RECEIVED
28 JUL 1993
MARLBOROUGH DISTRICT COUNCIL

BC 93-984

PROPOSED TOWNHOUSE
for
Mr. J. BROUGHTON
16 McCALLUM STREET
BLENHEIM

MARLBOROUGH DISTRICT COUNCIL
Approved subject to all work complying with the N.Z. Building Code.
G J Wyatt 11-8-93 Plumbing & Drainage Inspector

Marlborough District Council
Note: The stormwater must be completed and inspected before a Code Compliance Certificate will be issued.
G J Wyatt 11-8-93 Plumbing & Drainage Officer

Note:- Existing sewer to be water
(1) Tested and inspected.
(2) Stormwater to be 100Ø. main to all buildings
(3) Water inside property to be 20Ø. minimum
G J Wyatt

CONTENTS:

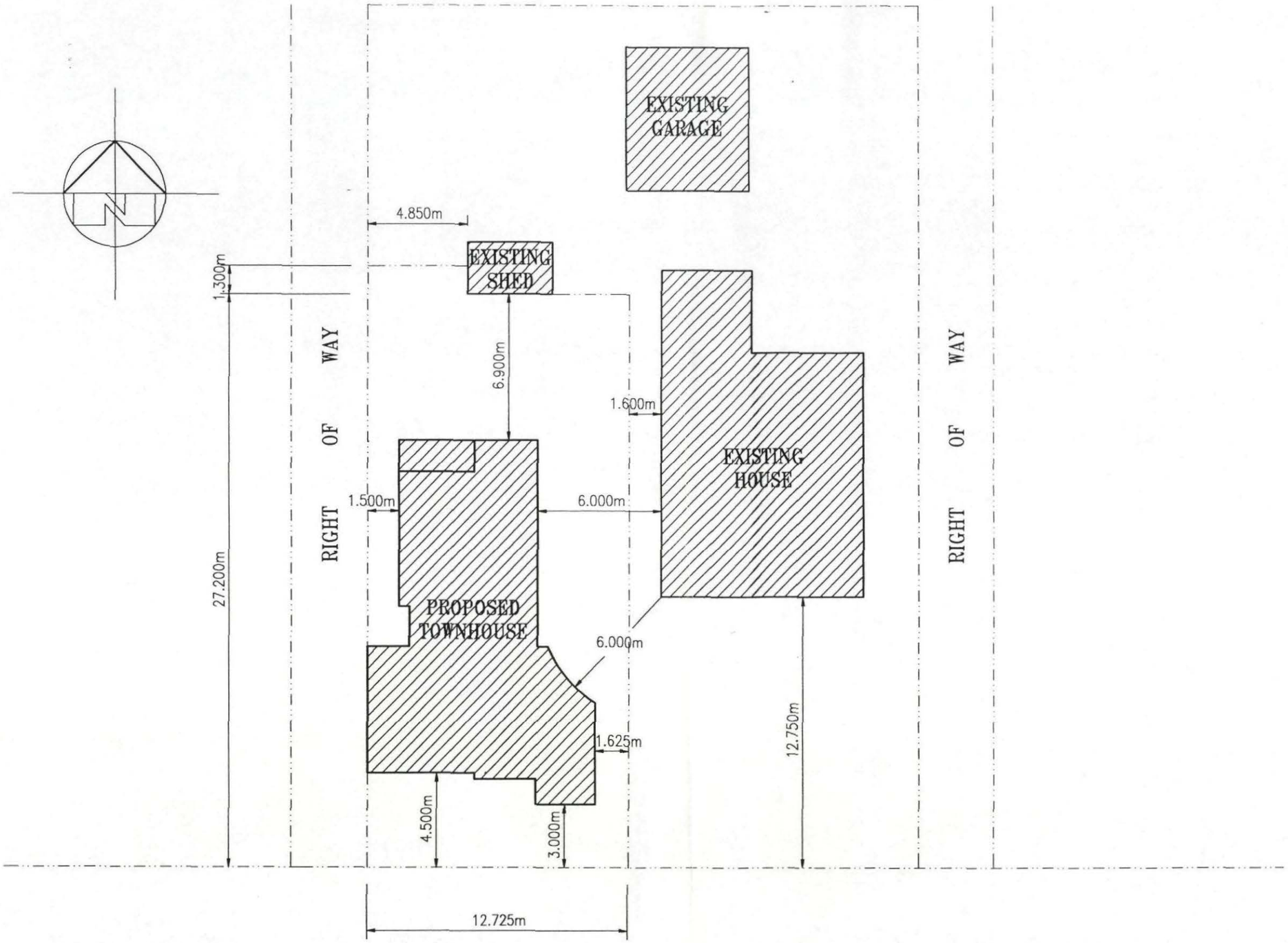
MARLBOROUGH DISTRICT COUNCIL
24 HOURS NOTICE MUST BE GIVEN.
1. PRIOR TO FIXING ANY WALL OR CEILING LININGS.
2. FOR SEWER OR STORMWATER INSPECTIONS.
3. ON FINAL COMPLETION OF BUILDING.

G J Wyatt
PLUMBING AND DRAINAGE INSPECTOR

MARLBOROUGH DISTRICT COUNCIL
APPROVED SUBJECT TO:
1. All work complying with the N.Z. Building Code.
2. 24 hours notice being given to the Building Inspector prior to pouring any concrete.

R.J. McIlwain 30-7-93 Building Inspector

MARLBOROUGH DISTRICT COUNCIL
ALL HOT & COLD WATER RETICULATION MUST BE PRESSURE TESTED TO 150 p.s.i. FOR A MINIMUM OF 15 MINUTES.
PLUMBING AND DRAINAGE INSPECTOR



NOTES:

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Draughtsman
ph(03)5778565

SCALE
1:200

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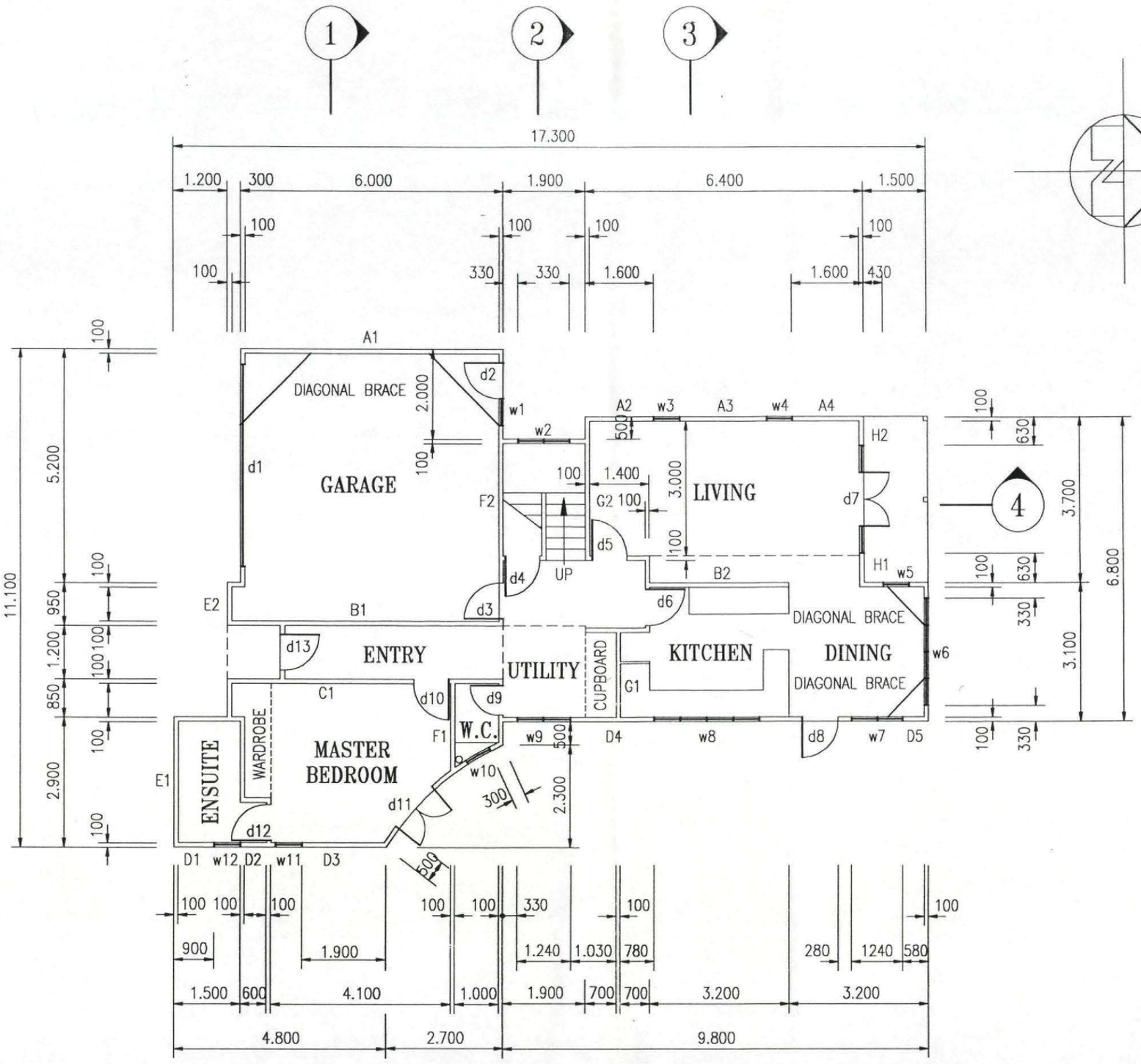
CLIENT
Mr J. BROUGHTON
16 McCALLUM STREET
BLENHEIM

PROJECT
3 BEDROOM TOWNHOUSE
16 McCALLUM STREET
BLENHEIM

SHEET TITLE
SITE PLAN
LOT 2, D.P.3992
OMAKA LAND DISTRICT

PROJECT No
107

SHEET 1 OF



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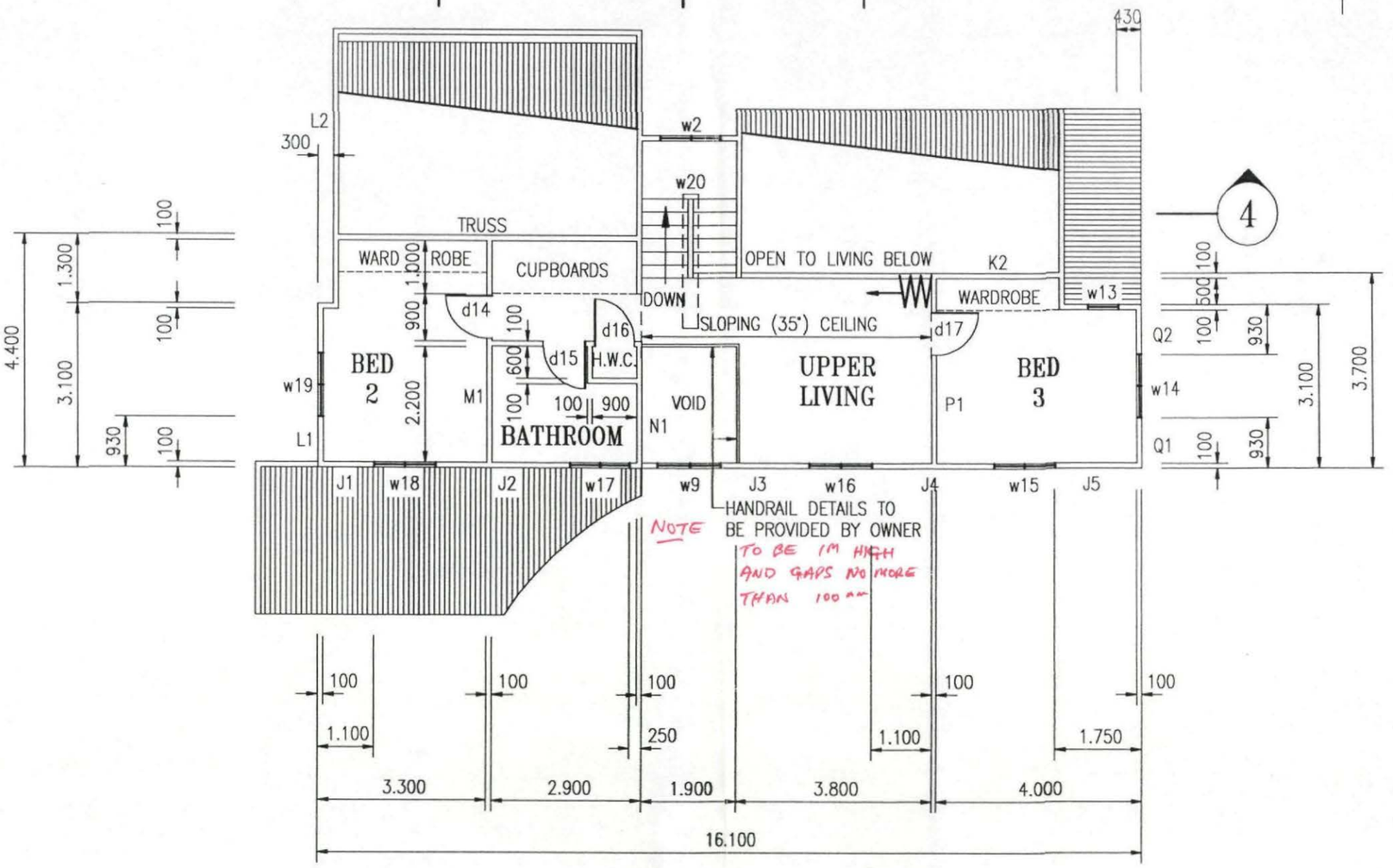
PROJECT
3 BEDROOM TOWNHOUSE
16 McCALLUM STREET
BLENHEIM

SHEET TITLE
PLAN – GROUND FLOOR

PROJECT No
107

SHEET 2 OF



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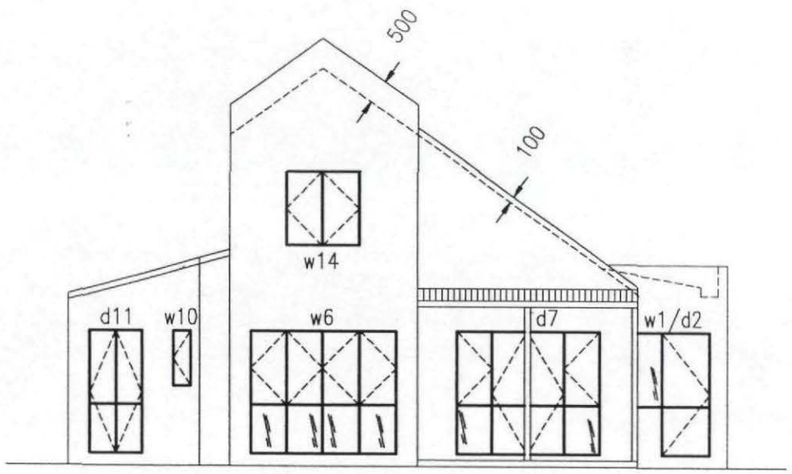
PROJECT
3 BEDROOM TOWNHOUSE
16 McCALLUM STREET
BLENHEIM

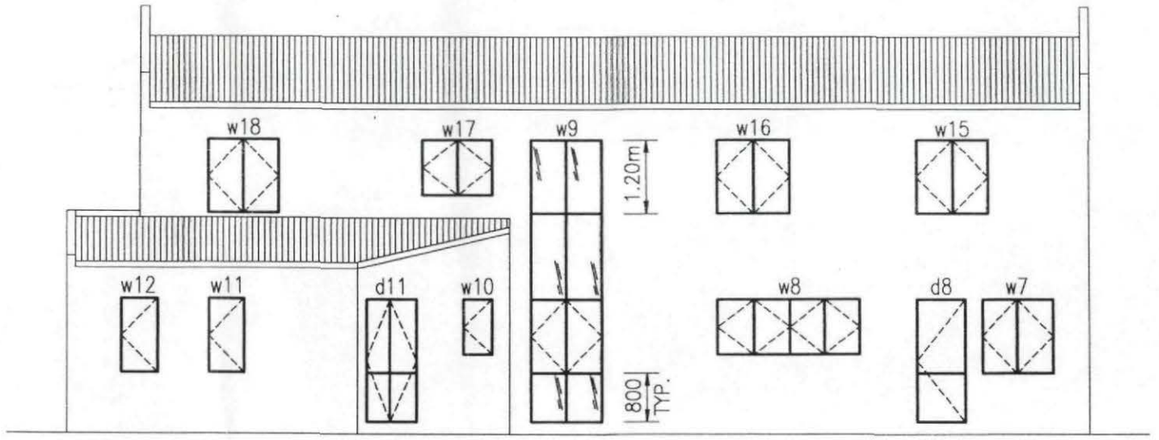
SHEET TITLE
PLAN – FIRST FLOOR

PROJECT No
107

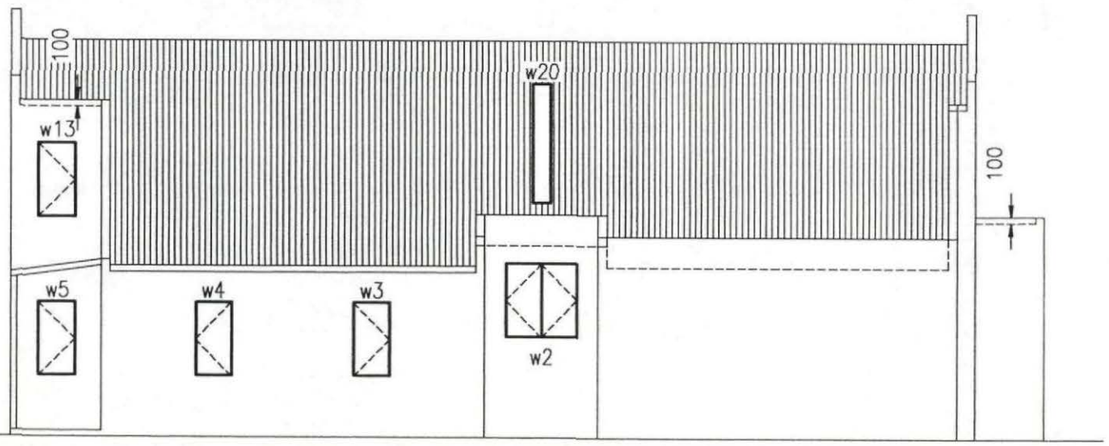
SHEET 3 OF



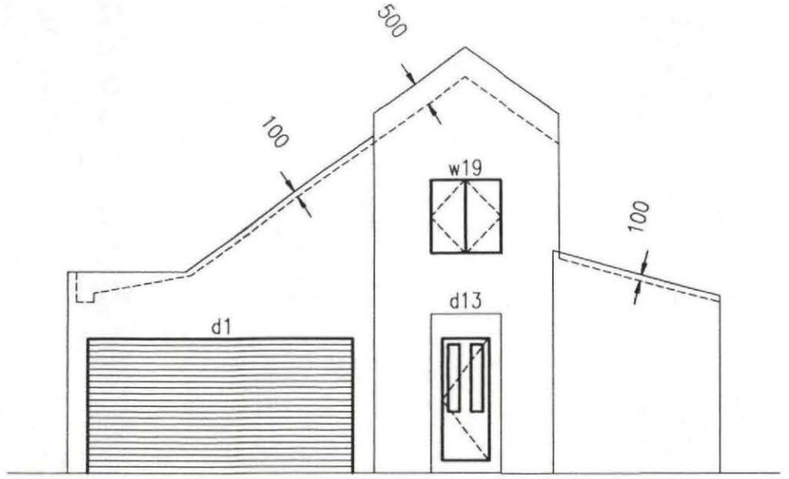
NORTH ELEVATION



EAST ELEVATION



WEST ELEVATION



SOUTH ELEVATION

EXTERIOR DOOR SCHEDULE:

d1	2.15m x 4.5	AHI WIDELINE ROLLER DOOR
d2/w1	2.0m x 810 900 x 600	ALUMINIUM
d7	4/2.0m x 600	ALUMINIUM
d8	2.0m x 810	ALUMINIUM
d11	2/2.0m x 600	ALUMINIUM
d13	2.0m x 810	TIMBER – REFER OWNER

WINDOW SCHEDULE:

w2, w7, w14, w15, w16, w18, w19	2/1.2m x 600	ALUMINIUM/CLEAR
w3, w5, w13,	1.2m x 600	ALUMINIUM/CLEAR
w4, w11,	1.2m x 600	ALUMINIUM/CLEAR
w6	4/2.0m x 600	ALUMINIUM/CLEAR
w8	4/900 x 600	ALUMINIUM/CLEAR
w9	1/4.66m x 1.2m	ALUMINIUM/CLEAR
w10	900 x 600	ALUMINIUM/OBSCURE
w12	1.2m x 600	ALUMINIUM/OBSCURE
w17	2/900 x 600	ALUMINIUM/OBSCURE
w20	3.6m X 300	ALUMINIUM/CLEAR

INTERIOR DOOR SCHEDULE:

d3, d4, d5, d6 2.0 x 810 HOLLOW CORE
d9, d10, d12,
d14, d15, d16,
d17.

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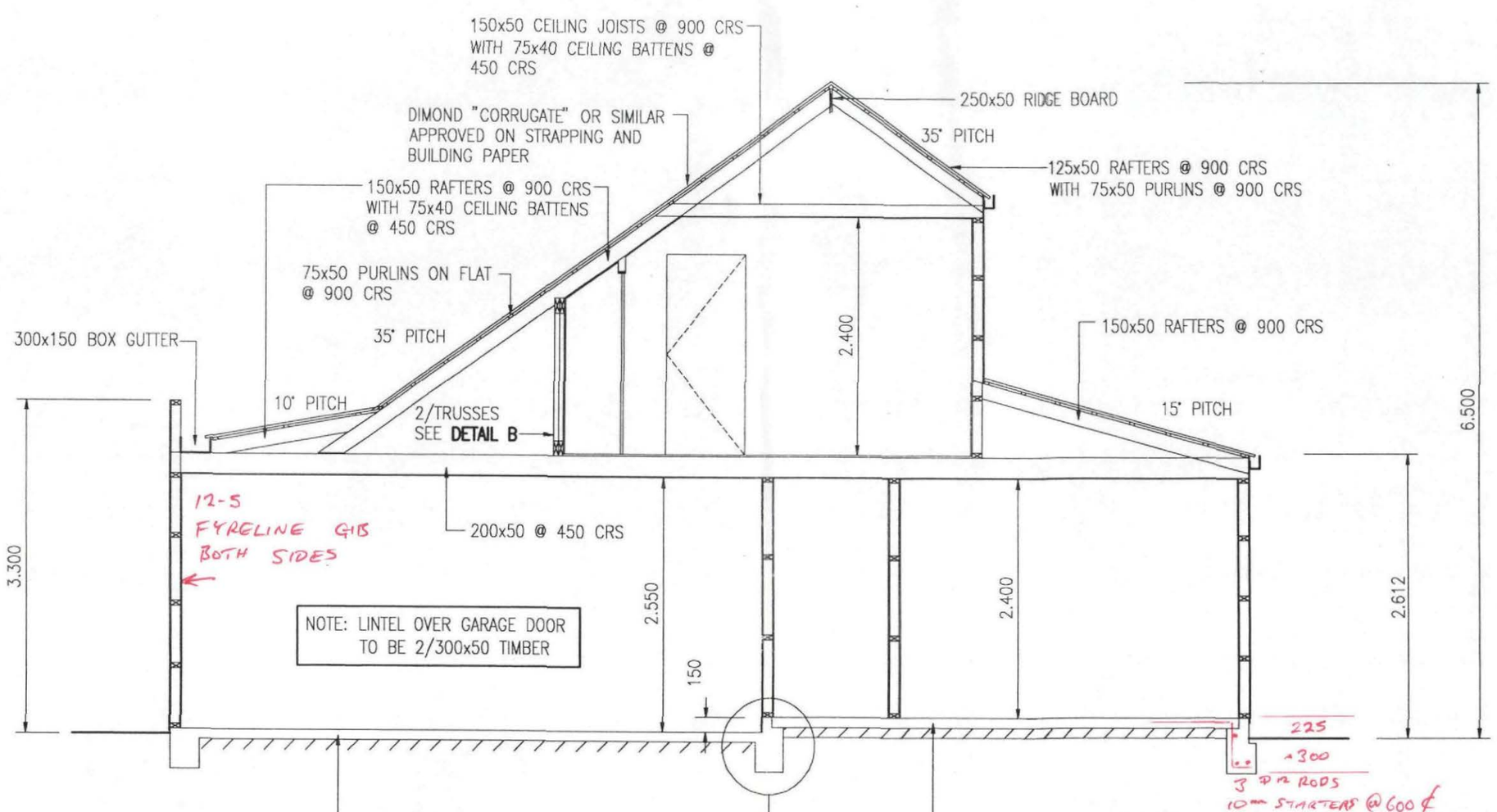
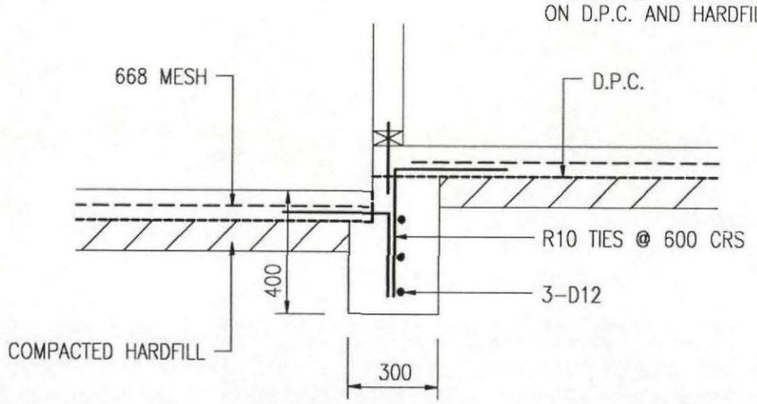
PROJECT
3 BEDROOM TOWNHOUSE
16 McCALLUM STREET
BLENHEIM

SHEET TITLE
ELEVATIONS

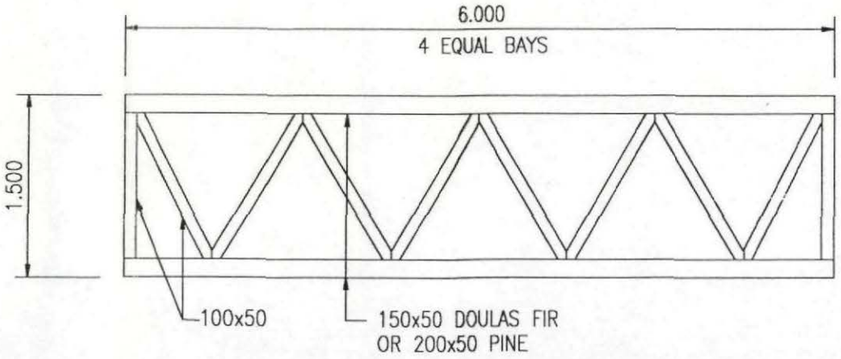
PROJECT No
107

SHEET 4 OF





DETAIL A



DETAIL B

NOTES:
2 TRUSSES SIDE BY SIDE, AND NAILED TOGETHER
FIX FLOOR JOISTS TO TRUSSES WITH JOIST HANGERS
OR CLEATS

NOTES:

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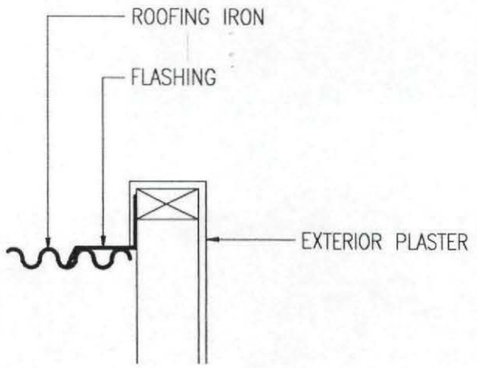
PROJECT
3 BEDROOM TOWNHOUSE
16 McCALLUM STREET
BLENHEIM

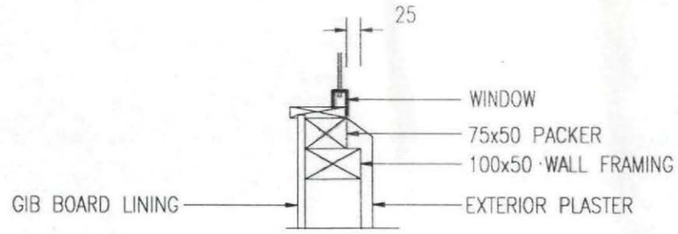
SHEET TITLE
CROSS SECTION 1

PROJECT No
107

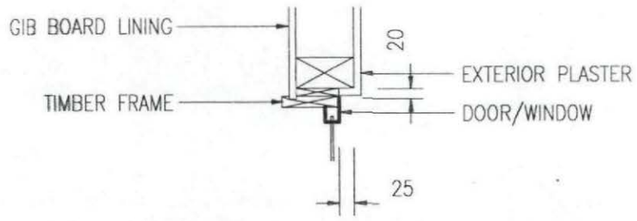
SHEET 5 OF



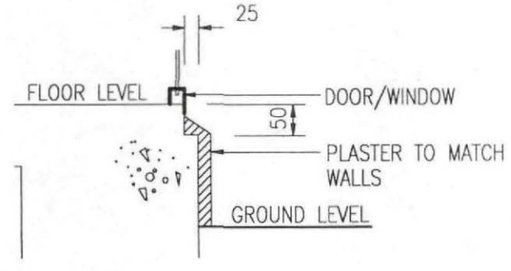
PARAPET DETAIL



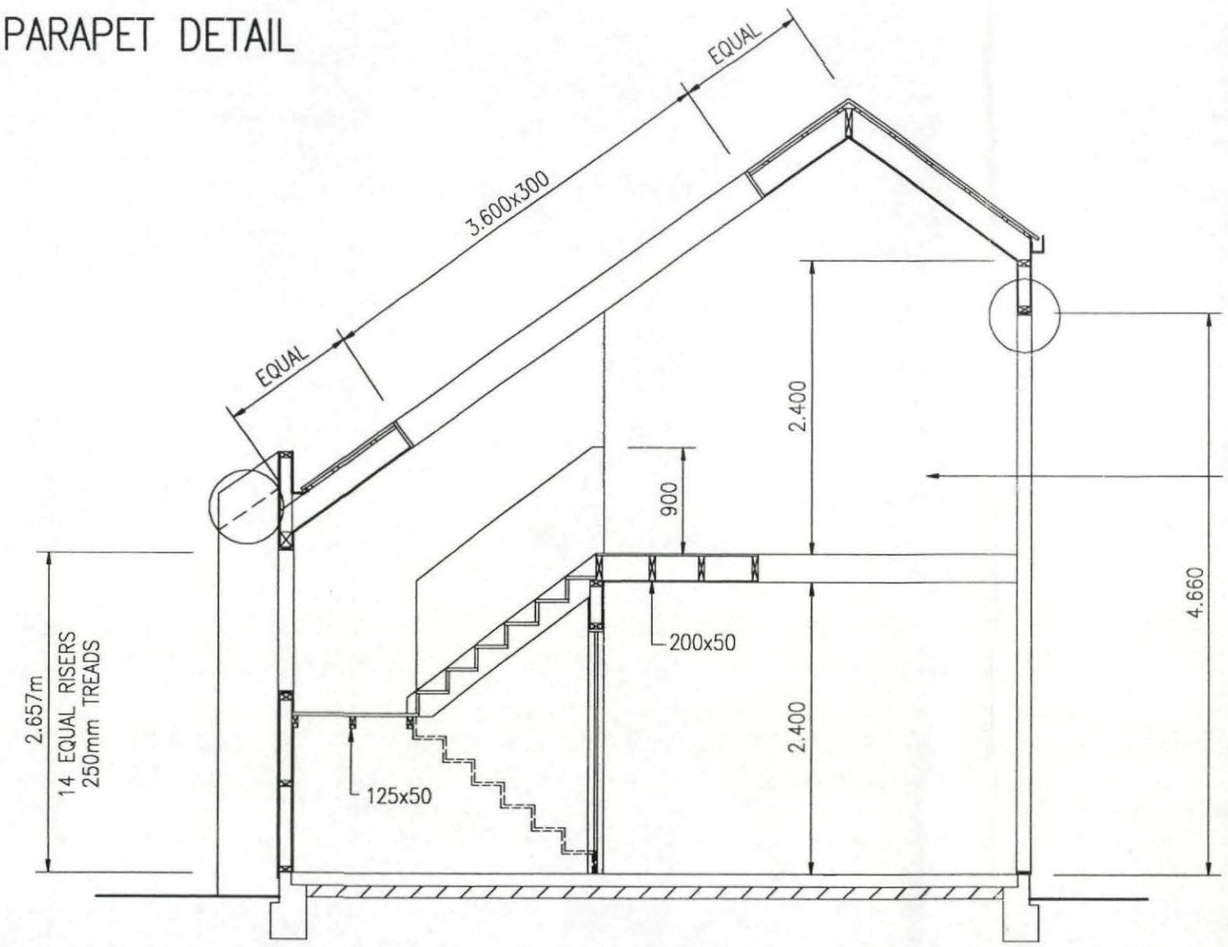
TYPICAL WINDOW SILL RECESS DETAIL



TYPICAL DOOR/WINDOW HEAD AND JAMB RECESS DETAIL



DOOR/WINDOW SILL DETAIL



NOTES AND DIMENSIONS AS FOR SECTION 1 UNLESS NOTED OTHERWISE

NOTES:

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3 BEDROOM TOWNHOUSE
16 McCALLUM STREET
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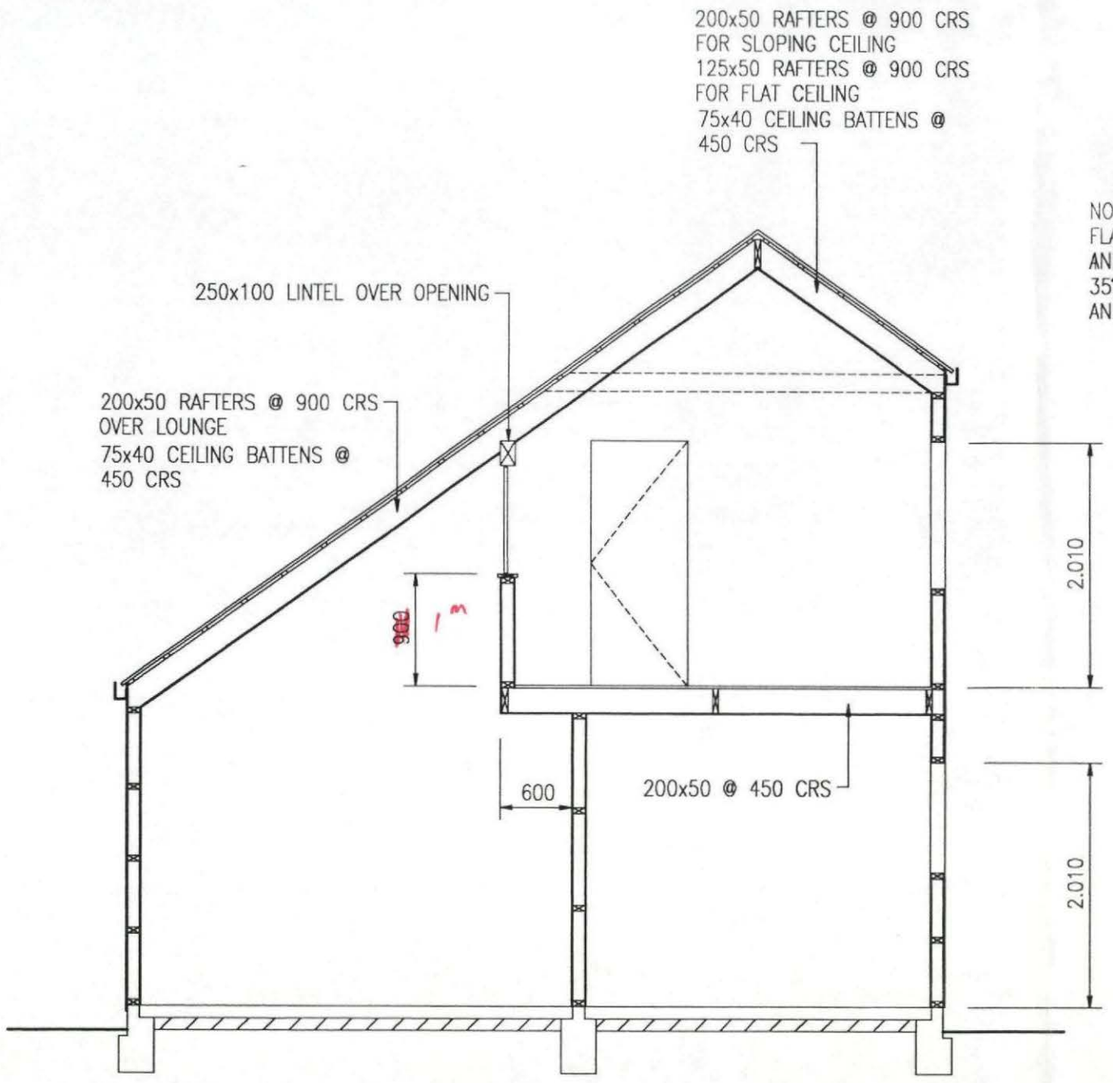
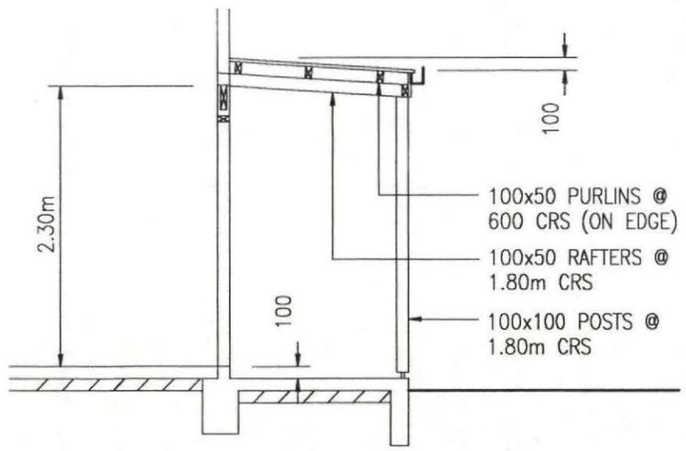
SHEET TITLE
CROSS SECTION 2

PROJECT No 107

SHEET 6 OF



NOTE:
FLAT CEILING OVER BEDROOMS, BATHROOM AND HALL.
35° SLOPING CEILING OVER UPPER LIVING AND VOID



SECTION 3

NOTES AND DIMENSIONS AS FOR SECTION 1
UNLESS NOTED OTHERWISE

SECTION 4

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3 BEDROOM TOWNHOUSE
16 McCALLUM STREET
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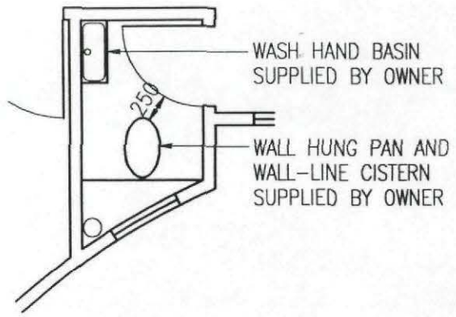
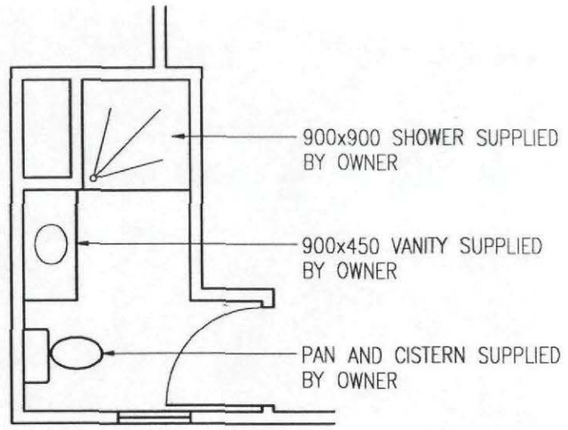
SHEET TITLE
CROSS SECTION 3 & 4

PROJECT No
107

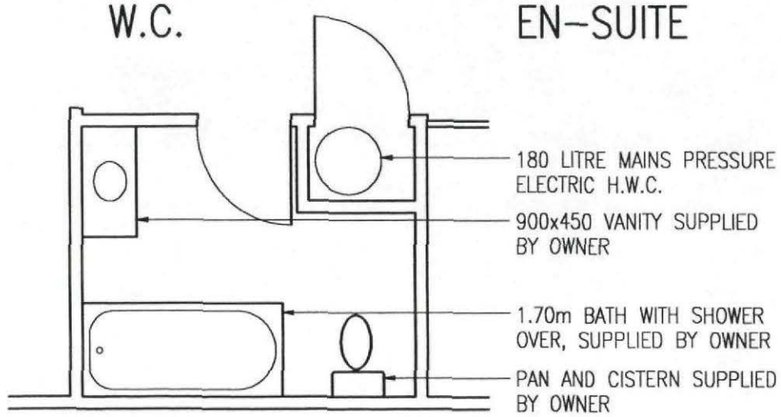
SHEET 7 OF



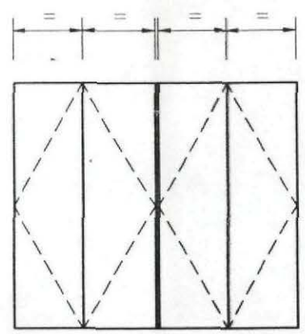


W.C.

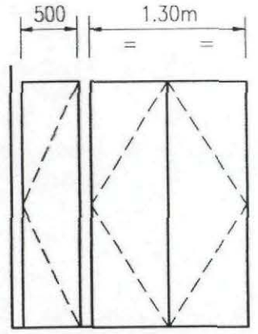
EN-SUITE



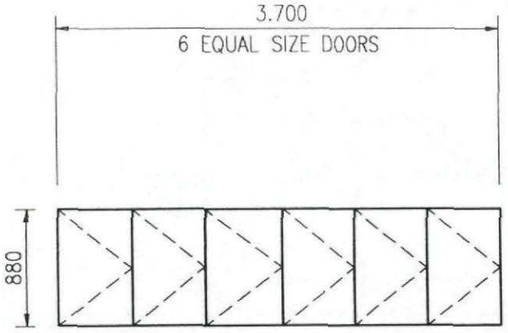
BATHROOM



MASTER BEDROOM – 2.55m x 2.0m
BED 2 – 2.9m x 1.8m
BED 3 – 2.4m x 2.0m
UPSTAIRS CUPB'D – 2.8m x 2.0m

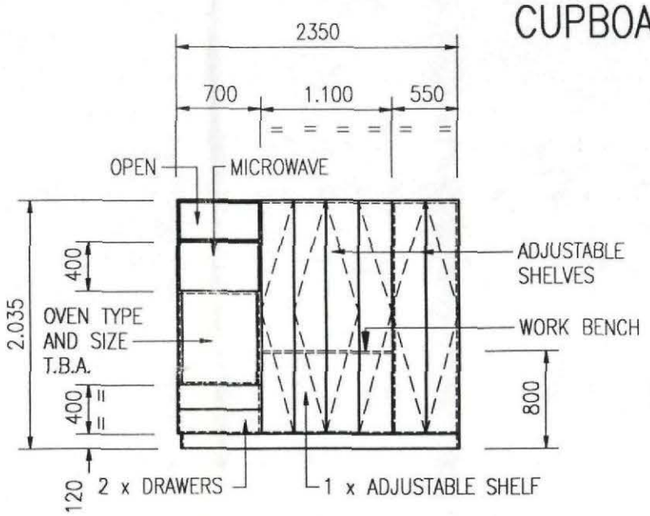


UTILITY CUPB'D

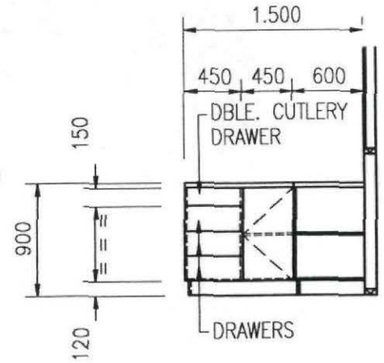


CUPBOARDS/WARDROBES

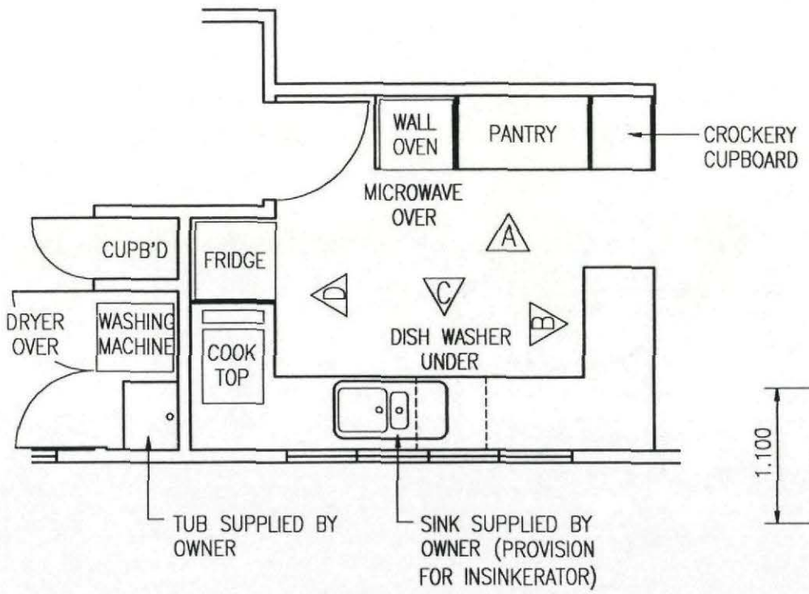
BI-FOLD DOORS
BETWEEN UPPER
AND LOWER LIVING



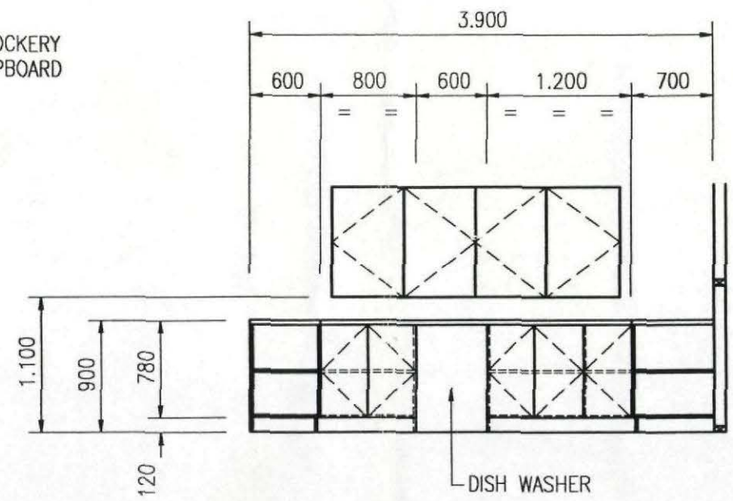
ELEVATION A



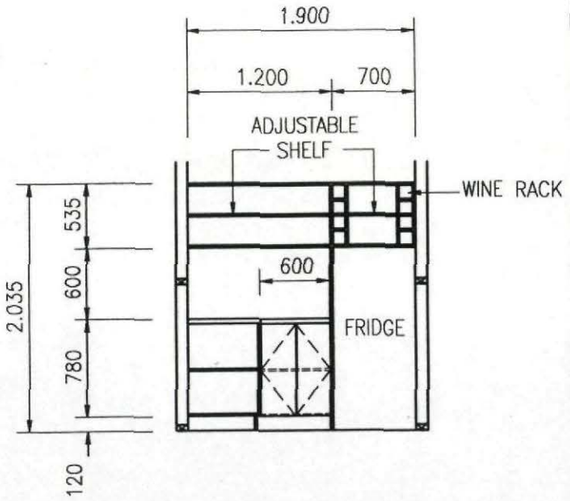
ELEVATION B



KITCHEN



ELEVATION C



ELEVATION D

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16 McCALLUM STREET
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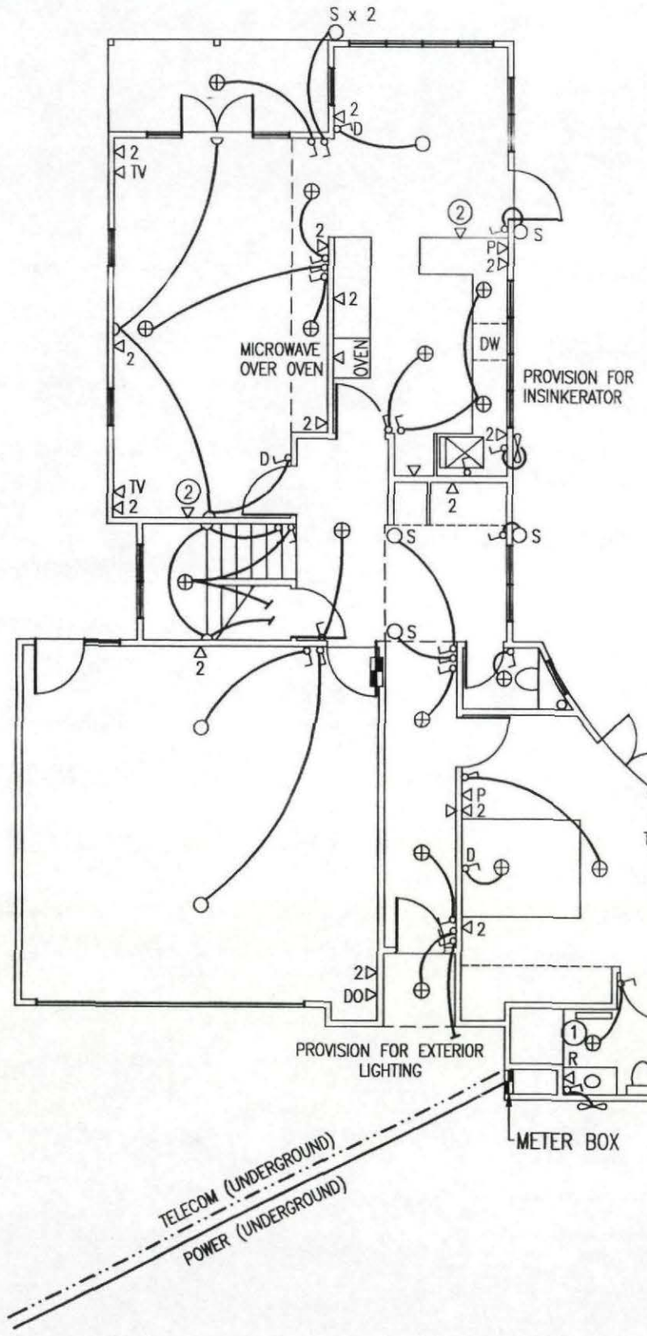
PROJECT
3 BEDROOM TOWNHOUSE
16 McCALLUM STREET
BLENHEIM

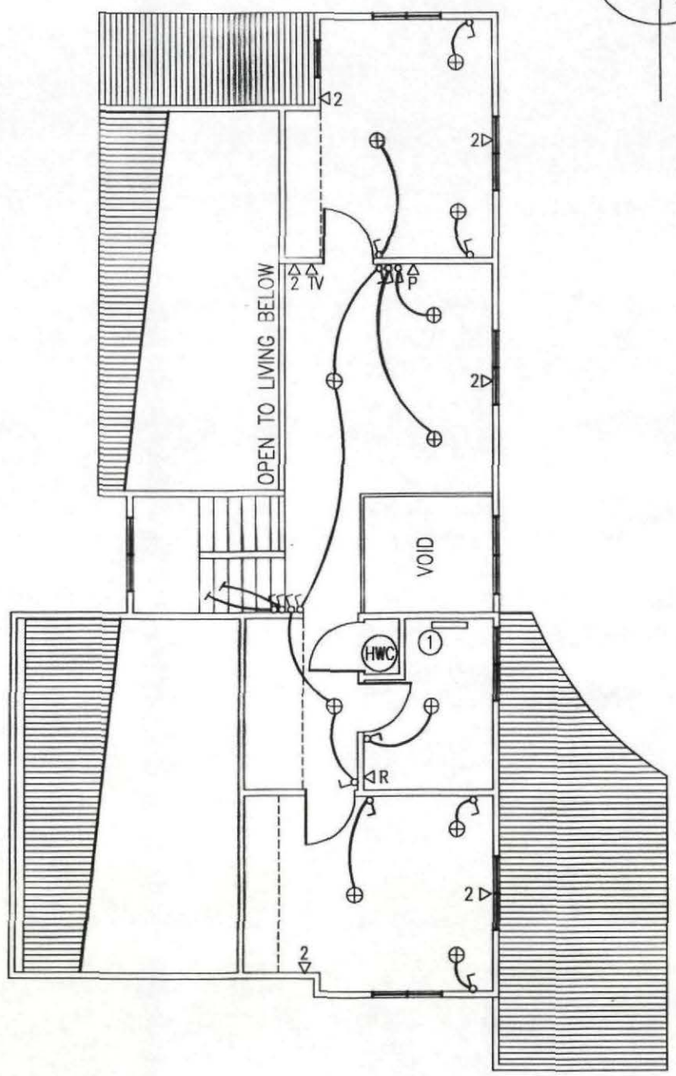
SHEET TITLE
DETAILS

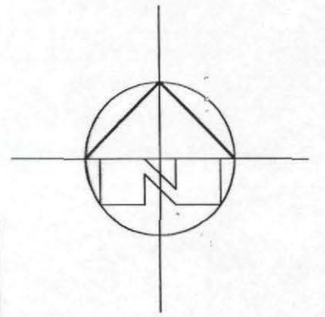
PROJECT No
107
SHEET 8 OF



LEGEND

- DISTRIBUTION BOARD
- LIGHT SWITCH
- D DIMMER LIGHT SWITCH
- POWER POINT
- 2 DOUBLE POWER POINT
- TV T.V. AERIAL SOCKET
- P TELEPHONE SOCKET
- DO GARAGE DOOR OPENER
- R ELECTRIC RAZOR POINT
- (1) PROVISION FOR BATHROOM HEATER
- EXPELAIR (THROUGH WALL)
- RECESSED DOWN LIGHT
- SUSPENDED LIGHT
- S SPOT LIGHT
- WALL LIGHT
- (2) PROVISION FOR ELECTRIC HEATING – REFER OWNER





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PROJECT
3 BEDROOM TOWNHOUSE
16 McCALLUM STREET
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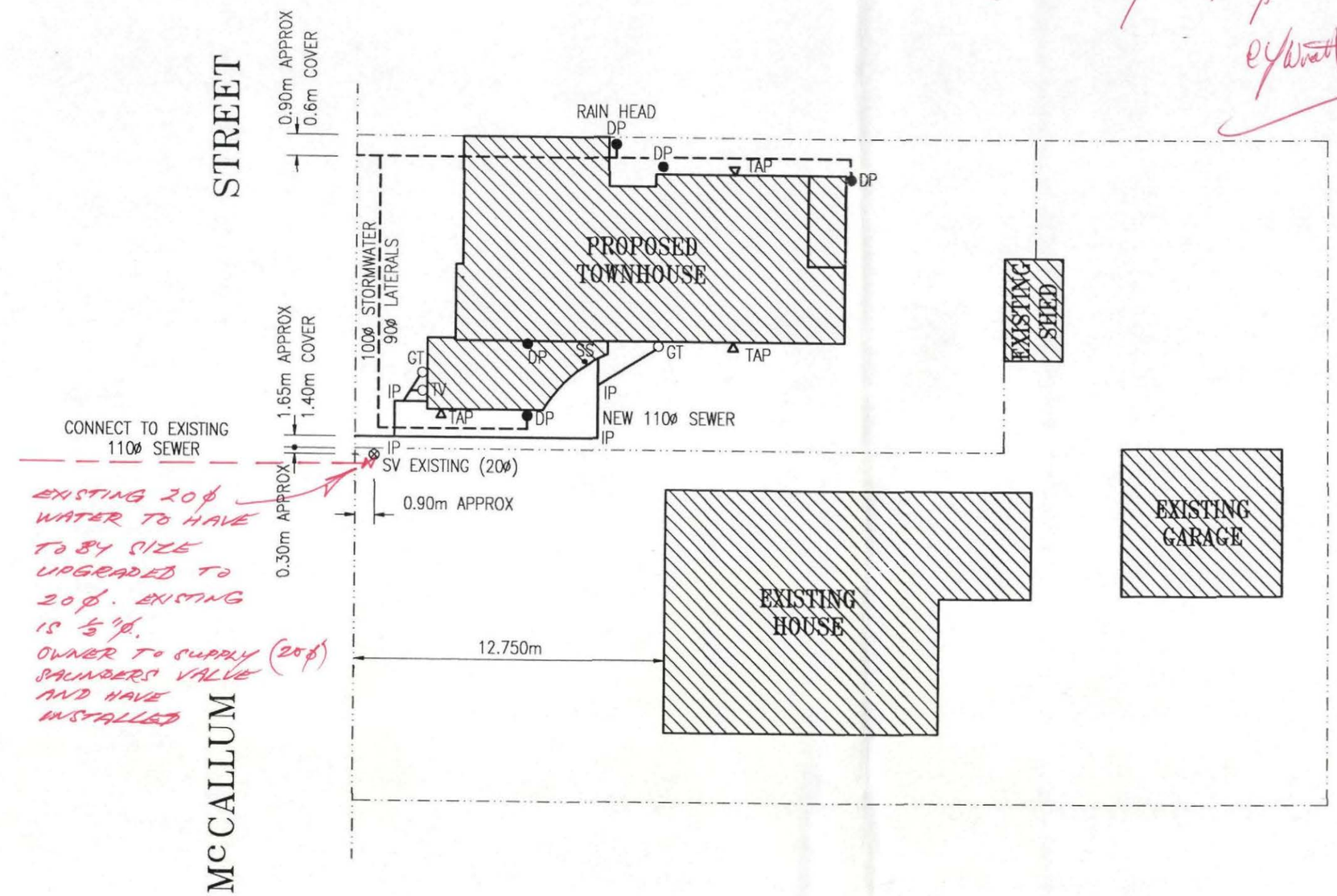
SHEET TITLE
ELECTRICAL LAYOUT PLAN

PROJECT No
107

SHEET 9 OF

Note:- 100ø Stormwater to existing dwelling and accessory buildings.



NOTES:

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3 BEDROOM TOWNHOUSE
16 McCALLUM STREET
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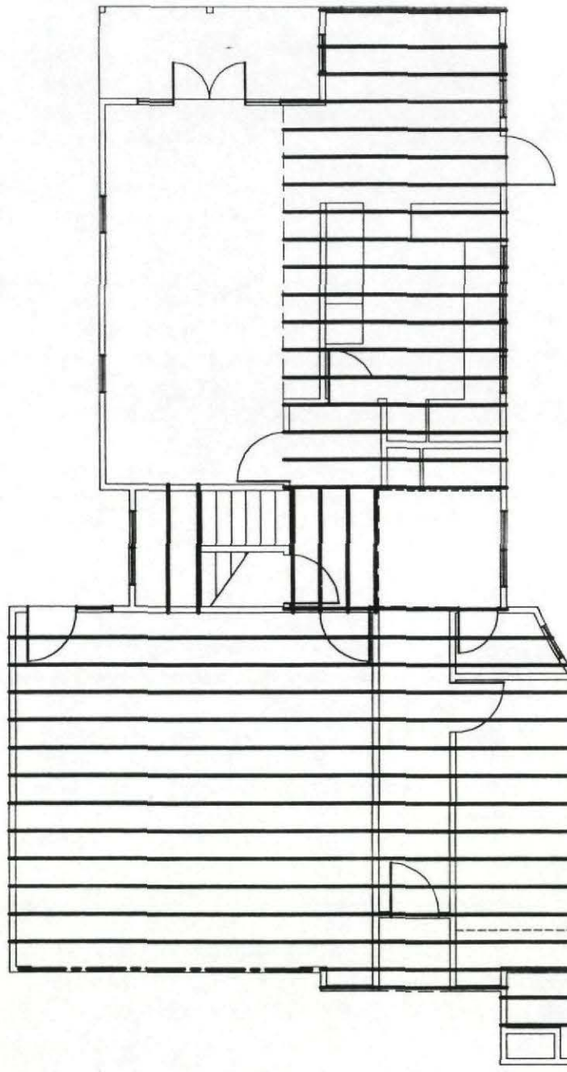
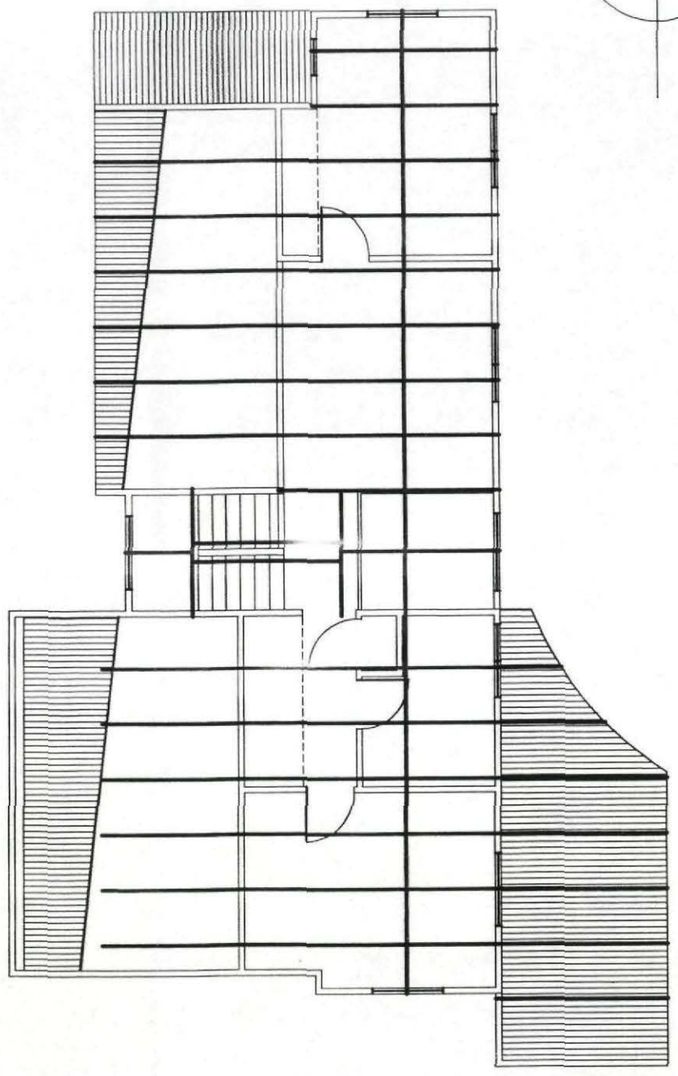
SHEET TITLE
DRAINAGE PLAN

PROJECT No
107

SHEET 10 OF



FIRST FLOOR FRAMING



RAFTERS

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PROJECT
3 BEDROOM TOWNHOUSE
16 McCALLUM STREET
BLENHEIM

SHEET TITLE
FRAMING LAYOUT

PROJECT No
107

SHEET 11 OF

ATTN JOHN McELWANE

GANG-NAIL NZ LTD

TIMBER ENGINEERING CONSULTANTS DIVISION

DESIGN CERTIFICATE

I, Stephen Anthony Coll, hereby certify that I have personally supervised the design of items from the job titled

Parallel Chord Truss

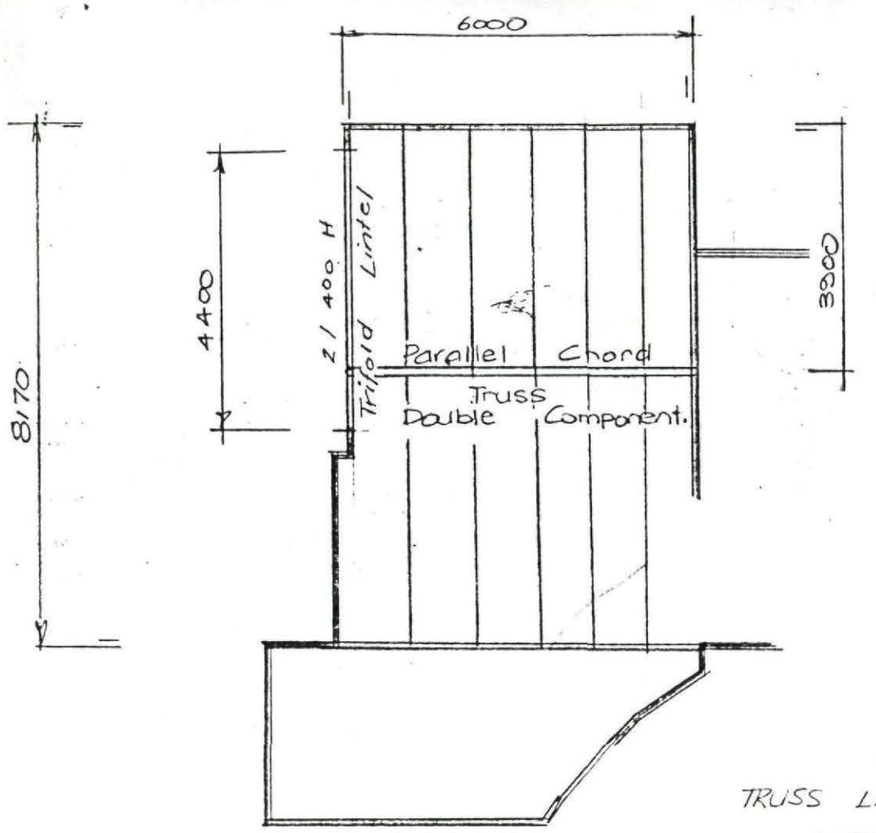
as shown on Drawing No. CH 5170A *Sheet(s)* 1 *inclusive.*

I certify that they have been designed in accordance with sound and widely accepted engineering principles, and that they comply with the relevant requirements of

New Zealand Building Code, NZS 3603, NZS 4203, TPI 85

Signature Stephen Coll *Professional Qualifications: N.Z.C.E. Assoc. I.P.E.N.Z.*

For and on behalf of Timber Engineering Consultants *Date:* 23·11·93

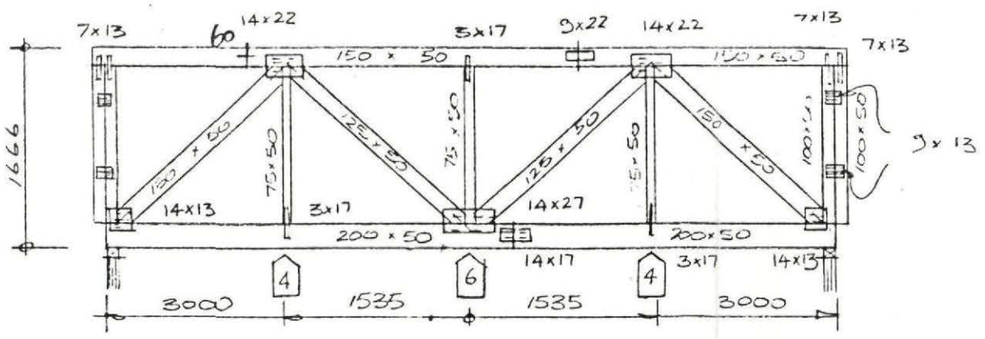


TRUSS LAYOUT
1:100

Notes.

1. Confirm all dimensions with builder prior to fabrication.
2. All details are to Gang Nail manual
3. All other details are to NZS 3604 : 1990.
4. Truss Stability assumed to be provided by ceiling & roof system.
5. Trifold Lintel installed as per manual.

5.85 kN/m
on top & bottom chords.



PARALLEL CHORD TRUSS
DOUBLE COMPONENT
1:50

Note.

1. Fix truss together with 90 mm nails @ 150 ctrs on top & bottom chords (one side only)

GENERAL NOTES

1) DIMENSIONS — the dimensions given have been taken from information supplied by the client. Due to the possibility of variation, error, inadequacy in the original instructions or otherwise, Timber Engineering Consultants cannot accept responsibility for dimensions.

The contractor must confirm all dimensions with the Component Fabricator at the time of placing this order. All dimensions must be checked.

Dimensions marked with "*" have been estimated and should be checked with extra care.

2) TEC Client:

Client's Reference Drawings:

The contractor must confirm that the reference drawings are current at the time of placing this order. Revisions will be made to Timber Engineering Consultants design on request.

3) Timber Engineering Consultants' Reference Drawings:

4) Construct generally as shown in the standard manual. TEC accepts no responsibility for the supervision or construction of items shown on this drawing.

5) Recommended camber shown ☐ in mm.

6) ERECTION — proper erection bracing must be installed to hold the components true and plumb and in a safe condition until the permanent bracing is fixed. All permanent bracing and fixings must be installed before applying any loads.

7) COPYRIGHT — These drawings are the property of Timber Engineering Consultants and are to be used only in connection with the performance of work by registered Component Fabricators.

These drawings must not be copied or reproduced without the written permission of Timber Engineering Consultants.

The loads and data below have been used by Timber Engineering Consultants to *prepare these drawings. The loads are in general accordance with NZS 4203. It is* the responsibility of the user to check that the design loads and data are still correct at the time of fabrication.

DESIGN LOADS:

	Top Chord kPa	Bottom Chord kPa
Live Load Lu	0.25	—
Dead Load D	0.25	0.20

Wind Load q = 0.54 kPa
Cpi = 0.80
Cpe = 0.36
Seismic Coefficient Cd = —
Snow Load S = ... kPa

DESIGN DATA:

Span = 6000
Pitch = 0°
Truss Centres = As shown

Roof Material = Iron
Ceiling Material = Gib
Purlin Size = to suit
Purlin Spacing = ...

TIMBER:

The specifications for timber shall be as follows unless stated otherwise:

Grading: The timber shall be machine graded No.1 Framing Grade Radiata Pine, or Standard Building Grade Douglas Fir.

Moisture Content: Green.

Treatment: TPA Specification H1

REV	DATE	DETAILS OF REVISION	BY	CHECKED
A	23.11	Trifold Lintel added	SJG	SJC

GANG-NAIL - LUMBERLOK
designed by
TIMBER ENGINEERING CONSULTANTS
Auckland Office: 3-5 Edmiston Drive, East Tamaki, P.O. Box 36-244, East Tamaki, Phone: (09) 274 7109
Christchurch Office: P.O. Box 8367 Christchurch, Phone: (03) 488 891

JOB TITLE: PARALLEL CHORD TRUSS
303618 Broughton's Job

SHEET TITLE: TRUSS LAYOUT
DRAWING No.: CH 5170A
DATE: NOV 93 | DESIGNED: SJC | CHECKED: SJC | SHEET 1 OF 1
SCALE: 1:5 @ A1 | DRAWN: SJC | CERTIFIED: SJC | CLIENT: FIO

Producer Statement 1997
Second draft for comment

RECEIVED
28 JUL 1993
MARLBOROUGH DISTRICT COUNCIL

ACENZ
NZIA
IPENZ
LOGO

05.08.93 - Printed doc
P.I.M. No.
Building Regulation Clause

PRODUCER STATEMENT - DESIGN

(Guidance notes on the use of this form are printed on the reverse side)

ISSUED BY: Donald M Cromarty
(Suitably qualified Design Professional)

TO: J Broughton
(Owner)

IN RESPECT OF: Proposed Town House.
(Description of Building Work)

AT: 16 Mc Callum St.
(Address)

LOT 2 DP 3692 SO

Dm Cromarty has been engaged by Owner
(Design Firm) (Owner/~~Developer/Contractor~~)

to provide Design parallel chord truss plus lintel over garage door. services in respect
(Extent of Engagement)

requirements of Clause(s) B1 & B2 of the Building Regulations 1992 for

☐ All ☑ Part only as specified

of the building work. The design has been prepared in accordance with B1/VM1 B2/VM1
(verification method/acceptable solution)

of the approved documents issued by the Building Industry Authority and the work is described on

Colin Baster design drawings titled 3 bedroom town-house. 16 McCallum St Blenheim
(Design Firm)

and numbered project 1of1 Sheets 1 - 11 and the specification and other documents according to what building is proposed to be constructed.

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

(i) the verification of the following design assumptions All roof plates to be on at equivalent between truss chords & diags. Shd on end each.

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.

Dm Cromarty Date 21.07.93
(Signature suitably qualified Design Professional)

BE Hons
(Professional Qualifications)

ERA/AERB Reg No. 3738

165A Budges St Bl
(Address)

Member ACENZ ☐
IPENZ ☑ ☐ NZIA

SPECIFICATION OF WORK AND MATERIALS

REQUIRED IN THE ERECTION OF

A three bedroomed townhouse with double garaging at 16 McCallum St. Blenheim.

A. GENERAL

1. The Work

The building is constructed of solid plaster on concrete with concrete building piles onto timber framing with long run iron roofing.

Also the construction of all cabinets, interior and exterior joinery, the fixing of all linings, and the installation of all services. The Contractor shall provide all labour,* materials, tools, plant etc, pay all dues, obtain all permits, and generally complete the building in the best trade manner, in accordance with the accompanying drawings and this specification, taken collectively or separately.
The Contractor shall ensure that materials and workmanship shall comply to the latest relevant N Z Standard Specification.

* See page 9.

2. Bylaws

The Contractor shall conform in all respects to the Bylaws of all or any local authority having jurisdiction over the work, and be responsible for all damage to private or public property occasioned by the work.

3. Sub-Contractors

This specification is divided into trade sections for the convenience of reference only, and every trade jointly and severally shall assist and render all necessary assistance to complementary trade.

4. Site

The Contractor shall visit the site before tendering to satisfy himself regarding access, levels, etc and the conditions generally, as no extra will be allowed under this heading for insufficient or wrong description.

5. Setting Out

The Contractor shall be held responsible for the setting out of the work and he shall be required to make good at his own expense, any error which may occur. Figure dimensions are to be taken in preference to scaled ones, and all measurements shall be verified on site before work commences.

6. Availability of Materials

Should any of the materials specified for this contract be unprocurable, or be prohibited by any Government Regulations, negotiations shall be made for the provisions of substitutes, to the approval of the Owner. Any price difference due to this must be agreed upon by the owner before the respective work is commenced.

7. Prime Cost Sum

The Owner reserves the right to purchase items under the PC Sum, and the accounts will be adjusted on completion of the Contract.

8. Completion

At regular periods during building, and on completion of this contract, the Contractor shall remove debris which may accumulate, and leave the site and building clean and ready for use. All floors shall be left broom clean, and all glass work sound and clean inside and out, all painted or stained work shall be left free from spoil or dirt. All wooden floors must be sanded up to the skirtings with a machine sander.

9. All materials will be supplied by the owner unless otherwise agreed. or it can be demonstrated by the subcontractor that they can supply at a lower/reasonable rate. Accordingly please itemise all quotations and seperate the material and labour content.

B. EXCAVATIONS

1. Excavate

   Excavate as required for foundation walls, footings, drainage pipes, etc where shown and as required to give a solid bearing to the various depths. Surplus spoil shall be placed where directed by the Owner.

2. Back-fill and Ram

   Back-fill and ram carefully around footings, consolidating as the work proceeds, and make up to existing ground level.

3. Hardcore Filling

   Hardcore filling shall be placed under all floor slabs as shown. Filling shall consist of clean river metal, consolidated and levelled off before blinding with clean sand, rolling, and pouring of concrete.

4. Over Excavations

   In the event of the Contractor excavating below the proper level, the Contractor shall fit the parts over-excavated, at his own expense with concrete.

C. CONCRETE

1. Materials and Mix

   The materials and workmanship shall be in accordance with NZS 3101. The concrete shall be ordinary grade, 17.24 mpa, in all foundations, walls, piles, etc as described in the above specification.

2. Foundations and Footings

   All foundations shall rest on solid footings at least 300 mm below adjacent ground level, and shall be constructed as shown on the plans.

3. Reinforcement

   All reinforcement shall comply with NZS 3402 or as shown on the plans. Floor starters of 10 mm at 600 mm cts shall be tied to foundation steel and the reinforcing mesh.

4. Vents

   Vents shall be an approved type set into the foundation wall at not more than 750 mm from any corners or greater than 1.8 m cts.

   Precast concrete or fabricated wire units may be used or in the case of a block or brick veneer, the bottom row of vertical mortar joints shall be left free of mortar.

5. Steelwork

   Allow to build in all holding down bolts, brackets, column bases etc as required for future fittings. Holding down bolts for bottom plates to building perimeter shall be 12 mm dia at 1.4 m cts max and not more than 300 mm from corners.

6. Damp Proof Course

All concrete faces in contact with timber shall be covered with one layer of 3 ply malthoid or other approved damp proof course, with minimum side laps of 75 mm.

7. Concrete Flooring

Shall be minimum of 100 mm thick, reinforced with 668 steel mesh and laid on AHI Moistop, or polythene sheeting properly sealed at all joints and exterior edges. Where water or drainage pipes cut through the polythene, ensure that all holes and chases are properly sealed to the pipes, with sealing tape. Hardcore filling shall be properly consolidated and blinded with sand before laying DPC sheeting.

Garage floor to have upstops with concrete

D. CARPENTER AND JOINER

1. Timber Generally

All timber shall be to the best of its class, free from large loose or dead knots or wavey edges, thicknessed if possible, and well seasoned and dry. All joinery timber shall be heart Rimu, Matai, or Mahogany, and machined timber shall be run dry. Any timber not dry shall be fillet stacked on the site until required.

Framing timbers shall be Douglas Fir or C7 treated Pinus Radiata.

2. Standard Specifications

All timber construction shall be in accordance with NZS 3604.

3. Builders' Ironmongery

The ~~Contractor~~ Owner shall provide all nails, brads, screws, bolts, and other ironmongery required. Nails for flooring shall be 62 mm galv. brads. All interior and exterior finishing work shall be punch nailed.

4. Framing - General

The whole of the framework shall be securely braced as per bracing schedule; 150 x 25 mm on exterior walls, 100 x 50 mm solid bracing throughout, or steel angle bracing. All bracing shall be as near as possible to 45 degrees. Construction ply sheet bracing may be used as directed.

5. Piles

Piles ~~may be~~ 200 x 200 Concrete, 150 x 150 Senton timber piles, or 150 dia round piles, ~~placed~~ centrally in concrete footings, 300 x 300 x 150 mm deep, on solid bearing ~~at~~ least 300 mm below ground level.

6. Sleeper Plates

Sleeper plates shall be ~~securely tied to piles with No. 8 gauge galvanised wire ties stapled with No. 8 staples, or strap nail plates over bearers and fixing at least 200 mm down timber pile each side. All joints shall be over a pile and shall be diagonally halved with strap nail plates both sides.~~

7. Floor Joists

Floor joists to be 200 x 50 @ 450 CS.
If using a prelaid floor, max distance between joist and bearing wall shall not be greater than 200 mm.

8. Top Wall Plates

Shall be 100 x 50 mm in long lengths for stud spacing of 450 max cts halved together at all joints and angles, or joined with a nail plate on top face. 100 x 75, or 100 x 50 + 150 x 40 shall be used for stud spacing of 600 mm max.

9. Studs

Studs shall be 100 x 50 mm and cut to make 2450 mm between floor and ceiling battens. Opening studs to be 100 x 75 mm. Studs to be spaced at not more than 600 mm centres, and double studs to receive trimmers. Take all wall framing to an even width. Trim for all openings.

10. Ceiling Battens

Shall be 25 x 40 and to be fixed at centres to suit linings, to underside of trusses or joists, and fixed also to 150 x 40 top plate packer.

11. Ceiling Runners

All rooms over 2.4 m wide to have 150 x 50 mm on edge over centre of room. This to be fixed to top side of joists.

Over 3.0 m to be 200 x 50 mm, over 3.6 m to be 250 x 50 mm, over 4.5 m to be 300 x 50 mm. To be used only where ceiling joists replace trusses.

12. Lintel Beams

Shall be to the following sizes :

Opening width	Lintel size Roof load only
Up to 1.5 m	125 x 100 mm
1.6 to 1.8 m	150 x 100 mm
1.9 to 2.4 m	200 x 100 mm
2.5 to 3.0 m	250 x 100 mm
3.1 to 3.6 m	300 x 100 mm

Lintels to be supported on a 100 x 50 stud, with an additional stud full height of wall framing fixed to end of lintels.

13. Roof Framing

(a) Standard Roof

Rafters shall be As shown on drawings and purlins shall be As shown on drgs. Pitch of roof to be shown at As shown on drgs.

~~(b) Sloping Rafters~~

Exposed rafters shall be fully supported on the ridge beam, ~~fixed by skew nailing to sides and 360 long strap nail plate on top from rafter to rafter.~~ Fixing to top wall plate shall be multigrip plates both sides.

Non-exposed rafters shall be fully supported on top of ridge beam, or by joist hangers fixed to side of beam. Fixing to framing by multigrip plates to top wall plate.

~~(c) Exposed Beams~~

Beams shall be across the room supporting the rafters or floor joists ~~and fixed into the wall framing by double studs under the beams.~~

(d) Ridge Beams

Ridge beams shall be 350 x 50 spanning across the room and fixed at each end, by double studs or nail plates and dwangs fixed to the framing.

(e) Flitch Beams

Flitch beam shall consist of with a steel sandwich of steel plate , all bolted together with 12 mm dia. bolts at 300 mm cts offset. See addenda sheet supplies with this specification.

(f) Trusses

Shall be ex 100 x 50 mm timber members, fixed together to design supplied by Nail Plate Manufacturer. With 150x50 DF on 200x50 Plates top and bottom cords
Trusses shall be positioned ~~at 900 mm max cts~~. as shown on the drawings.

(g) Purlins

Purlins shall be 75 x 50 @ 900 cts.
Tile Battens shall be
Pitch of roof shall be 35°, 15° over Master bedroom & ensuite. Nominal pitch on garage & part flutter style roof/carport ~ 10°

14. Roof Bracing for Corrugate style

All lap ends or gable ends to roof, shall be braced back to top plateline to resist horizontal loads in roof plane. See clause 10.4 in NZS 3604.

15. Dwangs

All walls shall be dwanged with 100 mm x 50 mm solid dwangs at nor more than 800 mm cts, or to suit linings: (2 rows dwangs internal walls 3 rows exterior walls.)
All first floor joists shall be solid block dwanged at centre span, to all rooms where span exceeds 2.4 metres. Dwangs. 800 cts & 600 cts respectively.

16. Flooring

Concrete floors shall be as specified under Section C 6.
Wooden floors shall be 20 mm H.D. Particle board laid and fixed to manufacturer's specifications.

17. Insulation

Shall be to standards laid down by the Local Authority. Generally it shall be R 2.2 batts to all ceilings.
R 1.6 batts to all exterior walls, and under wooden floors shall be double -sided sizalation.

~~18.~~ Fire Rated linings for Buildings

(a) Basements (Garages only)

Line ceiling of basement with one layer 12 mm Gibraltar board for ½ hr f.r.r.

(b) Garage on same level

Line wall between house and garage with one layer of 12 mm Gibraltar board both sides for ½ hr f.r.r. Line ceiling or take dividing wall fire rating to U/S of roofing iron with 12 mm gibraltar board for the same rating.

(c) Doors

All doors from garage to dwelling shall be type B smoke stop doors for ½ hr f.r.r.

(d) Boundary walls for garages

Walls of garages on property boundary shall be clad with one layer 16 mm "Fireline" gibraltar board both sides of wall framing, for one hour f.r.r.

19. Joinery

All joinery must be constructed according to the best joinery practice, by mortice and tenon, tongue and groove, mitres, screwed corners, etc. All exposed nailing shall be well punched.

(a) Windows

Aluminium windows shall be constructed by an approved manufacturer, to the sizes and styles shown.

Colour Reveals Loaded.

Wooden windows shall beconstructed by a tradesman using cedar or white pine sashes, and Rimu or treated pine frames.

(b) Doors and Frames

Aluminium sliders and/or sidelights as shown.
Front entry Loaded - Aluminium frame.
Rear entry Aluminium
Interior Doors Loaded
Wardrobe doors Loaded
Linen cupboard doors Loaded

(c) Joinery Fixtures

Bathroom - En suite Vanity units.
Kitchen - Cupboards, benches, drawers, shelves as detailed on sheet 8.

20. Staircase

Closed type - to be constructed with 250 x 50 stringers, 250 x 30 treads and x 25 risers. Treads and risers shall be housed 15 mm; glued, wedged and glue blocked to the stringers.

~~Open type - to be constructed with 250 x 50 mm stringers, 250 x 40 mm~~ treads and open risers.

Supply handrails ex 75 x 50 mm bevelled and rounded to one side of each flight of stairs.

E. ROOFER

Long run corrugated or tremlit style.
Layed & fastened in approved manner over suitable building paper.

F. DRAINAGE

1. Materials

   Provide and fix all materials which must be in accordance with the best trade practice and with the specification of the Local Authority and Health Department.

2. Excavate

   Excavate all trenches required for drains and fittings to the depth required, and the laying of sanitation and stormwater drains shall conform with Sanitary and Drainage Bylaws. 1978/127.

3. Stormwater Connection

   From each downpipe gully, collect all stormwater into 90 mm PVC pipe and discharge at roadside into pipe laid under footpath, or into stormwater soak pits as shown on the drainage plan.

   90mm laterals 100mm kyan

4. Sewer Connection

   Connect up all foul sewerage drains in 110 mm PVC to the main sewer in the road or to an approved-type septic tank and soakage drain as shown.

5. Completion and Testing

   On completion of the whole of the drainage, to be handed over in thorough working order, according to the Health Department's requirements and the local Bylaws, to the satisfaction of Inspectors.

G. PLASTERER

1. Materials

   Cement and water shall be as specified under Concrete. Sand shall be hard and sharp and free from salt, soil or other deleterious materials.

2. Porches and Steps and Terraces

   All porches, steps, terraces, shall be thoroughly cleaned, hacked, washed with water, and rendered and straightened with 1:3 Portland Cement sand compo not less than 19 mm thick and finished with a steel float to a perfect smooth, straight, and even surface. Floors may be finished by a steel float during the main concrete pour.

3. Finish (Interior)

   Point up and flush off interior plaster board sheets after all sheets are properly secured, and finish to a perfectly smooth and even surface.

4. Exterior Finish

   Plaster and splatter-coat finish to the external ~~faces of~~ walls.

5 Exterior to be applied as per Jpsco Technical Bulletin TM-101 1/6/8
Ensure silicon sealant is applied around all window and door openings.

6 Ensure all plasterwork to exterior opening is suitably gasked off or cleaned so that plaster does not set on jamb. Put plaster bead detailed as required with arrow.

7. Window/door sill, jamb & head details on sheet 6.
Note doors & windows are recessed 25mm from face of wall studs.

H. PLUMBER

1. Materials

   All materials used by the plumber shall be to the best of their several kinds and must fully conform to all or any governing regulations or Bylaws.

2. Flashings

   All flashings made from flat galvanised steel sheeting to be neatly executed in as long lengths as possible, joints lapped and soldered, back edges beaded or folded 12 mm.
   Butynol rubber sheeting may be used for flashings.

3. Downpipes PVC.

4. Spouting Metal - square profile.

5. Waste Pipes

   Carry waste pipes in PVC from all fittings with proper "S" waste traps, fittings, etc as required. Conceal wastes and traps wherever possible and all pipes shall have correct fall to discharge waste fluids to gully traps. Wastes, to be 38 mm dia. except for wash hand basins which shall be 32 mm dia.

6. Vents

   Terminal vent shall be 75 mm dia. PVC pipe with PVC cowl at top flashed at roof with lead, or butynol rubber.

7. Cold Water Supply

   Shall be run in 12 mm or 19 mm dia. piping as required, to all services shown.

8. Hot Water Supply

   Shall be run in 12 mm or 19 mm dia. piping as required, to all services shown.

9. ~~Supply and~~ Fit Up ready for Use

   / Bath with shower over. } Upper Bathroom
   / 900 mm Vanity
   / pan & cistern
   / 180L Lyons pressure HW cylinder with recessed valves.

   / Wall hung pan & wall line cistern. } Downstairs toilet.
   / Hand basin

   / Shower unit. } Ensuite.
   / 900 mm Vanity
   / pan & cistern.

   / Laundry tub with over flow system & separate outlet for washing machine. } Laundry

   / Sink unit with provision for waste disposal unit and dishwasher under. } Kitchen

I. BLOCK LAYER/BRICKLAYER

1. Materials

2. Mortar

All mortar used for brick/blocklaying shall be composed of one part lime to four parts of sand, well mixed and allowed to slake for at least 48 hours before being gauged with one part of cement to four parts of lime mortar. No mortar that has been allowed to become "dead" or set shall be used in the work.

3. Workmanship

The work must be carried up in even height using stretcher bond and angles and intersections shall be properly bonded, not more than 10 mm thick. The blocks shall be perfectly dry before use, and all required openings and chases shall be provided for as indicated on the plans.

4. Wall Ties

Veneer walls shall be secured to wall framing with galv. wall ties, set into mortar and fastened to framing with 38 mm galvanised flat-headed nails. They shall be at 8-10 ties per square metre, fastened to every stud.

5. Window and Door Frames

Where blockwork finishes against wooden door frames, there shall be placed a 19 mm quad sealed with a selastic compound to prevent water entry behind block work.

6. Cavity Wall Vermin Proofing

Strips of 6 mm by 19 g galvanised mesh approximately 100 mm wide shall be secured to the bottom plate with galvanised staples and carried across and built into blockwork on top of first course.

J. EXTERNAL FINISHING

1. Barge and Fascia Boards

Barge and Fascia Boards shall be of 150 x 32 Treated Pinus Radiata dressed and grooved to take soffit linings. Barge boards shall be fitted in long lengths, grooved at all angles and angle cut at any joints. All joints shall be primed with an approved red lead paint and all nailing shall be well punched.

2. Fascia Gutter

3. Soffit Lining

Soffit shall be lined with 5 mm hardiflex sheet nailed to dwangs and framing with 38 mm galvanised flathead nails. Against wall all joints shall be finished with 38 mm scotia; all butt joints with PVC jointers.

4. Linings

Solid plaster over Bonnel with building paper.

K. INTERIOR LININGS

1. Ceilings 9.5mm Gib Board.

2. Walls 9.5mm Gib Board.

3. Mouldings
   (a) Scotia Where specified by owner
   (b) Architraves
   (c) Skirtings Bevelled top - match doors/jambs.

L. GLAZIER

1. Materials

   All glass shall be best quality and free from all defects. Where glass is bedded in putty, it shall be well bedded, sprigged and face puttied. Aluminium frames shall be sealed by using neoprene glazing wedges. Obscure glass shall be used in Bathroom, Ensuite and downstairs toilet.

M. SUNDRIES

N. ELECTRICIAN

1. Materials

Materials used by the electrician shall conform to the regulations of the Electric Power Supply Authority. The electrician shall provide all materials necessary for the completion of the work, which shall be carried out in compliance with the appropriate regulations.

Wiring shall be done with a tough plastic sheathed and insulated cable, and shall be concealed from view where possible.

2. Lighting

Wire up and provide the fittings as detailed on the plan.

28 Interior ceiling lights. 2 Exterior ceiling lights.
5 Interior wall lights. — Exterior wall lights.
2 Interior spot lights. 3 Exterior spots. (2 single / 1 double).

All ceiling roses be centrally situated generally, unless shown otherwise, and switches where indicated, 1350 mm above floor level. Use ivory flush mounted switches, and owner to choose light fittings.

Allow PC sum $ for light fittings.

3. Heat Points

Heat points shall be provided as shown on the plan, and shall be generally 300 mm from floor level, except for washing machine, fridge and kitchen benches.

Number of heat points shall be 3 single, 21 double.
Shaving point in bathroom shall be 2. with earth leak breaker in system.

4. Underfloor Heating

5. Range or Oven all over — seperate hob. — electric.

6. Point of Entry

Provide a switchboard where shown built in to the wall, and run a mains cable from road to house. Telecom cable to be laid at the same time in the same trench.

7. Hot Water Cylinder

Shall be wired into night rate control. Cylinder to have thermostat
2,000 watt element for 180 litres.
2,500 watt element for 270 litres.

8. Test and Completion

The electrician shall provide for all tests prescribed by the Power Board, and hand over the whole work completed, passed and sealed by them.

O. PAINTER AND PAPERHANGER

1. Materials

All materials used shall be the best of their respective kind, and all surfaces to be painted shall be protected from weather, cleaned and free from dust or dirt.

Surfaces to be all prepared, shall be properly cleaned and treated with size to allow 100% bonding of paper to walls.

2. Exterior Work

(a) Woodwork

Prime all exterior woodwork with an approved red lead or general purpose primer, including all laps. Apply two coats of approved undercoat, and finish with one coat of approved exterior enamel.

(b) Steelwork

Spoutings, downpipes, flashings, pipework etc shall be primed with galvanised iron primer.
After priming and undercoats, finish with one coat of exterior enamel.

(c) Fibrolite

Seal with cement sealer, then apply undercoat and finish with one coat of exterior plastic paint, or two coats of acrylic paint may be used.

(d) Stained Woodwork

Apply liberally one coat of stain and brush well into timber. Apply a second coat after stopping with coloured putty.

(e) Blockwork and Foundations

Foundations shall be painted with two coats of a suitable cement paint. Blockwork shall be sealed with a liberal coat of waterproof sealer, or be painted with two coats of suitable cement paint.

3. Interior Work

The whole of the woodwork shall be painted or varnished as required. Plaster ceilings shall have one coat of Petriseal and two coats of Alkyd flat paint.

Where gibraltar board is to be wallpapered it shall be treated with size and wallpapered with butt joints, matching patterns properly registered, and shall be left free from wrinkling, blisters, lumps of paste, dirt, plaster, stains or any other defects.

Allow PC Sum of $ per roll.

4. Varnishings

All timber requiring varnishing shall be given one coat of satin clear sealer, and finishing with two coats of clear or satin enamel, work shall be well sanded between coats to give a perfectly smooth surface.

NAME: J. D. BROUGHTON

STOREY: ~~Single or top~~ / Lower of two ~~or middle of three~~ / ~~Lower of three~~

WIND AREA: ~~High~~ / ~~Medium~~ / Low

STOREY HEIGHT = 2.4 m

SITE ADDRESS: 16 McCALLUM ST BLENHEIM.

1) FOR EARTHQUAKE

Roof weight : light / ~~heavy~~

Average roof slope : 35. °

Earthquake Zone: A / ~~B~~ / ~~C~~

E = 5 B. U.'s / m²

2) WIND along the building (W1)

Average roof height : 3.6 m

Greatest roof slope : 35 °

ALONG

w1 wall = 33 B.U.'s/m

w1 roof = 28.8 B.U.'s/m

W1 total = 61.8 B.U.'s/m

3) WIND across the building (W2)

Average roof height : 3.6 m

Greatest roof slope : 35 °

ACROSS

w2 wall = 33 B.U.'s/m

w2 roof = 28.8 B.U.'s/m

W2 total = 61.8 B.U.'s/m

ROOF or BUILDING LENGTH BL = 15.8 m AV.

ROOF or BUILDING WIDTH BW = 8.95 m AV.

GROSS ROOF or BUILDING PLAN AREA GPA = 128.9 m²

EARTHQUAKE: LOAD (ALONG and ACROSS) E x GPA = 5 x 128.9 = 644.5 B.U.'s

WIND: LOAD ALONG W1 x BW = 61.8 x 8.95 = 553.11 B.U.'s

WIND: LOAD ACROSS W2 x BL = 61.8 x 15.8 = 976.44 B.U.'s

A For earthquake

Location of storey	Average slope of roof	Minimum number of bracing units per square metre in earthquake zone: A	B	C
Light Roof				
Single storey or top storey	0°-25°	2	2	2
	26°-45°	3	2	2
	46°-60°	3	2	2
Lower of two storeys or middle of three storeys	0°-25°	5	4	3
	26°-45°	5	4	4
	46°-60°	6	5	4
Lowest of three storeys	0°-25°	7	6	5
	26°-45°	8	6	5
	46°-60°	8	7	6
Heavy Roof				
Single storey or top storey	0°-25°	3	3	2
	26°-45°	4	4	3
	46°-60°	5	4	3
Lower of two storey or middle of three storeys	0°-25°	6	5	4
	26°-45°	7	6	5
	46°-60°	7	6	5
Lowest of three storeys	0°-25°	8	7	6
	26°-45°	9	8	6
	46°-60°	10	8	7

B For wind

Location of storey †	Height of each storey (m)	Minimum number of bracing units per metre for wind acting on the walls in wind exposure and for roof slope: ϕ					
		LOW		MEDIUM		HIGH	
		≤25°	≥25°	≤25°	≥25°	≤25°	≥25°
Single or top	2.4	9	11	12	14	18	22
Lower of two or middle of three	2.4	27	33	35	43	55	67
Lower of three	2.4	45	54	58	71	91	111
Single or top	3.6	13	16	18	21	27	33
Lower of two	3.6	40	49	52	64	82	100
Single or top	4.8	18	22	23	29	36	44
Lower of two	4.8	53	65	70	85	109	133

Slope of roof ϕ°	Height of roof (m)**	Minimum number of bracing units per metre for wind acting on the roof in wind exposure: ϕ		
		LOW	MEDIUM	HIGH
0°-10°	1	0	0	0
11°-25°	1	7	9	14
	3	21	27	42
26°-35°	1	8	10	16
	5	40	50	80
36°-60°	1	10	13	20
	8	80	104	160

ALONG

1	Wall or Bracing Line		Wall Bracing Elements Provided				
	2	3	4	5	6	7	8
Total Bracing Units Required for this storey	Line Label	Minimum B.U.'s Required	Bracing Element NO.	Type (table 20)	Rating B.U.'s (table 20)	Length of Element (m)	B.U.'s Achieved
From sheet A greater of earthquake or wind along	A	44	A 1	2	62	6.0	372.
		12	2	1	42	1.6	67
		15	3	1	42	2.0	84
	B	75	B 1	2	74	6.2	458.8
		38	2	2	74	3.2	236.8
	C	80	C 1	2	74	4.1	303.4
	D	7	D 1	10	83	.9	74.7
		14	2	1	50	1.9	95
		14	3	1	50	1.9	95
	A	12	A 4	1	42	1.6	67.2
	D	22	D 4	1	50	1.8	90.
		9	5	10	83	.580	48.14
644.5.						TOTAL	1992.04

RATINGS OF 2.4m HIGH WALL BRACING ELEMENTS

Type	Description of wall bracing element	Rating (bracing units per metre of element length)
	Diagonal braces with sheet material (clause 6.9.2):	
1	Let-in timber or steel angle brace, sheet on one face	42 in single or top storey 50 in any other location
2	Let-in timber or steel angle brace, sheet on both faces	62 in single or top storey 74 in any other location
3	Steel strip or cut-in timber pair of braces, both entirely within element, sheet on one face	42 in single or top storey 50 in any other location
4	Steel strip or cut in timber pair of braces, both entirely within element, sheet on both faces	62 in single or top storey 74 in any other location
5	Steel strip or cut in timber pair of braces, one not entirely within element, sheet on one face	30 in single or top storey 36 in any other location
6	Steel strip or cut in timber pair of braces, one not entirely within element, sheet on both faces	47 in single or top storey 56 in any other location
7	Diagonal boarding (clause 6.9.3)	42 in single or top storey 50 in any other location
	Sheet bracing (clause 6.9.4):	
	Sheet bracing on one face:	
8	Element length not exceeding 1.8 m	67 in any location
9	Element length exceeding 1.8 m	83 in any location
10	Sheet bracing on one face, sheet material to clause 6.9.2.2 on the other:	83 in any location
11	Reinforced concrete or reinforced masonry (clause 6.9.5), rating for each side of the element to which framing is attached	42 in any location
12	Sheet material both sides (clause 6.9.6)	42 per 1.2 m minimum length

† For wall bracing elements of other heights (other than type 11), these ratings must be multiplied by $\frac{3.4}{\text{element height in metres}}$ except that elements less than 1.8m high shall be rated as if they were 1.8m high.

ACROSS

1	Wall or Bracing Line		Wall Bracing Elements Provided				
	2	3	4	5	6	7	8
Total Bracing Units Required for this storey	Line Label	Minimum B.U.'s Required	Bracing Element NO.	Type (table 20)	Rating B.U.'s (table 20)	Length of Element (m)	B.U.'s Achieved
From sheet A greater of earthquake or wind across	M E	24	E 1	1	50	2.3	145.
		7	2	10	83	.9	74.7
	M F	25	F 1	2	74	2.0	148
		27	2	2	74	3.7	273.8
	S S	25	S 1	2	74	2.0	148
		22	2	2	74	3.0	222.
	H H	5	H 1	10	83	.65	53.95
		5	2	10	83	.65	53.95
	Q						
976.44.						TOTAL	1113.4

NAME: J. BROUGHTON

STOREY: ~~Single~~ or top / ~~Lower of two or middle of three~~ / ~~Lower of three~~

WIND AREA: ~~High~~ / ~~Medium~~ / Low

STOREY HEIGHT = 2.4 m

SITE ADDRESS: 16 Mc CALLUM ST. BLENHEIM

1) FOR EARTHQUAKE

Roof weight : light / ~~heavy~~

Average roof slope : 35 °

Earthquake Zone: A / ~~B~~ / ~~C~~

E = 3 B.U.'s / m²

2) WIND along the building (W1)

Average roof height : 1.1 m

Greatest roof slope : 35 °

ALONG

w1 wall = 11 B.U.'s/m

w1 roof = 8.8 B.U.'s/m

W1 total = 19.8 B.U.'s/m

3) WIND across the building (W2)

Average roof height : 1.1 m

Greatest roof slope : 35 °

ACROSS

w2 wall = 11 B.U.'s/m

w2 roof = 8.8 B.U.'s/m

W2 total = 19.8 B.U.'s/m

ROOF or BUILDING LENGTH BL = 16.1 m

ROOF or BUILDING WIDTH BW = 3.850 m AV.

GROSS ROOF or BUILDING PLAN AREA GPA = 58.5 m²

EARTHQUAKE: LOAD (ALONG and ACROSS) E x GPA = 3 x 58.5 = 175.5 B.U.'s

WIND: LOAD ALONG W1 x BW = 19.8 x 3.850 = 76.23 B.U.'s

WIND: LOAD ACROSS W2 x BL = 19.8 x 16.1 = 318.78 B.U.'s

A For earthquake

Location of storey	Average slope of roof	Minimum number of bracing units per square metre in earthquake zone: A	B	C
Light Roof				
Single storey or top storey	0°-25°	2	2	2
	26°-45°	3	2	2
	46°-60°	3	2	2
Lower of two storeys or middle of three storeys	0°-25°	5	4	3
	26°-45°	5	4	4
	46°-60°	6	5	4
Lowest of three storeys	0°-25°	7	6	5
	26°-45°	8	6	5
	46°-60°	8	7	6
Heavy Roof				
Single storey or top storey	0°-25°	3	3	2
	26°-45°	4	4	3
	46°-60°	5	4	3
Lower of two storey or middle of three storeys	0°-25°	6	5	4
	26°-45°	7	6	5
	46°-60°	7	6	5
Lowest of three storeys	0°-25°	8	7	6
	26°-45°	9	8	6
	46°-60°	10	8	7

B For wind

Location of storey †	Height of each storey (m)	Minimum number of bracing units per metre for wind acting on the walls in wind exposure and for roof slope: ϕ LOW ≤25°	LOW >25°	MEDIUM ≤25°	MEDIUM >25°	HIGH ≤25°	HIGH >25°
Single or top	2.4	9	11	12	14	18	22
Lower of two or middle of three	2.4	27	33	35	43	55	67
Lower of three	2.4	45	54	58	71	91	111
Single or top	3.6	13	16	18	21	27	33
Lower of two	3.6	40	49	52	64	82	100
Single or top	4.8	18	22	23	29	36	44
Lower of two	4.8	53	65	70	85	109	133

Slope of roof ϕ°	Height of roof (m)**	Minimum number of bracing units per metre for wind acting on the roof in wind exposure: ϕ LOW	MEDIUM	HIGH
0°-10°	1	0	0	0
11°-25°	1	7	9	14
	3	21	27	42
26°-35°	1	8	10	16
	5	40	50	80
36°-60°	1	10	13	20
	8	80	104	160

ALONG

1	Wall or Bracing Line		Wall Bracing Elements Provided				
	2	3	4	5	6	7	8
Total Bracing Units Required for this storey	Line Label	Minimum B.U.'s Required	Bracing Element NO.	Type (table 20)	Rating B.U.'s (table 20)	Length of Element (m)	B.U.'s Achieved
From sheet A greater of earthquake or wind along	~~J~~	12	~~J1~~	1	42	1.6	67.2
		17	2	1	42	2.3	96.6
	~~J~~	17	3	1	42	2.3	96.6
		17	4	1	42	2.3	96.6
		17	5	1	42	2.3	96.6
	K	14	K2	2	62	2.3	142.6
	C						
	D						
	E						
175.5					TOTAL		586.2

RATINGS OF 2.4m HIGH WALL BRACING ELEMENTS

Type	Description of wall bracing element	Rating (bracing units per metre of element length)
	Diagonal braces with sheet material (clause 6.9.2):	
1	Let-in timber or steel angle brace, sheet on one face	42 in single or top storey 50 in any other location
2	Let-in timber or steel angle brace, sheet on both faces	62 in single or top storey 74 in any other location
3	Steel strip or cut-in timber pair of braces, both entirely within element, sheet on one face	42 in single or top storey 50 in any other location
4	Steel strip or cut in timber pair of braces, both entirely within element, sheet on both faces	62 in single or top storey 74 in any other location
5	Steel strip or cut in timber pair of braces, one not entirely within element, sheet on one face	30 in single or top storey 36 in any other location
6	Steel strip or cut in timber pair of braces, one not entirely within element, sheet on both faces	47 in single or top storey 56 in any other location
7	Diagonal boarding (clause 6.9.3)	42 in single or top storey 50 in any other location
	Sheet bracing (clause 6.9.4):	
	Sheet bracing on one face:	
8	Element length not exceeding 1.8 m	67 in any location
9	Element length exceeding 1.8 m	83 in any location
10	Sheet bracing on one face, sheet material to clause 6.9.2.2 on the other:	83 in any location
11	Reinforced concrete or reinforced masonry (clause 6.9.5), rating for each side of the element to which framing is attached	42 in any location
12	Sheet material both sides (clause 6.9.6)	42 per 1.2 m minimum length

† For wall bracing elements of other heights (other than type 11), these ratings must be multiplied by $\frac{2.4}{\text{element height in metres}}$ except that elements less than 1.8m high shall be rated as if they were 1.8m high.

ACROSS

1	Wall or Bracing Line		Wall Bracing Elements Provided				
	2	3	4	5	6	7	8
Total Bracing Units Required for this storey	Line Label	Minimum B.U.'s Required	Bracing Element NO.	Type (table 20)	Rating B.U.'s (table 20)	Length of Element (m)	B.U.'s Achieved
From sheet A greater of earthquake or wind across	~~L~~	24	L1	10	83	.45	78.85
		15	2	1	42	2.0	84.
	~~M~~	14	M1	2	62	2.3	142.6
	~~N~~	14	N1	2	62	2.3	142.6
	P	14	P1	2	62	2.3	142.6
	Q	12	Q1	10	83	.95	78.85
		12	2	10	83	.95	78.85
318.78					TOTAL		748.39