GENERAL

G1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ALL DISCREPANCIES SHALL BE REFERRED TO THE ARCHITECT FOR DECISION BEFORE PROCEEDING WITH THE WORK.

G2. ALL DIMENSIONS RELEVANT TO SETTING OUT AND OFF-SITE WORK SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION AND FABRICATION IS COMMENCED. THE ENGINEERS' DRAWINGS SHALL NOT BE SCALED.

G3. DURING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE STRUCTURE IN A STABLE CONDITION AND ENSURING NO PART SHALL BE OVER STRESSED UNDER CONSTRUCTION ACTIVITIES. TEMPORARY BRACING SHALL BE PROVIDED BY THE CONTRACTOR AS REQUIRED.

G4. WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE RELEVANT CURRENT AUSTRALIAN STANDARDS INCLUDING ALL AMENDMENTS, AND THE LOCAL STATUTORY AUTHORITIES, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

G5. THE APPROVAL OF ANY SUBSTITUTION SHALL BE SOUGHT FROM THE ENGINEER.

G6. ALL DIMENSIONS ARE IN MILLIMETRES UNO. ALL LEVELS ARE EXPRESSED IN METRES.

G7. UNLESS NOTED OTHERWISE ON THESE DRAWINGS, THE STRUCTURAL WORK SHOWN ON THESE DRAWINGS HAS BEEN DESIGNED FOR THE FOLLOWING:
LIVE LOADS & ADDITIONAL DEAD LOADS: (TO AS/NZS 1170.1)

AREA SUBJECT TO LOADING	LIVE LOAD		ADDITIONAL DEAD LOAD
	UNIFORM	POINT	
GENERAL AREAS	5.00 kPa	3.6 kN	2.00 kPa
ROOF AREAS	0.25 kPa	1.4 kN	0.25 kPa

NO ADDITIONAL LOADS SHALL BE ADDED TO THE STRUCTURE UNLESS APPROVED BY A STRUCTURAL ENGINEER

G8. WIND LOADS TO AS/NZS 1170.2 :

WIND REGION	A3
IMPORTANCE LEVEL	2
REGIONAL WIND SPEED (m/s) Vdes.v (ULTIMATE) Vdes.s (SERVICABILITY)	 45 37
TERRAIN CATEGORY	2.0
MULTPLIERS : TERRAIN / HEIGHT MZ.CAT SHIELDING Ms TOPOGRAPHIC Mt DIRECTIONALITY Md	 0.91 1.00 1.00 1.00
DESIGN WIND SPEED (m/s) Vdes.v (ULTIMATE) Vdes.s (SERVICABILITY)	 40.35 33.67

G9. EARTHQUAKE LOADS TO AS 1170.4 :

IMPORTANCE LEVEL	2
PROBABILITY FACTOR Kp	1.0
HAZARD FACTOR Z	0.07
SITE SUB-SOIL CLASS	CLASS Ce
EARTHQUAKE DESIGN CATEGORY	EDC I

G10. SNOW LOADS TO AS 1170.3 :

SNOW REGION	AN
ALTITUDE	1040
ROOF PITCH	15/20
GROUND SNOW Sg (kPa)	1:20 YR = 0.34 kPa
ROOF SNOW Rs (kPa)	1:20 YR = 0.24 kPa

G11. FOR EARTHWORKS AND FOUNDING CONDITIONS REFER TO SITE SPECIFIC GEOTECHNICAL REPORT. ANY DISCREPANCIES BETWEEN THE GEOTECHNICAL REPORT AND THE FOLLOWING NOTES SHALL BE REFERRED TO THE ENGINEER FOR A DECISION BEFORE PROCEEDING WITH THE WORK.

FOOTINGS

F1. STRIP AND PAD FOOTINGS HAVE BEEN DESIGNED FOR A SAFE BEARING VALUE OF 150 kPa U.N.O. FOR BORED PIER BEARING VALUES REFER TO NOTES ON FOOTING PLAN.

F2. FOUNDATION MATERIAL SHALL BE INSPECTED AND APPROVED IN WRITING BY AN ENGINEER FOR THE ABOVE SAFE BEARING PRESSURE BEFORE PLACING CONCRETE.

F3. FOR FOUNDING CONDITIONS REFER TO GEOTECHNICAL INVESTIGATION REPORT AS NOTED ON FOOTING PLAN

F4. SLABS ON GROUND HAVE BEEN DESIGNED FOR MIN. CBR 5 IN ACCORDANCE WITH CEMENT & CONCRETE ASSOCIATION, CONCRETE INDUSTRIAL FLOOR & PAVEMENT DESIGN, U.N.O.

FORMWORK

FW1. THE DESIGN, CERTIFICATION, CONSTRUCTION, INSPECTION AND PERFORMANCE OF THE FORMWORK AND FALSE WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, EXCEPT TO THE EXTENT THAT FORMWORK DESIGN IS SHOWN ON THE STRUCTURAL DRAWINGS.

FW2. FORMWORK SHALL BE DESIGNED TO ACCOMMODATE MOVEMENTS AND LOAD RE-DISTRIBUTION DUE TO ANY POST TENSIONING.

FW3. THE FORMWORK SHALL NOT BE DESIGNED TO RELY ON RESTRAINT OR SUPPORT FROM THE PERMANENT STRUCTURE WITHOUT PRIOR APPROVAL FROM THE STRUCTURAL ENGINEER.

FW4. DESIGN INFORMATION FOR THE FOUNDATIONS UNDER THE FORMWORK SHALL BE DETERMINED FROM THE CONDITIONS EXISTING ON SITE AT THE TIME OF CONSTRUCTION. REFER TO THE GEOTECHNICAL REPORT FOR THE SITE.

FW5. FORMWORK CONSTRUCTION TOLERANCES AND STRIPPING TIMES SHALL COMPLY WITH AS3610 AND AS3600 UNLESS OTHERWISE APPROVED BY THE STRUCTURAL ENGINEER.

FW6. DURING CONSTRUCTION, SUPPORT PROPPING WILL BE REQUIRED WHERE LOADS FROM STACKED MATERIALS, FORMWORK AND OTHER SUPPORTED SLABS INDUCE LOADS IN A SLAB OR BEAM WHICH EXCEED THE DESIGN CAPACITY FOR STRENGTH OR SERVICEABILITY LIMIT STATES AT THAT AGE. ONCE THE NOMINATED 28 DAY STRENGTH HAS BEEN ATTAINED, THESE LOADS SHALL NOT EXCEED THE DESIGN SUPERIMPOSED LOADS SET OUT IN THESE GENERAL NOTES.

FW7. IT IS TO BE ANTICIPATED IN MULTI-STOREY CONSTRUCTION THAT PROPPING MAY BE REQUIRED TO EXTEND A NUMBER OF LEVELS BELOW THE FLOOR BEING CAST. PROP REMOVAL IS TO BE PROGRAMMED TO AVOID DISTRESS TO PREVIOUSLY CAST FLOORS. RE-SHORING OR BACK-PROPPING PROPOSALS SHALL BE SUBJECT TO THE APPROVAL OF THE STRUCTURAL ENGINEER.

FW8. FORMED CONCRETE SURFACES SHALL HAVE FINISHES IN ACCORDANCE WITH AS3610, AS SPECIFIED BY THE PROJECT ARCHITECT.

FW9. DO NOT PLACE PERMANENT LOADS ON THE CONCRETE STRUCTURE UNTIL AFTER FORMWORK AND PROPPING IS REMOVED

FW10. REFER TO PROJECT ARCHITECT'S DRAWINGS FOR TEST PANEL REQUIREMENTS. REINFORCEMENT FOR TEST PANELS SHALL BE SIMILAR TO THAT IN THE PERMANENT STRUCTURE BEING REPRESENTED BY THE TEST PANEL.

FW11. BEFORE PLACING REINFORCEMENT IN THE FORMWORK, APPLY A RELEASE AGENT TO THE FACE OF THE FORMWORK COMPATIBLE WITH THE REQUIRED SURFACE FINISH.

FW12. DIMENSIONAL TOLERANCES SHALL COMPLY WITH AS3610 FOR THE APPROPRIATE FINISH CLASS.

FW13. CHAMFER RE-ENTRANT ANGLES AND FILLET AT CORNERS BY 25mm U.N.O.

FW14. BEFORE PLACING CONCRETE, REMOVE ALL WATER, DUST, AND DEBRIS FROM THE FORMWORK.

FW15. FILL ALL HOLES LEFT BY FORM TIE BOLTS WITH MORTAR MATCHING THE SURFACE COLOUR OF THE FINISHED SURFACE.

RETAINING WALLS

RW1. DO NOT BACKFILL RETAINING WALLS (OTHER THAN CANTILEVER WALLS) UNTIL FLOOR CONSTRUCTION AT TOP AND BOTTOM IS COMPLETED.

RW2. ENSURE FREE DRAINING BACKFILL AND SUB-SOIL DRAINAGE IS IN PLACE BEHIND ALL RETAINING WALLS WITH SUITABLE PROTECTION.

RW3. WATERPROOFING - REFER TO WATERPROOFING NOTES.

STRUCTURAL STEELWORK

S1 ALL WORKMANSHIP AND MATERIAL SHALL BE IN ACCORDANCE WITH AS 4100 EXCEPT WHEN VARIED BY THE CONTRACT DOCUMENTS. FABRICATION SHALL BE CARRIED OUT IN ACCORDANCE WITH SECTION 14 OF AS 4100. ERECTION SHALL BE CARRIED OUT IN ACCORDANCE WITH SECTION 15 OF AS 4100.

S2 UNLESS NOTED OTHERWISE ALL STEEL SHALL BE OF THE FOLLOWING GRADE IN ACCORDANCE WITH THE FOLLOWING AUSTRALIAN STANDARDS.

TYPE OF STEEL	AUSTRALIAN STANDARD	GRADE
UNIVERSAL BEAMS & COLUMNS, PARALLEL FLANGE CHANNELS & LARGE ANGLES	AS/NZS 3679.1	300
WELDED SECTION	AS/NZS 3679.2	300
HOT MILLED PLATES, FLATS, FLOOR PLATES, SMALL ANGLES & SLABS	AS/NZS 3678	250
CIRCULAR HOLLOW SECTIONS	AS 1163	C350 OR 450 ACCORDING TO SECTION DESIGNATION
COLD FORMED PURLINS & GIRTS	AS 1397	G450 Z350

PROVIDE CERTIFICATES OF COMPLIANCE FOR ALL STEELWORK TO THE STRUCTURAL ENGINEER IF REQUIRED.

S3 WELDING
ALL WELDING SHALL COMPLY WITH AS 1554.
FILLET WELDS SHALL BE 6mm CONTINUOUS, CATEGORY SP USING E49XX ELECTRODES OR EQUIVALENT, UNLESS NOTED OTHERWISE. BUTT WELDS SHALL BE COMPLETE PENETRATION BUTT WELDS CATEGORY SP TO AS 1554.1.

S4 WELD TESTING
THE EXTENT OF NON-DESTRUCTIVE WELD EXAMINATION SHALL BE AS NOTED BELOW. RADIOGRAPHIC OR ULTRASONIC EXAMINATION SHALL BE TO AS 1554.1, AS 2177.1 AND AS 2207 AS APPROPRIATE.

TYPE OF WELD & CATEGORY	EXAMINATION METHOD	EXTENT (% OF TOTAL LENGTH OF WELD TYPE)
FILLET WELDS, GP+SP	VISUAL INSPECTION	100%
BUTT WELDS, GP	VISUAL INSPECTION	100%
BUTT WELDS, SP	VISUAL INSPECTION	100%
	RADIOGRAPHIC OR ULTRASONIC INSPECTION	0 - 10%

S5 BOLTS SHALL BE M20 UNLESS NOTED OTHERWISE.
BOLTS SHALL BE 8.8/S UNLESS NOTED OTHERWISE.
ALL BOLTS, NUTS AND WASHERS SHALL BE GALVANISED TO AS 1214. COLUMN HOLDING DOWN BOLTS, CAST IN PLACE, SHALL BE 4.6/S UNLESS NOTED OTHERWISE.

COLUMN HD BOLT	EMBED IN CONCRETE	COG	CONCRETE EDGE DISTANCE MINIMUM
M16 4.6/S	250	50	160
M20 4.6/S	300	75	200
M24 4.6/S	400	100	260

COGS MAY BE REPLACED BY CROSS BRACING OF HD BOLT ASSEMBLIES

S6 BOLTS DENOTED 4.6/S ARE COMMERCIAL BOLTS OF STRENGTH GRADE 4.6 TO AS 1111, SNUG TIGHT.

S7 BOLTS DENOTED 8.8/S, 8.8/TF AND 8.8/TB ARE HIGH STRENGTH STRUCTURAL BOLTS OF STRENGTH GRADE 8.8 TO AS 1252.
- 8.8/S DENOTES BOLTS SNUG-TIGHT
- 8.8/TF AND 8.8/TB DENOTES BOLTS FULLY TENSIONED TO AS 4100
- 8.8/TF DENOTES FRICTION JOINT
- 8.8/TB DENOTES BEARING JOINT

S8 LOAD INDICATOR WASHERS MAY BE USED UNDER THE BOLT HEAD FOR ALL 8.8/TF AND 8.8/TB BOLTS. PROVIDE A 75mm COLOUR FLASH AT THESE CONNECTIONS. PART-TURN METHOD MAY BE USED TO TENSION BOLTS

S9 BOLT HOLES AND WASHERS - TYPICAL FOR UP TO M24 (UNLESS SHOWN OTHERWISE ON DRAWINGS).
S9.1 TYPICAL CONNECTIONS

CONNECTION TYPE	BOLT HOLES SHALL BE ROUND. SIZE = BOLT DIAMETER PLUS:	WASHERS	
		BOLT TYPE	WASHERS - HOT DIP GALVANISED TO AS 1214
STEEL TO STEEL	2mm	4.6/S	TO AS 1111 (37 OD x 3mm THICK FOR M20)
		8.8/S	TO AS 1252 (39 OD x 4mm NOMINAL THICK FOR M20)
		8.8/TF	TO AS 1252 (39 OD x 4mm NOMINAL THICK FOR M20) PLUS LOAD INDICATOR WASHERS UNDER BOLT HEAD IF REQUIRED
		8.8/TB	
STEEL TO CONCRETE	4mm		MINIMUM 4mm THICK PLATE WASHER
COLUMN BASE PLATES	6mm	M20 4.6/S	45 x 45 x 4mm PLATE WASHER
		M24 4.5/S	50 x 50 x 5mm PLATE WASHER

S9.2 CONNECTIONS TO TILT UP CONCRETE WALL PANELS. FOR CONNECTIONS TO CAST IN FERRULES IN TILT UP WALL PANELS, BOLT HOLES SHALL BE 6mm OVERSIZE WIDE x LONG SLOTTED HOLES (UNLESS SHOWN OTHERWISE ON DRAWINGS).

BOLT	HOLE SIZE	WASHER - TO COMPLETELY COVER SLOTTED HOLE
M20 8.8/S	26 WIDE x 50mm	75 x 75 x 8mm PLATE WASHER

S9.3 SLOTTED HOLES FOR STEEL TO STEEL CONNECTIONS

TYPE	HOLE SIZE		WASHERS
	WIDTH	LENGTH	
SHORT SLOTTED HOLES	2mm OVERSIZE	BOLT DIAMETER + 10mm	PROVIDE HARDENED OR PLATE WASHER UNDER BOTH BOLT & NUT
LONG SLOTTED HOLES	2mm OVERSIZE	2.5 x BOLT DIAMETER	MINIMUM WASHER THICKNESS 8mm.WASHER SHALL COMPLETELY COVER THE LONG SLOTTED HOLE. PROVIDE WASHER UNDER BOTH BOLT AND NUT

S9.4 ENGINEER TO BE ADVISED OF ANY HOLE MODIFCATIONS MADE ON SITE.

S10 CONNECTIONS
CONNECTION DETAILS SHOWN ON STRUCTURAL DRAWINGS ARE TYPICAL ONLY. WHERE A DETAIL IS NOT SHOWN THE ENGINEEER SHALL BE REQUESTED TO PROVIDE DETAILS. CONNECTIONS SHALL HAVE AT LEAST TWO BOLTS. ALL COSTS & THE IMPLICATIONS ASSOCIATED WITH THESE WORKS ARE TO BE ALLOWED FOR BY THE CONTRACTOR.

S11 ALL PLATES AND STIFFENERS SHALL BE 10mm THINK U.N.O.
- PURLIN & GIRT CLEATS SHALL BE 8mm THICK U.N.O.

S12 CO-ORDINATION
THE CONTRACTOR SHALL MAKE THE NECESSARY ALLOWANCES FOR CO-ORDINATING ALL ARCHITECTURAL & STRUCTURAL ELEMENTS IN THE PREPARATION OF STRUCTURAL STEELWORK SHOP DRAWINGS & SUBSEQUENT FABRICATION AND ERECTION.

S13 PROVIDE ALL THE NECESSARY PURLIN, GIRT AND TRIMMING ELEMENTS AS REQUIRED TO SUPPORT ALL ROOF & WALL SHEETING/CLADDING, EDGES, VALLEYS, HIPS & PENETRATIONS.

STRUCTURAL STEELWORK (cont'd)

S14 PURLINS & GIRTS SHOULD BE THE STANDARD LYSAGHT SECTION SIZES OR APPROVED, INSTALLED IN ACCORDANCE WITH MANUFACTURER'S WRITTEN DIRECTIONS. USE WASHERS UNDER BOLT HEAD & NUT OR SPECIFICALLY SHAPED BOLTS & NUTS. PURLIN BOLTS SHALL BE:
- M12 4.6/S FOR SECTIONS UP TO 250 DEEP U.N.O.
- M16 4.6/S FOR SECTION OVER 250 DEEP U.N.O.

S15 CORROSION PROTECTION
THE FOLLOWING ARE THE MINIMUM REQUIREMENTS FOR PROTECTIVE TREATMENT U.N.O. ON THE DRAWINGS. REFER TO THE ARCHITECTURAL SPECIFICATIONS FOR EXTRA FINISH COATS & COLOURS. ALL COATINGS TO BE COMPATIBLE WITH APPLIED FINISHES INCLUDING TOP COAT & ANY FIRE PROTECTION COATING. PAINT REPAIRS SHALL BE CARRIED OUT TO GIVE THE SAME LEVEL OF PROTECTION AS THE ORIGINAL TREATMENT. ALL PAINT & REPAIRS SHALL COMPLY WITH ANY SPECIFIED WARRANTY.

INTERNAL ENVIRONMENTS (EXCLUDING SPECIAL ENVIRONMENTS)

MEMBER	SURFACE PREPARATION TO AS 1627	PRIMER	TOP COAT
ALL U.N.O.	POWER TOOL CLASS 1 OR ABRASIVE BLAST CLASS 1	OXIDE ZINC PHOSPHATE 75mm	TO ARCHITECT'S SPECIFICATIONS

EXTERNAL ENVIRONMENTS

MEMBER	PAINT SYSTEM TO AS/NZS 2312 TABLE 6.3	
ALL EXTERNAL STRUCTURAL STEEL	CORROSIVITY CATEGORY	LIFE SPAN (YEARS)
	B	25+

HOT DIP GALVANISING
UNLESS SPECIFIED OTHERWISE, UNDER ALL EXTERNAL ENVIRONMENTS ALL STRUCTURAL STEELWORK WHICH IS EXPOSED, OR IS IN CONTACT WITH EXPOSED BRICKWORK, AND ALL LINTELS SHALL BE HOT-DIP GALVANISED AFTER FABRICATION TO AS 4680.

MEMBER	HOT-DIP GALVANISED TO AS 4680
EXTERNAL NOT VISUALLY EXPOSED	NORMAL FINISH
EXTERNAL VISUALLY EXPOSED	ARCHITECTURAL GRADE FINISH

S16 ALL BOLTS, NUTS & WASHERS, INCLUDING HOLDING-DOWN BOLTS SHALL BE GALVANISED TO AS 1214.

S17 CONCRETE-ENCASED STEELWORK TO BE WRAPPED WITH F41 MESH HAVING 50mm MINIMUM COVER OF CONCRETE GRADE N25 TO AS 3600.

S18 PROVIDE SEAL PLATES TO ENDS OF ALL HOLLOW SECTIONS (WITH HOT-DIP VENT HOLES IF SECTION IS TO BE HOT DIP GALVANISED).

S19 ROOF BRACING TO BE HOOK BOLTED TO THE ROOF PURLINS, OR SIMILAR, SO THAT BRACING IS STRAIGHT. BOLTS FOR HANGING DUCTS AND PIPES ETC FROM PURLING SHALL BE ATTACHED TO THE WEB OF THE PURLIN, NOT THE FLANGE.

S20 BASE PLATES SHALL BE GROUTED BEFORE MEMBER IS SUBSTANTIALLY LOADED. GROUT SHALL HAVE MINIMUM STRENGTH F'C OF 40MPa AND SHALL BE DRYPACK MORTAR, RAMMED IN OR AN APPROVED NON-SHRINK GROUT.

S21 ALL STEELWORK IS TO BE TEMPORARILY BUT SECURELY BRACED UNTIL ALL FINAL BRACING, CLADDING AND STABILISING BRICK OR BLOCKWORK HAS BEEN COMPLETED.

S22 SHOP DRAWING SHALL BE PREPARED BY THE FABRICATOR FOR ALL STRUCTURAL STEELWORK. A 3D MODEL OF THE STRUCTURAL STEEL SHALL BE SUPPLIED TO THE ENGINEER FOR REVIEW WITH THE SHOP DRAWINGS. THE 3D MODEL SHALL BE SUPPLIED IN AUTOCAD FORMAT OR IN A FORMAT THAT CAN BE VIEWED USING AN ONLINE VIEWER SUCH AS TEKLA VIEWER.

S23 THE CONTRACTOR SHALL SUBMIT 1 SET OF PDF WORKSHOP DRAWINGS TO THE ENGINEER FOR STRUCTURAL REVIEW.

S24 DO NOT FABRICATE STEELWORK UNTIL WORKSHOP DRAWINGS ARE APPROVED.

S25 ALL CHEMICAL ANCHORS SHALL BE APPROVED BY A STRUCTURAL ENGINEER.

MASONRY

M1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS 3700.

M2. THE CHARACTERISTIC COMPRESSIVE STRENGTH OF MASONRY (f'uc) = 24 MPa

M3. THE DURABILITY REQUIREMENTS OF MASONRY SHALL BE AS FOLLOWS;

DURABILITY REQUIREMENTS			
MORTAR	SALT ATTACK RESISTANCE GRADE	BUILT IN COMPONENT	MIN. COVER TO REINFORCEMENT & TENDONS IN GROUTED CAVITIES
M2	Protected	R1 (Galv'd 300 g/m² each side)	5
M3	General Purpose	R3 (Galv'd 470 g/m² each side)	15
M4	Exposure	R4 (Stainless)	30

M4 ALL MASONRY WALLS SUPPORTING SLABS AND BEAMS SHALL HAVE A PRE-GREASED TWO LAYER GALVANISED STEEL SLIP JOINT BETWEEN CONCRETE AND MASONRY.

M5 ALL MASONRY WALLS SUPPORTING OR SUPPORTED BY CONCRETE FLOORS SHALL BE PROVIDED WITH VERTICAL JOINTS TO MATCH ANY CONTROL JOINTS IN THE CONCRETE.

M6 NON LOAD BEARING WALLS SHALL BE SEPARATED FROM CONCRETE ABOVE BY 20 mm THICK CLOSED CELL POLYTHYLENE STRIP.

M7 MASONRY SHALL BE ARTICULATED IN ACCORDANCE WITH TECHNICAL NOTE 61 FROM THE CEMENT AND CONCRETE ASSOCIATION OF AUSTRALIA. VERTICAL CONTROL JOINTS SHALL NOT EXCEED 5 METRES MAXIMUM CENTRES, AND 4 METRES MAXIMUM FROM CORNERS IN MASONRY WALLS, AND BETWEEN NEW & EXISTING BRICKWORK.

M8 MASONRY RETAINING WALLS ARE TO BE BACKFILLED WITH EITHER OF THE FOLLOWING MATERIAL:
- COARSE GRAINED SOIL WITH LOW SILT CONTENT
- RESIDUAL SOIL CONTAINING STONES
- FINE SILTY SAND
- GRANULAR MATERIALS WITH LOW CLAY CONTENT

M9 UNLESS OTHER SUPPORT IS SPECIFIED, BUILD IN DURABILITY GRADE R4 LINTELS TO SUPPORT BRICKWORK OVER OPENNGS, ONE TO EACH LEAF OF WALL, AND CONFORMING TO THE FOLLOWING TABLE;

SPAN	LINTEL SIZE	MIN END BEARING
UP TO 900	75 x 6.0 EA	100
OVER 900 - 1800	100 x 100 x 6 (EA)	150
OVER 1800 - 3000	150 x 100 x 10 (UA)	150
MAXIMUM HEIGHT OF BRICKWORK OVER LINTEL = 1000		
ALL EXTERNAL LINTELS TO BE HOT DIPPED GALVANISED		

WATERPROOFING REQUIREMENTS

W1. TO ACHIEVE WATERPROOF PROPERTIES A FLEXIBLE MEMBRANE OR OTHER APPROVED PRODUCT SHALL BE USED IN STRICT ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. WATERPROOFING IS TO BE USED IN THE FOLLOWING AREAS OR AS SPECIFIED;
- CONCRETE ROOF
- CONCRETE BALCONIES
- EXPOSED COLUMNS
- LIFT PIT AND LIFT WALL TO GROUND LEVEL
- BALANCE & BACKWASH TANKS
- CONCRETE & BLOCKWORK RETAINING WALLS

W2. GENERALLY WATERPROOFING TO BE IN ACCORDANCE WITH THE ENGINEER'S AND CLIENT'S REQUIREMENTS.

W3. ALL WATERPROOFING SYSTEMS TO BE PROVIDED BY SUITABLY QUALIFIED EXPERTS OR SUPPLIERS.

REINFORCED CONCRETE

C1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600 CURRENT EDITION WITH AMENDMENTS, EXCEPT WHERE VARIED BY THE CONTRACT DOCUMENTS.

C2. CONCRETE COMPONENTS AND QUALITY SHALL BE AS FOLLOWS U.N.O:

ELEMENT	SLUMP mm	MAX. SIZE AGG. mm	CEMENT TYPE	f'c AT 28 DAYS - MPa	ADMIXTURE
FOOTINGS	80	20	A	25	-
PIERS & CAPS	80	20	A	32	-
SLABS ON GROUND	80	20	A	32	-
SUSPENDED SLABS	80	20	A	40	-
WALLS & COLUMNS	80	10	A	40	-

C3. MINIMUM CLEAR CONCRETE COVER TO REINFORCEMENT INCLUDING TIES AND STIRRUPS SHALL BE AS FOLLOWS UNO.

EXPOSURE CLASSIFICATION	MINIMUM COVER (mm) CONCRETE STRENGTH (f'c)				
	20 MPa	25 MPa	32 MPa	40 MPa	>50 MPa
A1	20	20	20	20	20
A2	(45)	30	20	20	20
B1	-	(45)	30	25	20
B2	-	-	(50)	35	25
C1	-	-	-	(60)	45

FOR BRACKETED FIGURES REFER TO AS 3600 CURRENT EDITION TABLE 4.10.3.2

C4. MINIMUM COVER FOR FIRE RESISTANCE LEVEL (FRL) SHALL BE AS FOLLOWS;

MINIMUM ELEMENT WIDTH OR THICKNESS / MIN COVER (mm)				
FRL	BEAM	SLAB	COLUMN	WALL
60	125 / 40	150 / 20	200 / 25	120 / 20
90	150 / 55	200 / 25	250 / 35	140 / 35
120	200 / 65	200 / 35	350 / 45	160 / 40
180	250 / 80	200 / 45	400 / 60	200 / 45
240	280 / 90	200 / 50	450 / 70	250 / 50

NOTE : 1. REFER TO AS 3600 CURRENT EDTION FOR REDUCED COVERS IF GREATER ELEMENT THICKNESSES ARE ADOPTED FOR BEAMS & COLUMNS.
2. COVER IS MEASURED TO THE MAIN REINFORCEMENT

C5. COVER TO REINFORCEMENT SHALL BE OBTAINED BY THE USE OF APPROVED BAR CHAIRS. ALL CHAIRS SHALL BE SPACED AT 1000 CTS MAXIMUM.

C6. ALL CONCRETE SHALL BE MECHANICALLY VIBRATED. VIBRATORS SHALL NOT BE USED TO SPREAD CONCRETE.

C7. SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.

C8. NO HOLES OR CHASES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DRAWINGS SHALL BE MADE IN CONCRETE MEMBERS WITHOUT THE PRIOR APPROVAL OF THE ENGINEER.

C9. CONSTRUCTION JOINTS WHERE NOT SHOWN SHALL BE LOCATED TO APPROVAL OF THE ENGINEER. ALL CONSTRUCTION JOINTS SHALL BE SCABBLED OVER THE WHOLE FACE AND ANY UNSOUND MATERIAL REMOVED.

C10. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY; IT IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.

C11. SPLICES IN REINFORCEMENT SHALL BE MADE ONLY IN THE POSITIONS SHOWN OR AS APPROVED BY THE ENGINEER. WHERE THE LAP LENGTH IS NOT SHOWN IT SHALL BE SUFFICIENT TO DEVELOP THE FULL STRENGTH OF THE REINFORCEMENT AS SPECIFIED IN AS3600. COGS AND HOOKS SHALL BE STANDARD UNLESS SHOWN OTHERWISE.

C12. WELDING OF REINFORCEMENT WILL NOT BE PERMITTED UNLESS SHOWN ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE ENGINEER.

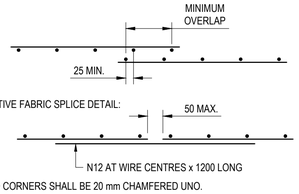
C13. PIPES OR CONDUITS SHALL NOT BE PLACED WITHIN THE CONCRETE COVER TO REINFORCEMENT WITHOUT THE APPROVAL OF THE ENGINEER.

C14. REINFORCEMENT SYMBOLS:

N - DENOTES DEFORMED GRADE 500 NORMAL DUCTILITY REINFORCING BARS TO AS/NZS 4671.
R - DENOTES PLAIN ROUND GRADE 250 NORMAL DUCTILITY REINFORCING BARS TO AS/NZS 4671.
SL - DENOTES DEFORMED GRADE 500 LOW DUCTILITY REINFORCING MESH TO AS/NZS 4671.
RL - DENOTES DEFORMED GRADE 500 LOW DUCTILITY REINFORCING MESH TO AS/NZS 4671.
L--TM - DENOTES DEFORMED GRADE 500 LOW DUCTILITY TRENCH MESH TO AS/NZS 4671.

C15. ALL REINFORCING FABRIC SHALL COMPLY WITH AS1303 AND AS1304 AND SHALL BE SUPPLIED IN FLAT SHEETS.

C16. SPLICES IN FABRIC: THE OUTERMOST TRANSVERSE WIRES SHALL BE OVERLAPPED BY AT LEAST THE SPACING OF THESE TRANSVERSE WIRES PLUS 25 mm.



C17. EXPOSED CORNERS SHALL BE 20 mm CHAMFERED UNO.

C18. ALL REINFORCEMENT SHALL BE INSPECTED BY THE SUPERINTENDENT OR ENGINEER PRIOR TO PLACING CONCRETE.

C19. ALL SLAB CONCRETE TO BE CURED IN AN APPROVED MANNER FOR A MINIMUM OF 7 DAYS.

C20. ALL FORMWORK AND PROPS FOR SLABS AND BEAMS SHALL BE REMOVED BEFORE CONSTRUCTION OF ANY MASONRY WALLS OR PARTITIONS ON THE FLOOR.

C21. ALL ABBREVIATIONS ARE IN ACCORDANCE WITH AS1100.

C22. EACH FLOOR SHALL BE FULLY PROPPED TO THE FLOOR BELOW IN ACCORDANCE WITH AS3610 (FORMWORK CODE).

C23. THE FLOOR BELOW SHALL BE BACKPROPPED PROPPED THROUGH A MINIMUM OF TWO STOREYS BELOW. THIS RESULTS IN A MINIMUM OF THREE STOREYS PROPPED AT ALL TIMES.

C24. PROPS MAY BE REMOVED AFTER 28 DAYS OF CURING OR AFTER 14 DAYS IF THE CONCRETE HAS REACHED ITS CHARACTERISTIC STRENGTH (AS PROVED BY CYLINDER TEST RESULTS).

PROPOSED WORKSHOP
21 Waller Ave, Armidale NSW
STRUCTURAL DOCUMENTATION

ISSUED FOR APPROVAL
A1 ORIGINAL SIZE

REVISION	DATE	AMENDMENT DESCRIPTION
B	07.03.22	ISSUED FOR APPROVAL
A	09.02.22	ISSUED FOR APPROVAL

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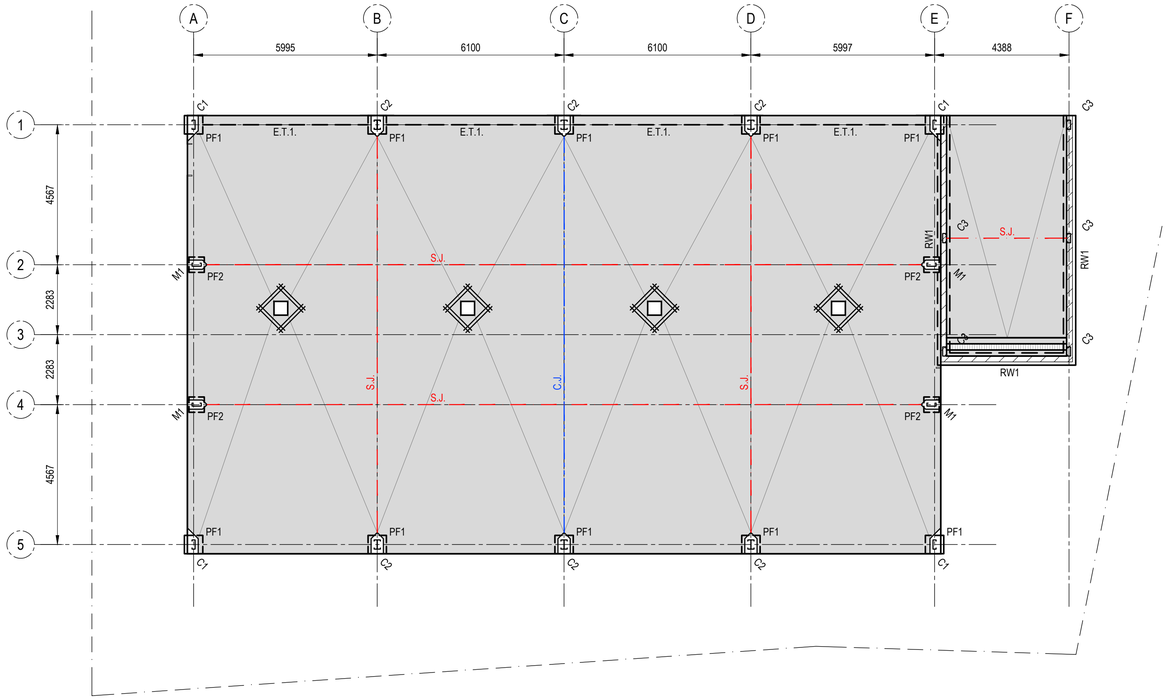
PROPOSED WORKSHOP
21 Waller Ave, Armidale NSW
For ANE Building Design

GENERAL NOTES - WORKSHOP

DESIGN	DRAWN	DATE	PROJECT No.
SWH	GOH	FEB 2022	10332
CHECKED	APPROVED	SCALE	DRG No.
		-	S201 - B



GROUND FLOOR SLAB & FOOTING PLAN

1:100

DENOTES **200 THICK SLAB ON GROUND** WITH **SL102 MESH TOP** THROUGHOUT OVER **150 COMPACTED SUBBASE LAYER WITH CBR 15% MIN** & PROOF ROLLED SUBGRADE WITH CBR 5% MIN
CONCRETE STRENGTH = **32 MPa**

2-N12 (75 SPACING 1200 LONG) TRIMMERS TOP SHALL BE LOCATED 50 FROM ALL RE-ENTRANT CORNERS, TYPICAL U.N.O.

REINFORCEMENT COVER TO GROUND FLOOR SLAB SHALL BE AS FOLLOWS:
- 40mm - TO UNPROTECTED GROUND
- 40mm - EXTERNAL EXPOSURE
- 30mm - TO A MEMBRANE IN CONTACT WITH GROUND
- 30mm - INTERNAL EXPOSURE

BULK EARTHWORKS

BE1. THE SITE SHALL BE STRIPPED A MINIMUM DEPTH OF 50 mm UNDER PAVEMENTS AND BUILDINGS. ALL EXISTING FILL, ORGANIC MATERIAL, REFUSE AND ROOTS SHALL BE REMOVED.

BE2. AFTER APPROVAL, THE EXCAVATED SUB GRADE LEVEL SHALL BE PROOF ROLLED FOR A MINIMUM OF SIX (6) PASSES USING A VIBRATING ROLLER, MINIMUM DEADWEIGHT TEN TONNES. SOFT, WET AND UNSUITABLE SPOTS SHALL BE REMOVED AND REPLACED BY APPROVED SITE MATERIAL AS DIRECTED BY THE SUPERINTENDENT. THE SUB GRADE SHALL BE COMPACTED TO NOT LESS THAN 100% STANDARD DRY DENSITY RATIO WITHIN ±2% OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH AS1289 5.1.1 AND 5.4.1.

BE3. WHERE FILL IS REQUIRED TO ACHIEVE ROAD PAVEMENT SUB GRADE LEVEL, IT SHALL BE APPROVED RIPPED SANDSTONE, HAVING A MAXIMUM PARTICLE SIZE OF 75 mm UNLESS DIRECTED OTHERWISE. IT SHALL BE PLACED IN 150 mm LOOSE LAYERS AND COMPACTED TO NOT LESS THAN 100% STANDARD DRY DENSITY RATIO WITHIN ±2% OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH AS1289 5.1.1 AND 5.4.1.

BE4. ALL BATTERS SHALL BE 1 IN 4 MAXIMUM UNO.

SUB GRADE PREPARATION

FOR SLABS ON GROUND AND RAFT SLABS.

E1. THE SITE SHALL BE EXCAVATED TO LEVELS SHOWN ON RELEVANT DRAWINGS.

E2. THE SITE SHALL BE STRIPPED TO A MINIMUM DEPTH OF 50 mm TO EXPOSE RESIDUAL MATERIAL PRIOR TO THE FILL OPERATION. ALL EXISTING FILL, ORGANIC MATTER, REFUSE AND ROOTS SHALL BE REMOVED, EXCEPT IF APPROVED ENGINEERED FILL IS PRESENT.

E3. PROOF ROLL THE EXCAVATED AREA BEFORE FILLING. AREAS OF LOCAL SOFTENING REVEALED DURING EXCAVATION OR STRIPPING SHALL BE COMPACTED TO 100% STANDARD DRY DENSITY RATIO TO AS1289 5.1.1.

E4. CLAY MATERIAL FREE OF ORGANIC MATERIAL FROM CUT AREAS MAY BE USED AS ENGINEERING FILL PROVIDED THAT IT HAS BEEN TESTED. ALL IMPORTED SELECTED FILL SHALL BE TESTED AND APPROVED BY THE ENGINEER.

E5. ALL FILL SHALL BE COMPACTED TO NOT LESS THAN 98% STANDARD DRY DENSITY RATIO WITHIN ±2% OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH AS1289 5.1.1 AND 5.4.1.

E6. ALL SELECT ROAD BASE AND HARD-CORE FILLING SHOWN UNDER SLABS ON DRAWINGS SHALL BE COMPACTED TO NOT LESS THAN 98% MODIFIED DRY DENSITY RATIO WITHIN ±2% OF THE OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH AS1289 5.1.1 AND 5.4.1.

E7. ALL FILLING SHALL BE CONDUCTED UNDER THE SUPERVISION OF THE PROJECT GEOTECHNICAL ENGINEER, WHO SHALL SUPPLY CERTIFICATES OF COMPACTION FOR THE SITE.

PAD FOOTING SCHEDULE

TYPE	DIMENSIONS			REINFORCEMENT		CONCRETE
	LENGTH	WIDTH	DEPTH	'X' BARS	'Y' BARS	
PF1	750	750	750	-	-	32 MPa
PF2	600	600	600	-	-	32 MPa

CONCRETE SPECIFICATION - SLABS ON GROUND

	WORKSHOP / WASH BAY
SLAB THICKNESS	200mm
REINFORCEMENT	SL102 MESH TOP
SUBBASE	50 COMPACTED SAND OR CRUSHER DUST
DESIGN SUBGRADE CBR	GREATER THAN OR EQUAL TO 5%
MINIMUM COMPRESSIVE STRENGTH (f'c AT 28 DAYS AS3600)	32 MPa
MINIMUM FLEXURAL STRENGTH (f'cf AT 90 DAYS TO C & CA)	4.36 MPa
MAXIMUM AGGREGATE SIZE	20mm
ADMIXTURES (WHEN APPROVED)	TO AS1478
TYPICAL MAXIMUM DRYING SHRINKAGE (AT 56 DAYS TO AS1012.3)	650 MICROSTRAIN AVERAGE 700 MICROSTRAIN MAXIMUM
NOMINAL SLUMP TO AS1012.3	80 mm
TESTING OF CONCRETE	PROJECT CONTROL TESTING TO A1379 AND AS3600
PLACING	MACHINE OR HAND PLACED
SAW CUTS	SOFT CUT G2000 OR G3000 TO MANUFACTURER'S SPECIFICATIONS
CURING	7 DAYS MINIMUM WITH APPROVED CURING COMPOUND OR MATERIAL
CURING COMPOUND	TO AS3799 90% MINIMUM WATER RETENTION EFFICIENCY INDEX AFTER 72 Hrs.

NOTE: CONCRETE MIX TO BE APPROVED BY ENGINEER PRIOR TO USE

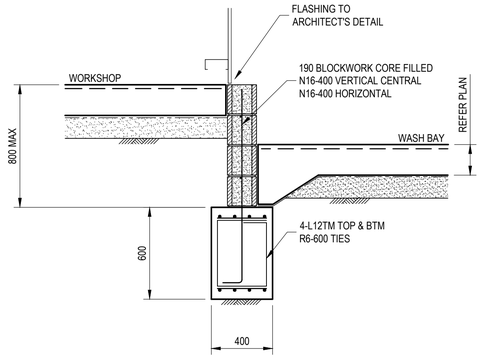
FLOOR LOADING NOTE

WAREHOUSE FLOOR SLAB HAS BEEN DESIGNED BASED ON MAXIMUM BACK-TO-BACK RACKING LOADS OF 3000 kg, OR A MAXIMUM UNIFORMLY DISTRIBUTED LOAD OF 40 kPa.

GROUND FLOOR OFFICE SLAB HAS BEEN DESIGNED FOR A MAXIMUM UNIFORMLY DISTRIBUTED LOAD OF 3.0 kPa.

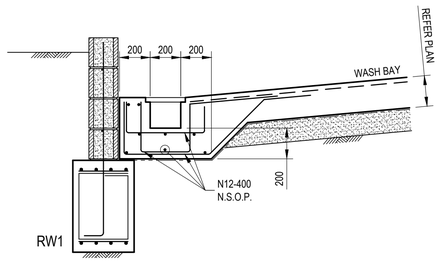
FLOOR FLATNESS NOTE

DEVIATION FROM A STRAIGHT LINE SHALL NOT EXCEED 3mm OVER A LENGTH OF 3000mm. THE LEVEL OF ANY GIVEN POINT SHALL NOT BE MORE THAN 10mm FROM THE SPECIFIED DESIGN LEVEL.



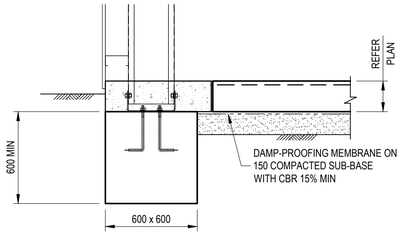
RETAINING WALL RW1 DETAIL

1:20



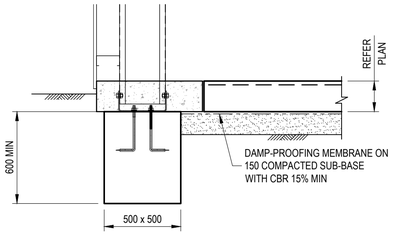
TYPICAL GRATED DRAIN DETAIL

1:20



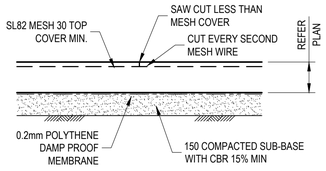
PAD FOOTING PF1

1:20



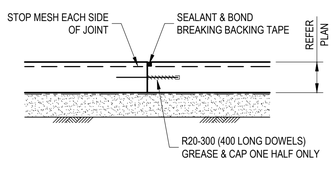
PAD FOOTING PF2

1:20



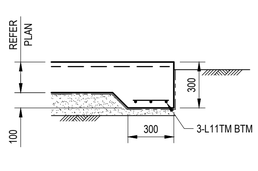
SAWN JOINT (S.J.) DETAIL

1:20



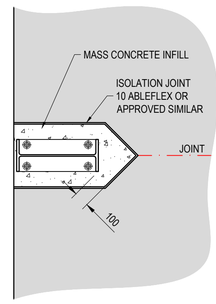
CONSTRUCTION JOINT (C.J.) DETAIL

1:20



EDGE THICKENING (E.T.1.) DETAIL

1:20



TYPICAL ISOLATION JOINT AT COLUMN PLAN DETAIL

1:20

ISSUED FOR APPROVAL

A1 ORIGINAL SIZE

REVISION	DATE	AMENDMENT DESCRIPTION
B	07.03.22	ISSUED FOR APPROVAL
A	09.02.22	ISSUED FOR APPROVAL

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GROUND FLOOR SLAB & FOOTING PLAN & DETAILS

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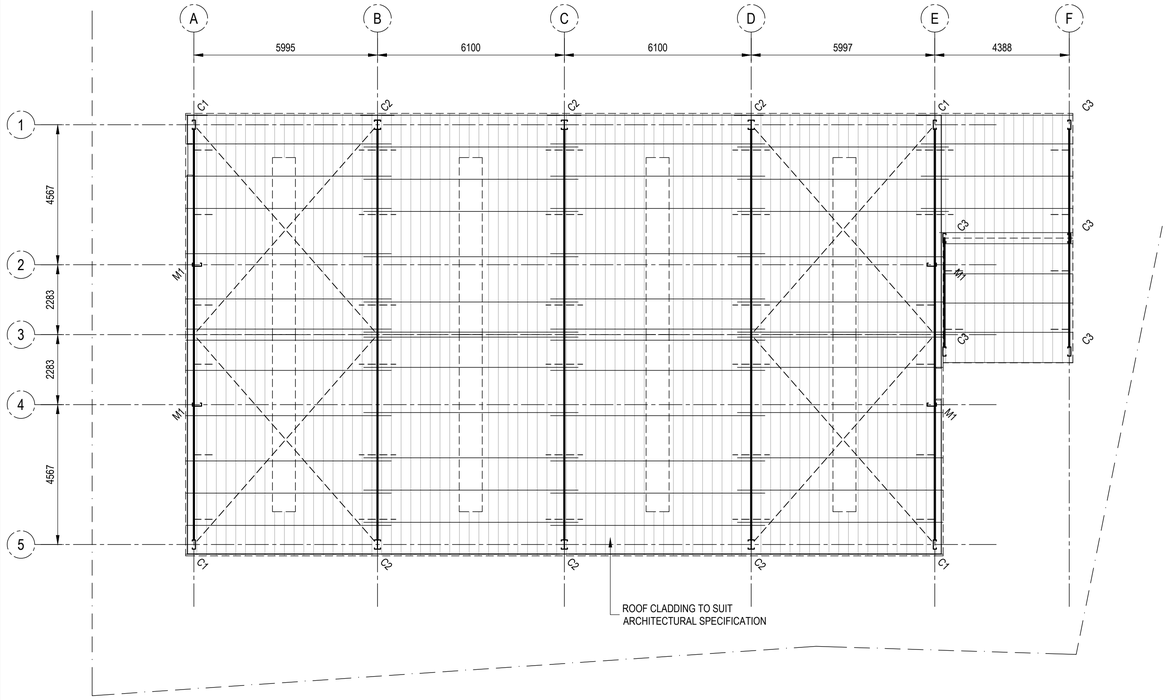
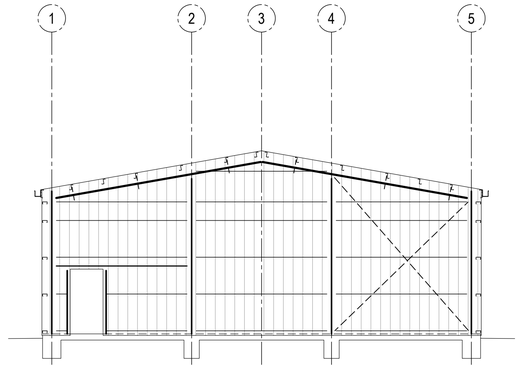
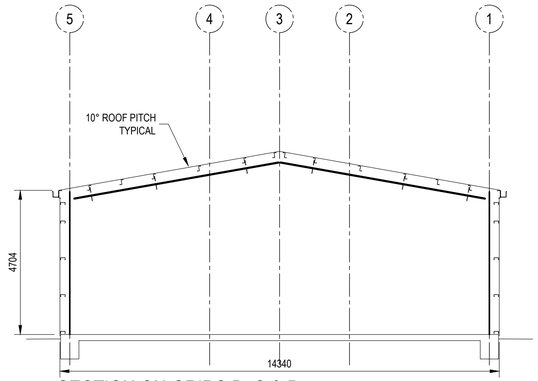
CHECKED	APPROVED	SCALE	DRG No.
		1:100, 1:20	S202 - B





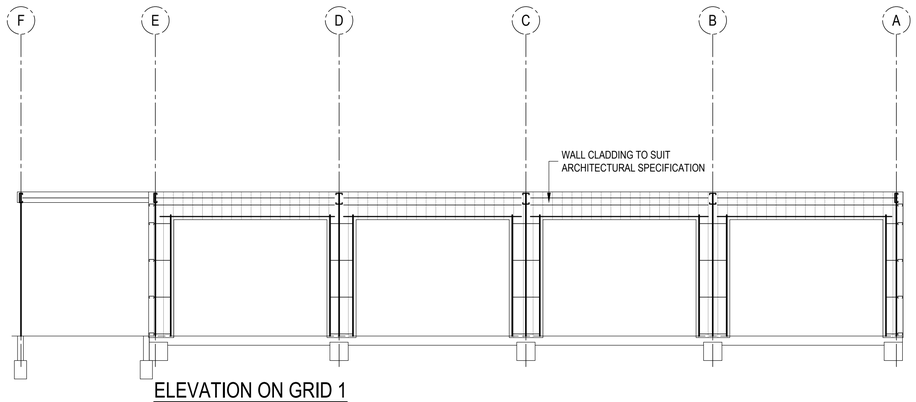
ELEVATION ON GRID A

1:100



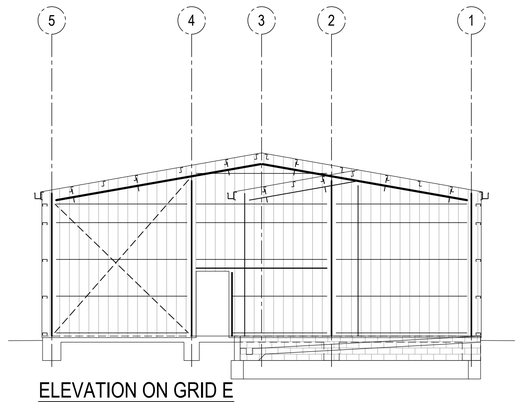
SECTION ON GRIDS B, C & D

1:100



ELEVATION ON GRID 1

1:100



ELEVATION ON GRID E

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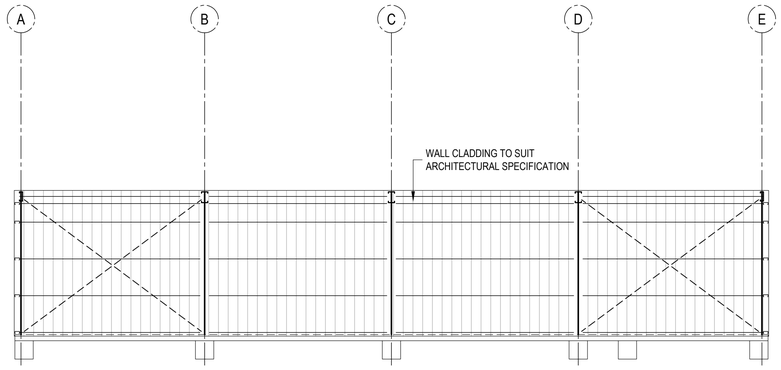

ELEVATION ON GRID 5

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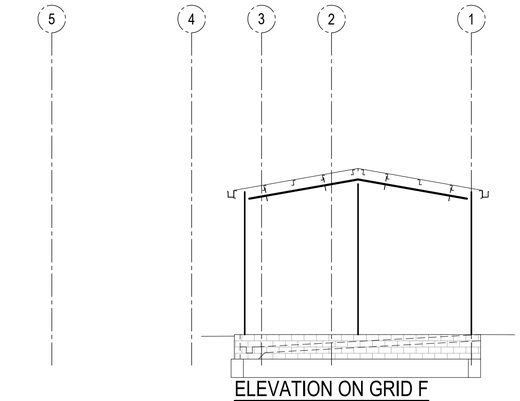

ELEVATION ON GRID F

1:100

SHED PERFORMANCE SPECIFICATION

SHED SHALL BE DESIGNED & CERTIFIED TO MEET LOADING CONDITIONS AS SPECIFIED ON DRAWING S201

FOUNDATONS HAVE BEEN DESIGNED BASED ON PIN BASE PORTAL CONNECTIONS ONLY

NO KNEE OR APEX BRACES (COLLAR TIES) ARE PERMITTED UNLESS APPROVED IN WRITING BY THE CLIENT

CLADDING TO BE IN ACCORDANCE WITH THE ARCHITECTURAL SPECIFICATION

ROLLER DORS SHALL BE ABLE TO RESIST THE FULL DESIGN WIND LOAD

ISSUED FOR APPROVAL

A1 ORIGINAL SIZE

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ROOF FRAMING PLAN & ELEVATIONS

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		1:100	S203 - B