

# BRACING CALCULATIONS

## JOB INFORMATION SHEET

|   |  |                                     |                |
|---|--|-------------------------------------|----------------|
| Job name                                  | <u>Coldicutt / Lush</u>  |                                     |                |
| Job address                               | Lot No <u>3</u>  | DP No. <u>114673</u>                |                |
|   | No. <u>60 Makarau Rd ROY Workworth</u>   | Street                              |                |
| Building type<br><i>Refer to drawings</i> | Single storey  | <input checked="" type="checkbox"/> |                |
|   | Two storey   | <input type="checkbox"/>            |                |
|   | Three storey   | <input type="checkbox"/>            |                |
|   | Attic rooms in roof space less than 50% of floor area  | <input type="checkbox"/>            |                |
| Building length (BL)                      | Refer plan<br>(Use roof length where average roof pitch is over 25°)   | <u>3.5</u>                          | m              |
| Building width (BW)                       | Refer plan<br>(Use roof width where average roof pitch is over 25°)  | <u>4.8</u>                          | m              |
| Gross Building<br>Plan Area               | Calculate from plan<br>(GPA) (For heavy roofs use roof plan at eaves level)  | <u>17</u>                           | m <sup>2</sup> |
| Building height                           | Ground to apex. Refer to drawings  | <u>4.5</u>                          | m              |
| Roof height                               | Eaves to apex. Refer to drawings   | <u>1</u>                            | m              |
| Roof weight                               | Light, heavy (L,H)   | <u>L</u>                            |                |
| Roof pitch                                | Average. Gable ends 60°  | <u>60</u>                           | °              |
| Stud height                               |  | <u>2.4</u>                          |                |
| Cladding weight                           | Light, heavy (L,H)   | <u>L</u>                            |                |
| Type of foundations                       | Refer NZS 3604 Table 4.1   | Type <u>13T</u>                     |                |
| Earthquake zone                           | A, B or C. Refer NZS 3604 Fig 2.2  | <u>C</u>                            |                |
| Wind zone                                 | Low, Medium, High, Very High or Specific Design<br>Refer Territorial Authority Office or determine from<br>NZS 3604 Figs 2.3, 2.4 and Tables 2.4, 2.5<br><b>Note</b><br>For Specific Design refer drawings to a Registered Structural Engineer | <u>H</u>                            |                |

# FOUNDATION BRACING

## FOUNDATION BRACING UNITS AND BRACING ELEMENTS REQUIRED (Not required for solid foundation walls)

### FOR WIND

#### a. Along the building

##### i. Building Width (BW)

Multiply by number from NZS 3604 Table 4.7B

x

Equals minimum Bracing Units required along

=

##### ii. Divide by pile rating from NZS 3604 Table 4.8

/

Equals number of rated piles required along  
(Correct upwards to next highest whole number)

=

#### b. Across the building

##### i. Building Length (BL)

Multiply by number from NZS 3604 Table 4.7B

x

Equals minimum Bracing Units required across

=

##### ii. Divide by pile rating from NZS 3604 Table 4.8

/

Equals number of rated piles required across  
(Correct upwards to next highest whole number)

=

### FOR EARTHQUAKE

#### Along and across the building

##### i. Gross Plan Area (GPA)

Multiply by number from NZS 3604 Table 4.7A

x

Equals minimum Bracing Units required along and across

=

##### ii. Divide by pile rating from NZS 3604 Table 4.8

/

Equals number of rated piles required along and across  
(Correct upwards to next highest whole number)

=

### Notes

1. Use the highest number of piles required, wind or earthquake.
2. Spread the rated piles evenly throughout the building, at exterior wall lines and in bracing lines not more than 6m apart.
  - Exterior walls require a minimum of 10 Bracing Units per metre of length.
  - Interior bracing lines require a minimum of 70 Bracing Units.
3. Check NZS 3604 for foundation bracing when flooring is used as a diaphragm.
4. Check NZS3604 Table 4.8 for the brace rating for reinforced concrete and reinforced masonry base walls more than 1.5m long and for the brace ratings of other subfloor bracing elements.
5. Refer NZS 3604 for the extra weighting required for attic rooms in the roof space less than 50% of the floor area.

## BRACING CALCULATION SHEET.

ALONG THE BUILDING.

FOUNDATIONS.

~~SINGLE OR TOP STOREY.~~~~BOTTOM STOREY.~~

(Specify).



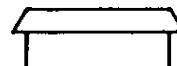
| WALL OR BRACING LINE.             |   | PROPOSED BRACING ELEMENTS.          |               |                               |
|-----------------------------------|---|-------------------------------------|---------------|-------------------------------|
| LINE LABEL<br><i>alphabetical</i> | MIN.B.U<br>REQ'D<br><i>10 per m<br/>or 70</i> | BRACE<br>NUMBER<br><i>numerical</i> | BRACE<br>TYPE | NUMBER<br>OF<br>OR<br>LENGTH. |
| A.                                | 70  | 1                                   | 14            | 1                             |
|                                   |   | 2                                   | 14            | 1                             |
| B.                                | 70  | 3                                   | 14            | 1                             |
|                                   |   | 4                                   | 14            | 1                             |
| C.                                |   |                                     |               |                               |
| D.                                |   |                                     |               |                               |
| E.                                |   |                                     |               |                               |
| F.                                |   |                                     |               |                               |

| FOR WIND.                                   |                               |
|---|-------------------------------|
| BRACE<br>RATING<br><i>each<br/>or per m</i> | PROPOSED<br>BRACING<br>UNITS. |
| 160   | 160                           |
| 160   | 160                           |
| 160   | 160                           |
| 160   | 160                           |
|   |                               |
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| FOR EARTHQUAKE.                             |                               |
|---|-------------------------------|
| BRACE<br>RATING<br><i>each<br/>or per m</i> | PROPOSED<br>BRACING<br>UNITS. |
| 70  | 70                            |
| 70  | 70                            |
| 70  | 70                            |
| 70  | 70                            |
|   |                               |
|   |                               |
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|   |                               |
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|   |                               |

PROPOSED BRACING UNITS ALONG FOR WIND. 640E'QUAKE 280BRACING UNITS REQUIRED ALONG FOR WIND. 547.2E'QUAKE 51

ACROSS THE BUILDING.



|    |    |   |    |   |
|----|----|---|----|---|
| M. | 70 | 5 | 14 | 1 |
|    |    | 6 | 14 | 1 |
| N. | 70 | 7 | 14 | 1 |
|    |    | 8 | 14 | 1 |
| O. |    |   |    |   |
| P. |    |   |    |   |
| Q. |    |   |    |   |
| R. |    |   |    |   |
| S. |    |   |    |   |

|     |     |
|-----|-----|
| 160 | 160 |
| 160 | 160 |
| 160 | 160 |
| 160 | 160 |
|     |     |
|     |     |
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|    |    |
|----|----|
| 70 | 70 |
| 70 | 70 |
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| 70 | 70 |
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PROPOSED BRACING UNITS ACROSS FOR WIND 640E'QUAKE 280BRACING UNITS REQUIRED ACROSS FOR WIND 357E'QUAKE 51

# WALL BRACING

## WALL BRACING UNITS AND BRACING ELEMENTS REQUIRED

### FOR WIND

#### a. Along the building

|   |   |              |
|---|---|--------------|
| Building Width (BW)                         |   | <u>4.8</u>   |
| Multiply by number from NZS 3604 Table 6.2  | x | <u>49</u>    |
| Equals minimum Bracing Units required along | = | <u>235.2</u> |

#### b. Across the building

|  |   |              |
|--|---|--------------|
| Building Length (BL)                         |   | <u>3.5</u>   |
| Multiply by number from NZS 3604 Table 6.2   | x | <u>35</u>    |
| Equals minimum Bracing Units required across | = | <u>122.5</u> |

### FOR EARTHQUAKE

#### Along and across the building

|  |   |             |
|--|---|-------------|
| Gross Plan Area (GPA)                                  |   | <u>17</u>   |
| Multiply by number from NZS 3604 Table 6.1             | x | <u>1.4</u>  |
| Equals minimum Bracing Units required along and across | = | <u>23.8</u> |

#### Note

|  |   |              |
|--|---|--------------|
| Wind bracing units required along            |   | <u>235.2</u> |
| Divided by earthquake bracing units required | / | <u>23.8</u>  |
| Equals                                       | = | <u>9.9 *</u> |
| And  |   |              |
| Wind bracing units required across           |   | <u>122.5</u> |
| Divided by earthquake bracing units required | / | <u>23.8</u>  |
| Equals                                       | = | <u>5.1 *</u> |

\* For answers 1 or less calculate for Earthquake only

For answers between 1 and 1.5 calculated for both Wind and Earthquake

For answers 1.5 or more calculate for Wind only

∴ Earthquake NOT req'd.

#### Notes

- Bracing Units proposed for the building must exceed the Bracing Units required:
  - In total
  - For each bracing line.
- Spread the bracing lines evenly throughout the building, at exterior wall lines and in bracing lines not more than 6m apart.
  - Exterior walls require a minimum of 10 Bracing Units per metre of length.
  - Interior bracing lines require a minimum of 70 Bracing Units.
- For the rating of the various braces refer to:
  - NZS 3604 Table K1.
  - 3604 Fix List - Bracing Elements (a BRANZ publication)
  - Manufacturers' brochures

## BRACING CALCULATION SHEET.

ALONG THE BUILDING.

~~FOUNDATIONS.~~  
~~SINGLE OR TOP STOREY.~~  
~~BOTTOM STOREY.~~  
 (Specify).

| WALL OR BRACING LINE.       |   | PROPOSED BRACING ELEMENTS.    |               |                               |
|-----------------------------|---|-------------------------------|---------------|-------------------------------|
| LINE LABEL<br>alphabetical. | MIN. B.U.<br>REQ'D<br>10 per m<br>or 70 | BRACE<br>NUMBER<br>numerical. | BRACE<br>TYPE | NUMBER<br>OF<br>OR<br>LENGTH. |
| A.                          | 70                                      | 1                             | BR5           | 1.2                           |
| B.                          | 50                                      | 2                             | BR5           | 1.2                           |
| C.                          |   |                               |               |                               |
| D.                          |   |                               |               |                               |
| E.                          |   |                               |               |                               |
| F.                          |   |                               |               |                               |

| FOR WIND.                            |                               |
|--------------------------------------|-------------------------------|
| BRACE<br>RATING.<br>each<br>or per m | PROPOSED<br>BRACING<br>UNITS. |
| 115                                  | 138                           |
| 115                                  | 138                           |
|                                      |                               |
|                                      |                               |
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|                                      |                               |

| FOR EARTHQUAKE.                     |                               |
|-------------------------------------|-------------------------------|
| BRACE<br>RATING<br>each<br>or per m | PROPOSED<br>BRACING<br>UNITS. |
|                                     |                               |
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|                                     |                               |

PROPOSED BRACING UNITS ALONG FOR WIND. 276  
 BRACING UNITS REQUIRED ALONG FOR WIND. 235.2

EQUAKE  
 EQUAKE

ACROSS THE BUILDING.

|    |    |   |     |     |
|----|----|---|-----|-----|
| M. | 50 | 3 | BR5 | 1.2 |
| N. | 50 | 4 | BR5 | 1.2 |
| O. |    |   |     |     |
| P. |    |   |     |     |
| Q. |    |   |     |     |
| R. |    |   |     |     |
| S. |    |   |     |     |

|     |     |
|-----|-----|
| 115 | 138 |
| 115 | 138 |
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PROPOSED BRACING UNITS ACROSS FOR WIND 276  
 BRACING UNITS REQUIRED ACROSS FOR WIND 122.5

EQUAKE  
 EQUAKE



## RESIDENTIAL SPECIFICATION

# RESIDENTIAL SPECIFICATION



Specification of the work to be done and the materials to be used  
in the erection and completion of a residence  
as per the accompanying drawings.

for

Mr and Mrs .....

at .....

Lot Number ..... street

This specifications is to be read in conjunction with the accompanying drawings and any other drawing which may be issued during the currency of the contract.

Any item in this specification and not shown on the drawings and vice versa shall be equally binding as though included both.

The contractor shall provide a form of contract which is to be completed by all parties before the commencement of any work on the site.

Any additions, omissions or variations to the contract shall be authorised in writing and agreed price stated.

The owners are to ensure that all boundary marker pegs are in place and exposed for inspection.

Re-survey if necessary, at owners expense.

Owners .....

Contractor .....

Owners Solicitor .....

Loan Company .....

City, Borough or County .....

## Contract Documents

1. Land information memorandum.
2. Project information memorandum.
3. The accompanying drawings.
4. This specification
5. Concrete work NZS 3109 (1980)
6. Block work NZS 3102
7. Construction - NZS 3604  
- "New Zealand Constructional Details" by RJ Wilson
8. Finish Timber Framed Construction by RJ Wilson
9. Bracing Calculations sub-floor, walls.
10. Engineering details and calculations as required
11. Producer statements as required
12. Survey plan showing contours.

# PRELIMINARY AND GENERAL (ALL TRADES)



## 1. Building Consent

The Contractors shall arrange to obtain building consent, etc., arrange all inspections and pay all fees as required by the territorial authorities, and the various supply authorities.

## 2. Protection of work

All parts of the work liable to injury and all adjoining property, existing work, footways, trees, etc., are to be protected until completion of the contract.

## 3. PC sums (nett Sums)

The PC sums quoted in this specification are nett and the contractor or sub-contractor concerned must add any cartage, fixing charges and profit required to all such items.

## 4. Site

The site of the works will be pointed out to Tenderers who are advised to visit same and check the slope of the ground, quality of the soil, etc., as no extras will be paid for foundation work, site drainage and levelling not detailed or specified.

## 5. Acts Regulations and By-laws

The whole of the work in this contract is to be carried out in strict accordance with the Building Act and Building Regulations and the territorial authorities' regulations, and to be of a standard as required by the Building Code and as approved by the loan company.

## 6. Extent of work

This contract comprises the erection and completion in the soundest and most workmanlike manner of all the work shown or reasonably implied on the accompanying drawings and in accordance with this specification and the supply of all plant, tools, labour, materials, fixtures and fittings required for the due completion of the work.

## 7. Insurance

The Contractor shall at all times, keep the whole of the works fully covered by insurance. Fire. Public Liability. Workers' Compensation, etc.

## 8. Temporary Services

The Contractor shall arrange for all temporary services, pay all fees in connection there with and remove same on completion of the contract. Sheds, toilet, power, water, access to the building site, scaffolding.

## 9. Maintenance

The Contractors shall maintain the property for a period of 30 days after completion, and any damage done, arising during that time through faulty workmanship or materials shall be made good at the Contractors expense.

## 10. Completion

On completion all trade debris is to be removed from the building site and the building left clean and ready for occupancy, with all services and mechanical parts in good working order. The Contractor is to arrange for and obtain a Code Compliance Certificate for the building.

## 11. Contingencies

Allow the sum of \$ ..... for contingencies. The whole, or any amount remaining unspent at the completion of the contract shall be credited to the owners.

## 12. Termite stops

Provision is to be made in all parts required by government Regulations for the fixing of termite stops or the use of suitably treated timbers should this building be erected in a gazetted area.



## EXCAVATOR

### 1. Generally

Remove all turf or other vegetation, including trees, stumps etc. from the area to be built on.

Bulldoze the site to the levels shown on the drawings. (Check original conditions).

Excavate as required for all wall footings, pile footings, steps etc. as shown on the drawings

Footing excavations are to be taken down to a solid bearing and be not less than 300mm deep (450mm in clay conditions).

Excavations are to be stepped to suit the slope of the ground, and kept level at the bottom, maintained free from water or fallen material and shall be firm before placing reinforcing or concrete.

Backfill and ram the earth around the foundations after concrete work has firmly set.

Deposit the surplus spoil on the site or cart away as directed by the owners.

## CONCRETOR

### 1. Materials

Concrete to be pre-mixed with a test of 17,500 kPa after 28 days. Reinforcement to be round mild steel rods or reinforcing mesh, as detailed, free from scale, loose rust, paint, grease, dirt, etc.

Form work shall be erected and braced in such a manner that the concrete shall finish to the dimensions shown or specified. The formwork is to be hosed out and kept wet before and while the concrete is being placed.

### 2. Concrete Work

Construct the various footings as detailed on the drawings and reinforced as shown.

Construct the various footings as detailed on the drawings and reinforced as shown.

Construct the various concrete corners, base walls, steps and porch slabs, chimney foundations, etc. as indicated on the drawings and reinforced as shown. Steps to have 150mm risers and 300mm tread.

Hard filling to be 75mm down scoria or 'run of the pit' metal compacted in layers of 150mm depth maximum. Blind with 25mm of sand and overlay with black polythene damp proof course with taped joints.

All floor slabs to be laid to true and straight surfaces, screeded, wood floated and finished with steel float or power float to a fine finish. Thickness and reinforcing as detailed on the drawings.

Allow to build in all holding down bolts, pipes, wires, etc. as required, prior to the pouring of the concrete. Holding down bolts to be 300mm maximum from corners and at 1.2m centres maximum.

All exposed concrete work (except floors) to be roughened or scratched for subsequent plastering.

Construct the various timber or concrete anchor piles, braced piles, cantilever piles and ordinary piles as shown on the drawings, set out as indicated on the foundation plan and supported on the concrete footings as detailed. All to be in accordance with NZS 3604.



## BLOCK LAYER

### 1. MATERIALS

Blocks are to be of the sizes as shown on the drawings, delivered to the site on pallets and to be free from cracks and chipped edges.

Mortar is to consist of sand, cement and a liquid lime based plasticiser, mixed according to the lime manufacturer's directions.

### 2. Laying

Construct the various block walls as shown on the drawings.

Corners to be plumbed both ways, courses to be level and straight.

The blocks are to be kept dry before and during laying and while the mortar is setting.

Sills are to be purpose made masonry unit sill blocks. Jamb blocks are to be rebated.

Ventilators are to be matching in colour and size, spaced 600mm from the corners and 1.8m intervals.

Joints are to be 10mm thick max, rounded on exposed faces.

Build in holding down bolts 300mm from the corners and at 1.2m centres.

Reinforce and concrete fill the various bond beam courses and vertical cavities as shown on the drawings.

On Completion clean down all exposed faces of the block work and leave free from all defects and mortar stains.

## BRICKLAYER

### 1. Materials

Bricks to be hard square, well burnt ..... bricks, delivered to the site in packets and free from chipped edges. The bricks are to be wetted before laying.

Mortar to consist of sand, cement and a liquid lime based plasticiser, mixed according to the lime manufacturer's directions.

### 2. Laying

Construct the various brick veneer walls, chimney, flower boxes, etc. as shown on the drawings.

All corners are to be plumbed both ways and the courses are to be level and straight. Perpendics are to be in alignment. Joints to be 10mm thick maximum weatherstruck on exposed faces.

Sills are to be bricks on edge, or purpose made sill bricks as directed protruding 25mm beyond the face of the wall.

Build in vermin proofing plate level and galvanised ties spaced at not more than 600mm horizontally and 350mm vertically.

Maintain a 40mm min. cavity to be kept clear of all mortar droppings and be drained and ventilated.

Co-operate with the carpenter in the building in of all exterior joinery.

On completion clean down the exposed faces of all brickwork and leave free from all defects, mortar stains, etc.

# CARPENTER



## 1. MATERIALS SCHEDULE

| MATERIAL              | SIZE                            | GRADE  | REMARKS                                  |
|-----------------------|---------------------------------|--|--|
| Sub-floor jack studs  | 100 x 75mm                      | Radiata No 1 fr BT or M/S                      |  |
| Sub-floor bracing     | 100 x 75mm                      | Radiata No 1 fr BT or M/S                      |  |
| Bearers               | 100 x 100mm min                 | Radiata No 1 fr BT or M/S                      | Wired or bolted                          |
| Wall plates           | 100 x 50mm                      | Radiata No 1 fr BT or M/S                      | Bolted down                              |
| Floor joists          | 150 x 50mm or as detailed       | Radiata No 1 fr BT or M/S                      | At 400mm to 600mm crs                    |
| Herringbone strutting | 40 x 40mm                       | Radiata No 2 fr BT                             | At 2.5m crs                              |
| Solid Bridging        | Joist depth x 40mm              | Radiata No 2 fr BT                             | At 2.5m crs                              |
| Top and bottom plates | 100 x 50mm                      | Radiata No 1 fr BT                             |  |
|                       | 75 x 50mm                       | Radiata No 1 fr BT                             | Long lengths                             |
| Studs                 | 100 x 50mm                      | Radiata No 1 fr BT                             |  |
|                       | 75 x 50mm                       | Radiata No 1 fr BT                             | At 600mm crs max                         |
| Trimmer studs         |                                 | Radiata No 1 fr BT                             | See table below                          |
| Lintels               |                                 | Radiata No 1 fr BT                             | See table below                          |
| Nogging (Dwangs)      | 100 x 50mm                      | Radiata No 2 fr BT                             | 1 row to walls                           |
|                       | 75.50mm                         | Radiata No 2 fr BT                             | 4 rows to vert. boards                   |
| Bracing               | galv. metal angle or 100 x 25mm | Radiata Merch BT                               | Checked in flush                         |
| Ceiling battens       | ex 40 thick                     | Radiata No 1 fr BT                             | 150 x 40 above plates, 70 x 40 elsewhere |
| Ceiling joists        | 100 x 50mm                      | Radiata No 1 fr BT                             | At 900mm crs max                         |
| Ceiling bracing       | 100 x 25mm                      | Radiata No 1 fr BT                             | Diagonal                                 |
|                       | 100 x 50mm                      | Radiata No 1 fr BT                             | Diagonal                                 |
| Ceiling nogging       | 75 x 50mm                       | Radiata No 2 fr BT                             | At 1.8m crs max                          |
| Rafters               | 100 x 50mm or as detailed       | Radiata No 1 fr BT                             | At 400mm crs to 900mm crs                |
| Ridge Board           |                                 |  |  |
| and Hip rafters       | 150 x 25mm                      | Radiata Merch BT                               | Minimum                                  |
| Valley rafters        | 100 x 50mm                      | Radiata No 1 fr BT                             | Minimum                                  |
| Valley boards         | 150 x 25mm                      | Radiata Merch BTT                              |  |
| Underpurlins          | 100 x 50mm                      | Radiata No 1 fr BT                             | Minimum                                  |
| Roof struts           | 100 x 50mm                      | Radiata Merch BT                               | As detailed                              |
| Collar ties           | 150 x 25mm                      | Radiata Merch BT                               | 1.8 crs max                              |
| Purlins (Iron roof)   | 75 x 50mm                       | Radiata No 1 fr BT                             | 750mm crs max                            |
| Roof trusses          | Gangnail or similar             |  | At 900mm centres                         |
| Eaves framing         | 75 x 40mm                       | Radiata No 2 fr BT                             |  |
| Fascia boards         | ex 200 x 25mm                   | Radiata M/S finger jointed grooved             |  |
| Barge Boards          | ex 200 x 25mm                   | Radiata M/S finger jointed grooved             |  |
| Weatherboards         | ex 200 x 25mm                   | Radiata M/S finger jointed BB or 'Hardiplanks' |  |
| Vertical boards       | ex 200 x 25mm                   | Radiata M/S finger jointed or as detailed      |  |
| Exterior facings      | ex 75 x 25mm                    | Radiata M/S finger jointed                     |  |
| Scribers              | Standard                        | Radiata M/S White pine M/S Cedar (pre Primcd)  |  |
| Flooring              | 3600 x 1800                     | HD particle bd                                 |  |
| Interior door jambs   | ex 25mm                         | DA Rimu or Radiata FJ                          | 10mm bevelled stops                      |
| Architraves           | 40 x 10mm                       | DA Rimu or Radiata FJ                          | Bevelled two edges                       |
| Skirtings             | 65 x 10mm                       | DA Rimu or Radiata FJ                          | Bevelled one edge                        |
| Sill boards           | ex 25mm                         | DA Rimu or Radiata FJ                          | Sanded. Grooved back                     |
| Cornices              | 40mm                            | DA rimu or Radiata FJ                          | Bevelled or splayed                      |
| Splash boards         | ex 25mm                         | DA Rimu or Radiata FJ                          | Primed. Grooved back                     |
| Shelving              | ex 25mm                         | Dressing grade or particle board               |  |
| Exterior Trim         | Mouldings as required           | Radiata M/S                                    |  |
| Interior Trim         | Mouldings as required           | Radiata FJ or DA, Rimu or clean Radiata        |  |

### Abbreviations used:

|                                    |                                  |                     |
|------------------------------------|----------------------------------|---------------------|
| BT - Boric Treated (or equivalent) | MS - Multi salt pressure treated | fr - framing        |
| Merch - Merchantable (grade)       | DA - Dressing A (grade)          | FJ - finger jointed |

## TRIMMING STUDS (light roof and heavy roof) See also NZS 3604



### Single or top storey

|                          |                               |
|--------------------------|-------------------------------|
| Openings up to 1.8m wide | 100 x 50mm                    |
| Openings 1.8m to 3m      | 100 x 75mm Solid or built up  |
| Openings 3m to 3.6m wide | 100 x 100mm Solid or built up |

### Lower of two storeys

|                          |                               |
|--------------------------|-------------------------------|
| Openings up to 1.8m wide | 100 x 75mm                    |
| Openings 1.8m to 3m wide | 100 x 100mm Solid or built up |
| Openings 3m to 3.6m wide | 100 x 125mm Solid or built up |

### Lintels (light roof 8m truss span)

See also NZS 3604

#### Opening Width

#### Lintel Size

|               |             |
|---------------|-------------|
| Up to 0.95    | 100 x 100mm |
| 0.9 to 2.45m  | 150 x 100mm |
| 2.45 to 3.05m | 200 x 100mm |
| 3.05 to 3.65m | 250 x 100mm |

## 2. Construction

All materials are to be the best of their respective kinds and grades, laid true to their various lines and levels and constructed in a proper tradesman like manner, to make the whole of the works a sound construction in accordance with the local-by-laws.

All timber work abutting or resting on masonry units, concrete or brickwork is to be protected with a bitumen-fabric damp proof course.

Sub-floor jack studs are to be wired to foundation piles with 4mm galv. wire ties passed through the piles and well stapled to the jack studs.

Bearers to be in long lengths, butted over jack studs or piles where jointed, and supported with 100 x 50mm flitches. Sub-floor bracing to be diagonal, as required by the sub-floor bracing to be diagonal, as required by the sub-floor bracing schedule.

Floor joists to be on edge, set out to suit the flooring sheets, nailed with two 100mm nails at every crossing and trimmed as required. For stairwell openings, slabs etc.

Double the floor joists at each end of the building and under bearing partition.

Floor joists spanning more than 2.5m are to be stiffened with herringbone strutting or solid bridging in rows at 2.5m centres maximum. Plates to be in long straight lengths. Bottom plates and wall plates to be butt joined over continuous support, top plates to be half jointed or butt jointed and fastened with nail plates.

Studs are to be set out to accommodate 2.4m high wall lining sheets, and are to be held to the plates with two 100mm flat headed nails at each end. Bowed studs to be straightened with sawcuts, wedges and with 2 pieces of 100 x 25mm timber 450mm long (1 piece each side).

Lintels are to be checked 15mm minimum into solid trimmer studs. Where built up trimmer studs are used or one 100 x 50mm stud is to be run up past the trimmer to the top plate and the remaining 100 x 50 or 100 x 25 is to run up to the underside of the lintel, and blocked above.

Nogging (dwangs) shall be 50 x 50mm min spaced in rows at 1.350m centres, maximum, set out to accommodate the wall lining sheets and where required drilled or notched for ventilation. To be nailed with two 75mm nails at each end.

Ceiling nogging (dwangs) to be set out to accommodate the ceiling lining sheets and cornices. Around the perimeter of each room and in rows at 900mm centres maximum.



Bracing to be let in flush with the face of the wall frames and raked as nearly as practicable to 45 degrees and not more than 55 degrees from horizontal max.

To be positioned as shown on the drawings and the bracing calculation sheet.

The wall frames are to be assembled, squared braced and erected. The bottom plates are to be straightened and fastened down, the corners are to be plumbed both ways using a plumb bob and line and the top plates are to be held straight with temporary bracing until the ceiling and roof and bracing are completed.

Ceiling joists to be on edge and spiked to the wall plates with two 100mm nails at each end. Where practicable, the ceiling joists are to come alongside rafters and to be spiked thereto.

Ceiling joists spanning more than 2.0m are to be stiffened with ceiling runners well spiked at every crossing.

150 x 50mm runners will span up to 3.1m

200 x 50mm runners will span up to 4.2m

250 x 75mm runners will span up to 4.9m

Rafters to be plumb cut to ridges and hip rafters and to be birdsmouthed to plates and fastened with two 100mm nails to the plates.

Supply and fix the necessary ridge boards, hip rafters, valley boards, underpurlins, roof struts, strutting beams and collar ties and braces as required to complete the roof framing and as detailed on the drawings.

Alternatively, where detailed, the roof framing is to be constructed with Engineer designed 'Gangnail' roof trusses fixed plumb, fastened to the plates with Zed nails or framing anchors, stiffened with runners and braced at each end of the building. The trusses are to be positioned directly over studs or supporting nogging is to be fixed between the studs directly under the top plate.

Ceiling battens ex 40 thick to be double nailed to bottom chords of trusses.

Purlins (galv. steel roof) to be spaced to accommodate the roof covering and ridging and fastened to the rafters with one 100mm nail and one 75mm skew nail at every crossing.

Eaves runner to be nailed to the outside of the wall frames.

Eaves bearers to be nailed securely to each rafter overhang.

### 3. Exterior finish

All exterior joinery, exterior timber linings or trim and all end joints are to be given a coat of primer or stain prior to fixing.

Behind all wall cladding fit a breather type building paper lapped 100mm and carried up to top plate level.

Grooved fascia and barge boards are to be fixed to level and straight lines, mitred where joined and fastened with galvanised nails.

Wall areas are to be covered with exterior lining as shown on the drawings.

Weatherboards are to have scribed internal corner joints and mitred external corners without soakers. Fix with 60mm galvanised nails minimum.

Vertical boards are to be fixed plumb and in single lengths with 60mm galvanised nails.

Soffits, verges and porch ceilings to be lined with flat fibre-cement sheets with plastic jointer moulds.

Build in the various exterior joinery frames as supplied under 'Joiner'. Fit sill trays, head capping and flashing, trim at sides with scribes and under the sill with a quadrant mould, all as required.



Exterior doors to be fitted on one and half pairs of 100mm galvanised loose pin (brass) butts.

Provide and fix a ledge and brace type foundation, access door and frame, positioned as directed.

#### 4. Interior Finish

Flooring to be laid in large single sheets of high density particle board or wood fibre board with joints laid in ashlar pattern. All joints and edges to be continuously supported by floor joists or nogging cut between the floor joists.

Check with the owners regarding the laying of flooring before the wall framing is erected.

Nail the flooring with 60mm galvanised jolt head nails at 150mm centres on the joists and at 300mm centres on intermediate floor joists.

On completion of the contract the floor nails are to be punched and the floor machine sanded with two papers to a fine finish.

Care must be taken that the flooring is not stained by rust marks, tea or coffee stains, etc.

Interior wall linings generally to be 9.5mm gibraltar board sheets fixed with vertical joints nailed with flat headed galvanised clouts, double nailed to studs and nogging. Sheets to be used as bracing panels must be brace line nailed at 150mm crs around the perimeter with the appropriate nails.

All joints, nail holes and other imperfections are to be tapped and stopped flush and left ready for the paperhanger.

Shower linings to be selected formica wallboard with plastic jointer and corner mouldings.

Ceiling linings to be fibrous plaster sheets, well glued or wadded to ceiling framing and with all joints, nail holes and other imperfections stopped flush and left ready for the painter, or plaster board sheets with taped joints.

Nog for and build in the various joinery fitments and plumbing fittings as supplied under 'plumber' and trim around with splash boards primed and set in mastic and other finishing trim and mouldings as required.

Interior doors are to be fitted with 1 pair of 90mm AC or FB loose pin butts.

Architraves to be fitted in single lengths, with glued mitred joints.

Skirtings to be scribed to the floor and internal corners and mitred at external angles.

Sill boards to be housed to jambs and mullions and bevel scribed to sashes. To finish flush with the inside of the jambs and to be finished with a returned architrave.

Coat cupboard and wardrobes to be fitted with one shelf ex 300mm wide fixed 1.750m above the floor and with a 20mm galvanised pipe hanger rail under.

Linen, hot water and other cupboards to be shelved with slatted shelves ex 100 x 25mm as directed.

Allow the PC sum of \$ ..... for all hardware, and allow to order, take delivery of and fix same.

Form a ceiling access door in a convenient and inconspicuous place (wardrobe).

Co-operate with the Electrician in the building in of a meter box and the building of a switchboard recess lined with fire resistant material and trimmed around as required.



Supply and fix the sundry internal finishing mouldings and trim as required. 12mm quadrants to internal corners of service rooms, etc.

Cut for, attend on, and make good after all trades and provide and fix all necessary blocks for securing the work of all other trades.

All internal finishing timbers shall be sanded to remove machine marks and on completion, shall be free from all hammer marks, splits or other defects.

All nails in exposed work (interior and exterior) are to be punched.

# ROOFER



## 1. Generally

Refer to the drawings for the type of roofing to be used.

## 2. Concrete Tiles

Tile battens are to be nailed firmly to the rafters and spaced to suit the gauge of the tiles.

50 x 25mm battens for rafters at 450mm centres.

50 x 50mm selected quality Douglas Fir rafters or roof trusses at 900mm centres.

Tiles are to be set out with a full tile at the top.

Tiles to be laid with standard laps and nailed or wired down in accordance with standard practise.

Hips and ridges to be covered with hip tiles bedded in mortar.

Parge all hips, ridges and barges with coloured mortar to suit the colour of the tiles.

On completion leave 5 ordinary and 2 ridge tiles under the building for future maintenance purposes.

Supply the owners with a guarantee for the tiles and a separate two year guarantee for the laying of the tiles.

## 3. Coated galvanised tiles

Supply and fix an approved breather type underlay on top of rafters and under the tile battens.

Battens to be splay cut, two ex 75 x 50mm timber and set out to suit the gauge of the tiles, and nailed firmly to the rafters. Co-operate with the Carpenter in the determining of the rafter length to finish with a full tile at the top.

Ridges, hips and barges to be covered with purpose made accessories, coated as for tiles.

Fix the tiles and accessories in accordance with standard practise and touch up all exposed nail heads with bitumastic coating coloured as for tiles.

Supply the owners with the standard guarantee for the laying of the tiles.

## 4. Galvanised Steel

The roof area is to be covered with 75mm x 1mm galvanised wire mesh stretched taut and securely stabled to the purlins. Overlay with breather type building paper. Alternatively use a breather type underlay which will span over the purlins.

Roofing to be 0.5mm galvanised corrugated steel sheeting, with primed laps, in single lengths. with 1 1/2 corrugations side lap and nailed with purpose-made nails in accordance with standard practise.

Ridges and hips to be covered with lead edged ridging, primed on the underside in long lengths, with the lead edge dressed down into the corrugations of the iron.

Barges to be covered with purpose made barge flashings, lead caps etc. to make the roof thoroughly watertight and bidproof.

Priming to be calcium plumbate.

## 5. Flat roofs

Supply and fix over galvanised netting and breather type building paper and as per the manufactuer's directions, the flat roofing as shown on the drawings, complete with matching spoutings, downpipes, barge flashings as required.

Butynol roofing to be laid over prepared sub-strate as per the manufacturers instructions.



# PLUMBER AND DRAINLAYER



## 1. Generally

The whole of the plumbing and drainlayer shall be done in strict accordance with the building Code and territorial local authorities' by-laws and drains shall be laid by registered workman only.

The plumbing contractor shall obtain all necessary permits for the work and pay all fees in connection thereto.

## 2. Exterior work

Supply and fix all necessary flashings, lead caps, sill trays etc. in conjunction with the builder to make a thoroughly watertight job.

Supply and fix PVC spouting to all eaves, laid with even falls to 80mm diameter downpipes. Downpipes to be sealed into stormwater drains at foot.

Valleys to be standard, zinc sheet, laid over building paper.

## 3. Water service

Lay on cold water from the main, feed through a pressure reducing valve to a hot water cylinder, set up as shown on the drawings. Provide and set up the cylinder, complete casing, lagging and thermostatically controlled electric element.

Lay on hot and cold water services to the various fittings as shown on the drawings and to 2 hose standards positioned as directed. Hot water service to run in copper. Main and cold water may run in plastic if approved by owners, Loan company and territorial Inspector.

## 4. Fittings

Provide and set up the fittings as shown on the drawings and provide regulation traps and waste to same. Traps and wastes may be plastic if approved.

Bath - first quality, white,

Vanity unit - selected formica top, white basin, drawers and doors under.

Sink top - selected stainless steel.

Shower tray - stainless steel.

W.C - white, china, wash-down pedestal with plastic double-flap seat and low-down plastic flushing cistern.

Tub - stainless steel, with cupboard under.

Washing machine - to be supplied by the owner. Provide tap outlets same.

Taps - CP as selected by the owners, exterior hose taps (brass)

Shower rose - CP swivel type.

Shower mixer unit as selected by the owners.

Waste disposal unit to be ..... type fitted with a copper trap and waste.

## 5. Drains

Stormwater to be taken in second quality socketed earthen ware pipes or PVC pipes and fittings to street channel, stormwater main connection, or standard soak holes or trenches.

Sewer drains to be first quality glazed socketed earthenware pipes or PVC pipes and fittings 100mm laid with even falls and easy bends to a main connection as directed.

Provide and fix all necessary gully traps, terminal and back vents, cleaning eyes, inspection junctions and bends, etc., as may be necessary to comply with the building and territorial authorities' regulations.

Provide and set the field tile drains or draincoil set in scoria, if shown on site or basement plan.

# JOINER



## 1. Timber Grades

Exterior Joinery - Heart Rimu or Radiata M/S finger jointed.

Door Sills - Heart Matai or Radiata M/S finger jointed.

Sashes - Redwood or Radiata M/S finger jointed

Interior Joinery - DA Rimu or Radiata finger jointed or clean Radiata.

All to be dry seasoned timber run to standard profiles.

## 2. Windows

Aluminium windows where detailed shall be delivered to the site, stored on edge and protected from breakages, damage, plaster splashes, etc. To be installed as per manufacturer's directions.

Timber windows to be of the sizes and types as indicated on the drawings with all members run to standard or JMF 'Sundyne' profile, of standard construction and high class workmanship. Opening awning type sashes to be fitted with 'interlock' stays of approved sizes.

The windows are to be glazed with standard quality glass, with selected obscured glass to bathroom and WC windows and as directed.

## 3. Doors

Exterior door frames and doors are to be of standard sizes and of the types as shown on the drawings.

Interior doors are to be flush type, with DA Rimu facing and clashing strip to the closing edge.

### Sizes

Main doors - 1.980m x 760mm

Bathroom, WC - 1.980m x 710mm

Wardrobe and cupboards - 1.980m x 660mm or 1.980m x 610mm  
or 1.830m high with upper cupboards.

Interior door jambs are to be ex 25mm with 10mm bevelled planted stops.

Glazing to doors or door frames to be selected obscured glass.

## 4. Fittings

Construct the various fittings as shown on the drawings and as directed.

Cupboards are to be of standard construction and divided into door and drawer units as directed.

Sink top as specified under 'plumber'.

Other bench tops to be of selected 'formica' with matching edges.

Cupboard doors to have solid core and hardboard facing sheets or be of fibre board.

Drawers to have sides dovetailed to fronts and hardboard bottoms.

Supply a standard bathroom cabinet with a mirror rebated and beaded to the door.

## 5. Stairs

**Closed type** - To be constructed with strings ex 250 x 50mm treads ex 40mm thick and risers ex 25mm thick. the treads and risers are to be housed 15mm, glue wedged and glue blocked to the strings. Nosing to be 30mm maximum.

**Open type** - To be constructed with undercarriages ex 150 x 75mm tread cleats and treads ex 50mm thick timber - no risers.

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

# SOLID PLASTERER



## 1. Materials

Cement to be ordinary Portland cement.

Sand to be clean river sand free from saline, vegetable or earthy matter.

Mortar to consist of sand, cement and a liquid lime based plasticiser, mixed according to the lime manufacturer's directions.

## 2. Chimney

Supply and erect one precast concrete chimney as indicated on the drawings.

All units to be well bedded in mortar.

The corners are to be plumbed both ways and reinforced with D.12 rods, well grouted in.

## 3. Plastering

All exposed concrete steps and slabs, concrete base walls, precast concrete chimney, reinforced columns and beams etc. as indicated on the accompanying drawings shall be solid plastered to a fine finish.

All sharp exposed edges are to be rounded. Steps and slabs to fall slightly away from the building and not to hold water. Slabs to be coved up against the residence, under the door sills etc.

Columns, beams and chimneys to be textured as directed.

# INSULATION

## 1. Floors

Before laying the flooring cover the floor area with double sided perforated aluminum foil dished 100mm between the floor joists and with drain holes at the bottom of each dish.

Close all dished cavities at each end and fit the foil closely around all pipes etc.

## 2. Walls

All the wall cavities are to be tightly packed with the required thickness batts or approved mineral fibre sprayed insulation.

## 3. Ceilings

For flat and skillion types of roof construction supply and fix an approved vapour barrier above the ceiling lining.

Insulate all ceiling areas with fibreglass batt or blanket insulation or with approved mineral fibre sprayed insulation, or with approved polystyrene sheets.

## 4. Insulation table

|       | Combination Used | Actual |
|-------|------------------|--------|
| Roof  |                  |        |
| Walls |                  |        |
| Floor |                  |        |

# ELECTRICIAN



## 1. Generally

This contract includes the supply and installation of the electric wiring system complete. The whole of the work shall be carried out strictly in accordance with the Building, territorial and supply authority regulations and the electrical contractor is to obtain all permits from the supply authority, pay all fees in connection therewith and arrange for all inspections required.

## 2. Supply

Arrange for a mains supply to the building. Check the conditions before tendering.

## 3. Boards

provide and set up as required on meter board and case with all necessary equipment thereon neatly labelled.

Provide and set up as directed a switchboard panel with all necessary fuses, switches and main switches properly mounted and labelled, and hinged on one side. This panel can be combined with the meter board if convenient to the owners.

## 4. Lights

Provide and fix the lights, switches and power outlets as listed hereunder, all to be positioned by the owners after the floor has been laid.

Passage and stairwell lights to have two way switches.

.....Interior lights

.....Exterior lights

.....Power outlets with switch gear

## 5. Fittings

Allow the PC sum of ..... for the purchase of an electric range and allow to order, take delivery of and install same.

Allow to wire up the thermostatically controlled hot water cylinder element, supplied under 'plumber'.

Allow the PC sum of ..... for the supply of an electric wall heater and allow to order, take delivery of and install same.

Allow the PC sum of ..... for the purchase of special light fittings and allow to order, take delivery of and fit same.

Allow to supply and install an exhaust hood or fan as detailed on the drawings.

Allow to wire up for the waste disposal unit supplied under 'plumber'.

Allow to provide and install a selected razor outlet positioned as directed by the owners.

Earth all metal waste pipes and metal fittings as required by the regulations.

Aerial, earth and TV aerial sockets as directed by the owners.

# PAINTER AND PAPERHANGER



## 1. Generally

Allow to submit the drawings to a colour service for a colour scheme and thence to the owners for approval.

All paint and varnish is to be delivered to the job in new tins, unopened and currently usable.

## 2. Exterior

Woodwork - Prime, stop and paint in one undercoat and one finish coat with a high gloss finish.

Stained work - one coat of stain prior to fixing, the nail holes, etc., are to be stopped with coloured stopping followed by one further coat of the stain.

Metalwork, including spoutings, downpipes, wrought iron work etc.

Approved primer for galvanised iron, one undercoat and one finish coat.

Asbestos-cement sheets - two coats of plastic paint. Solid plaster and concrete block work to be left unpainted.

Galvanised steel roof - to be left unpainted.

## 3. Interior

Interiors of all service rooms to be primed or sealed, stopped, undercoated and finished with high gloss enamel.

All other ceilings to be given two coats of flat or satin finish ceiling paint.

All other walls to be lined with wallpaper, hung in single lengths, plump, and with butt joints.

PC value ..... per roll.

Flush doors only to be sealed, and given two coats of satin finish varnish.

To be rubbed down between coats.

All other interior finishing woodwork to be primed, stopped, undercoated and finished with a satin finish paint.

## 4. Completion

On completion the residence is to be left clean and tidy, window and other glasswork is to be cleaned. All trade debris is to be removed from the site and the building left clean and ready for occupancy.

# Klondike, Yukon and Oregon,

These stoves are factory assembled and sealed except the joint between top and bottom bellies, and, after fitting the legs, are ready to install apart from sealing this joint, sliding a baffle into the Oregon, and fitting the baffle and elbow (or optional socket) to the Yukon.

To install a water coil first remove the two factory fitted plugs at the back of the bottom belly.

Place the water coil through the hole in the top belly and loosely replace one of the backing nuts. Apply sealant to the joint (as detailed in the Pittsburgh and Fatso instructions above) and place the top belly on the bottom, threading the bottom end of the water coil into position. Refit the bolts and nuts to secure the two bellies together. Fit the other coil backing nut. After tightening, check that the coil rises continuously from bottom (inlet) to top (outlet). The copper coil may be adjusted to achieve the required rise. Failure to do so will cause a drop in performance and hammering noises in the pipe.

The Oregon baffle plate is inserted against the inside of the Top Chamber with the curved edge downward and the word 'front' facing inward. Slide it around on the ridges in the Top Chamber until the top edge engages behind the retaining post, Figure 2.

Bolt the Yukon elbow (or socket) in position over the flue outlet on the back of the top belly.

Install the baffle by hooking the bottom (flat) edge into the outlet and pivot the top sideways and behind the small retaining post adjacent to the hot plate at the top rear of the stove, Figure 3.

The baffle must be in place whether the standard fluted elbow or optional straight flue socket is used.

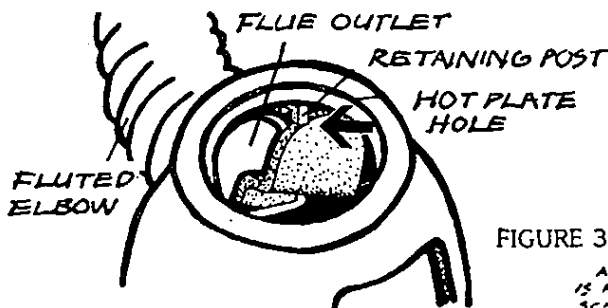


FIGURE 3

A BLUE HEAT DEFLECTOR IS REQUIRED WHEN A HEAT SCREEN DOES NOT EXTEND THE HEIGHT OF A HEAT SENSITIVE WALL

## 1. Installing the stove

This section covers all models, with or without water heating coils, except for a Yukon Stove fireplace installation (refer to Section 3).

### 1.1 Unprotected walls

The minimum clearances from stoves to unprotected walls must be observed. (See Page 4).

Measurements to the rear of the stove are taken from the back of the flue. Clearances to the side are measured from the nearest point on the ring around the belly of the stove, (Figure 4), or from the side of the cooking top in the case of the Fatso and Oregon.

Where a Yukon Stove is fitted with the optional straight Flue Socket (for use when the flue discharges into a chimney), the rear

clearance is measured from the belly and 80 mm should be added to the figures shown on the following page.

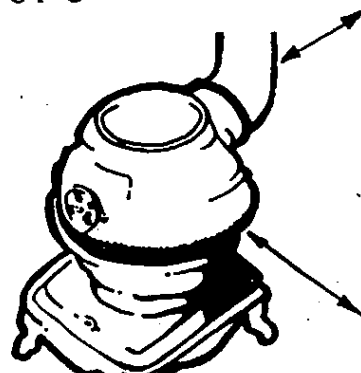


FIGURE 4

## 1.2 Protecting the walls

A heat sensitive wall can be protected by the erection of a single or double heat screen, or by a brick screen, thus enabling the stove-to-wall distance to be reduced greatly.

### 1.2.1 Heat Screen Material

The material must be capable of withstanding 180°C without damage. Sheetmetal and certain heat resistant materials, (e.g., 12 mm Supalux), is an obvious choice. If they are to be painted, only fire resistant paints should be used and the colours should be kept light, as dark finishes will raise the panel temperatures significantly. Allowances for expansion must be made when fastening.

Note: An information sheet on the use of Rocboard insulating panels for protecting walls and insulating hearths is available from New Zealand Forest Products Limited or their agents. Rocboard should be used on in accordance with the information.

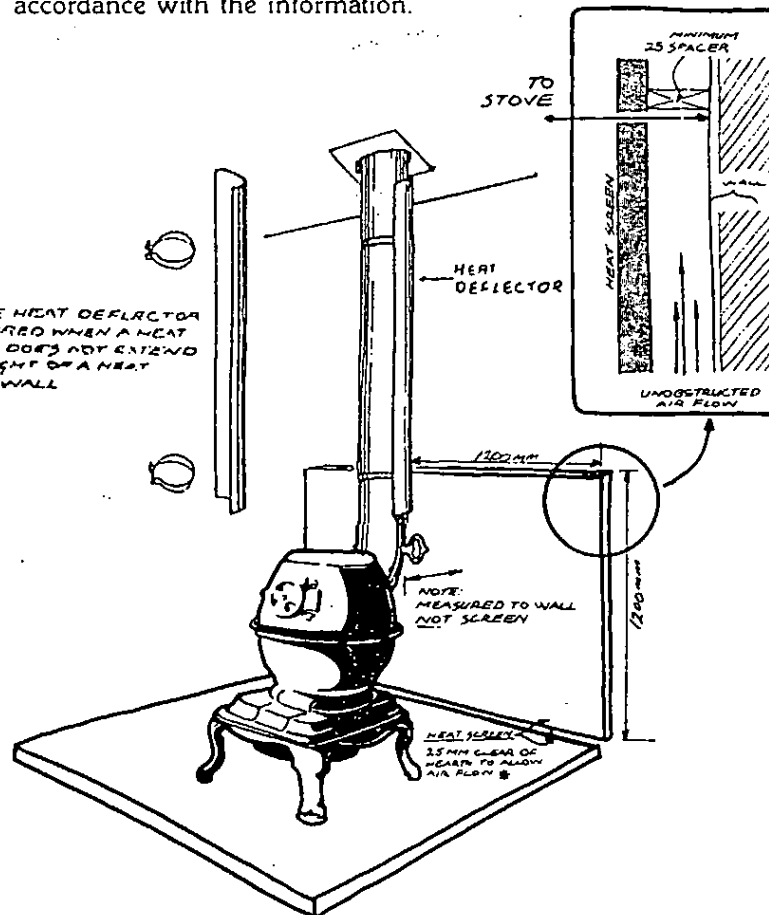


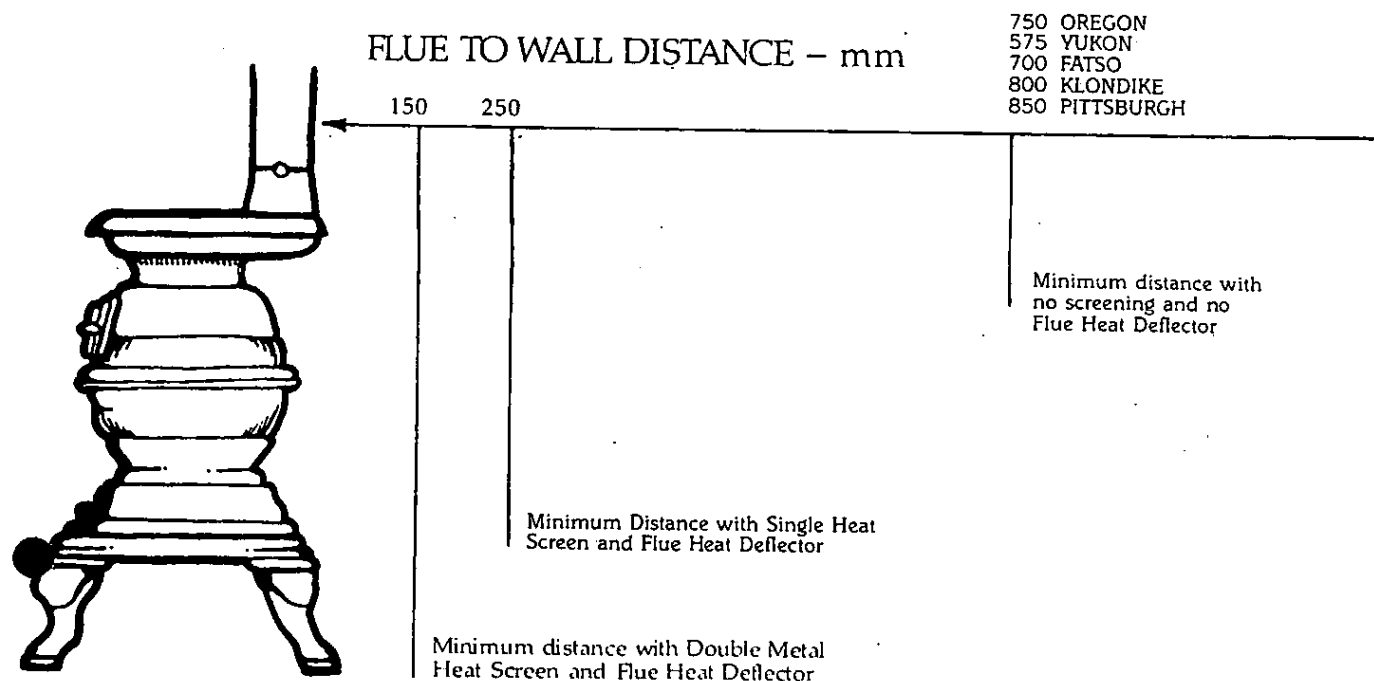
FIGURE 5

TABLE 1

## MINIMUM STOVE TO WALL CLEARANCES

|  | PITTSBURGH<br>mm | KLONDIKE<br>mm | FATSO<br>mm | YUKON<br>mm   | OREGON<br>mm |
|--|------------------|----------------|-------------|---------------|--------------|
| a. Concrete or Concrete Block Walls .....  | 200              | 200            | 200         | 200           | 200          |
| b. Brick Walls (see 1.2.4 for brick screens)   |                  |                |             |               |              |
| (i) Cavity brick walls which do not enclose timber framing or other heat sensitive material .....  | 150              | 150            | 150         | 150           | 150          |
| (ii) Brick walls erected in contact with heat sensitive materials (e.g. timber, gibraltar board, etc.)   |                  |                |             |               |              |
| - back of fire .....   | 680              | 640            | 560         | 460           | 600          |
| - side of fire .....   | 720              | 720            | 580         | 600           | 580          |
| (iii) Brick walls which have the spacing and reflective screen requirements detailed under "Brick Screens" below .....   | 150              | 150            | 150         | 150           | 150          |
| c. Heat sensitive walls or other objects, e.g. timber, asbestos cement board, plaster board, gypsum plaster, etc., including sheetmetal in contact with such materials (This distance can be reduced by screening in accordance with 1.2). | 1,250            | 950            | 900         | 860           | 800          |
| - back of fire .....   | 850              | 800            | 700         | 575 (see 1.1) | 750          |
| - side of fire .....   | 900              | 900            | 725         | 750           | 725          |

## STOVE SCREENING REQUIREMENTS FOR HEAT SENSITIVE WALLS



- NOTE: 1. All Heat Screens 1200 mm minimum height and 1200 mm minimum width.
2. Flue Heat Deflector may be omitted if Screen shields full height of wall.
- \* 3. Minimum distance when combustible wall is faced with Brick Screen as per Instructions - 150 mm measured to outer face of Brick Screen.
4. See Text for constructional details.

This must be fastened to the wall on non-combustible insulating spacers so that there is an air space of not less than 25 mm between the screen and the wall, Figure 5. There must be a 25 mm gap along the top and bottom of the screen and the spacers must be arranged to permit free vertical air flow between the screen and the wall. The screen should be wide enough to extend at least 600 mm along the wall each side of the stove centreline. Where the stove is fitted in a corner, both walls need to be screened.

The screen must never be less than 1,200 mm high and if the screen does not shield the full height of the wall, a flue heat deflector must be fitted. Figure 5.

**NOTE:** Minimum stove to wall distance when a single metal heat screen is sheetmetal; 250 mm (All models).

The construction is similar to the single heat screen case (see 1.2.2) except that an extra sheetmetal screen is fixed mid-way in the air space, Figure 7. It must be the same size as the heat screen, and the two air spaces must each be not less than 12 mm. A suitable material for this air space divider is 0.5 mm galvanised steel. The spacers behind the double screen must be arranged to allow free air flow from the bottom intake slots to the outlet slots at the top. The width and height requirements for double screens are the same as for single screens, refer Figure 5. Again, if the screen does not shield the full height of the wall, a flue heat deflector must be fitted, refer Figure 5.

Minimum stove to wall distance when a double heat screen is fitted, 150 mm, all models.

ALL PANELS (SCREENS) MUST  
BE OPEN TOP AND BOTTOM  
TO ALLOW FREE AIR FLOW

(EG.) 0.5  
CALV. STEEL

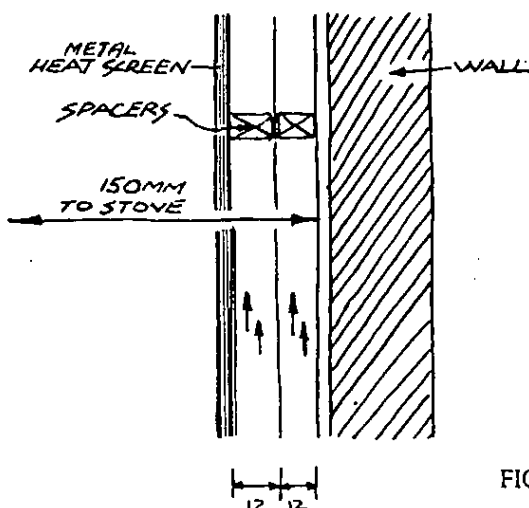


FIGURE 7

Heat sensitive walls can be faced with brick provided that the bricks are laid flat and spaced not less than 25 mm from the wall, Figure 8. A layer of

reflective building paper must be secured to the face of the wall (reflective side facing the bricks) in such a manner that it will not inhibit the air flow in the space. Alternatively, the building paper may be

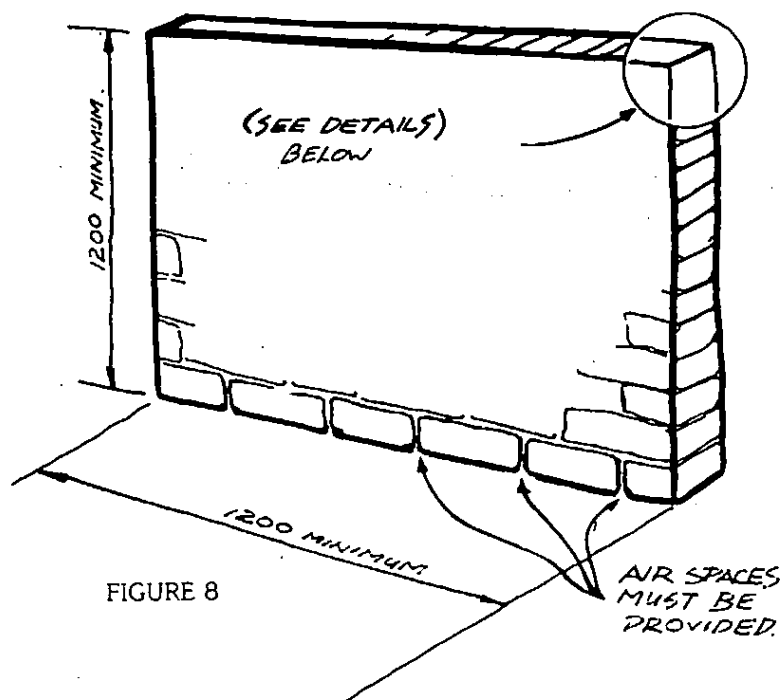


FIGURE 8

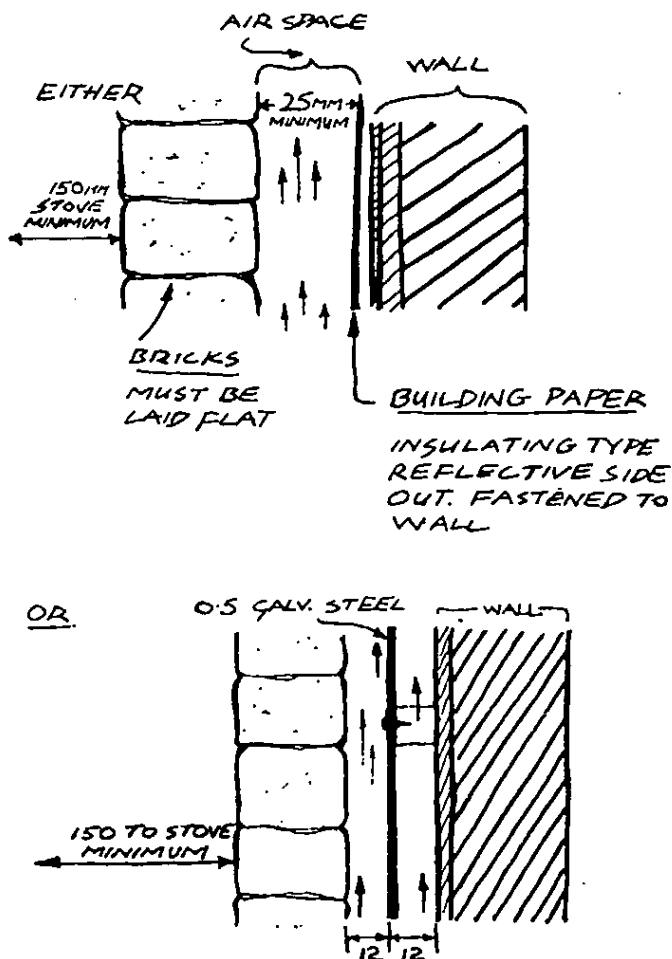


FIGURE 9



replaced by a sheetmetal air space divider as specified for a double heat screen, refer Figure 7. The top of the air space must be left open and gaps must be provided between the bricks in the bottom rows, to allow adequate air entry.

The brick facing must extend at least 600 mm each side of the stove centreline and should be at least 1200 mm high. If the screen does not shield the full height of the wall, a flue heat deflector must be fitted, refer Figure 5.

Minimum distance between stove and outer face of brick screen 150 mm, all models. (This will give a minimum stove to wall distance of 285 mm.)

## 1.3 Protecting the floor

The stove must stand on a fireproof floor or hearth extending sideways to a heat screened wall or to at least 610 mm each side of the stove centreline. If the rear of the hearth is not limited by a hearth screened wall it must extend back at least 300 mm from the feet of the Pittsburgh or Fatso, 325 mm from the Yukon or 415 from the Klondike or Oregon. The hearth must extend at least 375 mm forward from the feet of all models. A 220 x 1220 hearth will suit all models although this size may be reduced by the proximity of heat resistant or heat screened walls. Hearths of solid material can conduct heat through to the floor and should be raised on insulating blocks to provide an air space beneath. This air space should be not less than 12 mm and the blocks (about 100 mm square) should be positioned directly over the floor joists. Access to the air space should be unobstructed to permit the free flow of air. As long as the air space is not impeded, the hearth may be installed as above directly onto existing carpet coverings.

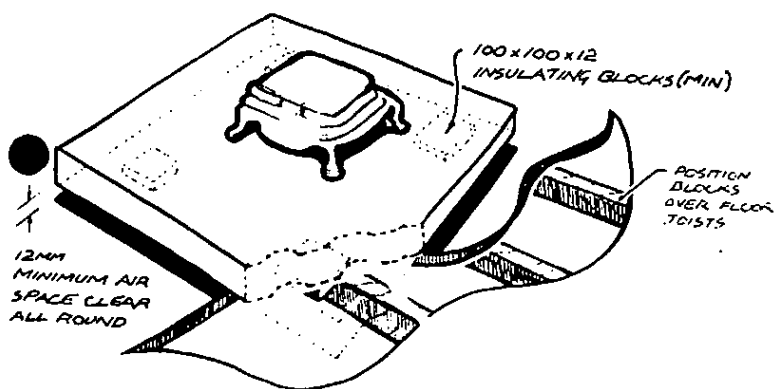
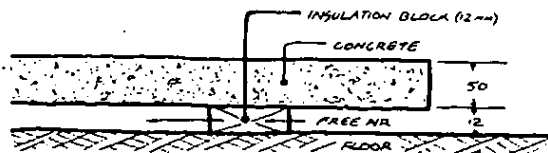


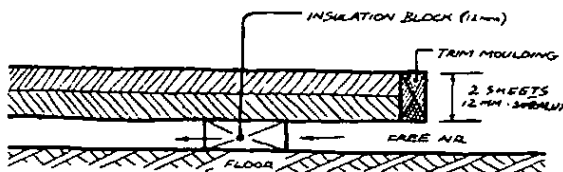
FIGURE 10

To minimise risk of movement in the event of an earthquake, the hearth and stove should be secured to the floor by screws or retaining brackets.

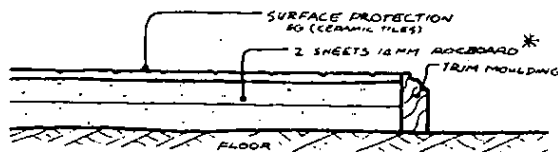
### CONCRETE



### HARDITHERM



### ROCBORD



\*3 SHEETS FOR OREGON ON PARTICLE BOARD FLOOR

FIGURE 11

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## 2. Installing the flue

Flue installations are covered in three sections: Section 2.1 covers installations where the stud height is 2400 mm and the roof pitch is low to normal. In these cases a standard Masport Flue Kit should be all that is required.

Section 2.2 deals with cases where extra components may be needed because:

- a) the stud height is greater than 2,400 mm;
- b) there is a high pitched roof and the standard flue would not project 600 mm above the ridge;
- c) the Heat Shield would not protrude 400 mm above the roof;
- d) the ceiling is sloping.

Section 3 explains the special requirements needed when fitting a Yukon stove into an existing fireplace.

**NOTE:** All galvanised flue components exposed above the roof should be painted in the normal way for exterior galvanised iron.

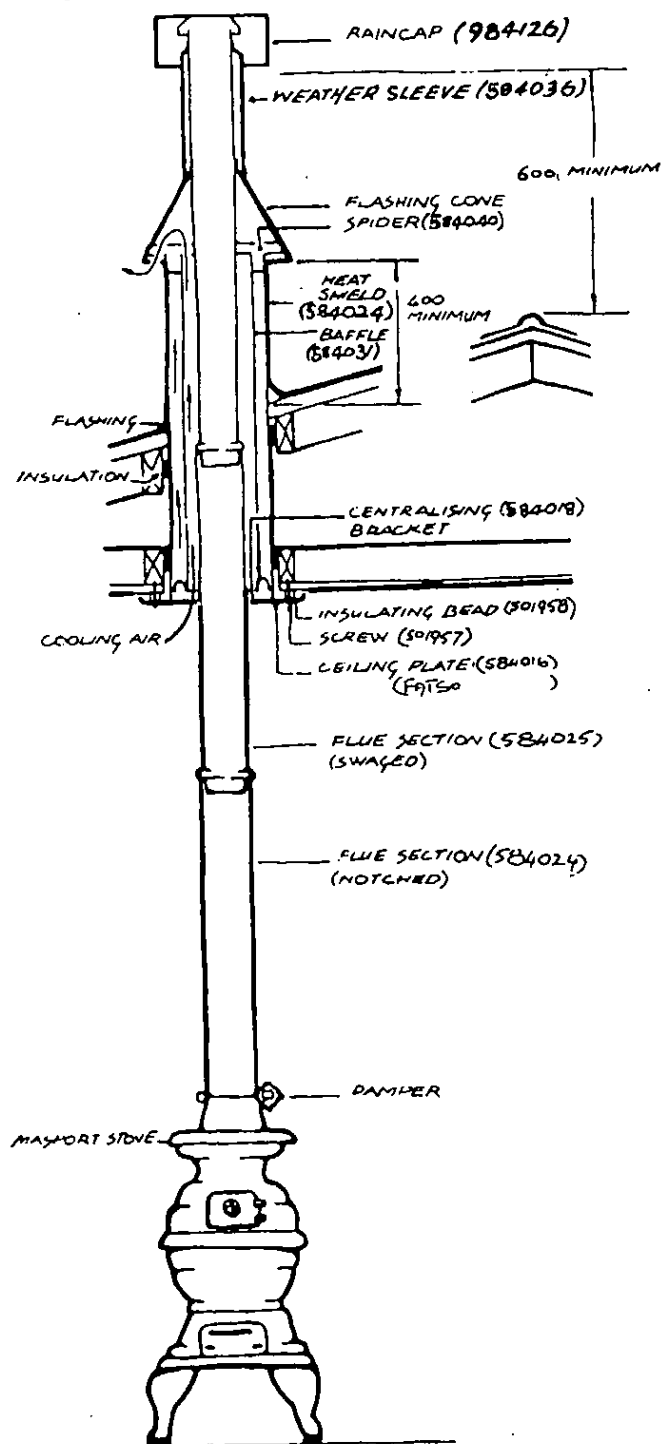


FIGURE 12

### 2.1 Installations with the standard flue kit

2.1.1 Place the stove in position, satisfying all clearances noted in Section 1. Take care that the flue will not pass through ceiling joists, rafters, valleys or ridges. Drop a plumb bob from the ceiling to the centre of the flue outlet flange of the stove to locate the position where the flue will pass through the ceiling.

Cut a 275 mm square hole through the ceiling on this centre-line. Secure suitable nogs to the ceiling timbers forming a 275 mm square opening to which the bottom of the Heat Shield will be secured, Figure 13. Care should be taken that the hole is square and is no greater than 275 mm so that the Ceiling Plate will cover the opening.

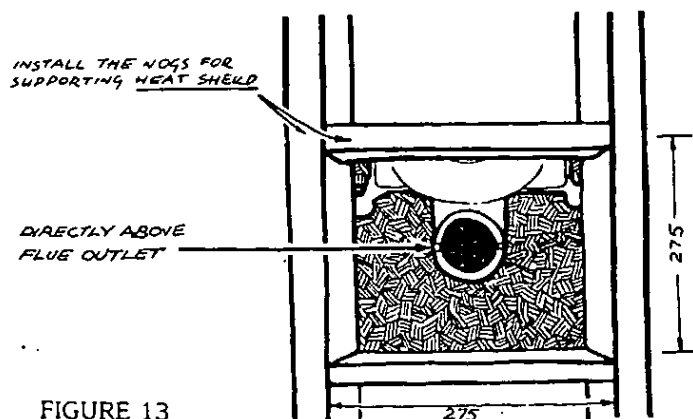


FIGURE 13

2.1.2 On the same centre-line cut a 250 mm diameter hole through the roof and secure suitable nogs to the roofing timbers forming a 275 mm square opening to which the top of Heat Shield may be secured. With the crinkled or swaged end uppermost and the lower end protruding 12 mm below the ceiling, nail or screw the Heat Shield in place using four 12 mm thick insulating spacers at each end, Figure 14.

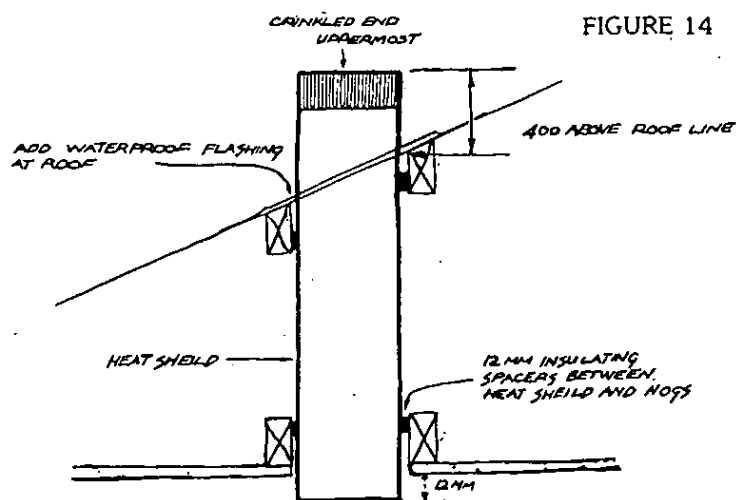


FIGURE 14

The top of the Heat Shield must be at least 400 mm above the roof as shown in Figure 14. If more than 400 mm of the Heat Shield protrudes above the roof, the Shield may, but need not, be trimmed. The Heat Shield should now be flashed to waterproof the joint.

2.1.3 Assemble the two Flue Sections and fit the notched Flue Section to the lower (swaged) end, Figure 15. All flue seams should be in line. The bottom flue is notched to accommodate the Damper.

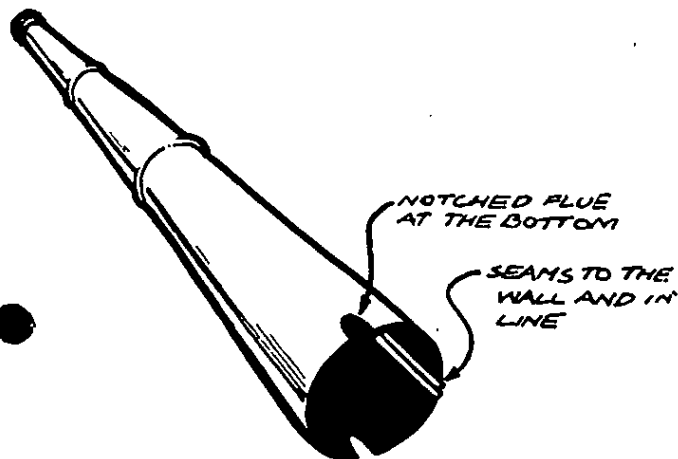


FIGURE 15

2.1.4 Clamp the Centralising Bracket with the lugs upwards, to the assembled Flue Sections so that the bottom of the bracket will be flush with the bottom of the Heat Shield when the flue is in place, Figure 16. Move the flue up and down to ensure that the Centralising Bracket is a free sliding fit within the Heat Shield. This is to accommodate expansion and contraction of the flue. If the bracket is tight, bend the ends of the arms slightly to achieve the desired fit.

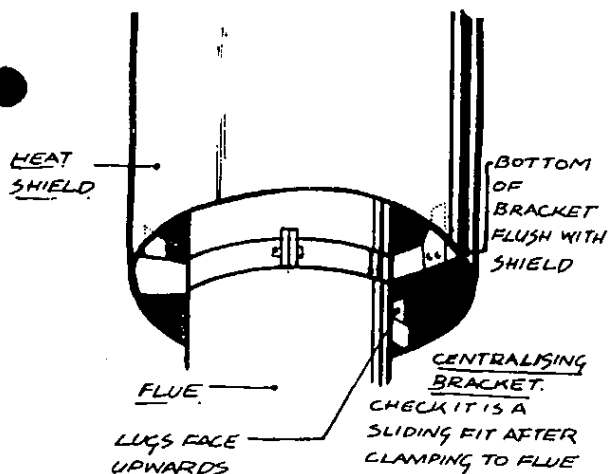


FIGURE 16

2.1.5 To ensure that the tops of the Baffle and Heat Shield are level with each other when finally installed, measure the length of the Heat Shield and subtract 19 mm (the height of the Centralising Bracket). Trim the Baffle to this dimension, Figure 17.

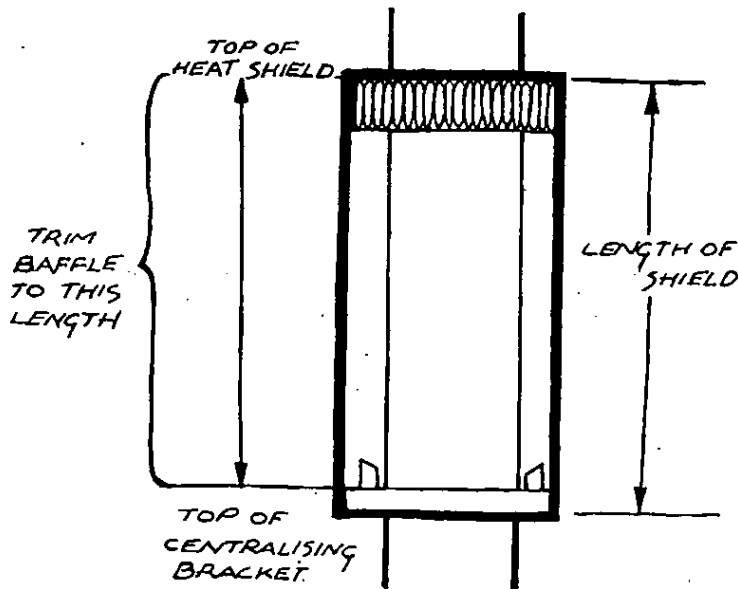


FIGURE 17

2.1.6 Ensure that the Damper is in position and place the Ceiling Plate, with the plastic coated side down over the flue outlet flange on the stove, Figure 18.

NOTE: For Fatso installations a 400 x 400 mm Ceiling Plate must be used.

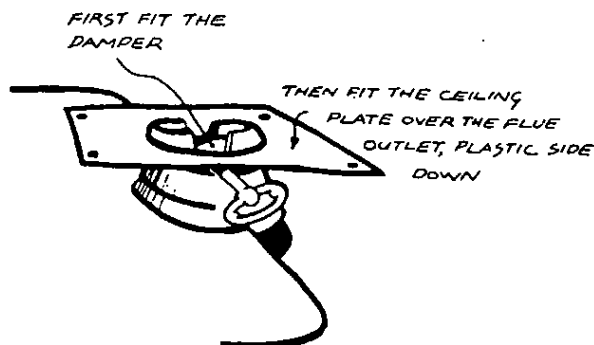


FIGURE 18

2.1.7 Insert the assembled flue upwards through the Heat Shield and fit the notched flue onto the outlet flange, making sure that the flue seam is towards the wall. Slide the Ceiling Plate up and screw it to the ceiling, using the spacers provided to keep the Ceiling Plate clear of the ceiling, Figure 19, making sure that the gap between the Ceiling Plate and flue is even all around. The protective plastic coating may now be peeled from the Ceiling Plate.

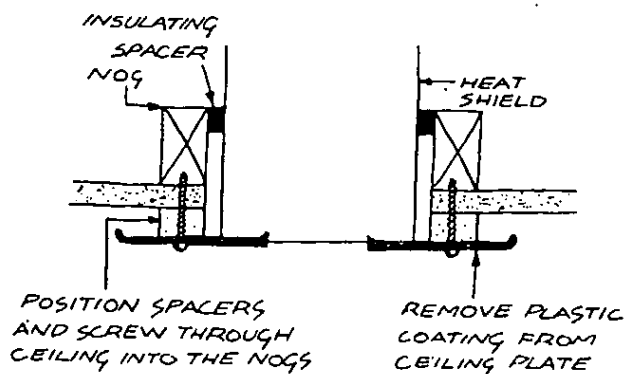


FIGURE 19