

Name: B & A ENGLAND

|   |  |   |
|---|--|---|
| 1 | Location of STOREY: foundation<br>single<br>upper of two<br>lower of two | SITE ADDRESS: <u>WAIKUKU</u><br>City/Town or District: <u>FRANKLIN COUNTY</u><br>Street and Number: <u>17 ELSIE DRIVE</u><br>or LOT and D.P. Number: <u>LOT 85</u><br><u>DP. 176184</u> |
|   | SITE WIND ZONE: (Table 2.4) low, medium, high / very high<br>medium      |   |
|   | EARTHQUAKE ZONE: A / B / C<br>(Fig 2.2, Table 2.3) C                     |   |

|   |  |                 |
|---|--|-----------------|
| 2 | FOR EARTHQUAKE   |                 |
|   | Roof weight : light / heavy<br>Average Roof Pitch: 30<br>Type of Cladding: light / heavy<br>Earthquake zone: C<br>Storey in Roof space: yes / no | E = 4 B.U.'s/m² |

|   |   |   |
|---|---|---|
| 3 | FOR WIND  |   |
|   | Building Height: : 8 m<br>Roof Height : : 1.4 m<br>Storey Height : : 2.4 m<br>Design Wind Speed : MED | W along = 126 B.U.'s/m<br>W across = 116 B.U.'s/m |

|   |   |   |
|---|---|---|
| 4 | ROOF or BUILDING LENGTH<br>ROOF or BUILDING WIDTH<br>GROSS ROOF or BUILDING PLAN AREA | BL = 15.7 m<br>BW = 13.8 m<br>GPA = 177.32 m² |
|---|---|---|

|   |   |
|---|---|
| 5 | EARTHQUAKE LOAD (ACROSS and ALONG) E x GPA = 4 x 177.32 = 709.3 B.U.'s<br>WIND LOAD: ACROSS W x BL = 116 x 15.7 = 1821.3 B.U.'s<br>WIND LOAD: ALONG W x BW = 126 x 13.8 = 1738.8 B.U.'s |
|---|---|

Please Photocopy

# Wall Bracing Calculation Sheet B

Along

| Wall or Bracing Line |                      | Bracing Elements Provided |              |                      | Wind          |                           | Earthquake    |                           |
|----------------------|----------------------|---------------------------|--------------|----------------------|---------------|---------------------------|---------------|---------------------------|
| 1                    | 2                    | 3                         | 4            | 5                    | 6 W           | 7 W                       | 6 E           | 7 E                       |
| Line Label           | Minimum BUs Required | Bracing Element No.       | Bracing Type | Length Element (m) L | Rating BU/m W | BUs Achieved (BU/m x L) W | Rating BU/m E | BUs Achieved (BU/m x L) E |
| A                    |                      | A1                        | BR 9         | 0.6                  | 97            | 58.2                      |               |                           |
|                      |                      | A2                        | "            | 0.9                  | 97            | 87.3                      |               |                           |
|                      |                      | A3                        | "            | 0.6                  | 97            | 58.2                      |               |                           |
|                      |                      | A4                        | "            | 0.6                  | 97            | 58.2                      |               |                           |
| B                    |                      | B5                        | BR 6         | 2.4                  | 150           | 360                       |               |                           |
|                      |                      | B6                        | "            | 2.4                  | 150           | 360                       |               |                           |
| C                    |                      | B7                        | GIB 3        | 1.2                  | 65            | 78                        |               |                           |
|                      |                      | C8                        | GIB 3        | 1.2                  | 65            | 78                        |               |                           |
| D                    |                      | C9                        | BR 6         | 3.0                  | 150           | 360                       |               |                           |
|                      |                      | C10                       | GIB 3        | 1.2                  | 65            | 78                        |               |                           |
| E                    |                      | C11                       | GIB 3        | 1.2                  | 65            | 78                        |               |                           |
|                      |                      | D12                       | BR 9         | 0.9                  | 110           | 99                        |               |                           |
|                      |                      | D13                       | BR 9         | 0.9                  | 110           | 99                        |               |                           |

|                              |  |  |  |  |   |        |   |  |
|------------------------------|--|--|--|--|---|--------|---|--|
| Totals Achieved              |  |  |  |  | W | 1941.9 | E |  |
| From Sheet A Totals Required |  |  |  |  | W | 1738   | E |  |
| Wreq/Ereq =                  |  |  |  |  |   |        |   |  |

\*If Wreq/Ereq is 1 or less complete E column only  
If Wreq/Ereq is 1.5 or more complete W column only  
Otherwise complete both W and E

Across

| Wall or Bracing Line |                      | Bracing Elements Provided |              |                      | Wind          |                           | Earthquake    |                           |
|----------------------|----------------------|---------------------------|--------------|----------------------|---------------|---------------------------|---------------|---------------------------|
| 1                    | 2                    | 3                         | 4            | 5                    | 6 W           | 7 W                       | 6 E           | 7 E                       |
| Line Label           | Minimum BUs Required | Bracing Element No.       | Bracing Type | Length Element (m) L | Rating BU/m W | BUs Achieved (BU/m x L) W | Rating BU/m E | BUs Achieved (BU/m x L) E |
| M                    |                      | M14                       | BRS          | 2.4                  | 115           | 276                       |               |                           |
|                      |                      | M15                       | BRS          | 1.8                  | 115           | 207                       |               |                           |
|                      |                      | M16                       | BRS          | 2.4                  | 115           | 276                       |               |                           |
| N                    |                      | N17                       | GIB 2        | 1.8                  | 75            | 135                       |               |                           |
|                      |                      | N18                       | GIB 2        | 2.4                  | 80            | 192                       |               |                           |
| O                    |                      | O19                       | GIB 2        | 2.4                  | 80            | 192                       |               |                           |
|                      |                      | O20                       | GIB 2        | 1.8                  | 75            | 135                       |               |                           |
| P                    |                      | P21                       | BRS          | 2.4                  | 115           | 276                       |               |                           |
|                      |                      | P22                       | BR 5         | 1.8                  | 115           | 207                       |               |                           |
| Q                    |                      | P23                       | BR 9         | 0.6                  | 110           | 66                        |               |                           |
|                      |                      |                           |              |                      |               |                           |               |                           |

|                              |  |  |  |  |   |      |   |  |
|------------------------------|--|--|--|--|---|------|---|--|
| Totals Achieved              |  |  |  |  | W | 1962 | E |  |
| From Sheet A Totals Required |  |  |  |  | W | 1821 | E |  |
| Wreq/Ereq =                  |  |  |  |  |   |      |   |  |

Name: B & A ENGLAND

|   |  |  |
|---|--|--|
| 1 | Location of STOREY                       | foundation<br><u>single</u><br><u>upper of two</u><br>lower of two |
|   | SITE WIND ZONE:<br>(Table 2.4)           | low <u>medium</u><br>high / very high                              |
|   | EARTHQUAKE ZONE:<br>(Fig 2.2, Table 2.3) | A / B <u>C</u>   |

## SITE ADDRESS

City/Town  
or District:WAIUKU, FRANKLIN CO.Street and Number:  
or17 ELSIE DRIVE.

LOT and D.P. Number:

Lot 85  
D.P. 176184

## 2 FOR EARTHQUAKE

 Roof weight : light / heavy  
 Average Roof Pitch: 30°  
 Type of Cladding: light / heavy  
 Earthquake zone: C  
 Storey in Roof space: yes / no
E = 2 B.U.'s/m²

## 3 FOR WIND

 Building Height: : 8 m  
 Roof Height : 3 m  
 Storey Height : 2.4 m  
 Design Wind Speed : MED.
W along = 60 B.U.'s/mW across = 60 B.U.'s/m

## 4 ROOF or BUILDING LENGTH

BL = 10.4 m

## ROOF or BUILDING WIDTH

BW = 11.4 m

## GROSS ROOF or BUILDING PLAN AREA

GPA = 104 m²

## 5 EARTHQUAKE LOAD (ACROSS and ALONG)

E x GPA = 2 x 104 = 208 B.U.'s

WIND LOAD: ACROSS

W x BL = 60 x 10.4 = 624 B.U.'s

WIND LOAD: ALONG

W x BW = 60 x 11.4 = 684 B.U.'s

Please Photocopy

**Wall Bracing Calculation Sheet B****Along**

| Wall or Bracing Line |                      | Bracing Elements Provided |              |                      | Wind          |                           | Earthquake    |                           |
|----------------------|----------------------|---------------------------|--------------|----------------------|---------------|---------------------------|---------------|---------------------------|
| 1                    | 2                    | 3                         | 4            | 5                    | 6 W           | 7 W                       | 6 E           | 7 E                       |
| Line Label           | Minimum BUs Required | Bracing Element No.       | Bracing Type | Length Element (m) L | Rating BU/m W | BUs Achieved (BU/m x L) W | Rating BU/m E | BUs Achieved (BU/m x L) E |
| A                    |                      | A1                        | BR9          | 0.6                  | 132           | 79.2                      |               |                           |
|                      |                      | A2                        | BR9          | 0.6                  | 132           | 79.2                      |               |                           |
| B                    |                      | B3                        | BR9          | 0.6                  | 110           | 66                        |               |                           |
|                      |                      | B4                        | BR9          | 0.6                  | 110           | 66                        |               |                           |
|                      |                      | B5                        | BR9          | 1.0                  | 110           | 110                       |               |                           |
| C                    |                      | C6                        | BR9          | 0.6                  | 132           | 79.2                      |               |                           |
|                      |                      | C7                        | BR9          | 1.0                  | 110           | 110                       |               |                           |
| D                    |                      | D8                        | GIB2         | 1.8                  | 75            | 135                       |               |                           |
|                      |                      | D9                        | BR4          | 1.2                  | 120           | 144                       |               |                           |
| E                    |                      | E10                       | GIB1         | 2.4                  | 75            | 180                       |               |                           |
|                      |                      | E11                       | GIB1         | 2.4                  | 75            | 180                       |               |                           |

Totals Achieved

W 1228.6

E

From Sheet A

Totals Required

W 684

E

Wreq/Ereq =

\*If Wreq/Ereq is 1 or less complete E column only  
 If Wreq/Ereq is 1.5 or more complete W column only  
 Otherwise complete both W and E

**Across**

| Wall or Bracing Line |                      | Bracing Elements Provided |              |                      | Wind          |                           | Earthquake    |                           |
|----------------------|----------------------|---------------------------|--------------|----------------------|---------------|---------------------------|---------------|---------------------------|
| 1                    | 2                    | 3                         | 4            | 5                    | 6 W           | 7 W                       | 6 E           | 7 E                       |
| Line Label           | Minimum BUs Required | Bracing Element No.       | Bracing Type | Length Element (m) L | Rating BU/m W | BUs Achieved (BU/m x L) W | Rating BU/m E | BUs Achieved (BU/m x L) E |
| M                    |                      | M12                       | GIB1         | 1.8                  | 66            | 118.8                     |               |                           |
|                      |                      | M13                       | BR9          | 0.9                  | 146           | 131.7                     |               |                           |
| N                    |                      | N14                       | BR9          | 1.2                  | 110           | 132                       |               |                           |
|                      |                      | O16                       | GIB2         | 2.4                  | 90            | 216                       |               |                           |
| O                    |                      | O17                       | GIB2         | 2.4                  | 75            | 180                       |               |                           |
|                      |                      | P18                       | GIB1         | 2.4                  | 90            | 216                       |               |                           |
| P                    |                      | P19                       | GIB1         | 2.4                  | 90            | 216                       |               |                           |
|                      |                      |                           |              |                      |               |                           |               |                           |
| Q                    |                      |                           |              |                      |               |                           |               |                           |
|                      |                      |                           |              |                      |               |                           |               |                           |

Totals Achieved

W 1210.5

E

From Sheet A

Totals Required

W 624

E

Wreq/Ereq =

Name: B & A ENGLAND

|   |  |  |                            |                                 |
|---|--|--|----------------------------|---------------------------------|
| 1 | Location of STOREY                       | foundation<br><del>single</del><br>upper of two<br><u>lower of two</u> | SITE ADDRESS               | <u>WAIKUKU</u>                  |
|   | SITE WIND ZONE:<br>(Table 2.4)           | <del>low</del> <u>medium</u><br>high / very high                       | City/Town<br>or District:  | <u>FRANKLIN COUNTY</u>          |
|   | EARTHQUAKE ZONE:<br>(Fig 2.2, Table 2.3) | <del>A/B</del> <u>C</u>  | Street and Number:         | <u>17 ELSIE DRIVE</u>           |
|   |  |  | or<br>LOT and D.P. Number: | <u>85</u><br><u>D.P. 176184</u> |

|   |   |                        |
|---|---|------------------------|
| 2 | FOR EARTHQUAKE  |                        |
|   | Roof weight : <u>light</u> heavy<br>Average Roof Pitch: <u>45°</u><br>Type of Cladding: <u>light</u> heavy<br>Earthquake zone: <u>C</u><br>Storey in Roof space: <u>yes</u> / <u>no</u> | E = <u>4</u> B.U.'s/m² |

|   |  |   |
|---|--|---|
| 3 | FOR WIND   |   |
|   | Building Height: <u>6.5</u> m<br>Roof Height: <u>1.8</u> m<br>Storey Height: <u>2.4</u> m<br>Design Wind Speed: <u>MED</u> | W along = <u>96</u> B.U.'s/m<br>W across = <u>89</u> B.U.'s/m |

|   |   |  |
|---|---|--|
| 4 | ROOF or BUILDING LENGTH<br>ROOF or BUILDING WIDTH<br>GROSS ROOF or BUILDING PLAN AREA | BL = <u>6</u> m<br>BW = <u>4.8</u> m<br>GPA = <u>28.8</u> m² |
|---|---|--|

|   |   |   |
|---|---|---|
| 5 | EARTHQUAKE LOAD (ACROSS and ALONG)<br>WIND LOAD: ACROSS<br>WIND LOAD: ALONG | $E \times GPA = 4 \times 28.8 = 115.2$ B.U.'s<br>$W \times BL = 89 \times 6 = 534$ B.U.'s<br>$W \times BW = 96 \times 4.8 = 460.8$ B.U.'s |
|---|---|---|

Please Photocopy

**Wall Bracing Calculation Sheet B****Along**

| Wall or Bracing Line |                      | Bracing Elements Provided |              |                      | Wind          |                           | Earthquake    |                           |
|----------------------|----------------------|---------------------------|--------------|----------------------|---------------|---------------------------|---------------|---------------------------|
| 1                    | 2                    | 3                         | 4            | 5                    | 6 W           | 7 W                       | 6 E           | 7 E                       |
| Line Label           | Minimum BUs Required | Bracing Element No.       | Bracing Type | Length Element (m) L | Rating BU/m W | BUs Achieved (BU/m x L) W | Rating BU/m E | BUs Achieved (BU/m x L) E |
| A                    |                      | A1                        | BRS          | 1.2                  | 115           | 138                       |               |                           |
|                      |                      | A2                        | GIB 1        | 2.0                  | 55            | 110                       |               |                           |
| B                    |                      | B3                        | GIB 1        | 2.0                  | 55            | 110                       |               |                           |
|                      |                      | B4                        | BRS          | 2.0                  | 115           | 230                       |               |                           |
| C                    |                      |                           |              |                      |               |                           |               |                           |
| D                    |                      |                           |              |                      |               |                           |               |                           |
| E                    |                      |                           |              |                      |               |                           |               |                           |

|                 |                 |   |       |   |  |
|-----------------|-----------------|---|-------|---|--|
| Totals Achieved |                 | W | 588   | E |  |
| From Sheet A    | Totals Required | W | 460.8 | E |  |
| Wreq/Ereq =     |                 |   |       |   |  |

\*If Wreq/Ereq is 1 or less complete E column only  
 If Wreq/Ereq is 1.5 or more complete W column only  
 Otherwise complete both W and E

**Across**

| Wall or Bracing Line |                      | Bracing Elements Provided |              |                      | Wind          |                           | Earthquake    |                           |
|----------------------|----------------------|---------------------------|--------------|----------------------|---------------|---------------------------|---------------|---------------------------|
| 1                    | 2                    | 3                         | 4            | 5                    | 6 W           | 7 W                       | 6 E           | 7 E                       |
| Line Label           | Minimum BUs Required | Bracing Element No.       | Bracing Type | Length Element (m) L | Rating BU/m W | BUs Achieved (BU/m x L) W | Rating BU/m E | BUs Achieved (BU/m x L) E |
| M                    |                      | M5                        | BR9          | 0.6                  | 110           | 66                        |               |                           |
|                      |                      | M6                        | BR9          | 0.6                  | 110           | 66                        |               |                           |
| N                    |                      | N7                        | BR7          | 1.6                  | 145           | 232                       |               |                           |
|                      |                      | N8                        | BR7          | 1.6                  | 145           | 232                       |               |                           |
| O                    |                      |                           |              |                      |               |                           |               |                           |
| P                    |                      |                           |              |                      |               |                           |               |                           |
| Q                    |                      |                           |              |                      |               |                           |               |                           |

|                 |                 |   |     |   |  |
|-----------------|-----------------|---|-----|---|--|
| Totals Achieved |                 | W | 596 | E |  |
| From Sheet A    | Totals Required | W | 534 | E |  |
| Wreq/Ereq =     |                 |   |     |   |  |

Hand-drawn architectural floor plan of a garage. The plan is rectangular with overall dimensions of 6000mm by 4800mm. The central area is labeled "GARAGE".

The plan shows four doors and two windows:

- Top Door:** A1 BRS 1.2m
- Bottom Door:** B4 BRS 2.0m
- Left Door:** M6 BRG 0.6m
- Right Door:** N7 BRG 1.6m
- Top Window:** 2/150x50 UNTEL. 1210W x 1010H
- Bottom Window:** 2/150x50 UNTEL. 1210W x 1010H

A "DECK OVER" is indicated by a dotted line on the right side. The plan includes various dimensions for walls, doors, and windows, as well as labels for structural elements like "BRG" (bracket) and "BRS" (bracket).

## GROUND FLOOR PLAN

SCALE 1:50

Name: B & A ENGLAND

|   |  |  |
|---|--|--|
| 1 | Location of STOREY                             | <del>foundation</del><br><del>single</del><br><u>upper of two</u><br><del>lower of two</del> |
|   | SITE WIND ZONE:<br>(Table 2.4)                 | <del>low</del> <u>medium</u><br><del>high</del> <del>very high</del>                         |
|   | EARTHQUAKE ZONE: A/B/C<br>(Fig 2.2, Table 2.3) | A/B <u>C</u>   |

SITE ADDRESS

WAIKUKUCity/Town  
or District:FRANKLIN COUNTY

Street and Number:

17 ELSIE DRIVE

or

LOT and D.P. Number:

LOT 85D.P. 176184

2

## FOR EARTHQUAKE

Roof weight : light / heavy  
 Average Roof Pitch: 45°  
 Type of Cladding: light / heavy  
 Earthquake zone: C  
 Storey in Roof space: yes / ~~no~~

E = 2 B.U.'s/m²

3

## FOR WIND

Building Height: 7.65 m  
 Roof Height: 1.8 m  
 Storey Height: 2.0 m  
 Design Wind Speed: MED

W along = 50 B.U.'s/mW across = 43 B.U.'s/m

4

ROOF or BUILDING LENGTH

BL = 6.0 m

ROOF or BUILDING WIDTH

BW = 4.8 m

GROSS ROOF or BUILDING PLAN AREA

GPA = 28.8 m²

5

EARTHQUAKE LOAD (ACROSS and ALONG)

E x GPA = 2 x 28.8 = 57.6 B.U.'s

WIND LOAD: ACROSS

W x BL = 43 x 6 = 258 B.U.'s

WIND LOAD: ALONG

W x BW = 50 x 4.8 = 240 B.U.'s



Please Photocopy

**Wall Bracing Calculation Sheet B****Along**

| Wall or Bracing Line |                      | Bracing Elements Provided |              |                      | Wind          |  | Earthquake    |                           |
|----------------------|----------------------|---------------------------|--------------|----------------------|---------------|--|---------------|---------------------------|
| 1                    | 2                    | 3                         | 4            | 5                    | 6 W           | 7 W                                    | 6 E           | 7 E                       |
| Line Label           | Minimum BUs Required | Bracing Element No.       | Bracing Type | Length Element (m) L | Rating BU/m W | BUs <sub>3</sub> Achieved (BU/m x L) W | Rating BU/m E | BUs Achieved (BU/m x L) E |
| A                    |                      | A1                        | BR 4         | 1.2                  | 110           | 120                                    |               |                           |
|                      |                      | A2                        | BR 4         | 1.2                  | 110           | 120                                    |               |                           |
| B3                   |                      | GIB 1                     | 1.6          | 55                   | 99            |  |               |                           |
| B4                   |                      | GIB 1                     | 1.8          | 55                   | 99            |  |               |                           |
|                      |                      |                           |              |                      |               |  |               |                           |
|                      |                      |                           |              |                      |               |  |               |                           |
|                      |                      |                           |              |                      |               |  |               |                           |
|                      |                      |                           |              |                      |               |  |               |                           |
| C                    |                      |                           |              |                      |               |  |               |                           |
|                      |                      |                           |              |                      |               |  |               |                           |
| D                    |                      |                           |              |                      |               |  |               |                           |
|                      |                      |                           |              |                      |               |  |               |                           |
| E                    |                      |                           |              |                      |               |  |               |                           |
|                      |                      |                           |              |                      |               |  |               |                           |

|                              |  |  |  |  |   |     |   |  |
|------------------------------|--|--|--|--|---|-----|---|--|
| Totals Achieved              |  |  |  |  | W | 438 | E |  |
| From Sheet A Totals Required |  |  |  |  | W | 240 | E |  |
| Wreq/Ereq = *                |  |  |  |  |   |     |   |  |

\*If Wreq/Ereq is 1 or less complete E column only  
 If Wreq/Ereq is 1.5 or more complete W column only  
 Otherwise complete both W and E

**Across**

| Wall or Bracing Line |                      | Bracing Elements Provided |              |                         | Wind             |                              | Earthquake       |                              |
|----------------------|----------------------|---------------------------|--------------|-------------------------|------------------|------------------------------|------------------|------------------------------|
| 1                    | 2                    | 3                         | 4            | 5                       | 6 W              | 7 W                          | 6 E              | 7 E                          |
| Line Label           | Minimum BUs Required | Bracing Element No.       | Bracing Type | Length Element (m)<br>L | Rating BU/m<br>W | BUs Achieved (BU/m x L)<br>W | Rating BU/m<br>E | BUs Achieved (BU/m x L)<br>E |
| M                    |                      | M5                        | BR 4         | 1.2                     | 100              | 120                          |                  |                              |
|                      |                      | M6                        | BR 4         | 1.2                     | 100              | 120                          |                  |                              |
|                      |                      |                           |              |                         |                  |                              |                  |                              |
| N                    |                      | N7                        | BR 4         | 1.2                     | 100              | 120                          |                  |                              |
|                      |                      | N8                        | BR 4         | 1.2                     | 100              | 120                          |                  |                              |
| O                    |                      |                           |              |                         |                  |                              |                  |                              |
| P                    |                      |                           |              |                         |                  |                              |                  |                              |
| Q                    |                      |                           |              |                         |                  |                              |                  |                              |
|                      |                      |                           |              |                         |                  |                              |                  |                              |

|                              |  |  |  |  |   |     |   |  |
|------------------------------|--|--|--|--|---|-----|---|--|
| Totals Achieved              |  |  |  |  | W | 480 | E |  |
| From Sheet A Totals Required |  |  |  |  | W | 258 | E |  |
| Wreq/Ereq = *                |  |  |  |  |   |     |   |  |

## SCALE 1:50

SCALE 1:50



P O BOX 56-468 MT EDEN  
AUCKLAND 3

PHONE No. 0-9-302 2235  
FAX No. 0-9-302 2236

JOB NAME:

PAGE No:

SECTION:

JOB No: **98208**

DESIGNED: **CFC**

DATE: **4/98**

CHECKED:

STRUCTURAL CALCULATIONS  
FOR  
17 ELSIE DRIVE  
WAIKUKU.  
ENGLAND HOUSE.



**LAW  
SUE**

CONSULTANTS LIMITED  
CONSULTING STRUCTURAL AND CIVIL ENGINEERS

P O BOX 56-468 MT EDEN  
AUCKLAND 3

PHONE No. 0-9-302 2235  
FAX No. 0-9-302 2236

JOB NAME:

17 Elsie Drive.

PAGE No:

1

SECTION:

Beam

JOB No:

78208

DESIGNED:

DATE:

4/98

CHECKED:

Roof Beam B1 span 3m

loads

$$\text{Roof} = \frac{2.4}{2} \left( \frac{0.4}{\text{by } 30} + 0.25 \right) = 0.85$$

$$= 0.15$$

$$\frac{1.0}{1.0}$$

Banding

$$M = 1.0 \times \frac{3^2}{8}$$

$$= 1.13144 \text{ m}$$

use 2/150x50

Roof Beam B1  
span 3m.

2/150x50

End R

$$R = \frac{1.0 \times 3}{2} = 1.5 \text{ kN}$$

P O BOX 56-468 MT EDEN  
AUCKLAND 3

PHONE No. 0-9-302 2235  
FAX No. 0-9-302 2236

JOB NAME:

17 Elsie drive

PAGE No:

2

SECTION:

Beam

JOB No:

98209

DESIGNED:

DATE:

4/98

CHECKED:

Beam BA span 3.4

Load

Roof =  $\frac{3.3}{2}$

$\gamma = 1.17$

$= 0.15$

1.33

Bending

$M = 1.33 \times 3^2$   
3

$= 1.5 \text{ kNm}$

we 2/200x50

$\Rightarrow$  Beam BA span 3.4

2/200x50

End P

$P = \frac{1.33 \times 3}{2} = 2 \text{ kN}$

Hip Rafter BS/B6 span 2m

local

$$\begin{aligned} \text{Roof} &= 1 \quad L \\ &= 0.71 \\ &= 0.1 \\ &= 0.81 \end{aligned}$$

Bending

$$\begin{aligned} M &= 0.81 \times 2^2 \\ &= 0.406 \text{ kNm} \end{aligned}$$

150x50

Hip Rafter span 2m

150x50

End

$$R = 0.81 \times 2 = 0.81 \text{ kN}$$

Roof A Frames span 4.6m

loads

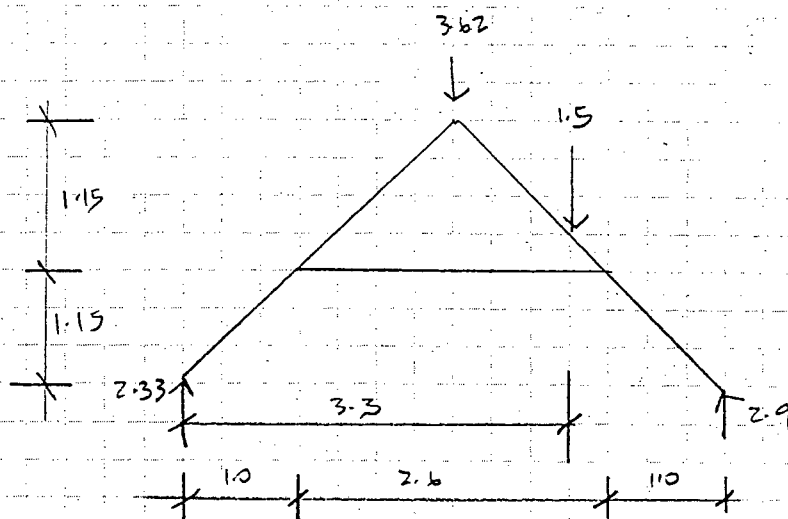
Point load @ ridge

$$B5 = 0.61 \times 2 = 1.62$$

$$B4 = \quad = 2.0$$

$$\underline{3.62 \text{ kN}}$$

Point load @ 3.3m = 1.5 kN



Binding

$$M = 2.9 \times 1 = 2.9 \text{ kNm}$$

$$\text{we } 3/150 \times 50 \quad \checkmark$$

collar tie

$$t/c = 233 \times 2.3 = t \times 1.15$$

$$T = 466 \text{ kN}$$

$\Rightarrow$  2/150x50 & 2M12x8 Bolts.

Roof frames  
B2/B3

span 4.6m.

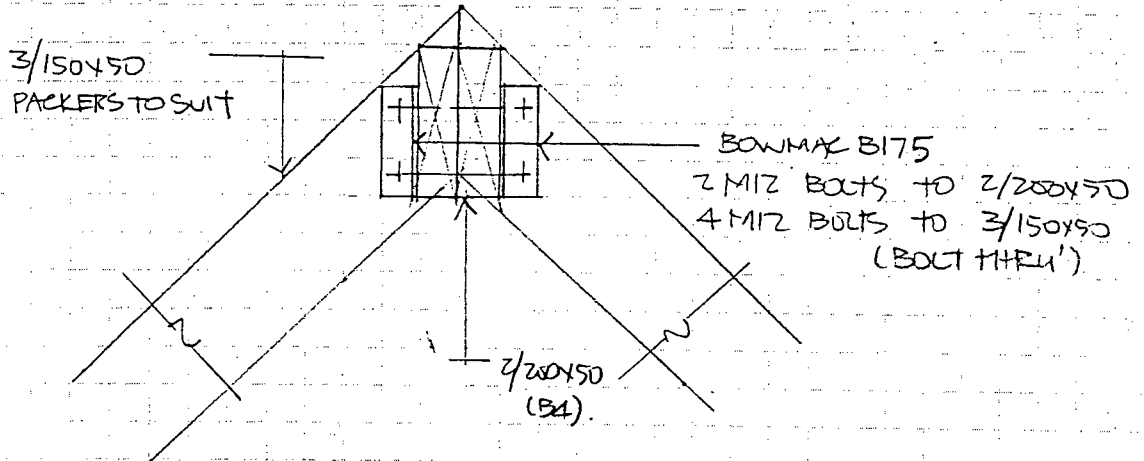
Rafters 3/150x50

collar ties 2/150x50

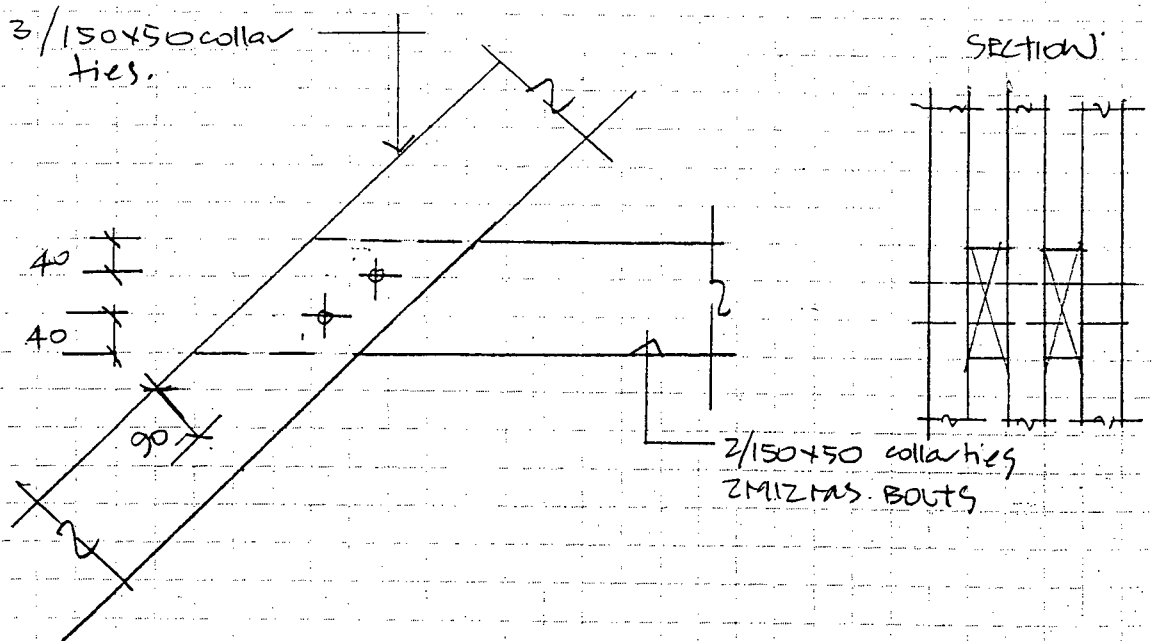
2M12x8 BOLTS

collar tie & 24m  
above floor level.





RIDGE DETAIL



COLLAR TIE DETAIL

POWDER COATED  
ALUMINIUM JOINERY

# NORTH ELEVATION

SCALE 1:100

# EAST ELEVATION

SCALE 1:100

(7)

3000 x 300 CONC. STRIP FTU.  
4-DIR LENGTH WITH  
R16 STPS @ 400%  
DIR @ 600%

45° ROOF PITCH

20° ROOF PITCH

OSBAGON ROOFING, SHINGLES ON  
50x40 BATTENS TO SUIT ON  
BREATHEN TYPE B/PAPER ON  
12mm 'SUPERFLAKE' P/BD BANKING ON  
150x450 EXPOSED BATTENS @ 900%

COPPER 1/2" H SPOUTING  
EX 100 x 25 CEDAR FAIRCE

GUEST

ENSUITE

10mm HD PARTICLE BOARD  
ON 150x50 JOISTS @ 400% MAX

41-TEX PLASTER BOARD  
WITH SPRAY TEXTURE F1  
ON B/PAPER ON TIMBER

75x40 BATTENS @ 400%  
9.5mm G18 BOARD LINING OVER

GARAGE

100mm CONC. SLAB WITH  
84/10 ECONOMIX WITH

POWDER COATED  
ALUMINIUM JOINERY

0.75mm POLYETHYLENE DEC. ON  
SAND BLINDING ON 100mm  
MIX COMPACTED HARDEN

## CROSS SECTION

SCALE 1:50

75sq.415 STAIN. POSTS  
IN 100Ø CONC. COLUMN  
300mm DEEP (TYPICAL)  
(6 IN TOTAL)

STAINS SHOWN DOTTED

DECK OVER SHOWN  
DOTTED

1200 | 100 300 100 1400 100 700 |

100sq.415 DECK POSTS IN  
100Ø CONC. COLUMN  
300mm DEEP  
(4 IN TOTAL)



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JOB NAME:

17 Elisha Dr.

PAGE No:

8

SECTION:

Unitely

JOB No:

98208

DESIGNED:

DATE:

4/19

CHECKED:

Gauge lintel span 3.0m (BT)

10 mls.

wall

= 0.72

Floor =  $\frac{0.6}{2}$  (12)

= 0.6

Roof =  $\frac{1.2}{2}$  ( )

= 0.427

1.75 kN/m.

Banding

M1 =  $1.75 \times \frac{3^2}{8}$

= 1.97 kN.

2/250x80.

Gauge lintel (BT)  
span 3m.

2/250x50mm

2/100x50 post

or

RC. F45

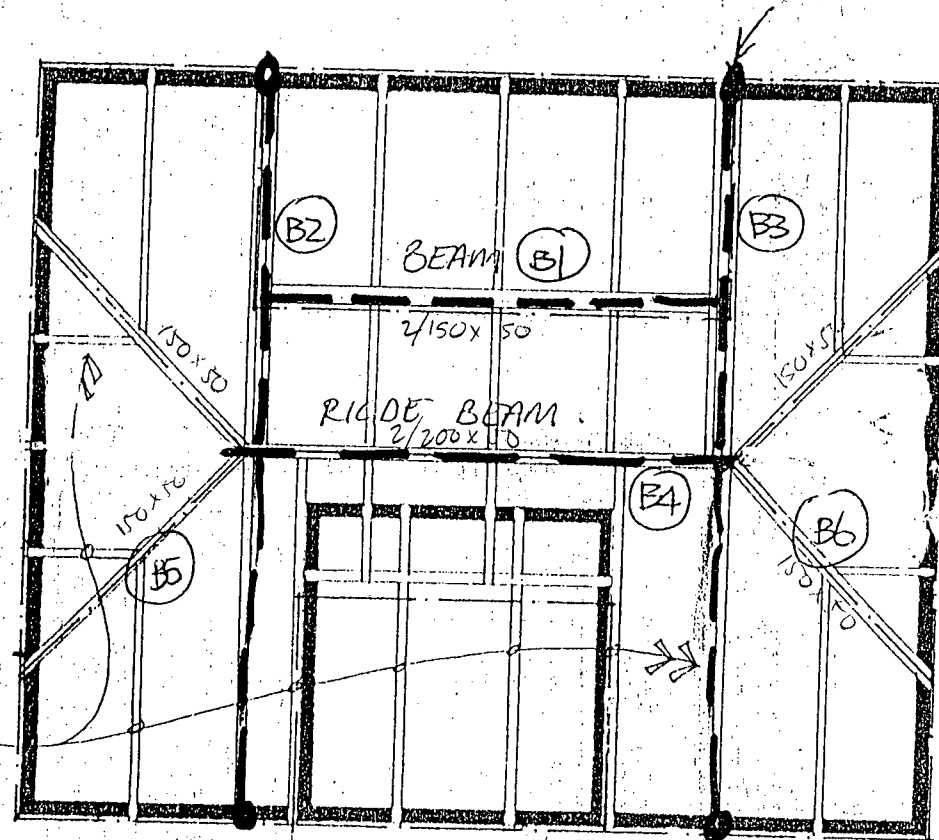
100mm CONC. SLAB WITH  
84/10 ECONOMECH

B2 & B3

3/150x50 RAFTERS WITH  
2/150x50 COLLAR TIE.

## CROSS SECTION

SCALE 1:50

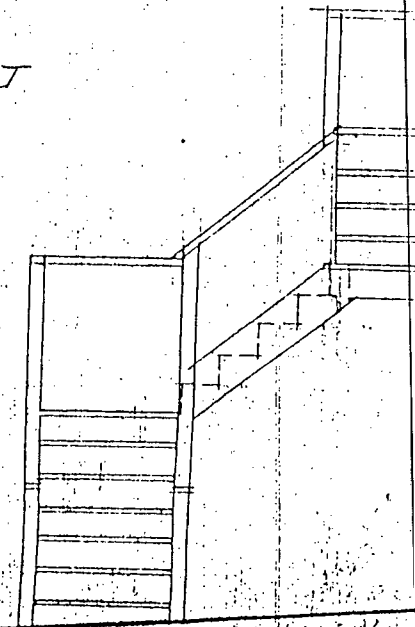


150x50 EXPOSED  
RAFTERS @ 900mm  
MAX.

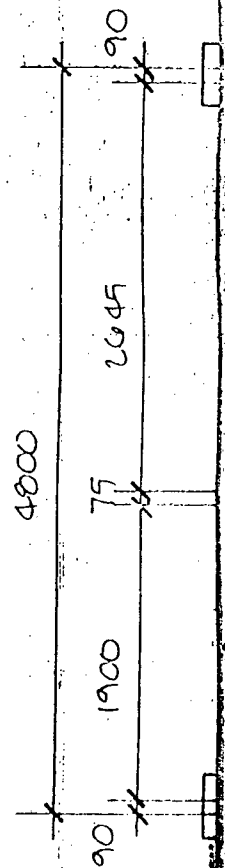
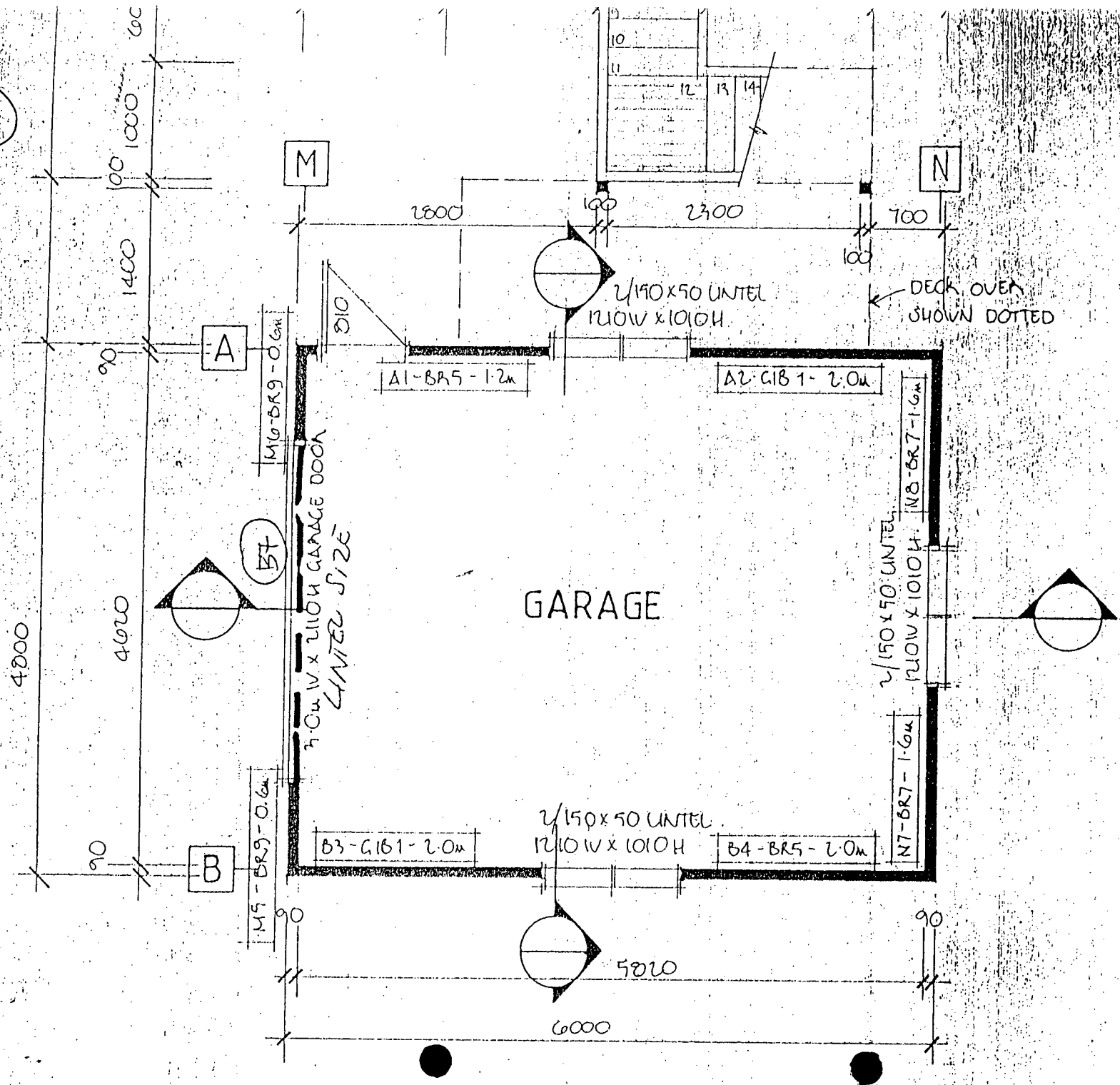
HOW TO SUPPORT  
RIDGE BEAM

## ROOF FRAMING PLAN

SCALE 1:50



(10)





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JOB NAME:

17 Elsie St

PAGE No:

11

SECTION: Beams

JOB No: 98208

DESIGNED:

DATE: 11/98

CHECKED:

Roof Beams B15/B16 span 3.6m max

loads

$$\text{Roof} = \frac{3.8}{2} ( ) = 1.35$$
$$= 0.15$$
$$\underline{1.5}$$

Bending

$$M = \frac{1.5 \times 3.6^2}{8}$$

$$= 2.43 \text{ kNm}$$

Roof Beams  
B15/B16

use 2/200x50 continuous.

2/200x50  
continuous



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JOB NAME:

17 ELSIE W

PAGE No:

12

SECTION:

Beams

JOB No:

98208

DESIGNED:

DATE:

4/98

CHECKED:

Beam B8 span 3.8m

loads.

$$\text{Floor} = \frac{2}{2} (2) = 2.0$$

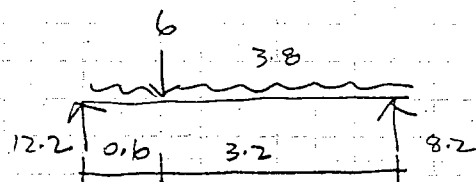
$$\text{Wall} = 0.72$$

$$\text{roof} = \frac{(1.4 + 1.6)}{2} ( ) = 7.06$$

$$3.8 \text{ kNm}$$

Point load 0.6m

$$= \frac{4}{2} \times \frac{8.4}{2} ( ) = 6 \text{ kNm}$$



Ending

Beam B8

span 3.8m.

$$M_1 = 12.2 \times 0.6 - 3.8 \times 0.6^2 = 6.7 \text{ kNm.}$$

3/250x50 on

$$M_2 = 8.2 \times 1.9 - 3.8 \times 1.9^2 = 8.7 \text{ kNm.}$$

2/100x50 post on

500x300 pad  
3D12 Eway.

we 3/250x50.

or

2/300x50  
wall beam



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JOB NAME:

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PAGE No:

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SECTION:

Beams

JOB No:

98208

DESIGNED:

DATE:

4/98

CHECKED:

Lintel B9 span 2m.

$$P_{lad} = 8.2 \text{ kN}$$

$$\text{roof} = 1 \quad ( ) = 0.71$$

$$= 0.1$$

$$0.81 \text{ kN/m}$$

Bending

$$M = \frac{8.2 \times 2}{4} + \frac{0.81 \times 2^2}{8}$$

$$= 4.5 \text{ kNm}$$

use 2/250x50

Lintel B9  
span 2m.

2/250x50 OL

2/100x50 POS

PLATE





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JOB NAME:

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PAGE No:

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SECTION:

Beams

JOB No:

98208

DESIGNED:

DATE:

4/98

CHECKED:

Garage lintel B10 span 4.8m

load/

$$\text{Roof} = \left( \frac{2.5}{2} + 0.3 \right) ( ) = 1.1$$

$$= 0.15$$

$$\underline{1.25}$$

Bending

$$M = 1.25 \times 4.82$$

$$= 3611 \text{ Nm}$$

use 2/300x50

Garage lintel B10

span 4.8m.

2/300x50 on

2/100x50 posts

on

R.C. Footing

Deflection

$$\text{WTD} = 1.73$$

$$\delta = 8 \text{ mm}$$

Beam B11 span 5.8m

loads:

$$\text{Floor} = \frac{3.8}{2} (2) = 3.8$$

$$\text{Wall} = 0.72$$

$$\text{Wing} = \frac{(9+7.5)}{2} (1) = 4.09$$

$$\text{SW} = 0.37$$

$$\frac{9.14}{1}$$

Bending

$$M = 9 \times 5.82$$

$$= 38.14 \text{ kNm}$$

250UB 37

Beam B11  
span 5.8m.

250UB 37

an

7543SHS

on

700x300pnd  
4DREWky.

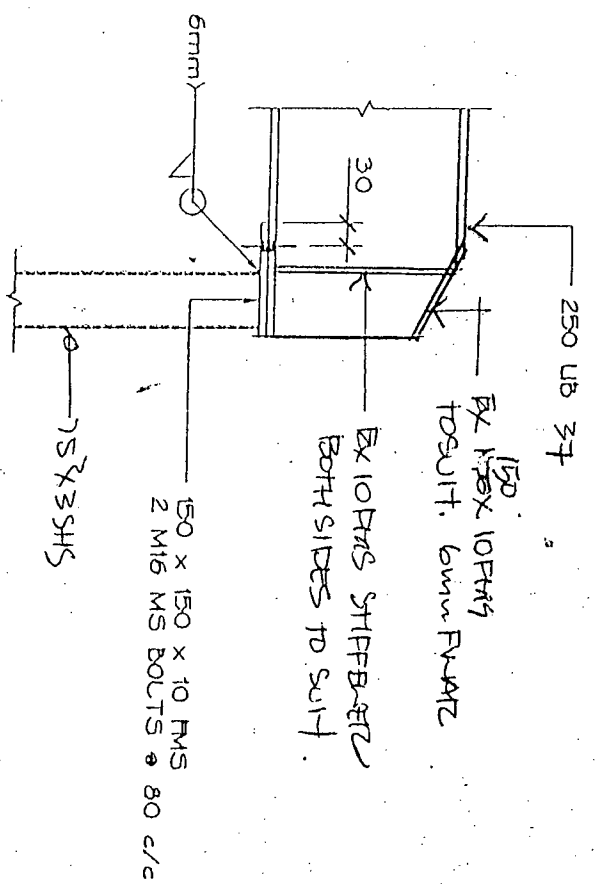
Depth

$$d = 12 \text{ mm}$$

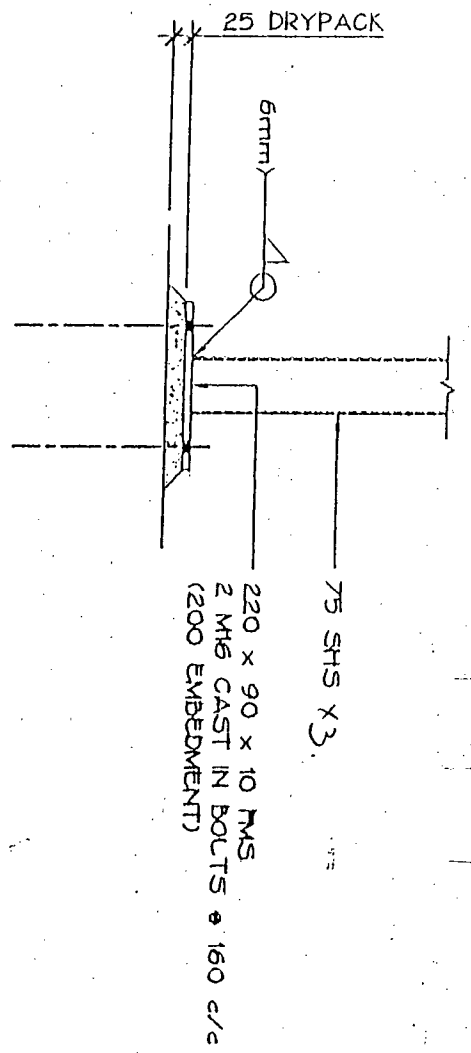
SLR

$$R = 9 \times 5.82 = 26 \text{ kN}$$

|                 |       |           |  |
|-----------------|-------|-----------|--|
| JOB NAME:       |       | PAGE No:  |  |
| 17 Elsie drive. |       | 16        |  |
| SECTION         | Beams |           |  |
| JOB No:         | 98208 | DESIGNED: |  |
| DATE:           | 4/98  | CHECKED:  |  |



250 UB/75 SHS POST CONNECTION  
SCALE 1:10



75 SHS BASE DETAIL  
SCALE 1:10

Beam B12 span 4.5m

loads

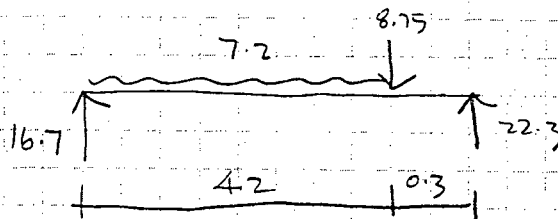
$$\text{Floor} = \frac{7}{2} (2) = 7.0$$

$$= 0.2$$

$$\underline{7.2 \text{ kN/m}}$$

At load 4.2m

$$= \left[ \left( \frac{4.2}{2} + 0.3 \right) (7.0) + 0.72 \right] \frac{7}{2} = 8.75 \text{ kN}$$



Bending

$$M = 16.7 \times 2.25 - \frac{7.2 \times 2.25^2}{2}$$

$$19.4 \text{ kNm}$$

use 200UB25.

Beam B12 span 4.5m

200UB25

on

75x35x5

on

600x300 pad  
ADZENAY.

Def

$$\delta = 9 \text{ mm}$$

JOB NAME:

17 Ekeber.

PAGE No. 18

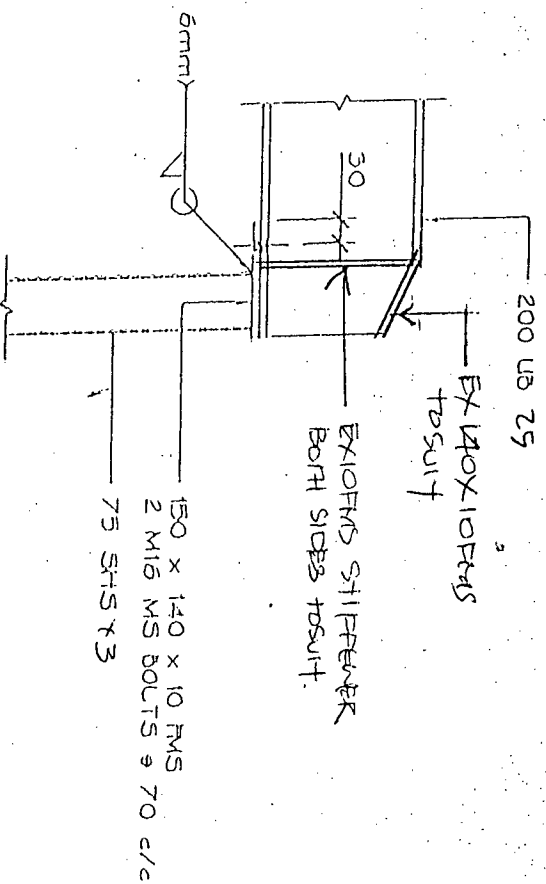
SECTION Beam

JOB No: 18208

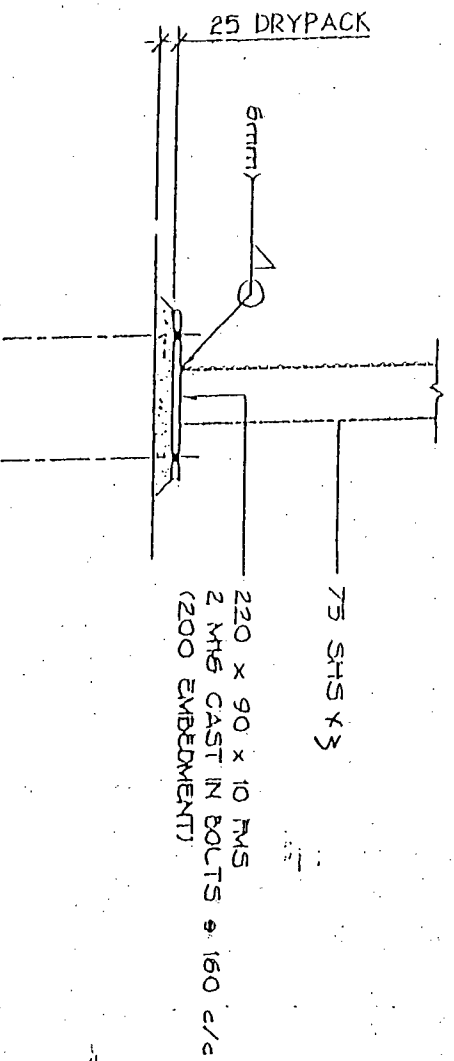
DESIGNED:

DATE: 4/98

CHECKED:



200 UB/75 SHS POST CONNECTION  
SCALE 1:10



75 SHS BASE DETAIL  
SCALE 1:10



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JOB NAME:

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PAGE No:

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SECTION:

Beams

JOB No:

98708

DESIGNED:

DATE:

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Beam B13 span 4.5m

loads

$$\text{Floor} = \frac{3.1}{2} (2) = 3.1$$

$$\text{Deck} = \frac{1.5}{2} (2 + 0.5) = 1.875$$

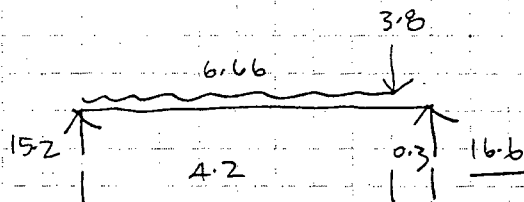
$$\text{Wall} = 0.72$$

$$\text{S/n} = 0.29$$

$$\text{roof} = 1 \quad \quad \quad = 0.71$$

$$\underline{\quad \quad \quad 6.66 \quad \quad \quad}$$

$$\text{At load @ 4.2m} = \frac{2.5 \times 3}{2} = 3.8 \text{ kN}$$



Beam B13  
span 4.5m.

200UB25

on  
2/100x75 posts

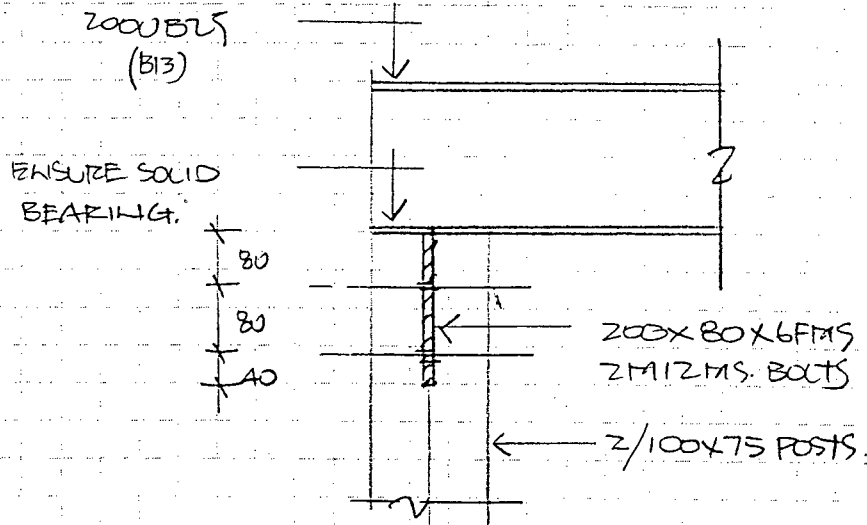
Bending

$$M = 15.2 \times 2.25 - \frac{6.66 \times 2.25^2}{2}$$

$$= 17.3 \text{ kNm}$$

we 200UB 25.

600x300 p.p.  
4 D12EN4.



200UBLS (B13) / POST

Beam B20 span 4.5m.

loads

$$\text{Deck} : \frac{1.5}{2} (2 + 0.5) = 1.875$$

$$\text{roof} : \frac{1.2}{2} ( ) = 0.427$$

$$\text{S/W} : 0.15$$

$$2.5 \text{ kN/m}$$

Banding

$$M = 2.5 \times 4.5^2$$

8

$$= 62 \text{ kNm}$$

$$\text{use } 2/300 \times 50 \text{ v}$$

Beam B20

span 4.5m.

2/300x50 on

2/100x50 posts

on  
R.C. footing

4

2/250x50 lintel  
span 1.8m.



Beam B14 span 6.2m

loads 0.6 - 6.2m

4.0.7.

$$\text{Floor} = \frac{2}{2} (1.5 + 0.5) = 2.0$$

1.55

$$\text{Rail} = \frac{3.4}{2} (2 + 0.5) = 4.25$$

3.23

$$\text{g.w.} = 0.37$$

0.37

$$\text{wall} = 0.72$$

0.72

$$\text{wg.} = \frac{9.1}{2} = 4.55$$

2.86

$$\underline{10.54 \text{ kN/m}}$$

8.74

Bending

$$M = \frac{10.54 \times 6.2^2}{8}$$

$$= 50.6 \text{ kNm}$$

Beam B14  
span 6.2m

310UB40

or 250UC73

310UB40

on

90x35x5

on

Defl

$$\delta = 12 \text{ mm}$$

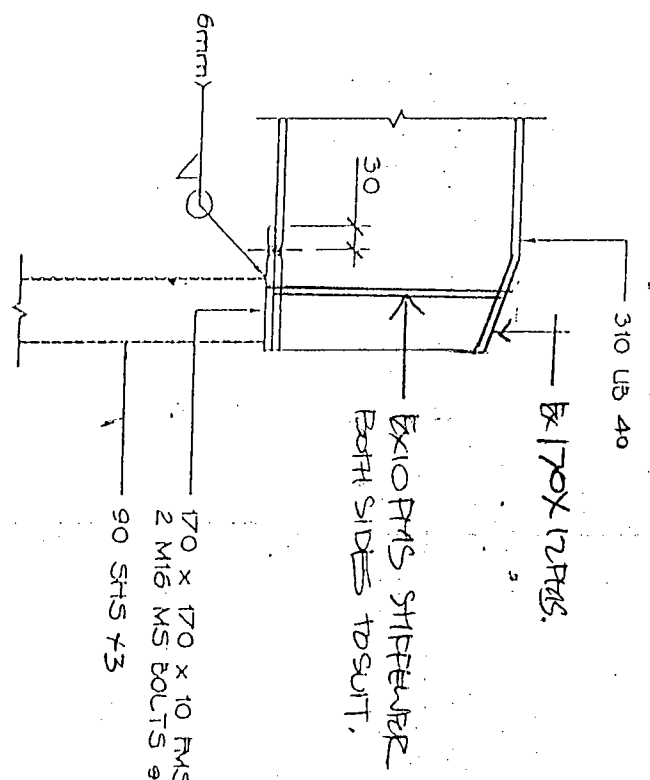
700x300 pad  
4 D12E. wdg.

JOB NAME:

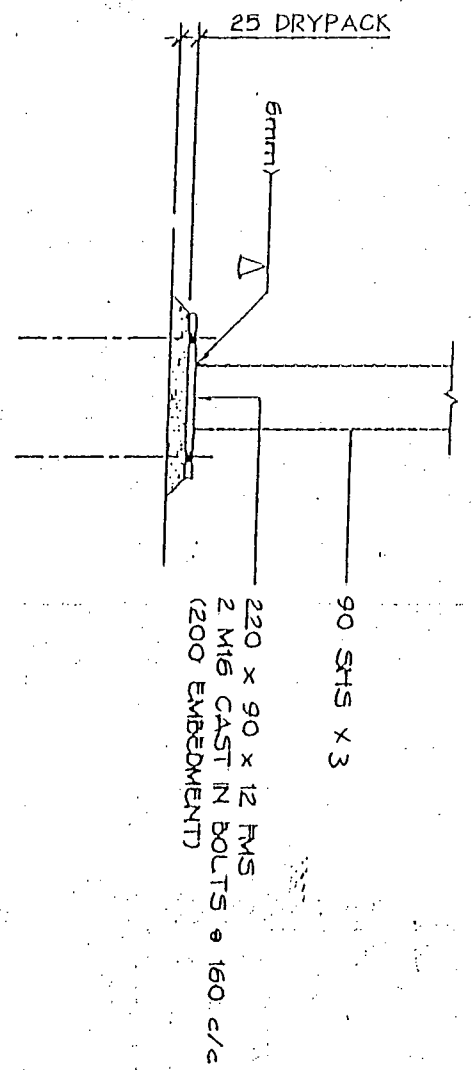
17 ELISIA BL

PAGE No:  
23

| SECTION | Beam  |           |
|---------|-------|-----------|
| JOB No: | 98208 | DESIGNED: |
| DATE:   | 4/98  | CHECKED:  |



310 UB/90 SHS POST CONNECTION  
SCALE 1:10



90 SHS BASE DETAIL  
SCALE 1:10

SPECIFICATION  
WORK TO BE DONE AND MATERIAL TO BE EMPLOYED IN THE ERECTION OF A  
RESIDENCE

---

PRELIMINARY & GENERAL

**CONTRACT:** This includes the supply and delivery of all materials, labour, fittings, tools plant, etc. necessary for the due and proper completion of the building as shown on the plans and herein specified. Underground power shall be provided where required by the local by-laws.

**CONSENTS:** Contractor to comply with NZ Building Code to apply for and obtain specific building consent and pay for the same. (Kerb crossing and water to be executed). This clause shall not apply to the payment of inspections, valuations by the lending institutions (if any) in respect of progress payments, fee for dispensations or specified departures.

**WATER:** The contractor will be responsible where reticulation is available for getting water laid on to a section by making application to Local Body and paying all fees, excluding water connection.

**SITE & ACCESS:** The purchaser/vendor will be responsible for ensuring that the section is fully pegged with pegs correctly numbered and flagged. The purchaser/owner will be responsible for clearing excess vegetation from the building site and will provide suitable access to the section and building site for vehicles of the builder and various sub-trades.

**PROVIDE & FIX:** Shall be construed to mean 'provide and fix' where used separately unless otherwise specified.

**INSURANCE:** The contractor shall insure their own workmen, employees and materials used on the contract by taking out a Contractor All Risk Policy. This policy is to remain in force until the Contractor has handed over to the owner.

**INTERPRETATION:** Workmanship as shown on plans or otherwise specified and not shown must be applied as though both shown and specified or alternatively constructed to accepted trade practice. Materials shown but not specified must be of a kind commonly employed for the service it is intended to perform. All figure dimensions shall be taken in preference to those scaled and all detail drawings shall supercede those of a smaller scale. This specification is to be read in conjunction with the accompanying drawings and to be followed in conjunction with the NZS 3604, NZS 1900 and Common Trade Practices.

**CLEARING:** All trades shall remove their trade waste from the house on completion of their work and place on site in a neat stack.

**MAINTENANCE:** The maintenance period shall be twelve (12) months after possession is granted. The purchaser will notify the Contractor in writing of any defects or faults which appear within 12 months (and give the contractor a signed clearance when items are rectified). If no such written notice is received within the 12 month period it shall be construed that no maintenance is required and the Contractor is cleared.

**MATERIALS:** In the event of any materials specified herein not being procurable at the time it is required, such materials may be substituted with other similar materials provided that the other materials confirm to the NZ Building Code. Any additional cost will be at the expense of the employer. The right substitution shall be at the sole discretion of the Contractor and this decision will be final.

**INSULATION:** Insulate in accordance with NZS 4218P, NZS 4214 and Branch Paper C1 1978. Batts to outer walls, unifoil underfloor, Batts, Rockwool or Insulfluff to ceilings. The Contractor reserves the right to substitute materials of equivalent thermal value as and when deemed necessary without notification or consultation.

**EXCAVATION:** Excavate for all pipes, walls and other foundations as shown on drawings to the minimum depth as specified in NZS 3604 or to good solid bearing. Step as necessary for falls in ground and leave bottom of trenches level and consolidated. Backfill all foundation excavation at completion. Where extra foundation work is required by the owner, the Lending Institution or Local Body because of any peculiarity of the section such as excess rock, loose filling, unstable subsoil or hidden subsidence etc. such work shall be

carried out, charged as an extra on labour and materials plus 15%. Where excavation is carried out to provide a basement as Contractor is excavating at request of owner, the owner will accept full responsibility for any claim arising through subsidence, water damage or any like contingency in owner's or adjoining property. Spoil from excavations shall be placed on the section at the Contractor's discretion and disposal of same is full responsibility of owner. The Contractor accepts no responsibility for Foundation difficulties relating to soil structure.

P.C.SUMS: All prime costs sums inserted on amounts to cover supply and installation of certain materials or items are strictly nett and shall be charged at cost plus 10%.

#### CARPENTER & JOINER

TIMBER: All timber up to flooring and all exterior timbers shall be timber treated by an approved process. All timber shall be graded according to NZS 169, 3rd revision.

PLACED TIMBER PILES: This specification to timber piles having a minimum diameter of 140mm or 125mm sq. The piles shall not exceed a maximum height of 3000mm above finished ground or floor level.

TIMBER: PILES: Timber piles shall be straight, natural rounds or square free from decay with all outer bark removed, treated with preservative to T.P.A.S. (C 1 (b)). The minimum depth of the pile shall not be less than 140mm. Where piles have been cut after treatment the cut end shall not be embedded in the ground. Cut and notched surfaces (above ground level) shall be coated with a mixture of 5% copper naphthanate, creosote or pentachlorophenol and 95% light petroleum solvent applied liberally by brush. Enseal or equivalent proprietary brands are acceptable.

EMBEDMENT OF PILES: All piles shall be embedded to the minimum depth as specified in NZS 3604 or to firm solid bearing. Piles shall be placed on a 100mm punch pad of concrete with a compressive strength at 28 days of not less than 17.5mpa. Piles shall be laid out in as straight a row as possible with the top of the pile within a tolerance of 10mm from a straight line in the direction of the bearer. Piles shall be placed plumb within tolerance of 15mm in 1000mm from the vertical.

BRACING TO PILES: (Where required). Diagonal timber bracing shall be fixed to the timber piles on exterior wall lines and on lines at no more than 5000mm centres in two directions at right angles. Where bracing is required the minimum number shall be four in each direction at right angles placed at the extremities of the dwelling. Additional bracing shall be as indicated on the attached drawings. (Foundation Plan and Detail). Braces shall be No.1 framing grade in one continuous length with 12mm hot dipped galvanised bolts and washers. Braces shall be 100mm x 75 mm for braces up to 3000 long and 100mm x 100mm for braces up to 5000 long. The lower end of the brace shall not be closer than 150mm to the finished ground level or more than 300mm above the finished ground level. The upper end of the brace shall be attached either to a floor joist with the fixing placed within 200mm of the centre line of the bearer or to the bearer within 200mm of the centre line of pole. (See Detail). No braces shall be steeper than 45 deg. to the horizontal and if possible of alternative slope. No more than one brace in each bracing line shall be fixed to any pole. (Two braces at right angles may be fixed to a single pole). Where corners are braced the upper end of the braces shall be at the corner. All bolts, nuts, washers and other connections used, whether exposed to or protected from the weather, shall be hot dipped galvanised. Bolts shall be protected by smearing with grease or pitch. Where bracing piles are indicated on the drawings these shall have the bottom of the brace attached to them. (NOTE: Senton Saw House Piles may be substituted for 140mm natural round piles).

BASE LINING: Unless otherwise shown shall be lined with 6mm flat Hardiflex fixed in accordance with the Manufacturers specification. Base framing shall be fixed on to 75mm x 50mm or 100mm x 50mm framing fixed horizontally at 500mm centre and vertical 75mm x 50mm nogs at 600mm centres. Any check outs required to keep base true shall be taken from the framing not the piles.

OR: 100 x 25mm rough sawn timber fixed horizontally at approximately 20mm spacings, 100mm clear of ground on a level section.

FRAMING: Frame floor joists at nominated centres with nogs and strutting as required under NZS 3604. Frame walls and partitions and provide sheet braces or angle braces at approximately 45deg. where required. Fix rows of nogging at each lined wall and elsewhere as required for fixing. Frame for roof as shown on drawings in compliance with good trade practice. Truss roof shall be framed to Manufacturers specification with 150mm x 40mm plate on top of top plate. Form soffits as on drawings line, under with flat asbestos sheets housed into fascia board.

EXTERIOR SHEATHING: Sheathing of fibroplanks fixed to Manufacturers instructions, or alternative materials as specified on plans or in the Addendum.

HARDIFLEX: Where indicated shall be fixed to Manufacturers specifications.

FLOORING: To be high density flooring grade particle board. In completion of all trades clean off with one cut of machine sanding. Floors are to be sealed or covered to comply with manufacturers requirements prior to habitation at the owners cost.

**CEILING FRAMING:** (a) Truss Roof: Double skew nail 75mm x 40mm borac treated strapping to bottom cords of trusses at 500mm centres for fibrous ceiling, 400mm centres for tiles or gib board. (b) Sloping ceilings for Framed Roof: Where ceilings are fixed to rafters exceeding 500mm centres, nogging or strapping shall be fixed in accordance with the ceiling manufacturers specification.

**WALL LININGS:** Walls to be lined with 9.5mm Gib Board sheets. All sheets to be nailed or glued. Alternatively prefabricated purpose made partitions may be used. All stopping to be done with good quality Plaster of Paris by skilled tradesmen. Where alternative linings are used they shall be fixed in accordance with manufacturers specification.

**DOORS:** External timber doors shall be as indicated in drawings hung with 1 1/2 pairs 100mm butt hinges. Internal doors shall be hollow core of approved make, hung with 1 1/2 pairs 89mm loose pin A.C. butt hinges. Interior doors not already prefinished shall be suitable for painting only. Non-standard doors e.g. Louvre or aluminium, shall be fixed in accordance with the manufacturers specifications. Aluminium external doors may be substituted for timber where and when required at the sole discretion of the builder.

**ALUMINIUM JOINERY:** Shall be of approved make. Opening sashes to have friction stays and approved catches fixed according to manufacturers specification.

**KITCHEN FITTINGS:** To be of builders standard design placed as shown on plan. Provide toe space to all fittings. Dresser or buffet top to be finished in formica or laminex.

**SINK TOPS:** To be formica or stainless steel at Contractors discretion. Form cupboards as on plan under one full width full length shelf and doors with toe space at floor.

#### DRAINAGE

**GENERAL:** The whole of the drainlaying work is to be carried out by a Registered Drainlayer and shall be in accordance with the NZ Building Code.

**EXTENT OF WORK:** Excavate for, supply and lay all drains, fittings etc. necessary for the complete drainage of the building including both sanitary sewer and stormwater systems.

**MATERIALS:** Shall be good quality lines:

- (a) Pipes first quality 100mm diameter PVC or approved title in accordance with NZS764:1981 and NZS4452:1986
- (b) Fittings, gullies PVC NZS 7605:1981
- (c) Install inspection fittings to sanitary sewer and stormwater drain as required in the NZ Building Code.

**LAYING:** Excavate for and lay pipelines to even falls, complete with necessary bends, junctions, cleaning eyes and inspections. Fit rubber ring joins and clean out pipes as work proceeds. Connect up to appropriate outfall.

**SEWER CONNECTION:** Arrange with the Local Authority to lay sewer connection. Fix 100mm gulley traps to take wastes, and 100mm bends to take soil pipe, terminal vents etc. Position of drains may be altered from Site Plan either by the Plumbing or Drainage Contractor at their sole discretion.

**STORMWATER DRAINS:** Fix 100mm PVC Stormwater bends to each downpipe and lead to connection is available, or soakage system clear of the house site as required by the Local Authority. Position of drains may be altered from Site Plan either by the Plumbing or Drainage contractor at their sole discretion.

**BOUNDARY DRAINS:** All boundary draining or ring draining for irrigation of site required by the Local Authority Inspector or Lending Institution is the responsibility of the owner and we will be provided for by the owner at his expense.

**SEPTIC TANK:** Where town sewerage is not available allow to provide a septic tank, constructed and situated to Local Body requirements. Lay sewer drains from gulley traps and W.C. to this tank. From septic tank take effluent to soak hole. All drainage work to comply with NZ Building Code.

**COMPLETION:** Sanitary sewer and stormwater drains will be tested to the Inspector's satisfaction and any defects made good before backfilling. Backfilling to be as original ground level.

#### PLUMBING

**GENERAL:** The whole of the plumbing work shall comply in all respects with the NZ Building Code and Standards Association of N.Z., and the building left watertight and all installations in perfect working order.

**PIPING:** Piping throughout both hot and cold water lines shall be in Polybutylene with appropriate fittings. Piping shall be to AS2642 or CSAB137.8 and 992, and supported with plastics brackets.

**COLD WATER SUPPLY:** Pipe feeds from supply in 15mm Polybutylene. All pipework to WC, bath, hot water cylinder, shower, basin, sink and tubs in Polybutylene. Also provide and fix two brass hose taps. Piping

outside building shall be buried to a minimum depth of 450mm grassed areas and 600mm in sealed area in the ground in accordance with NZS7601:1978. Trenches to remain open for inspection by Local Authority.

**HOT WATER SUPPLY:** Pipe feeders from HWC in 15mm Polybutylene to sink, tubs, basins, bath and shower in accordance with NZS7601:1978.

**HOT WATER CYLINDER:** Supply and fix one 135 litre or 180 litre capacity electric hot water cylinder complete with element and thermostat. Fix pressure reducing valve and relief valves in accordance with NZS4606:1985 and NZS6214:1988. Restraining strap to be installed as per NZ Building Code. Provide 20mm copper pipe between cylinder and relief valve. Temperature to bath, shower and vanity to be set at 55°C.

**SANITARY FITTINGS:** Fit acrylic bath, Formica vanity top with acrylic bowl on Contractors standard carcass. Fit rubber plugs and plastic gratings to all fittings. Fix white glazed earthenware W.C. pan and fit double flap plastic seat and low-down flushing cistern of approved manufacture. Fix single stainless steel tub in laundry according to plan with hot and cold tap over. All in accordance with NZS3331, NZS2028 and NZS4616.

**WASTES:** Join W.C. pan to drain above the level of the floor, as for normal Plumbing practice, which will provide a non-rigid gas tight joint. All wastes shall be PVC pipes with polybutylene traps and cleaning eyes. Bath and wash tub wastes shall be 38mm diameter. Sink wastes shall not be less than 38mm diameter. Where waste pipes terminate this will determine position of drainage gulley traps not necessarily as indicated on site plan. Traps to be as per NZS7652:1976 (Refer to NZ Building Code (Section G13(VIII)) and NZS7641:1978 (Section G13 VII2).

**FLASHINGS:** Flash as necessary to render building watertight. All flashings shall accurately fit the work and shall be machine bent and cut in as long lengths as possible with all joints well lapped and fixed with 18mm flat head galvanised nails.

**VENT AND SOILS STACK:** Vent pipes shall be approved rigid P.V.C. for total length from drains and fittings as per NZ Building Code. Secure vent pipes with galvanised or PVC standard clips.

**SPOUTING:** To be approved P.V.C. type support on brackets to manufacturers instructions and give evenly graded falls to downpipe outlets or alternative materials as specified on the plans or in the addendum.

**TAPS:** Taps and extensions, except stop cocks, to be as per builders standard range.

#### ELECTRICIAN

**GENERAL:** All installations shall be made in a sound safe practical workmanlike manner conforming with modern practice in accordance with the Wiring Regulations 1961 and to the satisfaction of the Local Authority. All switches and plugs shall be flush type and all cables shall be C.M.A brand or similar approved. Internal fuse board where required by the Authority.

**LIGHTS:** Provide light points with lamps at positions to be arranged and provide 100 watt lamps in the living and dining areas and 75 watt lamps in all other areas.

**POWER:** Provide power points at positions to be arranged. Make connections to hot water cylinder and stove.

**COOKER:** Provide and fix electric stove to Manufacturers instructions.

#### PAINTER & PAPERHANGER

**EXTERIOR WORK:** Prime all exterior exposed woodwork with approved primer. Follow with one undercoat. Finish with a first quality exterior high gloss in owners colour scheme restricted to two shades. Fibrolite soffit and walls to be given two coats P.V.A. paint. Painting of galvanised roof is not included in the contract. Fibrolite weatherboards to receive two coats Acrylic only. Block or brick bases will NOT be painted. Exposed subfloor beams and poles will not be painted. Tanalised timber need not be painted or oiled. Painting (or staining) of timber decking is not included in the contract. Picking out of colours or work considered by the painter to be beyond normal standard will be subject to extra charges between the owner and the Contractor before work is carried out.

**INTERIOR WORK:** Where applicable painting of ceilings and scotia shall be with two coats ready-mixed approved matt finish. Prime interior work to windows, undercoat and top coat with approved brand. All interior finishing lines except scotia will be undercoated and top coated. WHERE THE OWNERS COLOUR SCHEME EXCEEDS TWO COLOURS TO A ROOM OR IS CONSIDERED BY THE CONTRACTOR TO BE BEYOND NORMAL STANDARD, EXTRA MAY BE CHARGED as agreed between the owner and the contractor before work is started. Where applicable tinted ceilings are subject to extra charges. Painting interior of cupboards is not included in the contract. All interior hollow core doors to be painted. Stain or other finish on timber floors is not included in the contract.

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PAPER ALL WALLS: Paper all walls with papers to be selected by the owner. Hang papers plumb and in full lengths with butt joints. The painter retains the right not to hang papers that he feels will not finish to the contractors standard.

#### ALUMINIUM GLAZING

ALUMINIUM GLAZING: All glazing to aluminium joinery to be carried out in accordance with manufacturers specification. Any overhead glazing shall be 4mm laminated safety glass.

#### ROOFER

GENERAL: Fix roof as indicated. All roofs shall be fixed by contractors. Pitch of roof shall be as indicated with minimum of 17 1/2 deg. for concrete tiles, 10 deg. for metal; tile roofs.

LONGRUN IRON: Fix .45mm iron roofing complete with all ridges, hips and barges/ Fix roof with lead headed or other approved nails at top and bottom of sheets and at intermediate purlins. Fix lead edge ridging beaten well down into corrugations. Provide self supporting underlay as per manufacturer's specification.

STONECHIP TILE: Fixed to manufacturers specifications.

TILE ROOFS: Monier: Fix tile roof with main slope set out in complete courses with not less than 75mm end lap and in straight vertical and horizontal lines. All concrete tiles shall be in colour to be selected by the contractor.

#### INTERIOR FINISHES

WARDROBE CUPBOARDS ETC: Frame wardrobes, linen etc. as shown with linings as previously specified. 19mm shelf and lumberlok rail in each wardrobe. Linen and HWC will not be decorated.

INTERIOR FINISHING: Fix skirting to all walls. Fix scotia cornices to all ceilings. Architraves may be substituted for rebated jambs where applicable.

HARDWARE: Hardware to be installed by the contractor - locks, butt hinges and screws for doors etc.

TUB CABINET: Provide cupboard under tub.

ACCESS TO CEILING: Provide access to ceiling (where applicable)

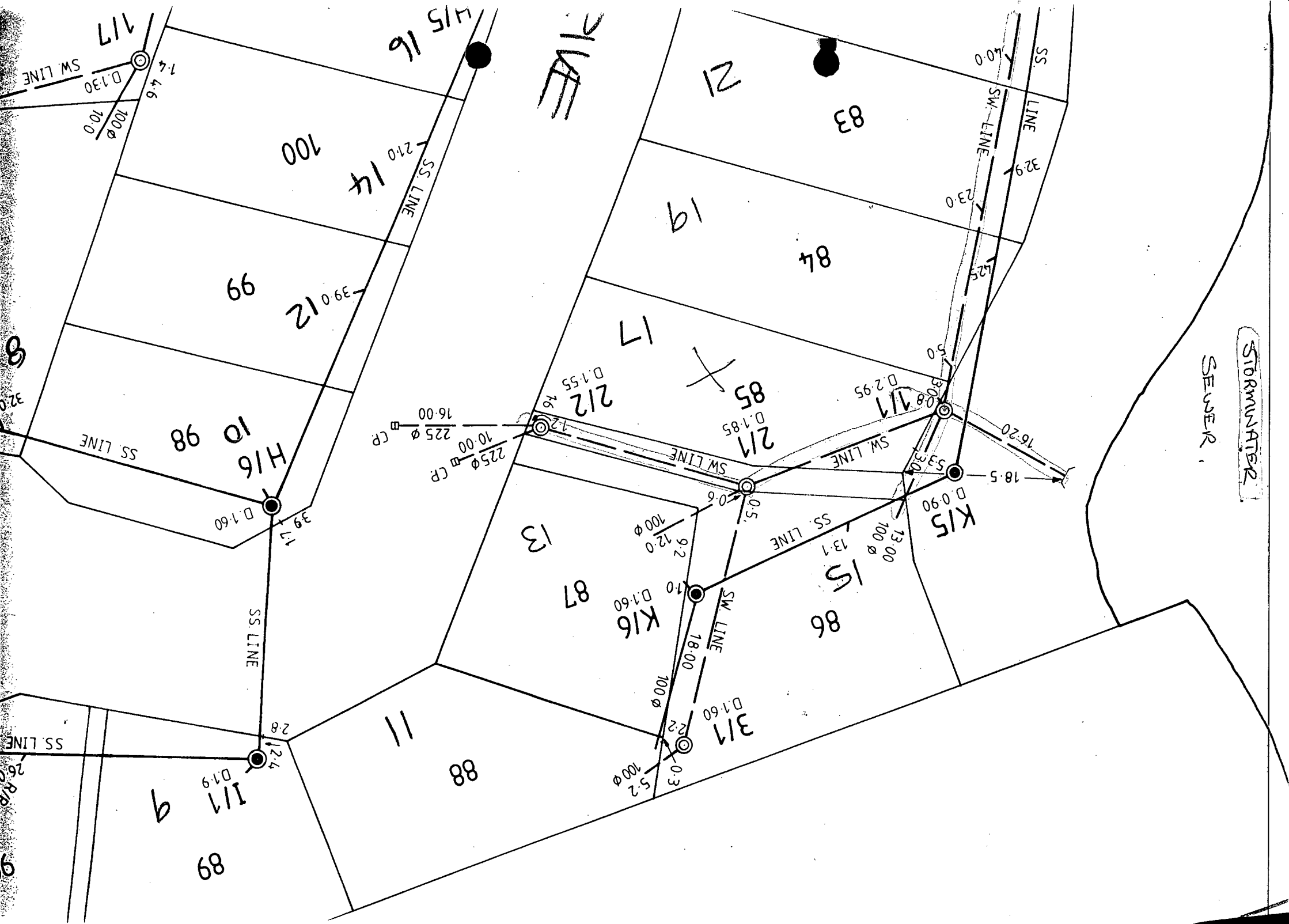
ACCESS TO BASEMENT: Provide base door and frame for access (where applicable)

#### EXTERIOR

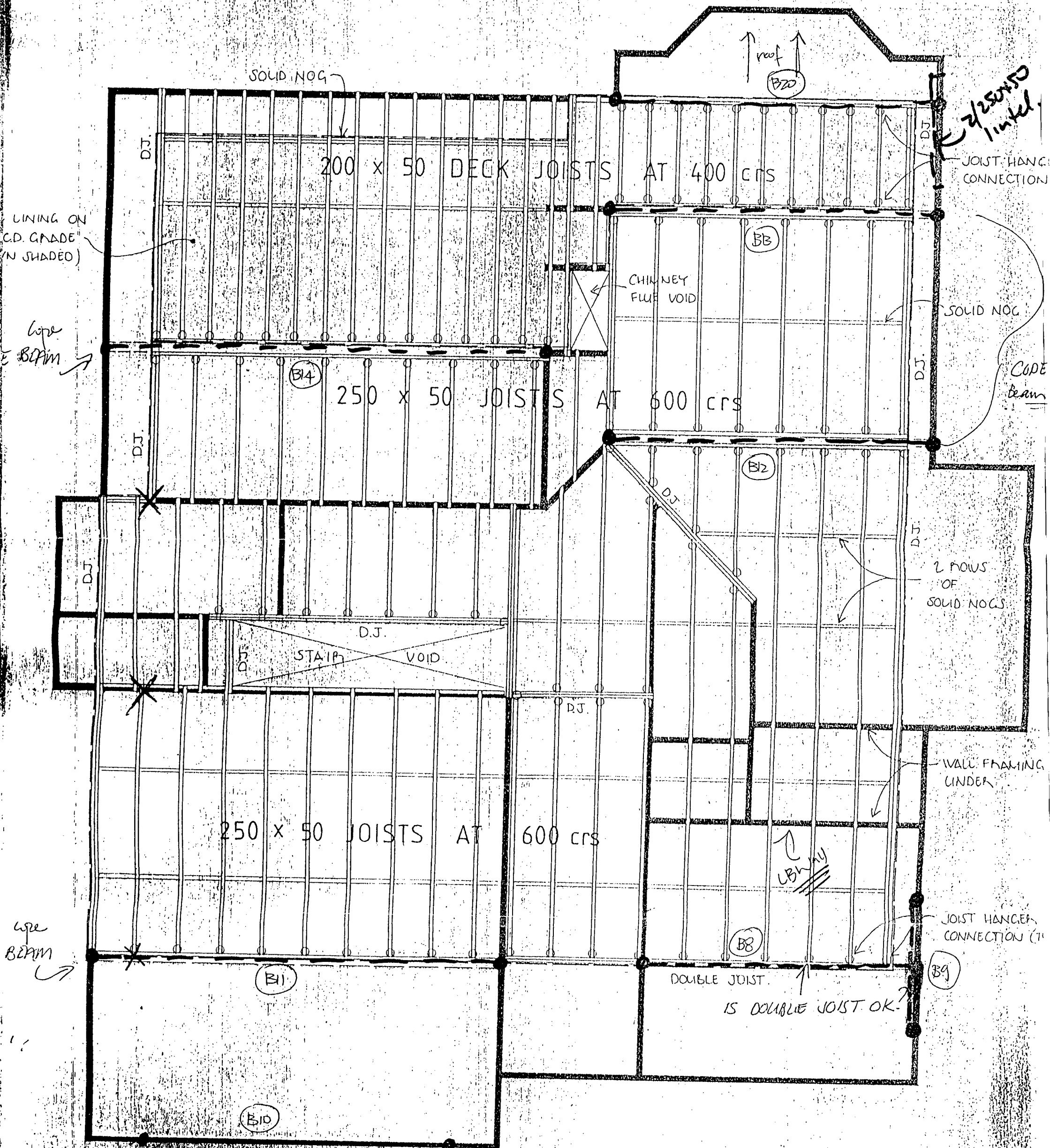
STEPS: Steps will be provided as shown on the plan except where paving is part of the contract.

GABLE FINISHING: Finish eaves and gable ends as indicated on plans. Fixed in accordance with manufacturers recommendations.

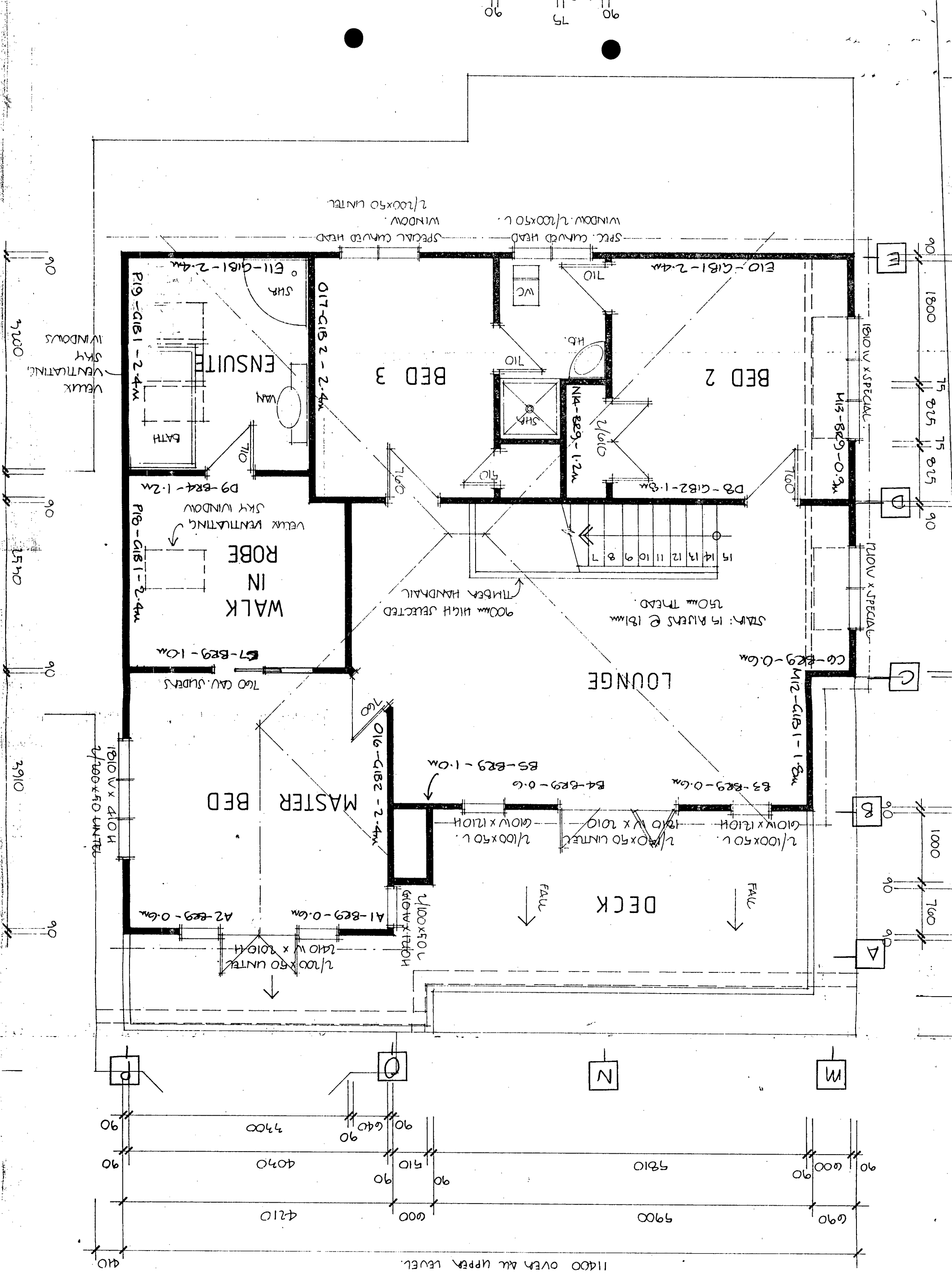


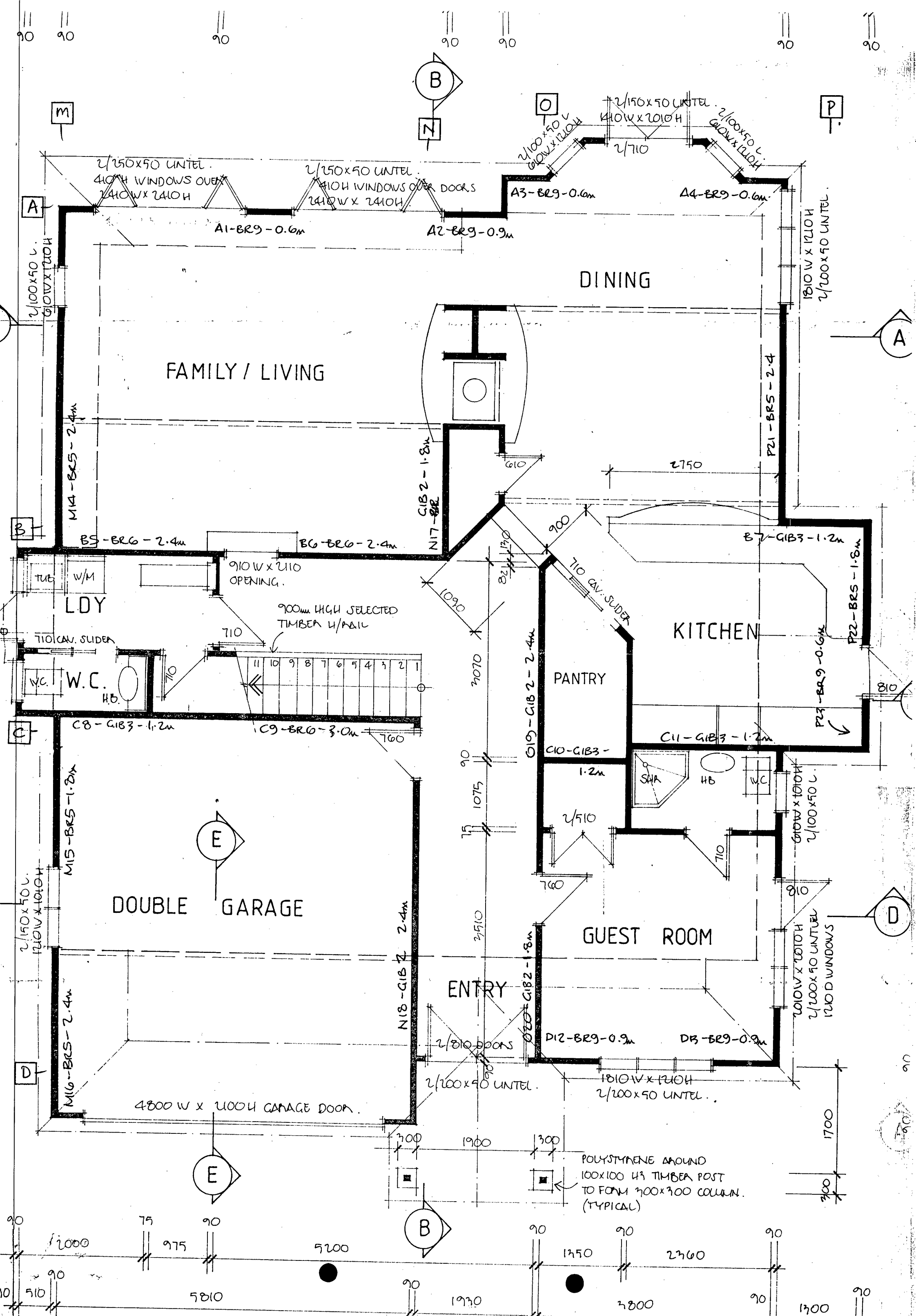






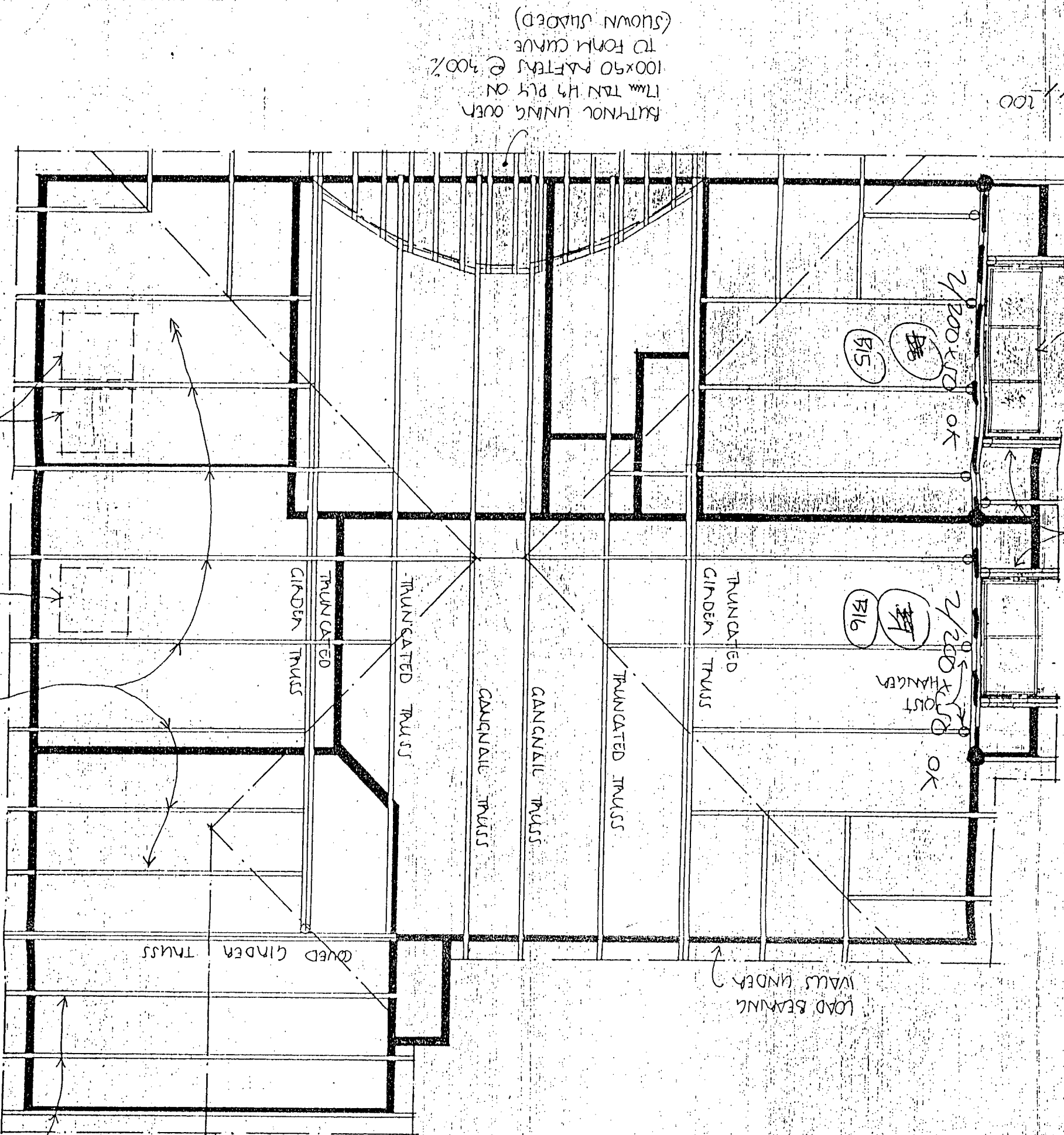
FLOOR FRAMING PLAN





# UPPER LEVEL ROOF FRAMING PLAN

Scale 1:50



BUTYROL LINING OVER  
17mm TAN H3 PLY ON  
100x90 RAFTERS @ 500%  
TO FORM CURVE  
(SHOWN STUDDED)

2/200 x 50 OK

2/200 x 50 OK  
2/200 x 50 HANGER

LOAD BEARING  
WALLS UNDER

TRUNCATED TRUSS

CANONICAL TRUSS

TRUNCATED TRUSS

TRUNCATED GIRDER TRUSS

GIRDER TRUSS

TRUNCATED GIRDER TRUSS

VENTILATED SKY WINDOW

VENTILATED SKY WINDOW

CANONICAL COVER TRUSSES @ 500%

CANONICAL COVER TRUSSES @ 500%



LEGAL DESCRIPTION

