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STRUCTURAL SERVICES

DESIGN & CONSTRUCTION
MASONRY PERFORMANCE SPECIFICATION

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1. GENERAL

1.1 Contract Documents

The "General Conditions of Contract", "Special Conditions of Contract" and "Preliminaries" clause shall form an integral part of this specification.

This section of the specification shall be read in conjunction with all other sections as the requirements may be interrelated.

In the event of discrepancies between the documents, the following order of precedence shall apply:

- Drawings
- This specification
- General standards

1.2 Scope

The work comprises the supply and erection of all concrete blockwork shown on the drawings including reinforcement, core filling, lintels, arch bars and the like.

Coordinate the other trades in respect of built-in items, openings for doors and windows and penetrations generally.

1.3 Standards

Blockwork shall conform with the current issue of AS 3700 Masonry in Buildings and other Standards referenced therein.

2. QUALITY

2.1 Inspection

Give sufficient notice to the Managing Contractor so that inspections can be made at the following stages:

- Damp-proof courses in position
- Flashings in position
- Bottoms of cavities after cleaning out
- Bottoms of core holes after tying reinforcement and before grouting
- Lintel blocks after reinforcing and before pouring

3. MATERIALS

3.1 Masonry Units

Concrete blocks shall be strength grade f'_{uc} = as noted on the structural documentation, sound, dry, clean and crack-free unless noted otherwise.

3.2 Mortar

Mortar for structural blockwork shall be class M3, having the proportions of 1 part type GP or GB cement to 5 parts sand with a methyl cellulose water thickener.

Mortar shall be thoroughly machine mixed and shall be used prior to its initial set. The addition of water to restore workability is permissible prior to initial set.

3.3 Grout

Grout (f'_{cg}) shall comprise cement, sand, coarse aggregate and water as specified on the structural drawings and to achieve the specified properties.

4 EXECUTION

4.1 Construction Generally

Blocks shall be laid only by experienced tradespeople. Blocks shall be laid dry and, unless otherwise shown, shall be stretcher bond. Cut blocks neatly using a suitable saw to achieve dimensional fit and to suit reinforcement.

Build in as necessary, reinforcement, arch bars, lintels, frames, straps, bolts, lugs, wall ties and metalwork. Carefully position openings for other trades to eliminate cutting.

Clean blockwork progressively to remove mortar smears, stains and discolouration. Do not use acid. Install wiring for power and telephones in conduits within block cores. Do not cut chases in hollow blockwork.

4.2 Joints

Blocks in work to be core-filled shall be full bedded and vertical joints shall be filled with mortar. Blocks in work not to be core-filled shall be shell bedded and vertical joints may be mortared for the thickness of the face shells only.

Bed joints shall be 10 mm thick.

Joints exposed to view shall be ironed with a round jointing tool unless otherwise specified. Tool horizontal joints after vertical joints. Maximum depth of tooling 3 mm. Joints not exposed to view shall be finished flush.

Construct control joints where shown on the architectural drawings using shear resisting control joint blocks unless shown otherwise. Do not continue bond beams or horizontal reinforcement across control joints.

Seal control joints with an approved grey elastomeric sealant equal to Sikaflex 1A, Thioflex 600 or Dow Corning 790 silicone.

4.3 Bond Beams

Where bond beams are required, they shall be made using bond beam blocks, reinforced as shown on the structural drawings.

A reinforced bond beam shall be located at the top of all load-bearing blockwork.

4.4 Steel Lintels

Steel lintels shall comprise class Z600 galvanised mild steel flat bars or angles. Use steel lintels only for 90 mm blockwork and in accordance with the following table:

Maximum Span (mm)	Lintel
950	75 x 8 EA
1050	75 x 8 EA
1200	75 x 8 EA
1500	90 x 8 EA
1800	100 x 75 x 8 AU
2400	125 x 75 x 10 UA
3000	150 x 100 x 10 UA

Install angles with long leg vertical. Pack mortar between the vertical leg and the supported masonry. Provide a minimum bearing at each end of 150 mm for spans up to 1500 mm and 300 mm for spans between 1500 mm and 3000 mm.

4.5 Reinforced Masonry Lintels

Construct reinforced masonry lintels as detailed on the structural drawings.

Use purpose-made lintel blocks and extend the lintel 400 mm beyond the edges of the opening. Build lintels on suitable shoring and fill with concrete before placing blocks above. Keep propped for at least three days after placing concrete.

4.6 Reinforcement

Provide clean out blocks at the base of all reinforced cores in each lift.

Clean projecting mortar from reinforced cores by rodding from the top. Remove any resulting debris from the clean out holes.

Insert vertical reinforcement from the top and tie to starter bars through the clean out holes at the bottom. If necessary, because of lack of clearance above the top of a vertically reinforced wall, insert reinforcement in short lengths and lift and lap as the blockwork progresses. Alternatively, fix vertical reinforcement in place before commencing block laying and use open ended blocks at reinforced cores.

Where necessary, lap 12 mm diameter bars 400 mm, and 16 mm diameter bars 600 mm. Make all horizontal reinforcement continuous around corners.

All reinforcement shall be centrally located unless shown otherwise on the drawings. Starter bars cast in out of position shall not be bent over into position. If bars are out of position, notify the Managing Contractor and a remedial detail which may involve drilling and epoxy grouting new starter bars will be provided.

4.6.1 Greenstar Requirements for Reinforcing Steel Credit 20.1

All structural must be sourced from a responsible steel maker; and all reinforcing bar and mesh used must be produced using energy reducing processed in its manufacture (measured by average mass by steel maker annually). For a steel manufacturer or a steel maker to be considered a responsible source of steel, they must show that they comply with both of the following initiatives:

- The steel making facilities where the structural and/or reinforcing steel for the project is sourced have a currently valid and certified iso 14001 environmental management system (ems) in place. valid iso 14001 environmental management system (ems) certificates must be provided from the steel making facilities where the structural and/or reinforcing steels in the project were produced; and

- The steel maker supplying the steel is a member of the World Steel Association's (WSA) Climate Action Programme (CAP). A current CAP certificate from the WSA, confirming that the steel maker is a member of the CAP, must be provided. Certificates are valid for a period of two years and must be current at the time that the Green Star documentation is submitted to achieve points for this criterion.

For steel reinforcement, energy reduction arising from energy-reducing processes must equate to at least 40 MJ/tonne, measured as a percentage of annual mass of reinforcing steel produced by the steel maker. Reinforcing steel products sourced from a steel maker using a Polymer Injection Technology in manufacturing their reinforcing products is an acceptable method of demonstrating compliance with this criterion.

4.7 Block Laying

Before laying blocks, ensure that the concrete base is clean and free of laitance, and any other material which would diminish the bond of the mortar.

Do not lay blocks during wet weather or on partly built blockwork still wet from rain.

Provide temporary bracing to ensure stability of the wall until the grout core filling has cured and the wall has been attached to the final structure as detailed on the drawings.

4.8 Grouting

Prior to commencing grouting and after inspection of the reinforcement, seal the face of the clean out holes to prevent loss of grout when the cores are filled.

Pour grout down cores from the top and compact by pencil vibrators to achieve complete filling of the cores.

Where compaction from the top is not possible and the height of the blockwork is such that complete filling cannot be guaranteed without compaction, progressively fill and compact such that the topmost cores can be reliably filled without compaction.

Except for the topmost lift, the grout shall be stopped 50 mm below the top of the blockwork of each lift.

The grout pour height shall not exceed 48 times the width of the cores or 3500 mm, whichever is least.

4.9 Cleaning Down

On completion of blockwork, clean down with water and stiff brushes and remove all mortar projections, splashes and irregularities. Make good around any services penetrating the blockwork and make good any faults in the pointing.