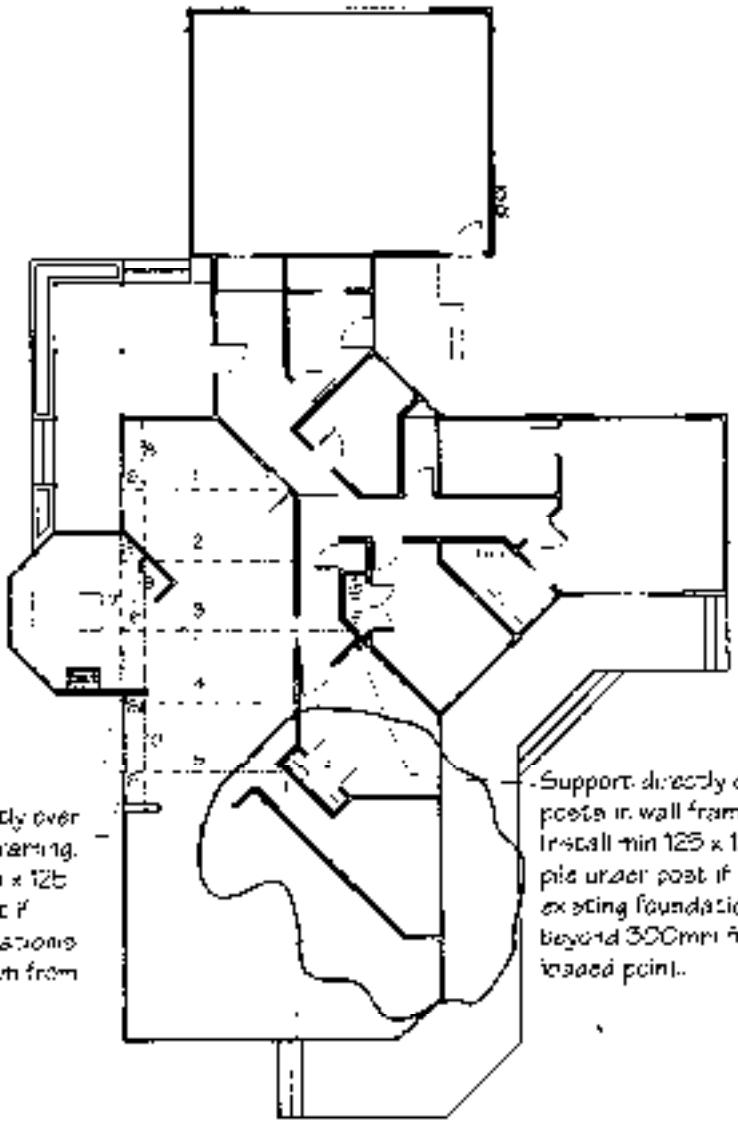
HOUSE ALTERATIONS FOR
PAT & LYNDSAY McPETER DGE
2290 SOUTH ROAD - OKATO

CONSTRUCTION DETAILS

A13

AR | 22.04.05 | A

354-010



Strutting/Counter Beams.

1. 2/200 x 45 HySpan strutting beam (or 2/200 x 50)
2. 200 x 63 HySpan strutting beam (or 2/200 x 50)
3. 300 x 63 HySpan strutting beam (existing re-used)
4. 2/200 x 45 HySpan strutting beam (or 2/200 x 50)
5. 2/200 x 45 HySpan strutting beam (or 2/200 x 50)
6. 150 x 75 strutting beam
7. 200 x 45 HySpan Counter beam (or 200 x 50)
8. 9. 10. 2/300 x 50 Counter beams

Fixings

All end fixing to be 6.7 kN
Use 2/100 x 3.75 skewed nails & 3x wire dogs.

Fix ceiling joist to beams with Lumberlok MiTegrip fully nailed with Lumberlok 30 x 3.56 nails.

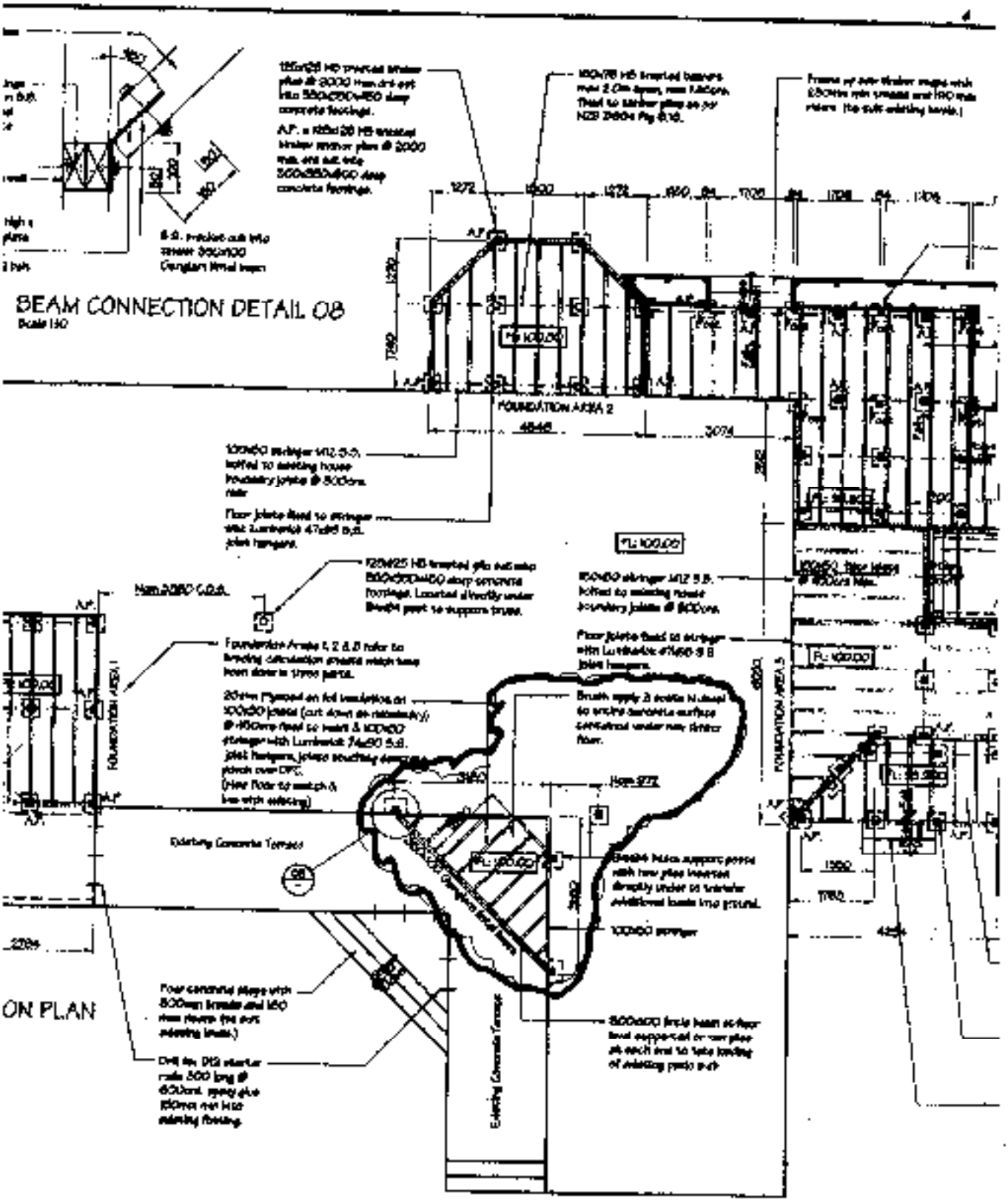
A	STRUTTING BEAMS ALTERED	09.09.03	OM
[illegible]	[illegible]	[illegible]	[illegible]

Owen McCluggage Design
O.P. McCluggage
11 Young Street, New Plymouth
Dean House, Rutherford Street

HOUSE ALTERATIONS
PAT & LYNDSAY McFETRIDGE
228B SOUTH ROAD - OKATO

FLOOR LAYOUT ALTS & STRUTTING BEAMS		21
OM	04.09.03	-
1:200		334-210

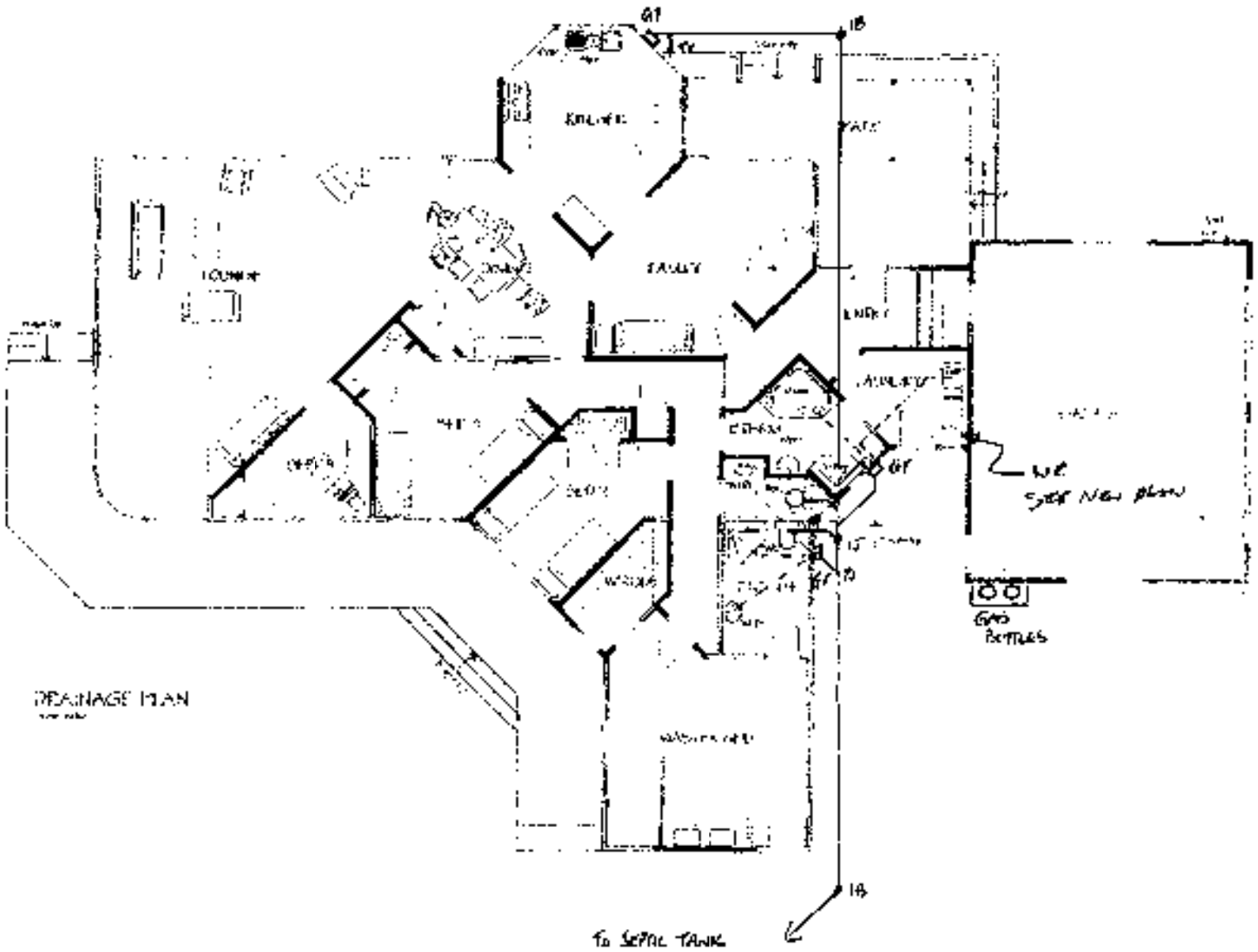
DO NOT SCALE
CHECK ALL DIMENSIONS
PRELIMINARY - NOT FOR CONSTRUCTION



Project Title

HOUSE ALTERATIONS FOR PAT & LYNDSAY McFETERIDGE

2286 SOUTH ROAD - OKATO

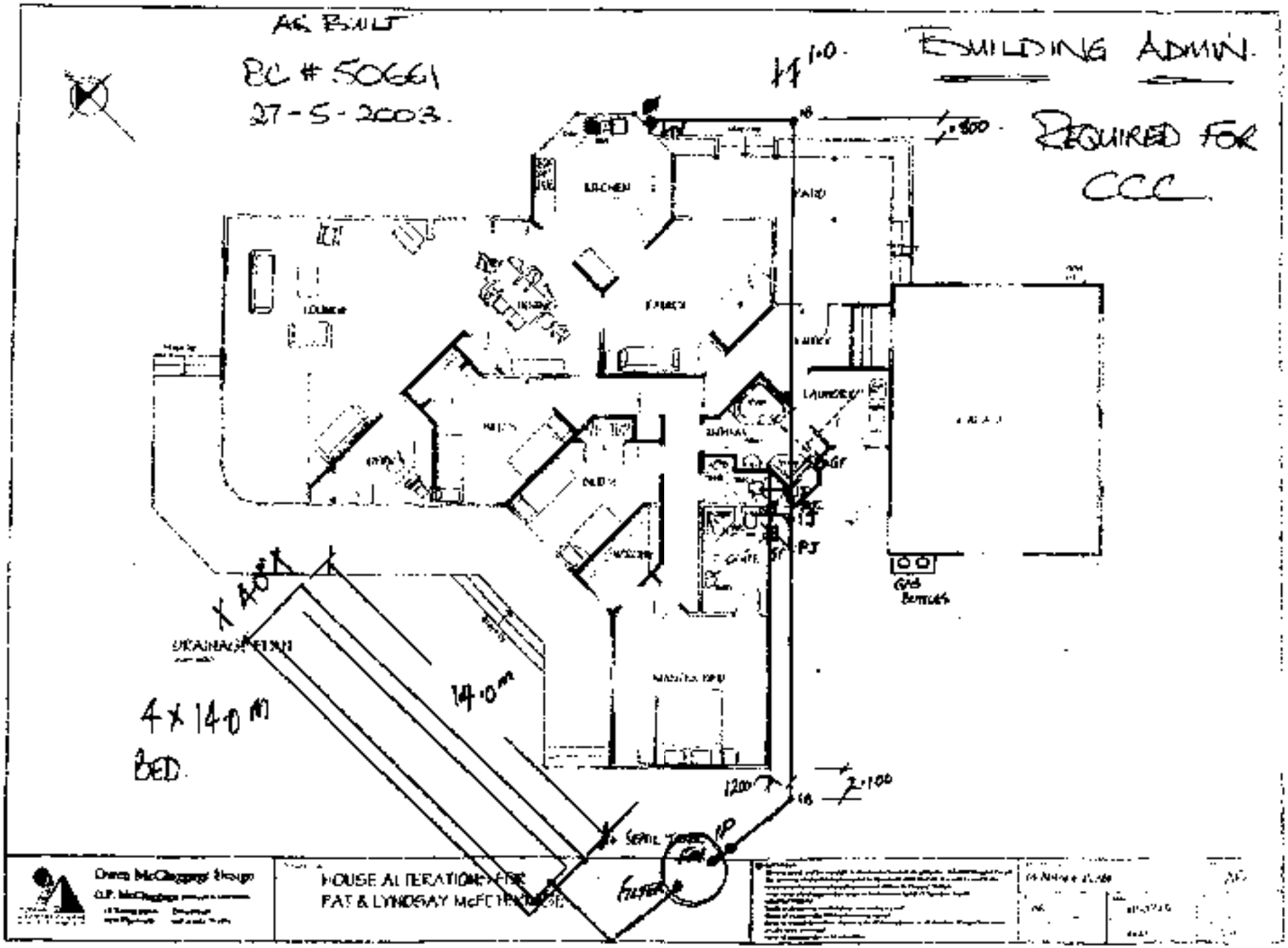


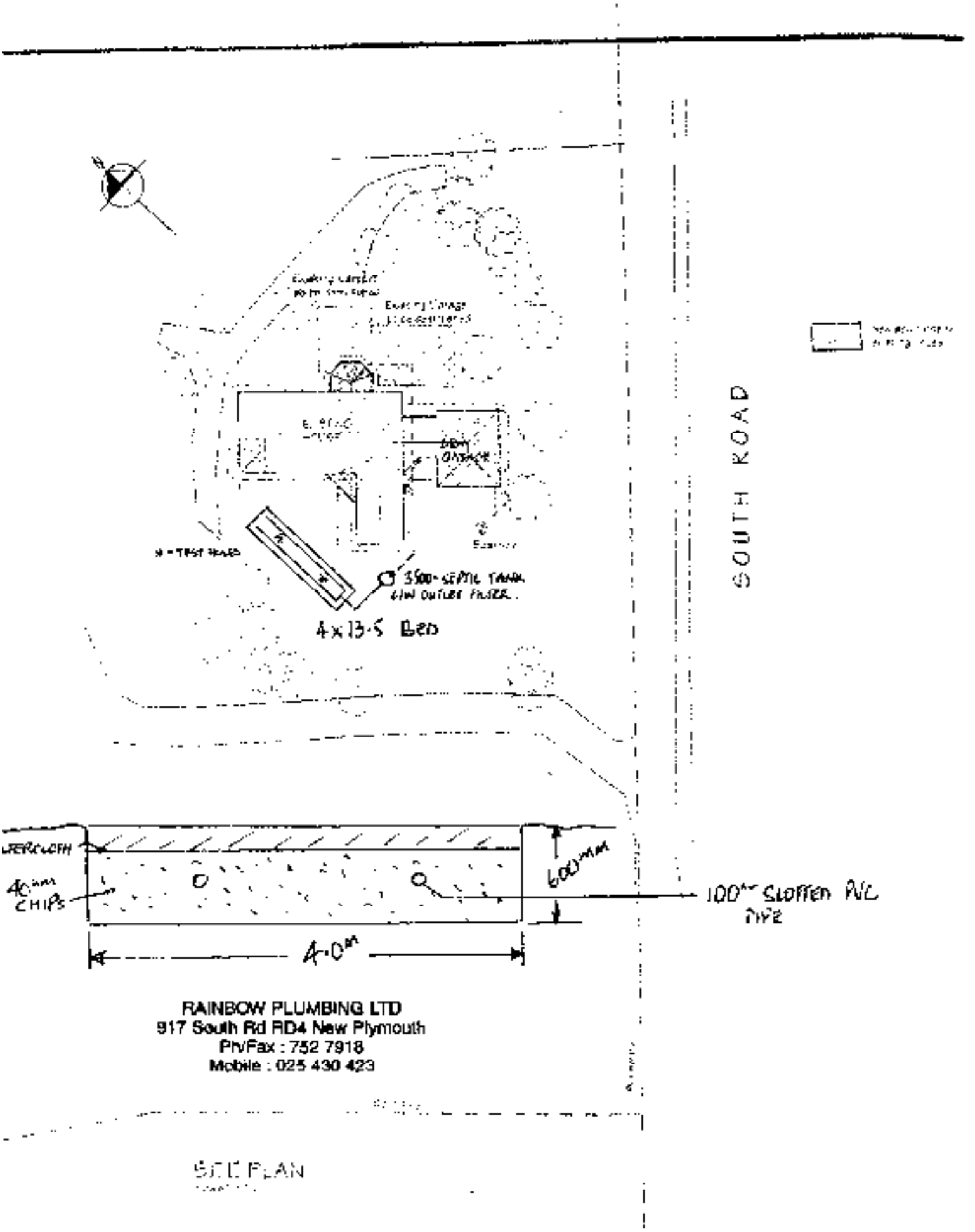
Owen McDougall Design

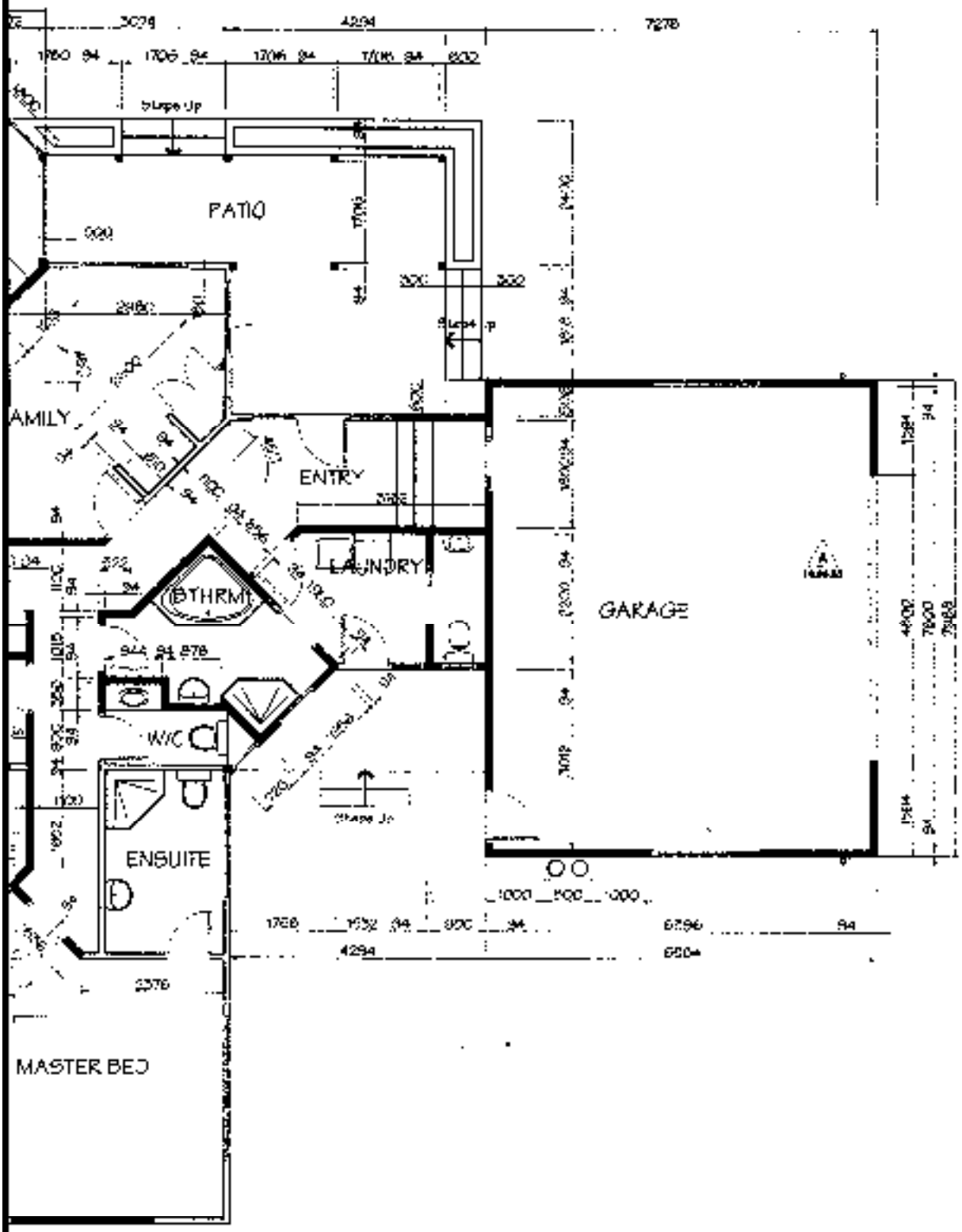
G.P. McDougall

HOUSE ALTERATIONS FOR
PAT & LYNDSAY McFETRIDGE

DRAINAGE PLAN


AS BUILT
BC # 50661
27-5-2003.
BUILDING ADMIN.
REQUIRED FOR CCC
KITCHEN
LOUNGE
LAUNDRY
GAS BOTTLES
DRAINAGE FIELD
4 x 14.0 m
BED.
14.0 m
PJ
HOUSE ALTERATIONS FOR
PAT & LYNDSAY McFETRIDGE


SOUTH ROAD
3500 SEPTIC TANK
C/W OUTLET FILTER
4x13·5 Bed
40mm CHIPS
600mm
100mm SLOTTED PVC PIPE
4·0m
RAINBOW PLUMBING LTD
917 South Rd RD4 New Plymouth
Ph/Fax : 752 7918
Mobile : 025 430 423
SITE PLAN



A	Garage Door extended	16.06.03	OM

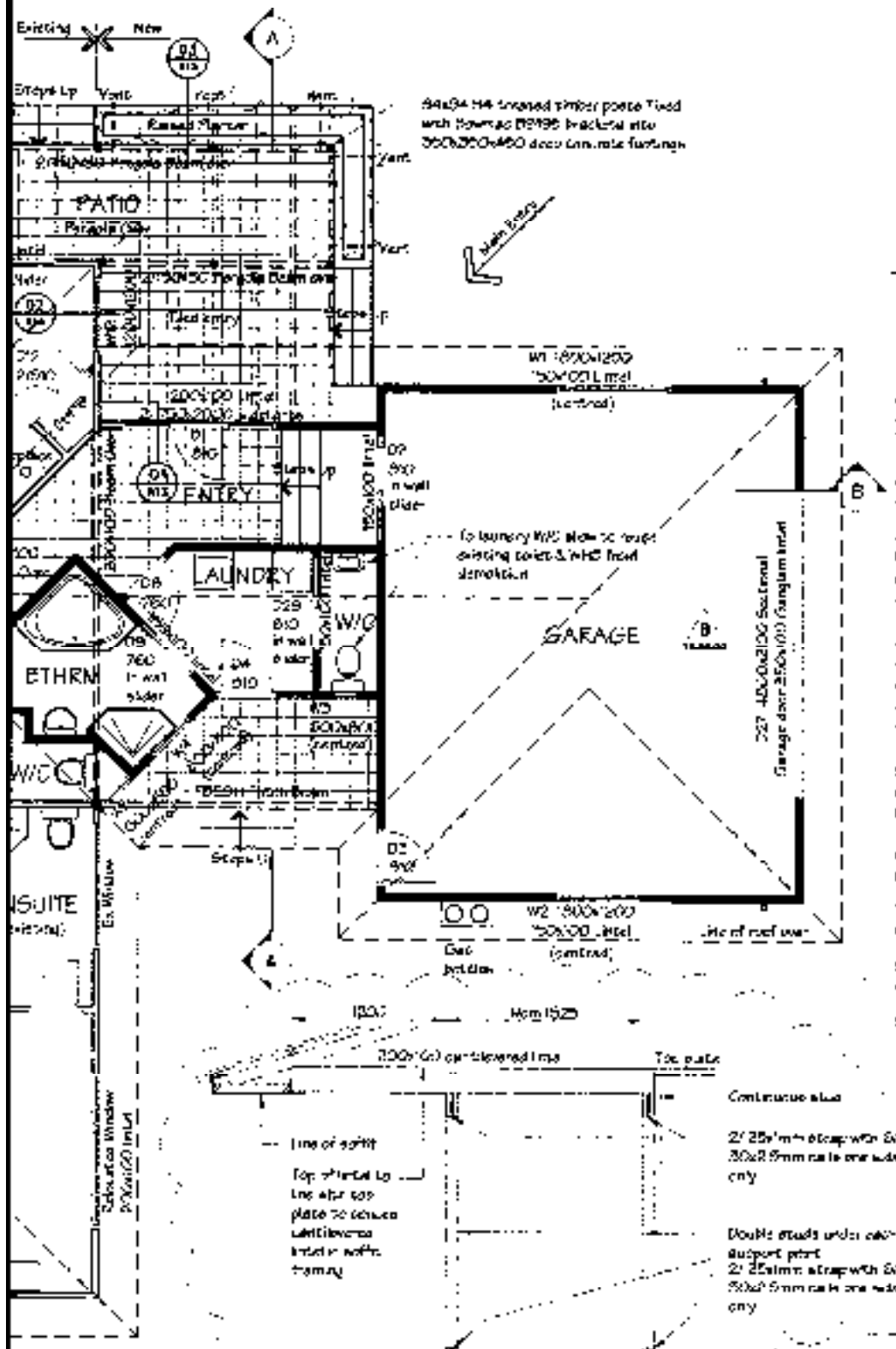
Drawing Title: PROPOSED (DIMENSIONAL) PLAN		Sheet: A2
Drawn: AK	Date: 24.03.03	Revision: -
Checked:	Scale: 1:100	File: 334-210

DO NOT SCALE

CHECK ALL DIMENSIONS

ORIGINAL SIZE A1

New freestanding fireplace [as selected by owner]. All to comply with NZS 7421:1990. Allow to form opening in existing roof cladding & flash around chimney as necessary.
Allow to form 100mm high [selected] tile hearth.
To install fire in conformity with manufacturers installation & instructions.



CANTILEVERED LINTEL FIXING
Scale 1:50

NEW CONSTRUCTION KEY

- EXISTING WALLS TO REMAIN
- NEW TIMBER FRAMED WALLS
- NEW WINDOWS
- W20 / D20 — NEW DOORS
- BEAMS OR BULKHEADS
- OUTLINE OF ROOF OVER

GENERAL NOTES:

1. All new construction where not specifically designed shall comply with the NZ Building Code Handbook and shall conform to NZS 3604:1999.

2. It is to be check all dimensions prior to construction. Manufacture or fixing of any part shall allow for adjustment for fitting tolerances, and to align with existing structure.
Dimensions errors shall not be the responsibility of the designer or the design firm or its agents.

3. All exposed metal fasteners and plates shall be stainless steel or galvanised [as specified in accordance with NZS 3604:1999 Section 4.5 and by Table 4.1]

4. All timber in contact with concrete, mortar or cement based products shall be separated with a damp proof course (DPC) of sufficient width to prevent contact between the two.

5. All framing timber to be H1 treated or where within 150 of ground level H3 treated. Exposed timber to be min H3 treated.

6. All decks shall have a slip resistance of not less than 0.4 wet.

7. All to be fully to conform to AS/NZS 3500.5:2000.

8. Electrician to confirm all electrical fittings with owner prior to wiring out.

9. C.C.S. means 'cracked or plus'.

B	Garage door lintel amended	16.06.03	OM
A	Cantilevered lintel detailed Soffit vent added Kitchen lintels sized	22.04.03	AK

Make well good to match where window removed

CONTRACTORS
Verify all dimensions on site before commencing any work.
Check all drawings before commencing any work.
Refer to figured dimensions - do not scale off drawing. (Larger scale drawings take preference over smaller scale drawings)
Refer all discrepancies to Consulting Office.

Drawing Title: PROPOSED FLOOR PLAN		Size: A3
Drawn: AK	Date: 22.04.03	Revision: A
Scale: 1:100		No. 334-210

DO NOT SCALE
CHECK ALL DIMENSIONS
ORIGINAL SIZE - A1

Roof pitch of new building works to match existing. E.O.S.

Corrugated colorbond roof cladding over approved self supporting roofing underlay.

New Marley PVC spouting on timber fascia board. Profile of spouting & fascia to match existing

Remove existing stone veneer & re-clad with new Palisade PVC weatherboard cladding over building paper

Ramp up ground level locally to garage doors.

Garage Line

Ground Line

Grill open for underfloor venting

Area for gas bottles. Note: Gas bottles to be secured on 800x800x100 concrete pad

New powdercoated aluminum window profile to match existing, colours as selected by owner. Supply & install all Head, sill & Jamb flashings to manufacturers recommendations & specifications.

Allow to clean & repaint entire existing soffit lining to match new

Floor Level

Ground Level

New colorbond roller shutter garage doors, colours as selected by owner. Supply & install all Head, sill & jamb flashings to manufacturers recommendations & specifications.

150x50 H3 pergola rafters @ 900 crs. over 150x100 H3 pergola beams max. on 150x100 H3 posts set into 300x300x900 deep concrete footings.

New powdercoated aluminum bifolding window to kitchen

Floor Level

Garage Level

Ground Level

Under floor ground

Timber framed deck, balustrade & steps.

Aluminum vent grille over 100Ø PVC vent pipe, min. 150mm & 750 from corners

Floor Level

Ground Level

Marley Palisade

B	Garage door amended	16.06.03	GM
A	Subfloor ventilation added Gas bottle location indicated	22.04.03	AK

PROPOSED ELEVATIONS		A7
AK	22.04.03	A
	1:100	334-210

DO NOT SCALE

CHECK ALL DIMENSIONS

ORIGINAL SIZE A1

GANGLAM LINTELS

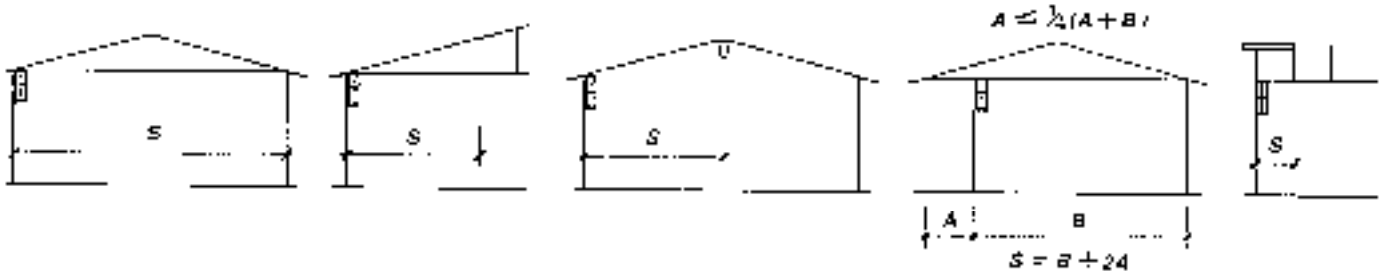


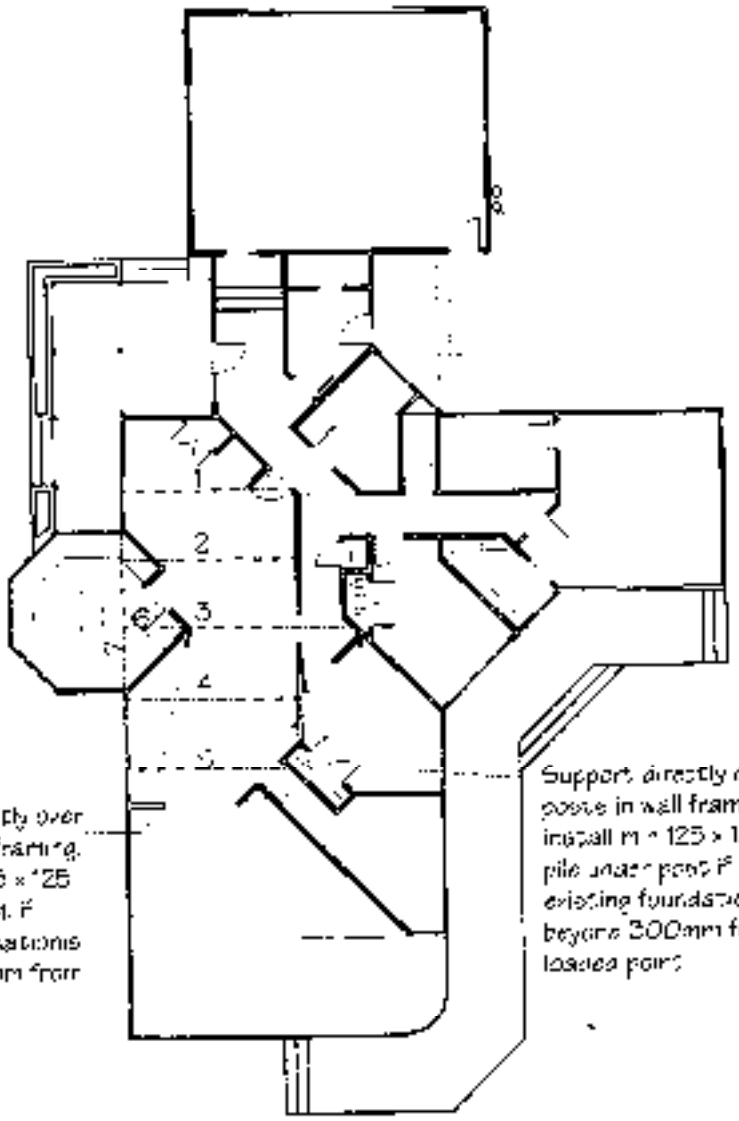
TABLE 1:
LINTELS SUPPORTING ROOF AND CEILING ONLY

	LINTEL SIZE	MAXIMUM LINTEL SPAN (m) SUPPORTED ROOF SPAN S (m)										
		5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0
LIGHT ROOF	100 x 100	1.56	1.49	1.43	1.35	1.30	1.24	1.19	1.14	1.10	1.07	1.04
	125 x 100	2.09	1.98	1.90	1.82	1.73	1.65	1.58	1.53	1.47	1.42	1.39
	150 x 100	2.43	2.31	2.22	2.12	2.02	1.93	1.85	1.78	1.72	1.66	1.61
	200 x 100	3.29	3.14	3.01	2.83	2.74	2.62	2.51	2.42	2.33	2.25	2.19
	250 x 100	4.16	3.96	3.80	3.64	3.40	3.31	3.17	3.05	2.94	2.85	2.76
	300 x 100	4.62	4.40	4.22	4.07	3.94	3.82	3.71	3.53	3.54		
	350 x 100	5.44	5.19	4.98	4.80	4.64	4.50	4.38	4.22	4.08		
	400 x 100	6.27	5.98	5.73	5.52	5.34	5.15	4.94	4.76	4.63		
	450 x 100	7.09	6.76	6.49	6.29	5.92	5.66	5.43	5.22	5.04		
	500 x 100	7.92	7.55	7.18	6.77	6.44	6.18	5.93	5.69	5.48		
	600 x 100	8.74	8.13	7.64	7.29	6.87	6.57	6.30	6.06	5.85		
	500 x 100	9.29	8.65	8.13	7.68	7.31	6.96	6.70	6.45	6.22		
HEAVY ROOF	100 x 100	1.20	1.30	1.15	1.11	1.07	1.04	1.00	0.94	0.93	0.90	0.87
	125 x 100	1.62	1.60	1.52	1.48	1.43	1.39	1.33	1.33	1.24	1.17	1.16
	150 x 100	1.96	1.87	1.79	1.73	1.67	1.62	1.55	1.44	1.41	1.39	1.36
	200 x 100	2.58	2.54	2.43	2.35	2.27	2.20	2.11	2.03	1.96	1.89	1.83
	250 x 100	3.35	3.21	3.08	2.96	2.87	2.77	2.60	2.5[illegible]	2.47	2.39	2.32
	300 x 100	3.71	3.56	3.42	3.29	3.18	3.09	3.00	2.93	2.86	2.80	[illegible]
	350 x 100	4.40	4.20	4.08	3.88	3.75	3.64	3.54	3.45	3.37	3.30	[illegible]
	400 x 100	5.07	4.84	4.64	4.47	4.32	4.19	4.08	3.97	3.88	3.80	[illegible]
	450 x 100	5.74	5.47	5.25	5.06	4.89	4.74	4.61	4.50	4.39	[illegible]	[illegible]
	500 x 100	6.41	6.11	5.86	5.64	5.46	5.30	5.15	5.02	4.90	[illegible]	[illegible]
	550 x 100	7.07	6.74	6.47	6.23	6.03	5.85	5.69	5.54	5.36	[illegible]	[illegible]
	600 x 100	7.73	7.36	7.08	6.82	6.60	6.40	6.20	5.97	5.76	[illegible]	[illegible]

TABLE 2:
GANGLAM RIDGE BEAM SUPPORTING ROOF AND SARKING
(RAFTERS @ 1200MM CRS MAX)

	LINTEL SIZE	MAXIMUM LINTEL SPAN (m) SUPPORTED ROOF SPAN S (m)										
		5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0
LIGHT ROOF	300 x 100	3.04	4.74	4.51	4.31	4.13	4.00	3.83	3.77	3.67	3.58	3.50
	350 x 100	5.94	5.69	5.31	5.09	4.88	4.72	4.57	4.44	4.32	4.22	4.12
	400 x 100	6.64	6.44	6.12	5.85	5.62	5.42	5.26	5.11	4.98	4.85	4.74
	450 x 100	7.62	7.26	6.92	6.60	6.36	6.14	5.94	5.73	5.63	5.40	5.37
	500 x 100	8.28	7.91	7.61	7.36	7.10	6.86	6.64	6.45	6.29	6.13	5.99
	550 x 100	8.92	8.52	8.20	7.93	7.70	7.50	7.32	7.13	6.94	6.77	6.62
	600 x 100	9.54	9.11	8.77	8.48	8.24	8.02	7.82	7.69	7.51	7.27	7.24
HEAVY ROOF	300 x 100	4.08	3.84	3.63	3.40	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	350 x 100	4.81	4.58	4.32	4.17	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	400 x 100	5.65	5.21	4.93	4.73	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	450 x 100	6.20	5.81	5.52	5.35	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	500 x 100	6.89	6.53	6.22	5.95	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	550 x 100	7.61	7.25	6.92	6.60	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	600 x 100	8.14	7.77	7.49	7.22	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Regular duty plating — Heavy duty plating — Super heavy duty plating



Support directly over posts in wall framing. Install min 125 x 125 pile under post if existing foundations beyond 300mm from loaded point.

Support directly over posts in wall framing. Install min 125 x 125 pile under post if existing foundations beyond 300mm from loaded point.

SEE AMENDMENT

Strutting/Counter beams

1. 2/200 x 45 HySpan strutting beam (or 2/200 x 50)
2. 200 x 63 HySpan strutting beam (or 2/200 x 50)
3. 300 x 63 HySpan strutting beam (existing re-used)
4. 2/200 x 45 HySpan strutting beam (or 2/200 x 50)
5. 2/200 x 45 HySpan strutting beam (or 2/200 x 50)
6. 150 x 75 strutting beam
7. 200 x 45 HySpan Counter beam (or 200 x 50)

Fixings

All end fixing to be 6.7 kN
Use 2/100 x 3.75 skewed nails & 3x wire dogs.

Fix ceiling joist to beams with Lumberlok Multigrip fully nailed with Lumberlok 30 x 3.150 nails.

Owen McCluggage Design

O.P. McCluggage

11 Young Street, New Plymouth

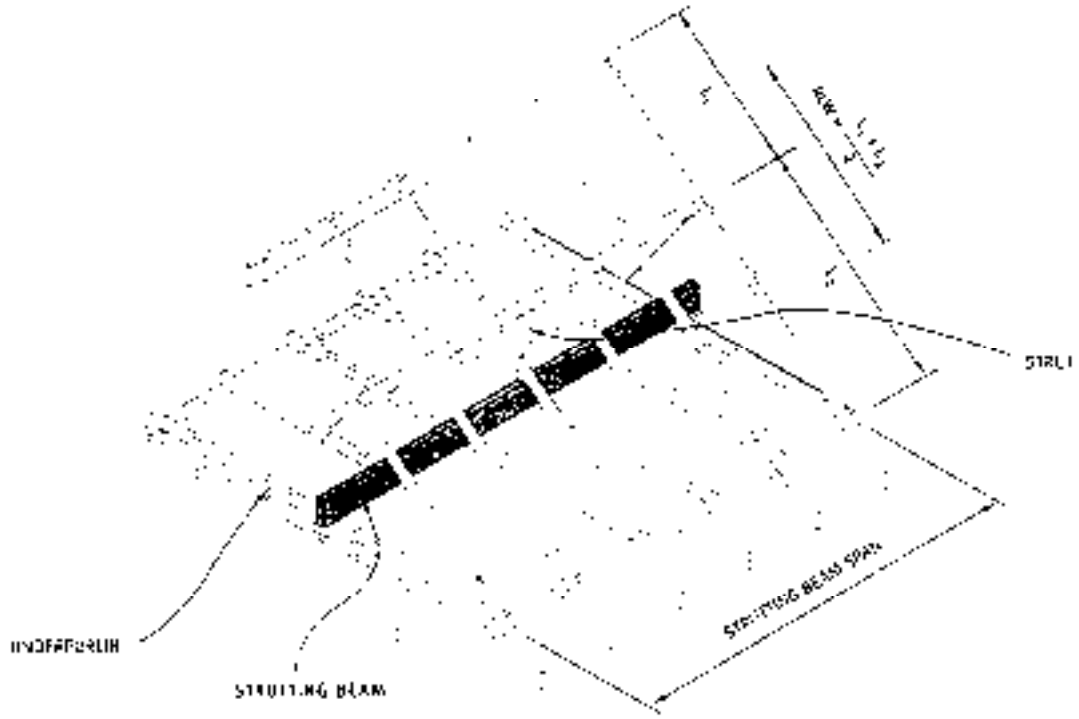
HOUSE ALTERATIONS
PAT & LYNDSAY McFETRIDGE
228 SOUTH ROAD – OKATO

CEILING STRUTTING BEAMS		D1
OM	04.09.03	
	1:200	334-210

Strutting Beams

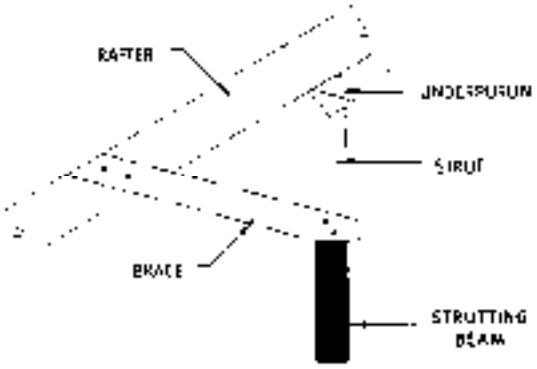
Supporting Underpurlins and Ceiling Joists

DETERMINATION OF ROOF LOAD WIDTH 'RLW'.

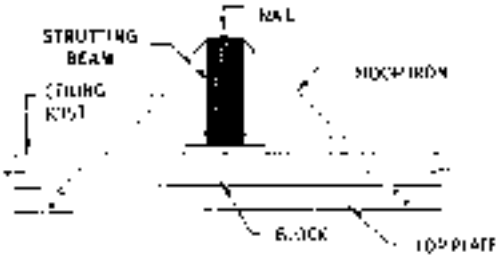


Notes:

1. Strutting beams designed to support one or more struts
2. Ends of strutting beams may be chamfer cut as detailed on page 34.
3. Strutting beams with D/B ≥ 3 should be provided with end restraint as per detail below or similar.
4. Strutting beams with spans shaded in the table should be provided with at least one mid-span restraint - see possible detail below. Alternatively restraint may be provided at strutting points



POSSIBLE INTERMEDIATE RESTRAINT DETAIL



POSSIBLE END RESTRAINT DETAIL

Strutting Beams

Supporting Underpurlins and Ceiling Joists

Design Deflection Limits
D.L. SPAN/300 OR 12.5 mm
L.L. SPAN/300 OR 12.5 mm

HYSPAN SECTION D x B (mm)	LIGHT ROOF AND CEILING												
	ROOF LOAD WIDTH 'RLW' (m)												
	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.8	5.4	6.0
	MAXIMUM SPAN (m)												
2/170 x 45*	4.3	[redacted]	4.0	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0
170 x 63	4.0	[redacted]	3.7	3.6	3.4	3.3	3.2	3.1	3.0	3.0	2.8	2.7	2.6
200 x 63	4.5	[redacted]	4.2	4.0	3.9	3.8	3.8	3.7	3.6	3.5	3.3	3.2	3.1
2/200 x 90*	4.6	[redacted]	4.3	4.2	4.1	4.0	3.9	3.8	3.7	3.6	3.5	3.4	3.2
[redacted]	[redacted]	[redacted]	4.5	4.4	4.3	4.2	4.1	4.0	3.9	3.9	3.7	3.6	3.5
240 x 63	5.1	4.9	4.8	4.6	4.5	4.4	4.3	4.3	4.1	4.1	3.9	3.8	3.7
2/240 x 45*	5.5	5.3	5.1	5.0	4.9	4.8	4.7	4.6	4.5	4.4	4.3	4.2	4.1
300 x 63	6.0	5.8	5.6	5.4	5.3	5.2	5.1	5.0	4.9	4.8	4.6	4.5	4.4
2/300 x 45*	6.5	6.2	6.0	5.9	5.7	5.6	5.5	5.4	5.3	5.2	5.0	4.9	4.8
360 x 63	6.8	6.6	6.4	6.2	6.0	5.9	5.8	5.7	5.6	5.5	5.3	5.2	5.0
450 x 63	7.4	7.1	6.9	6.7	6.5	6.4	6.2	6.1	6.0	5.9	5.7	5.6	5.4
2/400 x 45*	7.9	7.6	7.4	7.2	7.0	6.9	6.7	6.6	6.5	6.4	6.2	6.0	5.9
450 x 63	8.0	7.7	7.5	7.3	7.1	6.9	6.8	6.6	6.5	6.4	6.2	6.1	5.9
2/450 x 63*	9.0	8.7	8.5	8.4	8.1	8.0	7.8	7.7	7.6	7.5	7.3	7.1	6.9
	HEAVY ROOF AND CEILING												
170 x 63	3.2	3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.4	2.3	2.2	2.1	2.0
2/170 x 45*	3.6	3.4	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.6	2.5	2.4	2.3
200 x 63	3.8	3.6	3.5	3.2	3.1	3.0	2.9	2.8	2.8	2.7	2.6	2.5	2.4
2/200 x 90*	3.9	3.7	3.5	3.4	3.3	3.1	3.1	3.0	2.9	2.8	2.7	2.6	2.5
2/200 x 45*	4.3	4.0	3.8	3.6	3.5	3.4	3.3	3.2	3.1	3.1	2.9	2.9	2.7
240 x 63	4.4	4.1	4.0	3.8	3.7	3.6	3.4	3.4	3.3	3.2	3.1	3.0	2.9
2/240 x 45*	4.7	4.5	4.3	4.2	4.1	4.0	3.9	3.8	3.7	3.6	3.5	3.4	3.3
300 x 63	5.1	4.8	4.7	4.5	4.4	4.3	4.2	4.1	4.0	4.0	3.8	3.7	3.6
2/300 x 45*	5.5	5.2	5.1	4.9	4.8	4.7	4.6	4.5	4.4	4.3	4.2	4.1	4.0
300 x 63	5.9	5.5	5.3	5.2	5.0	4.9	4.8	4.7	4.6	4.5	4.4	4.3	4.2
400 x 63	6.2	6.0	5.8	5.6	5.4	5.3	5.2	5.1	5.0	4.9	4.8	4.6	4.5
2/400 x 45*	6.7	6.3	6.3	6.1	5.9	5.8	5.6	5.5	5.4	5.3	5.2	5.0	4.9
400 x 63	6.8	6.5	6.3	6.1	5.9	5.8	5.7	5.6	5.4	5.4	5.2	5.0	4.9
2/450 x 63*	7.5	7.2	7.3	7.1	6.9	6.8	6.6	6.5	6.4	6.3	6.1	5.9	5.7

* Sections built up by vertical nail laminations – see page 5

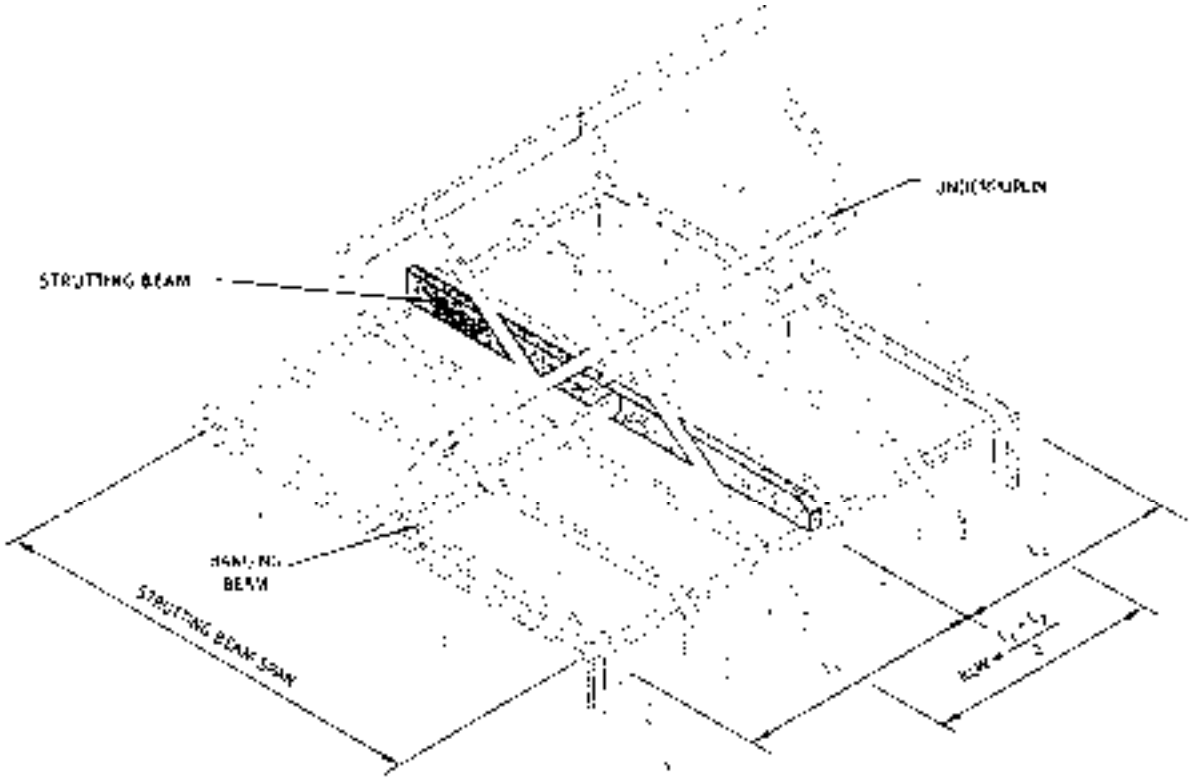
For stacked beams, intermediate lateral restraint must be provided

For determination of Roof Load Width 'RLW' for Strutting Beams – see the diagram on page 38

Strutting Beams

Supporting Underpurlins and Hanging Beams

DETERMINATION OF ROOF LOAD WIDTH 'RLW'.



Notes.

1. Strutting beams designed to support one or more purlins
2. Ends of strutting beams may be chamfer cut as detailed on page 34.
3. Strutting beams with D/B>3 should be provided with end restraint as per detail on page 35 or similar.
4. It has been assumed that hanging beams provide intermediate lateral restraint

Strutting Beams

Supporting Underpurlins and Hanging Beams

Design Deflection Limits
D.L. SPAN/300 OR 12.5 mm
L.L. SPAN/300 OR 12.5 mm

HYSPAN SECTION D x B (mm)	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.8	5.4	6.0
	LIGHT ROOF AND CEILING												
	ROOF LOAD WIDTH 'ROW' (m)												
	MAXIMUM SPAN (m)												
170 x 63	4.0	3.9	3.7	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8
2/170 x 45*	4.4	4.2	4.1	3.9	3.8	3.7	3.6	3.6	3.6	3.5	3.4	3.2	3.1
200 x 63	4.5	4.4	4.2	4.1	4.0	3.9	3.8	3.7	3.6	3.7	3.5	3.4	3.3
2/200 x 36*	4.7	4.5	4.3	4.2	4.1	4.0	3.9	3.8	3.8	3.7	3.7	3.5	3.4
[illegible]	[illegible]	[illegible]	[illegible]	4.4	4.3	4.2	4.1	4.0	4.0	3.9	3.8	3.7	3.7
240 x 63	5.2	5.0	4.8	4.7	4.5	4.4	4.3	4.3	4.2	4.1	4.0	3.9	3.8
2/240 x 45*	5.6	5.4	5.2	5.0	4.9	4.8	4.7	4.6	4.5	4.5	4.3	4.2	4.1
300 x 63	6.1	5.8	5.6	5.5	5.3	5.2	5.1	5.0	4.9	4.8	4.7	4.6	4.4
2/300 x 45*	6.5	6.3	6.1	5.9	5.8	5.6	5.5	5.4	5.3	5.2	5.1	4.9	4.8
360 x 63	6.9	6.6	6.4	6.2	6.1	5.9	5.8	5.7	5.6	5.5	5.3	5.2	5.1
400 x 63	7.3	7.1	6.9	6.7	6.6	6.4	6.3	6.2	6.1	6.0	5.8	5.6	5.5
2/400 x 45*	7.8	7.6	7.4	7.2	7.1	6.9	6.8	6.7	6.5	6.4	6.3	6.1	6.0
450 x 63	8.0	7.7	7.5	7.3	7.1	7.0	6.8	6.7	6.6	6.5	6.3	6.1	6.0
2/450 x 63*	8.0	8.7	8.5	8.3	8.1	8.0	7.8	7.7	7.6	7.5	7.3	7.1	7.0
	HEAVY ROOF AND CEILING												
170 x 63	3.4	3.2	3.0	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.3	2.2	2.1
2/170 x 45*	3.6	3.4	3.4	3.2	3.1	3.0	2.9	2.9	2.8	2.7	2.6	2.5	2.4
200 x 63	3.8	3.7	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5
2/200 x 36*	3.9	3.7	3.7	3.5	3.4	3.3	3.2	3.1	3.0	3.0	2.8	2.7	2.6
2/200 x 45*	4.1	3.9	3.8	3.7	3.7	3.5	3.4	3.3	3.3	3.2	3.1	2.9	2.8
240 x 63	4.3	4.1	4.0	3.9	3.8	3.6	3.7	3.6	3.5	3.4	3.3	3.1	3.1
2/240 x 45*	4.7	4.7	4.5	4.2	4.2	4.0	3.9	3.8	3.7	3.7	3.7	3.5	3.4
300 x 63	5.1	4.9	4.7	4.6	4.4	4.3	4.2	4.1	4.1	4.0	3.9	3.7	3.6
2/300 x 45*	5.5	5.3	5.1	4.9	4.8	4.7	4.6	4.5	4.4	4.3	4.2	4.1	4.0
360 x 63	5.9	5.6	5.4	5.2	5.1	4.9	4.8	4.7	4.6	4.5	4.4	4.3	4.2
400 x 63	6.3	6.0	5.8	5.6	5.5	5.3	5.1	5.1	5.0	4.9	4.8	4.6	4.5
2/400 x 45*	6.8	6.5	6.3	6.1	5.9	5.8	5.7	5.6	5.5	5.4	5.1	4.8	4.6
450 x 63	6.8	6.5	6.3	6.1	6.0	5.8	5.7	5.6	5.5	5.4	5.2	5.1	4.9
2/450 x 63*	7.5	7.3	7.2	7.1	7.0	6.8	6.7	6.5	6.4	6.3	6.1	6.0	5.8

* Bore [illegible] see page 5.

For [illegible] Strutting Beams - see the diagram on page [illegible]

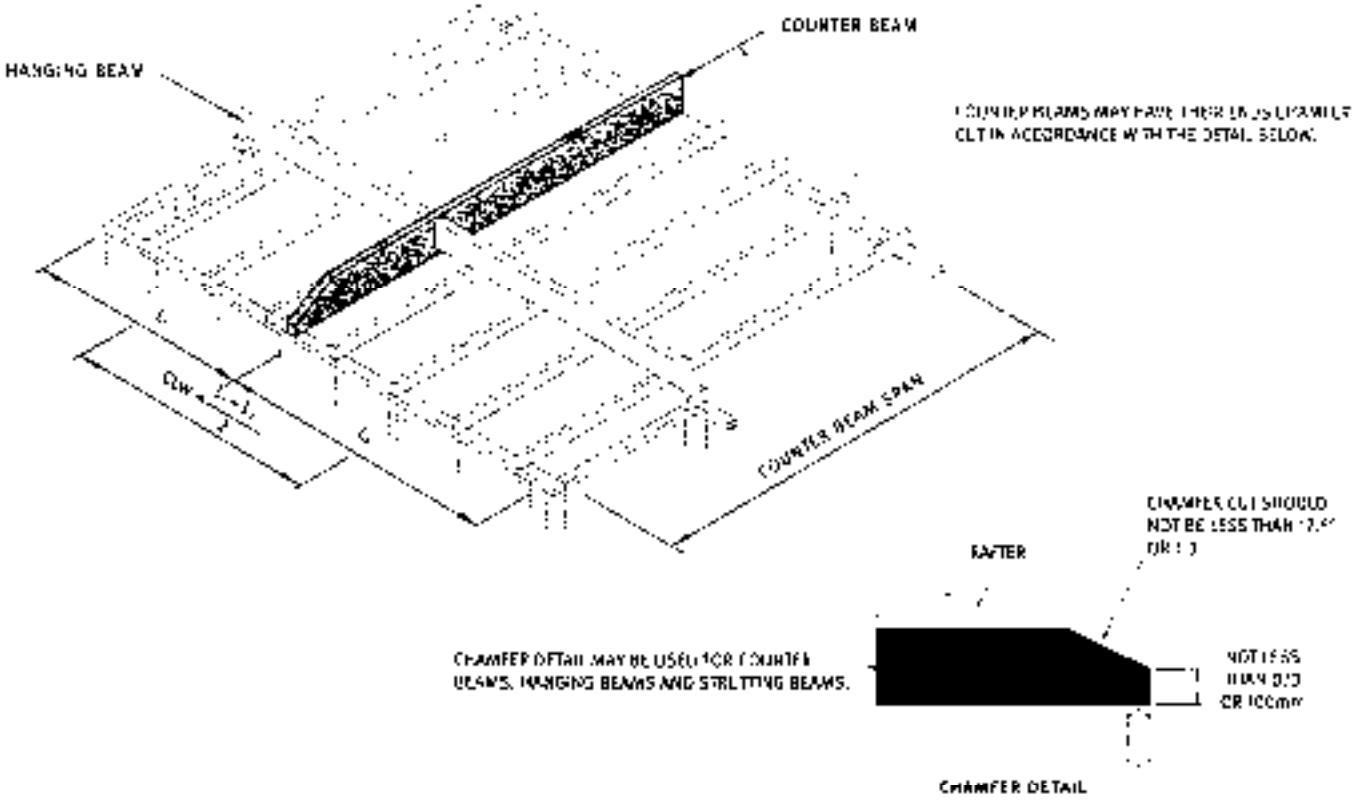
Counter Beams

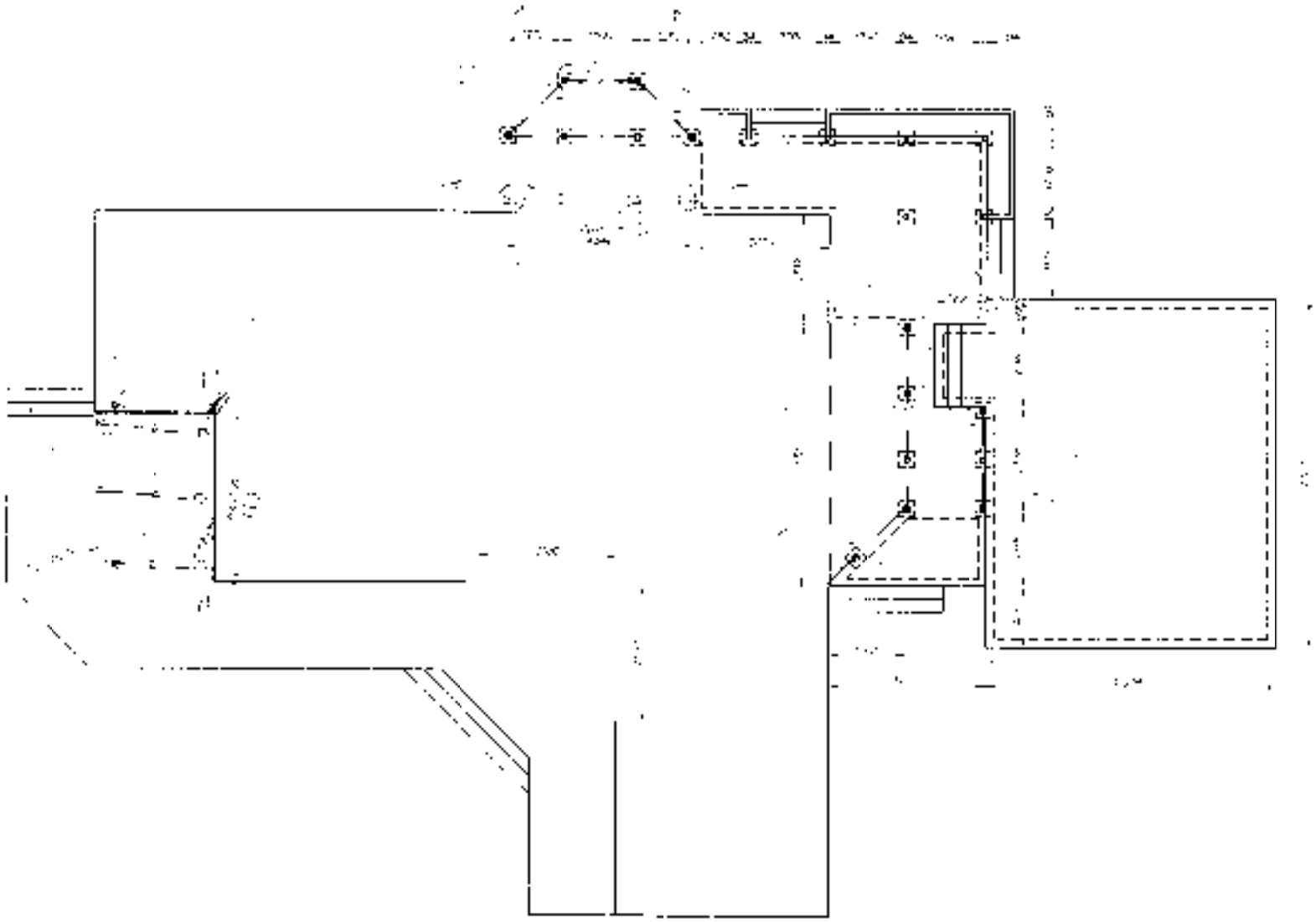
Supporting Hanging Beams

Design Deflection Limits
D.L. SPAN/300 OR 12.5 mm
L.L. SPAN/270 OR 15 mm

HYSPAN SECTION D x B (mm)	CEILING LOAD WIDTH 'CLW' (m) 2.4	3.0	3.6	4.2	4.8	5.4	6.0	6.6
	MAXIMUM SPAN (m)							
150 x 36	3.4	3.2	3.0	2.9	2.8	2.7	2.6	2.5
150 x 45	3.7	3.4	3.3	3.1	3.0	2.9	2.8	2.7
170 x 45	4.1	3.9	3.7	3.5	3.4	3.2	3.1	3.0
200 x 36	4.3	4.1	4.0	3.8	3.7	3.5	3.4	3.3
200 x 45	4.6	4.3	4.2	4.0	3.9	3.8	3.7	3.6
200 x 63	4.9	4.7	4.5	4.3	4.2	4.1	4.0	3.9
240 x 45	5.2	5.0	4.8	4.5	4.5	4.3	4.2	4.1
240 x 63	5.6	5.3	5.1	5.0	4.8	4.7	4.6	4.5
300 x 45	6.1	5.8	5.6	5.4	5.2	5.1	5.0	4.9
300 x 63	6.5	6.2	6.0	5.8	5.6	5.5	5.4	5.3
300 x 63	7.0	7.1	6.8	6.6	6.4	6.1	6.1	6.0
400 x 45	7.4	7.1	6.9	6.6	6.4	6.2	6.1	6.0
400 x 63	7.9	7.6	7.1	7.1	6.9	6.6	6.6	6.5
450 x 63	8.6	8.2	8.0	7.7	7.5	7.1	7.2	7.0

For determination of Ceiling Load Width 'CLW' see the diagram below.

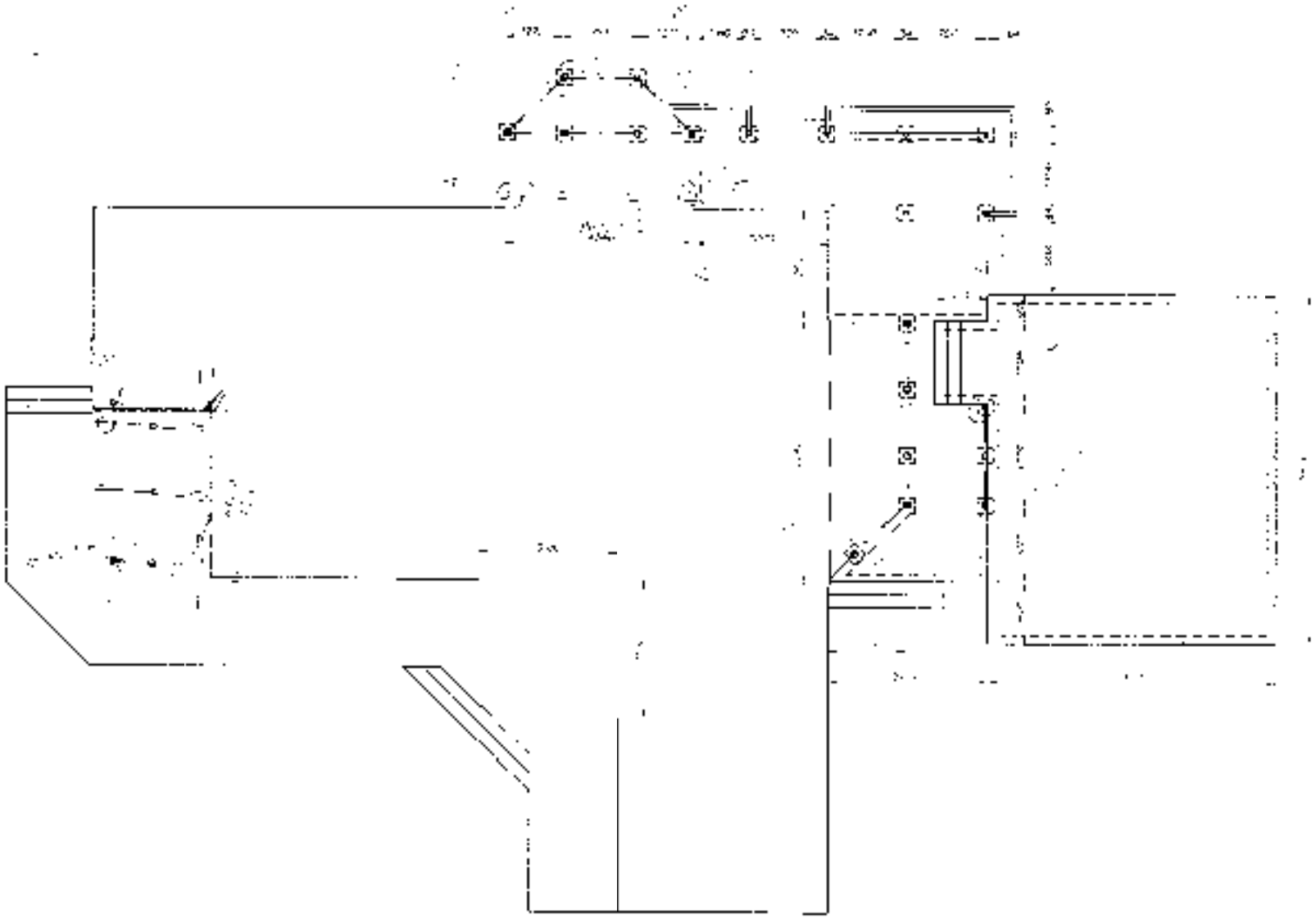




Owen McCluggage Design

HOUSE ALTERATIONS FOR
PAT & LYNDSAY McPETERIDGE

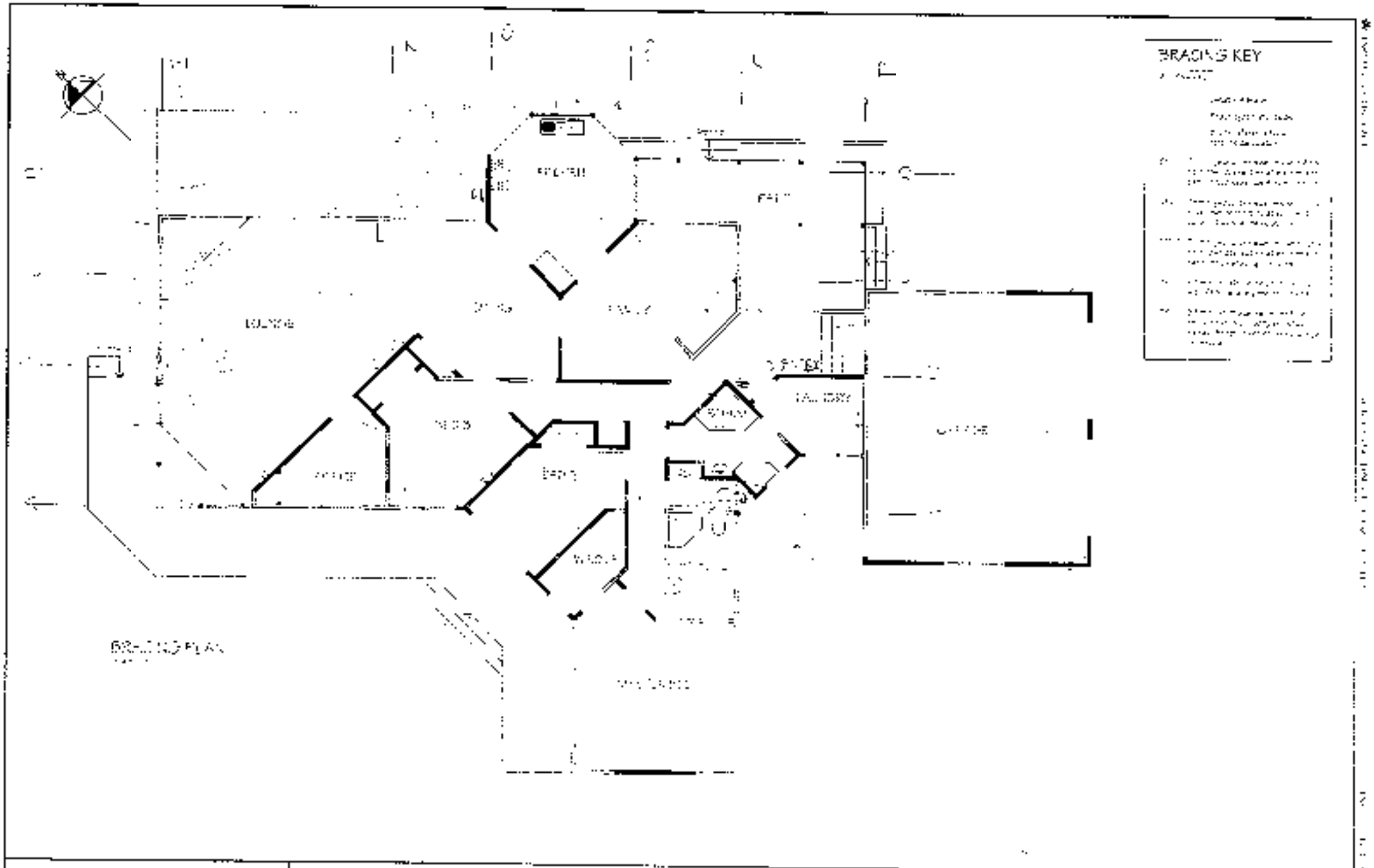
A6



Owen McCluggage Design

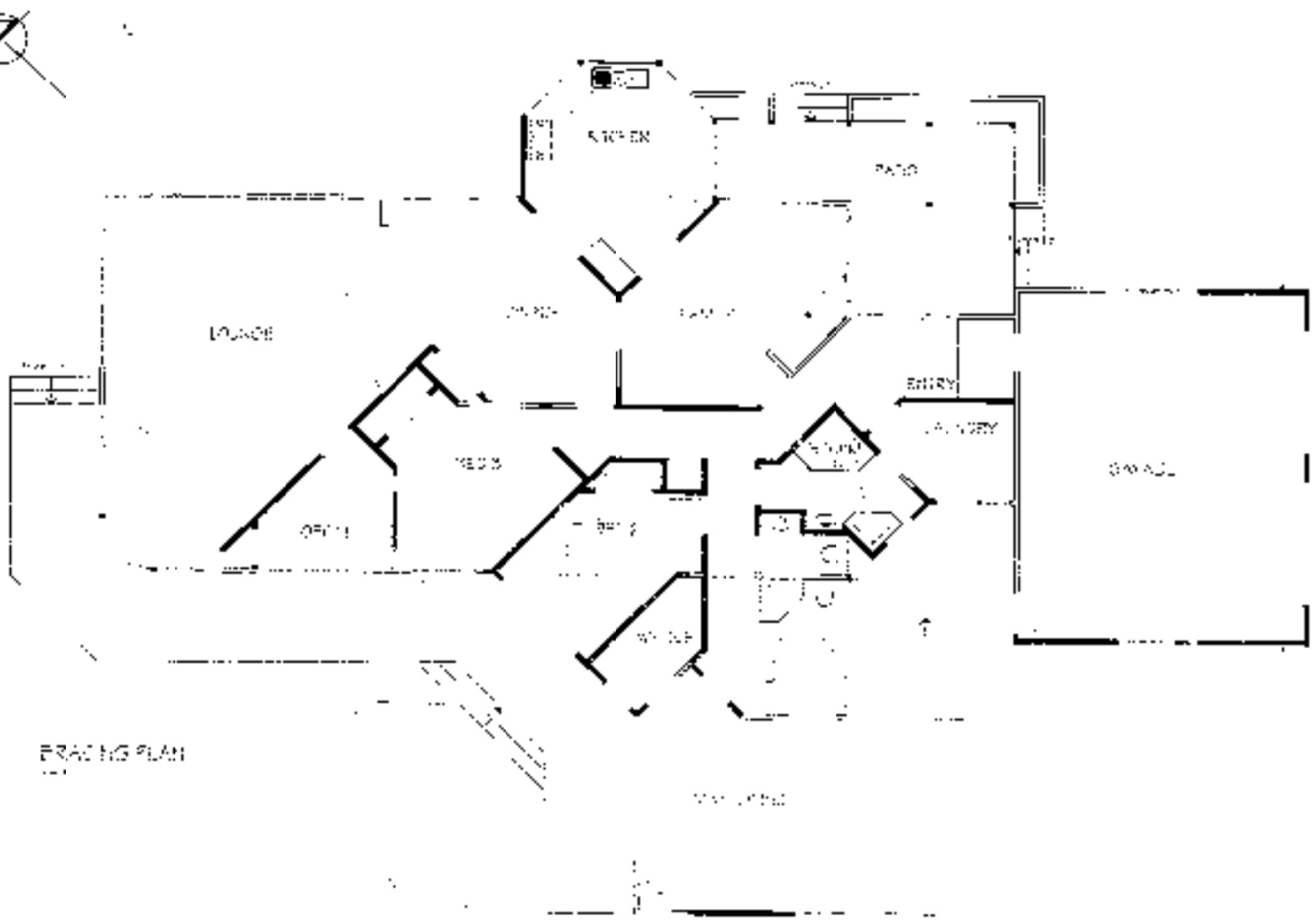
HOUSE ALTERATIONS FOR
PAT & LYNDSAY McPETERIDGE

LOCATION PLAN		A6
A6	25/2/03	



Owen McGuggage Design

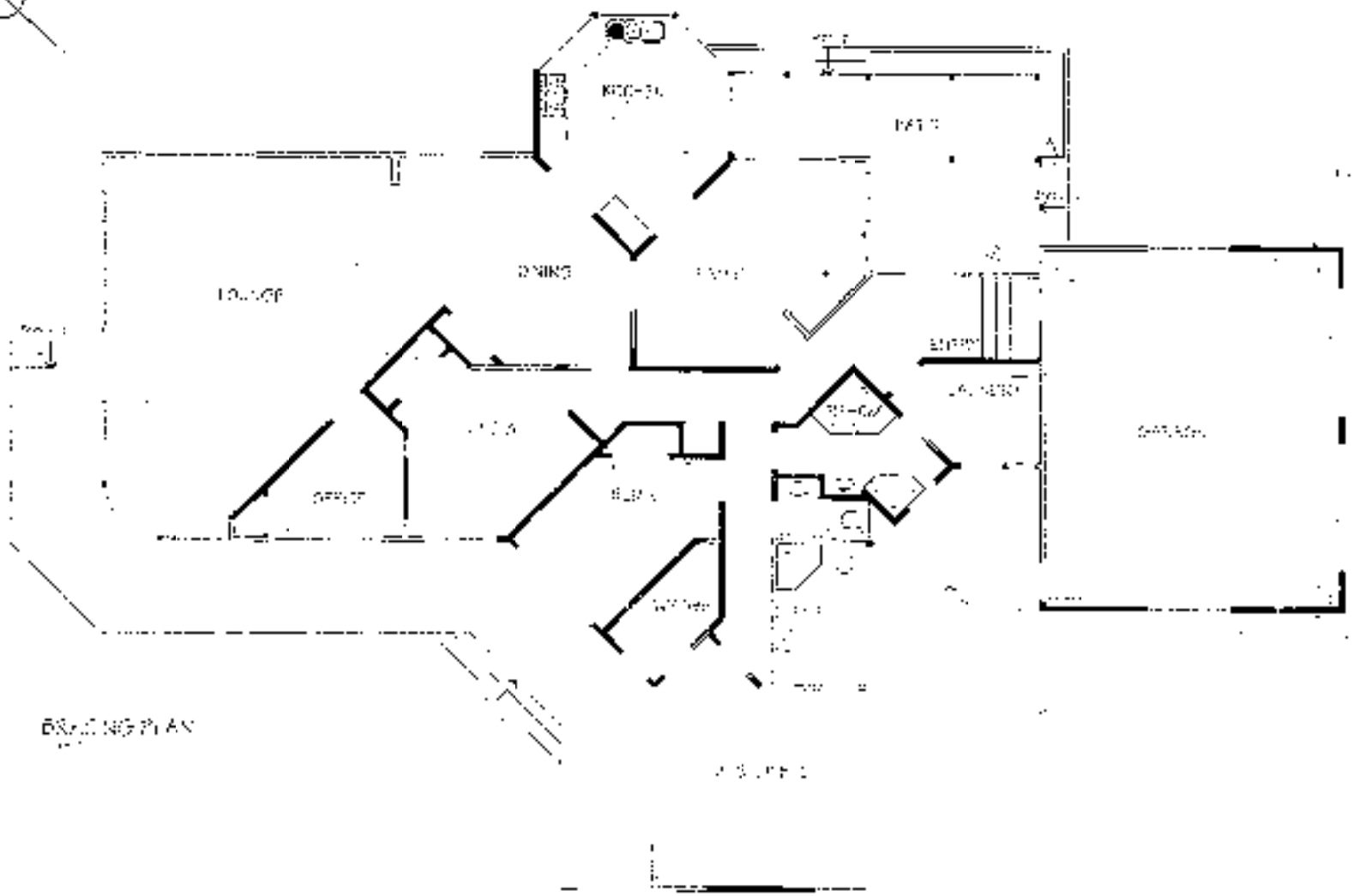
HOUSE ALTERATIONS FOR
PAT & LYNDSAY MONTEREDOL



BRACING KEY

Owen McCaggage Design

HOUSE ALTERATIONS FOR
PAT & LYNDSAY McPETERIDGE



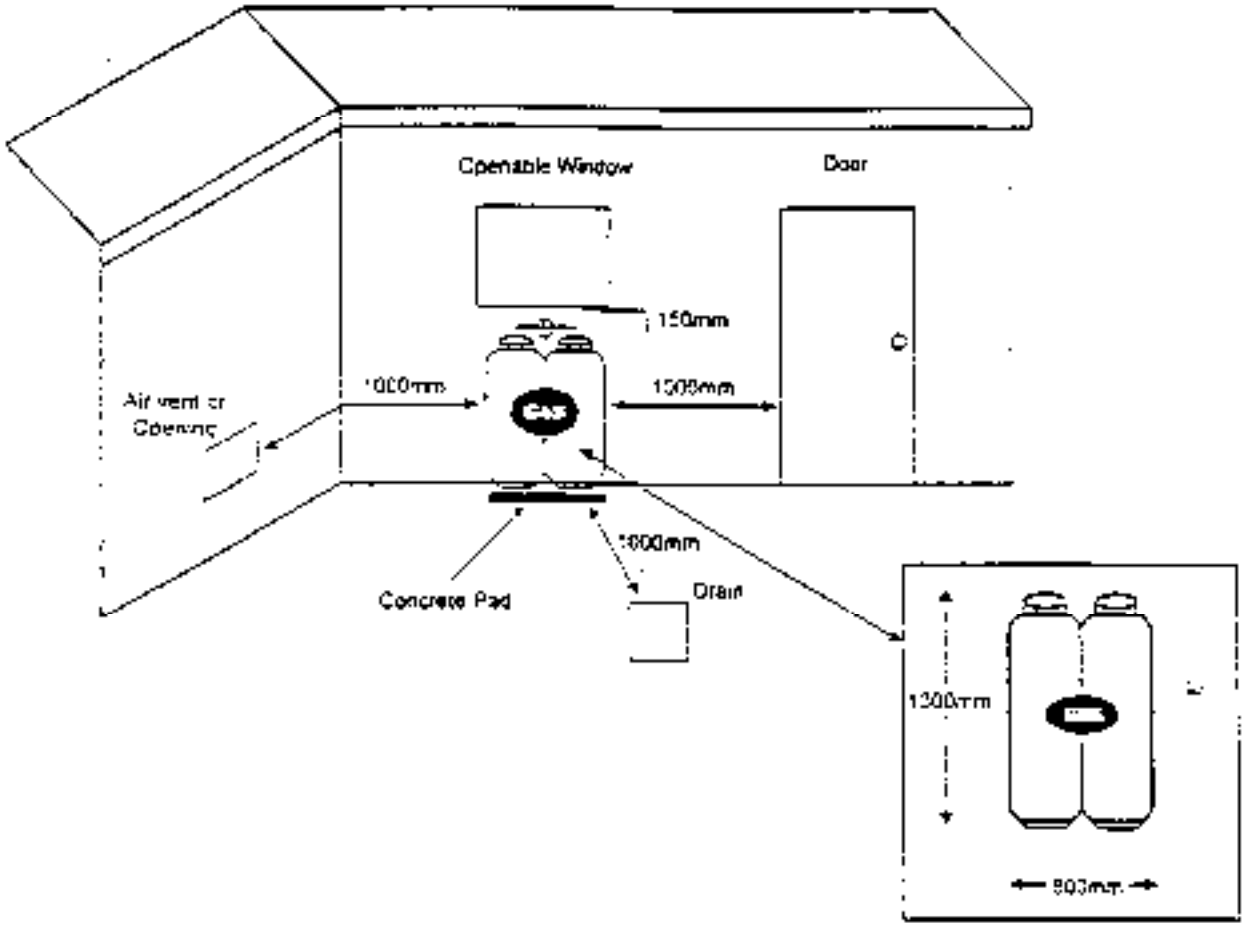
BRACING KEY

Owen McCloggage Design

HOUSE ALTERATIONS FOR
PAT & LYNDSAY McFFTERIDGE

A2

Twin Pack Location



RAINBOW PLUMBING LIMITED

Effluent Bed Size Calculation

Client: Pat and Lindsay McFetridge Date: 17.3.03

Address: 2286 South Road Okato

1547:2000

Appendix 4.2D
"TYPICAL DOMESTIC WASTE WATER FLOW DESIGN ALLOWANCES"

Source	Water supply	Water supply per person /day	No. of persons in residence	Total waste water per day
Household with standard fixtures	Community	180 litres	6	1080 litres

Table 4.2A1
"RECOMMENDED DESIGN LOADING RATES FOR TRENCHES AND BEDS"

Soil Category	Soil Texture	Structure	Indicative permeability	Primary treated effluent
Two	Sandy loam	Weak	3.0	20mm

Minimum effluent bed size

1080 litres total per day ÷ 20 mm per day = **54 m2 effluent bed (minimum)**

TSE TARANAKI & ASSOCIATES LIMITED
ARCHITECTS-ENGINEERS
INTERIOR DESIGNERS - PROJECT MANAGERS

Alterations to dwelling.

Lower beam over bedroom 2 + kitchen to support roof windows

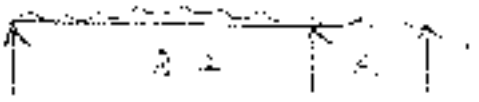
Due to height restrictions, design steel beams to reduce depth.

Existing Roof Construction – refer construction + sheets.

Roof wgt: DL = LL = 0.65 kPa.

Beam 1. Beam over BR 2

Beam supported at ends by load bearing walls and intermediate support from cantilever of beam over kitchen.



$$UDL = 0.65 \times \frac{5.6}{2} = 1.8 \text{ kN/m}$$

$$BM = \frac{1.8 \times 3.2^2}{8} = 2.3 \text{ kNm}$$

Try 102 × 51 × 10.2 kg/m Channel.

$I = 206 \text{ cm}^4$

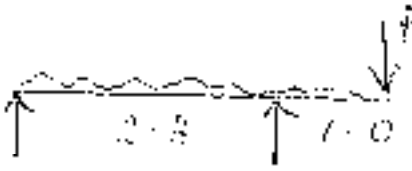
$Z = 40.4 \text{ cm}^3$

TSE TARANAKI & ASSOCIATES LIMITED
ARCHITECTS-ENGINEERS
INTERIOR DESIGNERS - PROJECT MANAGERS

$f_{bc} = \frac{2.3 \times 10^3}{40\ cy} = 58\ MPa$ OK

$\delta = \frac{5}{384} \cdot \frac{1.6 \times 3.2^4 \times 10^4}{200 \times 206} = 4.6\ mm$ OK

Beam 2. Beam over loadcells



DL load from beam 1

$P = 1.6 \times \frac{4}{2}$

$= 3.6\ kN$

$UDL = 0.65 \times \frac{4.6}{2} = 1.5\ kN/m$

Cantilever moment $= 3.6 \times 1 - 1.5 \times \frac{1^2}{2}$

$= 4.4\ kNm$

102 x 51 channel.

$f_{bc} = \frac{4.4 \times 10^3}{26.7} = 165\ MPa$ OK

$\delta = \left(\frac{1}{8} \times 1.5 \times 1^4 - \frac{1}{3} \times 3.6 \times 1^3\right) \times \frac{10^3}{200 \times 2.6}$

$= 2.3\ mm$ OK

SHEET NO 2	FILE NO 3860/105
CALCS BY Lisa	JOB NAME Rafteridge Cl.
DATE May '03	

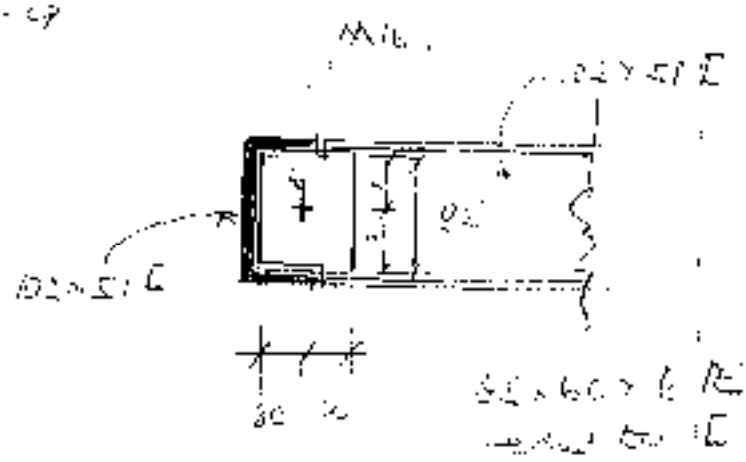
TSE TARANAKI & ASSOCIATES LIMITED

ARCHITECTS-ENGINEERS
INTERIOR DESIGNERS · PROJECT MANAGERS

Doubly supported span

$$BM = 15 \times \frac{2.8^2}{8} = 10 \text{ kNm}$$

$$f_{bc} = \frac{1 \times 10^6}{40 \cdot 49} = 24.2 \text{ MPa} \quad \underline{OK!}$$



25 CARRINGTON STREET, P.O. BOX 237, NEW PLYMOUTH. TEL (06) 758 8390 FAX (06) 757-9404

WALL BRACING - Ground Floor - Along

Wall or Bracing Line		Bracing Elements Provided				WIND		EARTHQUAKE	
Line Label	Minimum BU/Wall	Element No.	Bracing Type	Element Length	Element Height	Wall Rating BU/m	Achieved (BU/m x L)	Wall Rating BU/m	Achieved (BU/m x L)
A	118	1	BR4	1.2m at 45°	2.4m	100	85	85	72
		2	BR4	1.2m at 45°	2.4m	100	85	85	72
		3	BR4	1.2m at 45°	2.4m	100	85	85	72
		4	GIB2	2.0m	2.4m	75	150	60	120
B	70	1	BR4	1.2m at 45°	2.4m	100	85	85	72
		2	BR5	3.0m	2.4m	115	345	85	255
		3	BR5	2.4m	2.4m	115	276	85	204
C	48	1	BR4	1.2m at 45°	2.4m	100	85	85	72
		2	BR4	1.2m	2.4m	100	120	85	102
D	124	1	GIB1	2.4m	2.4m	75	180	50	120
		2	BR4	1.2m at 45°	2.4m	100	85	85	72
					Total Achieved BU's		1581 BU's		1233 BU's
					Total Required BU's		690 BU's		1171 BU's

WALL BRACING - Ground Floor - Across

Wall or Bracing Line		Bracing Elements Provided				WIND		EARTHQUAKE	
Line Label	Minimum BU/Wall	Element No.	Bracing Type	Element Length	Element Height	Wall Rating BU/m	Achieved (BU/m x L)	Wall Rating BU/m	Achieved (BU/m x L)
M	85	1	BR4	1.0m	2.4m	100	100	85	85
N	70	1	GIB2	2.3m	2.4m	75	173	60	138
		2	BR4	1.2m at 45°	2.4m	100	85	85	72
		3	BR4	0.9m	2.4m	100	90	85	76
O	19	1	BR5	1.8m	2.4m	115	207	85	153
P	70	1	BR4	1.2m	2.4m	100	120	85	102
Q	83	1	BR4	1.1m	2.4m	100	110	85	94
		2	BR5	1.8m at 45°	2.4m	115	146	85	108
		3	BR5	1.8m at 45°	2.4m	115	146	85	108
		4	BR4	0.9m at 45°	2.4m	100	64	85	54
R	70	1	BR4	1.2m	2.4m	100	120	85	102
		2	BR4	1.0m	2.4m	100	100	85	85
					Total Achieved BU's		1460 BU's		1178 BU's
					Total Required BU's		1024 BU's		1171 BU's

HBrace 4.0: Bracing Design to NZS 3604:1999

PROJECT DETAILS

Project Name:	*P & L McFeteridge (House Part I) (Revised 30:06:03)*		
Street Address:	*2286 South Road*		
City/Town:	*OKATO*	Job Number:	*334-210*
Read with:	*O McCluggage Design*		

WIND ZONE - High Wind Zone

(Wind Zone was supplied by the Local Authority.)

EARTHQUAKE ZONE

Earthquake Zone (from NZS 3604 map): *A*

BUILDING DETAILS

Number of Levels:	*Single Storey structure (Timber Ground Floor).*		
Dimensions:	Ground Floor: *21.2 x 11.6m*		
Floor Areas:	Ground Floor: *174.8m²*		
Typical Stud Height:	*2.4m*	Height to Roof Apex:	*4.5m*
Roof Pitch:	*0-25°*	Roof Height Above Eaves:	*1.7m*
Roof Cladding:	*Light*	Wall Cladding:	*Light/Light*

HBrace 4.0: Bracing Design to NZS 3604:1999

PROJECT DETAILS

Project Name:	*P & L McFeteridge (Foundations Area 1)*		
Street Address:	*2286 South Road*		
City/Town:	*OKATO*	Job Number:	*334-210*
Read with:	*O McCluggage Design*		

WIND ZONE - High Wind Zone

(Wind Zone was supplied by the Local Authority)

EARTHQUAKE ZONE

Earthquake Zone (from NZS 3604 map): *A*

BUILDING DETAILS

Number of Levels	*Single Storey structure (Timber Ground Floor).*		
Dimensions:	Foundation Level *3 x 4m*	Ground Floor: *2.8 x 3.8m*	
Floor Areas:	Foundation Level *12m²*	Ground Floor *10.64m²*	
Typical Stud Height:	*2.4m*	Height to Roof Apex:	*4.7m*
Roof Pitch	*0-25°*	Roof Height Above Eaves:	*1.7m*
Roof Cladding:	*Light*	Wall Cladding:	*Light/Light*

WALL BRACING - Foundation Level - Along

Wall or Bracing Line		Bracing Elements Provided				WIND		EARTHQUAKE	
Line Label	Minimum BU/Wall	Element No.	Bracing Type	Element Length	Element Height	Wall Rating BU/m	Achieved (BU/m x L)	Wall Rating BU/m	Achieved (BU/m x L)
A	30	1	ST4	BU's per Unit			160		120
		2	ST4	BU's per Unit			160		120
B	70	1	ST4	BU's per Unit			160		120
					Total Achieved BU's		480 BU's		360 BU's
					Total Required BU's		323 BU's		113 BU's

WALL BRACING - Foundation Level - Across

Wall or Bracing Line		Bracing Elements Provided				WIND		EARTHQUAKE	
Line Label	Minimum BU/Wall	Element No	Bracing Type	Element Length	Element Height	Wall Rating BU/m	Achieved (BU/m x L)	Wall Rating BU/m	Achieved (BU/m x L)
M	40	1	ST4	BU's per Unit			160		120
N	70	1	ST4	BU's per Unit			160		120
					Total Achieved BU's		320 BU's		240 BU's
					Total Required BU's		219 BU's		113 BU's

HBrace 4.0: Bracing Design to NZS 3604:1999

PROJECT DETAILS

Project Name:	*P & L McFeteridge (Foundations Area 2)*		
Street Address:	*2286 South Road*		
City/Town:	*OKATO*	Job Number:	*334-210*
Read with:	*O McCluggage Design*		

WIND ZONE - High Wind Zone

(Wind Zone was supplied by the Local Authority)

EARTHQUAKE ZONE

Earthquake Zone (from NZS 3604 map): *A*

BUILDING DETAILS

Number of Levels:	*Single Storey structure (Timber Ground Floor).*		
Dimensions:	Foundation Level: *3.1 x 4.4m*	Ground Floor: *3.1 x 4.4m*	
Floor Areas:	Foundation Level: *13.64m²*	Ground Floor: *13.64m²*	
Typical Stud Height:	*2.4m*	Height to Roof Apex:	*4.7m*
Roof Pitch	*0-25°*	Roof Height Above Eaves:	*1.1m*
Roof Cladding:	*Light*	Wall Cladding:	*Light/Light*

WALL BRACING - Foundation Level - Along

Wall or Bracing Line		Bracing Elements Provided				WIND		EARTHQUAKE	
Line Label	Minimum BU/Wall	Element No.	Bracing Type	Element Length	Element Height	Wall Rating BU/m	Achieved (BU/m x L)	Wall Rating BU/m	Achieved (BU/m x L)
A	30	1	ST4	BU's per Unit			160		120
		2	ST4	BU's per Unit			160		120
B	70	1	ST4	BU's per Unit.			160		120
				Total Achieved BU's			480 BU's		360 BU's
				Total Required BU's			449 BU's		128 BU's

WALL BRACING - Foundation Level - Across

Wall or Bracing Line		Bracing Elements Provided				WIND		EARTHQUAKE	
Line Label	Minimum BU/Wall	Element No.	Bracing Type	Element Length	Element Height	Wall Rating BU/m	Achieved (BU/m x L)	Wall Rating BU/m	Achieved (BU/m x L)
M	40	1	ST4	BU's per Unit			160		120
N	70	1	ST4	BU's per Unit.			160		120
				Total Achieved BU's			320 BU's		240 BU's
				Total Required BU's			280 BU's		128 BU's

HBrace 4.0: Bracing Design to NZS 3604:1999

PROJECT DETAILS

Project Name:	*P & L McFeteridge (Foundations Area 3)*		
Street Address	*2286 South Road*		
City/Town:	*OKATO*	Job Number:	*334-210*
Read with:	*O McCluggage Design*		

WIND ZONE - High Wind Zone

(Wind Zone was supplied by the Local Authority.)

EARTHQUAKE ZONE

Earthquake Zone (from NZS 3604 map) *A*

BUILDING DETAILS

Number of Levels:	*Single Storey structure (Timber Ground Floor).*		
Dimensions:	Foundation Level: *3.6 x 6m*	Ground Floor: *3.6 x 6m*	
Floor Areas	Foundation Level: *15.6m²*	Ground Floor: *15.6m²*	
Typical Stud Height	*2.4m*	Height to Roof Apex:	*4.7m*
Roof Pitch:	*0-25°*	Roof Height Above Eaves:	*1.4m*
Roof Cladding:	*Light*	Wall Cladding:	*Light/Light*

WALL BRACING - Foundation Level - Along

Wall or Bracing Line		Bracing Elements Provided				WIND		EARTHQUAKE	
Line Label	Minimum BU/Wall	Element No.	Bracing Type	Element Length	Element Height	Wall Rating BU/m	Achieved (BU/m x L)	Wall Rating BU/m	Achieved (BU/m x L)
A	36	1	ST4	BU's per Unit			160		120
B	70	1	ST4	BU's per Unit.			160		120
		2	ST4	BU's per Unit			160		120
C	24	1	ST4	BU's per Unit			160		120
				Total Achieved BU's			640 BU's		480 BU's
				Total Required BU's			548 BU's		147 BU's

WALL BRACING - Foundation Level - Across

Wall or Bracing Line		Bracing Elements Provided				WIND		EARTHQUAKE	
Line Label	Minimum BU/Wall	Element No.	Bracing Type	Element Length	Element Height	Wall Rating BU/m	Achieved (BU/m x L)	Wall Rating BU/m	Achieved (BU/m x L)
M	70	1	ST4	BU's per Unit			160		120
		2	ST4	BU's per Unit			160		120
N	70	1	ST4	BU's per Unit.			160		120
				Total Achieved BU's			480 BU's		360 BU's
				Total Required BU's			294 BU's		147 BU's

Details of Brace Types used in the Design.

Sub FL NZS3604 - ST4 Capacity is based on a per Unit basis

Description:

Anchor Piles

Fixings Required

Refer to the NZS 3604:1999 for full details.

Wind Bracing Capacity: 160 BU/Unit. Earthquake Bracing Capacity: 120 BU/Unit.

Manufacturer.

6.9 Anchor piles

6.9.1 ***Height***
The height of an *anchor pile* shall be as defined in 6.4.1.1.

6.9.2 ***Depth***
The minimum depth of an *anchor pile* from *cleared ground level* to the *footing* under the surface bearing against the ground shall be 900 mm.

6.9.3 ***Fixings***
The fixings of *bearer* and floor *joists* to *anchor piles* shall be M12 bolts or 12 mm diameter threaded rod in the locations (see Figures 6.9 and 6.10). Alternative fixings having a capacity of 12 kN in tension or compression along the *bearer* and timber *joist* may be used.

6.10 Framed subfloor walls

6.10.1 ***Stud walls***
Timber *stud subfloor walls* shall comply with the requirements of section 8 for timber stud walls with a stable exterior that:

(a) *Wall plates* shall be the same depth as the studs above, but not less than 50 mm thick, and continuously supported on a *foundation wall*;

(b) The *bottom plate* may be substituted by a bearer supported on *piles*.

(c) A double stud shall be provided directly beneath any *bearer* at right angles to the wall and supported by the *top plate*.

Wall plates shall be fixed to the *foundation wall* in accordance with 6.11.9.

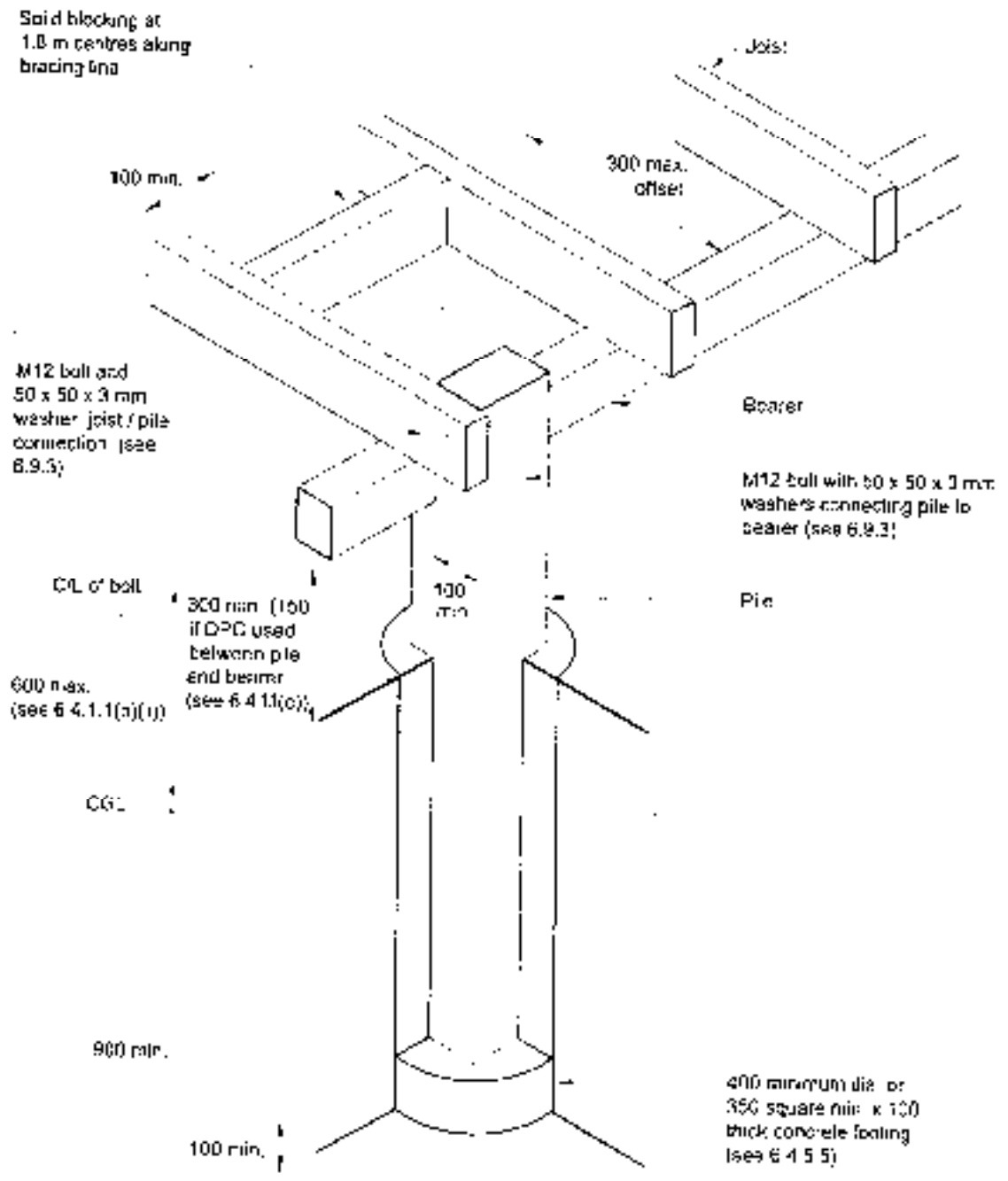
C6.10.1
The provisions of section 8 require that subfloor stud walls must be lined or clad, or diagonal braces provided for lateral support of the studs.

6.10.2 ***Jack studs***

6.10.2.1
Jack studs shall be of the dimensions given by table 6.5 (see table 14.5 for 3 kPa floor loads).

6.10.2.2
Jack studs shall be located over supporting piles and shall have their greater dimension in the line of the *bearer* supported by the *jack studs*.

6.10.2.3 ***Fixings***
Fixings of *jack studs* to *ordinary piles* shall be in accordance with 6.5.2.



NOTE –
(1) Bearers must not be joined at an anchor pile.
(2) CGL = Cleared ground level.
(3) See section 4 for durability requirements.

Bracing units

Wind	160
Earthquake	120

Figure 6.9 – Anchor pile directly connected to joist and bearer (see 6.9.3)

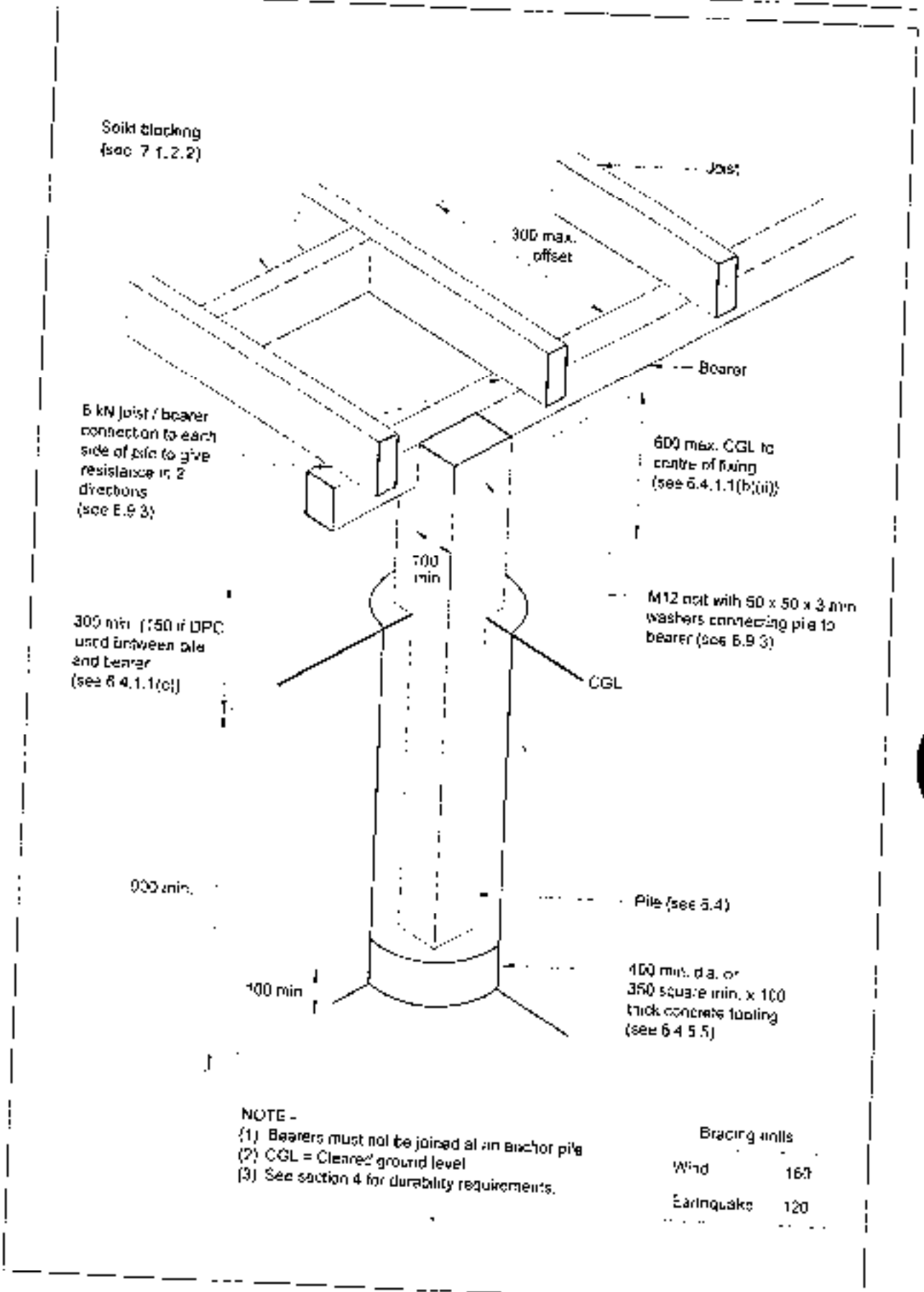


Figure 6.10 – Anchor pile directly connected to bearer only (see 6.9)

WALL BRACING - Ground Floor - Along

Wall or Bracing Line		Bracing Elements Provided				WIND		EARTHQUAKE	
Line Label	Minimum BU/Wall	Element No	Bracing Type	Element Length	Element Height	Wall Rating BU/m	Achieved (BU/m x L)	Wall Rating BU/m	Achieved (BU/m x L)
A	118	1	BR4	1.2m at 45°	2.4m	100	85	85	72
		2	BR4	1.2m at 45°	2.4m	100	85	85	72
		3	BR4	1.2m at 45°	2.4m	100	85	85	72
		4	GIB2	2.0m	2.4m	75	150	60	120
B	70	1	BR4	1.2m at 45°	2.4m	100	85	85	72
		2	BR5	3.0m	2.4m	115	345	85	255
		3	BR5	2.4m	2.4m	115	276	85	204
C	48	1	BR4	1.2m at 45°	2.4m	100	85	85	72
		2	BR4	1.2m	2.4m	100	120	85	102
D	124	1	GIB1	2.4m	2.4m	75	180	50	120
		2	BR4	1.2m at 45°	2.4m	100	85	85	72
				Total Achieved BU's			1581 BU's		1233 BU's
				Total Required BU's			690 BU's		1171 BU's

WALL BRACING - Ground Floor - Across

Wall or Bracing Line		Bracing Elements Provided				WIND		EARTHQUAKE	
Line Label	Minimum BU/Wall	Element No.	Bracing Type	Element Length	Element Height	Wall Rating BU/m	Achieved (BU/m x L)	Wall Rating BU/m	Achieved (BU/m x L)
M	85	1	BR4	1.0m	2.4m	100	100	85	85
N	70	1	GIB2	2.3m	2.4m	75	173	60	138
		2	BR4	1.2m at 45°	2.4m	100	85	85	72
		3	BR4	0.9m	2.4m	100	90	85	76
O	19	1	BR5	1.8m	2.4m	115	207	85	153
P	70	1	BR4	1.2m	2.4m	100	120	85	102
Q	83	1	BR4	1.1m	2.4m	100	110	85	94
		2	BR5	1.8m at 45°	2.4m	115	146	85	108
		3	BR5	1.8m at 45°	2.4m	115	146	85	108
		4	BR4	0.9m at 45°	2.4m	100	64	85	54
R	70	1	BR6	2.2m	2.4m	150	330	110	242
				Total Achieved BU's			1570 BU's		1233 BU's
				Total Required BU's			1024 BU's		1171 BU's

HBrace 4.0: Bracing Design to NZS 3604:1999

PROJECT DETAILS

Project Name:	*P & L McFeteridge (House Part 1)*		
Street Address:	*2286 South Road*		
City/Town:	*OKATO*	Job Number:	*334-210*
Read with:	*O McCluggage Design*		

WIND ZONE - High Wind Zone

(Wind Zone was supplied by the Local Authority)

EARTHQUAKE ZONE

Earthquake Zone (from NZS 3604 map): *A*

BUILDING DETAILS

Number of Levels	*Single Storey structure (Timber Ground Floor).*		
Dimensions:	Ground Floor: *21.2 x 11.6m*		
Floor Areas.	Ground Floor: *174.8m²*		
Typical Stud Height:	*2.4m*	Height to Roof Apex	*4.5m*
Roof Pitch:	*0-25°*	Roof Height Above Eaves	*1.7m*
Roof Cladding:	*Light*	Wall Cladding:	*Light/Light*

HBrace 4.0: Bracing Design to NZS 3604:1999

PROJECT DETAILS

Project Name:	*P & L McFeteridge (House Part 2)*		
Street Address:	*2286 South Road*		
City/Town:	*OKATO*	Job Number:	*334-210*
Read with:	*O McCluggage Design*		

WIND ZONE - High Wind Zone

(Wind Zone was supplied by the Local Authority.)

EARTHQUAKE ZONE

Earthquake Zone (from NZS 3604 map): *A*

BUILDING DETAILS

Number of Levels:	*Single Storey structure (Timber Ground Floor).*		
Dimensions:	Ground Floor: *7.6 x 8.8m*		
Floor Areas	Ground Floor: *39m²*		
Typical Stud Height:	*2.4m*	Height to Roof Apex:	*4m*
Roof Pitch:	*0-25°*	Roof Height Above Eaves:	*1.2m*
Roof Cladding:	*Light*	Wall Cladding	*Light/Light*

WALL BRACING - Ground Floor - Along

Wall or Bracing Line		Bracing Elements Provided				WIND		EARTHQUAKE	
Line Label	Minimum BU/Wall	Element No	Bracing Type	Element Length	Element Height	Wall Rating BU/m	Achieved (BU/m x L)	Wall Rating BU/m	Achieved (BU/m x L)
A	91	1	GIB2	2.4m at 45°	2.4m	80	136	70	119
		2	BR4	1.1m	2.4m	100	110	85	94
B	70	3	BR4	1.2m	2.4m	100	120	85	102
C	75	5	GIB1	1.8m	2.4m	55	99	50	90
					Total Achieved BU's		465 BU's		404 BU's
					Total Required BU's		458 BU's		261 BU's

WALL BRACING - Ground Floor - Across

Wall or Bracing Line		Bracing Elements Provided				WIND		EARTHQUAKE	
Line Label	Minimum BU/Wall	Element No.	Bracing Type	Element Length	Element Height	Wall Rating BU/m	Achieved (BU/m x L)	Wall Rating BU/m	Achieved (BU/m x L)
M	48	1	BR4	1.2m	2.4m	100	120	85	102
N	70	1	BR4	1.2m	2.4m	100	120	85	102
O	70	1	GIB2	2.0m	2.4m	75	150	60	120
					Total Achieved BU's		390 BU's		324 BU's
					Total Required BU's		295 BU's		261 BU's

Details of Brace Types used in the Design.

BraceLine - BR4 Minimum Length: 900mm Maximum Length: 1200mm

Description

9.5mm Gib Braceline on one face only with 6 KN capacity end stud fixings

Fixings Required

Clouts and washers or screws at 150mm centers to perimeter of element. 300mm centres to all other sheet edges. Daub of glue to each intermediate stud at 300crs.

Wind Bracing Capacity: 100 BU/m Earthquake Bracing Capacity: 85 BU/m.

Manufacturer: Winstone Wallboards Ltd. - ph.0800 100 GIB

Gib Board - GIB1 Minimum Length: 1800mm Maximum Length: 2400mm

Description

9.5mm Standard Gib Board on one side only with diagonal bracing strap. Sheets fixed horizontal or vertical

Fixings Required

Clouts and washers or screws at 150mm centers to perimeter of element. 300mm centres to all other sheet edges. Daub of glue to each intermediate stud at 300crs.

Wind Bracing Capacity: 55 BU/m. Earthquake Bracing Capacity: 50 BU/m.

Manufacturer: Winstone Wallboards Ltd. - ph 0800 100 GIB

Gib Board - GIB2 Minimum Length: 1800mm Maximum Length: 2400mm

Description:

9.5mm Standard Gib Board on both faces with diagonal bracing strap. Sheets fixed horizontal or vertical.

Fixings Required:

Clouts and washers or screws at 150mm centers to perimeter of element. 300mm centres to all other sheet edges. Daub of glue to each intermediate stud at 300crs.

Wind Bracing Capacity: 75 BU/m Earthquake Bracing Capacity: 60 BU/m

Manufacturer: Winstone Wallboards Ltd - ph 0800 100 GIB

HBrace 4.0: Bracing Design to NZS 3604:1999

PROJECT DETAILS

Project Name:	*P & L McFeteridge (Garage)*		
Street Address:	*2286 South Road*		
City/Town:	*OKATO*	Job Number:	*334-210*
Read with:	*O McCluggage Design*		

WIND ZONE - High Wind Zone

(Wind Zone was supplied by the Local Authority.)

EARTHQUAKE ZONE

Earthquake Zone (from NZS 3604 map): *A*

BUILDING DETAILS

Number of Levels:	*Single Storey structure (Concrete Ground Floor).*		
Dimensions:	Ground Floor: *8 x 6.6m*		
Floor Areas:	Ground Floor: *52.8m²*		
Typical Stud Height:	*2.4m*	Height to Roof Apex:	*4m*
Roof Pitch:	*0-25°*	Roof Height Above Eaves:	*1.4m*
Roof Cladding:	*Light*	Wall Cladding:	*Light*

WALL BRACING - Ground Floor - Along

Wall or Bracing Line		Bracing Elements Provided				WIND		EARTHQUAKE	
Line Label	Minimum BU/Wall	Element No.	Bracing Type	Element Length	Element Height	Wall Rating BU/m	Achieved (BU/m x L)	Wall Rating BU/m	Achieved (BU/m x L)
A	80	1	GIB1	2.2m	2.4m	55	121	50	110
		2	BR4	0.9m	2.4m	100	90	85	76
B	70	1	BR4	0.9m	2.4m	100	90	85	76
		2	BR4	0.9m	2.4m	100	90	85	76
					Total Achieved BU's		391 BU's		339 BU's
					Total Required BU's		363 BU's		190 BU's

WALL BRACING - Ground Floor - Across

Wall or Bracing Line		Bracing Elements Provided				WIND		EARTHQUAKE	
Line Label	Minimum BU/Wall	Element No.	Bracing Type	Element Length	Element Height	Wall Rating BU/m	Achieved (BU/m x L)	Wall Rating BU/m	Achieved (BU/m x L)
M	66	1	GIB1	2.4m	2.4m	75	180	50	120
N	66	1	GIB1	2.4m	2.4m	75	180	50	120
					Total Achieved BU's		360 BU's		240 BU's
					Total Required BU's		341 BU's		190 BU's

Details of Brace Types used in the Design.

BraceLine - BR4 Minimum Length: 900mm Maximum Length: 1200mm

Description:

9.5mm Gib Braceline on one face only with 6 KN capacity end stud fixings.

Fixings Required

Clouts and washers or screws at 150mm centers to perimeter of element. 300mm centres to all other sheet edges. Daub of glue to each intermediate stud at 300crs.

Wind Bracing Capacity: 100 BU/m Earthquake Bracing Capacity: 85 BU/m

Manufacturer: Winstone Wallboards Ltd. - ph 0800 100 GIB

Gib Board - GIB1 Minimum Length: 1800mm Maximum Length: 2400mm

Description:

9.5mm Standard Gib Board on one side only with diagonal bracing strap. Sheets fixed horizontal or vertical.

Fixings Required:

Clouts and washers or screws at 150mm centers to perimeter of element. 300mm centres to all other sheet edges. Daub of glue to each intermediate stud at 300crs.

Wind Bracing Capacity: 55 BU/m Earthquake Bracing Capacity: 50 BU/m.

Manufacturer: Winstone Wallboards Ltd. - ph 0800 100 GIB

Gib Board - GIB2 Minimum Length: 1800mm Maximum Length: 2400mm

Description:

9.5mm Standard Gib Board on both faces with diagonal bracing strap. Sheets fixed horizontal or vertical.

Fixings Required:

Clouts and washers or screws at 150mm centers to perimeter of element. 300mm centres to all other sheet edges. Daub of glue to each intermediate stud at 300crs.

Wind Bracing Capacity: 75 BU/m Earthquake Bracing Capacity: 60 BU/m.

Manufacturer: Winstone Wallboards Ltd. - ph 0800 100 GIB

Details of Brace Types used in the Design.

BraceLine - BR4 Minimum Length: 900mm Maximum Length: 1200mm

Description:

9.5mm Gib Braceline on one face only with 6 KN capacity end stud fixings.

Fixings Required:

Clouts and washers or screws at 150mm centers to perimeter of element. 300mm centres to all other sheet edges. Daub of glue to each intermediate stud at 300crs.

Wind Bracing Capacity: 100 BU/m. Earthquake Bracing Capacity: 85 BU/m

Manufacturer: Winstone Wallboards Ltd. - ph.0800 100 GIB

BraceLine - BR5 Minimum Length: 1200mm Maximum Length: N/A.

Description

9.5mm Gib Braceline on one face only with 6 KN capacity end stud fixings. Sheets fixed either horizontal or vertical.

Fixings Required:

Clouts and washers or screws at 150mm centers to perimeter of element. 300mm centres to all other sheet edges. Daub of glue to each intermediate stud at 300crs

Wind Bracing Capacity: 115 BU/m. Earthquake Bracing Capacity: 85 BU/m

Manufacturer: Winstone Wallboards Ltd. - ph.0800 100 GIB

BraceLine - BR6 Minimum Length: 1200mm Maximum Length: N/A.

Description:

9.5mm Gib Braceline on one face, standard 9.5mm Gib on other with 12 KN capacity end stud fixings. Sheets fixed either vertical or horizontal

Fixings Required:

Clouts and washers or screws at 150mm centers to perimeter of element. 300mm centres to all other sheet edges. Daub of glue to each intermediate stud at 300crs.

Wind Bracing Capacity: 150 BU/m Earthquake Bracing Capacity: 110 BU/m.

Manufacturer: Winstone Wallboards Ltd. - ph.0800 100 GIB

Gib Board - GIB1 Minimum Length: 1800mm Maximum Length: 2400mm.

Description:

9.5mm Standard Gib Board on one side only with diagonal bracing strap. Sheets fixed horizontal or vertical

Fixings Required:

Clouts and washers or screws at 150mm centers to perimeter of element. 300mm centres to all other sheet edges. Daub of glue to each intermediate stud at 300crs.

Wind Bracing Capacity: 55 BU/m Earthquake Bracing Capacity: 50 BU/m.

Manufacturer: Winstone Wallboards Ltd. - ph 0800 100 GIB

Gib Board - GIB2 Minimum Length: 1800mm Maximum Length: 2400mm

Description:

9.5mm Standard Gib Board on both faces with diagonal bracing strap. Sheets fixed horizontal or vertical.

Fixings Required:

Clouts and washers or screws at 150mm centers to perimeter of element. 300mm centres to all other sheet edges. Daub of glue to each intermediate stud at 300crs.

Wind Bracing Capacity: 75 BU/m Earthquake Bracing Capacity: 60 BU/m

Manufacturer: Winstone Wallboards Ltd. - ph.0800 100 GIB

6.9 Anchor piles

6.9.1 ***Height***
The height of an *anchor pile* shall be as defined in 6.4.1.1.

6.9.2 ***Depth***
The minimum depth of an *anchor pile* from *cleared ground level* to the *footing* under the surface bearing against the ground shall be 900 mm.

6.9.3 ***Fixings***
The fixings of *bearer* and floor *joists* to *anchor piles* shall be M12 bolts or 12 mm diameter threaded rod in the locations (see Figures 6.9 and 6.10). Alternative fixings having a capacity of 12 kN in tension or compression along the *bearer* and timber *joist* may be used.

6.10 Framed subfloor walls

6.10.1 ***Stud walls***
Timber stud subfloor walls shall comply with the requirements of section 8 for timber stud walls within a *storey* except that:

(a) Wall plates shall be the same depth as the studs above, but not less than 50 mm thick, and continuously supported on a *foundation wall*.

(b) The bottom plate may be substituted by a *bearer* supported on *piles*.

(c) A double stud shall be provided directly beneath any *bearer* at right angles to the wall and supported by the top plate.

Wall plates shall be fixed to the *foundation wall* in accordance with 6.11.2.

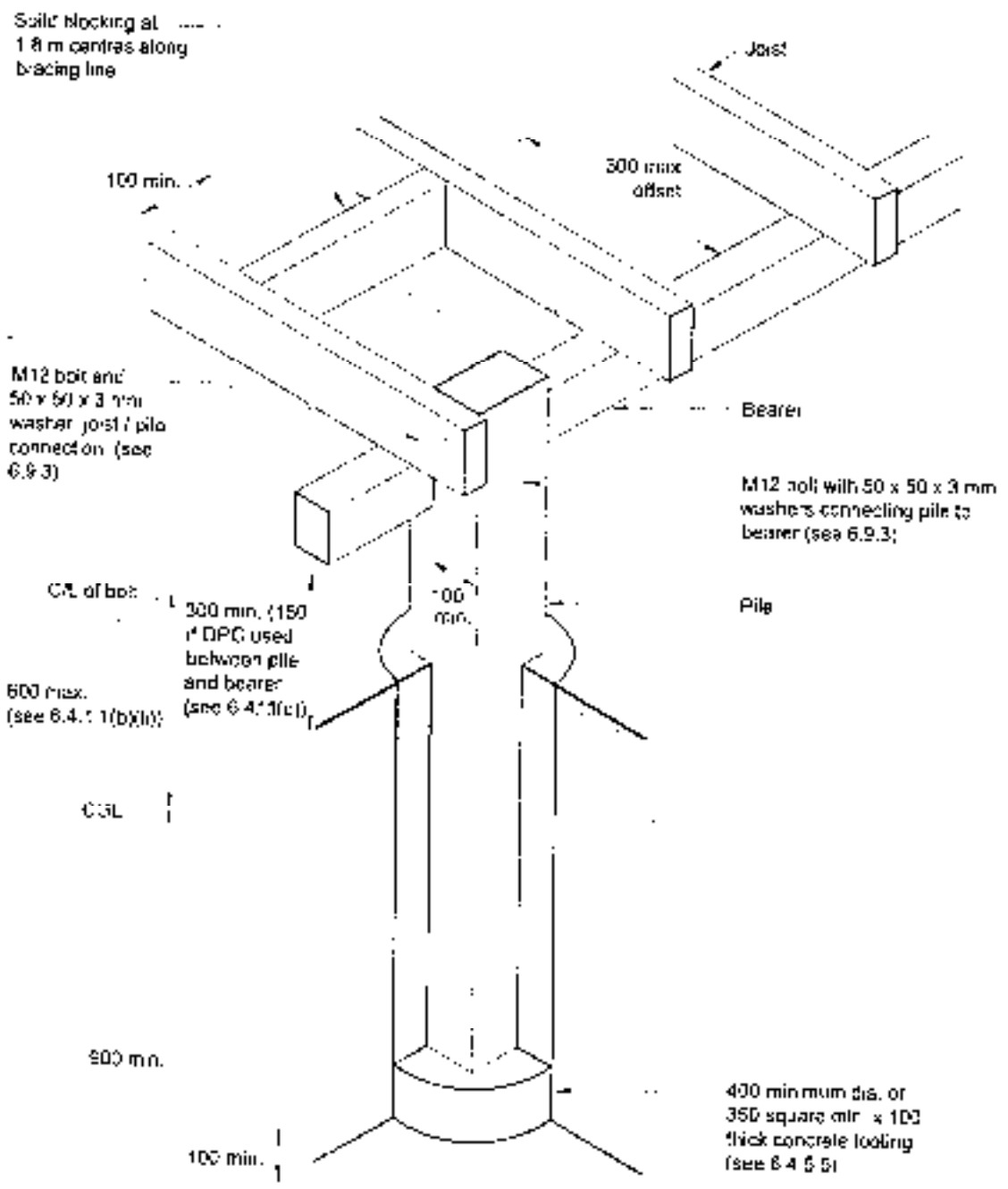
6.10.2 ***Jack studs***

6.10.2.1
Jack studs shall be of the dimensions given in table 6.3 (see table 14.5 for 3 kPa *floor loads*).

6.10.2.2
Jack studs shall be located near supporting piles and shall have their greater dimension in the line of the *bearer* supported by the *jack studs*.

6.10.2.3 ***Fixings***
Fixings of *jack studs* to *ordinary piles* shall be in accordance with 6.5.2.

C6.10.1
The provisions of section 8 require that subfloor stud walls must be braced or clad, or bracings provided for lateral support of the studs.



NOTE -
(1) Bearers must not be joined at an anchor pile.
(2) CGL = Cleared ground level.
(3) See section 4 for durability requirements.

Bracing units

Wind	160
Earthquake	120

Figure 6.9 – Anchor pile directly connected to joist and bearer (see 6.9)

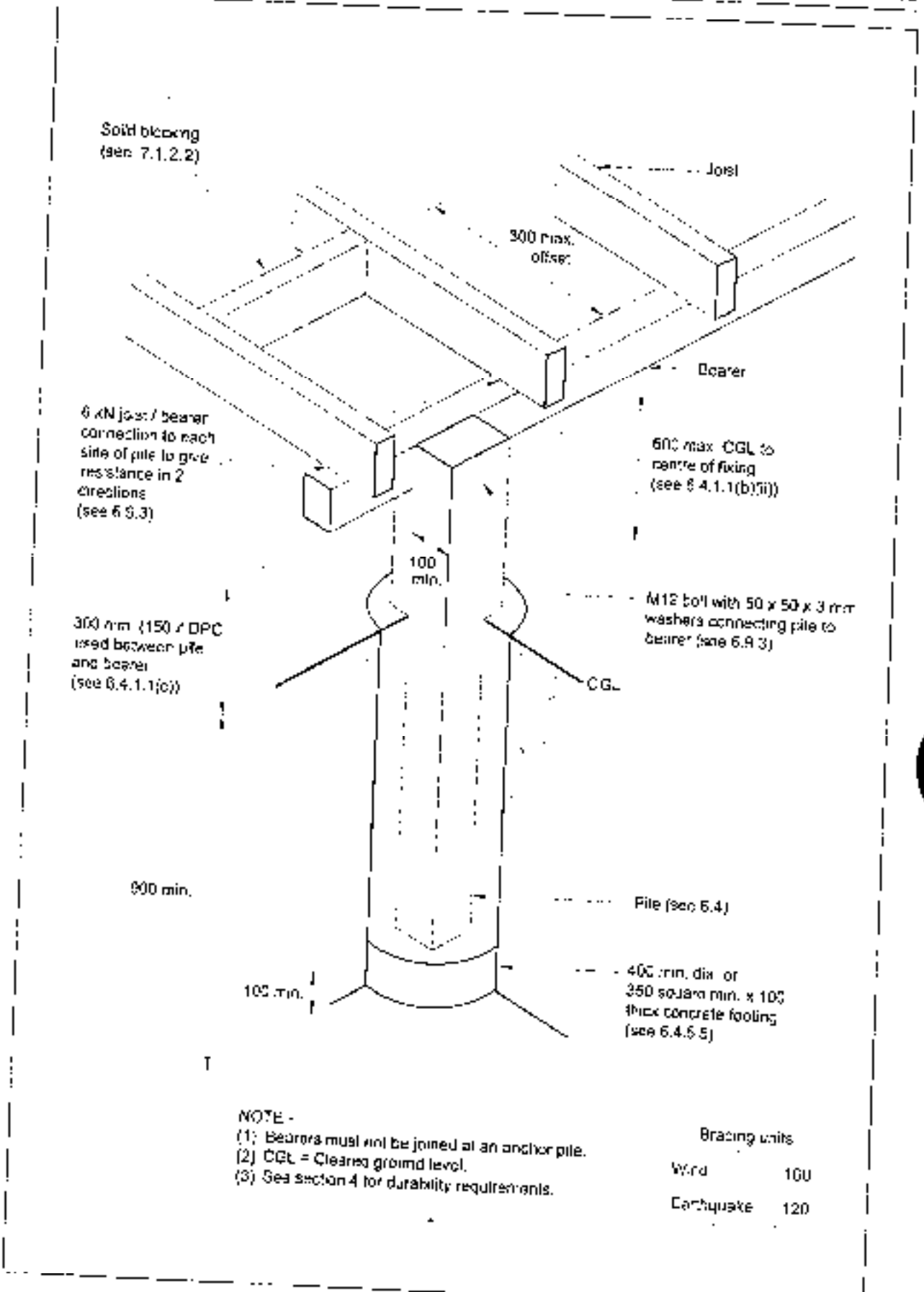


Figure 6.10 – Anchor pile directly connected to bearer only (see 6.9)

Details of Brace Types used in the Design.

BraceLine - BR4 Minimum Length: 900mm Maximum Length: 1200mm

Description:

9.5mm Gib Braceline on one face only with 6 KN capacity end stud fixings

Fixings Required:

Clouts and washers or screws at 150mm centers to perimeter of element. 300mm centres to all other sheet edges. Daub of glue to each intermediate stud at 300crs.

Wind Bracing Capacity 100 BU/m. Earthquake Bracing Capacity 85 BU/m.

Manufacturer: Winstone Wallboards Ltd. - ph.0800 100 GIB

BraceLine - BR5 Minimum Length: 1200mm Maximum Length: N/A.

Description

9.5mm Gib Braceline on one face only with 6 KN capacity end stud fixings. Sheets fixed either horizontal or vertical

Fixings Required

Clouts and washers or screws at 150mm centers to perimeter of element. 300mm centres to all other sheet edges. Daub of glue to each intermediate stud at 300crs.

Wind Bracing Capacity: 115 BU/m Earthquake Bracing Capacity: 85 BU/m.

Manufacturer: Winstone Wallboards Ltd. - ph 0800 100 GIB

BraceLine - BR6 Minimum Length 1200mm Maximum Length: N/A

Description:

9.5mm Gib Braceline on one face, standard 9.5mm Gib on other with 12 KN capacity end stud fixings. Sheets fixed either vertical or horizontal

Fixings Required

Clouts and washers or screws at 150mm centers to perimeter of element. 300mm centres to all other sheet edges. Daub of glue to each intermediate stud at 300crs

Wind Bracing Capacity: 150 BU/m. Earthquake Bracing Capacity: 110 BU/m

Manufacturer: Winstone Wallboards Ltd - ph 0800 100 GIB

Gib Board - GIB1 Minimum Length: 1800mm Maximum Length: 2400mm

Description:

9.5mm Standard Gib Board on one side only with diagonal bracing strap. Sheets fixed horizontal or vertical.

Fixings Required:

Clouts and washers or screws at 150mm centers to perimeter of element. 300mm centres to all other sheet edges. Daub of glue to each intermediate stud at 300crs.

Wind Bracing Capacity 55 BU/m Earthquake Bracing Capacity. 50 BU/m

Manufacturer: Winstone Wallboards Ltd - ph.0800 100 GIB

Gib Board - GIB2 Minimum Length 1800mm Maximum Length: 2400mm

Description

9.5mm Standard Gib Board on both faces with diagonal bracing strap. Sheets fixed horizontal or vertical.

Fixings Required

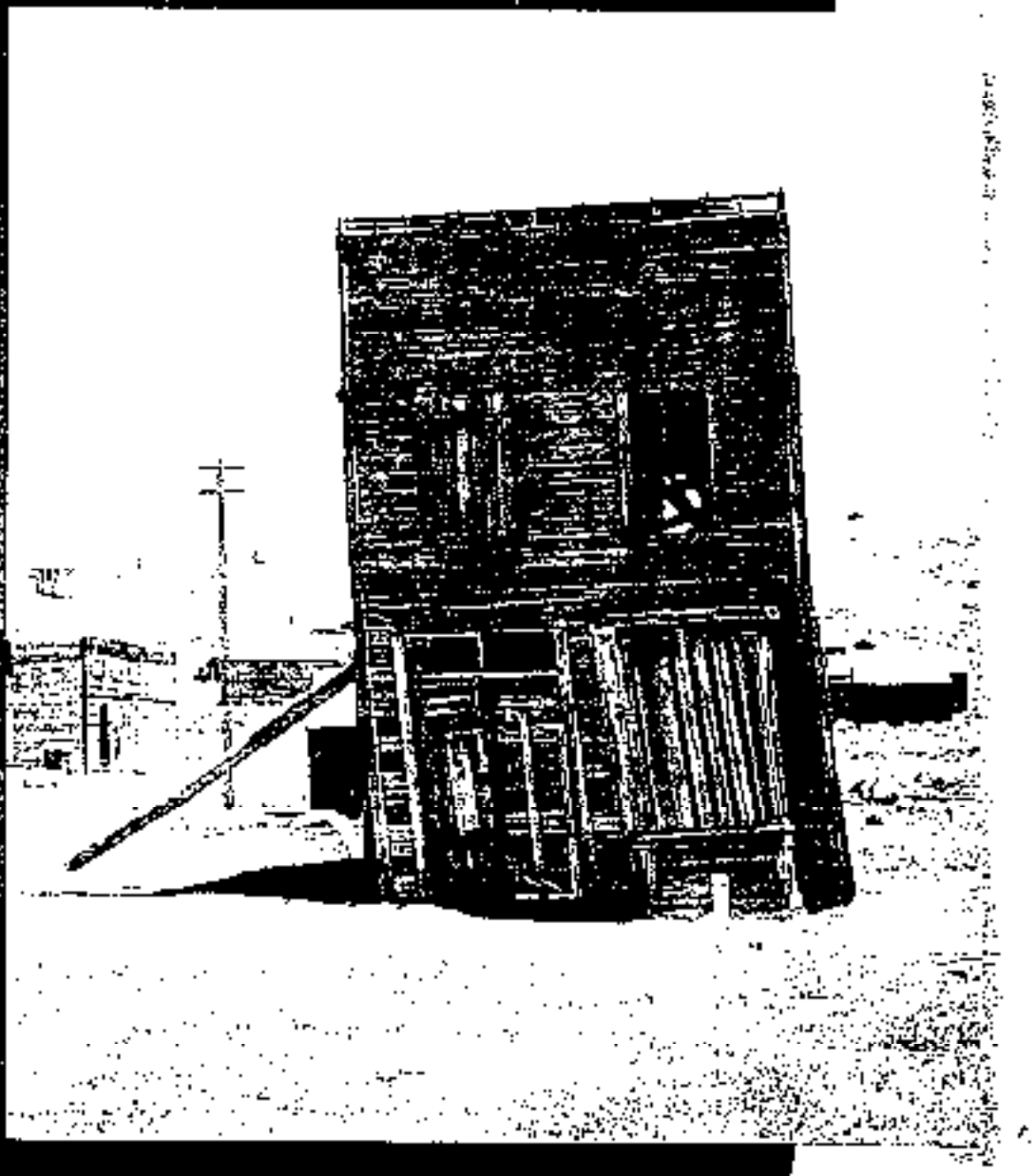
Clouts and washers or screws at 150mm centers to perimeter of element. 300mm centres to all other sheet edges. Daub of glue to each intermediate stud at 300crs

Wind Bracing Capacity. 75 BU/m Earthquake Bracing Capacity: 60 BU/m

Manufacturer: Winstone Wallboards Ltd. - ph 0800 100 GIB

December 2000

Gib® Bracing Systems



GIB
Living Solutions

Design Steps 4 and 5 – Bracing Units Achieved (Wind and Earthquake)

The next step is to place selected wall bracing systems on the bracing lines. A range of Gib® bracing systems have been tested and the specimens and Bracing Unit ratings are listed below. Standard Gib® plasterboard systems often represent the most cost effective wall bracing elements. Gib® Ecoline or Gib® Toughline systems are suitable for narrow walls or where high Bracing Unit ratings are required. Gib® Noiseline and Gib® Aqualine Bracing Unit ratings are lower. Refer to Standard Gib® construction and Gib® Bracing.

Wall Heights Other Than 2.4m

The published Bracing Unit ratings are based on 2.4m wall height. For other heights the ratings must be multiplied by a factor of 2.4 divided by the actual wall height. The Bracing Unit ratings for walls higher than 2.4 metres are reduced, and the Bracing Unit ratings for walls shorter than 2.4 metres will increase. Factor if must not be greater than 1.0.

TABLE 1: Bracing Unit ratings for 9.5mm & 12.5mm Standard Gib® plasterboard, 9.5mm Gib® Ultraline, 9.5mm Gib® Aqualine, 9.5mm Gib® Fyreline, 9.5mm Gib® Noiseline.

Type	Minimum length (m)	Lining Requirement	Additional Requirement	Bracing Units per metre (wind)	Bracing Units per metre (Earthquake)
		Standard 9.5mm Gib® plasterboard bracing systems (not applicable to 9.5mm Gib® Aqualine and 9.5mm Gib® Fyreline)			
[illegible]	[illegible]	[illegible]	[illegible]	50	30
[illegible]	2.4 and [illegible]	[illegible]		75	30
[illegible]	[illegible]	[illegible]	[illegible]	75	60
[illegible]	2.4 and [illegible]	[illegible]		80	70
[illegible]	[illegible]	Standard 9.5mm Gib® [illegible]	[illegible]	80	60
		Standard 12.5mm Gib® plasterboard bracing systems			
[illegible]	[illegible]	[illegible]	[illegible]	65	60
[illegible]	[illegible]	[illegible]	[illegible]	65	65
		9.5mm Gib® Ultraline bracing systems (these ratings also apply to 9.5mm Gib® Noiseline)			
[illegible]	1.2	Gib® Ultraline one face [illegible]	[illegible] connections	70	60
[illegible]	1.2	Gib® Ultraline both sides [illegible]	[illegible] connections	100	85

Design Steps 4 and 5 – Bracing Units Achieved (Wind and Earthquake)

TABLE 2: Bracing Unit ratings for 9.5mm Gib® Braceline and 9.5mm or 12.5mm Gib® Toughline.

Type	Minimum length (m)	Lining Requirement	Additional Requirement	Bracing Units per metre (wind)	Bracing Units per metre (Earthquake)
		9.5mm Gib® Braceline lining systems (these ratings also apply to 9.5mm or 12.5mm Gib® Toughline)			
[illegible]	1.8 and above	Gib® Braceline one side, [illegible]	[illegible]	[illegible]	60
[illegible]	2.4 and greater	[illegible]		81	72
[illegible]	1.8 and above	Gib® Braceline one side, [illegible]	[illegible]	[illegible]	60
[illegible]	2.4 and greater	[illegible]	[illegible]	81	33
[illegible]	1.8 and above	Gib® Braceline one side, [illegible]	[illegible]	[illegible]	63
[illegible]	2.4 and greater	[illegible]		81	63
[illegible]	1.8 and above	Gib® Braceline one side, [illegible]	[illegible]	[illegible]	93
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Notes: 1) Where linings are specified on both faces (Systems GB3, GB4, GB11, GB12, BR3, BR7, BR9) each face must be fastened as a braced element. Refer page 11 for fastening systems relating to Plywood and Fibreboard.
The standard 1.8m Gib® Plasterboard on the leeward face of BR9 is fastened as per System GB1.

2) See notes on page Down Strap Fastening, Page 17

*3) For maximum lining of linings in Systems DR4, BR3, BR7, BR9, [illegible] (BR9) see page 16.

GIB

Construction Details

Framing

General framing requirements such as grade, seasoning and installation shall comply with the provisions of NZS 3604. Winstone Wallboards recommends the use of kiln dried machine stress graded framing (K2 MSG). To achieve the published shear performance the minimum actual framing dimensions are 90 x 35mm for external walls and 70 x 35mm for internal walls. System BR9 always requires a minimum of 90 x 35mm framing.

Additional framing is required for Gib® Systems where butt joints occur. Nogs are not considered to add to the bracing performance of the wall.

Fastening Gib® Plasterboard Linings

Internal: 9.5mm and 13mm Gib® plasterboard. 9.5mm and 13mm Gib® Noiseline and 13mm Gib® Toughlining may also be installed using 30mm x 6g Gib® Grabber drywall screws or 30 x 3.15mm Gib® Nails. Gib® Blockboard and 16mm Gib® Toughline must be fastened with 32mm Gib® Grabber Brace screws or 32mm Gib® Brace nails and washers.

Gib® linings for performance bracing elements are installed at 150mm centres around the perimeter of the bracing element. **The first fastener is always placed 50mm away from the sheet corner. See detail page 16.**

Fastening in the field of the bracing element is non-critical and the screw and glue method is not permitted. See Fastening Guide details pages 14 – 15.

Where fastener lengths of Gib® Brace screws or nails of 32mm are recommended for bracing elements.

For bracing elements of 8m or less in length, Gib® Brace screws or nails are unavailable they must be fastened with 30mm screws or nails. The field of the bracing element is fastened at 200mm centres. Alternatively, the sheet may be installed horizontally.

Plywood (BR7) and Hardboard (BR8)

"Plywood" as used in BR7 is a grade C/D 7.5mm construction plywood manufactured to AS NZS 2269:1994. Fastening with 30 x 3.15mm Gib® Nails at 100mm centres around the perimeter of the bracing element and at 200mm centres to intermediate framing.

"Hardboard" as used in BR8 is a 7.5mm plasterboard or 6mm cement fibreboard manufactured by a leading building supply company. Fastening with 30 x 3.15mm Gib® Nails at 100mm centres around the perimeter of the bracing element and at 200mm centres to intermediate framing.

Fire Resistance Ratings

[illegible]

The fastener length for the [illegible] bracing element must also be increased in accordance with the relevant [illegible] conditions.

Jointing and Stopping

All sheet joints must be jointed and stopped in accordance with the manufacturer's specification. Refer Gib® Plasterboard Solutions Site Guide – April 1998.

Fastening the Bracing Element to Timber Floors

Fastening of the bottom plate of a Gib® bracing element to a timber floored floor must be in accordance with NZS3604 with plate of 100 x 35mm nailed at 400mm centres. In accordance 8 or 12kN connections must be installed where specified for the particular bracing element type.

Fastening the Bracing Element to Concrete Slabs

Fastening of the bottom plate of a Gib® bracing element to a concrete floor must be in accordance with NZS3604 for external walls with a minimum 12mm diameter x 50 x 50 x 3mm square washer or a proprietary fixing with equivalent capacity at 1200mm centres or BR8 from both ends of the wall bracing elements.

On external bracing lines the bottom plate of the Bracing Element may be fixed using 2.8mm shot fired fasteners (Hilti nails) located at 150mm centres, 20mm from the end studs and intermediate at 600mm centres. This method is applicable to Systems Gib® 2, 3, 10, 11 and BR1, 2, 3.

Hold-Down Strap Placement (Refer Illustrations Pages 17 and 18)

Where 8kN connections are specified in the Approved Product Information, they are required only if the bracing element terminates within 1.2 metres of the end of a concrete bracing wall (illustration, page 18).

Where 12kN connections are specified they must be installed at both ends of the bracing element in all cases.

Bracing Elements

[illegible] the middle third of the wall bracing element's length and height. Neither [illegible] shall be more than one third of the element height. Wall linings and lintels in opening [illegible] centres. Small openings (eg. power outlets of 80 x 80mm or less) may be placed [illegible] mm to the edge of the bracing element.

[illegible]es

[illegible] to keep members in place during transport and construction. They are not as part of [illegible] bracing of a building under construction. Angle braces contribute only a fraction to the [illegible] the performance of a completed building depends mainly on the [illegible] fixings.

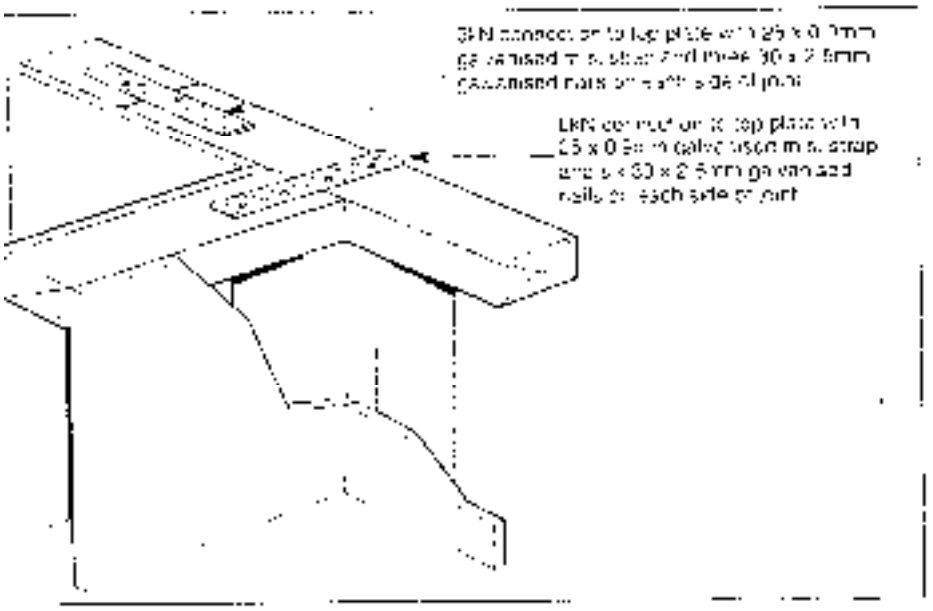
[illegible] metal angle braces must be placed at an angle no steeper than 60 degrees and [illegible] length of the bracing element. For elements longer than [illegible] metres, pairs of [illegible] are required. Fixing of angle braces is with three 30 x 2.5mm G[illegible] [illegible] plates and four 30 x 2.5mm nails to plasterboard lining.

[illegible]onnections

[illegible] wall panel contains one or more of the bracing elements shall be joined according to [illegible] specified individual bracing element surfaces.

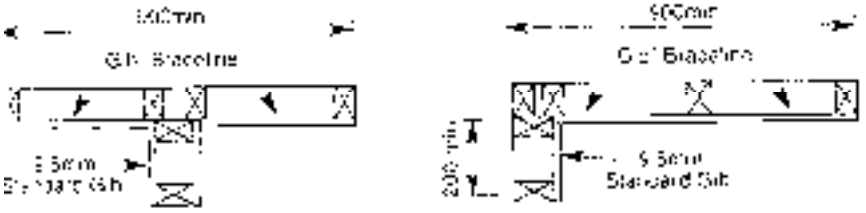
[illegible] GIB connectors as shown or by an alternative fixing of [illegible] specified by the [illegible]

[illegible] GIB [illegible] of GIB [illegible] fixing of GIB [illegible] along the joint.



[illegible] for Intersecting Walls (all Gib® Bracing Sheet Types)

[illegible] may have intersecting walls with a minimum length of 200mm. Bracing element [illegible] as shown on page 14 [illegible]. Fasteners are to be placed around the [illegible] bracing element. Vertical joints at T junctions (illustrated below) are to be placed [illegible] from GIB® sheet joints. **The bracing element length must be no less than 900mm.**



[illegible] Bracing Elements are interrupted by T or L junctions (as illustrated in the 900mm example [illegible] [illegible] considered as follows.

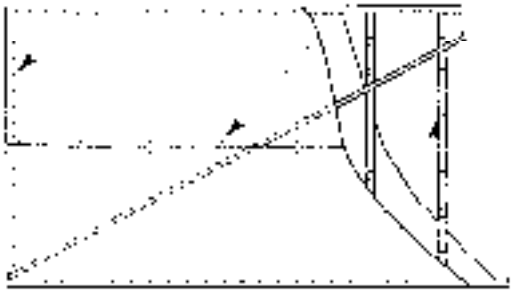
[illegible] has been cut to accommodate the junction. Nevertheless, in respect of [illegible] Bracing Unit, the Bracing Element is deemed to be continuous for the whole length [illegible] the outside case.

GIB

Fastener Layouts

32mm x 6g Gib® Grabber screws or 30mm Gib® Nails at 150mm centres to perimeter of Bracing Element

Single 32mm screws or Gib® Nails where sheets cross studs

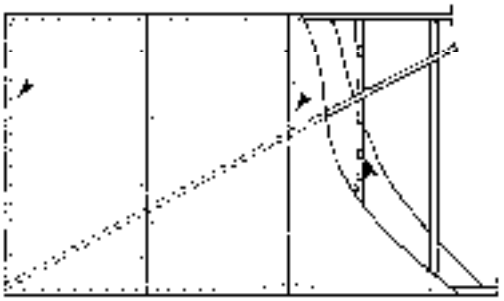


Gib® 1 (lined one side)
Gib® 2 (lined both sides)
(Horizontal Fixing)

Dab of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

32mm x 6g Gib® Grabber screws or 30mm Gib® Nails at 150mm centres to perimeter of Bracing Element

Single 32mm screws or Gib® Nails where sheets cross studs

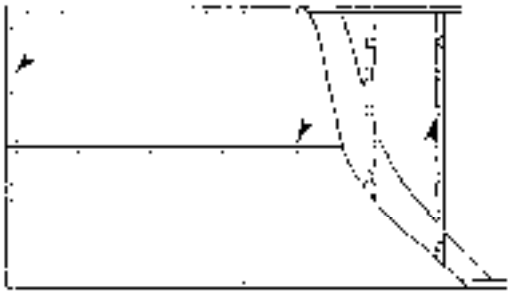


Gib® 1 (lined one side)
Gib® 2 (lined both sides)
(Vertical Fixing)

Dab of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

32mm x 6g Gib® Grabber screws or 30mm Gib® Nails at 150mm centres to perimeter of Bracing Element

Single 32mm screws or Gib® Nails where sheets cross studs

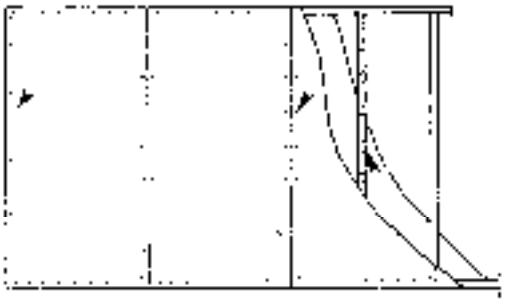


Gib® 3 (lined both sides)
Gib® 10 (lined one side)
Gib® 11 (lined both sides)
(Horizontal Fixing)

Dab of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

32mm x 6g Gib® Grabber screws or 30mm Gib® Nails at 150mm centres to perimeter of Bracing Element

Single 32mm screws or Gib® Nails where sheets cross studs

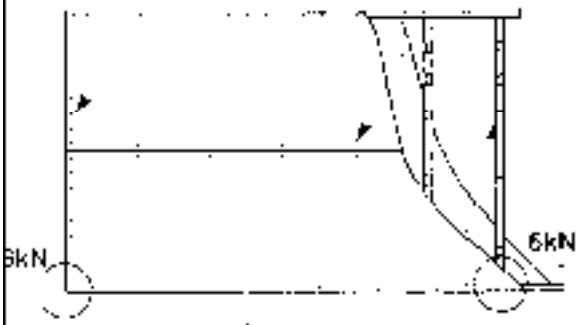


Gib® 3 (lined both sides)
Gib® 10 (lined one side)
Gib® 11 (lined both sides)
(Vertical Fixing)

Dab of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

32mm x 6g Gib® Grabber screws or 30mm Gib® Nails at 150mm centres to perimeter of Bracing Element

Single 32mm screws or Gib® Nails where sheets cross studs

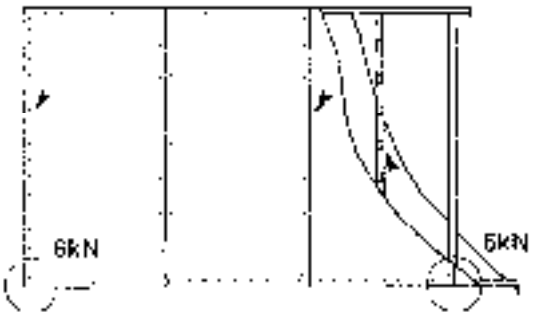


UL1 (lined one side)
UL2 (lined both sides)
(Horizontal Fixing)

Dab of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

32mm x 6g Gib® Grabber screws or 30mm Gib® Nails at 150mm centres to perimeter of Bracing Element

Single 32mm screws or Gib® Nails where sheets cross studs



UL1 (lined one side)
UL2 (lined both sides)
(Vertical Fixing)

Dab of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

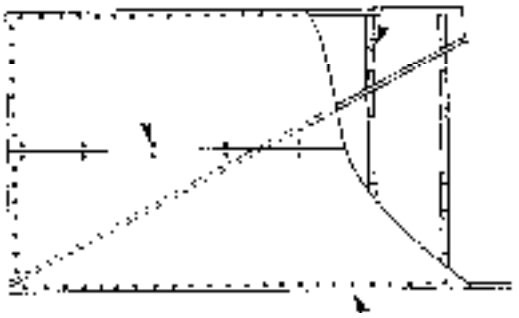
Fastener Layouts – continued

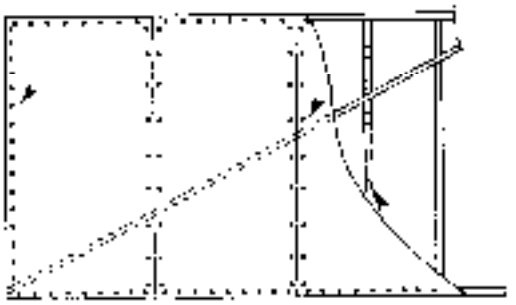
32mm single screws or Gib® Nails where sheets cross studs

Double of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

32mm Gib® Bracline screws or 30mm Gib® Bracline clouts and washers at 150mm centres to perimeter of braced element

Single 32mm screws or Gib® Nails at 300mm centres





BR1 (lined one side) (Horizontal Fixing)

32mm Gib® Bracline screws or 30mm Gib® Bracline clouts and washers at 150mm centres to perimeter of braced element

BR1 (lined one side) (Vertical Fixing)

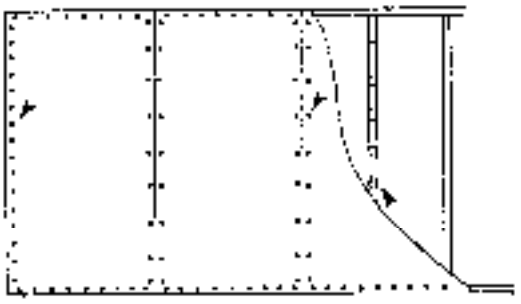
Double of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

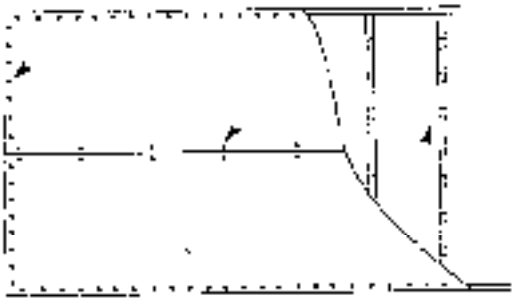
32mm Gib® Bracline screws or 30mm Gib® Bracline clouts and washers at 150mm centres to perimeter of braced element

Single 32mm screws or Gib® Nails at 300mm centres

32mm Gib® Bracline screws or 30mm Gib® Bracline clouts and washers at 150mm centres to perimeter of braced element

Single 32mm screws or Gib® Nails where sheets cross studs





BR2 (lined one side) (Vertical Fixing Only)

Double of Gib® Fix Wood Bond adhesive at 300mm centres to intermediate studs

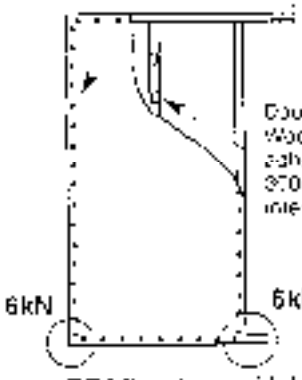
BR3 (lined one side) (Horizontal Fixing Only)

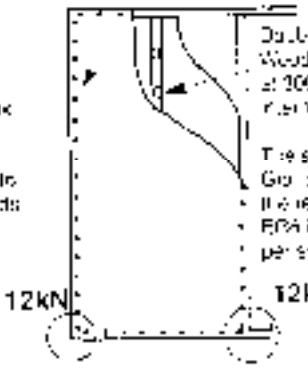
Double of Gib® Fix Wood Bond adhesive only at 300mm centres to intermediate studs

32mm Gib® Bracline screws or 30mm Gib® Bracline clouts and washers at 150mm centres to perimeter of braced element

32mm Gib® Bracline screws or 30mm Gib® Bracline clouts and washers at 150mm centres to perimeter of braced element

32mm Gib® Bracline screws or 30mm Gib® Bracline clouts and washers at 150mm centres to perimeter of braced element





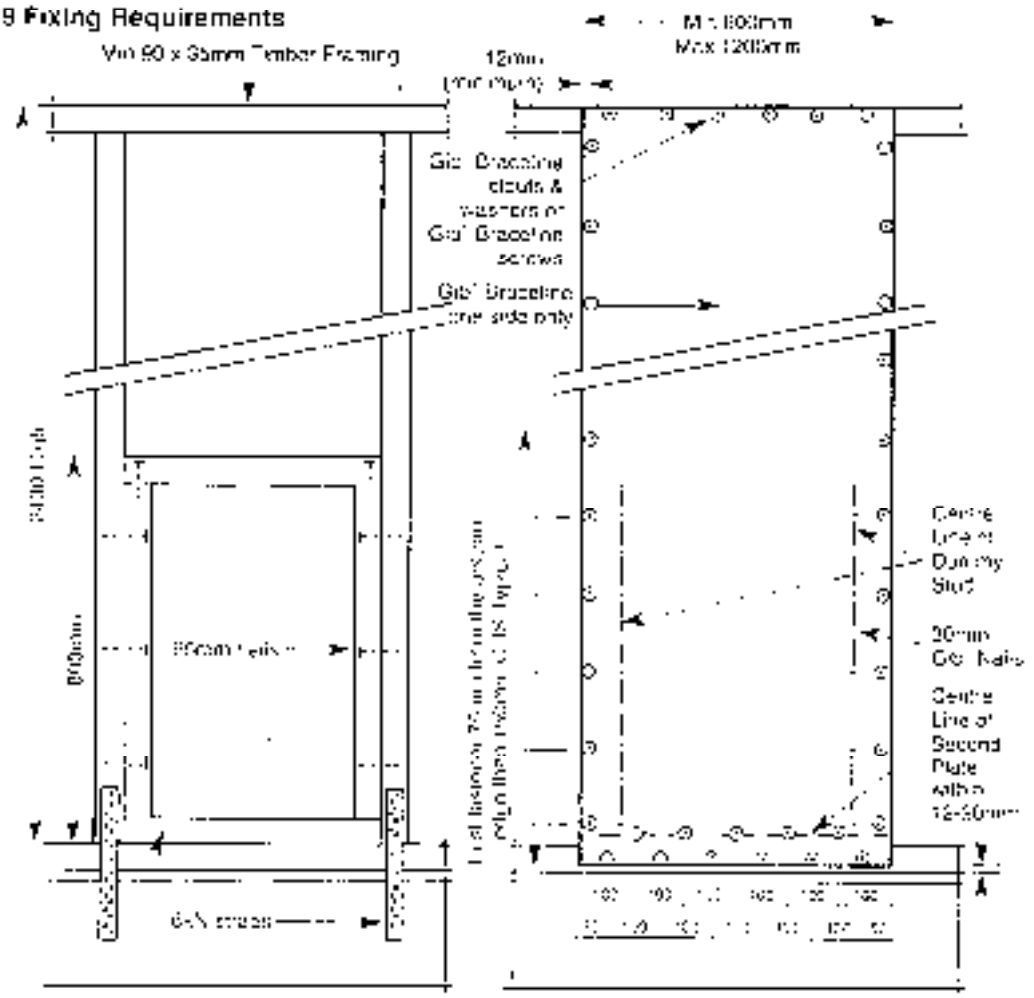
BR4 (lined one side)
BR5 (lined one side)

BR6 (lined both sides)

BR7 (lined both sides)
BR8 (lined both sides)

Note: If the length of the braced element using systems BR4, BR5, BR6, BR7 and BR8 exceeds 7m then the sheet edges with the element [illegible] at 200mm centres.

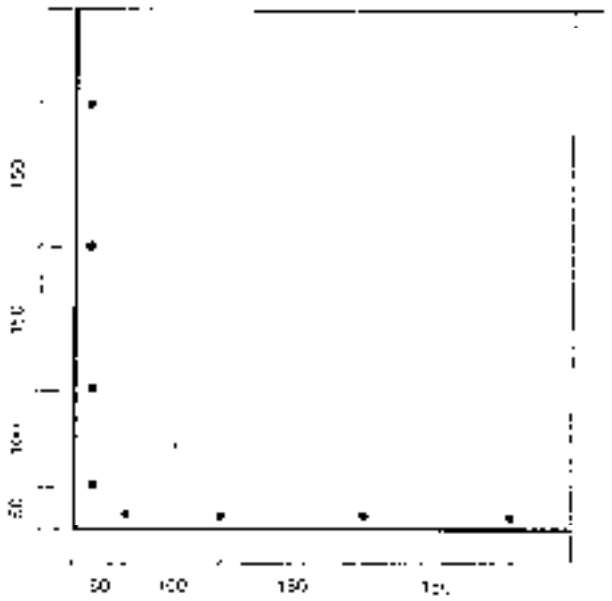
BR9 Fixing Requirements



IMPORTANT

Corner Fastening Details

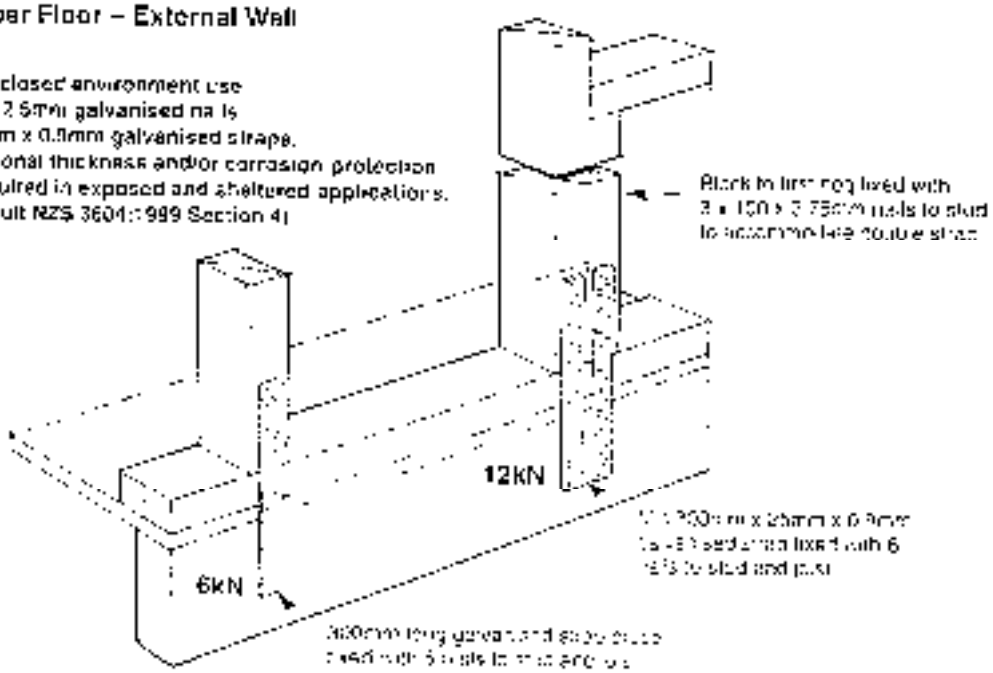
This pattern applies to ceiling diaphragms and to all wall bracing elements except BR9.



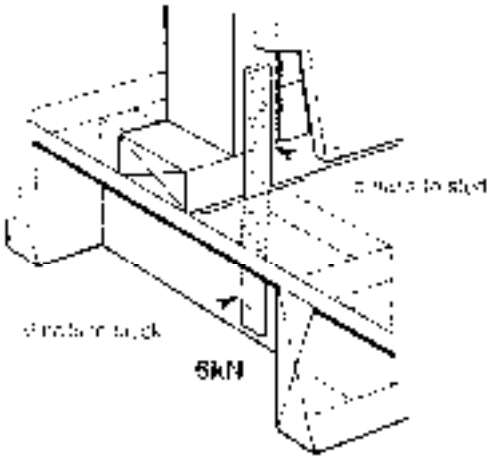
Hold-Down Straps

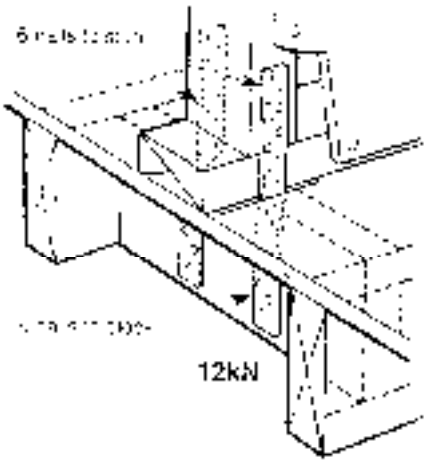
mber Floor – External Wall

or a closed environment use
30 x 2.5mm galvanised nails
25mm x 0.8mm galvanised straps.
dditional thickness and/or corrosion protection
required in exposed and sheltered applications.
Cor suit NZS 3604:1999 Section 4)

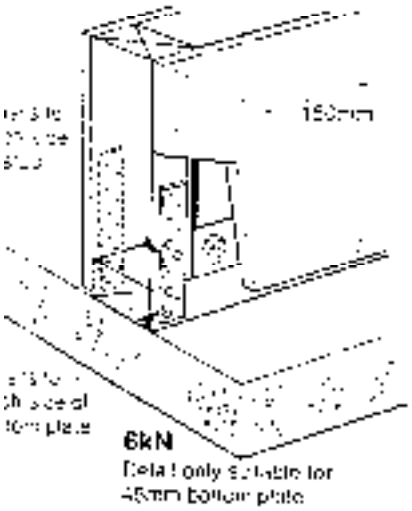


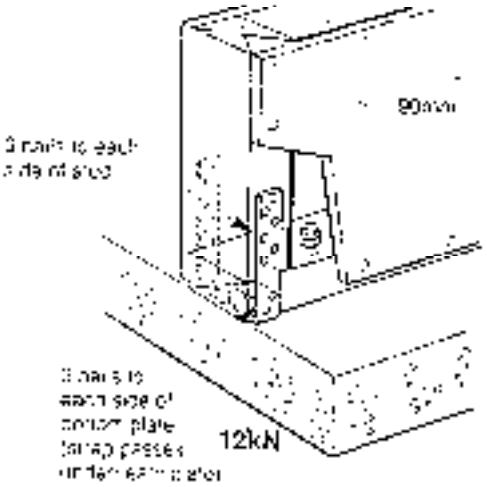
mber Floor – Internal Wall





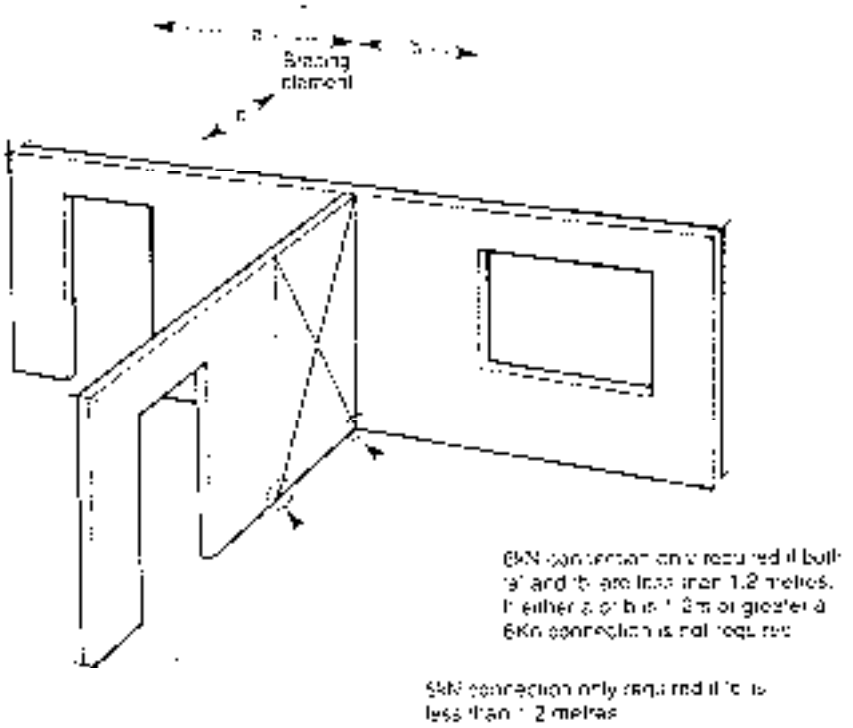
Concrete Floor





N Connections – UL1 ... 2, BR4, BP5, BR7, BR5 & BR9
N Connections – BR8

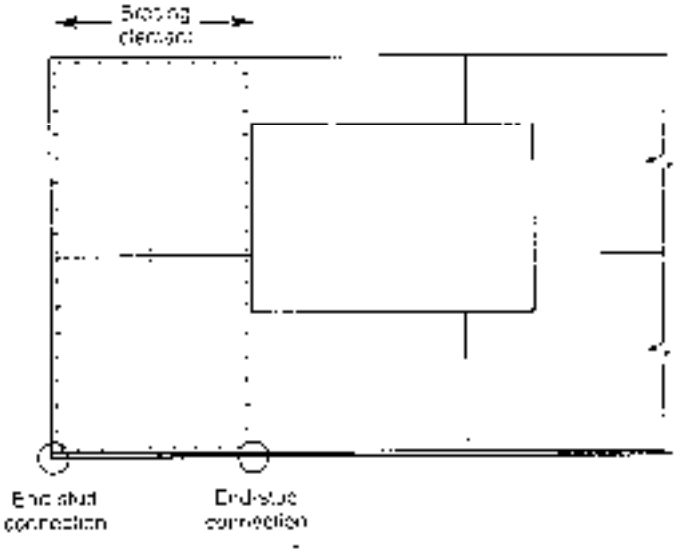
Hold-Down Strap Placement



Note: Where 12kN connections are specified (BR6) they must be installed at both ends of the bracing element in all cases.

Horizontal Fixing (BR4, 5, 6, 7, 8, 9)

GIB® Braceline® in these systems BR4, 5, 6, 7, 8, 9 must be fixed horizontally where linings extend under lower door or window openings. GIB® structural plasterboard must be fixed around the perimeter of the bracing element.



GIB

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move.

darrell paterson

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