HUTT COUNTY COUNCIL

Valuation No. 1515/548/17. **Date Received:** 11.12.72

1023

Application for Building Permit

To: The Building Inspector,
P.O. Box 8012, Govt. Blds.,
WELLINGTON.

198-200

I (the undersigned), Robert John Berg (Full Name)

of 51 Tiromoana Road Raumati South (Address)

hereby make application for permission to **ERECT / ADD / ALTER / REINSTATE** Erect

with a floor area of 2425 sq. ft. as prescribed herein and set out in the plans and specifications attached hereto, in premises at: ~~Emerald Glen Road.~~

No. STET. ~~Maungakotukutuku~~ ✓ Street or Road Paraparaumu Township

Lot No. 20 D.P. 33688 Riding

The owner of the premises is Robert John Berg (Name)

51 Tiromoana Road Raumati South (Address)

Previous owner (If Section has been recently transferred) Rewa Farms Ltd.

Estimated value of:

Building only	$ 21000 : 00	21000
Plumbing and Drainage	$ 1200 :	1200
Total	$ 22200 : 00.	22200

JH

Signature of Applicant Robert J. Berg (As Builder or Owner) Dec. 11, 1972 (Date)

Builder's Name and Address: (If not the applicant) D23 B.2L

8952
8951

FOR OFFICE USE ONLY

Receipt No. 8951 Road Deposit No. A/c. No. 3433

Fees:

Building Permit	$	61 : 00
Kerb Crossing	$	:
Road Deposit	$	:
	$	61 : 00

Date 12.12.72
Permit No. 74546
Date Issued 21.3.73.

BR $11.50 — 8952

TOWN PLANNING DISTRICT Operative / Undisclosed
Conforms/Non-Conforming.

Checked by District Engineer. 14-12-72 (Date) JE (Initials)

Remarks: Permit issued subject to amended bathroom layout to isolate WC

JH

Subject also to amended damp course detail of tank to be submitted on job

61

C S W 4855p H.14

KAPITI BOROUGH COUNCIL
Application for Permit

Valuation No. 15150 046 00

Date Rec'd 28.8.78 | Day Book Page 42 | Initial

To: The Borough Engineer
P.O. BOX 121, PARAPARAUMU

I/WE P CLEGHORN

(Postal Address) Box 230 Paraparaumu Phone 80682

hereby make application for permission to have the work described herein, and set out in the plans and specifications attached hereto, carried out in the premises situated at —

No. ..... Street or Road MAUNGAKOTUKUTUKU RD

Lot. No. 20 D.P. 33688 District Kapiti.

The owner of the premises is As Above.

(Postal Address) .....

Signature of Applicant P Cleghorn Date 23/8/78

OFFICE USE ONLY

APPROVED - Permit may be issued
23-8-78
Building Inspector
Kapiti Borough Council

OFFICE USE ONLY

Building – Plumbing – Drainage

ERECT / ~~ADD / ALTER / REINSTATE~~ A (specify) .....

FREE STANDING FIRE.

with a floor area of ..... sq. metres

Value of proposed work including materials — Estimated cost of:	Building only	$ 300
	Plumbing only	$
	Drainage only	$
	TOTAL	$ 300

Builder's name and address owner.

Type of water supply ..... Capacity of storage tanks ..... cubic metres

Plumber's name and address .....

Drainlayer's name and address .....

FOR OFFICE USE ONLY

Account No. 1990 Date 29 AUG 1978 Receipt No. 1865 Date 22.9.78

Fees:

Building Permit	$ 2	Permit No. 012207	Date Issued 13.OCT 1978
Plumbing Permit	$	Permit No.	Date Issued
Drainage Permit	$	Permit No.	Date Issued
Sewer Connection	$		
Water Connection	$		
Kerb Crossing	$	Order No.	
Damage Deposit	$	Refund	
Bldg Research Levy	$		
	$	Checked	
TOTAL	$ 2	Date 28-8-78	

Register Entry
80/5

TOWN PLANNING Conforms/Non-Conforming .....

Remarks: Endorse Permit. Installation to be strictly to the manufactures instructions having particular regard to hearth size, heat shields and roof clearances for flue etc for the proposed location. A copy of such instructions shall be forwarded to the Chief Building Inspector before work commences.

Site Inspection: .....

Paraparaumu Print

Valuation No. 15150 046 00

KAPITI BOROUGH COUNCIL
Application for Permit

Date Rec'd	Day Book	Initial
9-5-79	Page 48	

To: The Borough Engineer
P.O. BOX 121, PARAPARAUMU

Bot 230 Prain

I/WE P J & C A CLEGHORN

(Postal Address) MAUNGAKOTUKUTUKU Rd Phone 70682

hereby make application for permission to have the work described herein, and set out in the plans and specifications attached hereto, carried out in the premises situated at —

No. ..... Street or Road .....

Lot. No. 20 D.P. 33688 District .....

The owner of the premises is AS ABOVE

(Postal Address) Bot 230 Prain

Signature of Applicant P Cleghorn Date 9/5/79

OFFICE USE ONLY

APPROVED - Permit may be issued
10-5-79
Building Inspector
Kapiti Borough Council

OFFICE USE ONLY

Building – Plumbing – Drainage

ERECT / ~~ADD / ALTER / REINSTATE~~ A (specify) IMPLEMENT SHED

with a floor area of 129.6 sq. metres

Value of proposed work including materials — Estimated cost of:	Building only	$ 7000 : 00
	Plumbing only	$ — :
	Drainage only	$ — :
	TOTAL	$ 7,000 . 00

Builder's name and address SELF

Type of water supply ..... Capacity of storage tanks ..... cubic metres

Plumber's name and address .....

Drainlayer's name and address .....

FOR OFFICE USE ONLY

Account No. 3086 Date 14 MAY 1979 Receipt No. 0474 Date 22.5.79

Fees:

Building Permit	$	60 : 00
Plumbing Permit	$	:
Drainage Permit	$	:
Sewer Connection	$	:
Water Connection	$	:
Kerb Crossing	$	:
Damage Deposit	$	:
Bldg Research Levy	$	:
	$	:
TOTAL	$	60 : 00

Permit No. 71241 Date Issued 23 MAY 1979

Permit No. ..... Date Issued .....

Permit No. ..... Date Issued .....

Order No. .....

Refund .....

Checked .....

Date 11/5/79

Register Entry

110/16

TOWN PLANNING Conforms/Non-Conforming .....

Remarks: .....

Site Inspection: .....

Paraparaumu Print

HUTT COUNTY COUNCIL

ıation No. ..... Date Received 11.12.72

Application for Plumbing and Drainage Permit

198-200

The County Health Inspector,
P.O. Box 8012,
WELLINGTON.

I, the undersigned Robert John Berg (full name)

51 Tuamoana Rd Raumati South (address)

by make application for permission to have the work prescribed herein set out in the plans attached hereto
ed out in the premises situated at Emerald Glen Road

~~Maungakotukutuku~~ Street Paraparaumu Township

20 D.P. 33688 Riding

The owner of the premises is Robert John Berg (Name)

51 Tuamoana Rd Raumati South (Address)

I hereby nominate these Registered Tradesmen to carry out the said work : .....

..... (Registered Plumber)

..... (Address)

..... (Registered Drainlayer)

..... (Address)

---

of water supply Rain Water Capacity of storage tanks 5000 gals.

ription of Work : Cross out any of the following which do not apply :
Install bath, basin, sink, ~~tubs~~, shower, W.C., hot/cold water supply.
Drainage to grease trap/septic tank/~~sewer~~/field drain/soak pit.
Stormwater drainage to street/~~channel~~/~~soak pit~~.

er Work .....

e of Proposed Work (including Materials) :

nated cost of : (a) Plumbing $ 900 :

(b) Drainage $ 300 :

TOTAL $ 1200 :

ature of Applicant Robert J. Berg Date Dec. 11, 1972

For Office Use Only

:

Plumbing ..... $ 14 :

Drainage ..... $ 6 :

Sewer connection ..... $:

Total ..... $ 20 00.

Acct. No. 3433.

Date 12.12.72

Permit No. 27469

Date Issued .....

Receipt No. 8951

NO PLUMBER

arks : .....

TD

GENERAL SPECIFICATIONS

Specification of work to be done and materials to be supplied for the erection and completion of a Residence for Mr. and Mrs. Robert J. Berg at Lot 20, Maungokotukutuku Road in Paraparaumu.

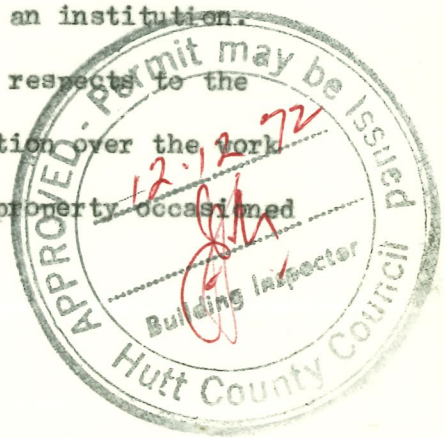
(a) GENERAL

(1) THE WORK consists of the erection of a storey and a half dwelling in timber on concrete foundations (concrete slab floor) and roofed with long-run roofing.

The contractors shall provide all labour and most materials. Those items not to be supplied by the contractor will be noted below and supplied by owner. Contractors will supply and maintain the required tools, plan, scaffolding, etc. -- obtain all necessary permits, -- pay all dues and generally complete the residence in the best trade manner in accordance with the true intent and meaning of the accompanying drawing and this specification taken separately or collectively.

If the contract is partly or wholly financed either by the State Advances Corporation in the form of a Rehabilitation loan or any other State loan, or by any other financial institution, the contractor shall conform with the requirements and conditions set out by the lender to the satisfaction of the agent supervising on behalf of such an institution.

(2) BY-LAWS. -- The contractor shall conform in all respects to the By-Laws of all or any local authorities having jurisdiction over the work and be responsible for all damage to public or private property occasioned by the work.



(3) INSURANCE. -- Before commencing this contract, the contractor must effect an insurance with an approved company to cover any liability of the owner for accidents or workmen's compensation for any accidental injury to any worker or death of the same in the course of his employment, and the contractor must maintain such insurance until the completion of the job. The contractor will also insure the works and keep them similarly insured until they are delivered up against loss or damage by fire in the joint names of the owner and contractor for the full insurable value of the works executed. All policies and receipts for premiums for such insurance to be lodged with the owner.

(4) LIENS ACT -- This contract is subject to the "Wages Protection and Contractors Liens Act, 1908, and its amendments."

(5) DEFAULT AND BANKRUPTCY. -- The usual laws of bankruptcy and default apply to this contract.

(6) ARBITRATION. -- In any dispute arising between the owner and contractor not soluble by the terms of this specification, it should be referred to arbitration within the meaning of the Arbitration Act, 1908.

(7) PROGRESS PAYMENTS. -- Progress Payments -- unless otherwise agreed upon -- will be paid monthly up to 75% of the estimated value of the work performed and materials on the ground. Up to 95% of the value of the work will be paid within 31 days after tentative acceptance and completion, the balance of 5% to be paid at the end of the maintenance period. If this contract, however, is financed by the State Advances Corporation, the contractor will be satisfied with the manner of payment as set out by this Corporation.

(8) SUB-CONTRACTORS. -- This specification is subdivided into trade sections for the convenience of reference only, and it shall not be

construed that each trade section is an entire and separate contract. Every trade jointly and severally shall collaborate, wait on assist and render all necessary assistance to complementary trades.

(9) 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 provision of substitutes. Before any such substitutes are included in the contract, the approval of the owner will be obtained. The price difference resulting from the inclusion of the substitutes must be agreed upon before the respective work is commenced. Any substitute must also be acceptable to the Building Controller and the Local Authority.

(10) P.C. (PRIME COST) -- The owner reserves the right to select or purchase items under the P.C. sum and the accounts will be adjusted accordingly on completion.

(11) COMPLETION. -- At regular periods during building operations and on completion of this contract the contractor shall remove debris which may accumulate from time to time, leave the whole site tidy and fit for gardening, and leave the entire building, including paths, steps, etc. clean and ready for use.

(b) EXCAVATION

The contractor shall cut into one side of hill top knoll so as to provide a 50 square foot area on solid ground. All material down to this level is to be deposited at the edges of the levelled area to form a level crescent-shaped area site. In general, this work will be done with owner at the site.

(c) DRAIN-LAYER

The Drain-Layer shall obtain the necessary permits from the local authorities and pay all fees and other charges. All drainage work is to be stricdy in accordance with the Local By-Laws and the Drainage and Plumbing Regulations 1959, notwithstanding any omission herein, and to the entire satisfaction of the Engineer and the instructions issued by him must be carried out. All work in this specification not being in contravention of the By-Laws is to be carried out as specified.

(1) The Contractor shall fix all materials, which must be the best of their several kinds, in accordance with the best trade practice and with the specification of the Local Authority and Health Department.

(2) The Contractor shall Excavate for all trenches, gulley traps, sumps, drains, etc. to depths required for approved laying of sanitary and story-water drains.

(3) The Contractor shall, commencing at the lowest point of system lay and solidly bed all drains to sizes and gradients as required. The whole of the drains are to be accurately laid and jointed and each pipe is to be cleaned out with a suitable badger before another is laid. Connect to all traps, F.A.I.'s vents and other fittings as required by Local Authority. Build in gulley traps, cesspits as required and leave with iron gratings. Form neatly dished concrete cesspits and build in all discharge pipes, concreting same, finishing off the whole in 1 to 1 cement mortar.

(4) Septic Tank -- Install Septice Tank of approved design and constructions to the requirements of Local Body and Health Department complete with all appurtenances set on concrete bed, and connect sanitary drain.

(5) INSPECTION CHAMBER -- Where required supply and fix concrete inspection chamber and cover with 3 inches concrete lid and seal with weak lime mortar.

(6) COMPLETION AND TESTING -- On completion the whole of the drainage to be handed over in thorough working order according to the Health Department's requirements and the local by-laws, to the satisfaction of inspectors.

(d) CONCRETE

(1) MATERIALS -- Concrete will be a ready-mixed variety with a compression strength of 2500 psi at 28 days.

(2) Concrete floor slabs to be constructed as follows: Excavate trenches for concrete beams beneath slab floor. Properly box where and as necessary and effectually prevent the possibility of a mixture of earth or other unsuitable matter with concrete foundations. Slab to be constructed on 4inches of hard fill to be compacted and covered by a layer of sand thick enough to prevent puncturing of polythene D.P.C. Polythene D.P.C. to be .005 thickness. Beams or foundations are to be reinforced with steel having a yield strength of 40,000 psi. Slab shall be finished in one operation and float machine will be used to finish surface to owner's specification.

(e) CARPENTER AND JOINER

(1) GENERAL -- All timber must be the best of its class, free from large loose or dead knots and waney edges. suitable for its purpose and in as long lengths as possible. 4 x 2 framing will be done at 18 inch centres and whereever spacing works out differently the distances are to be lessened by the insertion of an extra timber. The whole of the work is to be of the best description and the whole of the framing to be framed bolted and spiked together in a ammner approved by New Zealand standards.

(2) TIMBER -- The whole of the timber required for the work must be kiln dried and carefully stacked with wood slips on the site. All timber shall be strictly in accordance with Government grading rules that for all lower plates on concrete to be building 'A' Heart Rimu; all other framing timbers shall be "BORON" treated. All structural timber is to be Douglas Fir as specified in Structural Drawing. All exterior shiplap to be tantalized.

(3) WALL PLATES -- Lower plates resting on concrete shall be fixed with bolts according to Government standards. All plates shall be in long lengths and properly halved at joints and angles. The walls shall be framed before raising into position and each stud shall be nailed through from the upper side of the top plate and the lower side of the bottom plate with nails that enter the ends at least 2 inches.

(4) DAMP PROOFING -- Insert a layer of D.P.C. (approved) between all timbers and concrete throughout the job.

(5) JOISTS -- Floor joists for the Mezzanine level are to be 6 x 2 at 18 inch centres. Joists to be blocked with 6 x 2 's above all partitions.

(6) EXTERNAL WALLS -- The whole of the external walls shall be constructed of 4 x 2's or 4 x 3 studs in platform style. All agnles to be double studded.. External walls are to be thoroughly and strongly braced as directed by Structural Drawing.

(7) STUD PARTITIONS -- All lower level partitions shall be framed with 4 x 2 studs.

(8) ROOF -- The roof shall be constructed of 12 x 4 and 10 x 4 rafters, each made up of 12 x 2 and 10 x 2's bolted according to Structural Drawing.

Purlins shall be 6 x 2's at 36 inch centres and fixed at each end with triple-grip fasteners, as noted in Structural Drawing. Sarking is to be diagonal 1 inch tongue and groove. All rafters and purlins to be given one coat of stain before erection.

(9) DWANGING -- Properly dwang all walls where external vertical sheathing is to be used.

(10) FLOORING -- Flooring on Mezzanine level is to be 2 inch tongue and groove diagonal sarking, close-cramped and double nailed at each point of bearing.

(11) EXTERNAL LININGS -- Horizontal and vertical shiplap to be to owner's specification. All external shiplap to be fixed with galvanized nails.

(12) INSULATION -- All walls and partitions to be fixed with Batts. Batts are to be placed under long-run roofing above sarking.

(13) GARAGE DOOR -- To owner's specification.

(14) INTERNAL LININGS -- Completely line with shiplap to owner's specification.

(15) CUPBOARDS AND WARDROBES -- To be to owner's specification.

(f) WINDOWS AND DOORS

All windows to be as stated in following schedule

(a) All fixed windows to be of $\frac{1}{4}$ inch to owner's specification.

(b) All sliding windows to be aluminium and supplied by the owner.

(c) Exterior sliding doors to be aluminium supplied by owner.

(d) Interior and exterior wood doors supplied by owner.

(

(g) HARDWARE AND STAIRCASE

To be supplied by owner.

(h) PLUMBER

The Plumber shall obtain the necessary permits from the Local Authorities and pay all fees and other charges. All work treated under this heading is to be strictly in accordance with local By-Laws nothwithstanding any omission herein, and to the entire satisfaction of the Local Authorities and the owner.

(a) CAST IRON -- All cast iron is to be of the best quality substantially clean and sound, true and free from all defects and painted in two coats of red lead or dipped in asphalting as directed.

(b) GUTTERS AND DOWNPIPES -- To be supplied and fitted by owner.

(c) PIPES AND FITTINGS - All hot and cold water supply pipes and fittings to be of copper tubing installed in an approved manner.

(d) TAPS -- All taps to be supplied by owner.

(e) HOT WATER CYLINDER -- 60 Gallon hot water cylinder is required and must be approved by the owner.

(f) HOT WATER SERVICE -- All pipes shall be in copper tubing properly lagged with approved insulating hair felt held securely in position with a wire binding.

(g) SHOWER -- Shower and taps to be supplied by owner

(h) SANITARY FITTINGS -- The Contractor shall properly fit up the following sanitary fittings complete with traps, wastes, overflows, as required:

(1) Bath

(2) Harvey lavatory basins

(3) Lavatory cisters

(4) Shower tray

(5) Kitchen sink basin

(i) PIPES IN CONCRETE -- All pipes requiring to pass under the concrete floor slab shall be wrapped securely in tape before laying, and the whole system shall be tested and found perfectly satisfactory prior to the laying of the concrete slabs.

(j) WATER SUPPLY -- Contractor shall fit pressure pump from water reserve tank to supply water to household.

All connections and fittings done by plumber will be tested and left in operating order and fulfill all requirements of Local Authorities, notwithstanding any of the above clauses.

(1) ELECTRICIAN

The electrician shall obtain the necessary permits from the supply authorities and shall pay all fees and other charges. The installation shall comply with the Electrical Wiring Regulations and shall be to the entire satisfaction of the Supply Authorities' inspectors. The contractor shall provide all materials and install the whole of the lighting or power points, the number and particulars of which are shown on drawing and will be to owner's specification. The whole of the wiring shall be concealed and none but first-class workmanship and materials will be allowed.

Where wiring is being installed, the requirements regarding checking of timber shall be in accordance with the New Zealand Standard Code of Building By-Laws.

All work shall be protected from the weather in an approved manner against possible injury during the progress of the work.

(1) LAMPS -- The owner shall provide the whole of the lamps and the contractor will fix in an approved manner.

(2) HOT WATER ELEMENTS -- To hot water cylinder provide and fit a thermostatically controlled electric hot water element of maximum capacity permitted by Supply Authorities.

(3) RANGE AND OVEN -- Fit up in kitchen where shown. Range and oven supplied by owner.

(4) TELEPHONE -- Telephone will be arranged for by owner.

(5) ISOLATING SWITCH -- In addition to the main switch on the Switch and Fuse Board, the owner will require an isolating switch to cut off all power throughout the house except to the refrigerator and deep freeze.

(6) UNDER FLOOR HEATING -- Contractor shall fit in an approved manner under floor heating supplied by owner.

(7) PRESSURE PUMP -- Completely fit up pressure pump as to approval of authorities.

(8) POWER POINTS -- Power points are to be set to a definite current rating as controlled by a miniature circuit breaker, hence a string of power points is possible. This string of power points to be discussed with owner. All other power points to be installed in an approved fashion.

(m) STRUCTURAL STEELE

This will be supplied and erected by the owner to Engineer's specifications on Structural Drawing.

Berg House

BY NJ McCRAN

DATE

The Structure:

The house has conventional galvanised iron roofing on diagonal sarking. This is supported by timber purlins and rafters. The roof generally is supported by steel posts at the rear and at the apex and timber posts at the front. The mezzanine is of convention timber construction on steel bearing between the steel posts and the rear and centre of the building.

Resistance to lateral wind and earthquake loading is provided by diagonal cross bracing in the longitudinal direction along the line of the side walls and the ℄ of the structure. In the lateral direction all shears are carried by steel frames @ 11' cs. consisting of posts, at the rear wall and at the ℄ of the structure, and beams spanning between them at mezzanine level.

The whole is supported on conventional pad footings. The floor is concrete slab on grade.

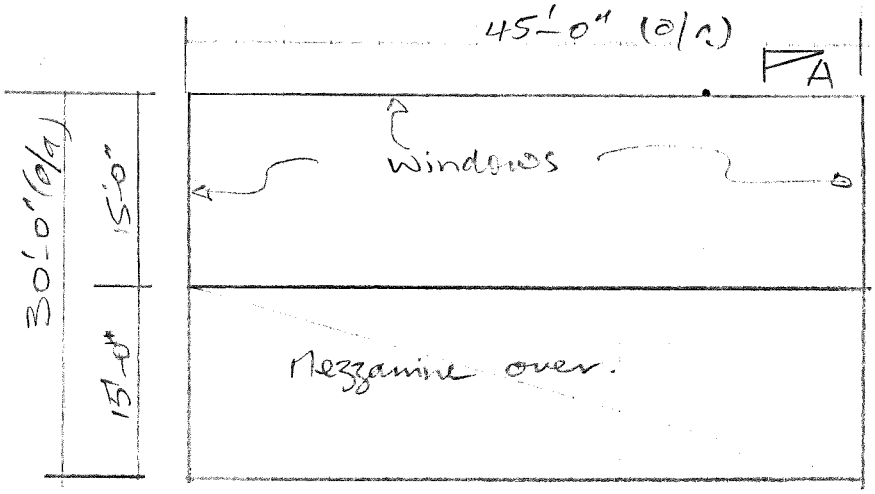
Codes:

1. NZSS 1900 Chapt 8.
2. NZSS 1900 Chapt 9.1
3. NZSS 1900 chapt 9.3A
4. NZSS 1900 Chapt 9.4
5. NZS 3101 P 1970.
6. "Timber Eng. Design Handbook" Pearson Kloot and Boyd.

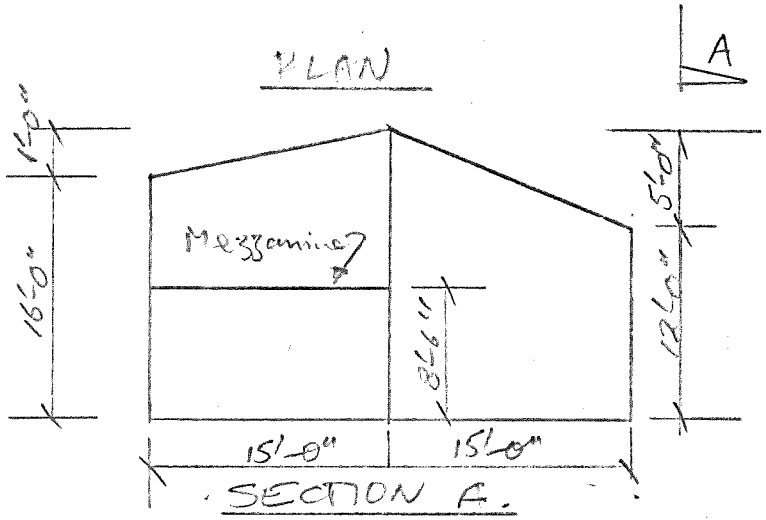
JOB Berg House

BY

DATE NJ Kingston 2



PLAN



SECTION A.

LATERAL LOADINGS:

i) E.Q. Loading: K = 1.0 C = .12 g

Roof : DL

Sarking	4	psf
Insulation	½	psf
Roofing	1½	psf
Purlins.	2	psf
Rafters.	2	psf
	10	psf

LL say 15 psf. 15 psf.

$\therefore W_{roof} = 25$ psf.

Mezzanine: DL

Flooring	4
Finishing	2
Joists.	3

JOB

BY

DATE

Walls : Glazing say 10 psf.
W/B Wall say 20 psf.

Consider unit length of building.
∴ Gravity Loads are:
- Roof Load. = 25×30 = 750 lb
- Wall Load. = 10×12+20×16 = 440 lb.
- Negraine Load = 40×15 = 600 lb.
1790 lb.

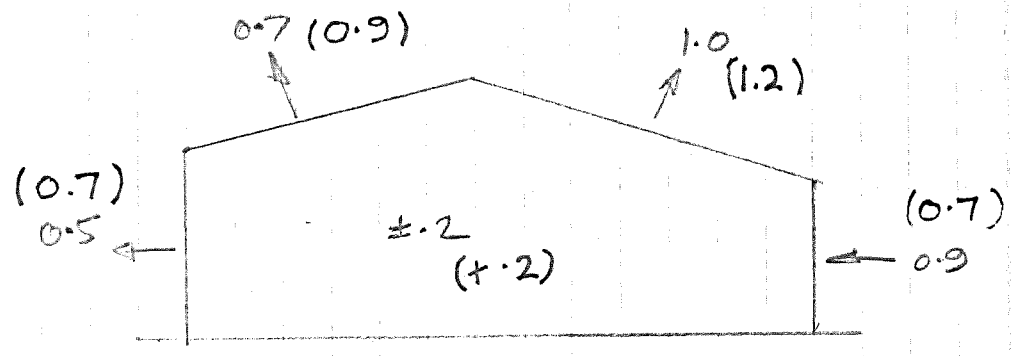
∴ Base Shear = 1.0 × .12 × 1790 lb/ft run

Say = 220 lb/ft run.

(ii) Wind Loading.

q = 17 psf. C_h = 1.2 (to take geographical position into account)

h/b = 16/30 = .53
L/b = 45/30 = 1.5



Using coeffts above —

Σ Lateral Force = 17 × 1.2 × 1.4 × 16 lb/ft run

= 460 lb/ft run

∴ Wind Loading is more critical than eq loading.

BY

DATE

ROOF DESIGN:

Purlins: Span = $\frac{45}{4}$ = 11.25'

Spacing = 3'-0".

Loading: c.g.i 1.5 psf.
1" sarking 3.5 psf.
o/w. 1.25 psf
LL 15.00 psf
21.25

∴ w = 21.25 × 3 = 65 plf say.

M_{max} = 65 × 11.25² × 1.5 lbin.
= 13500

Use Douglas Fir (Standard Grade)
∴ Z = 13,500 / 1250 in³.
= 10.8 in³

∴ Try 6" × 2" purlins.

check δ.

$$\delta = \frac{5 \times 63 \times 11.25^4 \times 1728}{384 \times 1.4 \times 10^6 \times 86} \text{ ins}$$

= .45 ins.

Span × .003
= 11.25 × 12 × .003 ins
= .41"

∴ Even under LL = 15 psf δ OK.

Purlins
6×2 Douglas Fir @ 36" cs

Reactions = 65 × 11.25/2 = 366 #.

∴ 2 Trip-L-Grip anchors at each end sample.

Rafters: Spacing = 11.25'.

Say [illegible]

(a) Over living area:

$\theta > 45°$ $\therefore$ LL = 6 psf

Loading		
cgi	1.50	psf
Sarking	3.50	psf
Timber	1.25	psf
o/w	1.00	psf
LL	6.00	psf
	13.25	psf

$\therefore w = 13.25 \times 11.25 = 149$ plf

say 150 plf

$M_{max} = 150 \times 16^2 \times 1.5$ lb in.

$= 57,600$ lb in.

$\Rightarrow Z = 46.2$ in^3.

$\therefore$ Try 2 – 10" × 2" beams.

Deflection $\delta = \dfrac{150 \times 16^4 \times 5 \times 1728}{384 \times 1,400,000 \times 333.3}$ ins

$= .48$ in.

$\delta_{all} = 16 \times 12 \times .003 = .58"$

[check for axial loads later.]

(b) Over Mezzanine Area:

Loading		
DL	7.25	psf
LL	15.00	psf
	22.25	psf

$\therefore w = 22.25 \times 11.25 = 250$ plf.

$\therefore M_{max} = 250 \times 15^2 \times 1.5 = 84,400$ lb in.

$\therefore Z_{req'd} = 67.5$ in^3.

Try 2 – 10" × 2" beams.

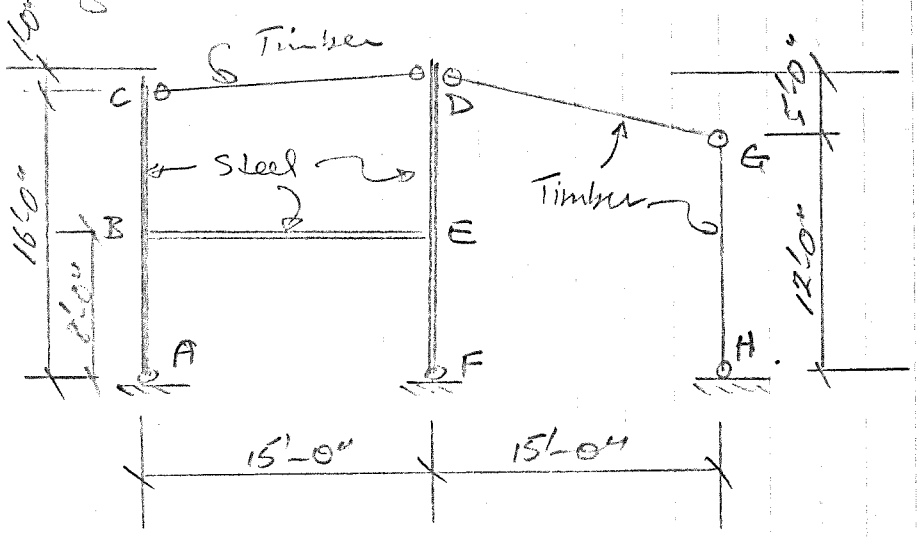
$\delta = 250 \times 15^4 \times 5 \times 1728 / 384 \times 1.4 \times 10^6 \times 333.3$

$=$ [illegible] $<$ 1.1

$\therefore$ Rafters over living area 2 – 10" × 2" beams. Douglas Fir

$\therefore$ Rafters over Mezzanine Area 2 – 12" × 2" beams Douglas Fir.

FRAME DESIGN : (a) LATERAL DIRECTION.



(a) DL+LL :

Rafter design see p4.

Rafter reactions.

$= 15 \times 250/2 = 1880^{\#}$ (over mezz.)

$= 16 \times 150/2 = 1200^{\#}$ (over living area)

ie $R_C = 1880^{\#}$

$R_D = 1880 + 1200 = 3080^{\#}$.

$R_G = 1200^{\#}$.

Mezzanine Design :

Joists :

Loading :		
Flooring	4.0	psf
Finishing	2.0	
O/W.	3.0	
	9.0	
	30.0	psf.

$\therefore$ DL+LL $= 39.0$ say 40 psf.

Try joists at 18" cts.

$w = 60$ plf

$M_{max} = 60 \times 11.25^{ft} \times 1.5 = 11,450$ lb in.

$\therefore Z = 9.2$ in^3

$$\delta = \frac{5 \times 60 \times 11.25^4 \times 1728 \text{ ins}}{384 \times 1,400,000 \times 36}$$

$$= .495''.$$

Use 6"x2" joists in mezzanine @ 18" cs.

$$\delta_{max} = 11.25 \times 12 \times .0025 = .34''.$$

Not bad.
(Partitions on ground floor will stiffen the joists)

∴ Loading on Mezzanine Steel Beam

is $W = 40 \times 11.25 + 10$ plf.
$= 460$ plf.

$$\therefore M_{FEM} = \frac{460 \times 11.25^2}{2240} = 26.0 \text{ Ton ins}.$$

S_{BC}	= 3/8	= .38	
S_{BA}	= 3/8	= .35	
S_{BE}	= 4/15	= .27	[.26]
		1.03	

Neglecting stress.

[.26]	[.26]
−26.0	+26.0
+6.8	−6.8
−3.4	+3.4
+.9	−.9
−21.7	+21.7

$$\therefore M_{m/s} = 21.7 - 26 \times 1.5 \text{ Ton ins}.$$
$$= 17.3 \text{ Ton ins}$$

$$\therefore Z_{reqd} = 21.7/10.5 \cdot 2.60 \text{ in}^3. \checkmark$$

Reactions $= 460 \times 15.0/2 = 3460$ lb.

∴ Σ Foundation loads (excluding walls)

$R_F = 3460 + 3080 = 6540^{\#}$.

$R_H = 1200^{\#}$.

(ii) DL + WL only.

DL only loads:

Rafter reactions $= \frac{15}{2} \times 7.25 \times 11.25$

$= 610^{\#}$ (over mezzanine)

or $\frac{16}{2} \times 7.25 \times 11.25$

$= 650^{\#}$ (over living area)

$\therefore R_C = 610^{\#}$

$R_D = 610 + 650 = 1260^{\#}$

$R_G = 650^{\#}$.

Mezz. loading: Reactions $= 9 \times 11.25 \times \frac{15}{2}^{\#} + 10 \times \frac{15}{2}$

$= 835^{\#}$

$\therefore$ Foundation Loads (excluding walls)

$R_A = 610 + 835 = 1445^{\#}$

$R_D = 1260 + 835 = 2095^{\#}$.

$R_G = 650^{\#}$.

Loading on mezzanine beam

$w = 9 \times 11.25 + 10 = 110$ plf.

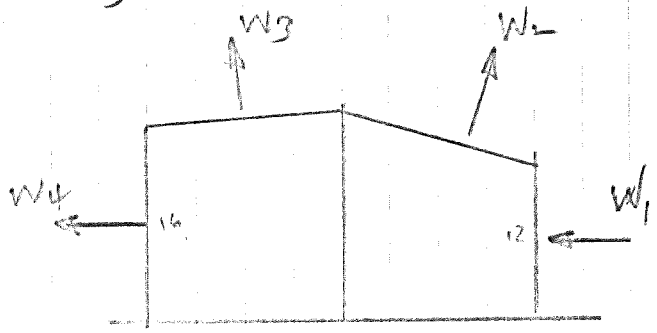
$\therefore M_{FEM} = \frac{110 \times 15^2 \times 1.0}{2240} = 11.0$ Tons.

$\therefore M_{BE} = M_{EB} = .86 \times 11.0$ Tons.

$= \underline{9.5 \text{ Tons}}$

(under DL only)

W.L. only.



neglect horiz components of vert forces.

For W.L refer p2.

$W_1 = 17 \times 1.2 \times 1.1 \times 12 \times 11.25$ # $(-.2 = C_{pi})$
$= \underline{3040\ \#}$

$W_4 = 17 \times 1.2 \times .3 \times 16 \times 11.25$ #
$= \underline{1100\ \#}$ $(C_{pi} = -.2)$

$W_2 = 17 \times 1.2 \times 1.2 \times 11.25$ plf.
$= 276$ plf.

ie $\Sigma W = 276 - 7.25 \times 11.25$
$= 194.5$ plf.

comp. $w_{D+L} = 150$.

$w_{D+WL} = \frac{194.5}{1.33} = 146$ plf.
(1.33 ← wind stress allowance)

∴ Rafters OK in bending.

$W_3 = 17 \times 1.2 \times .9 \times 11.25$ plf
$= 206$ plf. — OK easily.

check axial stresses in rafter over living area

$P_{ax} = \frac{3040}{2 \cos 20°} = 1620\ \#$.

Rafters will be held by purlins

$\therefore P_{ax.} = c = 900$ psi.

$P_b = 57,800 \times \frac{146}{150} \times \frac{1}{66.66}$ psi

$= 840$ psi

$P_b = 1400$ psi

∴ Stress ratio :

$\frac{840}{1400} + \frac{40.5}{900} = .64 < 1.33$

— o/c

Lateral shear (total) above mezzanine

$= \frac{3040}{2} + \frac{1100}{4} = 1796$ say, 1800 lb.

assume this is distributed equally to the steel columns.

$\therefore M_{BC} = M_{ED} = \frac{900 \times 9 \times 12 \text{ Tin}}{2240}$.

$= \underline{43.5 \text{ T.in}}$.

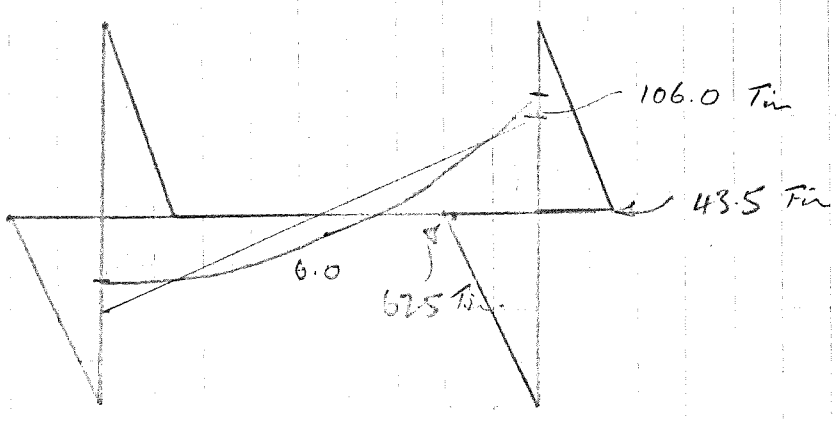
Total Base Shear at A & F.

$= \frac{3040}{2} + 1100 = 2600^{\#}$.

assumed equally distributed to cols.

$\therefore M_{BA} = M_{EF} = 1300 \times 9 \times 12 / 2240 \text{ Tin}$.

$= \underline{62.5 \text{ T.in}}$



B.M.D.

BEAM DESIGN:

$M_{max} = 106.0 + 9.5 = 115.5$ T.in.

Try 8 × 5¼ UB (17 #)

Have length of comp. flange
$\doteq 6.2 \times 12$ ins
$\doteq 75$ ins.

$\therefore \frac{l}{r_{yy}} = \frac{75 \times .80}{1.16} = 51.7 \quad \frac{D}{T} = 26.0$

$\Rightarrow p_{bc} = 10.5$ tons/in².

$\therefore Z_{reqd} = 115.5/10.5 = 11.0$ in³.

$\therefore$ 8 × 5¼ × 17 UB OK

(D+L OK see p7) ($Z = 14.1$ in³)

COLUMN DESIGN:

Σ O/T Moment Due to WL.

$= 1100 \times 6 + \frac{3040}{2} \times 16$ lb ft.

$= 33{,}200$ lb ft.

$\therefore$ Axial forces in col due to WL only (lateral only)

$= \frac{33{,}200}{2240 \times 16} = \pm .93$ tons.

∴ force in mbr ABC under D2+WL

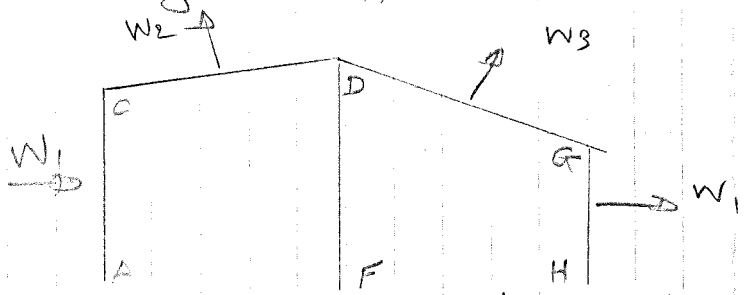
$= \frac{1445}{2240} - .74$ ton

$= \underline{-.09 \text{ ton}}$ negligible.

Force in mbr F.E.D. under D2+LL

$= \frac{2025}{2240} - 1.72 = \underline{-.80 \text{ ton}}$ (uplift)

Check wind acting in oppos. direction:



From p 2 $W_1 = 17 \times 1.2 \times 1.1 \times 16 \times 11.25$
$= 4050$ #.

$W_4 = 825$ #.

$W_2 = 276$ plf
$W_3 = 206$ plf } refer p 9.

∴ Σ O/T Moments due to WL.
$= 4050 \times \frac{16}{2} + \frac{825}{2} \times 16$ lb ft

$= 39{,}000$ lb ft.

∴ Axial forces in mbrs due to O/T only
$= 39{,}000 / 2240 \times 16 = \pm 1.09$ tons.

Axial force in AC due to uplift only
$= 276 \times 8 / 2240 = -.99$ Tons.

FD
$= (276 + 206) \times 8 / 2240 = -1.72$ ton

∴ Force in col AC
= −1.09 − .99 + 1445/2240
= −1.44 ton uplift.

Force in col FD
= +1.09 − 1.75 + 2095/2240
= −.28 ton uplift.

with WL + DL acting column axial loads are negligible

M_{max} = 62.5 ton in.

$\frac{l}{r_{yy}}$ = 8 × 12 × .85 / 1.16 = 79

∴ P_{bc} = 10.5 ton/in²

⇒ $z_{reqd} = \frac{62.5}{10.5}$ = 5.95.

— OK easily.

Check columns under DL+LL only.

Max P = (150 + 950) 18 / 2240 ton

= 1.43 ton

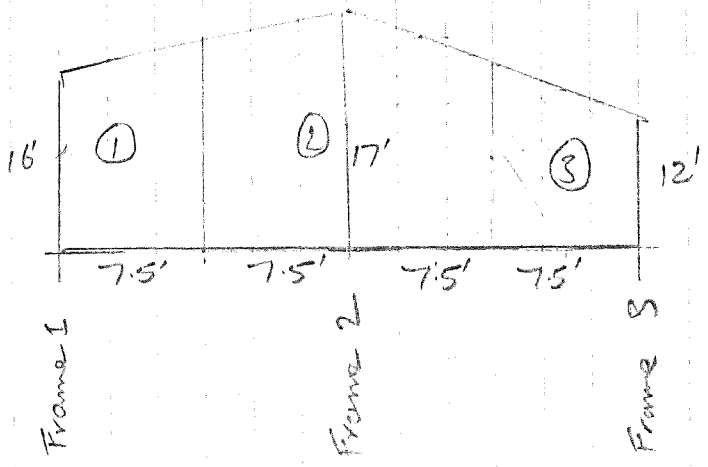
Unsupported length = 9'.

$\frac{l}{r_{yy}} = \frac{9 \times 12 \times .85}{1.16}$ = 79 (if top is held in position)

∴ P_a = 6.65 ton/in².

∴ Capacity of 8 UB 17 is 6.65 × 5.00
= 33.2 ton
— ample.

(b) LONGITUDINAL DIRECTION:



End Elevation.

As before W. Press = $17 \times 1.2 \times C_p$ psf.

$= 20.4\, C_p$ psf.

in long direction
overall $\Sigma C_p = 1.2$

$\therefore$ Σ W.P in long direction
$= 20.4 \times 1.2$ psf $= 24.6$ psf.

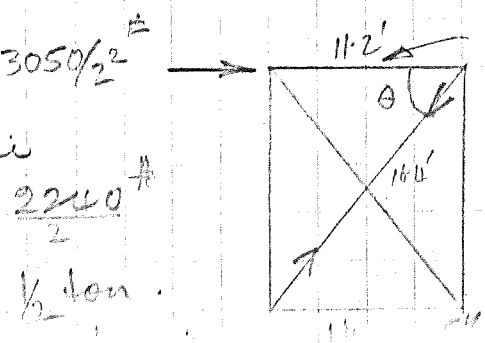
$\therefore F_1 = 24.6 \times 16.5 \times 7.5 = 3050$ lb.

$F_2 = (16.5 + 15.0) \times 7.5 \times 24.6 = 5800$ lb.

$F_3 = 13.0 \times 7.5 \times 24.6 = 2400$ lb.

FRAME 1

Provide diagonal bracing in two bays.



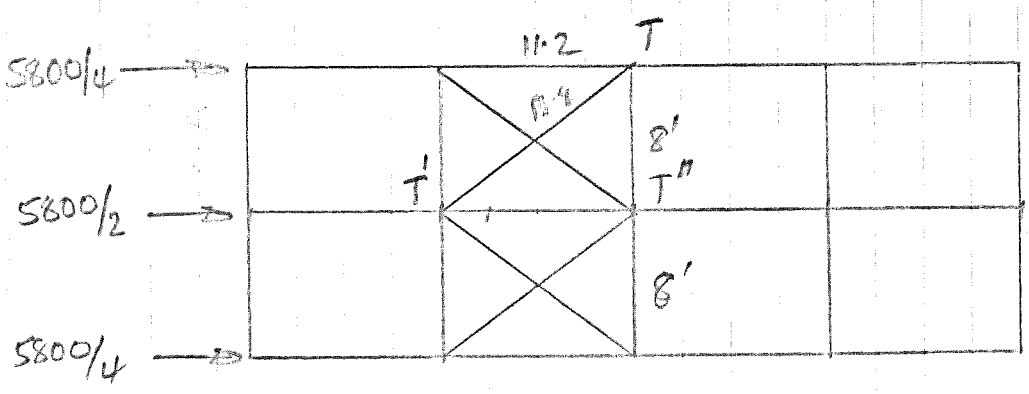
Force in diagonal tie

$= \frac{1525}{2} \times \frac{16.4}{11.2} = \frac{2240}{2}$ #

$= 1$ ton.

FRAME 2

Provide diagonal bracing in a central bay only.



Force in tension tie TT'

$$= \frac{5800}{4 \times 2240} \times \frac{13\cdot8}{11\cdot2} = \cdot80 \text{ Ton}$$

∴ Use $1\frac{1}{2} \times 1\frac{1}{2} \times 10$ SWG RHS bracing between roof & mezzanine

Below mezzanine.

Force in tension tie

$$= \frac{3}{4} \times \frac{5800}{2240} \times \frac{13\cdot8}{11\cdot2} = 2\cdot39 \text{ ton}$$

∴ Use ~~2"×4" ms ft~~ 4"×2" timber checked into internal wall for bracing.

Apex member: Eff length = 11·2 ft.

Max Axial Force $= \frac{5800}{4 \times 2240} = \cdot65$ ton (1450 lb)

∴ Use 2-6"×2" purlin (all bays)

Member TT'' - Max Axial force = 1·95 ton.

∴ Use $2\frac{1}{2}$"×$2\frac{1}{2}$"×10g RHS in all bays.

FRAME 3 Provide diagonal bracing in 2 bays.

- use 2" x 1/4" m.s. ϕ bracing out into framed timber walls.

FOUNDATION DESIGN:

FRONT WALL (ie fully glazed wall)

Max Post Forces = 150 x 7.5 + 4 x 11.25 x 12 (approx.)
glazing

= 1665 lb. ↓

or = -(276 - 81.5) 7.5 + 540
glazing

= -920 lb ↑

Allow bearing press of 500 psf.

∴ Area of pad reqd = 3.34 ft²

∴ Use 2' x 2' x 1' pad.

Reinf with #3 @ 6" crs ew.

Wt of footing 4 x .150 = 600 #
+ Wt of adj strip footing
say 4 of 12 x 12 = 4 x .150 = 600 #

+ Wt of 12" of soil over pad
= 100 x 4 = 400 #

1600 # > 1.5 x 920 # uplift.

∴ Fdns ok.

Jns 18 x 12

CENTRAL COLUMNS:

Max loads = 1.43 x 2240 = 3200 # (w/ v p13)

∴ Use 2'-6" × 2'-6" × 1'-0" pad

with #3 @ 6" c/s ew.

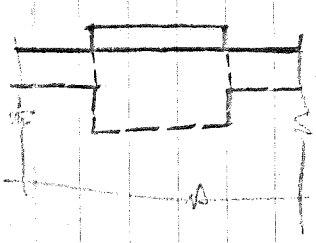
Wt of footing 2.5×2.5×150 = 940#.

Wt of adj floor slab.
say 6'×6'×4" = 6×6×⅓×150 = 1800#
2740# > 1.5×1790# uplift

∴ Fdn OK.

REAR WALL:
Max Post Force = 250×7.5 + 16×20×4 (approx; approx wall wt.)
= 3150#.

∴ Use 2'-6" × 2'-6" × 1'-0" pads
with #3 @ 6" c/s ew.



Max uplift = 1.44×2240 − 1280
= 1940#.

Wt of footing = 940.
Wt of 4' of 12×12 strip footing = 600
Wt of 2' of soil over 2.5² × 100 = 625
Wt of 6'×3'×4" of slab = 900
3065 > 1.5×1940# uplift.

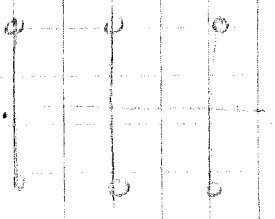
∴ Fdn OK.

DESIGN OF POSTS TO FRONT WALL

Max Axial Compression = 1125#.

Max Lateral load (WL) = 17×1.2×1.1×11.25 plf.
= 252 plf

Span = 12'-0".



∴ Use 2 - 8"×2" bolted together.

Reactions = 252 × 6 = 1512 #.
(or 1130 # corrected for WL loading)

∴ Use 2 - 2½" ϕ 400 Tred plate connectors.
top & bottom.

horizontals on front wall

Span = 11.25'. w = 17×1.2×1.1 × 6
= 135 plf.

Mmax = 135 × 11.25² × 1.5 = 25,600 lb in.

⇒ Z = 15.4 in³.

∴ Use 2 - 6"×2" horiz beams.

End Reactions = 135 × 11.25/2
= 760.

∴ Use 2 - Triple-Grip Fasteners each end.

End Wall:

Horiz Beam: — assume adequate vertical support.

Span = 15'.

w = 17×1.2×1.1 × 8.5 = 191 plf.

Mmax = 191 × 15² × 1.5 = 64,500 lb in.

∴ Z reqd = 39.0 in³.

∴ Use 2 - 9"×2" beam on the flat.

Reactions: 191 × 7.5 = 1430 lb. (Douglas Fir)

∴ Use 2 - 2½" ϕ [illegible]

ROOF BRACING

It is assumed that the diagonal sarking is sufficient for in plane bracing.

TRIMMERS TO 10' WINDOWS IN END WALLS.

Loading: Wall over @ 90 plf. 160 plf.
Flooring Loading (from mezzanine)
= 40 × 5.5 = 220 plf.
380 plf.

$\therefore M_{max} = 380 \times 10^2 \times 1.5$ lb in.

$= 57{,}000$ lb in.

$\therefore Z_{req'd} = 57{,}000/1250 = 45.6$ in^3.

$\therefore$ Use 2 - 9" × 2" bolted together.

N.J. Morgan. EE (Hons)
Wellington

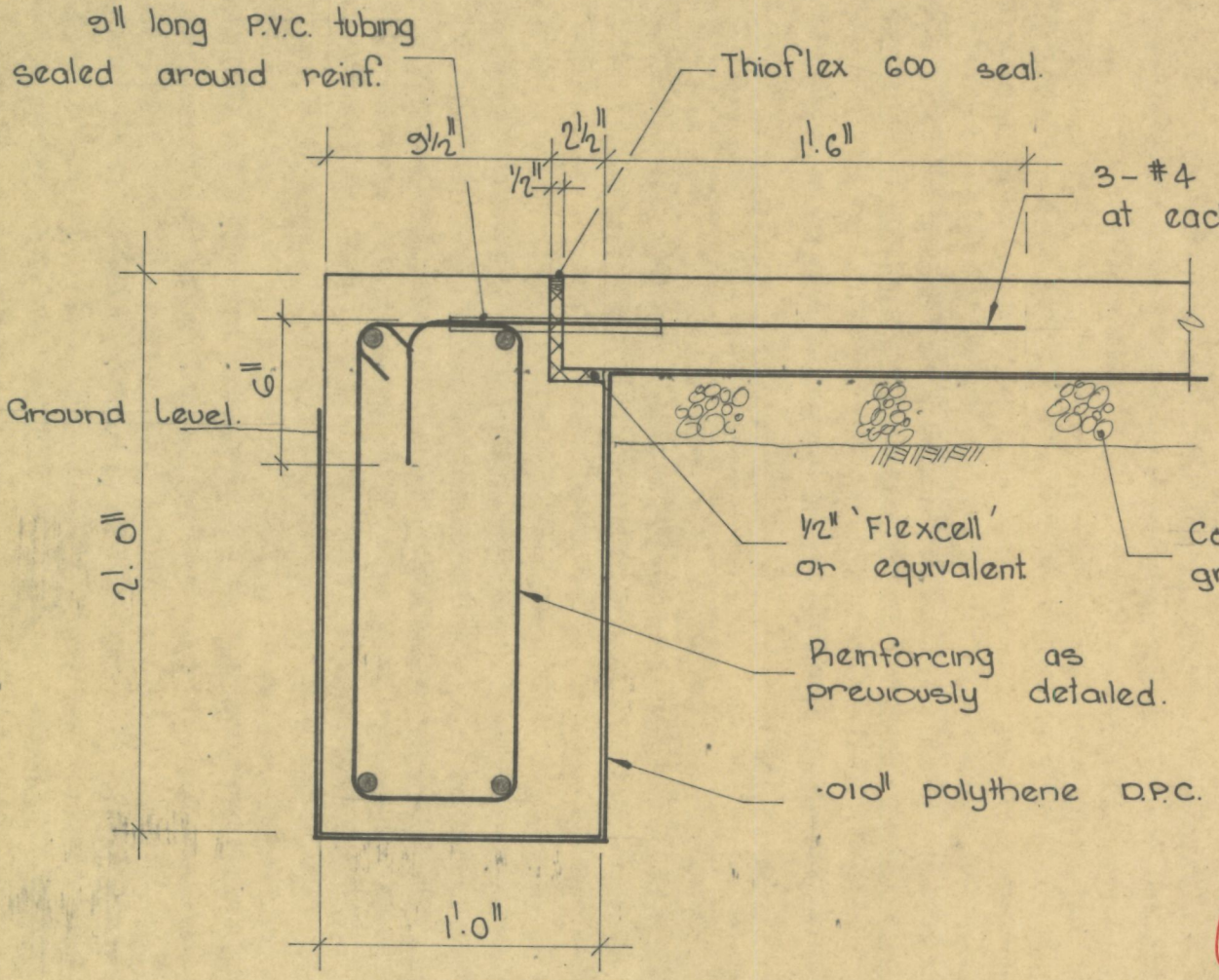
KAPITI BOROUGH COUNCIL

ADDRESS Mungaroturukuturuku Rd OWNER Cleghorn LOT 20 DP 33688

E OF BUILDING Farm Shed. AREA BUILDING INSPECTOR Bowering

E PLEASE ADVISE BUILDING INSPECTOR IF DELAY IS UNAVOIDABLE.

	SIGNED	DATE
NIOR PLANNING OFFICER: OK.		
BDIVISIONAL ENGINEER:		
KS ENGINEER:		
SIGN ENGINEER:		
LTH, PLUMBING, DRAINAGE INSPECTOR:		
ERWORKS INSPECTOR:		
EF BUILDING INSPECTOR:		
LDING INSPECTOR: OK.		



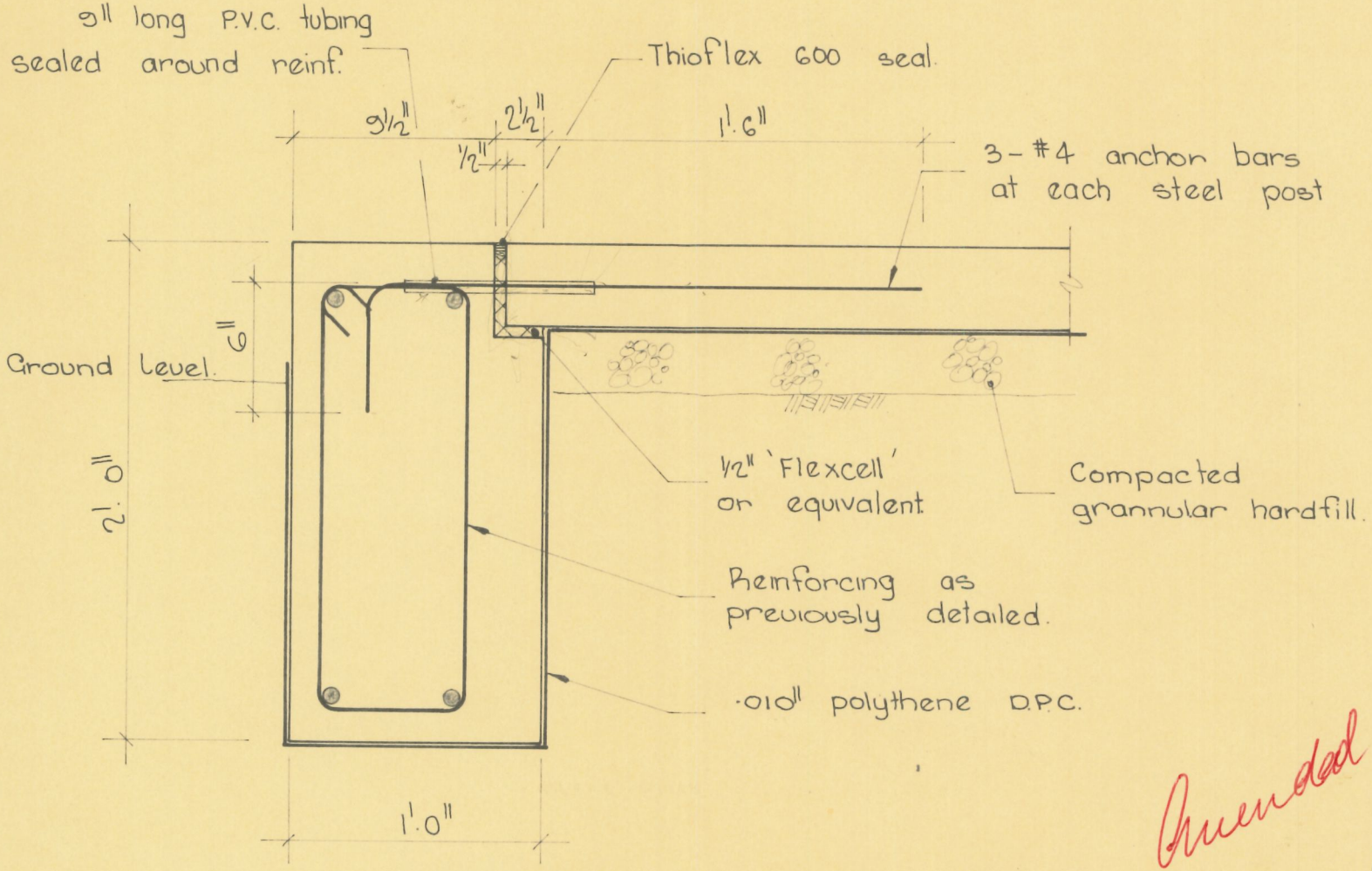
PERIMETER BEAM DETAIL

Amended detail

APPROVED - Permit may be issued
19 3 77
Building Inspector
Hutt County Council

Scale: ½" = 1'.0"
Designed: N.J.M.
Drawn: B.M.S.
SHEET 4.

BERG HOUSE PARAPARAUMU.



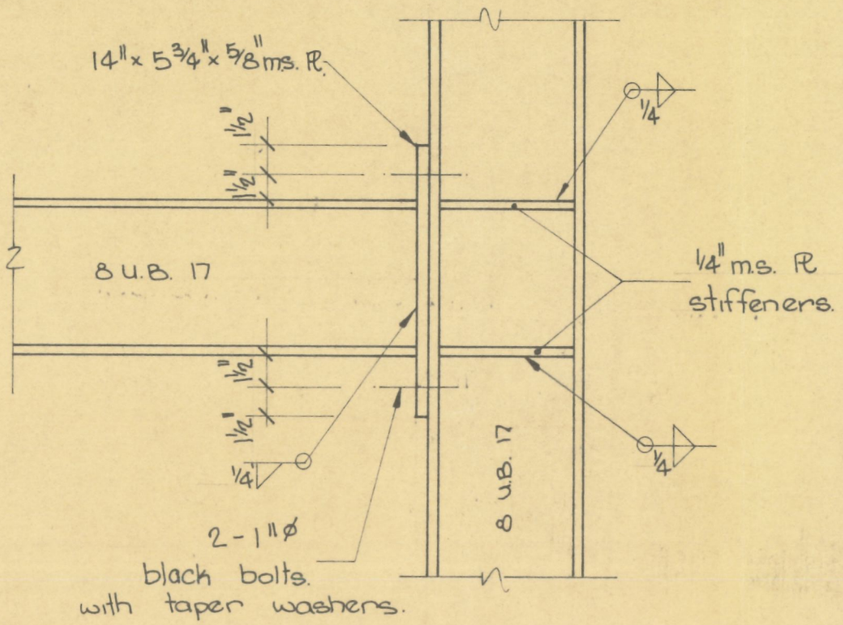
PERIMETER BEAM DETAIL

Amended detail

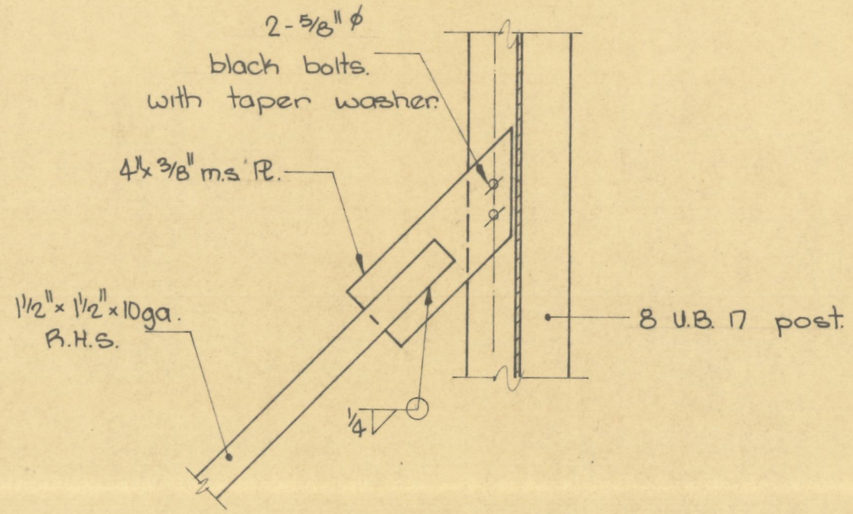
APPROVED - Permit may be issued
19.3.73
Building Inspector
Hutt County Council

Scale: 1½" = 1'.0"
Designed: N.J.M. 12.
Drawn: BMS. 8.
SHEET 4.

BERG HOUSE PARAPARAUMU.

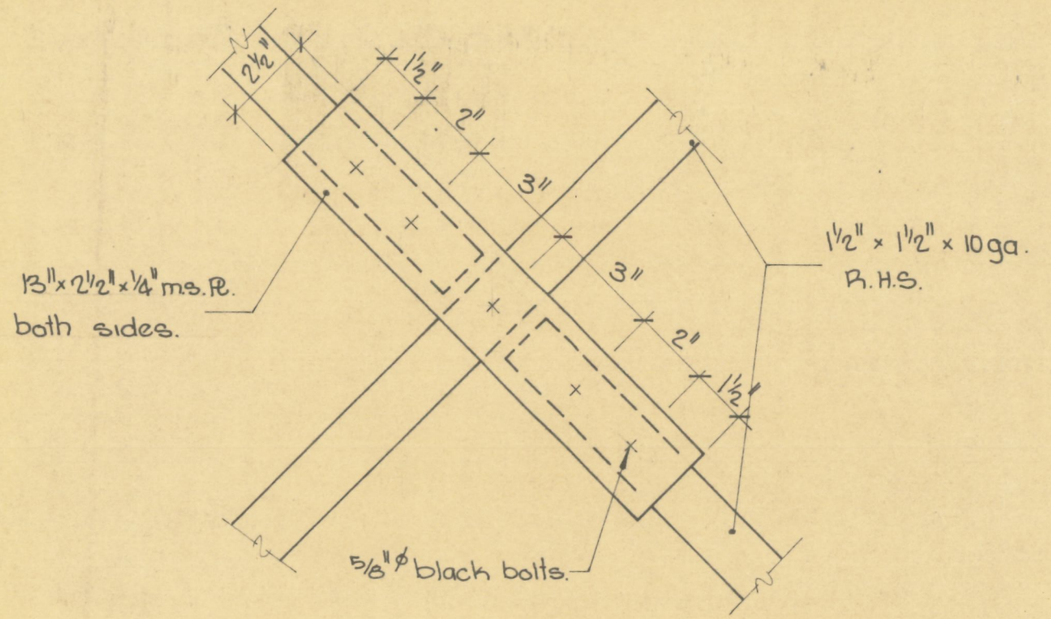


ALTERNATIVE (9)



ALTERNATIVE (18)

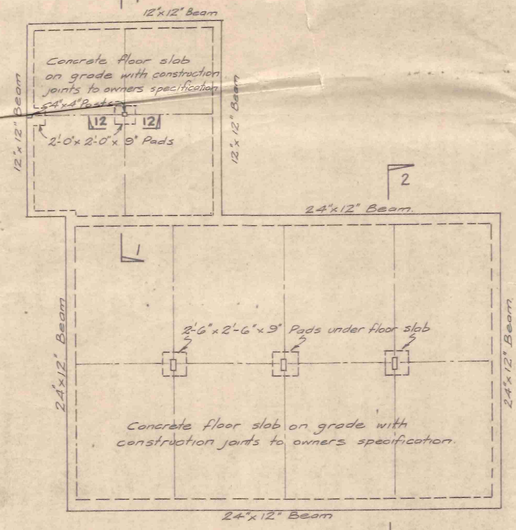
Amended detail



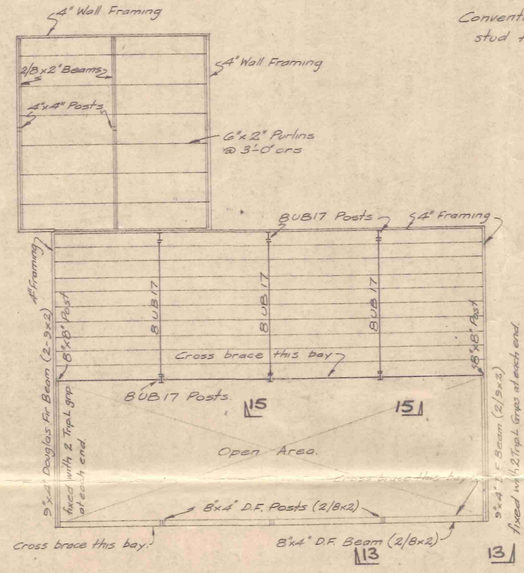
ALTERNATIVE (17)

ALTERNATIVE DETAILS FOR BERG HOUSE PARAPARAUMU

Scale: 1/8 & 1/4 F.S.	
Drawn: B.M.S.	Date: Nov 72.
Designed: N.J.M.	Date: Nov 72
Sheet 3.	

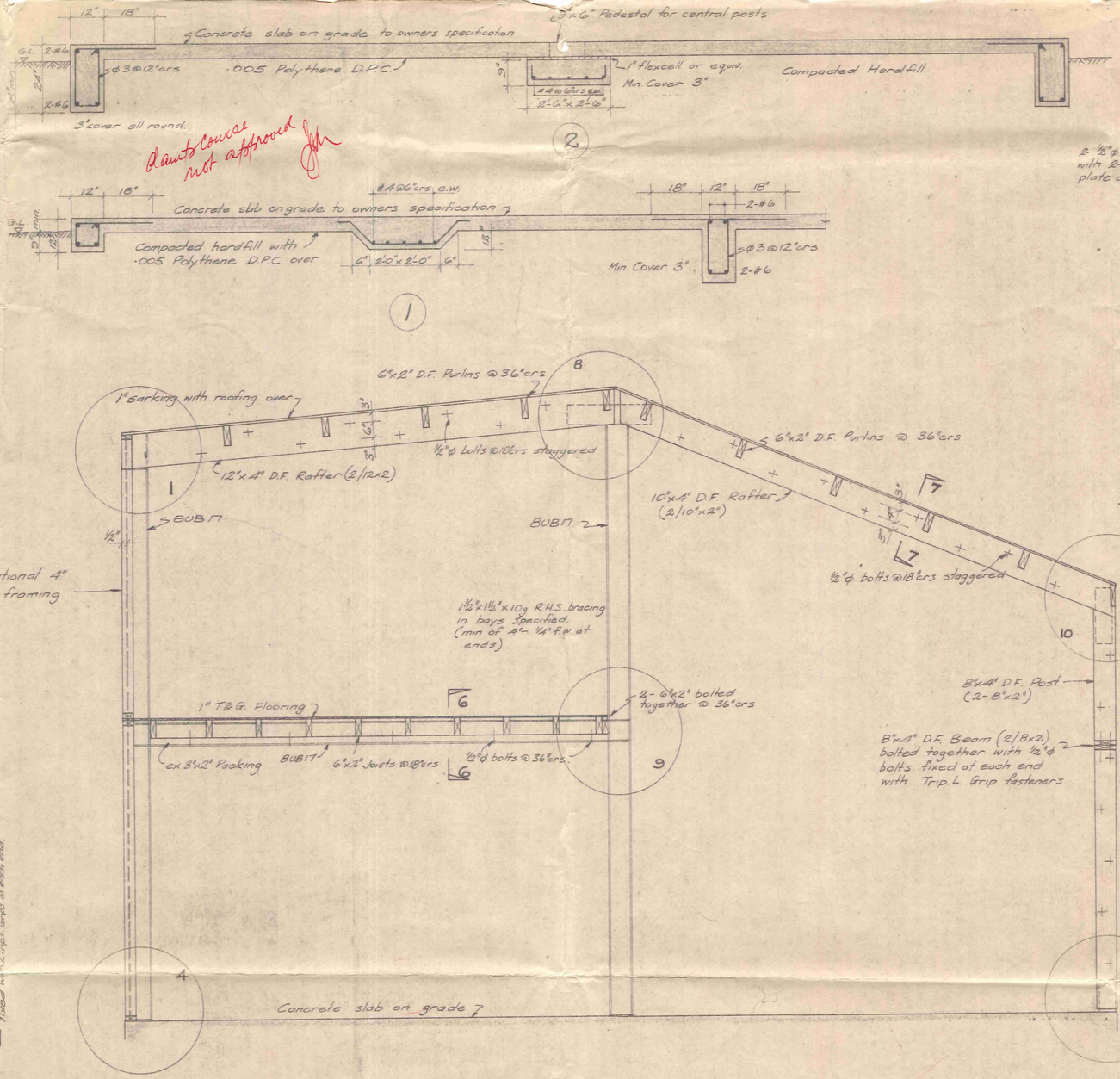


FOUNDATION PLAN

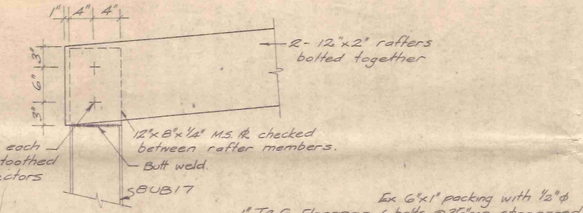


PLAN AT MEZZANINE LEVEL

ROOF PLAN



Concrete slab on grade



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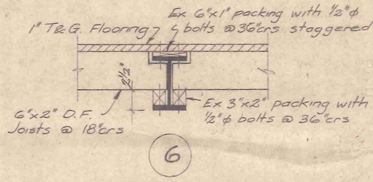

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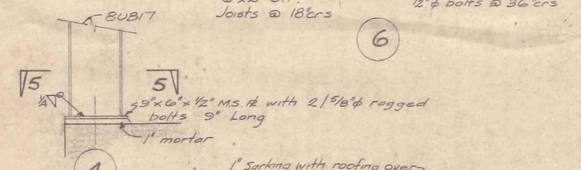

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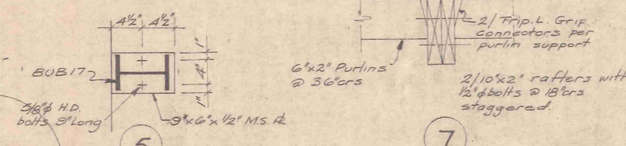
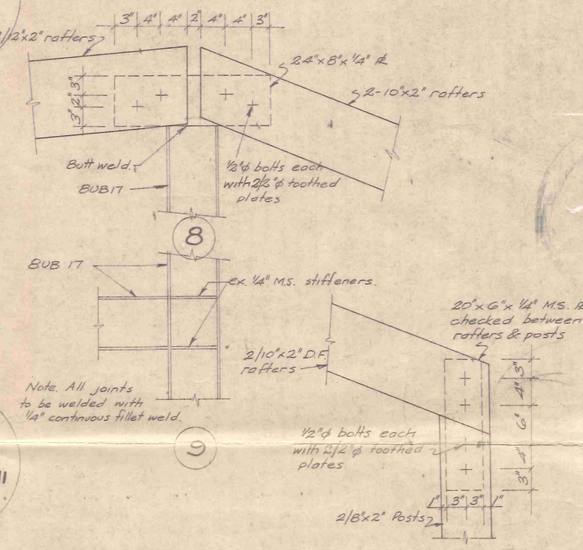
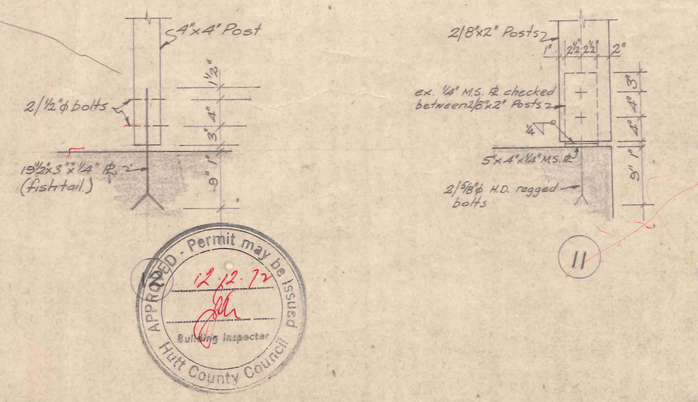


5 7



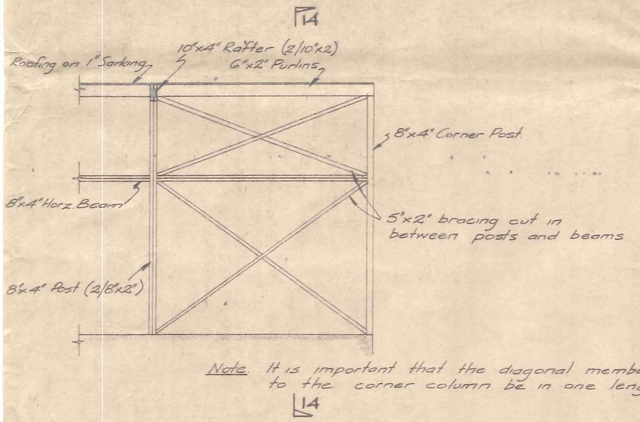


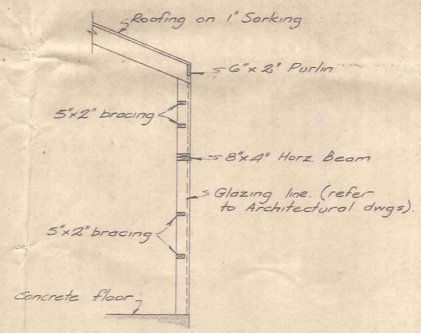
Notes.

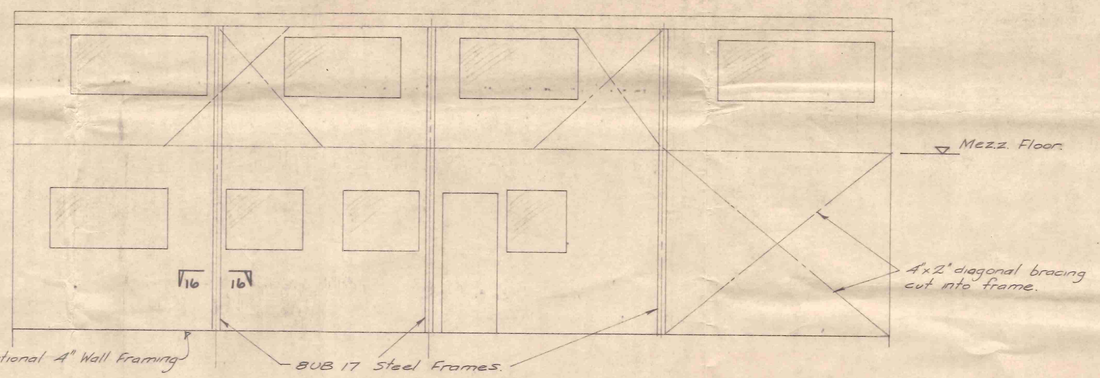
1. All foundations are to be founded on solid material. Where soft ground exists at design founding level, the soft material is to be excavated at backfilled with weak mix. concrete.
2. Concrete compression strength is to be 2500 psi at 28 days. Reinforcing steel is to have a yield strength of 40,000 psi (NZSS 1693) (Mild steel)
3. All concrete to comply with the provisions of NZ.SS 1900 Chapter 9.3.A
4. All structural steel to comply with the provisions of NZSS 309 and NZ.SS 1900 Chapter 9.4
5. All unencased structural steelwork is to be painted with one coat of red lead paint.
6. The floor slab and its preparation is to be to the "Owner's" specification.
7. All structural timberwork except wall framing ie. beams, posts, joists, rafters & purlins to be Douglas Fir. Structural Grade. and is shown on the dwg as D.F.
8. Refer to the Archectural Drawings for dimensions.

PROPOSED HOUSE FOR MR BERG ~ PARAPARAUMU ~

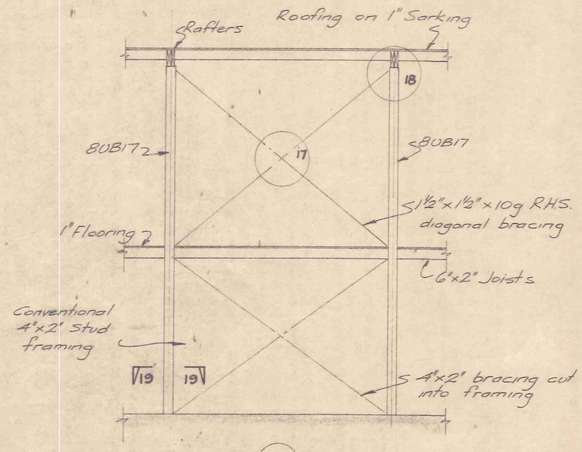
Scale	1/8", 1/2" & 1" = 1'-0"	
Drawn	J. A. Helps	Nov. 197
Designed	N. J. Morgan	Nov. 197
SHEET 1		

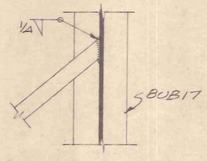


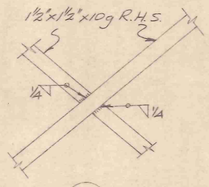


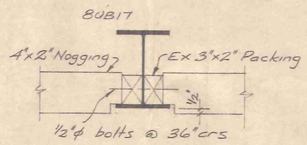


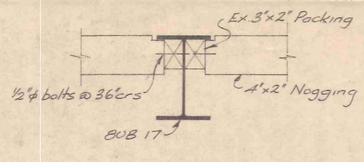
ELEVATION ON REAR WALL.



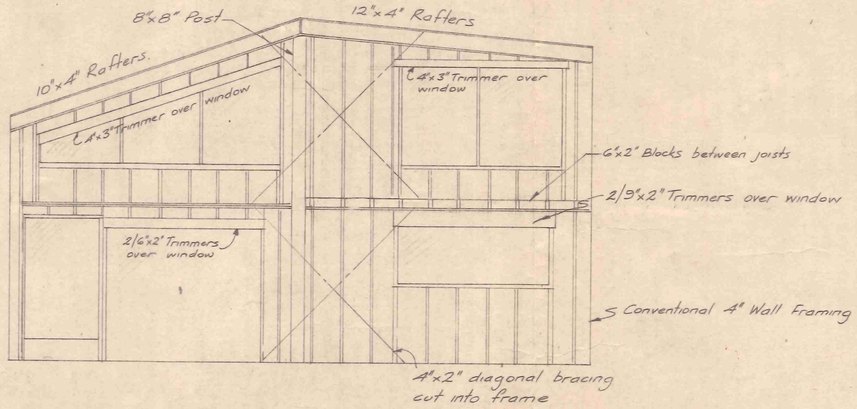








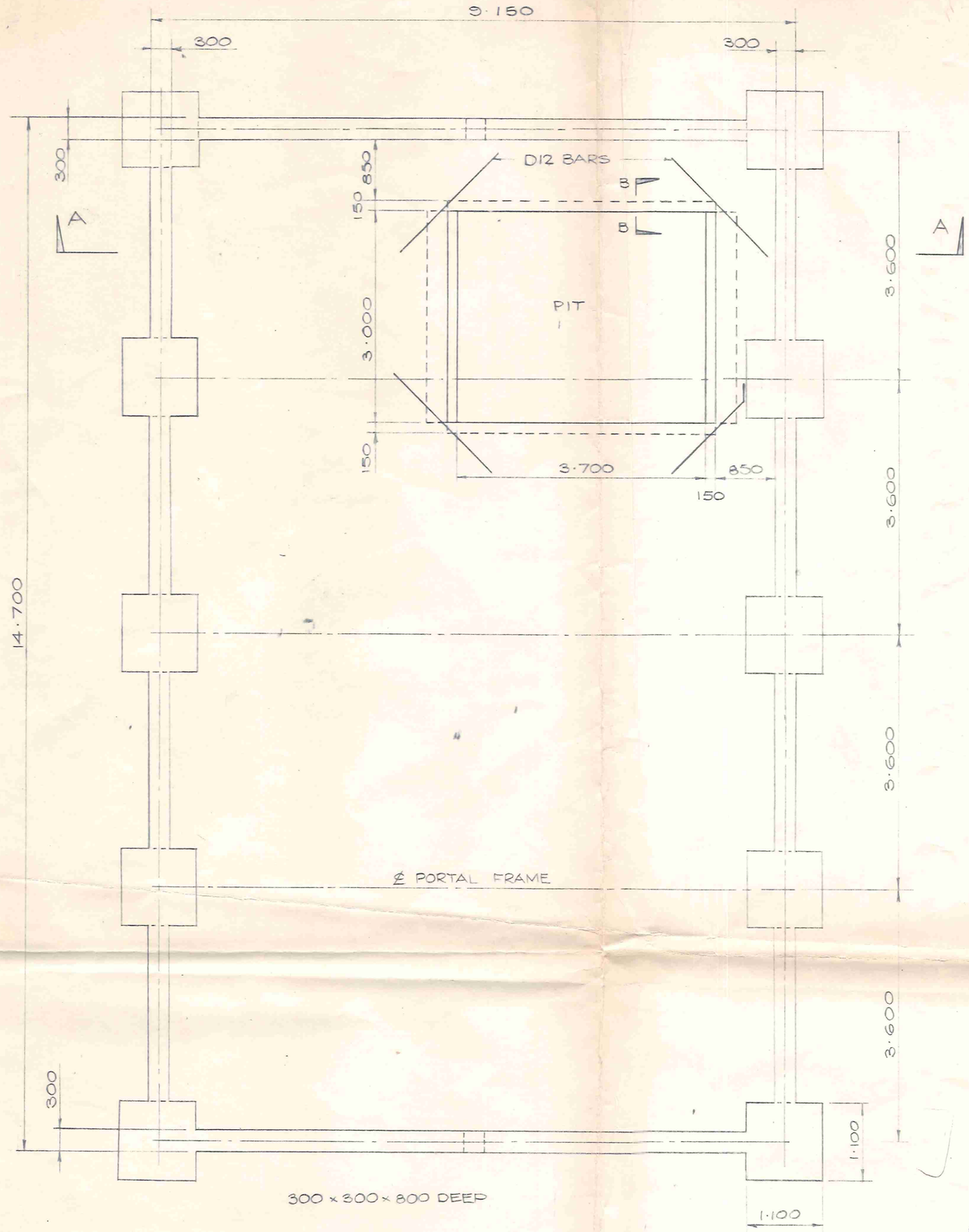
For rafter support details see details 3, 8 & 10.



ELEVATION ON END WALL

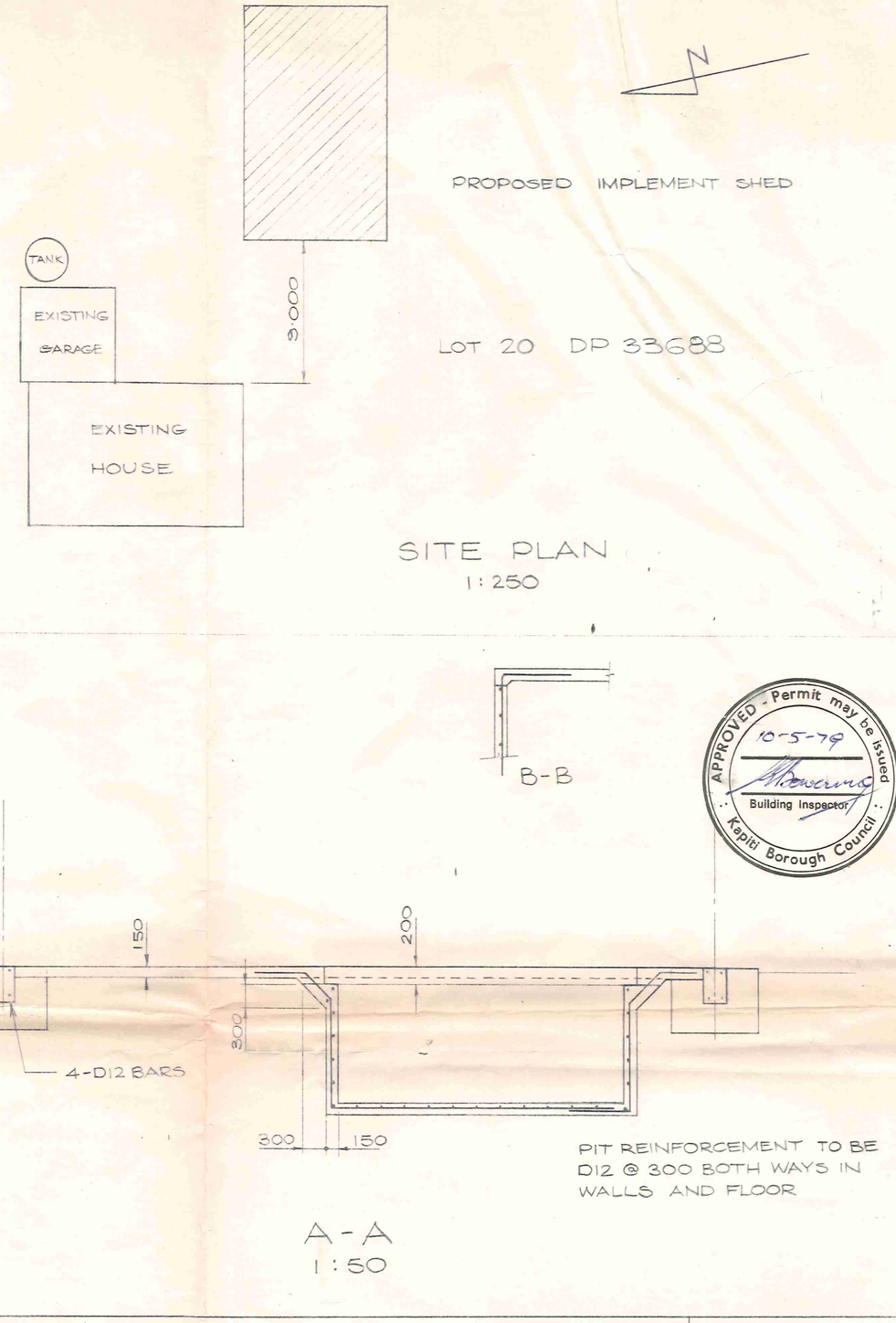
PROPOSED HOUSE FOR MR. BERG. ~ PARAPARAUMU ~

Scale	1/4" & 1½" = 1'-0"	
Drawn	J.A. Nelson	NOV. 1972
Designed.	N.J. Morgan.	Nov. 1972
SHEET 2		



FOUNDATION PLAN

1:50



SITE PLAN

1:250

APPROVED - Permit may be issued
10-5-79
Building Inspector
Kapiti Borough Council

PIT REINFORCEMENT TO BE D12 @ 300 BOTH WAYS IN WALLS AND FLOOR

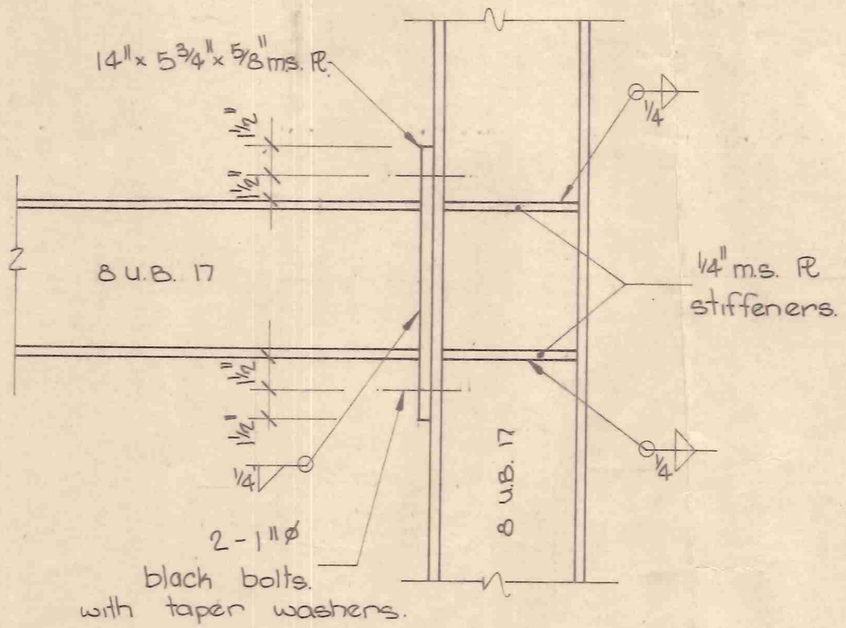
A-A

1:50

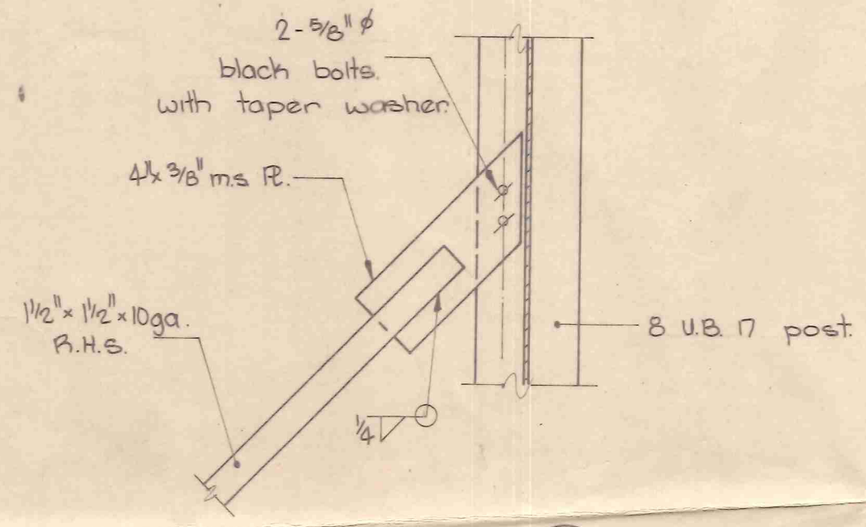
FOUNDATION AND SITE PLANS FOR THE PROPOSED IMPLEMENT SHED FOR MR & MRS P CLEGHORN MAUNGAKOTUKUTUKU RD. PARAPARAUMU

SCALES
SITE PLAN 1:250
FOUNDATIONS 1:50

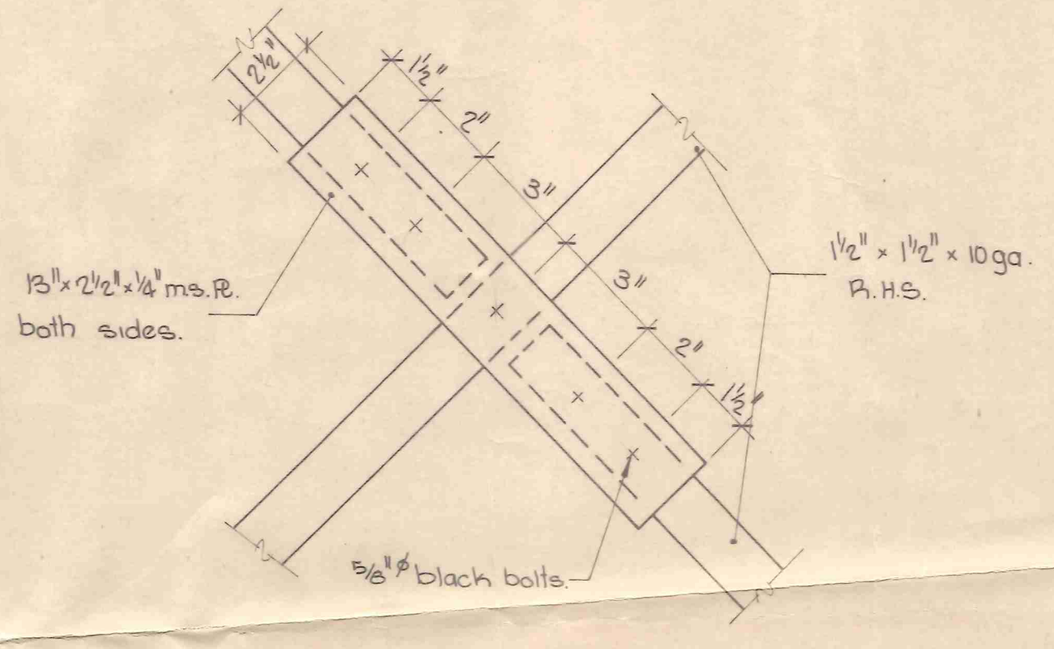
DRAWN.
I.D.McLUCKIE REA 6/5/79



ALTERNATIVE (9)



ALTERNATIVE (18)



ALTERNATIVE (17)

ALTERNATIVE DETAILS FOR BERG HOUSE PARAPARAUMU

Scale: 1/8 & 1/4 F.S.	
Drawn: B.M.S.	Date: Nov 72.
Designed: N.J.M.	Date: Nov 72
Sheet 3.	

S

N

← To Maungakotukutuku Road

Prefab 7

5000 Gallon
Rain Water Storage

← Pump in Garage

Septic Tank

4" Concrete

← To Valley Road

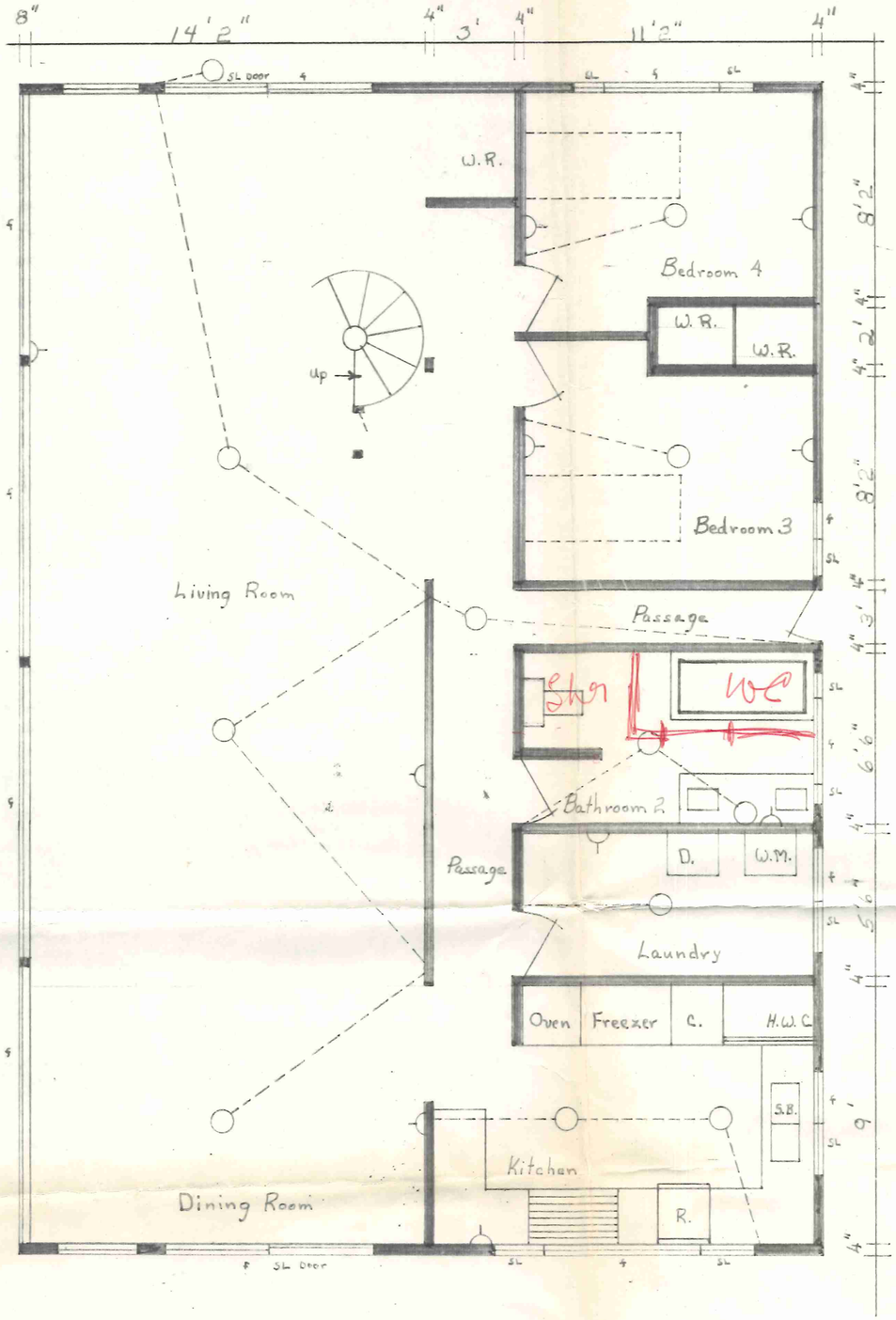
Scale ⅛" = 1 Chain
Total Area = 52 Acres

No detail of water tank and septic tank to be presented

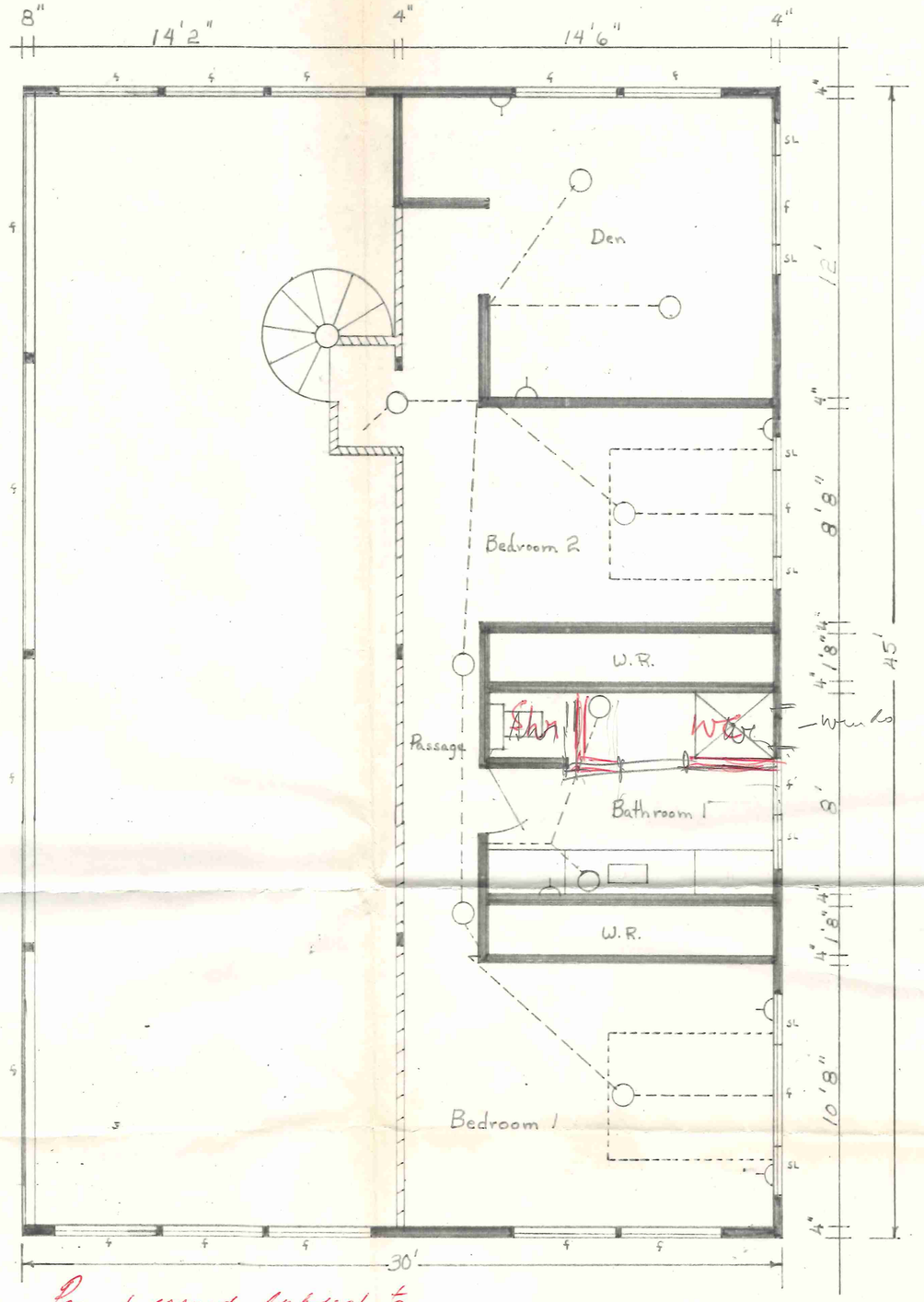
APPROVED - Permit may be issued
12-12-72
Building Inspector
Hutt County Council

Site Plan - Berg - Paraparaumu

Scale ⅛" = 1'-0"
Drawn R.J. Berg Nov. 1972
Designed R.J. Berg Nov. 1972



Lower Level

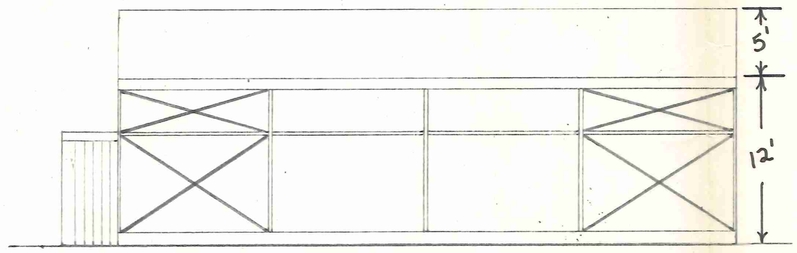


Permit issued subject to amended Bathroom layout to isolate WC

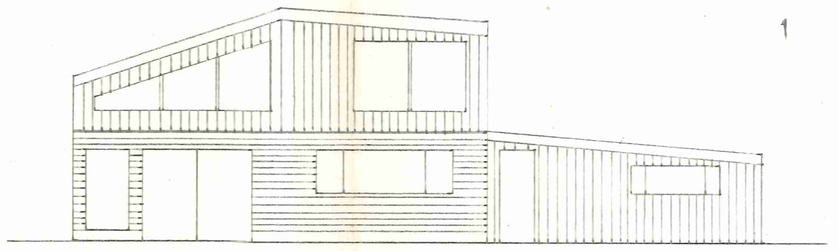
Upper Level

Floor Plan - Berg - Paraparaumu

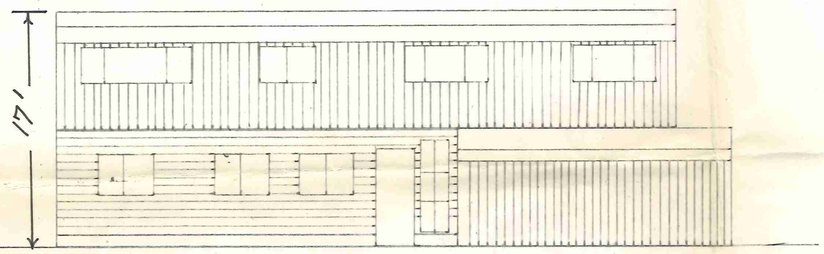
Scale ¼" = 1'-0"
Drawn R. J. Berg Nov. 1972
Designed R. J. Berg Nov. 1972



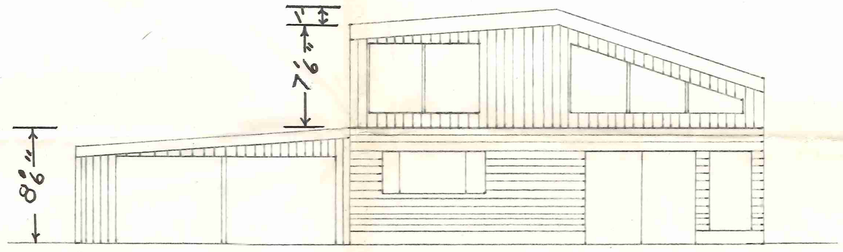
Front Elevation



Left Elevation



Rear Elevation



Right Elevation

Elevations - Berg - Paraparaumu

Scale 1/8" = 1:0"
Drawn R.J. Berg Nov. 1972
Designed R.J. Berg Nov. 1972

ASSESSMENT .....

LOT 20

DP 33688

Date Received	10-5-79				
Type	implement Shed				
Permit No.					
Owner	Cleghorn				
Builder	owner				
Plumber					
Drainlayer					
Site					
Foundation					
Boundaries Location					
Framing					
Lining					
Plumbing					
Drainage					
Completed					
Plotted					
Plan sheet					