

About Marline Engineering Newcastle

At Marline, we take a comprehensive approach when designing your new development.

With in-house electrical, mechanical and hydraulic engineers, Marline Engineering makes your engineering design needs a breeze. We are able to adjust, implement and create designs on AutoCAD and REVIT which makes it easy for contractors and builders to build our designs.

We advise you on the most affordable, practical and effective solutions and systems based on the site and legal factors.

As consulting engineers, Marline has also expanded the range of services to provide a wide range of building services disciplines including Air-conditioning, Electrical, Hydraulics, Fire Protection and Lift Services.

Marline has seen a huge amount of growth in the Energy sector. We provide services that go above and beyond the standard regulatory requirements and offer unique solutions to your Section J or JV3 Alternative solution reports. We also offer a fast NABERS and BEEC certification that ensures advertising for commercial properties are fully compliant with the CBD advertising rules and regulations.

With engineering consulting experience that dates back as far as 1975, we're one of the best engineering companies in Australia, and have developed the kind of projects that residential and commercial property developers benefit from.

Our Newcastle engineering firm continues to grow, however our team prides itself on every customer receiving the kind of high quality workmanship and personalised service that our company is known for.

To accommodate the expansion and demand for engineering services within Newcastle and throughout New South Wales, Marline Engineering has almost doubled the number of highly trained employees in the last five years.

Our engineering firm currently employs ten engineers, eight technical assistants and an office administrator. As a result, we continue to be leaders amongst engineering companies in Australia, with a large portfolio and a positive attitude.

PROJECT No:  
MN15171

CLIENT:  
CABONNE COUNCIL

ARCHITECT:  
CABONNE COUNCIL

MECHANICAL - ELECTRICAL - HYDRAULIC - FIRE - ENERGY - NABERS - STORMWATER - SECTION J - BEEC

# Mechanical Services

---

## CABONNE HOME SUPPORT REFURBISHMENT

70 GASKILL STREET CANOWINDRA, NSW 2804

### DRAWING SCHEDULE

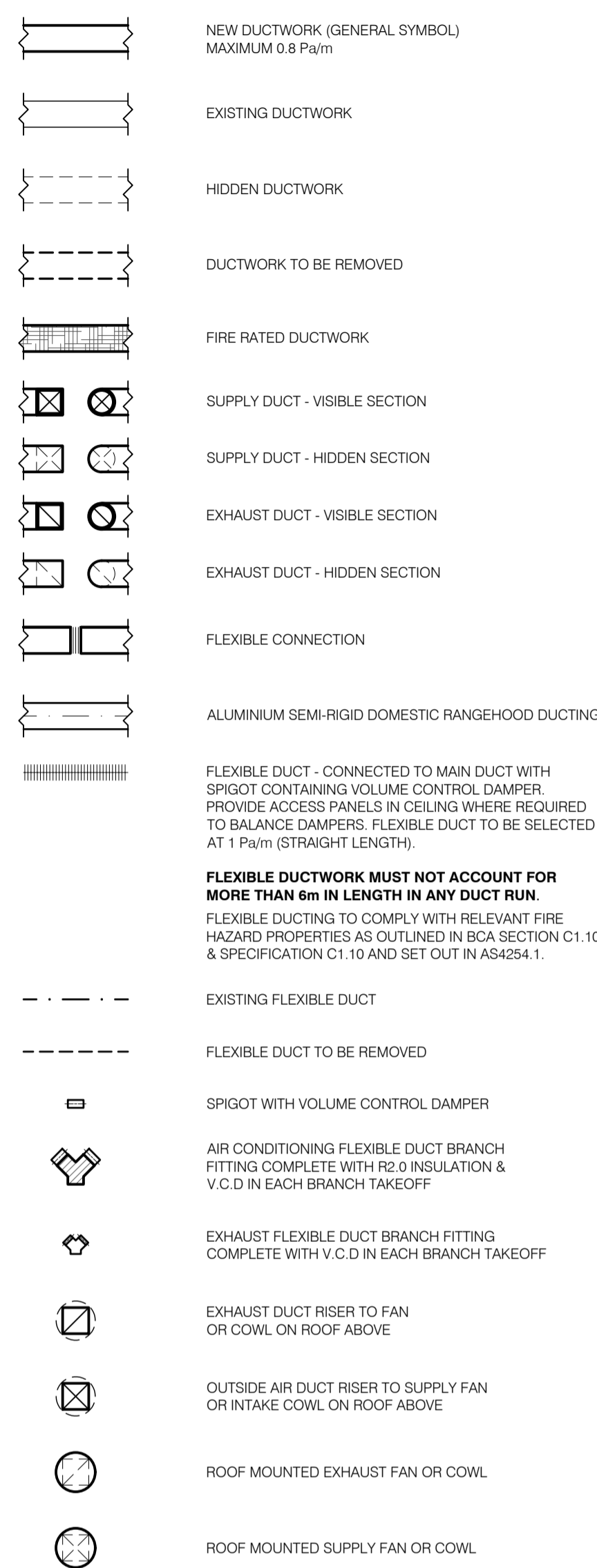
ME-00-000	COVER SHEET
ME-00-001	LEGEND & NOTES
ME-10-001	GROUND FLOOR - AIR CONDITIONING & VENTILATION LAYOUT
ME-10-002	ROOF - AIR CONDITIONING & VENTILATION LAYOUT
ME-30-001	EQUIPMENT SCHEDULES
ME-40-001	DETAILS

**REVISED AS REQUESTED**

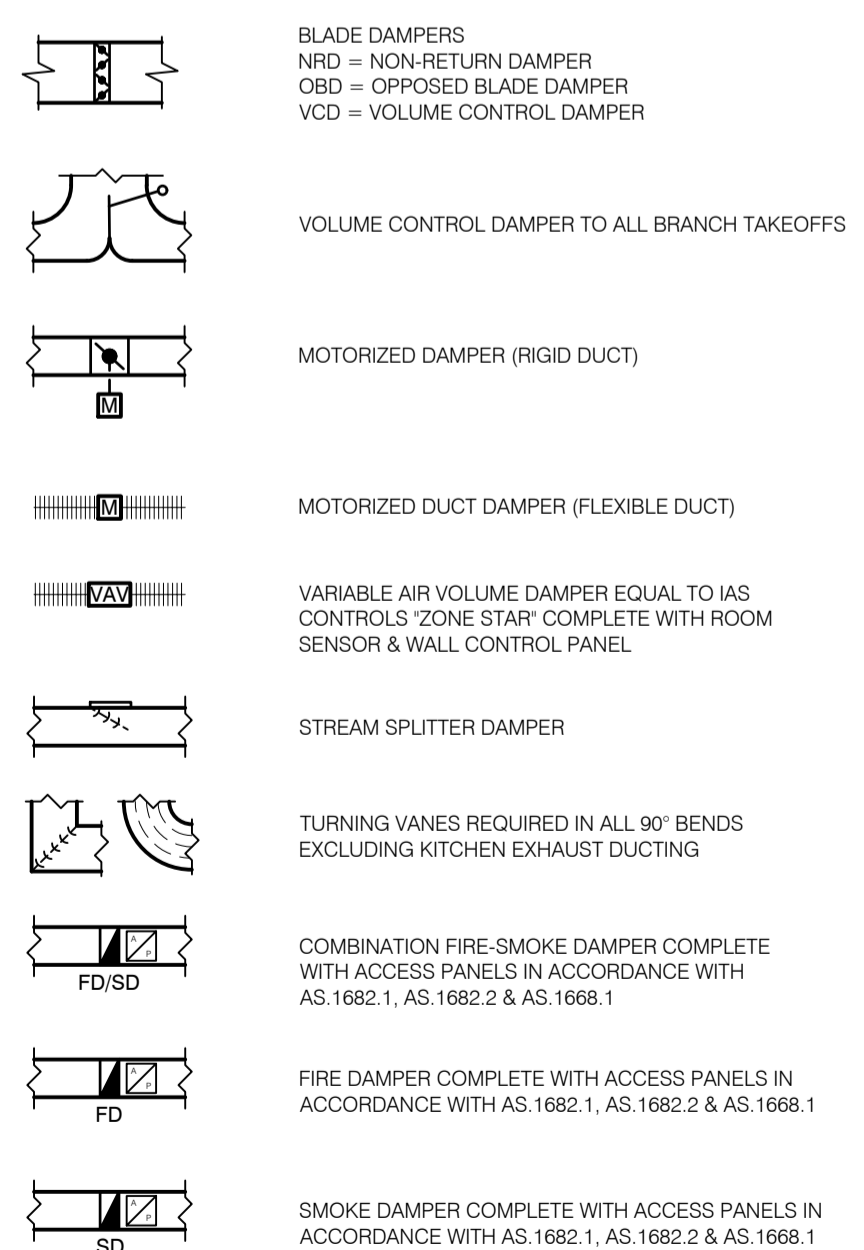
MECHANICAL SERVICES

ME-00-000 3

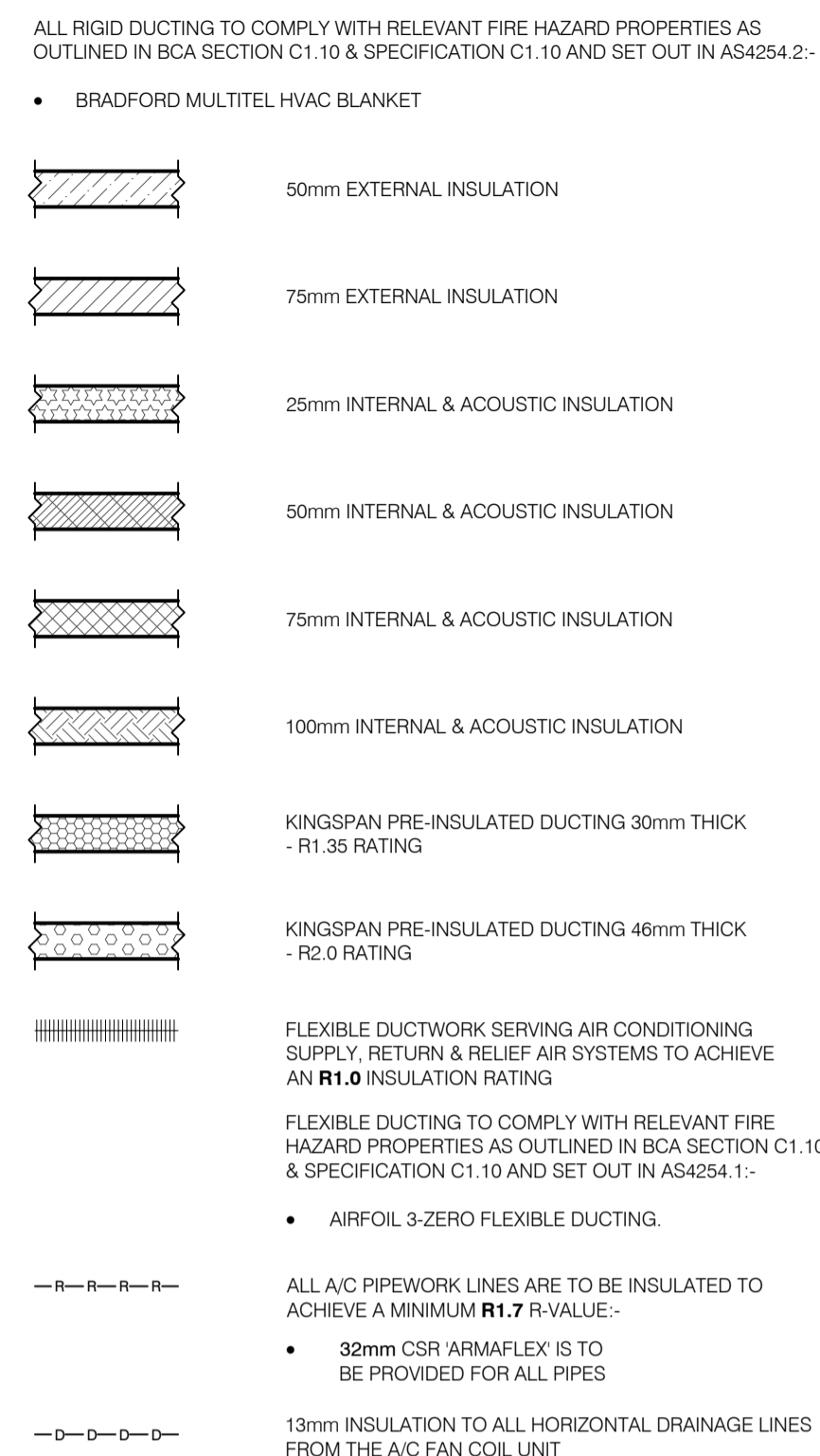
DUCTWORK



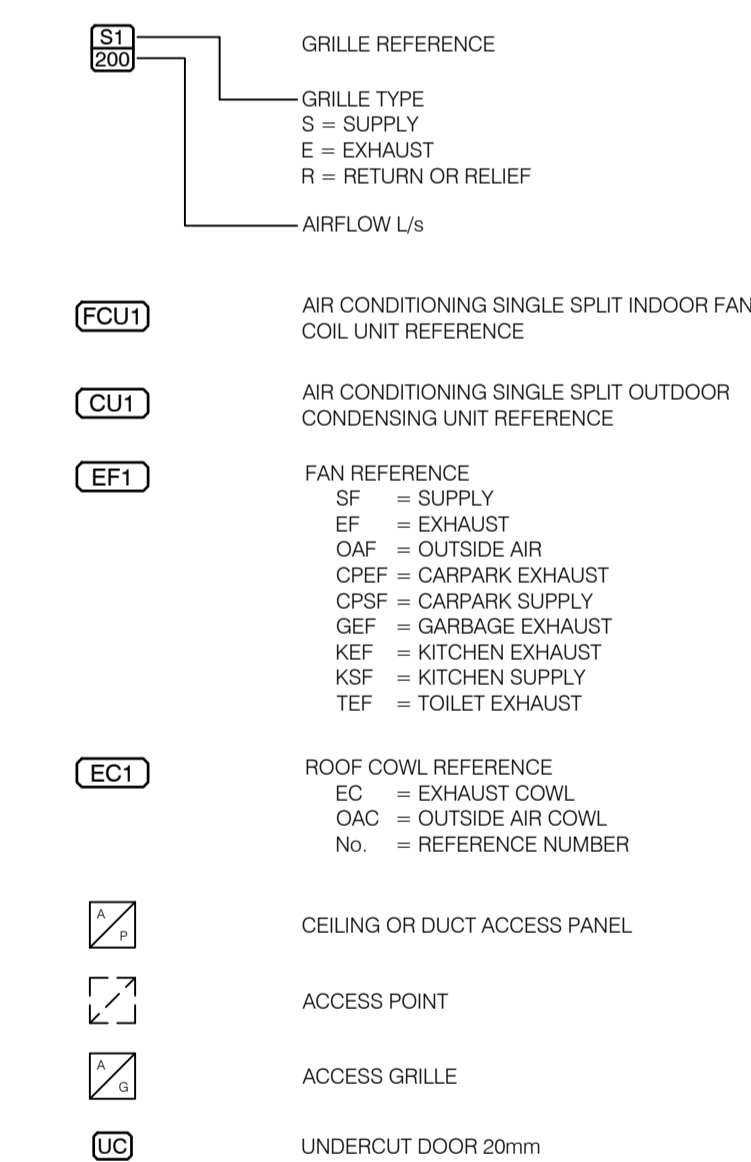
DAMPERS



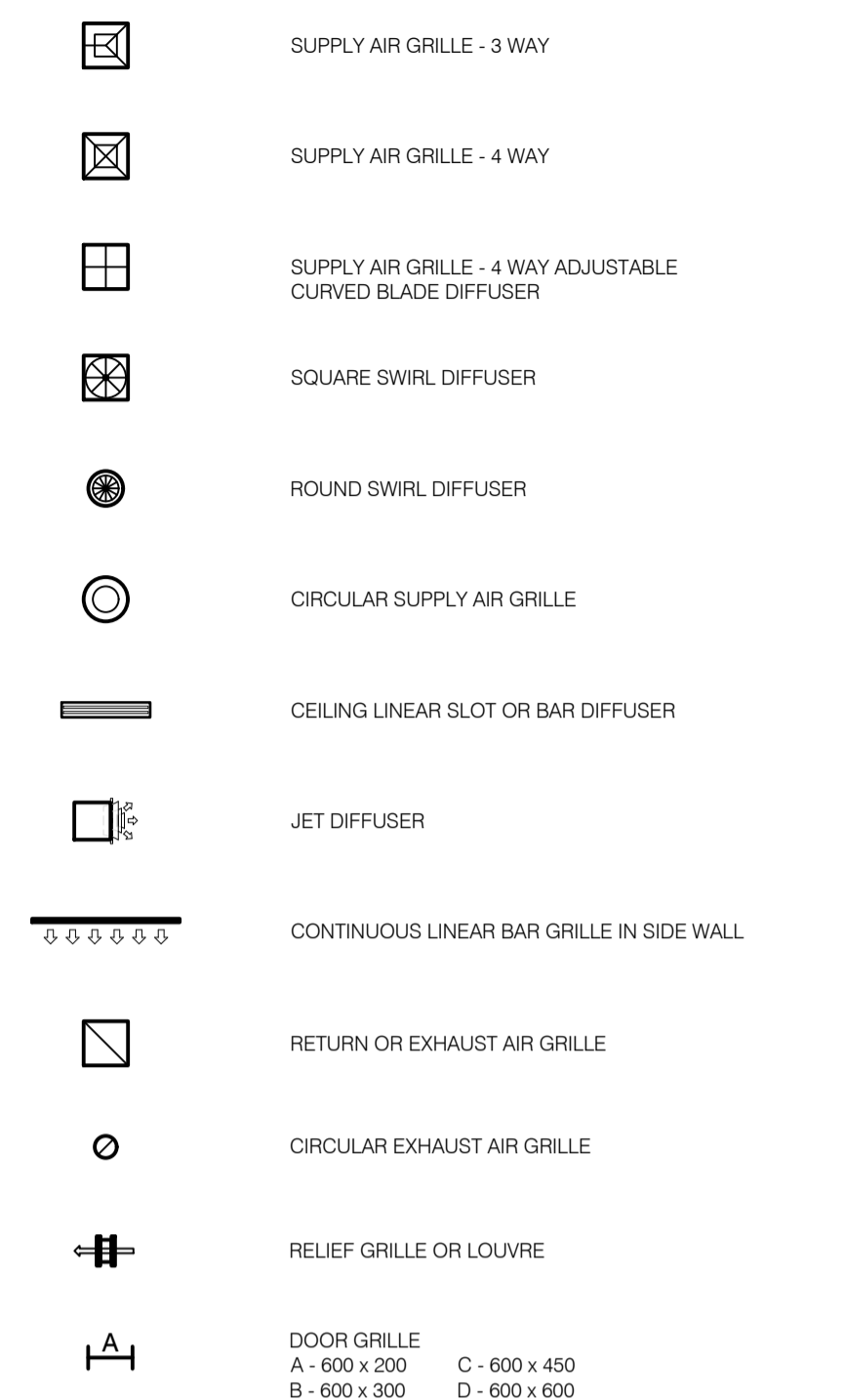
DUCT & PIPEWORK INSULATION



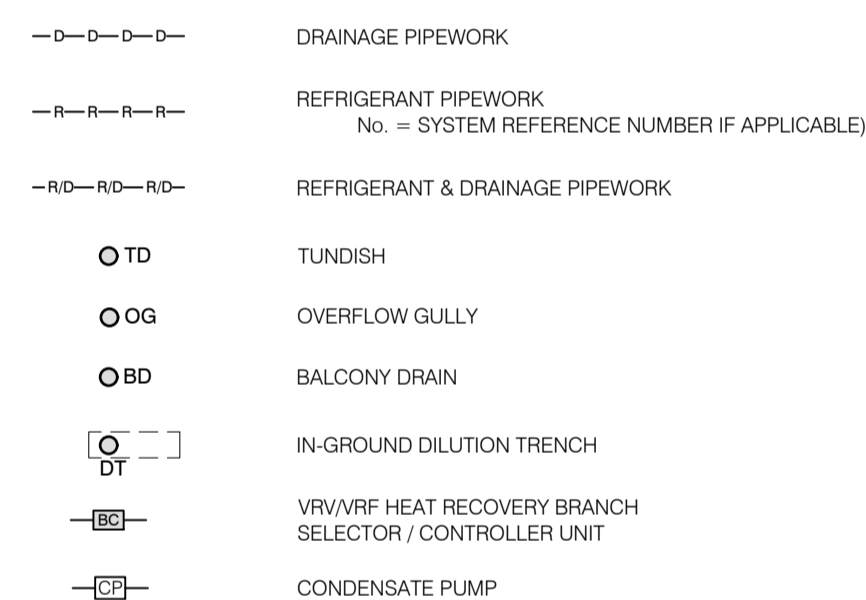
SYMBOLS



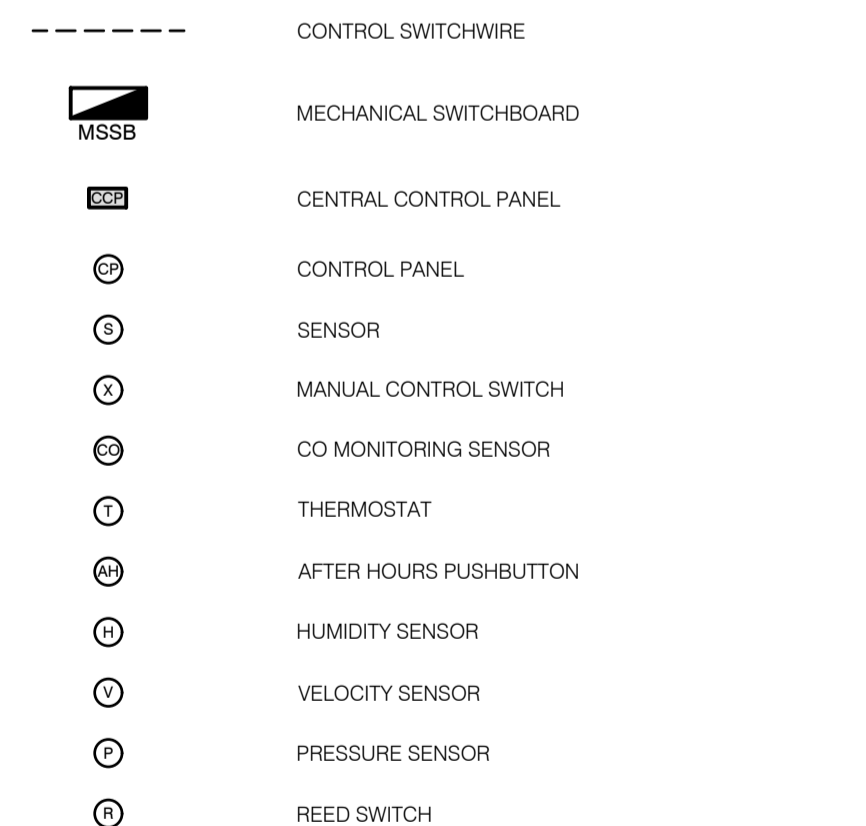
GRILLES



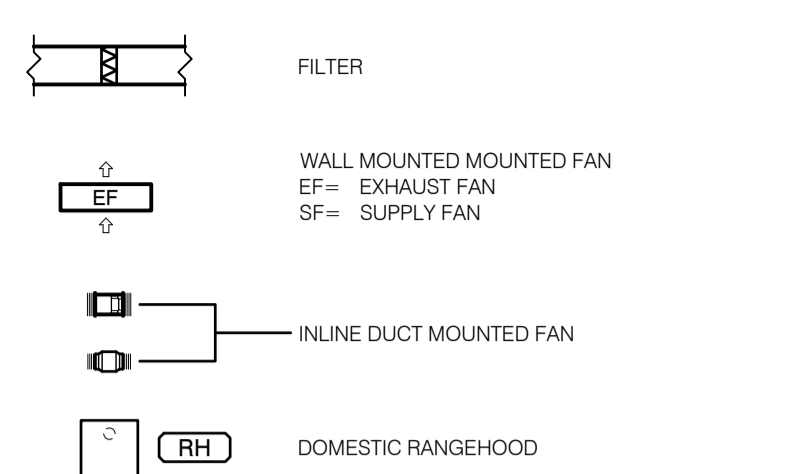
PIPEWORK & DRAINAGE



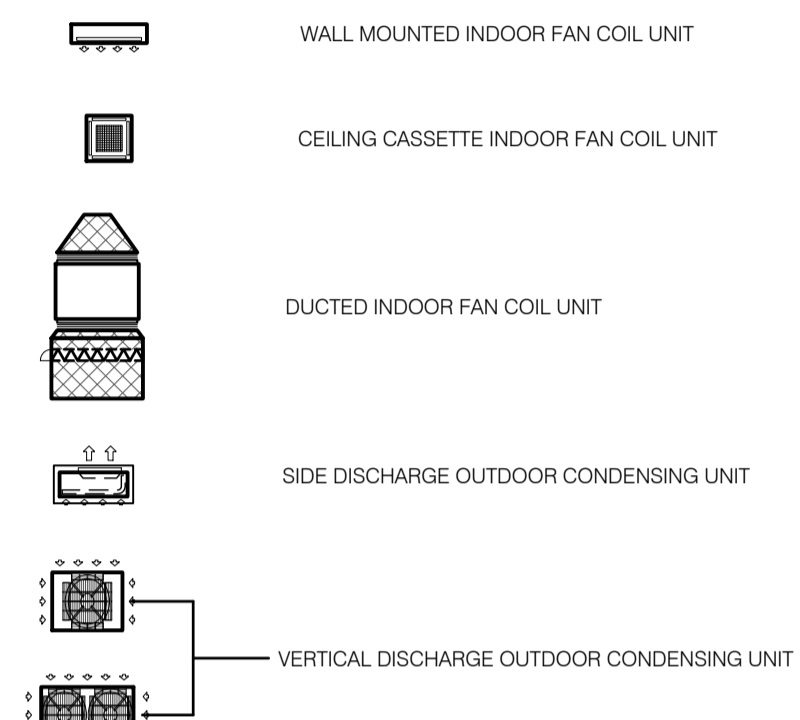
ELECTRICAL & CONTROLS



VENTILATION EQUIPMENT



AIR CONDITIONING EQUIPMENT

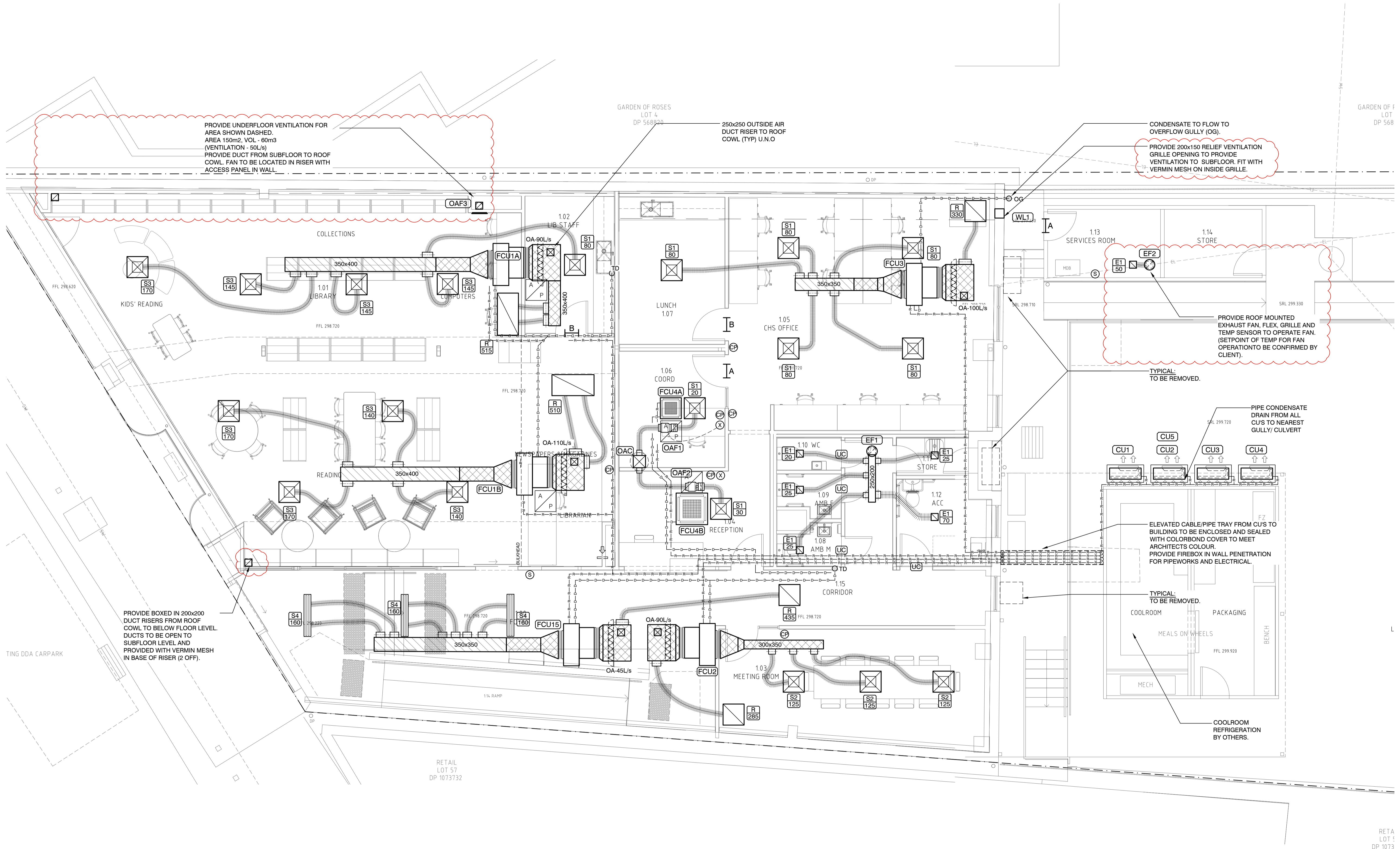


NOTES - GENERAL MECHANICAL WORKS

- ALL DUCTWORK OTHER THAN EXHAUST DUCTWORK NOT IN THE CONDITIONED SPACE SHALL BE EXTERNALLY INSULATED UNLESS INDICATED OTHERWISE.
- DUCTWORK DIMENSIONS SHOWN ARE CLEAR INTERNAL AIRWAYS DIMENSIONS.
- ALL AIR CONDITIONING DUCTWORK SHALL BE INSULATED TO ACHIEVE THE MINIMUM R-VALUES IN ACCORDANCE WITH BCA SECTION J.
- DIFFUSERS, GRILLES AND REGISTERS ARE TO BE INSTALLED WITH PLENUM BOXES INTERNALLY INSULATED TO ACHIEVE THE R-VALUES IN ACCORDANCE WITH BCA SECTION J.
- ALL FLEXIBLE & RIGID DUCTING TO COMPLY WITH RELEVANT FIRE HAZARD PROPERTIES AS OUTLINED IN BCA SECTION C1.10 & SPECIFICATION C1.10 AND SET OUT IN AS4254.1 AND AS4254.2.
- ALL AIR CONDITIONING PIPEWORK SHALL BE INSULATED TO ACHIEVE THE MINIMUM R-VALUES IN ACCORDANCE WITH BCA SECTION J.
- ALL FLEXIBLE DUCTWORK SHALL COMPLY WITH AS4254 AND BCA SECTION J. DUCT TAKE OFF'S ARE TO BE FITTED WITH SPIGOTS COMPLETE WITH VOLUME CONTROL DAMPERS.
- ALL DUCTWORK CONNECTED WITHIN 3m UPSTREAM OR DOWNSTREAM OF A VENTILATION FAN (OTHER THAN FOR A KITCHEN EXHAUST DUCT) SHALL BE PROVIDED WITH A MINIMUM OF 50mm INTERNAL & ACOUSTIC INSULATION (UNLESS SHOWN OR NOTED OTHERWISE).
- TURNING VANES REQUIRED IN ALL 90° BENDS EXCLUDING KITCHEN EXHAUST DUCTING.
- PROVIDE COLORBOND COVER OVER ALL EXPOSED REFRIGERANT PIPE & CABLING.
- EQUIPMENT IS TO BE MOUNTED ON ANTI-VIBRATION MOUNTS AS SPECIFIED.
- REFER TO ARCHITECTURAL DRAWINGS FOR EXACT FLOOR LAYOUTS & REFLECTED CEILING PLAN FOR FINAL LOCATION OF DIFFUSERS, GRILLES & ACCESS PANELS.
- THE MECHANICAL CONTRACTOR IS REQUIRED TO UNDERTAKE A FULL CO-ORDINATION OF MECHANICAL SERVICES INSTALLATIONS WITH THE BUILDING STRUCTURE AND OTHER SERVICES PRIOR TO THE COMMENCEMENT OF ANY BUILDING WORKS. TO DETERMINE AND CO-ORDINATE ALL MECHANICAL SPATIAL REQUIREMENTS FOR SYSTEMS.
- THE MECHANICAL CONTRACTOR IS TO FULLY CO-ORDINATE WITH THE TRUSS MANUFACTURER PRIOR TO TRUSS DESIGN AND MANUFACTURE ALL SPATIAL REQUIREMENTS FOR MECHANICAL SYSTEMS WITHIN THE ROOF SPACE. ANY MODIFICATION WORK REQUIRED AFTER TRUSSES ARE CONSTRUCTED SHALL BE AT NO COST TO THE CLIENT.
- PAINT ALL EXPOSED DUCTWORK. COLOUR TO NOMINATED BY SUPERINTENDENT.
- ROOF MOUNTED FANS AND COWLS ARE TO MATCH THE ROOF COLOUR. REFER TO ARCHITECTURAL DRAWINGS FOR FINAL LOCATIONS.
- PROVIDE WEATHER COVER OVER EXTERNAL FLEXIBLE CONNECTIONS & EXPOSED CONTROL EQUIPMENT. EXTERNAL DUCTWORK TO BE CROSS BROKEN TO PREVENT PONDING.
- ROOF PENETRATIONS SHALL BE OVERFLASHED TO APPROVAL AND SEALED WATER TIGHT.
- INTERNAL DUCTWORK AND FITTINGS VISIBLE THROUGH GRILLES/DAMPERS TO BE PAINTED MATTE BLACK.
- PROVIDE ACCESS DOORS TO FILTER PLENUMS COMPLETE WITH CHROME PLATED HEAVY DUTY HINGES AND LATCHES.
- EQUIPMENT SHALL BE AS SPECIFIED. ALTERNATIVES ARE SUBJECT TO WRITTEN APPROVAL.
- PROVIDE NON-RETURN SELF CLOSING DAMPERS IN DUCTWORK SERVING GENERAL DUCTED EXHAUST SYSTEMS. DAMPER RESISTANCE TO FULLY OPEN SHALL NOT EXCEED 10Pa. REFER TO FAN SCHEDULE AND TYPICAL DETAILS FOR FURTHER INFORMATION.
- EACH INDOOR FAN COIL UNIT IS TO BE PROVIDED WITH A WIRED CONTROLLER COMPLETE WITH WEEKLY SCHEDULE TIMER.
- ALL DUCTED SYSTEMS TO BE PROVIDED WITH REMOTE SENSORS.
- ALL DUCTED INDOOR FAN COIL UNITS ARE TO BE INSTALLED ABOVE A CONDENSATE SAFE TRAY. DUCTED UNITS ARE TO BE SPRING MOUNTED. REFER TO TYPICAL DETAIL ON LAYOUT DRAWINGS.
- OUTDOOR CONDENSING UNITS ARE TO BE MOUNTED ON 100mm HIGH CONCRETE PLINTHS AT GROUND LEVEL U.N.O. OR GALVANISED WALL BRACKETS. PROVIDE WITH RUBBER ANTI-VIBRATION MOUNTS UNDER UNITS FEET.
- OUTDOOR CONDENSING UNITS ARE TO BE PROVIDED WITH DRAINAGE PIPEWORK TO DISCHARGE TO THE NEAREST DRAINAGE POINT. PROVIDE THE MANUFACTURES DRAINAGE KITS AND/OR A CONDENSATE DRAIN TRAY UNDER CONDENSER TO COLLECT ALL CONDENSATE.
- THE ELECTRICAL TRADE IS TO PROVIDE POWER & CONTROLS TO ALL MECHANICAL EQUIPMENT. MECHANICAL TRADE IS TO MAKE FINAL CONNECTIONS. FULLY CO-ORDINATE INSTALLATION WITH ELECTRICAL TRADE.
- THE ELECTRICAL TRADE IS TO PROVIDE POWER SUPPLY & CONTROL TO EACH EXHAUST FAN. FULLY CO-ORDINATE INSTALLATION WITH ELECTRICAL TRADE.

SEISMIC PROVISIONS

- TO ENSURE SAFETY TO OCCUPANTS AND TO PREVENT DAMAGE TO THE BUILDING AND SERVICES IN THE EVENT OF AN EARTHQUAKE THE INSTALLATION OF ALL MECHANICAL SYSTEMS SHALL COMPLY WITH AS 1170.4 - 2007 EARTHQUAKE ACTIONS IN AUSTRALIA.
- THE CONTRACTOR SHALL ENGAGE THE SERVICES OF GRIPPLE AUSTRALIA OR APPROVED EQUAL TO PROVIDE A SYSTEM AND CERTIFICATION TO COMPLY WITH AS 1170.4.
- PIPES AND DUCTS - ALL DUCTWORK AND PIPEWORK SHALL BE PROVIDED WITH RESTRAINTS IN ACCORDANCE WITH THE SEISMIC RESTRAINT MANUAL: GUIDELINES FOR MECHANICAL SYSTEMS DATED 1991, AS PUBLISHED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION INC. (SMACNA) AND IN ACCORDANCE WITH AS 1170.4.
- PLANT AND EQUIPMENT - ALL PLANT AND EQUIPMENT SHALL BE SECURELY FIXED TO THE BUILDING STRUCTURE. FIXINGS SHALL BE CAPABLE OF WITHSTANDING SEISMIC LOADS DETERMINED IN ACCORDANCE WITH AS 1170.4 AND BE CAPABLE OF RESISTING BOTH HORIZONTAL AND VERTICAL SEISMIC FORCES. ANTI-VIBRATION MOUNTS SHALL BE OF THE 'HOUSED' TYPE CAPABLE OF WITHSTANDING THESE LOADS. PAYING PARTICULAR ATTENTION TO THE ATTACHMENT OF HEAVY COMPONENTS SUCH AS CHILLERS, COOLING TOWERS, BOILERS, TANKS AND SWITCHBOARDS TO PREVENT MOVEMENT AND DAMAGE UNDER EARTHQUAKE CONDITIONS.



PROVIDE UNDERFLOOR VENTILATION FOR AREA SHOWN DASHED. AREA 150m<sup>2</sup>, VOL - 60m<sup>3</sup> (VENTILATION - 50L/s) PROVIDE DUCT FROM SUBFLOOR TO ROOF COWL. FAN TO BE LOCATED IN RISER WITH ACCESS PANEL IN WALL.

250x250 OUTSIDE AIR DUCT RISER TO ROOF COWL (TYP) U.N.O

CONDENSATE TO FLOW TO OVERFLOW GULLY (OG). PROVIDE 200x150 RELIEF VENTILATION GRILLE OPENING TO PROVIDE VENTILATION TO SUBFLOOR. FIT WITH VERMIN MESH ON INSIDE GRILLE.

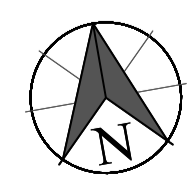
PROVIDE ROOF MOUNTED EXHAUST FAN, FLEX, GRILLE AND TEMP SENSOR TO OPERATE FAN. (SETPOINT OF TEMP FOR FAN OPERATION TO BE CONFIRMED BY CLIENT).

PROVIDE BOXED IN 200x200 DUCT RISERS FROM ROOF COWL TO BELOW FLOOR LEVEL. DUCTS TO BE OPEN TO SUBFLOOR LEVEL AND PROVIDED WITH VERMIN MESH IN BASE OF RISER (2 OFF).

PIPE CONDENSATE DRAIN FROM ALL CU'S TO NEAREST GULLY/CULVERT

ELEVATED CABLE/PIPE TRAY FROM CU'S TO BUILDING TO BE ENCLOSED AND SEALED WITH COLORBOND COVER TO MEET ARCHITECTS COLOUR. PROVIDE FIREBOX IN WALL PENETRATION FOR PIPEWORKS AND ELECTRICAL.

COOLROOM REFRIGERATION BY OTHERS.



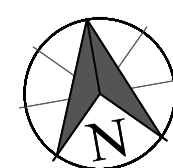
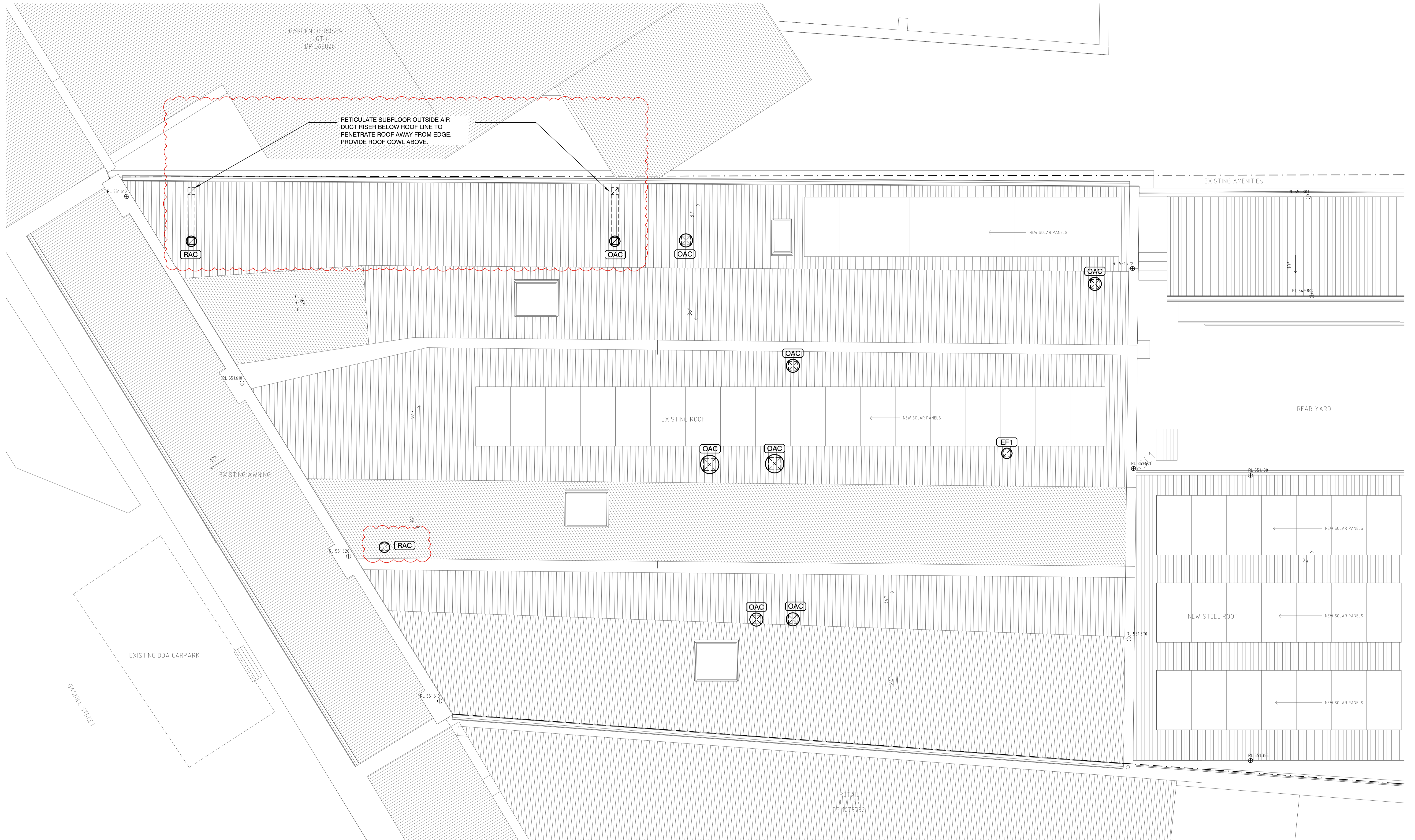
Rev	Date	Reason for Issue
4	28.11.24	REVISED AS REQUESTED
3	21.11.24	100% ISSUE FOR REVIEW
2	22.10.24	50% ISSUE FOR REVIEW
1	23.09.24	50% ISSUE FOR REVIEW

Drawn	Design	Verify
MJ	SM	
MJ	SM	
MJ	SM	
ES	SM	

Project  
**CABONNE HOME SUPPORT REFRUBISHMENT**  
70 GASKILL STREET  
CANOWINDRA, NSW 2804

Drawing Title  
**GROUND FLOOR AIR CONDITIONING & VENTILATION LAYOUT**

Discipline  
**MECHANICAL SERVICES**  
Job No. Drawing No. Rev  
MN15171 ME-10-001 4



Rev	Date	Reason for Issue
4	28.11.24	REVISED AS REQUESTED
3	21.11.24	100% ISSUE FOR REVIEW
2	22.10.24	50% ISSUE FOR REVIEW
1	23.09.24	50% ISSUE FOR REVIEW

Drawn	Design	Verify
MJ	SM	
MJ	SM	
MJ	SM	
ES	SM	

Project  
**CABONNE HOME SUPPORT  
 REFURBISHMENT**  
 70 GASKILL STREET  
 CANOWINDRA, NSW 2804

Drawing Title  
**ROOF  
 AIR CONDITIONING & VENTILATION  
 LAYOUT**

Discipline  
**MECHANICAL SERVICES**

Job No. Drawing No. Rev  
 MN15171 ME-10-002 4

Scale 1:50 @ A1

AIR CONDITIONING SCHEDULE																ROOM CONDITIONS: 23.5 +/- 1.5 °C			AMBIENT CONDITIONS: SUMMER 38.7 °C DB 22.8 °C WB WINTER -0.9 °C			
FAN COIL REF. No.	AREA SERVED	TYPE	MANUFACTURER	FAN COIL UNIT MODEL No.	TOTAL COOL kW	SENS. COOL kW	HEATING kW	SUPPLY AIR L/s	RETURN AIR L/s	OUTSIDE AIR L/s	DIMENSIONS H x W x D	WEIGHT kg	SOUND dBA	ELECTRICAL MCA - Ph	COND. UNIT REF No.	TYPE	COND. UNIT MODEL No.	DIMENSIONS H x W x D	WEIGHT kg	SOUND dBA	ELECTRICAL R.L.A. - Ph	CIRCUIT BREAKER
FCU1A	LIBRARY	DUCTED	DAIKIN	FXMQ125PAVE	10	8.8	7.2	605	515	90	300x1400x700	45	44	3.4	CU1	HEAT PUMP VRF	RXYMQ9AY1	1430x940x320	138	-	15-3	20
FCU1B	LIBRARY	DUCTED	DAIKIN	FXMQ125PAVE	10.8	9.3	7.3	620	510	110	300x1400x700	45	44	3.4								
FCU2	MEETING	DUCTED	DAIKIN	FXMQ50PAVE	5	3.6	3.6	370	280	90	300x1000x700	35	41	1.6	CU2	HEAT PUMP	RXYMQ3A2V4A	990x940x320	71	-	13.2	20
FCU3	CHS OFFICE	DUCTED	DAIKIN	FXMQ80PAVE	7.1	6	4.8	400	330	70	300x1000x700	35	43	2.3	CU3	HEAT PUMP	RXYMQ3A2V4A	990x940x320	71	-	13.2	20
FCU4A	COORD RM	CASSETTE	DAIKIN	FXZQ20AVM	1.2	0.9	0.8	100	100	20	260x575x575	16	32	0.3	CU4	HEAT PUMP VRF	RXYMQ3A2V4A	990x940x320	71	-	13.2	20
FCU4B	RECEPTION	CASSETTE	DAIKIN	FXZQ20AVM	1.3	1	0.8	100	100	20	260x575x575	16	32	0.3								
FCU5	FOYER	DUCTED	DAIKIN	FXMQ80PAVE	7.3	6.5	5	480	435	45	300x1000x700	35	43	2.3	CU5	HEAT PUMP	RXYMQ4A2V4A	990x940x320	71	-	13.2	20

FAN SCHEDULE					
REF. No.	EF1	EF2	OAF1	OAF2	OAF3
SERVES	TOILETS	SERVER ROOM	OFFICE	RECEPTION	SUBFLOOR
AIR FLOW L/s	165	50	20	20	100
EST. RESISTANCE Pa	100	100	80	80	100
FAN TYPE	ROOF	ROOF	IN LINE	IN LINE	ROOF
MAX SPEED rpm	1875	1200	2066	2066	1200
dBA AT 3m	55	48	30	30	48
MOTOR SIZE W - No. PH	160-1	160-1	20-1	20-1	160-1
UNIT SELECTION (FANTECH)	CEEC25V	CEEC25V	JETLINE-12SECO	JETLINE-12SECO	CEEC25V
REMARKS	REFER NOTES 1-5	REFER NOTE 6	REFER NOTES 1-5	REFER NOTES 1-5	REFER NOTES 1-5
NOTES: 1. INTERLOCK FAN TO LIGHTING FOR AREA SERVED. PROVIDE A 10 MINUTE RUN ON TIMER TO OPERATE FAN FOR A FURTHER 10 MINUTES AFTER LIGHTING IS TURNED OFF. 2. FAN CONTROLLED FROM ON/OFF CONTROL SWITCH. 3. PROVIDE BACKDRAFT SHUTTER TO SUIT FAN SELECTION. 4. PROVIDE 2-SPEED CONTROL SWITCH CW ON/OFF AND HI/LO SELECTOR. CONTROL SWITCH TO BE PROVIDED WITH A NEON RUN LIGHT INDICATING OPERATION AND STATUS OF HI/LO SPEEDS. 5. PROVIDE ADJUSTABLE WALL TEMP SENSOR TO OPERATE FAN WHEN INTEMP REACHES SPECIFIED UPPER LIMIT.					

FILTER SCHEDULE - G4	
FILTERS FOR ALL DUCTED AIR CONDITIONING SYSTEMS SHALL BE OF THE DRY MEDIA EXTENDED SURFACE DISPOSABLE TYPE WITH FOLLOWING PROPERTIES.	
<b>RATING</b>	
DEPTH mm	50
AVERAGE EFFICIENCY TO TEST DUST No.1 AS 1324	25%
AVERAGE EFFICIENCY TO TEST DUST No.4 AS 1324	90%
CLEAN RESISTANCE AT RATED CAPACITY	50Pa
FINAL RESISTANCE	125Pa
FILTER SELECTION	CAMFIL FARR
NOTES: 1. PROVIDE CHROME PLATED HEAVY DUTY HARDWARE ON FILTER ACCESS PANELS. 2. PROVIDE ALL FILTER MODULES TO THE SAME PHYSICAL DIMENSIONS, WHERE POSSIBLE. 3. FILTERS TO BE SELECTED AT NOT MORE THAN 1.8m/s FACE VELOCITY.	

FLEXIBLE DUCT SCHEDULE	
INTERNAL DIAMETER mm	AIR FLOW L/s
150	0 - 45
200	46 - 90
250	91 - 150
300	151 - 250
350	251 - 350
400	351 - 420
450	421 - 500
500	501 - 650
NOTE: FLEXIBLE DUCT TO BE 4 ZERO. AIR CONDITIONING DUCT TO BE INSULATED AND HAVE AN ACOUSTIC CORE. PROVIDE MULTIPLE FLEXIBLE DUCTS WHERE AIRFLOW EXCEEDS 500L/s.	

SUPPLY DIFFUSER SCHEDULE			
LEGEND LF41 = LAY-IN FRAME 4-WAY BLOW DIFFUSER FF41 = FLUSH FACE 4-WAY BLOW DIFFUSER CSD-25 = 4 SLOT LINEAR SLOT DIFFUSER			
REF. No.	TYPE	NOMINAL FACE SIZE mm	NECK SIZE mm
S1	LF41/FF41	600 x 600	150 x 150
S2	LF41/FF41	600 x 600	225 x 225
S3	LF41/FF41	600 x 600	300 x 300
S4	CSD-25	1534 x 220	1500 x 193

RETURN/EXHAUST GRILLE SCHEDULE			
LEGEND EC = EGGCRATE RETURN/EX-HAUST AIR GRILLE			
REF. No.	TYPE	FACE SIZE mm	NECK SIZE mm
E1	EC	150 x 150	135 x 135
E2	EC	200 x 200	185 x 185
E3	EC	250 x 250	235 x 235
E4	EC	300 x 300	285 x 285
R1	EC	300 x 300	285 x 285
R2	EC	600 x 300	585 x 285
R3	EC	600 x 600	585 x 585
R4	EC	1200 x 600	1185 x 585

