

GENERAL

Usage	Live Load (kPa)	Superimposed Dead Load (kPa)
Retaining Walls (Surcharge)	2.5kPa	-

Terrain Category:

- G7 The method of construction and the maintenance of safety during construction is the responsibility of the Builder. If any structural element presents difficulty in respect of constructability or safety, the matter shall be referred to the Structural Engineer for resolution before proceeding with the work. The determination of a safe work method remains the responsibility of the Builder.
- G8 During construction the structure shall be maintained in a stable condition and no part shall be overloaded. Temporary bracing shall be provided by the Contractor in order to keep the building works and excavations stable at all times.
- G9 No changes in any structural element documented in these structural drawings shall be made without reference to the Structural Engineer. No substitutions shall be made without reference to the structural engineer.
- G10 Proprietary items specified on the structural drawings shall be installed in accordance with manufacturers written recommendations.
- G11 The Builder shall arrange separate certification of any design and construct component by a chartered (NPER registered) structural engineer.
- G12 All architectural filaments (glazing, partitions, ceilings) should allow for the short term and long term movement of structural elements. The Builder should consult the structural engineer for the extent of allowance to be made.
- G13 Site and stormwater drainage to BCA requirements and current Australian Standards.
- G14 All waterproofing, flashings, cappings and DPC's to suit BCA requirements and current Australian Standards.
- G15 The structural engineer accepts no responsibility for any works not inspected or not approved by the structural engineer during construction.
- G16 A minimum of forty eight (48) hours notice is required for all engineering inspections.

CONCRETE

C1 All workmanship and materials shall be in accordance with the current edition of AS3600 including amendments, except where varied by the contract documents.

C2 Readymix concrete supply shall comply with AS1379.

C3 Concrete Quality

Element In Structure	Strength Grade (MPa)	Slump (max) (mm)	Max Agg Size (mm)	Cement Type	Max W/C Ratio	Min Cement Content	Max Shrinkage Strain
FOOTINGS	25	70mm±15	20	NORMAL	0.4	330kg/m³	850 × 10⁻⁴
OTHER	40	70mm±15	20	NORMAL	0.4	330kg/m³	850 × 10⁻⁴

C4 Project assessment shall be carried out in accordance with AS1379. Submit results of project assessment to the Structural Engineer.

C5 No admixtures shall be used in concrete unless approved in writing by the Structural Engineer.

C6 Clear concrete cover to all reinforcement for durability shall be as follows unless shown otherwise.

Element In Structure	Exposure Classification to AS3600	Concrete Grade (MPa)	Fire Rating	Minimum Cover
FOOTINGS & SLABS	A1	25		AS NOTED
	B2	40		AS NOTED

C7 All reinforcement shall be firmly supported on mild steel plastic tipped chairs, plastic chairs or concrete chairs at not greater than 1 metre centres both ways. In exposure condition B2 or C use only plastic or concrete chairs. Bars shall be tied at alternate intersections with tie wire.

C8 Concrete sizes shown do not include thicknesses of applied finishes. Sizes shall not be changed without the approval of the structural engineer.

C9 Depths of beams are given first and include slab thickness. Slabs and beams are to be poured together unless approved otherwise by the Structural Engineer.

C10 All chamfers, drip grooves, reglets, etc., shall be in accordance with relevant Australian Standards & the BCA. Maintain cover to reinforcement at these details.

C11 No holes, chases or embedment of pipes other than those shown on the structural drawings shall be made in concrete members without the prior written approval of the Structural Engineer.

C12 Where not shown on the structural drawings construction joints shall be located to the approval of the Structural Engineer.

C13 Conduits, pipes etc. shall only be located in the middle third of slab depth and spaced at not less than 3 diameters. Pipes or conduits shall not be placed within the cover to the reinforcement.

C14 Slabs and beams shall be constructed to bear only on the beams, walls, columns, etc. shown on these structural drawings. All other building elements shall be kept 15mm minimum clear from the soffits of the structure.

C15 Reinforcement

All reinforcing bars shall be Grade D500N to AS4671 unless noted otherwise.

All mesh shall be Grade 500L to AS4671 and shall be supplied in flat sheets.

Reinforcement notation shall be as follows in the following order

e.g.	number of bars in group	bar grade	nominal bar size in mm.	spacing in mm
17	N	20	250	

The figures following the fabric symbols RL, SL, L, TM is the reference number for fabric in accordance with AS4671.

Reinforcement is represented diagrammatically and not necessarily in true projection.

Slab reinforcement shall extend at least 65mm onto masonry support walls and 50 percent of bottom reinforcement shall be coggled to achieved anchorage at simply supported ends.

Splices in reinforcement shall be made only in positions shown on the structural drawings or in positions otherwise approved in writing by the Structural Engineer. Laps shall be in accordance with AS3600 and not less than the development length for each bar.

Site bending of reinforcing bars shall be done without heating using mechanical bending tools.

Welding or threading of reinforcement shall not be permitted unless shown on these structural drawings or approved by the Structural Engineer.

Joggles to bars shall be 1 bar diameter over a length of 12 bar diameters.

Fabric shall be lapped 2 transverse wires plus 50mm. Bundled bars shall be tied together at 30 bar diameter centres with 3 wraps of tie wire.

C16 The Structural Engineer shall be given 48 hours notice for reinforcement inspection and concrete shall not be delivered until final approval has been obtained from the Structural Engineer.

C17 The finished concrete shall be a dense homogeneous mass, completely filling the formwork thoroughly embedding the reinforcement and free of stone pockets. All concrete shall be compacted with mechanical vibrators. Vibrators shall not be used to spread concrete.

C18 Curing of all concrete is to be achieved by keeping surfaces continuously wet for a period of 3 days, or by prevention of loss of moisture for a total of 7 days followed by a gradual drying out. Approved spray on curing compounds that comply with AS3799 may be used where floor finishes will not be affected (refer Manufacturers Specification). Polythene sheeting or wet hessian may be used to retain concrete moisture where protected from wind and traffic. Submit details of proposed curing method for approval.

C19 Construction support propping is to be left in place where needed to avoid overstressing the structure due to construction loading. All backpropping shall be approved by the Structural Engineer. No brickwork or partition walls are to be constructed on suspended levels until all propping is removed and the slab has absorbed its dead load deflection and achieved full design strength.

C20 All penetrations to have 2/N12 bars x 1000 long to each face.

C21 Set downs or falls in slabs or beams are not permitted unless shown on these structural drawings.

C22 The surface finish of the concrete shall be as specified on the Architectural drawings.

C23 All chemically anchored starter bars to be set with 'Ramset Chemset Res 502', or an approved equal, in accordance with the manufacturers specifications.

MASONRY

M1 Materials including mortar, concrete, grout shall comply with Section 11 of AS3700.

M2 Masonry units shall comply with AS4455. Wall ties shall comply with AS2699.

M3 Masonry shall be constructed in accordance with Section 12 of AS3700.

M3 Mortar proportions shall comply with Tables 5.1 and 11.1 of AS3700.

Mortar admixtures shall not be used without the written approval of the Structural Engineer.

M4 Strengths of bricks, class of blocks and type of mortar shall be as follows:

Element	Material	Characteristic Unconfined Compressive Strength, f _{uc} (MPa)	Mortar Classification to Table 11.1 of AS 3700
Bricks		30	M3
Blocks		15	M3

M5 All masonry walls and piers supporting slabs and beams shall have full bed joints and a pre-greased galvanised steel slip joint between the concrete soffit and the top of the masonry element. Non load bearing walls shall be separated from concrete above by 10mm thick closed cell polyethylene strip.

M6 All masonry supporting or supported by concrete floors shall be provided with vertical control joints to match any control joints in the concrete floors.

M7 No chases or recesses are permitted in load bearing masonry without the approval of the Structural Engineer.

M8 All bonding, lying and fixing of masonry shall comply with Clause 4.11 of AS3700.

M9 Do not construct masonry walls on suspended concrete slabs until slab has been stripped and de-processed.

M10 Provide vertical control joints at 10m max centres, and 5m maximum from corners in all masonry walls, unless shown otherwise on these structural drawings. Provide stainless steel ties at 600 mm centres (300mm centres around openings) installed in accordance with manufacturers recommendations.

M11 Reinforced concrete blockwork shall comply with the following:-

- Blocks shall be strength Grade 15 conforming to AS4455.
- Mortar shall comprise 1 cement: 0.25 lime : 3 sand. Mortar shall cure for at least 3 days before grouting.
- Provide cleanout holes at base of all walls and red core holes to remove protruding mortar fins and other material. Grout up when masonry is grouted.
- Core filling grout to have a characteristic strength of 20MPa, 10mm maximum aggregate, 230mm slump (± 30 mm) with a minimum cement content of 300kg/m³. Core fill in vertical lifts not exceeding 2600 mm and vibrate into position.
- Provide 65 mm cover to reinforcing bars from the outside face of the blockwork to allow adequate grout cover.
- Concrete block walls shall be constructed in maximum lengths of 8 metres if no horizontal reinforcement is used, up to 12 metres if horizontal reinforcement is used at 400mm spaced vertically and 16 metres if horizontal reinforcement is used in every course.

M12 All cavities below ground level shall be mortar or grout filled.

MASONRY ARTICULATION

MA1 For a Class A site to AS2870-211 'Masonry Articulation Joints' to be spaced at 6 metres maximum centres for face brick finish.

MA2 If wall height exceeds 4 metres, then engineer is to be contacted.

MA3 Spacing from corners or ends of walls should be in the range of 2 to 4.5 metres for all finishes.

MA4 Joints should generally be located near or at furthest side of window from corner of wall.

MA5 If walls have openings larger than 900 x 900mm, the maximum joint spacing should be 5 metres.

MA6 In addition to locations as determined above, articulation joints should be located:

- at changes in wall height
- control/construction joints in slabs
- window & door openings
- changes in wall thickness
- junctions in walls of different materials
- deep chases or rebates
- at wall offsets
- at changes in plan geometry



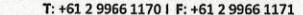



MA7 Joints should be located within 300mm of wall junctions or engaged piers that serve as lateral supports.

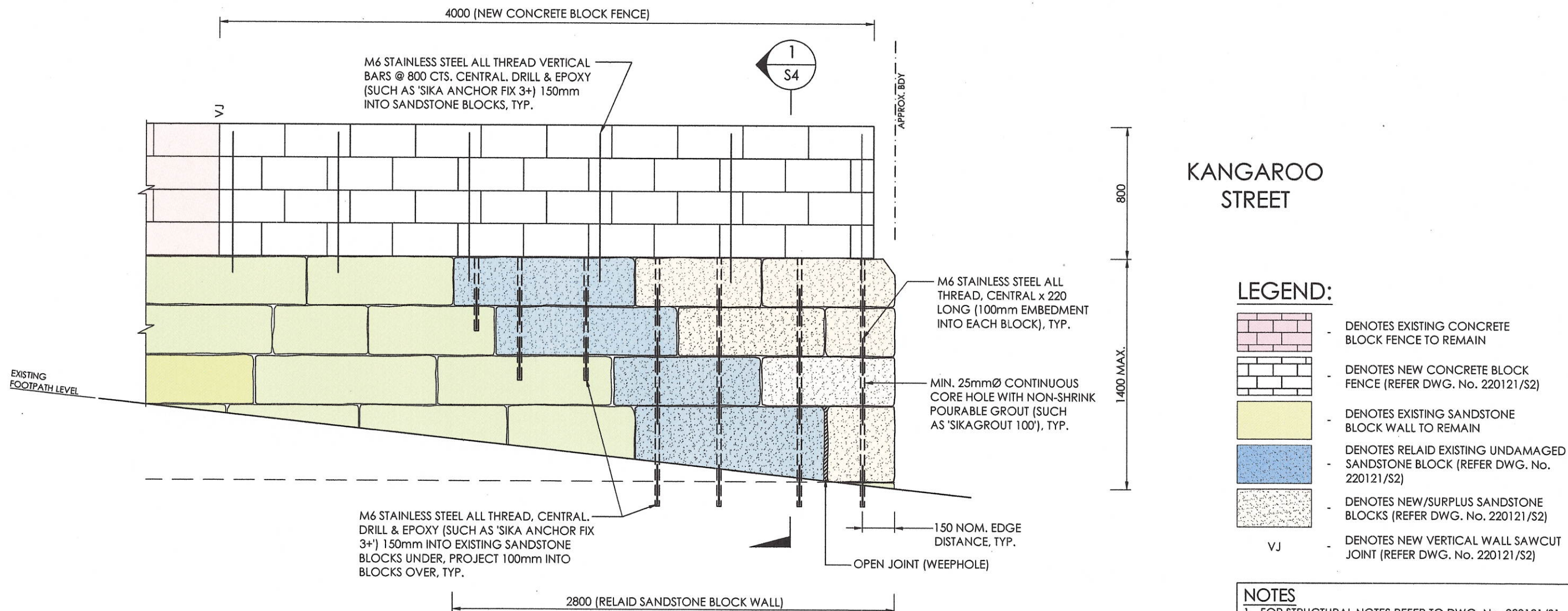
MA8 Refer to Technical Note 61 by 'Cement, Concrete & Aggregates Australia'.

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TENDER DRAWINGS	Director: Design Engineer:								PROJECT 1 KANGAROO STREET, MANLY, N.S.W. 2095			
DOCUMENTATION TO 90%	Director: Design Engineer:		JAN. '20						DRAWING TITLE STRUCTURAL NOTES			
CONCEPT DESIGN	Director: Design Engineer:								DRAWN J.C.	CHECKED M.L.	DATE JAN. '20	DRAWING No
DRAWING STATUS	REVIEWED BY	INITIALS	DATE	A	PRELIMINARY ISSUE	24.01.20		SCALE @ A3 —	APPROVED M.L.	220121/S1		A
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STRUCTURAL ELEVATION - SOUTHERN FACE
SCALE 1:25 (APPROX.)


NOTE:
STAINLESS STEEL TO BE:
CLASS 80, GRADE 316 (A4).

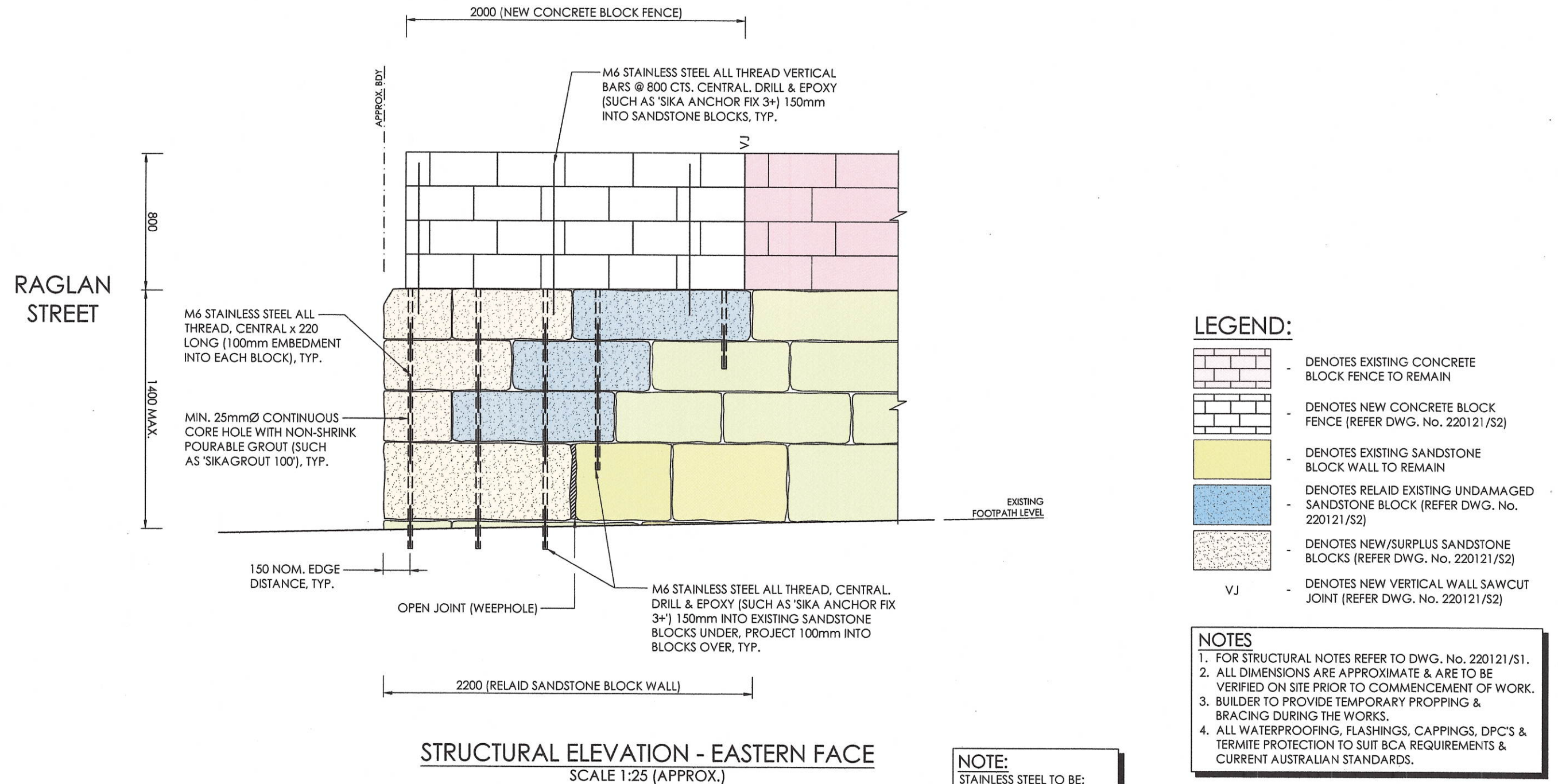
- LEGEND:**
- DENOTES EXISTING CONCRETE BLOCK FENCE TO REMAIN
 - DENOTES NEW CONCRETE BLOCK FENCE (REFER DWG. No. 220121/S2)
 - DENOTES EXISTING SANDSTONE BLOCK WALL TO REMAIN
 - DENOTES RELAID EXISTING UNDAMAGED SANDSTONE BLOCK (REFER DWG. No. 220121/S2)
 - DENOTES NEW/SURPLUS SANDSTONE BLOCKS (REFER DWG. No. 220121/S2)
 - DENOTES NEW VERTICAL WALL SAWCUT JOINT (REFER DWG. No. 220121/S2)
- NOTES**
- FOR STRUCTURAL NOTES REFER TO DWG. No. 220121/S1.
 - ALL DIMENSIONS ARE APPROXIMATE & ARE TO BE VERIFIED ON SITE PRIOR TO COMMENCEMENT OF WORK.
 - BUILDER TO PROVIDE TEMPORARY PROPPING & BRACING DURING THE WORKS.
 - ALL WATERPROOFING, FLASHINGS, CAPPINGS, DPC'S & TERMITE PROTECTION TO SUIT BCA REQUIREMENTS & CURRENT AUSTRALIAN STANDARDS.

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