# **ENGINEERING DRAWINGS**



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	PROJECT: PROPOSED RESIDENCE	JOB NO: QE23-2074	Designed: -	Checked:	Drawn I SAJID		Date 18/01/2024	Scale NTS	
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			Client: VISION 2 ESTIMATING			Rev: 0	Dwg No: S0.01		

## 1 - GENERAL NOTES:

- 1.0 These drawings shall be read in conjunction with - specification and certification, all architectural and other consultants drawings and specifications. Any discrepancies shall be referred to the architect or project manager for a sion before proceeding with the work
- 1.1 Dimensions SHALL NOT be obtained by scaling off the drawings.
- 1.2 All dimensions shall be checked by Builder prior to commencement of works.
- Prior to the commencement of construction the Builder shall check and co-ordinate with the Architect and other consultants all steps, fails, rebates endowns, unsees and penetrations. Any discrepancies with our drawings be referred to us for darillication and/or revision. Under no circumstances shall the Bulder proceed with the works until all discrepancies have been satisfactorily resolved. setdowns, chases and penetrations. Any discrepancies with our drawings shall
- All workmanship and materials shall be in accordance with the relevant Australian 1.4 Standards, the BCA and local council regulations.
- 1.5 The contractor shall be responsible for the maintaining the structure and adjacent structures in a stable condition, ensuring no part is overstressed during the works.

#### 2 - SAFETY RISK & HAZARDS

It is essential that an adequate safety plan is prepared by the contractor for the works. - may not be aware of all safety risks and hazards involved in this project and the absence of comment does not imply that there are no

## 3 - LOADINGS:

- The structural work as shown on these drawings has been designed for the following
  - General floor live load of 1.5 kPa uniform distributed load General floor live load of 1.8 kN point load Balcony and stair floor live load of 2.0 kPa uniform distributed load
- 31 Load combinations have been calculated in accordance with AS1170.1 requirements

#### 4 - FOUNDATIONS:

- Refer to the attached soil report for reference to the required founding material for the footings and soil profile for the site.
- The founding material and steel reinforcement to the footings and stab shall be inspected by the Engineer prior to the pouring of concrete. 24 hours notice is required for inspection.
- The Engineer shall be notified immediately should foundation material differ from that stated in the soils report. 42
- 43 Topsoil containing plant roots and any organic material shall be removed from the
- For sites where cut and fill is required, the fill shall continue past the edge of the building at least if metre and shall be retained or bettered beyond this point by a stope not steeper than 2 hottoctals to one vertical. The interior of the slab shall be founded on compacted material and the edge beams shall be founded on natural sed or controlled fill (first sed leport).
- The ground around the slab is to be well drained at all times by placing a gravel drain around the perimeter or by sloping the soil (1:10 maximum) away from the slab area. Proving of water around the slab area is to be prevented utilizing and after construction of the slab. At a level is to be drained to either the street frontage or to estiting or new field oriansep sits connected to a stommetar law. Soon drains 4.5
- 4.6 Edge footings shall be founded on material with an allowable bearing pressure not less than 100 kPa. The stab shall be founded in material with an allowable bearing pressure not less than 50 kPa.
- Excavation adjacent to existing footings shall not extend below the underside of existing footings unless instruction is obtained from the engineer. 47
- Notwithstanding that existing services may or may not be shown on these drawings, no responsibility is taken by the engineer for this information which has been supplied by others. The contractor shall asertain the position of all underground 48

LAP SCHEDULE:				
MINIMUM REINFORC	EMENT LAP FOR SLAB			
<u>SIZE</u>	<u>LENGTH</u>			
FABRIC	225mm			
N12	500mm			
N16	700mm			
N20	1000mm			

#### 5 - REINFORCED CONCRETE:

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- 50 All work shall be in accordance with all current Australian Standards as a MINIMUM
- 51 Concrete shall have a characteristic compressive strength after 28 days of not less than that listed below for the various concrete elements UNO.:

n	FOOTINGS	- 25 MPa
i)	INTERIOR GROUND SLABS	- 25 MPa
II)	EXTERIOR GROUND SLABS	- 32 MPa
W)	BLOCKWORK CORE FILL	- 20 MPa
νí	SUSPENDED SLABS	- 40 MPa

- Minimum clear cover to reinforcing bar shall be in accordance with the following table. However cover to reinforcing noted on the plans shall take precedence over those stated in the table.
  - FOOTINGS - 50mm TO ALL SIDES INTERIOR GROUND SLABS EXTERIOR GROUND SLABS - 45mm TOP & BOTTON
- All concrete shall be mechanically vibrated. Vibrator shall not be used to spread 53
- All concrete surfaces shall be cured using an approved method for seven (7) days immediately after concrete is hard. Confirm method of curing with Engineer prior to 54 use. Following concrete placement and as required during the finishing process, aliphatic alcohol or approved curing compound shall be applied to exposed surfaces
- Sizes of concrete elements do not include thickness of applied finishes. 58
- Construction joints where not shown shall be located to the Engineer's approval.
- 5.7 No holes, chases, blockouts, ducts or embedment of pipes other than those shown on the structural drawings shall be made in concrete members without prior approval of the Engineer.
- 58 No additives shall be added or applied to the concrete mix without the approval of the Engineer.
- All steel reinforcement in concrete elements shall be inspected by the Engineer and passed prior to pouring of any concrete. 5.9
- 5.11
- 5.12 Concrete to have a maximum aggregate size of 20mm with 80mm maximum slump and a water/cement ratio of not greater than 0.65.
- 5.13 The maximum permissible transport time for concrete between batching and placement on site shall be in accordance with the following table.

AMBIENT AIR TEMPERATURE	MAX. BATCHING TO PLACEMENT TIME
10° - 24°C	120 minutes
25° - 27°C	90 minutes
28° - 30°C	60 minutes
31° - 33°C	45 minutes
34°-36°C	30 minutes
37°C+	No placement of concrete unless chilled water or ice in mix

- 5.14 A leveling sand layer (50mm minimum in thickness) shall be placed under slab on ground. The sand shall be salt free and compacted to 65% Density Index. 5.15 A vaccur barrier (200µm thick polythene sheet) shall be placed beneath the slab on ground so that the ground surface under the stab and thickenings is entirely covered in
- cordance with AS3R10 and AS2R70 5.16 Slab fabric shall be lanned one full namel of fabric plus 25mm on that the two
- Where brittle floor coverings such as ceramic tile shall be used, an additional layer of SL62 Mesh shall be added to the existing stab reinforcement. If no extra reinforcement is added covering should be delayed until 90 days after the slab has been placed. 5 17
- 5.18 Where service pipes penetrate the floor and or walls provision should be made for

the sheet being lapped by 25mm.

- movement or use incorrect or the sampled and tested in accordance with AS 3800 adopting project assessment method for compressive strength and stump compliance. The results of all tests shall be promptly submitted to the Engineer for review.

  Diagonal reinforcement shall be placed at all re-entrant corners. 2/M12 or 34.11TM 5.20
- 500mm Min. Iona. Tvoical. 5.21
- The edge rebate shall be flashed and drained by weep holes at not more than 1m spacing. Weep holes shall be located above the firsthed ground level any portion of a deepened rebate that cannot be drained shall be mortar filled. 5 22 Approved steel reinforcement systems may be used in ileu of that stated on our clans (eg. Aquila steel "L" cage, Neumans F652 fabric etc ... ), provided the overall size of
- he footings and ground stab as detailed by us remains the same. All props and formwork under suspended concrete shall be removed before construction

## 6 - STRUCTURAL STEEL:

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- All steelwork shall be constructed in accordance with code of practice AS4100 Steel Structures R O Code, AS1554, AS1163, AS3679, AS4600 and all other codes of practice referred to therein. 6.1 Steel quality shall conform with the following Australian Standards UNO:
  - Steel Plates & Sections AS3679 Grade 300
  - Rectangular Hollow Sections AS1163 Grade C350 LO
     Circular Hollow Sections AS1163 Grade C350
  - Source Hollow Sections AS1163 Grade C350
  - Purlins/Girts AS1397 Grade G450 Z350
- Unless noted otherwise all welds shall be 6mm continuous fillet E41XX electrode. all boits M16 4.6/S, all plates 10mm thick.
- 63 Unless noted otherwise, bolt holes shall be 2mm greater than specified bolt size. 6.4 The steelwork sub-contractor's shop drawings shall be submitted to the Engineer for
- review before fabrication commences Fabricator to check all dimensions on site with contracto 6.5
- 6.6 Internal steetwork shall be blast cleaned to class 1 and coated with minimum 100µm high build Alkyd primer before erection. External steetwork shall be blast cleaned to class 2.5
- 6.7 The structural steel framework and bracing members shown on the plans are those required in the design for the completed structure only and the contractor shall be responsible for providing any necessary temporary connections, supports and bracing during the erection process to maintain the stability and safety of the steelwork
- Encased steelwork shall not be painted and shall be wrapped with F41 fabric, 50 cover.
- The steel fabricator shall provide all bolts necessary for the erection of the steelwork and bolt holes and cleats necessary for the erection of timber works as shown, noted or implied on these drawings or architects drawings and specification.
- The roof structure has been designed for normal roof loads only and does not allow for any extraneous loads such as hoists, monoralis etc... except where shown on 6.10
- 6.11 When shop splices are necessary in beams, the position of the splice shall be approved by the Engineer.
- R 12 Provide protective coating on all steelwork partially embedded in concrete UNO. The alting should be non-conductive and extend a minimum of 200mm into the concrete accordance with AS2312-2002 and a minimum of 100mm above the concrete.

#### 7 - MASONRY BLOCKWORK & BRICKWORK:

- 7.0 Materials and workmanship shall comply with the requirements of AS3700 and AS2733
- 7.1 All masonry blocks shall have a min unconfined compressive strength of 15 Mpa. All loadbearing bricks shall have a min unconfined compressive strength of 10 Mpa.
- Mortar shall have the following mix proportions, 1 part cament: 0.5 part lime: 4.5 parts clean sand. Sand shall be clean, well graded and free of slit and clay. Provide medium duty galvanised wall ties at 600mm crs. vertically & horizontally.
- 7.3 Embedment of ties in the mortar joint shall be a minimum of 50mm into each leaf.

  Stainless steel ties shall be used in locations < 1 km from the coast.
- Hollow blocks to be filled with concrete shall have cleanout blocks laid at the base 7.5 Additives shall not be added to the grout or mortar without the specific permission of the Engineer.
- 7.6 All mortar dags and protrusions into the block or brick cores shall be removed prior to the placement of any concrete into the cavities. Loose material and debris shall be also removed from the base of the masonry cores.
- Fully bed solid units, face bed hollow units and fully fill vertical joints. No raking of morter loints is permitted. 7.7
- Grouting shall not commence until the mortar joints have gained sufficient strength to restst blowout and grout spaces have been cleaned out. Compaction of concrete shall be by vibrator or by rodding with a rod not less than 24mm diameter. Meximum 6 course height to be filled and compacted in one peas. 7.8
- 7.9 The concrete used to fill the masonry cores shall have a compressive strength of not less than 20 MPa after 28 days. The concrete shall have a maximum aggregate size of 10mm and a maximum slump of 230±30mm and a minimum cement content of 300kg/m3
- All cores with reinforcement bars shall be filled with concrete, unless noted otherwise. Where masonry blockwork is acting as a retaining structure then all cores shall be filled with concrete. 7.10 7 11 Reinforcement shall be placed accurately and tied securely before placement of

  - Unless noted otherwise vertical control joints shall be provided in blockwork at 12m crs. and at 6m from corners, and in brickwork at 5.0m crs and at 2.0m to 4.5m from corners. Joints to be a minimum of 10mm wide and in accordance with Cement Concrete & Aggregates Australia Technical Note TN81.
  - No holes or chases shall be cut into blockwork/brickwork without prior approval of the Engineer.
  - Bricks shall exhibit a max. 5 year expansion of 1.0mm/m or less, and the brick supplier shall provide a recent test certificate confirming the above.

- 7 MASONRY BLOCKWORK & BRICKWORK (CONT.);
- 7 15 All wall intersections shall be of bonded construction or tied with medium duty fies at
- 7 1R Maximum height of core-filling :-
  - 140mm wide blockwork 1.8m max 190mm wide blockwork 3.4m max

## 8 - TIMBER FRAMING:

- The timber roof and floor framing layouts shown on these engineering drawings form the basis for the design of the structural support elements and the footings. Alternative roof and floor framing layouts will only be permitted with the written approval of the structural Engineer.
- All timber roof, wall and floor structural members that are designed by the Contractor shall be designed in accordance with Engineering principles, AS1684 and AS 1720.1 and shall be handled, erected, installed and braced in accordance with AS 1860 and AS 4440.
- At the time of the frame inspection, the Contractor shall provide all engineering design, checking and inspection certification required by the statutory authority, duly signed by a Registered Professional Engineer of -, for all of the timber 82 roof, wall and floor structural members that have been designed by the Contractor.
- In addition, the Contractor shall inspect and certify that the roof wall and floor
- 8.4 Except where otherwise shown on these Engineering drawings, all timber connection, tiedown and bracing details shall comply with AS 1684 and AS 1720.1.
- All timber members used in the construction shall have a minimum level of durability as specified in AS 1604.2 Appendix C.
- The Contractor shall provide protection of the construction against termile attack in accordance with NCC and AS 3660.1 and QMBA technical circular T -01-02/2001. The Contractor shall provide certification of treatment.

## 9 - COMPACTION OF FILL:

- Crawler plant track rolling is usually inadequate for compacting fill to approved standards and if fill compaction is not of a suitable standard, then foolings and the slab are to be supported on bored plers.
- After the site has been stripped of all topsoi, organic material and debris, proof rolling with a vibrating roller of 5 to 10 tonne capacity shall be carried out, if neighbouring structures are likely to be affected by vibration of the roller, a static sheepsfoot roller may be used in day solts by reducing the depth of fill layers to 9.1
- Soft spots under rolling should be excavated and filled, then re-rolled
- 93 Controlled fill is material that has been satisfactorily compacted to provide adequate
- Compaction requirements for fill material is as follows :-
  - Sand fill up to 800mm deep is to be compacted in 200mm layers by a vibrating plate or vibrating roller. The fill is to have an n value of 7 using a standard penetrometer test. Density index is to be not less than 75% in accordance with AS 1229. n
  - Non-sand fill up to 450mm deep shall be compacted in not more than 150mm layers by a mechanical roller, doy fill shall be moist during compaction. Standard compaction index is not to be less than 95% in accordance with
- Testing of density index shall be done in accordance with Australian standard AS 1288. Reactive clay should be avoided as fill but if used should be placed at a moisture content which approximates the fixed equilibrium mo

## 10 - UNCONTROLLED SHRINKAGE CRACKING:

- To minimise uncontrolled shrinkage cracking the following procedures should be strictly
- Under no circumstances shall any water be added to the concrete truck after it leaves the batching plant.
- 10.1 Slabs on ground shall be poured over a vapour barrier or compacted road base gravel as detailed on the drawings
- 10.2 The concrete shall be vibrated during placement.

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- Allphatic alcohol or approved curing compound shall be applied to the surface of the concrete immediately after the initial screed and again immediately after the buil floating. 10.3 10.4 The surface of the newly placed concrete shall be protected from excessive wind by erecting a wind barrier such as hessian fencing when required.
- Once the stab is finished it shall be continuously cured for 7 days by either keeping continuously wet or covering with weighted down plastic or approved equivalent method such as application of a curing compound.
- 10.6 When early signs of plastic settlement cracks are visible, re-compact or re-trowel
- Where polished concrete finishes are specified, concrete to be 40MPa minimum with

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