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	(5-) MECHANICAL INSTALLATION					
	(10) DEMOLITION & ALTERATIONS					
	ALTERATIONS					
	Note:					
A	1. THE ONUS IS ON THE CONTRACTOR TO VISIT THE SITE OF THE WORKS AND TO SATISFY HIMSELF AS TO THE NATURE AND EXTENT OF THE WORKS AND ALL OTHER MATTERS THAT MIGHT INFLUENCE HIS PRICE OR TIME FOR COMPLETION OF THE WORKS (ARRANGEMENTS TO VISIT THE SITE SHOULD BE MADE WITH THE EMPLOYERS REPRESENTATIVE). THE CONTRACTOR MUST INCLUDE WITHIN HIS PRICE FOR ALL WORKS IN CONNECTION WITH THE DEMOLITION WORKS AND WORKS TO THE EXISTING BUILDINGS, WHICH COULD BE REASONABLY FORESEEN OR IMPLIED BY THE TENDER DOCUMENTS. NO CLAIMS ON THE GROUNDS OF WANT OF KNOWLEDGE IN RESPECT OF THE ABOVE WILL BE ENTERTAINED WHATSOEVER.		note			
	Removing					
	Plumbing and Engineering Installations					
	Modifications to existing single pipe heating circuit to accommodate new works (measured elsewhere); including isolation, draining down, cutting into existing pipework, formation of connections, provision of fittings, valves, and supports as required, testing, making good, and full reinstatement of insulation and finishes; all in accordance with the Mechanical Specification and Drawing M-5601					
	Modifications to existing natural gas supply within plantroom to new boilers (measured elsewhere); including isolation, draining down, cutting into existing pipework, formation of connections, provision of fittings including new slam shut valve, meter and gas detection system (measured elsewhere), valves, and supports as required, testing, making good, and full reinstatement of insulation and finishes; all in accordance with the Mechanical Specification and Drawing M-5601					
	Notes					
B	The tendering Contractors are referred to ARM 4 Supplement 2, Agreed Alternative Rules for the Measurement of Services Installations (Issue 1, 2013), used in the production of this section of the pricing document.		note			
C	The following works are to be priced in accordance with the detailed design; performance specifications and scheme drawing numbers (list included in the Works Requirements) as prepared by BDP Consulting Engineers.		note			
D	Builders work in connection with the contract works such as cutting or drilling of holes, forming apertures, chases in walls, floors and ceilings, will be carried out by the Works Specialist under the terms of the main contract. The Mechanical Specialist shall be responsible for the correct marking out of all attendances, and all other cutting to be performed by the Works Specialist.		note			
				To Collection €		

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	(5-) MECHANICAL INSTALLATION (Cont)					
	ASBESTOS REMOVAL					
	DEMOLITION & ALTERATIONS					
	General					
A	The following items are not measured in strict accordance with ARM.		note			
B	The Contractor is refered to the Pre Refurbishment & Demolition Asbestos Survey		note			
C	The Contractor must ensure that any risk of exposure to asbestos is completely eliminated. Contractor to consult with Employer's Representative before any work commences on site.	1	item			
D	The Contractor is advised that there is a notification form to be used for any work involving asbestos. This form must be submitted 28 days prior to the start of such work.	1	item			
E	The Main Contractor / PSCS must appoint a specialist asbestos removal contractor to carry out the asbestos removal & disposal works	1	item			
F	Prior to commencing any demolition or construction works on site all asbestos must be removed from site; in accordance with the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006 & 2010	1	item			
G	The Main Contractor / PSCS must appoint a competent independent analyst / accredited laboratory for the purpose of undertaking air sampling, project monitoring and issuing site clearance for reoccupation certification; in conformance with ISO 17025 General Requirements for the Competence of Testing and Calibration Laboratories	1	item			
H	Prior to commencing the asbestos removal works the specialist contractor shall submit (to the PSDP & Employer's Representitive) their Plan of Work (risk assessment / method statement), Design Risk Assessment, and temporary works certificates for the Asbestos Removal works (at least 21 days in advance of commencing the asbestos removal works)	1	item			
J	Prior to commencing the asbestos removal works the specialist contractor shall submit their Plan of Work (risk assessment / method statement), and notify, to the HSA (at least 14 days in advance of commencing the asbestos removal works). The PSCS must also ensure that copies of the notifications are forwarded to the PSDP, Client & Project Manager	1	item			
K	No works may take place on site until the Plan of Work has been drawn up and approved by the Main Contractor / PSCS	1	item			
L	No deviations shall be permitted from the plan of work submitted to the HSA	1	item			
M	Should the Plan of Work require amending / updating (for whatever reason) it must be issued to the PSDP & Project Manager in the first instance, and then the HSA, prior to proceeding with any proposed changes	1	item			
				To Collection €		

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	(5-) MECHANICAL INSTALLATION (Cont)					
A	No asbestos removal works may take place in areas occupied by normal construction / project personnel and / or third parties	1	item			
B	An asbestos site clearance for reoccupation certificate(s) must be supplied (by the competent independent analyst / accredited laboratory) to the PSDP & Project Manager prior to commencing any demolition or construction works on site (other than the asbestos removal works); the certificate(s) must include (1) Visual inspection, (2) Air monitoring and (3) The decontamination unit	1	item			
C	After completing Asbestos Removal works the PSCS must ensure that asbestos site clearance for reoccupation certificates are issued to the Project Manager, PSDP, and Client PRIOR to allowing those areas to be opened up to persons (other than those persons directly involved in the asbestos removal works)	1	item			
D	NO Asbestos Containing Waste Material may be removed from the site unless a Waste Transfer Form (removal of Hazardous Waste Material from Site) has been completed and issued to the PSCS / Main Contractor, the PSDP & Project Manager	1	item			
E	The PSCS / Main Contractor must forward copies of final disposal certificates (i.e. completed Waste Transfer Form (final disposal of Hazardous Waste Material)) to the PSDP & Project Manager	1	item			
F	The PSCS / Main Contractor must forward, the following information (as applicable) to the PSDP, for inclusion in the Safety File; Bulk sample results, Amended Asbestos Register, Preliminary Safety & Health Plan and Specification, Specialist asbestos removal contractor Plan of Work, Notification to the Health and Safety Authority, Air monitoring results prior to removal works commencing, Air monitoring results during removal works, site clearance for reoccupation certificates, Completed Waste Transfer Form for the final disposal of all asbestos / hazardous waste.	1	item			
G	All asbestos works must be carried out in accordance with; The HSA 2010 Code of Practice for Safety, Health and Welfare at Work (Chemical Agents) Regulations 2001, The Safety Health and Welfare at Work (Exposure to Asbestos) Regulations 2006 & 2010, The HSA Guidelines on Working with Materials Containing Asbestos Cement (and any subsequent amendments updates to HSA Guidelines and / or Codes of Practice)	1	item			
H	Contractor to include here (Unless included in rates elsewhere) for protection of all fixtures, fittings and finishes to all areas in which asbestos removal occurs	1	item			
	Alterations					
J	The Contractor must note that the safe and proper removal and disposal of all asbestos material is the Contractor's full responsibility and therefore the contractor's price/rates must include for all work in connection with same; no claims on the grounds of want of knowledge will be entertained whatsoever.	1	item			
				To Collection €		

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	(5-) MECHANICAL INSTALLATION (Cont)					
	Removing Finishes; Asbestos Material					
A	Submit Plan of Work and 14 day prior notification to the Health & Safety Authority	1	item			
B	Setup Decontamination Unit & Form Enclosures	1	item			
C	Specialist removal and disposal of asbestos - containing valves in accordance with all relevant safety and environmental regulations.	1	item			
D	Specialist removal and disposal of asbestos - asbestos in control valve gaskets from basement noiler room 2 - chrysotile in accordance with all relevant safety and environmental regulations.	1	item			
E	Environmental clean to achieve clearance certification	1	item			
F	Asbestos Removal & Disposal Certificates	1	item			
G	INAB Accredited Asbestos Clearance Certification					
H	Reassurance Air Monitoring and Re-occupation Clearance Certification by an Asbestos Consultant	1	item			
				To Collection €		

(5-) MECHANICAL INSTALLATION (Cont)

ALTERNATIVE RULES FOR THE MEASUREMENT OF MECHANICAL INSTALLATIONS

(51) HEATING CENTRE

System

Heating center installation, testing and commissioning; consisting of 2nr ASHP (Primary heating source) and 3nr LPG gas fired condensing boilers (secondary heating source) serving radiators throughout the building; the installation shall include a pressurisation unit, expansion vessel, pipework, shunt pumps and all associated valves; the existing header and on floor distribution pipework to be retained and reused; existing flow rates to be recorded prior to works and re-established at the end of the works; The heating system shall be flushed and provided with appropriate chemical treatment; Commissioning results including a flue gas analysis shall be provided for the boilers prior to handover, along with a statement by the manufacturer/supplier confirming their correct and efficient operation; all in strict accordance with the Mechanical Engineers Specification Part 1; Part 2; Part 3; Part 4 and Drawings M-5601

Accessories associated with Primary Equipment

Stop valves for isolation of LPHW pipework up to 65mm Dia; Type: ball valves, lever operated; Operating temp: up to 90øC; PN rating: PN16; Kitemark certified; Pipe material - To suit steel tube; Ball type, copper alloy to IS EN 13828; Lever operated; Between flanges to IS EN 1092-2; all in strict accordance with Engineers Specification Part 3

A	22mm Stop valves	2	nr		
B	50mm Stop valves	2	nr		

Stop valves for isolation of LPHW pipework over 65mm Dia; Type: ball valves, lever operated; Operating temp: up to 90øC; PN rating: PN16; Kitemark certified; Pipe material - To suit steel tube; Ball type, copper alloy to IS EN 13828; Lever operated; Between flanges to IS EN 1092-2; all in strict accordance with Engineers Specification Part 3

C	100mm Stop valves	18	nr		

Non-return valves; include for all accessories and fittings; all in strict accordance with Engineers Specification Part 3

D	22mm Non-return valves	3	nr		
E	100mm Non-return valves	5	nr		

Lock Shield Valve; include for all accessories and fittings; complete; all in accordance with the Mechanical Engineers Specification Part 3

F	22mm Lock shield valve	2	nr		

To Collection €

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	(5-) MECHANICAL INSTALLATION (Cont)					
	Auto Air Vents; include for all accessories and fittings; complete; all in accordance with the Mechanical Engineers Specification Part 3					
A	22mm AAV Valve	1	nr			
	Strainer valve; include for all fittings and accessories; all in accordance with the Mechanical Engineers Specification Part 3					
B	100mm Strainer Valves	2	nr			
	Commissioning Sets; include for all accessories and fittings; complete; all in accordance with the Engineers Specification					
C	100mm Commissioning Set	1	nr			
	Drain Cock Valve; include for all accessories and fittings; complete; all in accordance with the Engineers Specification					
D	150mm Drain Cock Valve	2	nr			
	Temperature Sensors; include for all accessories and fittings; complete; all in accordance with the Mechanical Engineers Specification Section Part 3					
E	Temperature sensor	8	nr			
	Temperature gauge; include for all accessories and fittings; complete; all in strict accordance with the Mechanical Specification Part 3					
F	100mm Pressure gauge	6	nr			
	Pressure gauge; include for all accessories and fittings; complete; all in strict accordance with the Mechanical Specification Part 3					
G	80mm Pressure gauge	2	nr			
H	100mm Pressure gauge	4	nr			
	Flexible connections; include for all accessories and fittings; complete; all in strict accordance with the Mechanical Specification Part 3					
J	100mm Flexible connections	6	nr			
				To Collection €		

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	(5-) MECHANICAL INSTALLATION (Cont)					
	Gas Fired Boiler; The Contractor shall supply, install test and commission a fully packaged cascading wall mounted modulating LPG gas fired boiler plant in each schools Heating Plant room as an assist to the electric Air Source Heat Pump primary plant; Description: Wall hung modulating boilers; Fuel: LPG; LPHW Flow & Return Operating Temps: 50/30°C; Output Duty: 150kW; Gas Consumption: 11.3m3/hr; Dimensions (W x H x D): 690 x 584 x 952mm; Weight (empty): 147kg; SBEM Seasonal efficiency: 96.8; Flue: C13 110/160; Accessories: Integral class 'A' modulating pump T 20, Weather compensated controller c/w north facing temp stat, LPG Conversion Kit, 3 bar safety valve, Connection module and VFC required for connection to the BEMS for Enable/Fault; all in strict accordance with the Mechanical Engineers Equipment Schedule					
A	Gas Fired Boiler; Ref: BLR 01	1	nr			
B	Gas Fired Boiler; Ref: BLR 02	1	nr			
	Air Separator; supply and installation; complete; Description: Deaerator, Application: LPHW Heating System; Connection Size: DN 100; Construction: Mild steel, welded; Mounting: Inline; Finish: Powder coated; Max. flow velocity: 1.5 m/s; Pressure drop at Max. Flow: 4.2 kPa; Auto Air Vent: Integral; Stainer Screen: Stainless Steel; Magnets: Neodymium Magnets; Typical Height: 1500 mm; Typical Length: 650 mm; Compliance: Declaration of Performance / CE Certification / Confirmation of CPR Exemption PED 2014/68/EU; all in strict accordance with the Mechanical Engineers Equipment Schedule					
C	Air Separator; Ref: ASP-01	1	nr			
	Dirt Separator; supply and installation; complete; The Contractor shall supply and install air/dirt separators on the primary flow & return heating pipework from the ASHP; Description: Deaerator, Application: LPHW Heating System; Connection Size: DN 100; Construction: Mild steel, welded; Mounting: Inline; Finish: Powder coated; Max. flow velocity: 1.5 m/s; Pressure drop at Max. Flow: 4.2 kPa; Auto Air Vent: Integral; Stainer Screen: Stainless Steel; Magnets: Neodymium Magnets; Typical Height: 1500 mm; Typical Length: 650 mm; Compliance: Declaration of Performance / CE Certification / Confirmation of CPR Exemption PED 2014/68/EU; all in strict accordance with the Mechanical Engineers Equipment Schedule					
D	Dirt Separator; Ref: MSD-01	1	nr			
	Circulation Pump; supply and installation; complete; Description: Twin head, canned-rotor type c/w integral variable speed control & BMS connectivity; Power: 230C/1ph/50Hz; Pump Housing Material: Cast Iron; Impeller Material: Cast Iron; Maximum Operating Pressure: 10 bar; Enclosure Class: X4D; Insulation Class: F; Energy (EEI): 0.17; Compliance: Declaration of Performance / CE Certification; See Part 3: Standard Clauses; for appropriate standards; ERP Directive (2009/125/EC); EU Regulation (813/2013); Energy Labelling Framework; Regulation (EU) (2017/1369); EU Regulation (811/2013); all in strict accordance with the Mechanical Engineers Equipment Schedule 1.5					
E	Pump LPHW, Ref: PMP01; Flow rate: 25.0 kg/s; Head: 55kPa	1	nr			
F	Pump LPHW, Ref: PMP02; Flow rate: 25.0 kg/s; Head: 120kPa	1	nr			
				To Collection €		

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	(5-) MECHANICAL INSTALLATION (Cont)					
	Pressurisation Unit; supply and installation; complete; Description: Floor Standing LPHW Pressurisation Unit, Pumps: Twin.; Breaktank Connection: #AB# air gap to water supply; Max Working Pressure: 10 Bar; Connectivity: Volt Free Contacts required for High/Low level fault output to BMS; Digital Display: Required c/w password protection; Independent High / Low Pressure Alarm: Hard-wired; Auto Fill Capacity: Required; Standards/ Conformity: ISO 9001, BSEN 60204 Part 1, WRAS approved, IMQ & VDE Standards, PED, EMC Directives; Expansion Vessel: See drawings; Max. Working Pressure of Expansion Vessels: 10 bar; Pressurisation unit to supply common fault signal to BMS, Pressurisation unit c/ w high & low pressure trip, Quick fill loop to be included as part of installation; all in strict accordance with the Mechanical Engineers Equipment Schedule 1.8					
A	Pressurisation Unit; Ref: PRU001; Location: Plant room	1	nr			
	Buffer Vessel; supply and installation complete; Description: Direct Heating Vertical Buffer Vessel; Storage Capacity: 600 litres; Material: Mild Steel Construction with exterior paint; Max. Temperature: 99øC; Max. Working Pressure: 3 bar; Size: 1895mm (H) x 750mm (dia); Max.; Connections: See schematic; Insulation: 550mm soft polyester fibre insulation with high Thermal insulation to ErP class B or C, Fire Class: B-s2do to EN 13501; Warranty: 5 years; Accessories: Access hatch, Temperature Gauge, Pressure Gauge, Temp/Pressure, Safety Valve & tundish, Immersion Pockets 200mm deep min; Compliance: Declaration of Performance / CE Certification PED 2014/68/EU; all in strict accordance with the Mechanical Specification Part 4, Section 1.4					
B	Buffer vessel; Ref: BUF001	1	nr			
	Chemical dosing pot; supply and installation; complete; Capacity: 11 litres; Construction: Mild steel, welded; Mounting: Wall mounted c/w wall mounting brackets; Finish: powder coated; Minimum Output: 1 kW; Connection Details: Tundish, 1# fill valved connection, 1# drain valved connection, 1# flow valved connection, 12 return valved connection, Air vent Connection Sizes 1#; Typical Height: 880 mm; Typical Diameter: 200 mm; Weight: 16.5; c/w foot valve; chemical drum; Cleansing; Corrosion inhibitor and wall mounting brackets; include for all accessories and fittings; all in strict accordance with the Mechanical Equipment Schedule 1.7					
C	Chemical dosing pot	1	nr			
				To Collection €		

					€	c
	(5-) MECHANICAL INSTALLATION (Cont)					
	LPHW Plate Heat Exchanger; Description: Counter Flow LPHW to LPHW Plate Heater Exchanger with IG Painted Frame; Flow Plates: Stainless Steel Single pass solution Corrugated #herringbone# pattern AISI 316L (EN 1.4404) / 0.4mm; Heat Load: 426kW; Hot Side Inlet Temp Varies; Hot Side Outlet Temp Varies; Cold Side Inlet Temp Varies; Cold Side Outlet Temp Varies; Frame Carbon Steel with clamping bolts around frame edge; Design Pressure of Frame 10 bar; Hot Side Connections Carbon Steel rubber lined studded ports; Cold Side Connections Carbon Steel rubber lined studded ports; Gaskets NBR / Glue Free Plug In; Dimensions Varies; Construction Standard EN13455, ASME SecVIII, Div.1; Additional Equipment ? Bespoke Insulating Jacket ? Assembling Spanner ? Foundation Feet ? Instrument Flange ? Thermometer & Manometer ? Name Plate to indicate test and operating pressure; all in strict accordance with the Mechanical Equipment Schedule 1.11					
A	Plate Heat Exchanger	1	nr			
	Expansion Vessel; include for all fittings and accessories; all in accordance with the Mechanical Engineers Specification Part 3 & 4					
B	Expansion Vessel	1	nr			
	Hydraulic Low Loss Header; include for all fittings and accessories; all in accordance with the Mechanical Engineers Specification Part 3 & 4					
C	Hydraulic Low Loss Header	1	nr			
	Magnetic filteration unit; include for all fittings and accessories; all in accordance with the Mechanical Engineers Specification Part 3 & 4					
D	Magnetic filteration unit	1	nr			
	Boiler Flues; Flues shall be installed from each boiler as a pre-fabricated horizontal discharge balanced flue system; Description: Horizontal Balanced Flue Kit; Construction Inner: 304 grade s/steel (EN 1.4301); Construction Outer: Powder Coated Steel; Insulation Thickness: 50mm; Fire Rating: 2 hours (BS 476: Part 20); Minimum Clearance to Combustible Material: 50mm; Terminal Type: Suitable for Horizontal discharge; Support Brackets Int. Use: Powder-coated, 304 grade stainless steel; Roof terminal kit: Required; all in strict accordance with the Mechanical Engineers Specification Part 3					
E	Boiler flue; Size 100/160mm diameter	2	nr			
F	Boiler flue; Size 300mm diameter	1	nr			
G	Boiler header flue; Size 300mm diameter	1	nr			
				To Collection €		

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	(5-) MECHANICAL INSTALLATION (Cont)					
	Description Heat meter; Media LPHW; Visible Display Digital; Pulse Output Requirements; Switch type - reed; Contacts - VFC; Pulse value # 1 kw/h per pulse; Load current - 500mA; Max switch voltage - 180 Vdc; Contact rating # 10W; Flying lead - 2m; Requirements - Class 2 Ultrasonic flow sensor - Calculator with integral hardware and software for measuring flow rate, temperature and energy consumption - Temperature sensors - Pulsed Input interface card for water sub-metering- Remote reading via M-Bus or similar interface - Power save mode - 24 month memory - Extensive diagnostic displays; Connection Type As per Part 3: Standard Clauses; Inline Strainer Required; Installation Positions Horizontal & vertical; Max Pressure 16 Bar; Media Temperature 1 oC # 90/130oC; Operating Temperature 1 oC # 90/130oC; Compliance Declaration of Performance/CE Certification, IS EN 14154, MID (Measuring Instrument Directive) 2004/22/, EC, CEN EN 1434 (2007) and OIML R5 (2002); all in strict accordance with the Mechanical drawing and Specifications documents Volume 3 - Equipment Schedules 2.4					
A	Heat Meter	2	nr			
	Distribution					
	Medium Grade Black Mild steel pipework and fittings; include for all fixings and supports; include for all elbows, expansion bellows; unions and tees necessary to complete the work, all pipework up to 50mm to be screw joints, pipework above 50mm to be welded, plant room pipework to be flanged; all connections to valves shall be screwed; Painting: two coat of zinc chromate primer prior to fitting of insulation; all in strict accordance with the Mechanical Engineers Specification Part 3					
B	22mm diameter pipework	1	item			
C	50mm diameter pipework	1	item			
D	65mm diameter pipework	1	item			
E	80mm diameter pipework	1	item			
F	100mm diameter pipework	1	item			
G	150mm diameter pipework	1	item			
				To Collection €		

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	(5-) MECHANICAL INSTALLATION (Cont)					
	Heating Distribution pipework up to and including 80mm shall be Copper to IS EN 1057; include for all fixings All fittings employed on copper pipework systems shall be of the nondezincifiable quality. Soldered joints shall be in accordance with HVCA TR7 #Guidance on Soft Soldering for Pipe Jointing Copper# using lead free solder. On sizes 54 mm and below joints shall be made with capillary fittings to IS EN 1254 using lead free solder. On condense, boiler feed and boiler blow down systems an approved silver brazing alloy to IS EN 1044 shall be used. At dismantling points, unions, or flanged joints as appropriate shall be used. For connections to all appliances and on drainage pipework, joints shall be made with compression fittings to EN 1254 Part 2 or 2051 Part 1 as appropriate; all in strict accordance with the Mechanical Engineers Specification Part 4					
A	22mm diameter pipework	1	item			
B	50mm diameter pipework	1	item			
C	65mm diameter pipework	1	item			
D	80mm diameter pipework	1	item			
E	100mm diameter pipework	1	item			
F	150mm diameter pipework	1	item			
	Insulation					
	Phenolic preformed section insulation; to LTHW services pipes; Thermal conductivity shall not exceed 0.042 Wm2K at 100oC; All insulation shall be fitted in accordance with the manufacturer#s instructions. All heating and plumbing pipework, valves and ancillary equipment within the plant room and external plant compound shall be insulated and aluminum hammer clad to provide mechanical protection; All insulation shall be Class A1, CFC and HCFC free with ozone depletion factor of zero; include for all accessories; all in accordance with the Mechanical Engineers Specification Part 4					
	Insulation, 15mm thick					
G	to 22mm diameter pipework	1	item			
	Insulation, 40mm thick					
H	to 50mm diameter pipework	1	item			
J	to 65mm diameter pipework	1	item			
K	to 80mm diameter pipework	1	item			
L	to 100mm diameter pipework	1	item			
M	to 150mm diameter pipework	1	item			
				To Collection €		

					€	c
	(5-) MECHANICAL INSTALLATION (Cont)					
	Insulated cover boxes; aluminium split casing c/w spring clip fasteners, 35mm thick insulation lining; sized to suit valve; vapour sealed; all in accordance with Engineers Specification Part 4					
A	General valves	1	item			
	General					
	Testing and commissioning; all in accordance with Engineers Specification					
B	Testing and commissioning	1	item			
C	Testing,chemical dosing, sterilization and certification of all systems	1	item			
D	Completion of heat meter commissioning reports	1	item			
	Operating and maintenance manuals; all in accordance with Engineers Specification					
E	Operating and maintenance manuals	1	item			
F	Filter maintenance; allow for 3 visits to site after completion for filter cleaning	1	item			
	Working drawings; all in accordance with Engineers Specification					
G	Working drawings	1	item			
	Co-ordination drawings; all in accordance with Engineers Specification					
H	Co-ordination drawings	1	item			
	As built drawings; all in accordance with Engineers Specification					
J	As built drawings	1	item			
	Identification plates, labels and the like; all in accordance with Engineers Specification					
K	Identification plates, labels and the like	1	item			
				To Collection €		

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	(5-) MECHANICAL INSTALLATION (Cont)					
	(52) DRAINAGE AND REFUSE DISPOSAL					
	System					
	Soils and Waste Drainage Installation, testing and commissioning; complete; The complete installation of all above ground foul water drainage and refuse disposals; The Mechanical Contractor shall also be responsible for removal from storage and carriage to the position, erection of each item and all connections to and from the sanitaryware as detailed on the drawings and within this specification; all in strict accordance with the Mechanical Engineers Specification					
	Distribution System					
	Condensate pipework and fittings; include for all fixings and supports; include for all elbows, expansion bellows; unions and tees necessary to complete the work; all in strict accordance with the Mechanical Specification					
A	28mm nominal diameter; supports at average 1200mm centres vertical, 500mm centres horizontal; ears fixed with screws to background requiring plugging	1	item			
B	32mm nominal diameter; supports at average 1200mm centres vertical, 500mm centres horizontal; ears fixed with screws to background requiring plugging	1	item			
	General					
	Testing and commissioning; all in accordance with Engineers Specification					
C	Testing and commissioning	1	item			
	Operating and maintenance manuals; all in accordance with Engineers Specification					
D	Operating and maintenance manuals	1	item			
	Working drawings; all in accordance with Engineers Specification					
E	Working drawings	1	item			
	Co-ordination drawings; all in accordance with Engineers Specification					
F	Co-ordination drawings	1	item			
	As built drawings; all in accordance with Engineers Specification					
G	As built drawings	1	item			
	Identification plates, labels and the like; all in accordance with Engineers Specification					
H	Identification plates, labels and the like	1	item			
				To Collection €		

					€	c
	(5-) MECHANICAL INSTALLATION (Cont)					
	(54) GAS DISTRIBUTION - LPG GAS SERVICES					
	System					
	LPG Gas distribution; installation testing and commissioning; The school building will be fed from a new incoming LPG gas supply; The contractor shall allow for liaising with the gas supplier regarding coordination of works and certification of the site gas pipework and tank installation; LPG installation shall be installed in compliance with IS3213; all in strict accordance with the Mechanical Specification Part 1, Part 2, Part 3 and Part 4					
	Accessories associated with Primary Equipment					
	Isolation Valves; isolation of gas services pipework; include for all accessories; all in strict accordance with the Mechanical Specification Part 3					
A	65mm Stop valves	4	nr			
	Gas Meter; Low pressure drop turbine gas meter; Gas meter to have volt free contacts for connection to the BMS; include for all accessories and fittings; complete; all in strict accordance with the Mechanical Specification Part 3					
B	Gas Meter	1	nr			
	Distribution System					
	Galvanised Medium Grade Mild steel pipework and fittings; include for all fixings and supports, elbows,expansion bellows; unions and tees necessary to complete works; Painted with two coats of yellow ochre paint; pipework run in ceiling voids; all in strict accordance with the Mechanical Specification Part 3					
C	65mm diameter pipework	1	item			
	General					
	Testing and commissioning; all in accordance with Engineers Specification					
D	Testing and commissioning	1	item			
	Operating and maintenance manuals; all in accordance with Engineers Specification					
E	Operating and maintenance manuals	1	item			
	Working drawings; all in accordance with Engineers Specification					
F	Working drawings	1	item			
	Co-ordination drawings; all in accordance with Engineers Specification					
G	Co-ordination drawings	1	item			
				To Collection €		

					€	c
	(5-) MECHANICAL INSTALLATION (Cont)					
	As built drawings; all in accordance with Engineers Specification					
A	As built drawings	1	item			
	Identification plates, labels and the like; all in accordance with Engineers Specification					
B	Identification plates, labels and the like	1	item			
	(54) GAS DETECTION SYSTEM					
	System					
	Gas detection system installation testing and commissioning; A gas leak detection system shall be supplied, installed, tested and commissioned in the new Boiler House as indicated on the design drawings, schematics and as described in Part 4: Equipment Schedules; The system shall comprise of a control panel c/w integral emergency stop activation, emergency slam shut solenoid valve fitted to the gas pipework at point of entry to the building, LPG sensors at low level below the boiler and remote emergency knock off button. The system shall shut down the gas supply to the Boiler Room / Building on detection of a leak or activation of the building fire alarm. See Part 4: Equipment Schedule for performance specification. The gas detection panel shall be provided with volt free contacts and an I/O interface unit for connection to the schools fire alarm system; all in strict accordance with the Mechanical Engineers Specification					
	Primary Equipment					
	Gas detection control panel; supply and installation complete; Description: Gas Leak Detection & Isolation System; Panel Dimensions: 183mm(H) x 212mm(W) x 97mm(D); IP Rating: IP65; Electrical Supply: 1ph, 230V, 50Hz; Auxillary Position Status Facility: Required on solenoid valve for BMS; Gas Detector Type: LPG; Gas Detector Calibration: Pre alarm: 5% of low explosion level High alarm: 10% of low explosion level; Quantity of Gas Detectors per System: 4no.; Integral Emergency Stop Button & Reset: Required; Auxiliary Emergency Stop Button: 1 no. for each Plant room; Audible Alarm: Required; LED Indication: Power # GREEN, Gas On - RED; include for all accessories and fittings; complete; all in accordance with the Mechanical schedule 3.1, Mechanical Specification					
C	Gas detection control panel; Ref: CP-01	1	nr			
	Accessories associated with Primary Equipment					
	Slam Shut Valves; include for all accessories; all in strict accordance with the Mechanical Specification Part 3					
D	65mm Slam shut valves	1	nr			

					€	c
	(5-) MECHANICAL INSTALLATION (Cont)					
	Emergency Stop Button; include for all accessories and fittings; complete; all in strict accordance with the Mechanical Specification					
A	Emergency Stop Button	1	nr			
	Gas Sensor; include for all accessories and fittings; complete; all in strict accordance with the Mechanical Specification					
B	Gas Sensor	3	nr			
	General					
	Testing and commissioning; all in accordance with Engineers Specification					
C	Testing and commissioning	1	item			
	Operating and maintenance manuals; all in accordance with Engineers Specification					
D	Operating and maintenance manuals	1	item			
	Working drawings; all in accordance with Engineers Specification					
E	Working drawings	1	item			
	Co-ordination drawings; all in accordance with Engineers Specification					
F	Co-ordination drawings	1	item			
	As built drawings; all in accordance with Engineers Specification					
G	As built drawings	1	item			
	Identification plates, labels and the like; all in accordance with Engineers Specification					
H	Identification plates, labels and the like	1	item			
J						
				To Collection €		

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	(5-) MECHANICAL INSTALLATION (Cont)					
	(58) BUILDING ENERGY MANAGEMENT SYSTEM					
	System					
	BEMS System Installation; testing and commissioning; complete; The BEMS systems shall be an open protocol computer based systems that monitors and initiates stop and start sequences for all the mechanical plant and equipment. The systems shall permit the end user to login to the system accessing plant time scheduling and operational status, together with temperature values and data logging. All alarms shall be available for review on each School#s front end and all temperatures shall be logged and extracted graphically for review. All logging data shall be stored in a SQL database for external use. The electrical meters supplied by the electrical contractor under the LV switchgear shall be connected to the BEMS electrical meter system supplied under the electrical contract and all information shall be integrated within the same software package; all in accordance with the Mechanical Engineers Specification and Drawings ME5801					
A	Generally	1	item			
	Primary Equipment					
	Control Panel; supply and installation; complete; A new wall-mounted Mechanical Control Panel complete with a BEMS outstation and GSM module shall be provided in the new Heating Plant room of each main school and in its associated Multi-Purpose Hall Heating Plant room; Each control panel shall be provided with a touchscreen interface for access to setpoints, sensor readings and alarms; The MCC control panels shall be complete with Hand/Off/Auto selector switching for all items of plant with full functionality and indicator lamps, red for fault, green for healthy. Each BEMS control system shall relay all information back to the central monitoring system / front end and the electrical metering system; all in strict accordance with the Mechanical Engineers Equipment Schedule no. 6.1, Mechanical specification section no. 10.3 and Mechanical drawings ME5801					
B	Control Panel	1	nr			
	Front End PC c/w Software Licence; supply and installation; complete; include for all fittings and accessories; all in accordance with the Mechanical Engineers Specification and drawing ME5801					
C	Front End PC c/w Software Licence	1	nr			
	General					
	Testing and commissioning; all in accordance with Engineers Specification					
D	Testing and commissioning	1	item			
	Operating and maintenance manuals; all in accordance with Engineers Specification					
E	Operating and maintenance manuals	1	item			
				To Collection €		

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	(5-) MECHANICAL INSTALLATION (Cont)					
	Working drawings; all in accordance with Engineers Specification					
A	Working drawings	1	item			
	Co-ordination drawings; all in accordance with Engineers Specification					
B	Co-ordination drawings	1	item			
	As built drawings; all in accordance with Engineers Specification					
C	As built drawings	1	item			
	Identification plates, labels and the like; all in accordance with Engineers Specification					
D	Identification plates, labels and the like	1	item			
	(58) FIRE PROTECTION INSTALLATION					
	System					
	Fire Fighting installation, testing and commissioning; complete; Hand held fire extinguishers and fire blankets shall be provided throughout the building as detailed on the drawings; The installation will comply with BS 5306-2000-Part 8; The Contractor shall be responsible for carrying out the commissioning of the portable fire extinguishers before they are installed; all in strict accordance with the Mechanical Specification					
	Terminal equipment and Fittings					
	Fire Extinguishers supply and installation; complete with 5 years guarantee, CE approved and marked; all in accordance with the Mechanical Specification					
E	5KG CO2 Gas Extinguishers; c/w wall mounting brackets and ID signage; complete	1	nr			
F	5kg ABC Dry Powder Fire Extinguishers; c/w wall mounting brackets and ID signage; complete	1	nr			
	General					
	Testing and commissioning; all in accordance with Engineers Specification					
G	Testing and commissioning	1	item			
	Operating and maintenance manuals; all in accordance with Engineers Specification					
H	Operating and maintenance manuals	1	item			
	Working drawings; all in accordance with Engineers Specification					
J	Working drawings	1	item			
				To Collection €		

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	(5-) MECHANICAL INSTALLATION (Cont)					
	Co-ordination drawings; all in accordance with Engineers Specification					
A	Co-ordination drawings	1	item			
	As built drawings; all in accordance with Engineers Specification					
B	As built drawings	1	item			
	Identification plates, labels and the like; all in accordance with Engineers Specification					
C	Identification plates, labels and the like	1	item			
	MECHANICAL INSTALLATIONS					
	Sundries & Builders Work					
	General Attendances					
D	Provide all general attendances in accordance with Arm 4 .	1	item			
E	Provide use of the Main Contractors temporary roads and hardstandings.	1	item			
F	Provide use of the Main Contractors scaffolding.	1	item			
G	Provide use of the Main Contractors standing power operated hoisting plant.	1	item			
H	Provide accommodation for the subcontractors staff for eating, site lavatories, site washing facilities and cloakroom facilities.	1	item			
J	Each sub-contractor shall be permitted the free use, in common with other trades engaged on the site, of any available water supply, temporary plumbing and electrical services.	1	item			
K	Provide temporary distribution systems for lighting, power, water and fuel for the execution of the Mechanical services works, including testing and commissioning , and pay all ongoing operation charges.	1	item			
L	Provide safe and dry storage accommodation for the sub-contractors materials, plant and tools.	1	item			
M	Provide space for the provision by the sub-contractors of their own site offices.	1	item			
N	Provide temporary telephone services to the Mechanical Contractors temporary office and pay all charges associated with installation and operation.	1	item			
P	Include for unloading, hoisting/cranage and placing into position all items of heavy plant and site offices supplied by the sub-contractors.	1	item			
				To Collection €		

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	(5-) MECHANICAL INSTALLATION (Cont)					
A	Allow for maintaining all ducts, chases, trenches, trunking, etc., clean and free of all water, debris and rodents at all times.	1	item			
B	Allow for making good and fire sealing of all builders work opes with proprietary sealant to Architects details, where services penetrate fire zones.	1	item			
C	Fire proofing (material) around ducts and pipework shall be the responsibility of the Main Contractor	1	item			
D	Timber grounds shall be provided within stud partitions to facilitate fixing of wall mounted accessories	1	item			
	Special Attendances					
E	Provide all special attendances in accordance with Arm 4 Clause 3.1	1	item			
F	Provide temporary roads and hardstandings in connection with heavy items of plant and the like.	1	item			
G	Provide accommodation for the sub-contractor's staff for eating, site lavatories, site washing facilities, and cloaks.	1	item			
H	Provide safe and dry storage accommodation for the sub-contractors materials, plant and tools.	1	item			
J	Provide space for the provision by the sub-contractors of their own site offices.	1	item			
K	Provide temporary distribution systems for lighting, power, water for the execution of the electrical services works, including testing and commissioning, and pay all ongoing operation charges.	1	item			
L	Provide the free use, in common with other trades engaged on the site, of any available water supply, temporary plumbing and electrical services.	1	item			
M	Protection of the works the Main Contractor is responsible for providing adequate protection at all times for the Mechanical services installation.	1	item			
N	Protection/Maintenance, provide covers for placing on live equipment/fittings in areas under construction at the start of each work day and removing the covers at the end of each work day.	1	item			
P	Provide external access to high level on building facade to permit the installation of any external equipment/fittings and for the removal of existing services as required.	1	item			
Q	Provide Mobile Elevated Working Platforms (MEWP) or scaffolding for Mechanical sub-contractors working at high level.	1	item			
R	Provide for weathering & sleeving around all penetrations through the external structure of the building and to allow for sealing to fabric to maintain air tightness.	1	item			
				To Collection €		

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	(5-) MECHANICAL INSTALLATION (Cont)					
A	Allow for maintaining all ducts, chases, trenches, trunking etc, clean and free of all water, debris and rodents at all times.	1	item			
B	Allow for making good and fire sealing of all builders work opes with proprietary sealant to architects details, where services penetrate fire zones.	1	item			
C	Allow for coordination with local authorities and utility providers in respect of application for connections, providing excavation of roads and full coordination with various utility companies.	1	item			
D	Coordinate with Mechanical Contractor to facilitate fitting of all sanitary ware.	1	item			
E	Allow for patrices behind ceiling tiles and ceilings for the support of light fittings, grilles, smoke detectors, sensors etc.	1	item			
F	Allow for weathering details on all services passing through external envelope.	1	item			
G	Allow for all service / utility entries into building.	1	item			
H	Allow for clearing away and disposal of any rubbish.	1	item			
J	Provide safe access to roofspace to facilitate Mechanical installation work.	1	item			
K	Making good of opes for fire smoke dampers.	1	item			
L	Provide and maintain the specific temperatures and humidity levels.	1	item			
M	Contractor to provide for the construction of a walkway within the Attic space for service and maintenance of water and ventilation services.	1	item			
N	Contractor to ensure all existing services shut downs for connecting in new and changeovers shall be carried out between 10pm on a Sunday Night and 6pm on a Monday morning, to avoid any interruptions of the running of the existing school; times to be agreed with school management.	1	item			
P	Provide plywood protective cover over boiler for protection.	1	item			
	Unload, hoist distribute, and place in position the following items of plant and equipment:					
Q	Gas boiler	1	item			
R	Heat pumps	1	item			
S	Pumps	1	item			
	Sundries & Builders Work					
	General					
T	Marking positions of holes, mortices and chases	1	item			

To Collection €

					€	c
	(5-) MECHANICAL INSTALLATION (Cont)					
A	Testing & Commissioning	1	item			
B	Preparing drawings of "as completed" installations	1	item			
C	Identification plates, labels and the like; Provide and fit colour identification markers to ceiling hatches to mark the location of isolating devices within ceiling voids	1	item			
D	Keys, tools and spares	1	item			
	In-situ concrete; plain; to IS EN 206; Grade C30; formwork to sides of platform, powerfloating finish; all in strict accordance with the Engineers Drawings and Specification					
	Bases					
E	Size 850mm x 1650mm x 100mm thick	1	nr			
F	Size 1850mm x 1100mm x 100mm thick	1	nr			
G	Size 2650mm x 1850mm x 100mm thick	1	nr			
	Equipment supports; provide mounting grounds for the installation of the following fittings; making good structure and finishes; in strict accordance with the Architects/ Services Engineers drawings, schedule and specifications					
	Equipment supports					
H	Provide wall fixings for portable fire extinguishers to walls at 1500mm above floor	2	nr			
	Forming or cutting holes; including sleeves/plates, making good structure and finishes; include for a fully completed installation where nothing must remain to be done to the installation by others; in strict accordance with the Architects/ Services Engineers drawings, schedule and specifications					
J	cutting or forming holes is deemed to include all finishes and decorations both sides of the structure		note			
K	cutting or forming opes is deemed to include the making good and sealing of the ope around the pipe or duct		note			
	For ducts/pipes through exisitng external cavity blockwork wall, include for building in sleeves; weather proofing, making good all finishes on completion					
L	Size 1000mm x 250mm opes	1	nr			

To Collection €

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	(5-) MECHANICAL INSTALLATION (Cont)					
	Fire stopping system to multiple and single service penetrations; including intumescent boards, fire stop laminate; intumescent foams and mastic; intumescent pillows; intumescent putty; mineral wool rigid batts; intumescent collars and sealants to achieve 1 hour fire resistance; all in accordance with the Architects specification and Drawings					
	Special works were services pass through structures; external walls, making good all finishes on completion					
A	Size 1000mm x 250mm opes	1	nr			
				To Collection €		

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(5-) MECHANICAL INSTALLATION (Cont)					
COLLECTION					
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(5-) MECHANICAL INSTALLATION (Cont)					
COLLECTION					
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(5-) MECHANICAL INSTALLATION **Carried to Summary**					