

CONCRETE

- C1 ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3600 CURRENT EDITION WITH AMENDMENTS. READY-MIX CONCRETE SUPPLY SHALL COMPLY WITH AS 1379. ALL CEMENT TO BE TYPE 'S1' PORTLAND.
- C2 MAXIMUM DRYING SHRINKAGE SHALL BE 400 MICROSTRAIN AT 56 DAYS. PROJECT CONTROL TESTING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1379. NO ADMIXTURES SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING.
- C3 CLEAR CONCRETE COVER TO ALL REINFORCEMENT SHALL BE AS FOLLOWS UNLESS SHOWN OTHERWISE.

LOCATION	CONCRETE GRADE (MPa)	CAST AGAINST GROUND	CAST IN FORMS WITH EXPOSURE	CAST IN FORMS & NOT EXPOSED
FOOTINGS	25	50	50	30
SLABS ON GROUND	32	40	40	25
SUSPENDED SLABS	32	40	40	25

NOTE: WHERE CONCRETE IS POURED ON A VAPOURPROOF MEMBRANE 0.2 mm MINIMUM THICKNESS, THE COVER TO CONCRETE CAST AGAINST GROUND MAY BE REDUCED BY 10 mm.

- C4 NO ADMIXTURES OTHER THAN LOW RANGE WRA SHALL BE USED IN CONCRETE UNLESS APPROVED IN WRITING.
- C5 DEPTHS OF BEAMS ARE GIVEN FIRST AND INCLUDE SLAB THICKNESS.
- C6 CONCRETE SIZES SHOWN DO NOT INCLUDE THICKNESSES OF APPLIED FINISHES. FINISHES, NO FINISH WHICH DECREASES COVER IS ALLOWED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.
- C7 FOR CHAMFERS, DRIP GROOVES, REGLES, ETC REFER TO ARCHITECT'S DETAILS, MAINTAIN COVER TO REINFORCEMENT AT THESE DETAILS.
- C8 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 ENGINEER.
- C9 CONSTRUCTION JOINTS AND CLOSING STRIPS SHALL BE USED TO CONTROL AND REDUCE SHRINKAGE CRACKING IN WALLS AND FLOORS, AND COLD JOINTS IN LARGE POURS. THESE JOINTS SHALL BE PLANNED IN ADVANCE, TO THE APPROVAL OF THE ENGINEER.
- C10 THE FINISHED CONCRETE SHALL BE A DENSE HOMOGENEOUS MASS, COMPLETELY FILLING THE FORMWORK THOROUGHLY EMBEDDING THE REINFORCEMENT AND FREE OF STONE POCKETS. ALL CONCRETE INCLUDING SLABS ON GROUND AND FOOTINGS SHALL BE COMPACTED WITH MECHANICAL VIBRATORS.
- C11 CURING OF ALL CONCRETE IS TO BE ACHIEVED BY KEEPING SURFACES CONTINUOUSLY WET FOR A PERIOD OF 3 DAYS, AND PREVENTION OF LOSS OF MOISTURE FOR A TOTAL OF 7 DAYS FOLLOWED BY A GRADUAL DRYING OUT. APPROVED SPRAYED ON CURING COMPOUNDS COMPLYING WITH AS 3799 MAY BE USED WHERE NO FLOOR FINISHES ARE PROPOSED. POLYTHENE SHEETING OR WET HESSIAN MAY BE USED IF PROTECTED FROM WIND AND TRAFFIC.
- C12 CONDUITS, PIPES, ETC, SHALL ONLY BE LOCATED IN THE MIDDLE ONE THIRD OF SLAB DEPTH AND SPACED AT NOT LESS THAN 3 DIAMETERS AND SHALL NOT BE PLACED WITHIN THE REINFORCEMENT COVER.
- C13 REPAIRS TO CONCRETE SHALL NOT BE ATTEMPTED WITHOUT THE PERMISSION OF THE ENGINEER.

STRUCTURAL STEEL

- S1 ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 4100 AND AS 1554 EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.
- S2 UNLESS NOTED OTHERWISE ALL MATERIAL SHALL BE:
 - GRADE 250 HOT-ROLLED PLATES COMPLYING WITH AS 3678;
 - GRADE 250 HOT-ROLLED FLATS, TFC, TFR, ANGLES 100x100EA OR 125x75UA AND SMALLER COMPLYING WITH AS 3679.1;
 - GRADE 300PLUS UB, UC, PFC AND ANGLES 125x125EA OR 150x90UA AND LARGER;
 - GRADE 300 WB, WC COMPLYING WITH AS 3679.2;
 - GRADE C350 RHS, CHS COMPLYING WITH AS 1163;

- S3 THREE(3) COPIES OF WORKSHOP FABRICATION DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AT LEAST 7 DAYS PRIOR TO COMMENCEMENT OF FABRICATION AND PERMISSION TO USE OBTAINED PRIOR TO FABRICATION. PERMISSION TO USE DOES NOT RELIEVE THE BUILDER OF THE FULL RESPONSIBILITY FOR DIMENSIONS, FIT AND COMPLIANCE WITH ARCHITECTURAL AND ENGINEERING DRAWINGS.

- S4 BOLTS:-
 - 4.6/5.0...COMMERCIAL BOLTS OF GRADE 4.6 TO AS 1111, SNUG TIGHTENED.
 - 8.8/5.0...HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS 1252, SNUG TIGHTENED.

- 8.8/7B...HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS 1252 FULLY TENSIONED TO AS 4100 AS BEARING JOINT
- 8.8/7F...HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS 1252 FULLY TENSIONED TO AS 4100 AS A FRICTION JOINT WITH FACING SURFACES LEFT UNCOATED
- ALL BOLTS SHALL BE M20 GRADE 8.8/5 UNLESS NOTED. NO CONNECTION SHALL HAVE LESS THAN 2 BOLTS. ALL BOLTS, NUTS & WASHERS TO BE GALVANISED. TB AND TF BOLTS TO BE INSTALLED USING APPROVED LOAD INDICATING WASHERS, OR BY TURN OF NUT CONTROL OF TENSIONING.

- S5 WELDING SHALL BE CARRIED OUT IN ACCORDANCE WITH AS 1554.1. WELDING CONSUMABLES SHALL BE E40XX OR W50X U.N.O. ALL WELD SHALL BE 6 mm CPW SP CATEGORY U.N.O. CPW SHALL BE SP CATEGORY U.N.O. INSPECTION SHALL BE CARRIED OUT TO AS 1554.1. ALL GP/SP WELDS SHALL BE 100% VISUALLY SCANNED. SP WELDS ALLOW FOR 10% VISUAL EXAMINATION U.N.O. BUTT WELDS SHALL BE COMPLETE PENETRATION WELDS TO AS 1554.

- S6 ALL DETAILS, GAUGE LINES ETC. WHERE NOT SPECIFICALLY SHOWN ARE TO BE IN ACCORDANCE WITH AISC DESIGN CAPACITY TABLES FOR STRUCTURAL STEEL AND AISC STANDARDIZED STRUCTURAL CONNECTIONS. PLATES TO BE 10mm THICK, EX-STRAND SQUARE EDGE FLATS U.N.O.

- S7 PROVIDE SEAL PLATES TO ALL HOLLOW SECTIONS. PROVIDE VENT HOLES TO HOLLOW MEMBERS & DRAIN HOLES TO ALL MEMBERS TO BE HOT DIP GALVANISED.

- S8 IT IS THE BUILDER'S RESPONSIBILITY TO ENSURE THAT STEELWORK IS SECURELY TEMPORARILY BRACED AS NECESSARY TO STABILISE THE STRUCTURE DURING ERECTION.

- S9 STRUCTURAL STEELWORK SHALL HAVE THE FOLLOWING SURFACE TREATMENT IN ACCORDANCE WITH THE SPECIFICATION.

ELEMENT	SURFACE CLEANING	PROTECTIVE COATING
INTERNAL	POWER WIRE BRUSHING or ABRASIVE GRIT BLASTING	1 COATRUST INHIBITIVE ALKYD PRIMER OR EQUIV. + 1 TOP COAT ALL WEATHER GLOSS ACRYLIC
EXTERNAL	ABRASIVE GRIT BLASTING (CLASS 2.5) or PICKLING	1 COAT INORGANIC ZINC SILICATE PRIMER OR EQUIV. + 1 TOP COAT ALL WEATHER GLOSS ACRYLIC WITH UV PROTECTOR
EXTERNAL (ALT.)	PICKLING	HOT DIP GALVANISED

- S10 THE BUILDER SHALL PROVIDE ALL CLEATS AND DRILL ALL HOLES NECESSARY FOR FIXING STEEL TO STEEL AND TIMBER TO STEEL WHETHER OR NOT DETAILED ON THE DRAWINGS.

- THE FABRICATION AND ERECTION OF THE STRUCTURAL STEELWORK SHALL SUPERVISED BY A QUALIFIED PERSON EXPERIENCED IN SUCH SUPERVISION, ENSURING ALL REQUIREMENTS OF THE DESIGN ARE MET.

- S11 ALL BEAMS AND RAFTERS SHALL BE FABRICATED AND ERECTED WITH NATURAL CAMBER UP. ALL MEMBERS SHALL BE SUPPLIED IN SINGLE LENGTHS. SPLICES SHALL ONLY BE PERMITTED IN LOCATIONS SHOWN ON THE STRUCTURAL DRAWINGS.

BLOCKWORK

- BL1 ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3700. BL2 STRENGTHS OF MASONRY UNITS AND TYPE OF MORTAR SHALL BE AS FOLLOWS

- CHARACTERISTIC UNCONFINED COMPRESSIVE STRENGTH $f'_{uc} = 15 MPa$ MORTAR (CEMENT : LIME : SAND) = 1 : 0.25 : 3
MORTAR ADMIXTURES SHALL NOT BE USED WITHOUT THE WRITTEN APPROVAL OF THE SUPERINTENDENT.

- BL3 ONLY LOAD BEARING MASONRY WALLS ARE SHOWN UNDER CONCRETE SLABS.

- BL4 OTHER THAN REINFORCED CONCRETE BLOCKWORK, MASONRY SUPPORTING SLABS AND BEAMS SHALL BE TROWELLED SMOOTH WITH MORTAR FILLING ALL VOIDS. TWO LAYERS OF MALTHOID SHALL BE PLACED FULL WIDTH ACROSS SUCH LOAD BEARING SURFACES EXCEPT WHERE PROPRIETARY BEARING STRIP IS NOTED OR ALTERNATIVE DETAIL IS DOCUMENTED. THE HEADS OF LOAD BEARING WALLS SHALL NOT EXTEND ABOVE THE SOFFIT OF THE CONCRETE SLAB ABOVE.

- BL5 ALL MASONRY SUPPORTING OR SUPPORTED BY CONCRETE FLOORS SHALL BE PROVIDED WITH VERTICAL JOINTS TO MATCH ANY CONTROL JOINTS IN THE CONCRETE.

- BL6 NO CHASES OR RECESSES ARE PERMITTED IN LOAD BEARING MASONRY WITHOUT THE APPROVAL OF THE ENGINEER.

- BL7 PROVIDE VERTICAL CONTROL JOINTS AT 10 m MAX. CENTRES GENERALLY, AND 5 m MAX. FROM CORNERS FOR BRICKWORK AND UNREINFORCED BLOCKWORK.

- BL8 REFER TO CONCRETE NOTES FOR DE-PROPPING PRIOR TO CONSTRUCTION OF MASONRY WALLS ON SUSPENDED SLABS.

- BL9 REINFORCED CONCRETE BLOCKWORK SHALL COMPLY WITH THE FOLLOWING, UNLESS NOTED:

- * PROVIDE CLEANOUT HOLES 100 mm SQUARE MINIMUM AT BASE OF ALL WALLS AND ROD CORE HOLES TO REMOVE PROTRUDING MORTAR FINNS PRIOR TO GROUTING.
- * CORE FILLING GROUT SHALL BE -- $f'_{c} = 20 MPa$
MINIMUM CEMENT CONTENT = 300 kg/m³,
SLUMP = 230 ± 30 mm.

- * REINFORCEMENT PROJECTING FROM FOUNDATION OR SLABS INTO CORES, SHALL BE SET ACCURATELY IN PLACE USING TEMPLATES TO ALIGN WITH THE CENTRE OF THE LENGTH OF CORES AND WITH COVER AS NOTED. WHERE HORIZONTAL BARS ARE INDICATED, THE WEBS OF THE BLOCKS BELOW THE BARS SHALL BE CUT DOWN TO ACCOMMODATE THE BARS.

- * GROUT ALL CORES IN REINFORCED BLOCKWORK UNLESS OTHERWISE NOTED. HEIGHT OF BLOCKWORK TO BE GROUTED ON ONE DAY SHALL BE 2400mm. GROUT SHALL BE PLACED IN LIFTS OF 1200mm MAXIMUM AND COMPACTED BY POKER VIBRATOR. A SHORT TIME SHOULD ELAPSE BETWEEN SUCCESSIVE LIFTS TO ALLOW PLASTIC SETTLEMENT TO OCCUR.
- * PROVIDE 50 mm COVER FROM THE OUTSIDE OF THE BLOCKWORK UNLESS NOTED.

- BL10 BACKFILL TO RETAINING WALLS SHALL BE FREE DRAINING GRANULAR MATERIAL. PROVIDE SUBSOIL DRAIN AT BASE OF WALL. DO NOT BACKFILL UNTIL 14 DAYS AFTER GROUTING, OR IF APPLICABLE, AFTER RESTRAINING SLAB OVER HAS BEEN POURED AND CURED FOR 7 DAYS. BACKFILL SHALL BE COMPACTED TO 98% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT ± 2%.

BRICKWORK

- Bk1 ALL MATERIALS AND WORKMANSHIP TO BE TO AS 3700.
Bk2 ONLY LOAD BEARING MASONRY WALLS ARE SHOWN UNDER CONCRETE SLABS.

- Bk3 MINIMUM CLAY BRICK COMPRESSIVE STRENGTH TO BE 20MPa. RATE OF ABSORPTION TO BE LESS THAN 5KG/M²/MIN AT THE TIME OF LAYING. CLAY BRICKS SHALL BE AT LEAST 30 DAYS OUT OF THE KILN AND WILL OFTEN REQUIRE PRE-WETTING UNLESS PROOF OF A MOISTURE EXPANSION LESS THAN 0.6MM/M IS PRODUCED. UNLESS NOTED OTHERWISE MORTAR FOR CLAY BRICKWORK IS TO BE CEMENT-LIME SAND IN THE RATIO OF 1 : 1 : 6 AND THE WATER RETENTIVITY MUST BE AT LEAST 90%. NO ADDITIVES SHALL BE USED UNLESS APPROVED IN WRITING. BRICKWORK IS TO BE ADEQUATELY CURED PRIOR TO CONSTRUCTION OF SUSPENDED SLABS OVER.

- Bk4 UNLESS NOTED OTHERWISE CLAY BRICKWORK IS TO CONTAIN MOVEMENT JOINTS 20MM WIDE AT MAXIMUM SPACING OF 10M (5M IN INDUSTRIAL USE) AND ARE TO CONTAIN 40MM TAR IMPREGNATED POLYURETHANE STRIP. WHERE INTERNAL SKIN IS INTERRUPTED BY STEEL FRAMES THE ABOVE JOINTING APPLIES TO EXTERNAL SKIN ONLY.

- Bk5 ALL MASONRY SUPPORTING OR SUPPORTED BY CONCRETE FLOORS SHALL BE PROVIDED WITH VERTICAL JOINTS TO MATCH ANY CONTROL JOINTS IN THE CONCRETE.

- Bk6 NON LOAD BEARING WALLS BUILT PRIOR TO POURING CONCRETE SHALL BE SEPARATED FROM CONCRETE ABOVE BY 16 mm THICK CLOSED CELL POLYSTYRENE STRIP. WHERE BUILT AFTER CONCRETE IS POURED LEAVE 12mm CLEAR OF CONCRETE SOFFIT.

- Bk7 BRICKWORK SUPPORTING SLABS AND BEAMS SHALL BE TROWELLED SMOOTH WITH MORTAR FILLING ALL VOIDS. TWO LAYERS OF MALTHOID SHALL BE PLACED FULL WIDTH ACROSS SUCH LOAD BEARING SURFACES EXCEPT WHERE PROPRIETARY BEARING STRIP IS NOTED OR ALTERNATIVE DETAIL IS DOCUMENTED. THE HEADS OF LOAD BEARING WALLS SHALL NOT EXTEND ABOVE THE SOFFIT OF THE CONCRETE SLAB ABOVE.

- Bk8 ALL DOUBLE SKIN SOLID WALLS SUCH AS 230mm THICK BRICKWORK SHALL BE BONDED BY A HEADER COURSE EVERY 4th COURSE.

TIMBER

- T1 ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS1684 AND AS1720.1.
- T2 TIMBER TO BE SEASONED & MINIMUM GRADE F7 UNLESS NOTED OTHERWISE.
- T3 ALL BOLTS, NUTS AND WASHERS FOR TIMBER CONNECTIONS TO BE HOT-DIP GALVANISED & GRADE 4.6. WHERE POSSIBLE, BOLTS SHALL BE RETIGHTENED AT THE END OF THE MAINTENANCE PERIOD. BOLT HOLES SHALL BE DRILLED NO MORE THAN 1mm OVERSIZE. WASHERS UNDER ALL HEADS AND NUTS SHALL BE AT LEAST 2.5 x BOLT DIA.
- T4 MINIMUM BOLT SPACINGS IN TIMBER TO BE 5xBOLT DIAMETER. MIN EDGE DISTANCES FOR BOLTED CONNECTIONS TO BE 4xBOLT DIAMETER. MIN END DISTANCE FOR BOLTED CONNECTIONS TO BE 5xBOLT DIAMETER.
- T5 MINIMUM TIMBER CONNECTIONS TO BE NOMINAL FIXINGS IN ACCORDANCE WITH AS 1684 UNLESS NOTED OTHERWISE.
- T6 TIE-DOWN SHALL BE IN ACCORDANCE WITH AS1684.2 SECTION 9 UNLESS NOTED OTHERWISE.
- T7 ALL TIMBER JOINTS AND NOTCHES ARE TO BE 100mm MINIMUM AWAY FROM LOOSE KNOTS, SEVERE SLOPING GRAIN, GUM VEINS OR OTHER MINOR DEFECTS.
- T8 ALL TIMBER TO BE EITHER PLANTATION TIMBERS, TIMBER PRODUCTS MANUFACTURED FROM SUSTAINABLY MANAGED FORESTS OR RECYCLED TIMBERS.
- T9 EXTERNAL TIMBER SHALL BE EITHER HARDWOOD DURABILITY CLASS I OR II TO AS 1720.2 OR IMPREGNATED PINE GRADE F7, PRESURE TREATED TO AS1604 AND RE-DRIED PRIOR TO USE. SUPPLEMENTARY TREATMENT SHALL BE APPLIED TO ALL CUT SURFACES. SUPPLY SUPPORTING DOCUMENTATION FOR PRESERVATIVE TREATMENT.

ISSUED FOR CONSTRUCTION

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ISSUE	DESCRIPTION	BY	APR	DATE
B	ISSUED FOR CONSTRUCTION	JC	SW	28.08.08
A	ISSUED FOR TENDER PURPOSES ONLY	JC	SW	24.07.08

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PROJECT:
PROPOSED ALTERATIONS & ADDITIONS
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for: PHILIP JOHNSTON

DRAWING TITLE:
STRUCTURAL NOTES-SHT 2 of 2

DESIGN	S.W.	DATE	JUNE 2008
DRAWN	J.C.	SCALE	N/A
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SIGNED:			
DRAWING No.	7183-S0.01	REV	B