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SAFETY HEALTH AND ENVIRONMENTAL INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING:

CONSTRUCTION

- WORKING AT HEIGHT
- LIFTING HEAVY EQUIPMENT
- WORKING ADJACENT TO POTENTIALLY LIVE SERVICES
- HANDLING CHEMICAL PRODUCTS
- WORKING IN CONFINED SPACES
- PRESENCE OF ASBESTOS

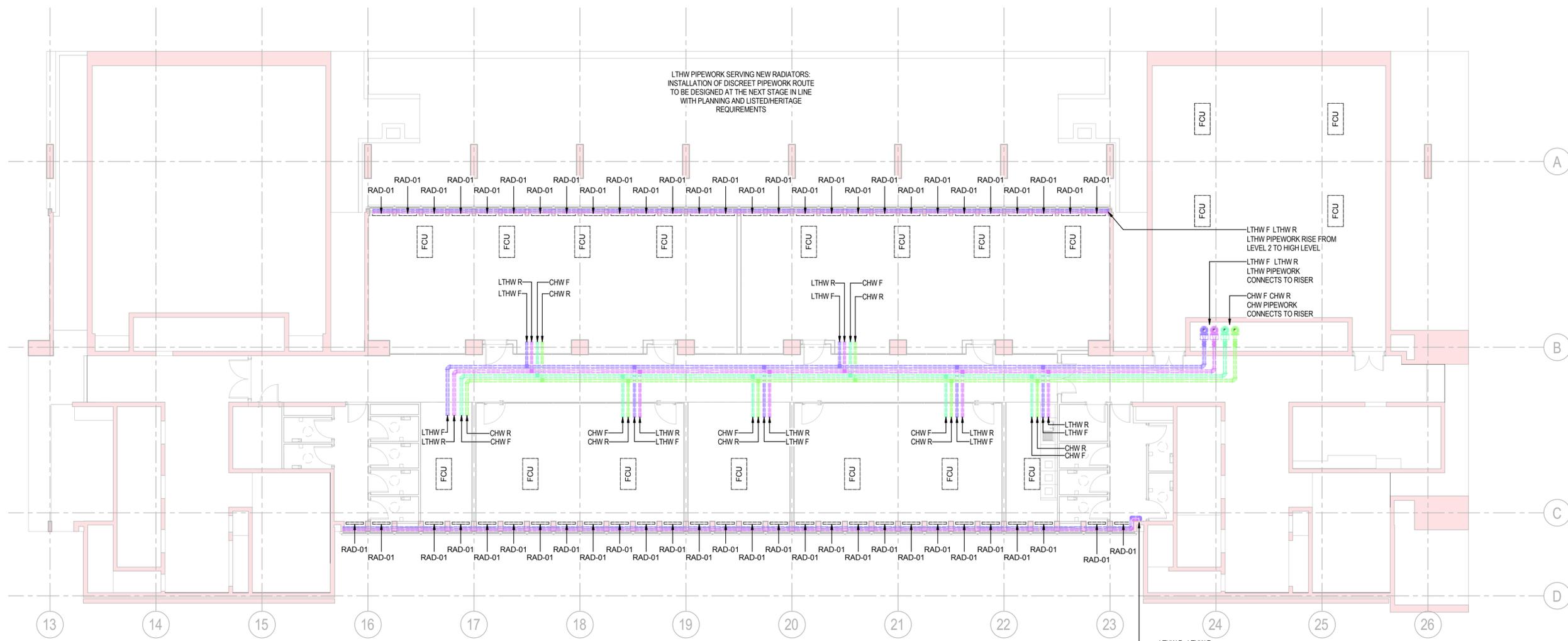
MAINTENANCE/LEANING/OPERATION

- HANDLING CHEMICAL PRODUCTS
- WORKING AT HEIGHT
- WORKING ADJACENT TO POTENTIALLY LIVE SERVICES

DECOMMISSIONING/DEMOLITION

- PRESENCE OF LIVE SERVICES
- PRESENCE OF ASBESTOS
- WORKING AT HEIGHT
- LIFTING HEAVY EQUIPMENT
- PRESENCE OF FLOOR OPENINGS
- ALWAYS SAFELY ISOLATE BEFORE COMMENCING ANY WORKS

- Notes**
- PIPEWORK NOTES**
- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER DISCIPLINES, DRAWINGS, SCHEDULES AND SPECIFICATIONS, LEGENDS AND STANDARD DETAILS.
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 - CONDENSATE DRAIN TO CONNECT TO NEAREST APPROPRIATE WASTE PIPE SYSTEM



P01	TENDER	11/04/2017	LH
Rev	Description	Date	Approved

TENDER

Statut/Substability of Drawing

BUROHAPPOLD
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 Web: www.burohappold.com

Architect: *HawkinsBrown*
 Project: **UCL Institute of Education**
 Dwg Title: **Mechanical Services
 Pipework Layout
 Level 3 ISD**

Job No: **035833**
 Scale: **1 : 100**

Drawing No: **20BW-BHE-S2-03-DR-M-XX-1000**
 Revision: **P01**

1 Mechanical Services Pipework Layout - Level 3 ISD

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- PRESENCE OF ASBESTOS

MAINTENANCE/CLEANING/OPERATION

- WORKING AT HEIGHT
- WORKING ADJACENT TO POTENTIALLY LIVE SERVICES

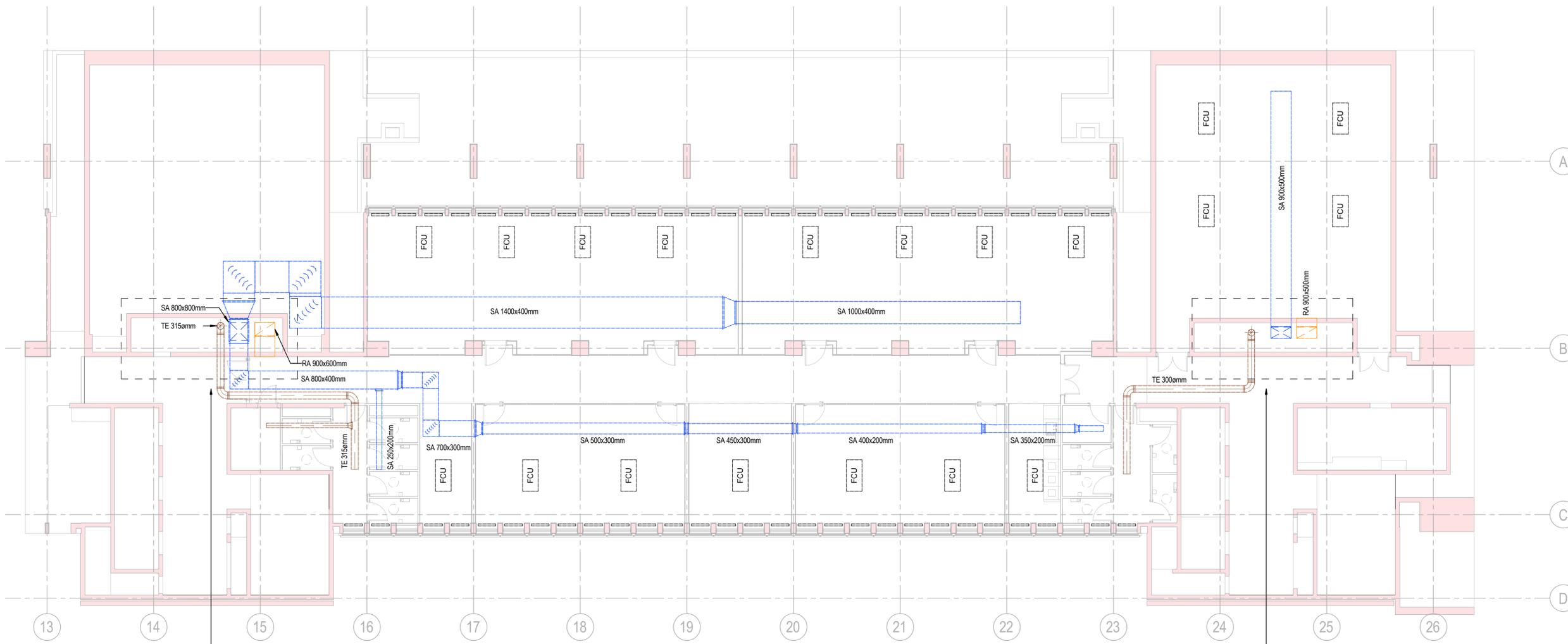
DECOMMISSIONING/DEMOLITION

- PRESENCE OF LIVE SERVICES
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- ALL DAMPERS SHALL BE ACCOMPANIED WITH ACCESS PANELS IN DUCTWORK AT ACCESSIBLE LOCATIONS.
- ALL DUCTWORK SHALL BE PROVIDED WITH ACCESS PANELS AT REGULAR INTERVALS TO FACILITATE CLEANING.
- ALL BUILDERS WORK DUCTS SHALL BE BUILT TO STRUCTURAL ENGINEER'S DETAIL.
- ALL BUILDERS WORK DUCTS SHALL HAVE A SMOOTH 'FAIR FACED' FINISH.
- ALL DUCTWORK SHALL BE MANUFACTURED & CONSTRUCTED IN ACCORDANCE WITH DW 144.
- FLEXIBLE DUCTWORK CONNECTIONS SHALL BE PROVIDED WHERE STRUCTURAL MOVEMENT JOINTS ARE PRESENT.
- FINAL NUMBER & LOCATIONS OF GRILLES/DIFFUSERS ARE SUBJECT TO ARCHITECT'S FINAL LAYOUT AND SETTING OUT INFORMATION.
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SUPPLY, RETURN AND TOILET EXTRACT DUCTWORK (NEW) FROM/TO LEVEL 2 PLANTROOM PR5/8. TOILET EXTRACT FAN AND AHU IN PR5/8 ARE NEW EQUIPMENT

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1 Mechanical Services Ductwork Layout - Level 3 ISD

P01	TENDER	11/04/2017	LH
Rev	Description	Date	Approved

TENDER

Statutory/Validity of Drawing

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 Web: www.burohappold.com

Architect: *HawkinsBrown*
 Project: **UCL Institute of Education**
 Dwg Title: **Mechanical Services Ductwork Layout Level 3 ISD**

Job No: **035833**
 Scale: **A1**
 Drawing No: **20BW-BHE-S2-03-DR-M-XX-2000**
 Revision: **P01**

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 5. WORKING IN CONFINED SPACES
 6. PRESENCE OF ASBESTOS

- MAINTENANCE/CLEANING/OPERATION**
1. HANDLING CHEMICAL PRODUCTS
 2. WORKING AT HEIGHT
 3. WORKING ADJACENT TO POTENTIALLY LIVE SERVICES

DECOMMISSIONING/DEMOLITION

1. PRESENCE OF LIVE SERVICES
2. PRESENCE OF ASBESTOS
3. WORKING AT HEIGHT
4. LIFTING HEAVY EQUIPMENT
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Notes

SCHEMATIC NOTES

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P01	TENDER	11/04/2017	LH

TENDER

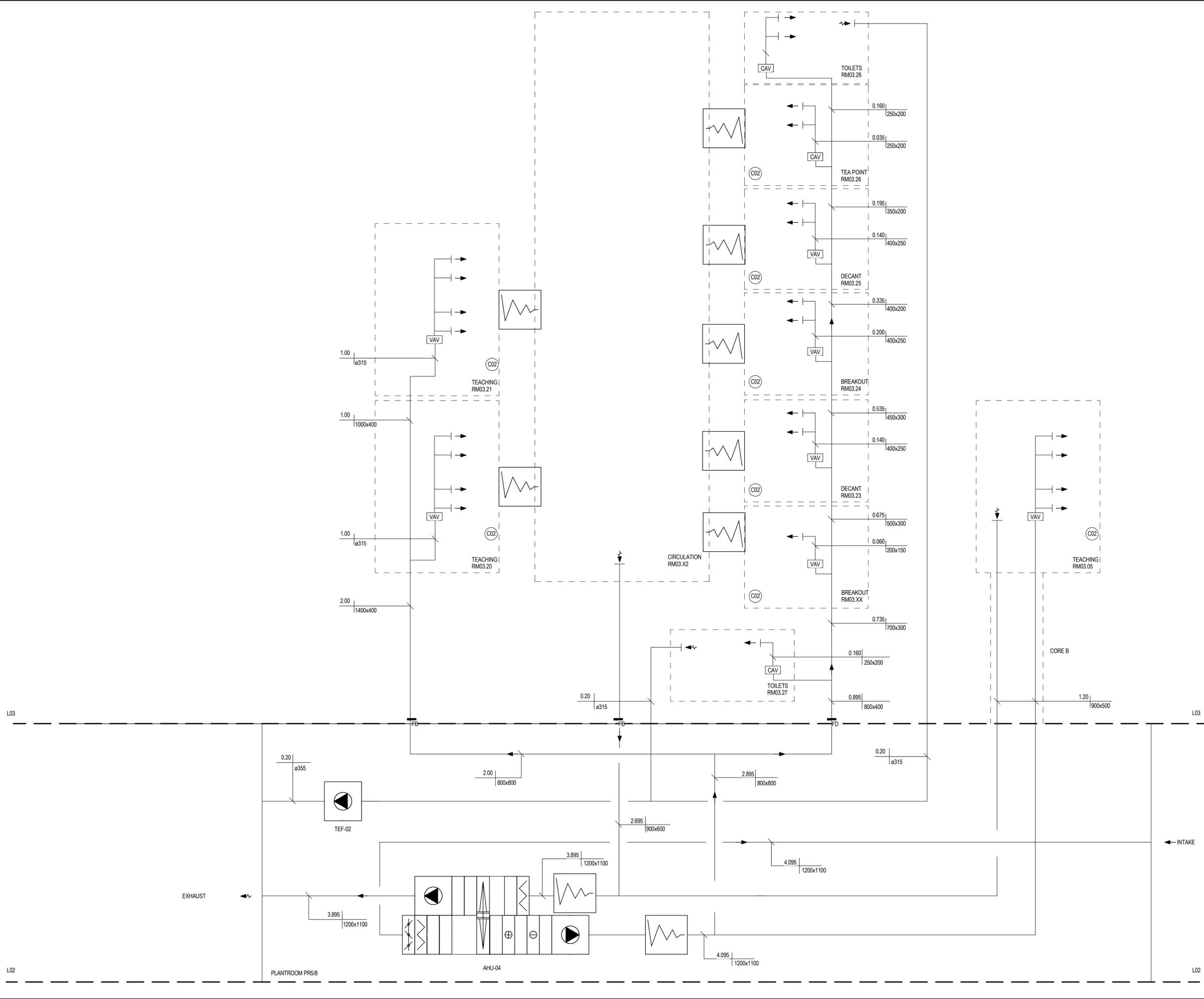
Status/Subsidiary of Drawing

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Architect: **HawkinsBrown**
 Project: **UCL Institute of Education**
 Dwg Title: **Mechanical Services Ventilation Schematics**
 ISD

Job No:	Scale:
035833	NTS
Drawing No:	Revision
20BW-BHE-S2-XX-SC-M-XX-7002	P01



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Rev	Description	Date	Approved
P01	TENDER	11/04/2017	LH

TENDER

Status/Stability of Drawing

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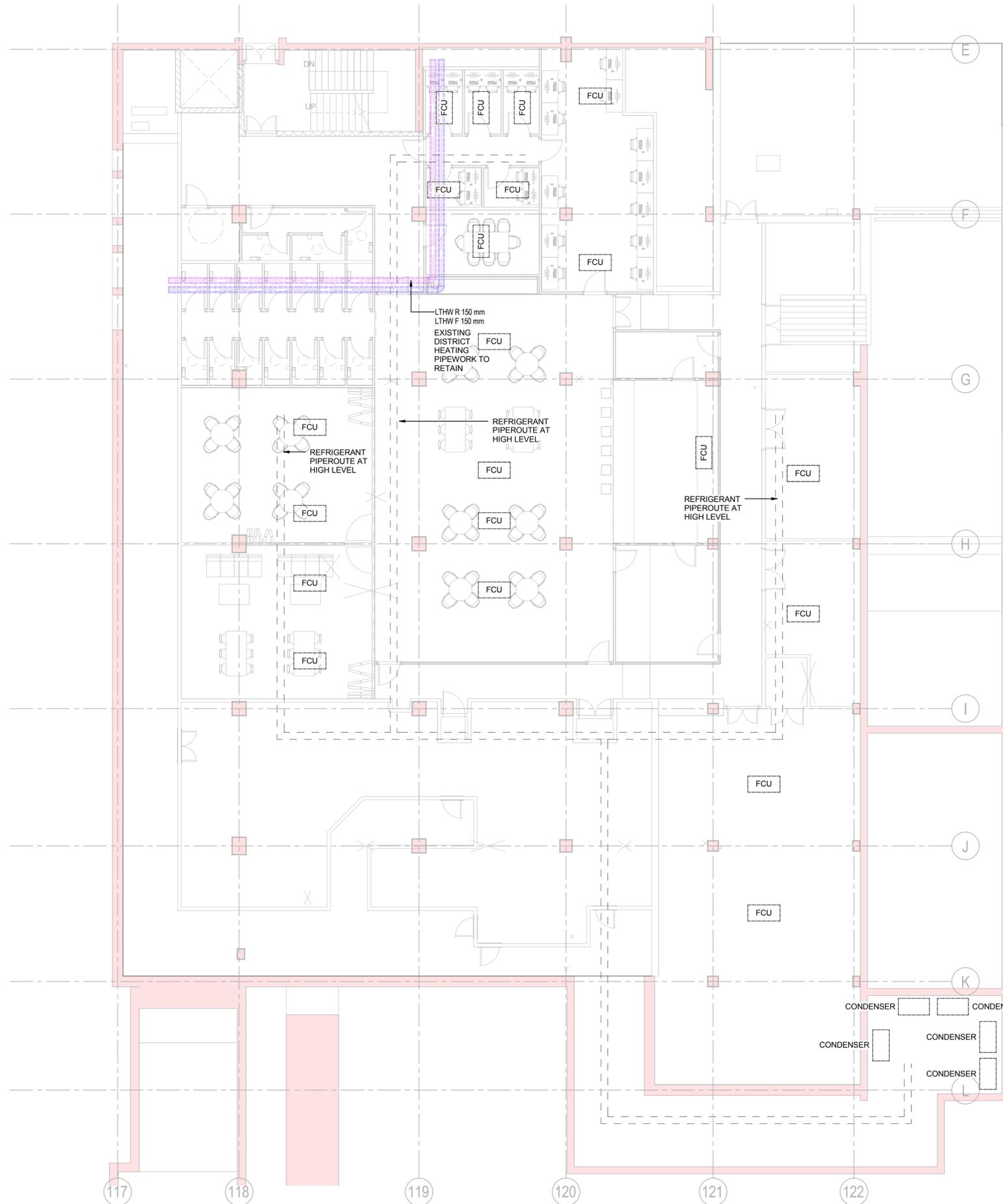
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Architect: *HawkinsBrown*
 Project: **UCL Institute of Education**
 Dwg Title: **Mechanical Services
 Pipework Layout
 Level 2 Wing A**

Job No: **035833**
 Scale: **1 : 100**

Drawing No: **20BW-BHE-WA-02-DR-M-XX-1000**

Revision: **P01**



1 Mechanical Services Pipework Layout - Level 2 Wing A

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MAINTENANCE/CLEANING/OPERATION

1. HANDLING CHEMICAL PRODUCTS
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Rev	Description	Date	Approved

TENDER

Status/Suitability of Drawing

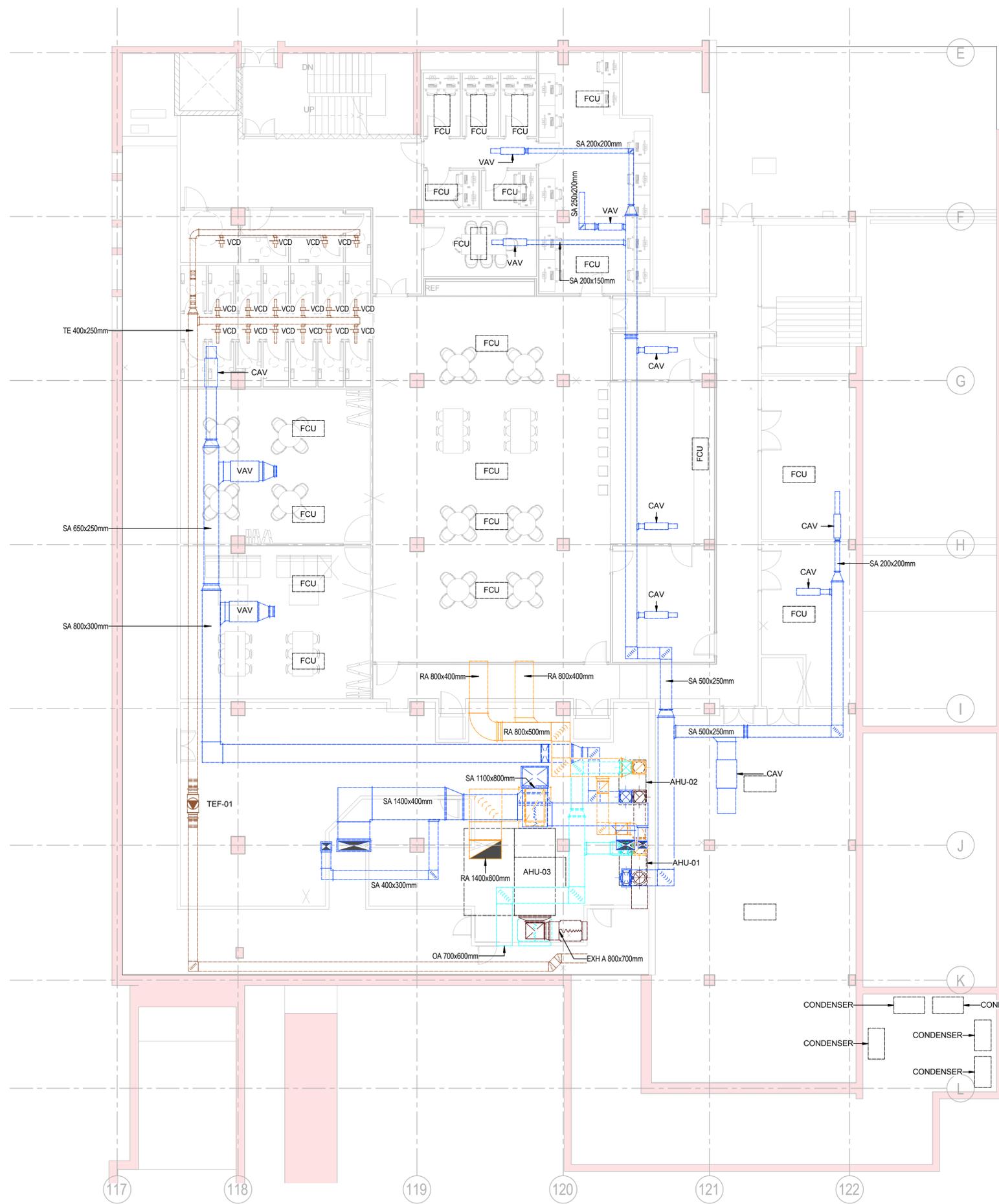
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Architect: *HawkinsBrown*
 Project: **UCL Institute of Education**
 Dwg Title: **Mechanical Services Ductwork Layout Level 2 Wing A**

Job No: **035833**
 Scale: **1 : 100**

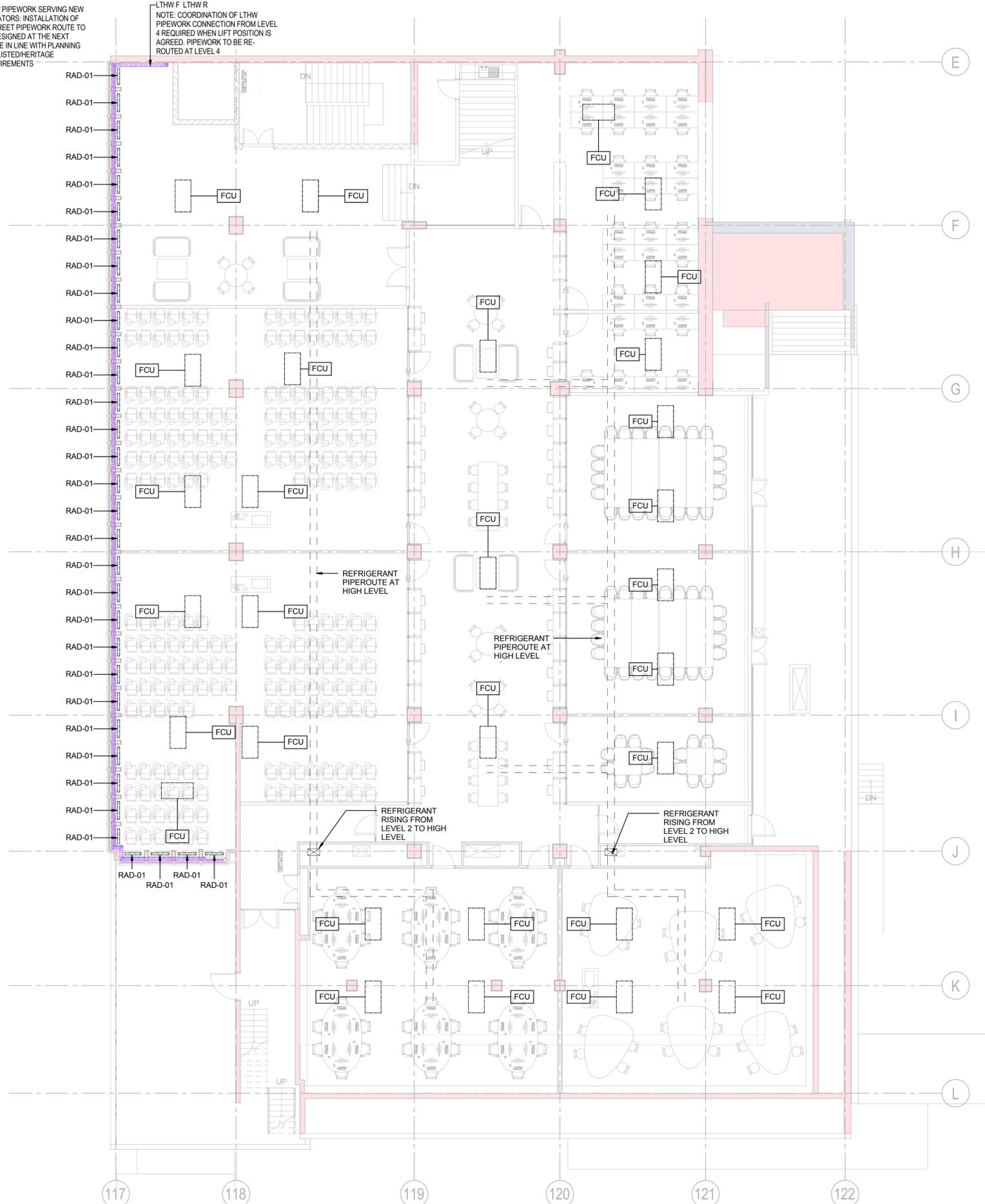
Drawing No: **20BW-BHE-WA-02-DR-M-XX-2000**
 Revision: **P01**



1 Mechanical Services Ductwork Layout - Level 2 Wing A

LTHW PIPEWORK SERVING NEW RADATORS: INSTALLATION OF DISCREET PIPEWORK ROUTE TO BE DESIGNED AT THE NEXT STAGE IN LINE WITH PLANNING AND LISTED/HERITAGE REQUIREMENTS

LTHW F LTHW R
NOTE: COORDINATION OF LTHW PIPEWORK CONNECTION FROM LEVEL 4 REQUIRED WHEN LIFT POSITION IS AGREED. PIPEWORK TO BE RE-ROUTED AT LEVEL 4



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- Notes**
- PIPEWORK NOTES**
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 - WHERE MECHANICAL SERVICES PASS THROUGH FIRE COMPARTMENTATION CEILING VOIDS, FLOOR VOIDS AND STRUCTURAL WALLS THE CONTRACTOR SHALL SLEEVE/SEAL THE OPENING WITH AN ACOUSTIC AND FIRE SEALANT APPROVED BY THE ARCHITECT.
 - THE CONTRACTOR SHALL REFER TO THE ARCHITECT'S DRAWINGS FOR DETAILS OF FIRE COMPARTMENTATION.
 - ALL HIGH POINTS ON MAIN PIPEWORK SHALL BE INSTALLED WITH MANUAL AIR VENTS, UNLESS NOTED OTHERWISE.
 - ALL LOW POINTS ON PIPEWORK SHALL BE INSTALLED WITH DRAIN COCKS.
 - ALL VALVES & CONTROL EQUIPMENT SHALL BE FULLY ACCESSIBLE TO ENABLE SERVICE, MAINTENANCE & REPLACEMENT.
 - MEANS FOR EXPANSION SHALL BE PROVIDED WHERE STRUCTURAL MOVEMENT JOINTS ARE PRESENT.
 - FINAL NUMBER, SIZE & LOCATION OF ALL EXPANSION BELLOWS, GUIDES & ANCHOR POINTS SHALL BE DESIGNED BY CONTRACTOR PRIOR TO INSTALLATION.
 - FOR PIPEWORK MATERIAL & INSULATION REFER TO SPECIFICATION.
 - STEEL/STAINLESS STEEL AND IRON PIPEWORK ARE DENOTED BY THEIR INTERNAL BORE SIZE.
 - COPPER AND PLASTIC PIPEWORK ARE DENOTED BY THEIR EXTERNAL DIAMETER.
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 - CONDENSATE DRAIN TO CONNECT TO NEAREST APPROPRIATE WASTE PIPE SYSTEM.

P01	TENDER	11/04/2017	LH
Rev	Description	Date	Approved

TENDER

Statutory/Validity of Drawing

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Architect: *HawkinsBrown*
Project: **UCL Institute of Education**
Dwg Title: **Mechanical Services
Pipework Layout
Level 3 Wing A**

Job No. 035833	Scale@A1 1 : 100
Drawing No. 20BW-BHE-WA-03-DR-M-XX-1000	Revision P01

1 Mechanical Services Pipework Layout - Level 3 Wing A

DO NOT SCALE THIS DRAWING.

SAFETY HEALTH AND ENVIRONMENTAL INFORMATION

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- CONSTRUCTION**
1. WORKING AT HEIGHT
 2. LIFTING HEAVY EQUIPMENT
 3. WORKING ADJACENT TO POTENTIALLY LIVE SERVICES
 4. HANDLING CHEMICAL PRODUCTS
 5. WORKING IN CONFINED SPACES
 6. PRESENCE OF ASBESTOS

- MAINTENANCE/CLEANING/OPERATION**
1. HANDLING CHEMICAL PRODUCTS
 2. WORKING AT HEIGHT
 3. WORKING ADJACENT TO POTENTIALLY LIVE SERVICES

DECOMMISSIONING/DEMOLITION

1. PRESENCE OF LIVE SERVICES
2. PRESENCE OF ASBESTOS
3. WORKING AT HEIGHT
4. LIFTING HEAVY EQUIPMENT
5. PRESENCE OF FLOOR OPENINGS
6. ALWAYS SAFELY ISOLATE BEFORE COMMENCING ANY WORKS

Notes

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12. THE CONTRACTOR SHALL REFER TO THE ARCHITECT'S DRAWINGS FOR DETAILS OF FIRE COMPARTIMENTATION.
13. ALL DAMPERS SHALL BE SITED AT FULLY ACCESSIBLE LOCATIONS TO ENABLE EASY ACCESS FOR MAINTENANCE & COMMISSIONING.
14. ALL DAMPERS SHALL BE ACCOMPANIED WITH ACCESS PANELS IN DUCTWORK AT ACCESSIBLE LOCATIONS.
15. ALL DUCTWORK SHALL BE PROVIDED WITH ACCESS PANELS AT REGULAR INTERVALS TO FACILITATE CLEANING.
16. ALL BUILDER'S WORK DUCTS SHALL BE BUILT TO STRUCTURAL ENGINEER'S DETAIL.
17. ALL BUILDER'S WORK DUCTS SHALL HAVE A SMOOTH 'FAIR FACED' FINISH.
18. ALL DUCTWORK SHALL BE MANUFACTURED & CONSTRUCTED IN ACCORDANCE WITH DW 144.
19. FLEXIBLE DUCTWORK CONNECTIONS SHALL BE PROVIDED WHERE STRUCTURAL MOVEMENT JOINTS ARE PRESENT.
20. FINAL NUMBER & LOCATIONS OF GRILLES/DIFFUSERS ARE SUBJECT TO ARCHITECT'S FINAL LAYOUT AND SETTING OUT INFORMATION.
21. WHERE SERVICES PENETRATE A FIRE BARRIER A SUITABLE FIRE DAMPER OR FIRE AND SMOKE DAMPER SHALL BE INSTALLED. FIRE SMOKE DAMPERS TO BE USED FOR PROTECTED LOBBY & ESCAPE CORRIDOR COMPARTMENTATION. FIRE DAMPER CONTROL PANEL TO BE PROVIDED.
22. DRAWING HAS BEEN PRODUCED FROM INCOMPLETE RECORD INFORMATION AND VISUAL SITE SURVEYS. CONTRACTOR IS RESPONSIBLE FOR VALIDATING ACCURACY PRIOR TO WORKS.
23. CONTRACTOR TO PROVIDE SCHEDULE OF PROPOSED SERVICES ISOLATIONS PRIOR TO WORK COMMENCING. DRAWINGS ARE INDICATIVE ONLY AND ARE SHOWN FOR THE DESIGN INTENT AND THE DESIGN & BUILD CONTRACTOR'S PRICING PURPOSE. THE CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE DESIGN DURING HIS DESIGN PHASE.

Rev	Description	Date	Appr'd
P01	TENDER	11/04/2017	LH

TENDER

Status/Stability of Drawing

**BUROHAPPOLD
ENGINEERING**

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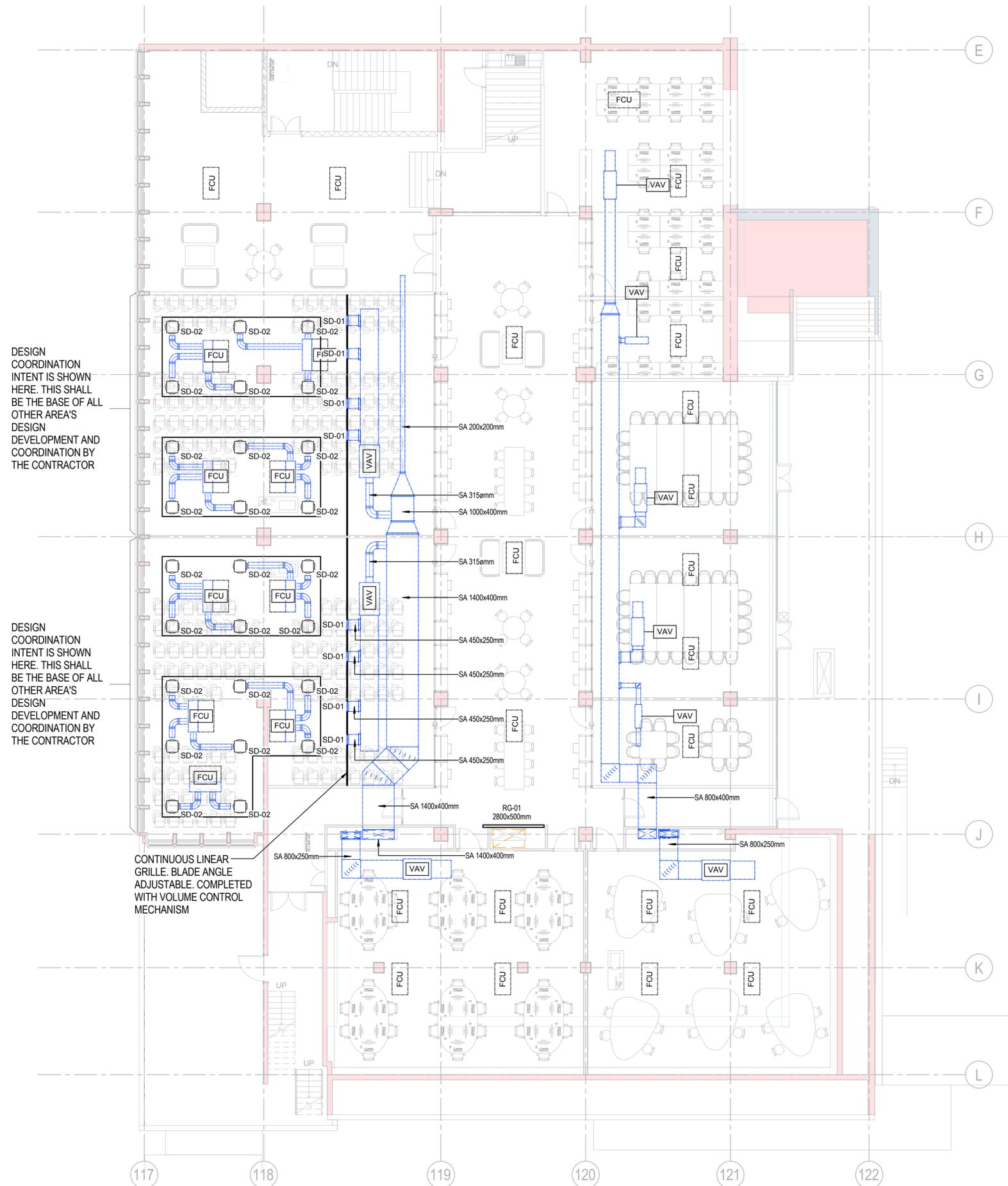
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 Web: www.burohappold.com

Architect: *HawkinsBrown*
 Project: **UCL Institute of Education**
 Dwg Title: **Mechanical Services
 Ductwork Layout
 Level 3 Wing A**

Job No: **035833**
 Scale: **1 : 100**

Drawing No: **20BW-BHE-WA-03-DR-M-XX-2000**

Revision: **P01**



DESIGN COORDINATION INTENT IS SHOWN HERE. THIS SHALL BE THE BASE OF ALL OTHER AREA'S DESIGN DEVELOPMENT AND COORDINATION BY THE CONTRACTOR

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CONTINUOUS LINEAR GRILLE. BLADE ANGLE ADJUSTABLE. COMPLETED WITH VOLUME CONTROL MECHANISM

1 Mechanical Services Ductwork Layout - Level 3 Wing A

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 - HANDLING CHEMICAL PRODUCTS
 - WORKING IN CONFINED SPACES
 - PRESENCE OF ASBESTOS

- MAINTENANCE/CLEANING/OPERATION**
- HANDLING CHEMICAL PRODUCTS
 - WORKING AT HEIGHT
 - WORKING ADJACENT TO POTENTIALLY LIVE SERVICES

- DECOMMISSIONING/DEMOLITION**
- PRESENCE OF LIVE SERVICES
 - PRESENCE OF ASBESTOS
 - WORKING AT HEIGHT
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P01	TENDER	11/04/2017	LH
Rev	Description	Date	Approved

TENDER

Status/Validity of Drawing

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 Web: www.burohappold.com

Architect: **HawkinsBrown**
 Project: **UCL Institute of Education**
 Dwg Title: **Mechanical Services Symbols Legend**

Job No: 035833	Scale@A1 NTS
Drawing No. 20BW-BHE-WA-XX-DR-M-XX-5000	Revision P01

PIPE VALVES

- ISOLATING VALVE (OPEN)
- ISOLATING VALVE (CLOSE)
- GATE VALVE
- WHEEL VALVE
- NON RETURN (CHECK) VALVE
- DOUBLE NON RETURN (CHECK) VALVE
- PRESSURE REDUCING VALVE
- GLOBE VALVE
- REGULATING VALVE
- DOUBLE REGULATING VALVE
- COMMISSIONING SET
- SAFETY VALVE
- ANGLE SAFETY VALVE
- LOCKABLE VALVE (NORMALLY CLOSED)
- LOCKABLE VALVE (NORMALLY OPEN)
- BALL VALVE
- DIFFERENTIAL PRESSURE CONTROL VALVE
- DRAIN COCK
- STAINER C/U
- THERMOSTATIC RADIATOR ANGLE VALVE
- THERMOSTATIC RADIATOR STRAIGHT VALVE
- AUTOMATIC AIR VENT
- AIR VENT
- 2 PORT MOTORISED VALVE
- 2 PORT SOLENOID VALVE
- 3 PORT MOTORISED VALVE (REGULATING)
- 3 PORT MOTORISED VALVE (DIVERTING)
- PRESSURE INDEPENDENT CONTROL VALVE
- 4 PORT MOTORISED VALVE
- FILL POINT

NOTATION

0 l/s | 0 Pa/m
 0 m/s | 0 mm

0 m.c.u/s | 0 Pa/m
 0 m/s | 0 mm

PIPE INSTRUMENTS

- PRESSURE GAUGE
- TEMPERATURE GAUGE
- CONTENTS GAUGE
- DIFFERENTIAL GAUGE
- HUMIDITY SWITCH
- PRESSURE SWITCH
- TEMPERATURE SWITCH
- FLOW SWITCH
- TEMPERATURE SENSOR
- PRESSURE SENSOR
- FLOW SENSOR
- HUMIDITY SENSOR
- THERMOMETER
- PRESSURE TAPPING
- GAS METER
- HEAT METER
- WATER METER
- DIFFERENTIAL PRESSURE SENSOR

PIPE ACCESSORIES

- FLOW ARROW
- GRADIENT ARROW (FALL)
- PIPE TO OR FROM ABOVE
- PIPE TO OR FROM BELOW
- PIPE CONNECTION BELOW
- PIPE TURNS DOWN
- PIPE TURNS UP/PIPE CONNECTION
- ANCHOR POINT
- BLANK END
- PIPE BREAK - SINGLE LINE
- PIPE BREAK - DOUBLE LINE
- TUNDISH - PLAN
- TRAPPED TUNDISH - PLAN
- TUNDISH - ELEVATION
- TRAPPED TUNDISH - ELEVATION
- BIB TAP
- HOSE UNION BIB TAP
- OPEN VENT
- EXPANSION BELLOWS
- ANTI-VIBRATION COUPLING
- TEST POINT
- DOSING POT
- EXPANSION VESSEL

HVAC ACCESSORIES

- EXHAUST DUCT UP RECTANGULAR
- EXHAUST DUCT UP ROUND
- EXHAUST DUCT UP OVAL
- EXHAUST DUCT DOWN RECTANGULAR
- EXHAUST DUCT DOWN ROUND
- EXHAUST DUCT DOWN OVAL
- SUPPLY DUCT UP RECTANGULAR
- SUPPLY DUCT UP ROUND
- SUPPLY DUCT UP OVAL
- SUPPLY DUCT DOWN RECTANGULAR
- SUPPLY DUCT DOWN ROUND
- SUPPLY DUCT DOWN OVAL
- RETURN DUCT UP RECTANGULAR
- RETURN DUCT UP ROUND
- RETURN DUCT UP OVAL
- RETURN DUCT DOWN RECTANGULAR
- RETURN DUCT DOWN ROUND
- RETURN DUCT DOWN OVAL
- AIR FLOW SUPPLY ARROW
- AIR FLOW EXTRACT ARROW

HVAC DAMPERS

- FIRE DAMPER
- VOLUME DAMPER LABEL
- VOLUME CONTROL DAMPER (PARALLEL BLADES)
- VOLUME CONTROL DAMPER (OPPOSED BLADES)

HVAC AIR TERMINALS

- CEILING SQUARE SUPPLY GRILLE
- CEILING SQUARE EXTRACT GRILLE
- CEILING CIRCULAR SUPPLY GRILLE
- CEILING CIRCULAR EXTRACT GRILLE
- CEILING HALF CIRCLE SUPPLY GRILLE
- CEILING HALF CIRCLE EXTRACT GRILLE
- 1 WAY SUPPLY DIFFUSER
- 2 WAY SUPPLY DIFFUSER
- 3 WAY SUPPLY DIFFUSER
- 4 WAY SUPPLY DIFFUSER
- CEILING LINEAR SUPPLY DIFFUSER

HVAC INSTRUMENTS

- FLOW VARIABLE SWITCH
- HUMIDISTAT SWITCH
- FLOAT SWITCH
- TEMPERATURE SWITCH
- DEW POINT SENSOR
- SMOKE DETECTOR
- TEMPERATURE SENSOR
- PRESSURE SENSOR
- WALL THERMOSTAT
- SELF CONTAINED THERMOSTAT
- DIFFERENTIAL PRESSURE SENSOR

HVAC EQUIPMENT

- FIXED SPEED PUMP
- VARIABLE SPEED PUMP
- CABINET UNIT HEATER
- ROOM AIR CONDITIONING
- HORIZONTAL HEATER
- PLATE HEAT EXCHANGER
- PRESSURE VESSEL
- SHELL HEAT EXCHANGER
- DUCT HEATER
- DUCT CHILLER
- FIN COIL EVAPORATOR
- FORCED CONVECTION
- PIPE COIL
- PLATE COIL
- ENCASED FAN
- ENCASED TWIN FAN
- TWO PIPE FAN COIL UNIT (WITH COOLING COIL)
- TWO PIPE FAN COIL UNIT (WITH HEATING COIL)
- TWO PIPE FAN COIL UNIT (WITH COOLING AND HEATING COIL)
- EXTERNAL LOUVRE
- FLOOR DUCT HEATER
- OVER DOOR HEATER
- DOOR TRANSFER GRILLE
- MANIFOLD
- FINNED TUBE
- HOSE REEL

PIPEWORK TEES

- 45° BRANCH
- 45° CROSS
- BOSS CONNECTION
- CROSS TEE
- DOUBLE LONG RADIUS BRANCH

PIPEWORK CLEANOUT

- ACCESS POINT FITTING
- RODDING EYE IN RISER
- RODDING EYE TO FALL

CONNECTIONS

- FLANGED UNION
- FLEX CONNECTION
- WELD NECK FLANGE
- THREADED FLANGE
- SCREWED UNION

PIPE CONNECTION

- OVERSHOOT
- CONNECTION

PIPEWORK REDUCERS

- CONCENTRIC REDUCER
- ECCENTRIC REDUCER

HVAC PARTS

- CAP END
- DUCT SILENCER
- DUCT HUMIDIFIER
- DUCT COIL
- DUCT SCREEN
- TOP & BOTTOM ACCESS DOOR
- SIDE ACCESS DOOR

AHU PLANT

- BUTTERFLY DAMPER
- OPPOSED BLADE DAMPER
- VOLUME CONTROL DAMPER
- PRESSURE RELIEF DAMPER
- FIRE DAMPER
- SMOKE CONTROL DAMPER
- VENTILATION FAN
- AXIAL FLOW FAN
- PROPELLER FAN
- ACCESS SECTION
- AHU BLANK SECTION
- AHU COOLING COIL
- AHU HEAT EXCHANGER
- AHU HEATING COIL
- AHU RUN AROUND COIL
- AHU ELIMINATOR
- AHU SPRAY HUMIDIFIER
- AHU BAG FILTER
- AHU STEAM HUMIDIFIER
- AHU PANEL FILTER
- MIXING BOX
- AHU HEAT RECOVERY
- AHU ATTENUATOR

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1. HANDLING CHEMICAL PRODUCTS
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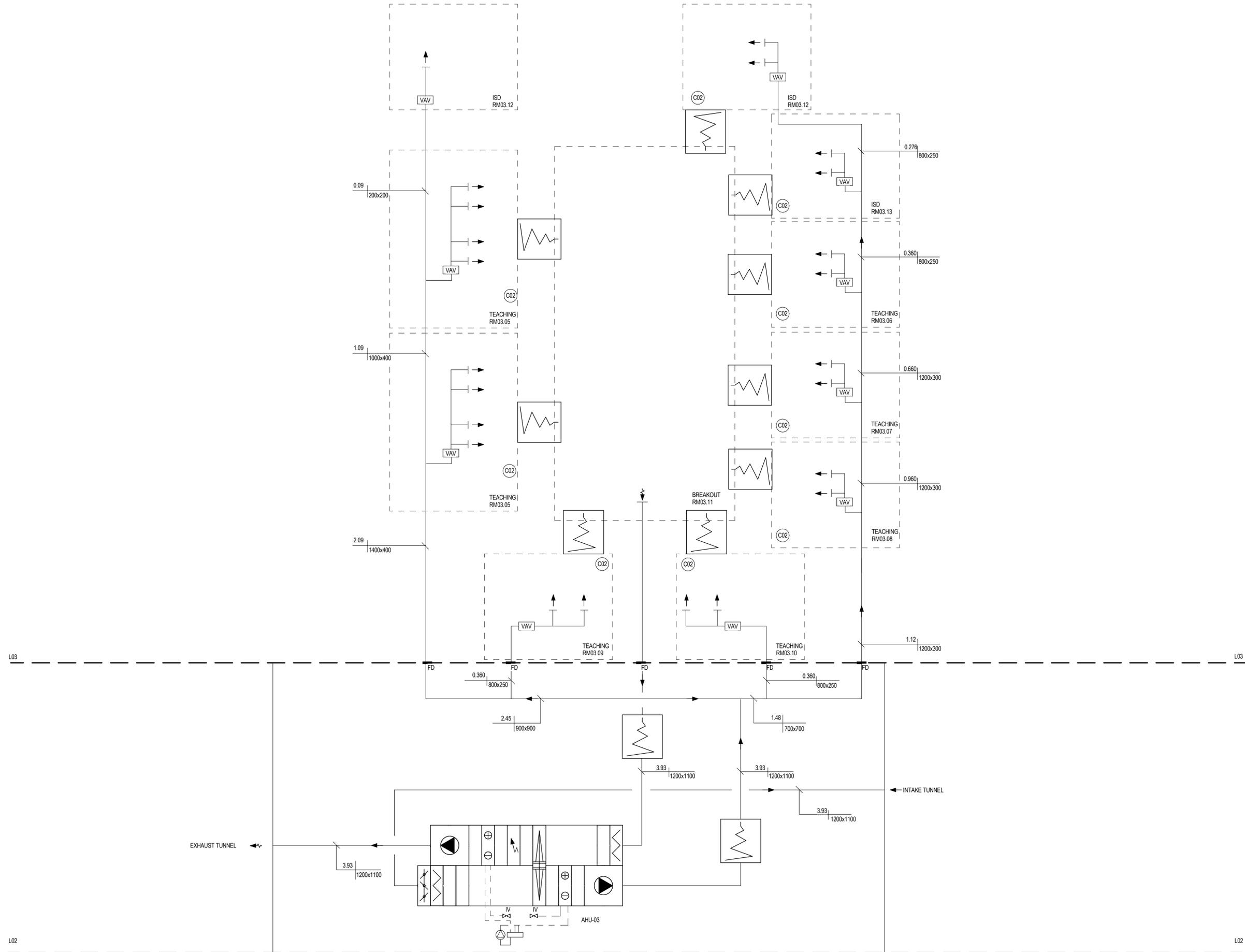
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Rev	Description	Date	Appr
P01	TENDER	11/04/2017	LH

TENDER

Status/Suitability of Drawing

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Architect: **HawkinsBrown**
 Project: **UCL Institute of Education**
 Dwg Title: **Mechanical Services Ventilation Schematics Wing A Sheet 1**

Job No: 035833	Scale@A1 NTS
Drawing No. 20BW-BHE-WA-XX-SC-M-XX-7000	Revision P01

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15. DRAWINGS ARE INDICATIVE ONLY AND ARE SHOWN FOR THE DESIGN INTENT AND THE DESIGN & BUILD CONTRACTOR'S PRICING PURPOSE. THE CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE DESIGN DURING HIS DESIGN PHASE.

R01	TENDER	11/04/2017	LH
Rev	Description	Date	Approved

TENDER

Status/Submitability of Drawing

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 Project: **UCL Institute of Education**
 Dwg Title: **Mechanical Services
 Ventilation Schematics Wing A
 Sheet 2**

Job No. 035833	Scale@A1 NTS
Drawing No. 20BW-BHE-WA-XX-SC-M-XX-7001	Revision P01

