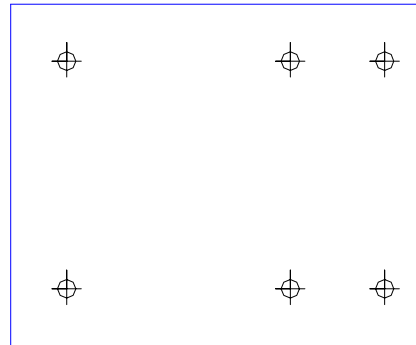


Annexure 2 - Mezzanine Floors and Staircases

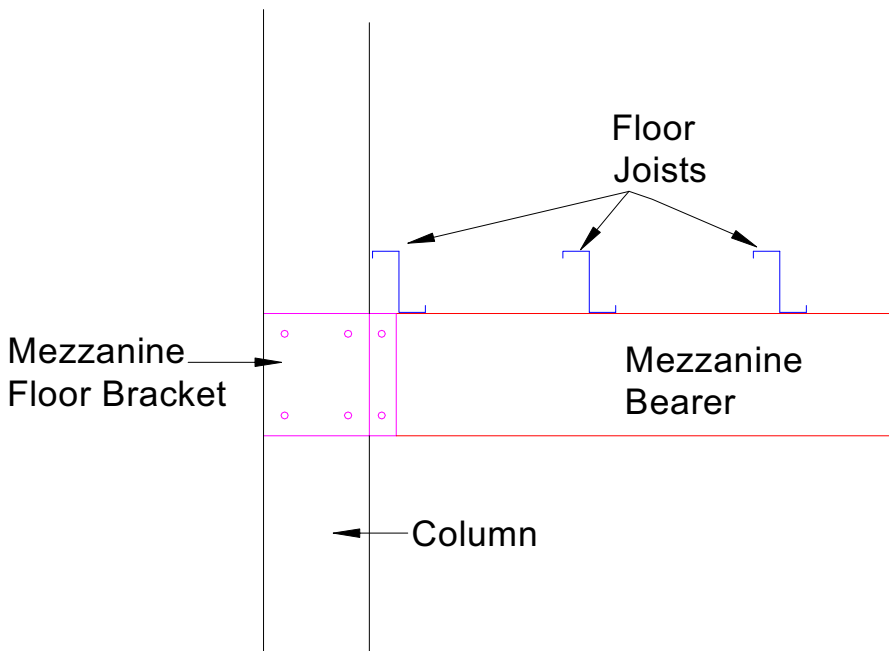
Currently mezzanine floors are only designed for the full width of the building. If a partial mezzanine is required, special engineering needs to be completed. If the building is designed with a Mezzanine floor, the floor can be installed before or after the frame for the building has been completed. This would be determined by the builder and the size of the building, in the case of large buildings the floor frame may inhibit the access for lifting equipment used to lift roof rafters in place, but on smaller buildings such as American and Quakers Barns the completed floor can be used to fit rafters and complete roof without the need for scaffolding. The mezzanine bearer bracket will be 6mm plate per connection, whether the bearer is doubled or not, and this should be fitted to side wall columns during the initial assembly of the side walls. Similarly, if the building is not designed with a mezzanine floor, engineering is required before fitting.



This is an example of one of the mezzanine floor brackets.

Using the bolts supplied attach the brackets to the column with the top edge of the bracket at the required bearer height. If the columns are back to back, it is a good idea to do this when assembling the columns and haunch brackets. Once the building frames

are completed and in place, install the mezzanine floor bearers using the bolts supplied to the Mezzanine floor brackets. Where back-to-back bearers are required, ensure that bolts are fitted along the bearers at 500mm intervals to hold the bearers together. Stairwell bearers and trimmers are to be fitted as per details on the following page.



A plan of a typical staircase can be found below. Due to the variations available and individual requirements, this plan can only be used as a guide of the construction style used. Stairs that vary for the plan supplied will require engineering approval.

The staircase is best manufactured on the ground and installed as a complete unit. Stair treads and stringers will not be punched due to the angles involved and the possibility of slight variations being required it is not feasible for these members to be punched with offset punching.

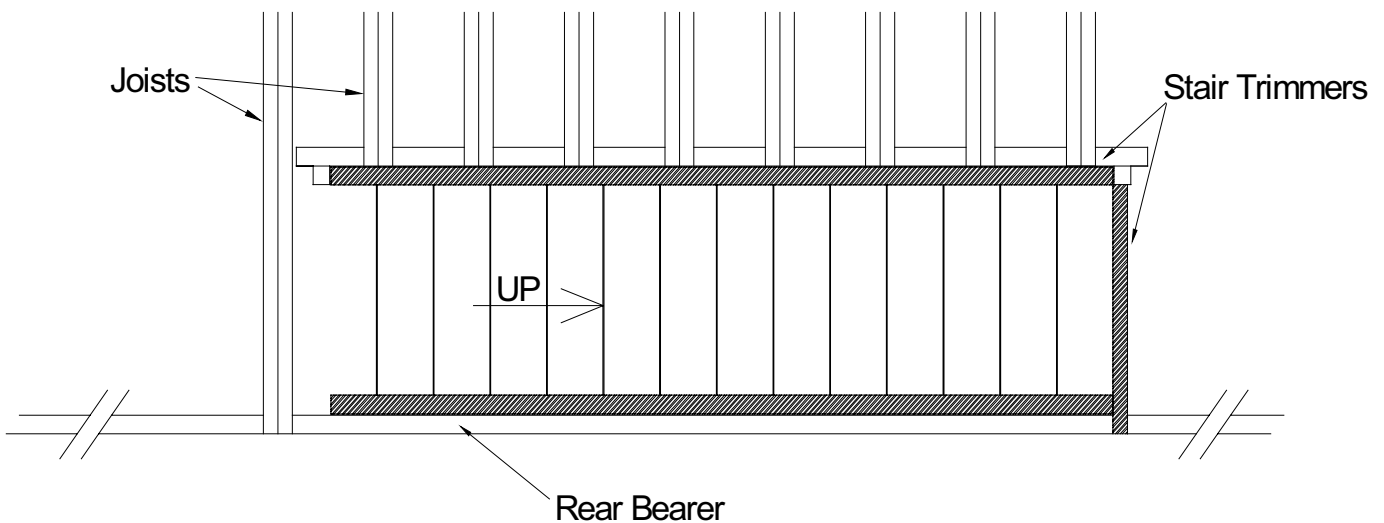
Firstly stair stringers need to be plumb cut at top and bottom, and then temporarily fix the stringer in place against the rear wall to mark position and level of stair treads. Using bolts supplied attach connecting brackets to both ends of every step. Lay stringer flat, sit each tread in place and mark position of boltholes.

N.B. When drilling these holes the job will be made easier by the use of smaller pilot holes placed in the middle of each mark.

This stringer can be used as a template for the second stringer and after all holes have been drilled you can now bolt the treads in place and tighten. Due to the variation between holes and bolts there may be a tendency for the steps to slip and you may wish to use some framing teks to help locate the treads.

Important note; Before use the step treads should be fitted with an abrasive non-slip tape or equivalent.

With help the staircase can now be lifted in place and propped, bolt to rear wall bearer and end wall mullions where possible, also fit sleeve anchors through base plates fitted to end of each stringer.

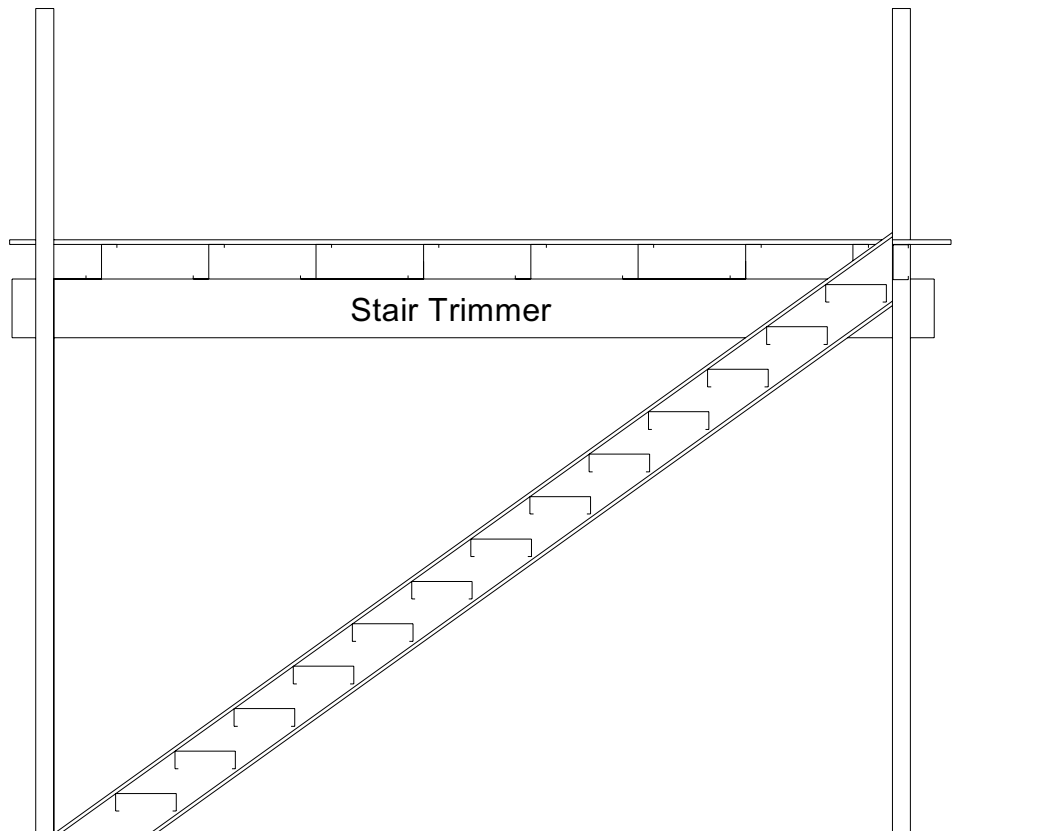


Plan View

For building the stairwell you have been supplied a trimmer of equivalent material to the other bearers but shorter in length, and this is to be fixed to 2 x 75mm SHS columns. These 75mm SHS columns are to be installed at a height no less than 1000mm above the finished floor level, the additional length being for the fitting of handrails and balustrades that is not supplied with your kit.

Important note; The building is not complete or ready for use until all safety rails are in place and correctly fitted. The details of which should be available from your local authority.

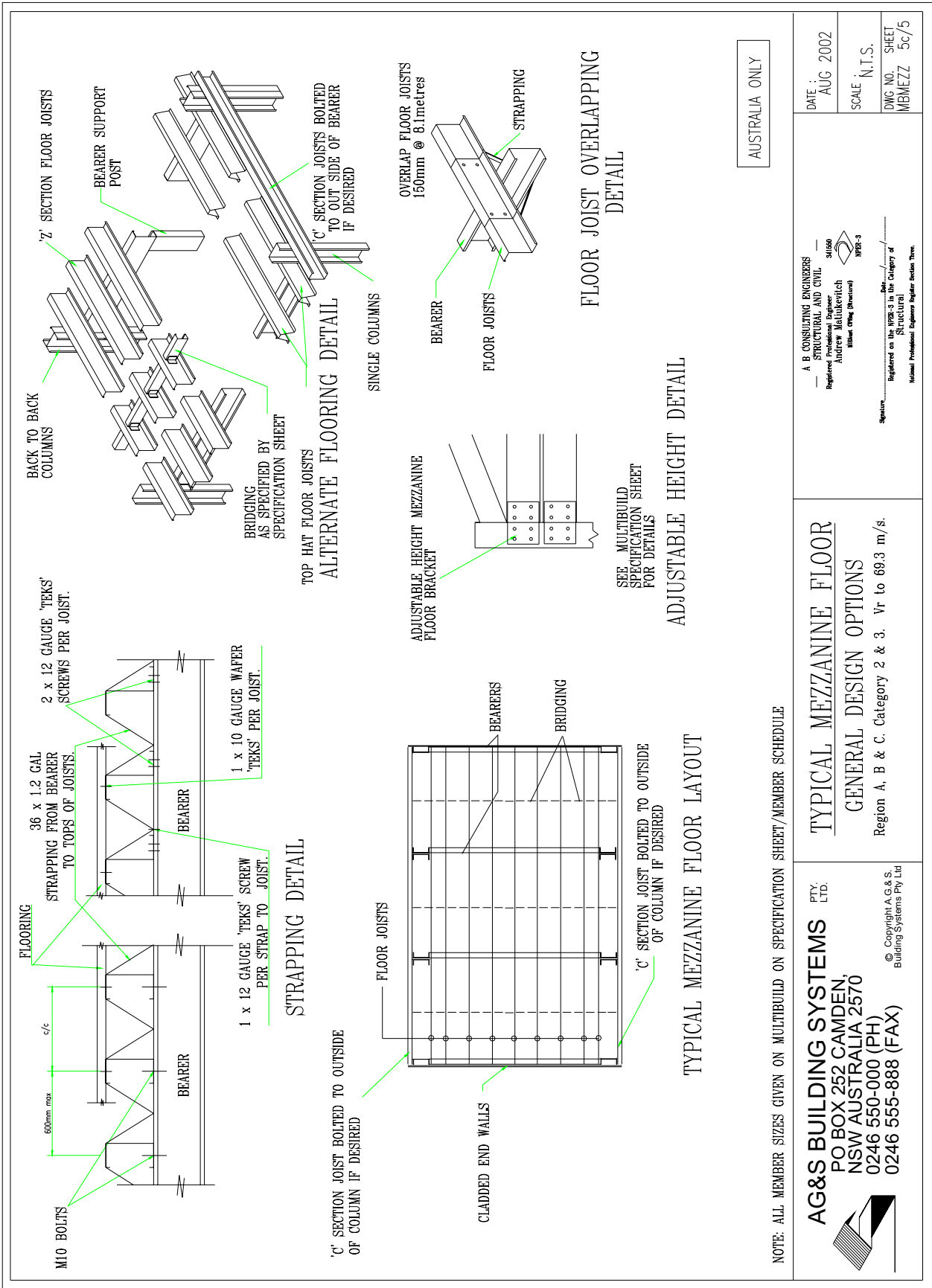
The trimmer is used as a floor bearer are therefore should be installed at the same height as all other bearers. When marking the position of this trimmer on the 75mm SHS posts please allow for the base plates, fit bases into columns before measuring. When installed the web of the trimmer should be parallel to the web of the rear wall



bearer and approximately 1006mm between trimmer and rear wall bearer. The distance between the 75mm SHS columns is stated as the M value in the chart found on the engineers structural details MBSTAIR 1/1, and when installed properly the stair stringer should fit snugly between the two columns. At this point you should again check level and position of the stair case, and if correct fasten the stringer to the trimmer using one or two of the bolts supplied. At this point the joists can be fitted. They are connected to the bearer using two Framing screws per connection, at the spacing nominated in the specification sheet supplied. Joist spacing will vary from one building to another and you should refer to the MultiBuild Specifications for the requirement of your structure.

Two C150 trimmers are also supplied and are fitted at 90 degrees to the main trimmer at each end of the stairwell.

Double check that all framing is complete and that all fasteners are in place and tensioned before fitting the floor materials. The flooring must be fitted to the manufacturer's specifications. To arrive at this point you would have applied considerable effort, don't let yourself down by skimping on flooring adhesive and fasteners.



NOTE: ALL MEMBER SIZES GIVEN ON MULTIBUILD ON SPECIFICATION SHEET/MEMBER SCHEDULE

AG&S BUILDING SYSTEMS PTY. LTD.
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 NSW AUSTRALIA 2570
 0246 550-000 (PH)
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TYPICAL MEZZANINE FLOOR
GENERAL DESIGN OPTIONS

Region A, B & C. Category 2 & 3. Vr to 69.3 m/s.

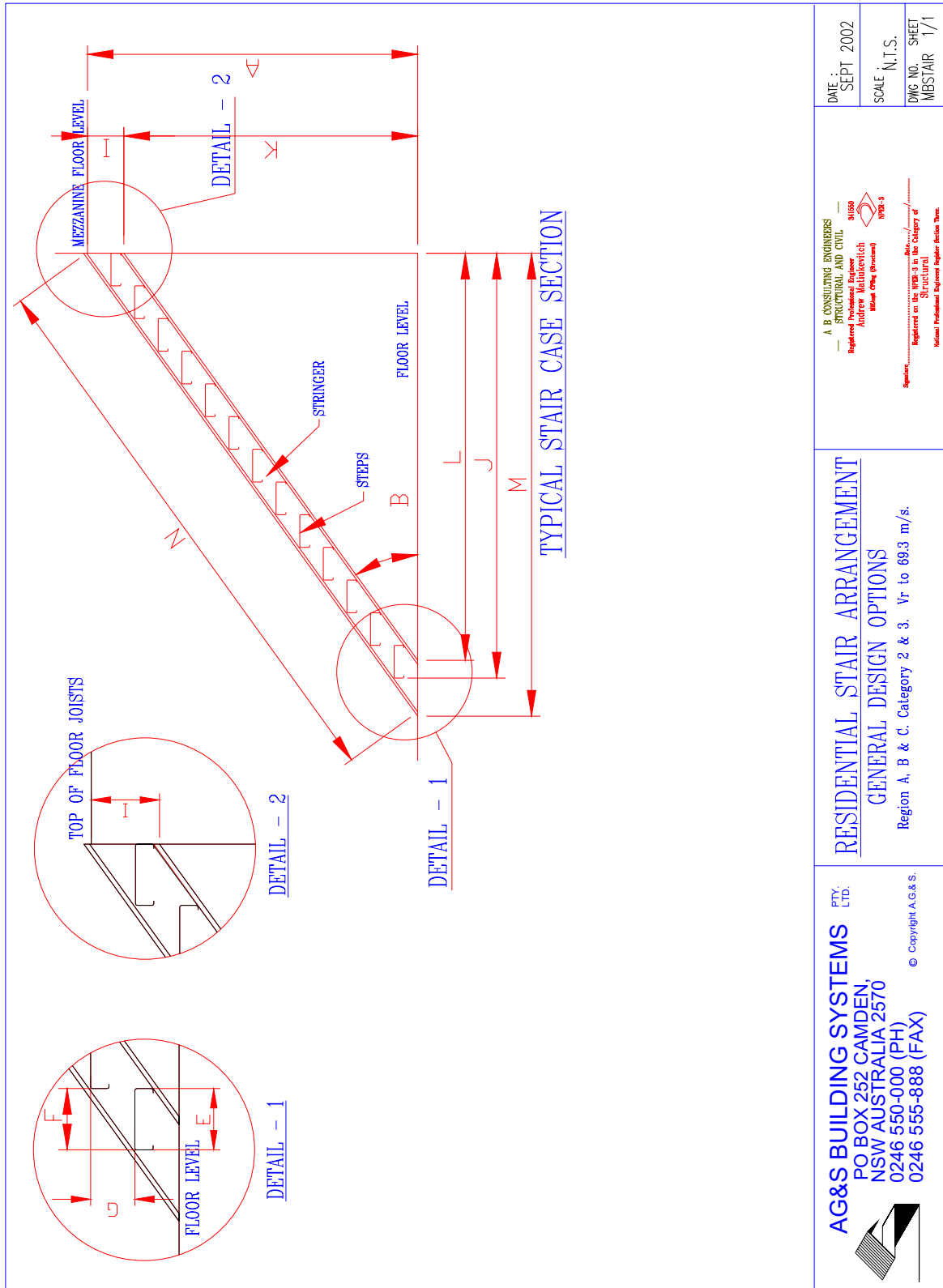
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 (Member of the Institution of Engineers Australia)



Signature: _____ Date: _____
 Registered on the RPEQR in the Category of
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 National Professional Engineer Register Section Three

DATE : AUG 2002
 SCALE : N.T.S.
 DWG NO. SHEET
 MBMEZZ 5c/5

AUSTRALIA ONLY



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| <p>AG&S BUILDING SYSTEMS PTY. LTD. PO BOX 252 CAMDEN, NSW AUSTRALIA 2570 0246 550-000 (PH) 0246 555-888 (FAX)</p> <p>© Copyright A.G.&S.</p> | <p>RESIDENTIAL STAIR ARRANGEMENT GENERAL DESIGN OPTIONS Region A, B & C. Category 2 & 3. Vr to 69.3 m/s.</p> | <p>A. P. CONSULTING ENGINEERS STRUCTURAL AND CIVIL 5/100 Registered Professional Engineer Andrew Maloukitch (Member of the Engineers) 1998-3</p> <p>Engineer, Registered on the NSW-3 in the Category of Structural National Professional Engineers Register Action Item.</p> | <p>DATE : SEPT 2002 SCALE N.T.S. DWG NO. SHEET MBSTAIR 1/1</p> |
|--|--|--|--|

See the table on the next page.

| Dimension | A | B | C | D | E | F | G | H | I | J | K | L | M | N |
|------------------------|---|--|--|-------------|-------------|------------|--------------------|------------------------------|-----------------------------------|------------------------------|---|--|---------|---------|
| | Stair Case | | | | | | | | | | | | | |
| | Exact | | | | | | | | | | | | | |
| Height to Top of Joist | Angle = arctan (Height to Top of Joist / Stair Case Length) | Number of Treads = Joist Height / 190 (mm) | Actual Number of Treads (Rounded Down) | Tread Width | Tread Going | Tread Rise | Slope Relationship | Floor Level To Stringer Base | Base Dimension To First Step Edge | Height To Bottom of Stringer | Horizontal Distance To Base of Stringer | Horizontal Base to the Front of the Stringer | | |
| Description | (mm) | (Degrees) | | (mm) | | | | | | | | | | Length |
| Dimensions | 2570 | 36.50 | 13.53 | 13.00 | 254 | 248.08 | 183.57 | 615.23 | 284.07 | 3225.07 | 2285.93 | 3088.26 | 3516.28 | 4374.26 |
| | 2570 | 36.50 | 14.05 | 14.00 | 254 | 240.55 | 178.00 | 596.55 | 284.07 | 3367.74 | 2385.93 | 3224.40 | 3651.42 | 4542.37 |
| | 2770 | 36.50 | 14.58 | 14.00 | 254 | 249.56 | 184.67 | 618.90 | 284.07 | 3493.93 | 2485.93 | 3399.54 | 3766.93 | 4710.49 |
| | 2870 | 36.50 | 15.11 | 15.00 | 254 | 242.41 | 179.38 | 601.16 | 284.07 | 3636.47 | 2685.93 | 3494.68 | 3921.70 | 4878.61 |
| | 2970 | 36.50 | 15.63 | 15.00 | 254 | 250.86 | 185.63 | 622.11 | 284.07 | 3762.57 | 2885.93 | 3629.83 | 4058.84 | 5048.72 |
| | 3070 | 36.50 | 16.16 | 16.00 | 254 | 244.05 | 180.59 | 605.23 | 284.07 | 3904.92 | 2785.93 | 3784.97 | 4191.99 | 5214.84 |
| | 3170 | 36.50 | 16.68 | 16.00 | 254 | 252.00 | 186.47 | 624.94 | 284.07 | 4032.01 | 2885.93 | 3900.11 | 4327.13 | 5382.96 |

Minimum Tread Width Between 355 - 240mm

Maximum Riser Height Between 180 - 115mm

Slope Relationship = 2R + G, Between 550 - 700mm