

LEGEND OF SYMBOLS

DUCTWORK

- SHEET METAL EXHAUST AIR DUCTWORK
- SHEET METAL RETURN AIR DUCTWORK
- SHEET METAL OUTSIDE AIR DUCTWORK
- SHEET METAL SUPPLY AIR DUCTWORK
- INTERNALLY INSULATED DUCTWORK
- EXTERNALLY INSULATED DUCTWORK
- DUCTWORK RISER
- DUCTWORK DROPPER
- MOTORISED DAMPER
- VOLUME CONTROL DAMPER
- FIRE DAMPER
- HALF RADIUS BEND
- SQUARE BEND WITH TURNING VANES
- DUCT TRANSITION CIRCULAR TO RECTANGULAR
- DUCT TAKE-OFF C/W STREAM SPLITTER
- BRANCH POP TAKE OFF C/W BUTTERFLY DAMPER
- SUPPLY AIR FLOW DIRECTION
- RETURN AIR FLOW DIRECTION
- TEMPERATURE SENSOR
- CARBON DIOXIDE SENSOR
- MOTORISED DAMPER
- MECHANICAL SWITCHBOARD
- FIRE DAMPER
- SEISMIC DUCT CONNECTION

DUCTWORK SCHEMATIC

- EXHAUST AIR DUCTWORK
- RETURN AIR DUCTWORK
- OUTSIDE AIR DUCTWORK
- SUPPLY AIR DUCTWORK
- AHU COOLING & HEATING
- FAN COIL UNIT
- AXIAL AIR FAN
- AIR FILTER
- AIR FLOW
- AIR INLET
- AIR OUTLET
- WEATHERPROOF LOUVRE
- FIRE DAMPER
- MOTORISED DAMPER
- NRD DAMPER
- VCD DAMPER
- SENSOR TEMPERATURE BMS
- SENSOR PRESSURE BMS
- SENSOR HUMIDITY
- ROOF COWL

PIPEWORK SCHEMATIC

- CHILLED WATER PIPEWORK FLOW
- CHILLED WATER PIPEWORK RETURN
- HEATING HOT WATER PIPEWORK FLOW
- HEATING HOT WATER PIPEWORK RETURN

PIPEWORK

- CHILLED WATER FLOW
- CHILLED WATER RETURN
- HEATING HOT WATER FLOW
- HEATING HOT WATER RETURN
- EXISTING PIPEWORK
- REFRIGERANT FLOW LIQUID
- REFRIGERANT RETURN GAS
- CONDENSER WATER FLOW
- CONDENSER WATER RETURN
- CONDENSATE PIPE
- PIPEWORK RISER
- PIPEWORK DROPPER

PIPEWORK SCHEMATIC

- BUTTERFLY VALVE
- BLANKED VALVE
- FLANGE CONNECTION
- MOTORISED DAMPER
- PIPEWORK BREAK
- PIPEWORK FLOW DIRECTION
- ISOLATION VALVE
- NORMALLY CLOSED ISOLATION VALVE
- NORMALLY OPENED ISOLATION VALVE
- STAT / BALANCING VALVE
- ANTI VIBRATION CONNECTION
- STRAINER
- 3 WAY VALVE
- PRESS RELIEF VALVE
- 2 WAY PRESS RELIEF VALVE
- PRESSURE REDUCING VALVE
- 2 WAY MOTORISED VALVE
- 3 WAY MOTORISED VALVE
- 2 WAY SOLENOID VALVE
- 3 WAY SOLENOID VALVE
- SENSOR DIFFERENTIAL PRESSURE BMS
- SENSOR TEMPERATURE BMS
- SENSOR PRESSURE BMS
- SENSOR HUMIDITY
- FLOW MEASURING STATION
- FLOW SWITCH
- PRESSURE GAUGE
- TEMPERATURE GAUGE
- TEST POINT
- NON RETURN VALVE
- AUTOMATIC AIR VENT
- SEISMIC JOINT
- AIR BOTTLE
- DRAIN POINT WITH HOSE UNION
- PUMP
- PIPEWORK FLEXIBLE COUPLING
- PRESSURE INDEPENDENT CONTROL VALVE
- TOTAL DISSOLVED SOLIDS SENSOR

AIR SIDE DESIGNATIONS

- AHU AIR HANDLING UNIT
- C/W COMPLETE WITH
- E/A EXHAUST AIR
- EAF EXHAUST AIR FAN
- FD FIRE DAMPER C/W ACCESS PANEL
- MFD MOTORISED FIRE DAMPER
- MSD MOTORISED SMOKE DAMPER
- MSSB MECHANICAL SERVICES SWITCHBOARD
- O/A OUTSIDE AIR
- OAF OUTSIDE AIR FAN
- R/A RETURN AIR
- RAF RETURN AIR FAN
- S/A SUPPLY AIR
- SAF SUPPLY AIR FAN
- SSD SMOKE DAMPER
- TEF TOILET EXHAUST FAN
- T/E TOILET EXHAUST
- VCD VOLUME CONTROL DAMPER

WATER SIDE DESIGNATIONS

- CHWF CHILLED WATER FLOW
- CHWR CHILLED WATER RETURN
- HHWF HEATING HOT WATER FLOW
- HHWR HEATING HOT WATER RETURN

FLEXIBLE DUCT SCHEDULE

AIR QUANTITY (L/s)	DUCT DIAMETER (mm)
0 - 30	125
31 - 45	150
46 - 60	175
61 - 80	200
81 - 100	225
101 - 125	250
126 - 175	300
176 - 240	350
241 - 320	400

THE ABOVE TABLE HAS BEEN GENERATED FROM MANUFACTURERS DATA AND GENERALLY ADOPTING A MAX VELOCITY OF 2.5 m/s.

GENERAL NOTES:

- DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE MECHANICAL SERVICES SPECIFICATION, ARCHITECTURAL SPECIFICATION AND ARCHITECTURAL DRAWINGS.
- FOR DIMENSIONAL & CONSTRUCTIONAL DETAILS OF BUILDING REFER TO ARCHITECTS DRAWINGS & SITE. CHECK ALL DIMENSIONS AND LOCATIONS ON SITE PRIOR TO MANUFACTURE.
- WHERE NOTED ON THESE DRAWINGS AS 'INSTALLED' OR 'PROVIDE', THE MECHANICAL CONTRACTOR SHALL SUPPLY AND INSTALL THE ITEM AS SPECIFIED.
- THESE DRAWINGS ARE DIAGRAMMATIC ONLY. THE SERVICES INDICATED ON THESE DRAWINGS SHOW THE GENERAL DESIGN INTENT AND SCHEMATIC ROUTES. THE CONTRACTOR SHALL CONFIRM THE EXACT ROUTE OF SERVICES ON SITE, CO-ORDINATING WITH ALL TRADES.
- PROVIDE AND UNDERTAKE ALL NECESSARY ADJUSTMENTS, MODIFICATIONS & ADDITIONS AS REQUIRED TO ACHIEVE THE INTENT INDICATED ON THE DRAWINGS AND DESCRIBED IN THE SPECIFICATION.
- THE MECHANICAL CONTRACTOR SHALL CONFIRM CEILING VOID REQUIREMENTS ARE ADEQUATE PRIOR TO MANUFACTURE AND INSTALLATION. ALLOW SERVICES ZONES FOR OTHER TRADES. ANY ABORTIVE INSTALLATION OR MANUFACTURE SHALL BE AT THE EXPENSE OF THE CONTRACTOR.
- ALL MECHANICAL SERVICES SHALL BE INSTALLED IN THE CEILING SPACE UNLESS SHOWN OR NOTED OTHERWISE.
- ALL DUCTWORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH AS 4254, UNLESS DETAILED OTHERWISE ON THE DRAWINGS AND IN THE MECHANICAL SERVICES SPECIFICATION.
- CONFIRM DUCTWORK SIZES ON SITE FOR CO-ORDINATED FIT PRIOR TO ORDERING EQUIPMENT OR MANUFACTURE.
- WHERE NOT INDICATED AS BEING INTERNALLY LINED, ALL AIR CONDITIONING SUPPLY AND RETURN AIR DUCTWORK SHALL BE THERMALLY LAGGED IN ACCORDANCE WITH THE SPECIFICATION.
- DUCT SIZES ARE CLEAR AIRWAY DIMENSIONS IN mm.
- DUCT SIZES - 1st FIGURE : SIDE SHOWN
- 2nd FIGURE : SIDE NOT SHOWN
- ALL SQUARE BENDS SHALL HAVE TURNING VANES UNLESS:
a) THE DUCT DIMENSION PERPENDICULAR TO THE TURNING VANE IS LESS THAN 200mm, OR:
b) THE SQUARE BEND IS PART OF A KITCHEN EXHAUST SYSTEM.
- ACOUSTIC TRANSFER DUCTS SHALL BE CONSTRUCTED SUCH THAT THE LINE OF SIGHT FROM EACH END IS OBSTRUCTED.
- VOLUME CONTROLS SHALL BE PROVIDED ON ALL SUPPLY AND EXHAUST AIR DUCTWORK BRANCH CONNECTIONS. VOLUME CONTROLS SHALL BE ACCESSIBLE VIA CEILING ACCESS PANELS WHERE CEILING TILES ARE NOT PROVIDED.
- OVVAL SPIGOTS SHALL BE USED WHERE THE FLEXIBLE DUCT SIZE IS EQUAL TO OR GREATER THAN DEPTH OF THE S/A DUCT.
- THE TOTAL LENGTH OF FLEXIBLE DUCTWORK BETWEEN SPIGOT AND OUTLET SHALL NOT EXCEED 5m.
- WHERE DUCTWORK PENETRATES PLANTROOM WALLS, OR ENTERS RISERS OR DROPPERS, AN AIR TIGHT SEAL SHALL BE PROVIDED. THE SEAL SHALL BE FIRE RATED WHERE REQUIRED.
- THE MECHANICAL SERVICES CONTRACTOR SHALL PROVIDE ALL FIRE DAMPERS C/W DUCT MOUNTED ACCESS PANELS TO FACILITATE ROUTINE TESTING. FIRE DAMPERS SHALL BE ACCESSIBLE VIA CEILING ACCESS PANELS WHERE CEILING TILES ARE NOT PROVIDED.
- REFER TO MECHANICAL SERVICES SPECIFICATION FOR DETAILED DESCRIPTION OF CONTROLS OPERATION.
- ALL SYSTEMS SHALL BE BALANCED & COMMISSIONED BY NEBB CERTIFIED PERSONNEL. THE CONTRACTOR SHALL SUBMIT BALANCING FIGURES FOR REVIEW.
- PROVIDE ALL NECESSARY STRUCTURAL SUPPORTS ASSOCIATED WITH MECHANICAL EQUIPMENT, PIPEWORK, DUCTWORK & WIRING.
- FANS, PUMPS AND MOTORS SHALL BE SELECTED BY MECHANICAL TRADE TO MEET EQUIPMENT SELECTION AND INSTALLED SYSTEM.
- REFER TO THE MECHANICAL SERVICES SPECIFICATION FOR CORROSION PROTECTION, LABELLING AND PAINTING OF SERVICES ALL FINAL PAINT FINISH COLOURS SHALL BE IN ACCORDANCE WITH ARCHITECTURAL REQUIREMENTS.
- ALL PLANT AND EQUIPMENT SHALL BE VIBRATION ISOLATED TO ACHIEVE AN ISOLATION EFFICIENCY OF NOT LESS THAN 90%.
- FOR FINAL LOCATION OF DIFFUSERS, GRILLES AND CEILING ACCESS PANELS REFER TO THE ARCHITECTURAL REFLECTED CEILING PLAN(S). THE CONTRACTOR SHALL CONFIRM THE FINAL LOCATIONS ON SITE PRIOR TO INSTALLATION. ANY ABORTIVE INSTALLATION OR FABRICATION SHALL BE AT THE EXPENSE OF THE CONTRACTOR.
- SUPPLY AIR PLENUMS WITH 25mm THICK INTERNAL INSULATION SHALL BE PROVIDED TO ALL SUPPLY AIR DIFFUSERS.
- THE MECHANICAL SERVICES CONTRACTOR SHALL SUPPLY ALL WEATHERPROOF LOUVRES FOR EXTERNAL WALLS C/W ASSOCIATED VERMIN PROOF MESH, ALL EXTERNAL LOUVRES INCLUDING SUPPORT FRAMES AND BRACING AS REQUIRED SHALL BE INSTALLED BY BUILDER IN ACCORDANCE WITH THE ARCHITECTURAL DRAWINGS AND SPECIFICATION.
- THE MECHANICAL SERVICES CONTRACTOR SHALL SUPPLY ALL DOOR GRILLES AS REQUIRED FOR INSTALLATION BY BUILDER IN ACCORDANCE WITH THE ARCHITECTURAL DRAWINGS AND SPECIFICATION.
- VISIBLE SURFACES BEHIND ALL DIFFUSERS, GRILLES AND LOUVRES SHALL BE PAINTED MATT BLACK.
- ALL FLOOR, WALL AND ROOF PENETRATIONS C/W UPSTANDS AND UNDERFLASHING AS REQUIRED SHALL BE BY BUILDING TRADE IN ACCORDANCE WITH THE ARCHITECTURAL DRAWINGS AND SPECIFICATION. THE MECHANICAL CONTRACTOR SHALL PROVIDE OVERFLASHINGS TO SUCH PENETRATIONS WHERE REQUIRED.
- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE HYDRAULIC SERVICES DRAWINGS AND HYDRAULIC SERVICES SPECIFICATION FOR TUNDISH AND FLOOR WASTE LOCATIONS BY HYDRAULICS TRADE.
- ALL CONDENSATE DRAINS SHALL BE DIA 32 UNLESS OTHERWISE INDICATED.
- THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE ELECTRICAL SERVICES DRAWINGS AND ELECTRICAL SERVICES SPECIFICATION FOR RETICULATION OF POWER TO MECHANICAL DISTRIBUTION BOARDS BY ELECTRICAL TRADE. CONTROLS AND POWER FROM THE MECHANICAL DISTRIBUTION BOARD TO EQUIPMENT SHALL BE BY MECHANICAL TRADE.
- ALL WIRING IN ACCORDANCE WITH AS 3000.
- ALL EQUIPMENT SHALL BE PROVIDED WITH LOCAL ELECTRICAL ISOLATORS.
- CONTRACTOR TO PROVIDE AS SOON AS PRACTICAL THE CONNECTED, DIVERSIFIED AND ABSORBED ELECTRICAL LOADS FOR VERIFICATION OF SUBMANS BY ELECTRICAL TRADE.
- ALL SENSOR, CONTROL POINT AND THERMOSTAT LOCATIONS ARE INDICATIVE ONLY. FINAL LOCATIONS SHALL BE SHOWN ON SHOP DRAWINGS. AN ALLOWANCE SHALL BE INCLUDED TO ENABLE THESE DEVICES TO BE RELOCATED WITHIN A 10m RADIUS OF LOCATIONS SHOWN ON THESE DRAWINGS. THE CONTRACTOR SHALL OBTAIN APPROVAL FOR PROPOSED LOCATIONS PRIOR TO INSTALLATION OF CABLING.
- TEMPERATURE SENSORS SAMPLE TO BE SUBMITTED FOR APPROVAL.
- WHERE FLEXIBLE DUCT SECTIONS ARE SHOWN ON DRAWINGS EXCEED A TOTAL LENGTH OF 5m FROM THE TAKE-OFF ON THE RIGID DUCT TO THE DIFFUSER. THE CONTRACTOR SHALL PROVIDE A RIGID SPIRAL-WOUND DUCT SECTION TO LIMIT THE TOTAL OVERALL FLEXIBLE DUCT LENGTH TO 5m.

FOR CONSTRUCTION

This drawing is confidential and shall only be used for the purpose of this project. The signing of this title block confirms the design and drafting of this project have been prepared and checked in accordance with the AECOM quality assurance system to ISO 9001-2000.



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PROJECT MANAGEMENT INITIALS		
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