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Ref:

7-07-6406.

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7th August, 2007.

THE MANAGER.
MR.M.& MRS.W.AUSTIN
C/- MATT MCILVEEN.
LOT 53, URANGERA DRIVE.
MOORE CREEK
NSW. 2340.

PROPOSED RESIDENCE.
AT LOT 71, DAINTREE CIRCUIT, TAMWORTH.
FOR MR.M.& MRS.W.AUSTIN

Dear Sir;

We have examined your drawing, Ref No; 509-07, dated 11th July 2007, drawn by M.A. of Jeremy Allen Planning & Design, for the above residence and advise as follows:

1. All Engineering details contained within this letter are to take precedence over details supplied in your architectural drawings Ref No.509-07, dated the 11th July, 2007.

2. A site inspection has been carried out by us and we would classify the site as a Class M.

3. Deep beam footings DB 1, being 500 mm deep x 450 mm wide reinforced with 4-L 11 TM top and bottom and R6 hoops at 900 mm centres, are to be used for the external wall footings of the residence, deep beam footings DB 2, being 500 mm deep x 300 mm wide reinforced with 3-L11 TM top and bottom and R6 hoops at 900 mm centres, are to be used for the other footings of the residence, as shown on our attached footing plan Ref No; 7-07-6406, dated 7th August, 2007.

We would recommend that 450 mm diameter x a minimum of 2000 mm deep, bored pier, reinforced with a central N12 bar, be used for the internal timber floor pier, (preferable to bear onto rocky band)

Bored piers being 450 mm diameter at 2.5 metre centres, or bulk piers being 400 mm long (base length) at 2.5 metre centres, may be required to bear footing beams onto rocky layer, all footings, bored piers or bulk piers are to bear on this material having a minimum bearing capacity of 300 KPa, located at approx. 3100 mm deep at the front of the residence, 1000 mm deep at the back of the residence and 1300 mm up the northwest side of the residence all below the natural surface.

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4. A 100 mm slab reinforced with SL82 top, is to be used for the garage and verandah slab, supported on the external and internal brick work with stiffening beams being 400 mm deep x 300 mm wide reinforced with 3-L11 TM bottom, being used in the position as shown, on our plan.

If the height between the top of the slab and the top of the footings is between 550 mm and 1500 mm, a 75 mm wide, 20 MPa grout filled cavity is to be used, between double width masonry, reinforced with N12 bars vertically at 400 mm centres, lapped 300 mm into both the slab and footings, and N12 bars at 400 mm centres horizontally.

The slab is to be poured onto a minimum of 150 mm clean non-reactive road base filling and water proof membrane of minimum thickness 0.2 mm.

After removal of the top soil, the slab area is to be proof rolled and any defective areas are to be excavated and replaced with suitable road base material and compacted as below

We would recommend that construction joints CJ, and dowel joints DJ be used across the verandah slab alternating at each post.

The construction joint is to have the mesh depressed with every second bar cut, for a 50 mm deep saw or trowel cut, dowel joints are to use R16 dowels x 300 mm long at 900 mm centres.

5. The internal beams (bearers) Hynbeams are to be 17C, 230 x 65 with a maximum span of 3 metres.

The joists are to be HI 200 88 maximum span of 4.7 metres at 450 mm centres
A 230 PFC with 10 mm outstand flange, gusseted with 6 mm, 75 mm gussets at 45 degrees located at 1 m centres and supports, is to be used for the garage doorway opening spanning a maximum of 5.3 m with 300 mm maximum height of 230 brick work.

All structural steel is to be of minimum grade 300 plus as released by BHP in October, 1994.

Surface preparation of steel work to be wire brushed with 2 coats ROZC., unless otherwise noted.

All welding is to be with complete penetration V-butt welds, with all fillet welds of these members being at least 6 mm, electrodes being W50X or E48XX, or equivalent.

6. All brick work is to be reinforced and articulated with vertical control joints in the brick work, with joints at a maximum of 6 metre centres.

7. Tie -down and bracing details are to be in accordance with, AS 1684.2 -1999 of the Residential Timber - Framed Construction Code.

8. Concrete Specification.

All concrete is to be type A Portland cement with minimum compressive strength $F_c = 20$ MPa, with maximum slump of 80 mm and no admixes, maximum aggregate size being 20mm.

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All concrete to be thoroughly vibrated (including slabs, to achieve a monolithic slab).
Unless otherwise noted the following will apply;

Clear cover to reinforcement; Slabs ; 25 mm top, 30 mm bottom

Footings and beams ; 50 mm

Reinforcing Fabric to be lapped a minimum of 230 mm (2 transverse wires plus 30mm), bar chairs to be used at one per square metre.

Reinforcing bars (including trench mesh) to be lapped a minimum of 400 mm or 40 bar diameters, which ever is the larger.

Concrete slabs are to be debonded from masonry, when pouring, by a minimum of 0.2 mm thickness of forticon or similar.

At all re-entrant slab corners 2 N12 bars or 3-L11TM x 2m long Top are to be used.

All concrete shall be placed and cured in accordance with section 7 A S 1480.

All filling below slabs is to be compacted in layers not exceeding 150 mm thickness, to 97% SSD. at approximately 2% below optimum moisture content, that is with only nominal use of water.

No water is to be used to 'water the fill material in'.

Our preferred maximum height of filling is to be 450 mm, for filling between 450 mm and 1300 mm the slab thickness is to be 120 mm with SL82 top and bottom.

We would recommend that the non-reactive filling material, be ridge gravel, or road base gravel rather than pure river gravel or pure coarse sand, so that water can not penetrate the compacted fill material, at a later date.

The slabs are to be monolithic slabs with stainless steel mesh protection from subterranean termites to be used at the external wall cavities, any the internal wall (slab) steps, all penetrations within the slab, and all construction or control joints in accordance with AS 3660.1.

9. The Building Contractor, Subcontractor or Owner Builder, is to incorporate into there design of the drainage and plumbing systems the following:

a) Clause 5.5, of Australian Standards 2870.2 – 1996 Additional Requirements for Class H and E sites, and

b) Clause 6.6 of Australian Standards 2870.2 – 1996 Additional Requirements for Class H and E sites.

which includes:

5.5.1 Architectural restrictions,

5.5.2 Variations in foundation material,

5.5.3 Drainage requirements, and

5.5.4 Plumbing requirements.

The drainage requirements, require that care shall be taken with surface drainage of the allotment from the start of construction, and that drainage requirements have been considered in the design of the footing system. The drainage system is to be completed by the finish of construction of the building. The plumbing trenches shall be sloped away from the building and backfilled with compacted clay in the top 300 mm within

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1.5 m of the building, where pipes pass under the footing system the trench shall be backfilled with clay or concrete, to stop ingress of water.

And 6.6 (a) to (g) including:

Penetrations of the footings are to be sleeved,

Water run-off shall be collected and channeled away from the building during construction.

Excavations near the edge of the footing system shall be backfilled to prevent access of water to the foundations.

Joints in plumbing pipes within 3 m of the building under construction shall be articulated to accommodate ground movements without leakage.

10. The owner's attention is drawn to Appendix B of Australian Standards 2870.2 - 1996 amendment No 3, Nov 2002, 'Performance Criteria and Foundation Maintenance' which includes:

a) All water is to be directed a minimum of 10 metres away from the building on the downhill side.

b) No trees or bushes are to be planted within 5 metres of the building.

Reference is also drawn to The CSIRO's Guide to Home Owners on Foundation Maintenance and Footing Performance.

If constructed in accordance with this letter and your plans the deep beam footings, bored piers and slabs will comply with the following relevant S.A.A. Codes;

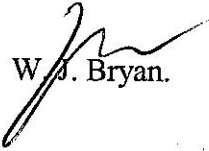
AS 1170 - 2002 Loading Code Part 1, Dead & Live Loads & Load Combinations

AS 2870 - 1996 Residential Slabs & Footings

AS 3600 - 1994 Concrete Structures

AS 1684.2- 1999 Residential Timber Framed Constructions.

Yours Faithfully;


W. J. Bryan.