

EMERGENCY WORKS SCHEME

**Castleknock Community College
Carpenterstown Road, Castleknock, Dublin 15**

**Works Requirement document – Volume A.2.3.2.1
Specification of Performance, Standards and
Materials**

For

Heating Centre Upgrade Works

Project Ref: 0835

Date: June 2026

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SECTION 1: PRELIMINARIES AND GENERAL CLAUSES:

01. Description Of Site:

The site is the existing Castleknock Community College, Carpenterstown Road, Castleknock, Dublin 15, which is easily accessible from the road. The site boundaries are defined on the accompanying Site Plan and this Contractor shall confine his operations to the area indicated.

The strategy of the mechanical design is to provide a safe, effective and user-friendly environment while delivering an energy efficient installation and achieving optimal ambient conditions for the client and future occupants of the space.

It is the intention of this specification to provide for all work and materials necessary for the completion, testing and setting to work of the installation outlined in this specification and to provide for the supply and erection of all necessary or usual accessories for such an installation, whether such work, materials or accessories shall have been individually itemised or described in this specification or not and also to provide for the maintenance of the installation for twelve months after completion.

CONSULTANTS

The following persons from Geaney's Engineering will be responsible for this project:
Cian/Jerry Geaney Project Lead – (info@geaneyengineering.ie)

The office phone number for Geaney Engineering is: 051-879371

This Contractor shall be deemed to have made a thorough examination of the site and all features thereof, the existing premises, together with all internal and external services, adjoining premises and property or other things affecting the proposed works, to ascertain precisely the nature and extent of same and the condition under which the works will have to be executed, as no claim will be allowed on the grounds of want of knowledge in this respect.

This specification will set out in general terms the design drawings and data to be used by the Contractor in order to submit a tender bid for the mechanical services installation and the works associated with the installation. The procurement, delivery, supply, handling, erection, installation and commissioning of the services as there under described as may be seen or inferred from the enclosed drawings and documents from the Consulting Engineer.

The Contractor shall satisfy himself that the installation is in accordance with all codes and standards. All works described shall comply with:

Notwithstanding the details of the specification, the contractor must note that, where applicable, this installation must conform in every respect with the full requirements of the most current regulations in terms of health and safety, construction standards, industry guidelines and best work practices, including but not limited to the following standards:

- Safety, Health and Welfare at Work (Construction) Regulations, 2006;
- Safety, Health and Welfare at Work (General Application) (Amendment) (No. 2) Regulations 2021 (S.I. No. 619/2021)
- Safety, Health and Welfare at Work (General Application) (Amendment) Regulations 2021 (S.I. No. 610/2021)
- Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2021 (S.I. No. 528/2021)
- Safety, Health and Welfare at Work (Construction) (Amendment) Regulations 2020 (S.I. No. 102 of 2020)
- Safety, Health And Welfare At Work (Construction) (Amendment) Regulations 2019 (S.I. No. 129 of 2019)
- Safety, Health and Welfare at Work (General Application) (Amendment) (No.3) Regulations 2016 (S.I. No. 370 of 2016)
- Safety Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013)
- Code of Practice for Indoor Air Quality - HSA
- Safety, Health and Welfare Act 2005 - present;
- Safety, Health and Welfare at Work (General Application) Regulations 2007;
- Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013);
- Local fire officer requirements
- Memorandum on Council Directive 92/57/EEC;
- Construction Industry Research and Information Association: "Control of Risk: A Guide to the Systematic Management of Risk from Construction";
- Building Regulations Technical Guidance Documents;
- Equipment Manufacturers Instructions / Recommendations;
- Relevant BESA Codes of Practice;
- NSAI Gas Standard IS820;
- The Chartered Institution of Building Services Engineers Guidance Documents and codes of practice;
 - CIBSE design codes A, B, C, D, E, F, L, and CIBSE doc: am14:2010
 - Commissioning Codes A, B, C, L, M, R and W
- Electro Technical Council of Ireland;
 - National Rules for Electrical Installations, Latest Edition.
- I.S. EN 1366-1 Part 1 – 2014+A1-2020 – Fire duct, Kitchen Extract & Pressurisation.
- British Standards, including but not limited to,
 - EN 442-1&2:2014
 - BS 5422:2023
 - BS 6880-2:1988
 - EN 13831:2007
 - EN 303-2:2017
 - BS 8558:2015
 - BS 6644:2011
 - EN 1775:2007
- The Energy Efficiency Directive 2012/27/EU;
- European Commission (EC) and European Directives (ED);
- European Harmonisation Directives;
- Electro-Compatibility Regulations 2007;
- Local Authority Fire Safety Requirements;
- Equipment Manufacturers Instructions / Recommendations; and
CE Marking of all Plant and Equipment.

Comply with all current TDG's/SDG's/ for Designing for Post Primary School Design Guidelines (Namely but not limited to the following: TDG-003, TDG-005, TDG-020, TDG-021, TGD-022, TGD-031, TGD-031.1, TGD-032, TGD-033, SDG-02-04, SDG-02-06, SDG-02-03, SDG-02-05-03 and Energy Conservation and Mechanical and Electrical Building Services Design Note 2020 01 / June 2020)

- EU 2030 Climate target Plan
- REPowerEU Plan
- EU F-Gas Regulations
- SEAI Guidance Documents
- Renewable Energy Directive (2009/28/EC)
- EU ecodesign regulation for local space heaters (EU) 2015/1188
- Energy labelling and ecodesign requirements for local space heaters (2017)
- Harmonised standards for space heaters 2014/C 207/02
- Harmonised standards for water heaters 2014/C 207/03
- EU energy labelling regulation for water heaters 812/2013
- Energy labelling for ventilation units (EU) No 1254/2014
- EU ecodesign regulation for water pumps (EU) No 547/2012
- Harmonised standards for circulators 2013/C 254/04
- Amendment to the Ecodesign for circulators 622/2012
- Ecodesign required for cooking appliances
- Climate Action Plan 2023
- Energy Performance Buildings Directives
- Renewable Energy Directives
- Energy Efficiency Directives
- Current ESB Regulations
- Fire Officers Requirements and Fire Certificate.
- SEAI Triple E Register of Approved Products
- EU Commission Regulation (EC) 640/2009 – Energy Efficiency (Particularly with regard to Fans and Pumps).
- BS EN 378 Parts 1, 2 and 3: Refrigeration Systems and Heat Pumps.
- CIBSE Technical Memorandum TM13: 2013 Minimising the Risk of Legionnaires Disease.
- All other CIBSE Technical Memorandums and Application Manuals.
- HVCA Specifications TR20-Pipework Systems
- HVCA Specifications DW144 Code of Practice for Ventilation Ductwork.
- HVCA Specification TR19-cleanliness of Ventilation Systems.
- BS9999: 2008 Code of practice for Fire Safety.
- Factories Act / Statutory Instruments.
- Client safety protocol
- Client Specifications
- Tender Drawings
- Contract Preliminaries

02. Description Of Works:

The works covered by this specification comprises of the decommissioning, disconnection and removal off site of the entire existing heating centre and the supply, installation, testing and commissioning of the new, as shown on the accompanying drawings and specified hereafter.

The mechanical contractor is required to carry out the installations to the highest standards using only materials and equipment of the highest quality and reliability.

The mechanical services installations shall only be carried out by highly experienced and competent personnel that have been appropriately trained to carry out work of similar nature, scale and complexity.

The contractor shall include all labour, materials, import charges and transport which maybe required for and in the construction of works detailed in the Specification and as shown on drawings, and shall provide at this own expense for all necessary power, plant, tackle, machinery, tools, apparatus, instruments, scaffolding, ladders, hoists, fencing and other equipment for the workmen and for the erection, testing, demonstration and commissioning of the complete plant in the manner described, together with the carriage thereof to the spot where they are required to be used and their subsequent removal.

Overview of Scope Of Works

The description of tasks explained in the “Scope of Works Section” is a legitimate account of all works that need to be carried out but is in no way an exhausted list of all tasks that need to be completed by the mechanical contractor. The mechanical contractor should envision the full body of work associated in the completion of the work set out in these specification/drawings when developing a tender for the works.

Mechanical and Electrical Tender drawings are coordinated design drawings only. Contractor shall produce coordinated construction drawings for construction purposes. Contractor to ensure adequate access is provided to plant and equipment for purposes of routine servicing, maintenance, and component replacement. Mechanical contractor shall be fully responsible for the complete co-ordination of all M&E services as detailed. All work shall be carried out in accordance with relevant statutory instruments and safety regulations, government and local. The installation shall comply with statutory instruments and regulations current at the date of tender proposal.

HEATING CENTRE – ELEMENT 51

The proposed plantroom installation shall be as per heating drawing and relevant schematics to include new heating boiler unit, expansion, circulating pump, new auto-top unit, new MCC, together with ancillary equipment, as detailed, shall be allowed for. The flue carrying exhaust gas from the new boiler, will travel directly to atmosphere using the existing masonry stack, as shown.

INTERNAL GAS SERVICES - ELEMENT 54

Internal Gas services installation shall be as per the accompanying drawings and relevant schematics. The contractor shall note that the existing natural gas service is to be diverted to external of the plant room as shown and as detailed.

BUILDERS WORK - ELEMENT 60- THIS CONTRACTOR

Builder’s work will include off-loading, lifting, lifting into position, scaffolding, fire proofing, hole coring, painting and priming of pipework and snagging and tidying and making good all finished work.

Please note that ‘The Contractor’ in this specification refers to the Mechanical Contractor.

03. Site Conditions:

This Contractor is strongly advised to visit the site and ascertain the facilities of access thereto, the supply of labour and materials the district will afford and general convenience of working. He shall be taken to have made himself acquainted with the nature of the works; the site and all existing buildings and all other things insofar as they may have any connection with or effect the works.

Contractors must refer to the Construction Industry Federation standardised approach to commencing construction projects in Ireland which incorporates the COVID-19 public health requirements and ENSURE that all measures required in order to comply with these guidelines are included for. This document is available at www.cif.ie and a copy of same is included with the tender documentation issued for the works.

All the above matters must be considered when tendering and no charge for any extra labour or materials will be allowed in consequence of this Contractors failure to do this.

The Contractor must notify the project Engineer immediately should site conditions alter significantly from those as stated in the tender documents.

04. Covid 19

The contractor shall allow in his tender for working on site in line with the CIFs Standard Operating Procedure (SOP) and, for any additional time and cost incurred to accommodate the implications of C19 restrictions. Please refer to CIF Construction Sector C-19 Pandemic SOP – V.9 October 2021, and/or all subsequent editions.

Ensure all directly and indirectly employed staff have undergone the CIF’s COVID-19 safety induction programme and have a digital card and follow the instructions of the main contractors C-19 compliance officer.

05. Tender Drawings

The design drawings issued within the tender package must be read in conjunction with the project specifications. If the contractor has any queries regarding design drawings issued prior to tendering they shall notify this office immediately. It shall be otherwise deemed that the contractor has understood and priced for all works as designed.

06. Instructions for Tenders

The Mechanical Contractor shall be deemed, before tendering, to have made a thorough examination of the Drawings, Specifications, Conditions of Contract, the Site and other things affecting the proposed works to ascertain precisely the nature and extent of same and the conditions under which the proposed works will have to be executed.

The Tenderer must complete the tender return / pricing pages accompanying this specification document, in full, where each elemental item is to be priced for separately. The following instructions should be carefully noted by contractors tendering as failure to comply with them may invalidate the tender.

Note 1: Tender must be an official Form of Tender and accompanied by a priced Schedule, and Suitability assessment Questionnaire.

Note 2: Should any doubt exist as to the meaning of any clause, description or dimension shown or described in the drawings, the contractor should refer same in writing to the Engineer not later than two weeks before the latest date for lodgements of tenders. All such queries received together with ruling on the points raised, will be circulated to all Contractors tendering.

Note 3: Attention is particularly drawn to the fact that omission to sign the Form of Tender or to insert therein the total amount of the tender or the making of any alteration or additional whatsoever in the test of the Form of Tender as prepared by the Engineers, may cause the Tender to be rejected. Any unauthorised alteration or addition will not be recognised by the Employer. Any qualification attached to the tender which attempts to vary or detract from the terms which the Contracting Authority has incorporated into its invitation to tender must be withdrawn as failure to do so may result in the tender being disqualified.

Where qualifications have been attached to all or some of the tenders submitted and all the tenderers have refused to withdraw their qualifications, the consulting authority, in order to secure the most economically advantageous price, reserve the right to deal with the most acceptable offer submitted.

Note 4: Tenders will be returned via the Etenders platform not later than the time and date stated on the letter of invitation to tender. Tenders received after the time will be considered null and void.

Note 5: The Employer does not bind himself to accept the lowest or any tender nor will the cost of preparing and submitting any tender be paid by the Employer.

Note 6: Tenders for these works are being obtained on a fixed price basis and contractors should note that the wages and price variation clause of the contract, Clause 36, is deleted and that the contractor's offer must remain open for the acceptance period not exceeding ninety days from the date of receipt of tenders.

Final Tender

This tender is final based on the final working drawings. This tender is not for approximate P.C. sum purposes. The successful tender will be responsible for all works including builder's work and mechanical works. Any conditions appended by the tenderer, which are at variance with the conditions set out below, shall invalidate the tender.

Notwithstanding the contents of this specification and associated drawings, the Contractor shall be fully responsible for the complete installation of the works to ensure that they can be tested and handed over in fully operational mode. The Contractor shall include in the tender for all necessary items not specifically mentioned or indicated, to achieve this objective.

Contract Award

The employer does not bind himself to accept the lowest or any tender. Contractors will not be remunerated for any trouble or expenses they may incur in making up their tenders.

The award of contract will be made to the contractor whose tender has determined to be the lowest evaluated tender and who meets the required standards capability and financial responsibility.

Tender prices shall include for all labour and materials required for the execution of the works and shall include for all costs in connection therewith, such as freight and transport, insurance of goods and persons, taxes, duties and other such charges current at date of submission of tender and for all charges arising from statutory legislation effecting the cost of labour. The responsibilities regarding knowledge of the operation or amount of any of these charges shall lie with the tenders and no allowance shall be made for them after submission of tender.

The tender must comply fully with all the conditions set out in the contract documents and the services drawings as listed.

Quoted time of delivery of materials on site and time of completion of the contract together with the extent to which the materials are suitable for their purpose and otherwise acceptable as to performance will be taken into consideration in relation to acceptance of tender.

Disclosing Tender

Acceptance of tender documents by a tenderer will be held to imply a guarantee that the amount of his tender will not be disclosed by the tenderer to any person or body prior the lodgement of the tender and that a wholly bona fide tender will be submitted, in default of which the tender shall be deemed invalid.

07. Payment

The Contractor must submit Progress Statements for each Claim and Interim Certificate Amounts may be at the Engineer's Discretion.

08. Pricing:

Un-priced items -Any item left un-priced shall be deemed to be included for in the tender and the cost of the item shall be deemed to be spread across and included in the rates generally.

Currency - All prices and rates shall be deemed to be denominated in Euros (€).

09. Ascertainment of Prices for Variations:

Any oral instructions, directions or explanations given by the Engineer upon the Works to Mechanical Contractor shall if involving a variation be confirmed in writing by the Mechanical Contractor to the Engineer within five working days. The rates in the Priced Bill of Quantities referred to in the clause above applied to the Works shall determine the value of work carried out as a variation when such work is of a character similar to that to which the aforesaid rates apply and is carried out under similar conditions. The aforesaid rates shall also determine the value of any work omitted.

10. Bill Of Quantities:

The contractor shall, within seven days of being requested to, submit to the Engineers a detailed schedule, of rates covering every item fixed, as specified, upon which the sub-contractors estimate has been based. The number of items and quantities shall be given up to the totals as indicated in the Tender Summary.

The bill shall list separately the material costs and labour costs with the number of man-hours included for in the tender.

The Bill of Quantities shall remain with the Engineers until the works are completed and shall form the basis for agreement of variations by measurement. However, the Contract is a lump sum contract and is not subject to re-measurement.

11. Works Programme:

The Mechanical Contractor shall submit an overall program of works program and include within his Programme, details of his intended timing and order for the construction of the Mechanical Services. Key dates and deliverables shall be submitted to the consultant and track records shall be included for each meeting with a red line track of deliverable dates and closed out items.

12. Installation and setting out of works/Builders work Drawings Record

The Contractor shall set out the whole of the works and be responsible for the correctness of the positions, levels and dimensions of the several works. All openings, plinths, bases and holes to be cut in the structure shall be positioned and marked by the Contractor. The tender drawings are diagrammatic only and the Contractor shall allow for a practical installation allowing for the setting around obstructions and other minor modifications which may or may not be apparent from the Architectural, Engineering, Structural, or services drawings.

The exact courses and positions of all pipes, ducts, flues, cabling, conduit, trunking etc. and other items of equipment shall be duly laid out and marked on the job by the Contractor and approved before execution as the best possible course and position, having regard to all considerations including temperature and the proximity to other services plant.

The Contractor shall make good any incorrectly set out works and shall be liable for costs of making good any work incorrectly carried out. The Contractor shall furnish all materials, labour and instruments necessary to enable the setting out to be checked.

13. Guarantees and Warranties

All manufacturers guarantees and warranties on plant, equipment, etc., shall be valid up to the end of the Defects Liability Period.

14. Defects Liability Period:

All manufacturers guarantees and warranties on plant, equipment, etc., shall be valid up to the end of the Defects Liability Period. Refer to the Conditions of Tendering in the Main Contract Document.

Operation of Plant

The Contractor shall include for providing personnel and maintaining continuous operation of the plant and systems during 1 week prior to the handover of the Works for 24 hours each day. The Contractor shall be responsible at his own expense for carrying out routine maintenance and for the rectification of defects during this period.

Once the Contractor has satisfied himself that the installation is in satisfactory working order, and expressed to the Engineer in writing his approval to the installation being put into normal service, the Contractor will assume responsibility for running the whole of the Contract

Works for a period of fourteen days from the date of practical completion and shall provide skilled supervision and attention during the required hours. During this period the Contractor shall be responsible for lubricating and maintaining all moving parts.

The Contractor shall, during this running period, indemnify the Employer against any damage or injury to the Sub Contract Works and indemnify the contractor against all actions, suits, claims, demands, costs, charges and expenses arising in connection therewith which will, in the opinion of the Engineer, be occasioned by the negligence of the Contractor, by the use of the Contractor of defective materials or workmanship, or by defective detail design.

15. Samples / Materials And Products:

The Mechanical Contractor shall include for providing samples of components as called for by the Engineer. The samples shall be provided free of charge and shall be used to determine whether the component proposed by the Contractor complies, in the opinion of the Engineer, which shall be binding with the requirements of the Specification. The Contractor shall provide samples of all mechanical equipment or components as requested by the Engineer.

The Mechanical Contractor shall issue details of all specified equipment and plant for approval prior to placing order. All equipment and plant shall be approved on site by the engineer prior to installation. Such approval shall not relieve the Contractor from responsibility for making good any defects which may arise as a consequence of failure or otherwise of any materials during the contract period.

The entire installation shall be constructed from new materials and equipment and all materials and workmanship shall be the best of their respective kinds in accordance with the specification. All materials and equipment selected or proposed by the Contractor shall be provided by manufacturers who have local maintenance and servicing capacity available within the Republic of Ireland as necessary.

All materials used in the works shall be fit for the use for which they are intended and for the conditions in which they are to be used in and includes materials which:

- Bear a CE mark in accordance with the provisions of the Construction Products Directive (89/106/EEC)
- Comply with an appropriate harmonized standard, European technical approval or national technical specification as defined in article 4(2) of the Construction Products Directive (89/106/EEC)
- Comply with an appropriate Irish Standard or Irish Agreement Board Certificate or with an alternative national technical specification of any member state of the European community, which provides in use an equivalent level of safety and suitability.

The installation shall be carried out and maintained in the best and most substantial and workmanlike manner. Workmanship shall comply with British or Irish Standards and the relevant codes of practice.

The economic life expectancy of all mechanical plant and components shall be in line with CIBSE Guide M Appendix 13.A1: Indicative life expectancy factors.

Contractors Submittals

The contractor is permitted to propose alternative equipment/materials in the form of a written submittal. Only one alternative may be included in each submittal to the engineer. The contractor shall be fully responsible for ensuring that the proposed submittal is based on the alternative plant/equipment being equal to or exceeding the technical performance/ specification of the product/material.

Each submittal shall be presented with a signed certificate/statement from the supplier/manufacturer confirming that the proposed alternative has been fully assessed in terms of satisfying the requirements of the consultant's specification document and that the proposed alternative is at least equal in terms of performance, quality and reliability. A maximum of two submittals shall be permitted for any equipment or material.

Should the submittals be found to be non-compliant with the specification/works requirement following a maximum of two presentations, the contractor shall then revert to the specified product/material set out in the specification document.

The consultant's acceptance of a submittal is based on the contractor having fully checked compliance with the specification and the information in the contractor's certificate being accurate in terms of meeting the specification requirements.

Should the equipment/materials be found to be lacking in performance or quality following the installation of same, the contractor shall remove and replace the installed equipment/materials at no cost, with the specified type to the satisfaction of the consulting engineer. Where samples for alternative equipment are required, the contractor shall supply a sample of both the specified product and the proposed alternative for examining by the consulting engineer.

Appropriateness and suitability of any contractors' proposal shall be subject to the approval of the consulting engineer. The consulting engineers' decision on the matter shall be final and shall not be subject to challenge by the contractor. The consulting engineer will assess the proposal on the basis of compliance with technical performance, design intent, quality, conformance, durability, robustness, life cycle cost, appearance and finishes.

16. CE Marking

All mechanical equipment, systems supplied and installed shall conform to the appropriate EU Directives and shall carry the applicable CE Marking.

17. Triple E Register

The Triple E Products Register is a benchmark register of best-in-class energy efficient products. The European Union (Energy Efficient Public Procurement) Regulations 2011, SI 151 of 2011, state “a public body shall only procure equipment or vehicles which are (a) listed on the Register or (b) satisfy the published SEAI energy efficiency criteria for the equipment or vehicle concerned, and the public body shall specify this requirement in any documentation describing its procurement requirements”.

The contractor shall ensure that all products or mechanical equipment installed in schools are listed on the Sustainable Energy Authority Ireland’s (SEAI) Triple E lists of energy efficient equipment or are compatible with the criteria of the Triple E evaluation scheme.

18. Builders Work:

The Mechanical Contractor shall be responsible for the necessary builder works to include concrete plinths, opes in roof etc. as required to complete the installation works. Where services pass through partitions (walls, ceilings) the Mechanical Contractor shall maintain the fire rating if applicable within the services.

The contractor shall be responsible for making good of all builder’s work opes around services and ensuring that the making good does not damage the services installed.

19. Coordination Works:

The Mechanical Contractor shall allow for liaising with all other trades in relation to coordination. Before any works are started on site, the Mechanical Contractor shall hold a meeting with the Electrical Contractor to co-ordinate the M&E installations in the proposed new heating centre.

20. Supervision:

The Contractor shall make available throughout the duration of the works a Project Supervisor or Site Foreman with appropriate qualifications and or experience to attend site meetings and receive instructions as are necessary for the execution of the contract, and to carry out superintendence of the works on site. The Project Supervisor /Site Foreman shall keep accurate records and details of all aspects of the works as necessary.

21. Labour:

This Contractor shall ensure that all employees are registered for PAYE / PRSI and that all employees have successfully completed a SafePass course. Only fully qualified and competent tradesmen, together with their necessary labourers, or helpers, shall be employed by the Contractor on the works, which shall be carried out and completed in the best substantial manner.

22. Site Establishment:

It is the responsibility of the Contractor to provide adequate temporary water, power and lighting supply for the duration of the Construction period.

23. Protection of Existing Services:

When stripping out the redundant services the Contractor shall ensure that no unnecessary damage is caused to either the equipment and/or the building fabric which is to be retained. This Contractor shall make good, at his own expense any damage caused whatsoever to existing services to the complete satisfaction of and in accordance with the instructions of the Engineer/Statutory Authority concerned and shall keep the Client indemnified at all times from claims in connection with the damage. Contractor shall allow for in his tender price a full dilapidation survey highlighting any previous damage

24. Electricity Supply:

The electricity supply to this project will be 380/220 Volts, 50 cycles, and all electrical plant and equipment must be suitable for this supply.

25. Wiring Details:

The General rules for wiring of supplies of Electrical Energy, as laid down by the Electro Technical Council of Ireland, National Rules for Electrical Installations, 5th Edition IS 10101:2020, together with the regulation laid down by the E.S.B., shall be strictly adhered to, as shall the requirements of the 18th Edition of the I.E.E. Rules and Regulations.

26. Trade Name

Any reference to Trade names shall be for the purpose of describing the Specification standard of the article or material to be used and it does not imply that the specified trade name solely must be used.

27. Inspection Prior to Concealment

Where work requiring inspection or testing is subsequently to be concealed, due notice shall be given to the Main Contractor/Engineer to accommodate necessary inspection and witnessing of testing where required before concealment. Failure to give due notice, of at least 48 hours, shall necessitate the Contractor uncovering the work and reinstating at their own expense.

The Engineer reserves the right to forego its inspection; however this will in no way relieve the Contractor's responsibility to comply with the specification and drawings. All work that is not installed to the required standard or does not demonstrate adequate co-ordination with the building and other services must be removed and re-installed in full compliance with the tender documentation and relevant standards at the Contractor's cost and without any associated increase in the project program

28. Tests/Commissioning On Completion:

The contractor shall test all installations on completion in accordance with standard test procedures, that is, relevant I.S. / B.S. / E.S. and Codes of Practice.

The Contractor shall notify the Main Contractor in writing when the mechanical services installation or parts thereof are ready for testing and commissioning, allowing sufficient time period for programming the testing, commissioning and handover of the systems. The contractor shall issue a seven day notice period to the Engineer prior to tests being carried out to allow for the Project Engineer to witness, if he so wishes.

The Contractor shall prove that all test results are in accordance with the performance based specification issued, and furnish the project Engineer with the report / certificate issued by the specialist commissioning company. All test / commissioning certificates are to be included in the project O&M manual.

29. Making Good Damage:

The Contractor shall inspect all equipment and materials on arrival on site for defects or any failure to meet the specification and shall replace any defective equipment or materials as necessary.

The Contractor shall take all necessary precautions to ensure that there is no damage or defacements caused by their employees or representatives to the furniture, fittings or other equipment within the buildings or to the premises themselves or to adjoining premises, and shall make good at their own expense any damage caused to the premises or its contents during the works, to the entire satisfaction of the Employer's Representative.

30. Instruction:

This Contractor shall allow for instructing the Employer in the operation of the mechanical services installations on completion of the installation works. He shall provide two sets of record drawings, for the installed systems and full operating and maintenance manuals.

31. Drawings:

Copies of drawings of the building are issued with each Specification. Dimensions and other information shown on the drawings forming part of the Contract are believed to be correct, but no responsibility for same is accepted. This Contractor should note that, prior to finally positioning and outlets or fittings, these must be agreed with the Engineer. The Contractor shall be responsible for the setting out of the work and he shall rectify any errors he may make, either in setting out the work or during its progress. The Contractor shall not deviate in the execution of the work from the Specification or Drawings herein referred to, except upon written order signed by the Employers Representative authorising such deviation.

This Contractor shall keep on site a full set of the Construction Drawings, on which he shall record and note the actual layout of all the mechanical services installations as installed, including routes. This Contractor shall include for the preparation of final marked-up drawings, in auto CAD, at practical completion stage of the project.

32. Maintenance:

The works shall be maintained by the Contractor in perfect condition for 12 months after the issue of the Engineers certificate of practical completion and any work or material exhibiting defects during that period shall be made good by the Contractor at his own expense.

34. Tax Clearance Certificate & C.I.F. Pension/Sick Pay Scheme:

It will be a condition for the award of the Contract that the firm being considered must be able to produce, within seven days of being requested to do so, a Tax Clearance Certificate from the Collector General of Taxes, Sarsfield House, Limerick and provide evidence of Membership of the Construction Industry Federation (C.I.F.) Pension/Sick Pay Scheme.

35. Insurances:

The Contractor shall comply with the requirements of Clause 10 of the “Short Public Works Contract” relating to Insurance and Compensation. He shall effect adequate insurance in his own name and also in the name of the Employer to cover all the risks or claims specified in the aforesaid “Short Public Works Contract” and shall hold the Employer indemnified against all such claims and risk in anyway arising out of the works included in the Contract.

The minimum sum for public liability insurance shall be €6,500,000.00 (six million, five hundred thousand euro) for any single claim, including employer’s liability of €13,000,000.00 (thirteen million euro) and including all risks as stated in the attached “Tender and Schedule.

CONTRACT SAFETY AND HEALTH PROCEDURES:

Introduction

The Contractor shall note the Preliminary Safety and Health Plan prepared by the Project Supervisor for Design Stage, information included within this report and include all costs relating to compliance with that set out within the various Sections of the Preliminary Safety and Health Plan.

The Contractor shall include for complying with the Safety, Health and Welfare at Work Acts and Regulations current at the date of tender.

The Contractor shall include for providing all necessary information as requested by the Project Supervisor for the Construction Stage to enable the preparation and completion of the Safety File.

The Contractor shall include for "As Built" drawings for inclusion in the Safety File.

The Contractor shall hand over all documentation in connection with the Safety File and full information must be handed over for sign off, to the PSDP prior to Practical Completion Certificate been issued

Procure and maintain insurance cover and provide indemnity in respect of any claim incurred by reason of the performance of functions and duties of the project supervisor for the Construction Stage of the Project. Assist in preparing and completing the Safety File.

Regulations

The Contractor shall comply and adhere to the general principles of prevention as stated in the following:

- Safety, Health and Welfare Act 2005 - Present;
- Safety, Health and Welfare at Work (General Application) Regulations 2007;
- Safety, Health and Welfare at Work (Construction) Regulations 2013 (S.I. No. 291 of 2013);
- Memorandum on Council Directive 92/57/EEC; and
- Construction Industry Research and Information Association: "Control of Risk: A Guide to the Systematic Management of Risk from Construction", Report FR/CP/32, 1995.
- Safety, Health and Welfare Act (Chemical Agents) Regulations (2015)

B1. BASIC LEGAL REQUIREMENTS:

Contractors must comply with the Safety, Health and Welfare at Work (Construction) Regulations 2013 to 2021 and any other statutory provisions and common law duties. Steps must be taken to ensure the provision of adequate and suitable plant and equipment.

Only those Contractors and Employees having appropriate training and experience should be allowed work, on the premises. The Contractor shall appoint a Project Supervisor as required by the Site Health and Safety Regulations.

B2. SAFETY COMMUNICATION:

The Contractor is required to ensure that all the Employees, Sub-Contractors and all their Employees, whilst on the Company premises are informed of the Health and Safety Rules and Procedures.

B3. PERIOD OF WORK:

The Contractor must notify the Project Co-ordinator in an appropriate way before commencing and on completion of their task. Prior application must be made for any work to be undertaken outside of normal office hours.

If work is to be phased, the method of phasing the work is to be prepared, agreed and distributed to all parties.

B4. VEHICLES:

Vehicles used by Contractors or their Employees are allowed on the Companies premises for delivery, parking or collection subject to local instructions. All drivers are requested to exercise maximum care when on Company premises and particularly when Employees or Members of the Public are entering or leaving.

Drivers of large vehicles operating in confined circumstances must ensure there is a person in attendance to assist with reversing etc.

B5. DELIVERY AND DEPOSIT OF MATERIALS AND GOODS:

No materials, goods or equipment shall be stored in Plant Rooms or placed so as to obstruct general work areas, gangways or fire exit routes.

All rubbish especially dangerous or flammable materials must be removed from the premises daily.

B6. CONTRACTORS WORK AREA:

The Contractor must keep locked, the doors to flat roofs with unprotected edges, plant rooms and electrical apparatus, unless in attendance. Where possible, the Contractor's work should be clearly defined and physically separated from all parts of the premises. The area may be marked by a temporary partition or tape backed up with warning signs.

The segregated area will become the responsibility of the Contractor. Visitors to Contractor's work must be accompanied by Contractors representative. Under no circumstances should portable or temporary methods of heating be introduced to the Contractors Area, without prior written authorisation.

B7. RAISED SURFACES, HOLES AND PROJECTIONS:

Raised surfaces, holes, trailing leads or surface and projecting equipment must not be left at any time without taking the necessary safety precautions. All opening must be securely fenced or covered over and marked with warning notices. Loose materials of whatever kind must not be left about or allowed to obstruct the roadway, gangways or working area.

B8. FIRE EQUIPMENT:

The removal or obstruction of Fire Extinguishing Equipment from its original location is prohibited. A Contractor is responsible for providing and maintaining any specialised fire extinguishers and equipment for the work in progress.

B9. EVACUATION OF BUILDING:

The contractor must read Fire Instructions displayed on the premises and comply in the event of an emergency evacuation. He/she is not to eliminate or diminish exists during alterations.

B10. EXISTING SERVICES:

It is the Contractors responsibility to ascertain the existence and whereabouts of electrical cables, drains, air, gas, and water mains. The Contractor must familiarise himself/herself and how to operate the main and/or local isolation points for services before starting work and in anticipation of an emergency.

B11. PLANT, TOOLS, AND EQUIPMENT:

All plant, tools and equipment brought onto the Company's premises should be of safe design and in a safe condition. Particular attention must be given to checking the electrical and mechanical integrity of any hired equipment. Earth leakage circuit breakers should be fitted on all 220-volt cables. Equipment operating at 110 volts is preferable.

B12. SAFEGUARDING OF MACHINERY:

All machines such as circular saw tables and pipe threaders must be guarded in accordance with statutory requirements.

B13. SAFETY STATEMENT:

Contractors are required to have safety statements available for inspection by the Clients H.S. and W. offices. They are also required to prepare method statements when undertaking tasks requiring special skills or technology.

B14. PORTABLE ACCESS EQUIPMENT:

Where ladders, step-ladders and trestles are necessary, they must be used in a safe manner for work to be done. Ladders should be securely tied at the top or held by a person at the bottom unless they incorporate suitable safety devices. The equipment should be of suitable construction and free from defect. Equipment and materials must be carefully moved and not thrown or dropped from a height.

B15. WARNING OF DANGER:

Care must be taken, at all times to protect the Client's employees and members of the public from danger and to protect property and work in progress from damage.

Any circumstances which give rise to such danger or damage must be reported immediately.

B16. PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING:

All Contractors employees must be issued with, and make full use of, all such protective equipment or clothing, as required by statute or any regulations made thereunder. They must also meet any locally agreed requirements for protecting the employee, e.g., for the use of safety helmets and protective footwear.

B17. ACCIDENTS:

In addition to the statutory obligations for Contractors to report dangerous occurrences and accidents to the appropriate authority, all accidents must be reported to the safety co-ordinator of the Clients.

B18. HOT WORK:

In the event of the Contractor carrying out any of the following works he must carry the appropriate insurance and also comply with all the procedures and safety precautions set out in this insurances:

- ☐ All activities involving flame.
- ☐ Hot air or arch welding and cutting equipment.
- ☐ Braising and soldering equipment and blow lamps.
- ☐ Bitumen boilers and other equipment producing heat or having naked flame

B19. SAFETY, HEALTH, WELFARE & ENVIRONMENTAL ISSUES

This Contractor shall comply fully with all statutory safety, health and welfare regulations regarding work people, including those employed by Sub-Contractors employed on the site and particularly the Safety, Health and Welfare at Work (Construction) Regulations 2013 to 2021 and provide all relevant details to the Main Contractor to carry out the function of Safety Planning Supervisor for the construction phase of the works.

This Contractor shall comply in all respects with the Factories and Safety in Industry Acts and any other Acts and with any Statutory Instruments or Regulations issued thereunder.

This Contractor is required to provide a safety method statement clearly indicating the proposed sequence of his works and the precautions he will be taking at each stage in the works to protect his employees, and those of the main contractor, other sub-contractors, visitors and the

Employers personnel and any plant and equipment, etc. Full details of any chemicals or substances proposed to be used in the project construction process should also be detailed fully and the Employer's prior written approval received for its use.

This Contractor shall include for complying with the Safety, Health and Welfare at Work Acts and Regulations current at the date of tender.

The Main Contractor shall be appointed by the Client under a collateral agreement to the main contract as Project Supervisor for the Construction Stage in respect of the project pursuant to the

Safety, Health and Welfare at Work (Construction) Regulations 2013 to 2021. This Contractor shall include all costs for the provision of the necessary services and details to the Main Contractor to perform his duties as Project Supervisor for the Construction Stage pursuant to Regulations 6 and 7 of the Regulations.

This Contractor shall include for providing all necessary information as requested by the Project Supervisor for the Construction Stage to enable the preparation and completion of the Safety File including record drawings, specifications, maintenance and operating manuals and commissioning certificates. The record drawings and Maintenance Manuals shall be as required under previous clauses of this document.

COMPLIANCE

We can confirm that our design considers all the requirements as outlined in the current health and safety regulations and we have taken every practical step ensuring that the installations we design can be safely installed, used and maintained

SECTION 2: PARTICULAR SPECIFICATION:

ELEMENT 51: HEATING CENTRE

51.1 Extent Of Works In This Section:

The proposed works within the heating centre comprise of the following:

- Supply and installation, testing and commissioning of the high efficiency gas (natural gas) fired boiler modular unit and flue system as detailed and as specified.
- Plate exchanger system,
- Supply, installation, testing and commissioning of auto fill pressurisation unit and expansion vessels.
- New low loss header arrangement, boiler house pipe work, electronic variable speed pumps, valves and actuators
- Installation of two stage frost protection controls with external frost stat and immersion sensor in the return pipework,
- New MCC control panel to provide new power supplies, two stage frost protection zone controls weather compensation and remote 'Boost' zone control panel.
- De-commissioning, disconnection, stripping out of obsolete services in the plant room, to include:
 - Gas services,
 - Boilers (2no)
 - Boiler flues
 - Expansion systems
 - Pumps
 - Piping insulation etc
- The cabling scheduled shall be as detailed on the accompanying drawings. The controls system shall have an app facility to control remotely.

51.2 Boiler and Burner Units

The Contractor shall supply, install and connect up the new modular natural gas boiler, as shown and as specified on the accompanying drawings.

The boiler shall incorporate its own burners, combustion for gas valve, ignition, ionisation, electrode, and burner control with safety controls shall be complete with flue kit. The boilers shall be of the make and manufacture schedule which is bound in at the back of this specification. Minimum performance requirements, materials, manufacture, mountings and fittings, automatic controls, inspection, hydraulic testing and marking, and electrical wiring shall comply with the requirements of BS 779.

The following mountings / fittings shall be supplied and fitted to the boiler:

- ◆ Modulating shunt pump.
- ◆ Microprocessor controls.
- ◆ Cascade manager for modulation of burners

Boiler casings shall be fabricated from mild steel sheet, with either enamel or galvanised finish. The casing shall be designed to facilitate easy access to component parts either by hinged or totally removable panels. Panels shall be stiffened and have fully returned edges. Adjoining panels shall be butted together; sheet metal lapped joints are not acceptable.

Irrespective of heating system mode of control, the boilers shall be fitted with high limit manual reset immersion thermostat suitably located and arranged to isolate the fuel burning equipment under high temperature conditions.

Boiler/burner assemblies shall be suitable for operation with 230V, 50Hz electrical supply, and shall be fitted with an integral isolator.

The combustion chamber and combustion gas flue way shall be readily accessible for cleaning purposes either from the front or rear of the boiler.

(a) Pressure Gauges

Pressure gauges shall be Bourdon tube pressure gauges to DIN 16064 Class 1. All pressure gauges shall have 100mm dial and have an operating range of 0 to 5 bar. It shall have a brass connection with copper alloy tubing, complete with brass pointer and aluminium face, painted white with black digits. The pressure gauge housing and bayonet ring shall be stainless steel and the dial shall be instrument glass. Pressure gauges shall be by Manotherm or equivalent.

(b) Temperature Gauges

Temperature gauges shall be Bimetallic measuring systems. All temperature gauges shall have a 100mm dial and an operating range of 0 to 150°C. It shall have a brass connection, complete with pointer and a face painted white with black digits. The unit shall be stainless steel with the dial in instrument glass. Temperature gauges shall be by Manotherm or equivalent.

The Contractor shall include for two tappings 19mm in the boiler flow pipe for the thermometers and altitude gauges. They shall also include a 20 mm MF elbow fitted to the boiler for the safety valve. The contractor will also allow 25 mm draw off cocks with hose connection for draining down if required.

51.3 Boiler Flue:

This includes the supply and installation of the new flue arrangement, as detailed on the accompanying drawing. The flue shall be suitable for natural gas firing. All necessary supports/brackets to the masonry structure shall be allowed for. A suitable cowl shall be supplied and fitted to the flues.

51.4 Test Points

The Contractor shall include for providing test points for flue gas analysis and temperature reading to boiler flue. The flue gas analysis points shall consist of 6 mm diameter brass test cocks connected to a sampling tube and finished flush with the inside of the flue. The thermometer test points shall consist of 19 mm MS Class B, pipe inserted one end in flue and finished flush with the inner surface of the flue, the other end fitted with socket and plug cap. The Engineers approval of the actual test points selected shall be obtained before proceeding with this installation.

51.5 Pipework And Pipework Fittings

All heating pipework in the boiler-house shall be carried out in medium gauge (Class B) mild steel with welded joints.

At dismantling joints on pipework or where pipework is connected to an appliance, all joints shall be flanged. Flanged joints shall be by wrought iron or annealed steel flanges machined full face screwed or welded to the pipe. Joints between flanges shall be made with approved copper-nickel rings and jointing compound. Bolts shall not be allowed to protrude from the nuts by more than 6 mm and shall be ordered to the correct length.

51.6 Pipe Supports:

Pipework generally in the boiler-house shall be supported by means of hanger brackets with screwed socket pipe clips suspended from a mild steel channel suitably secured to the underside of the boiler-house ceiling.

Purpose made brackets for mounting headers etc., vertically on the wall shall also be provided, but the engineers approval as to the arrangement should be obtained before erection.

51.7 Control Isolating And Check Valves

Control valves shall be provided and fitted to the locations indicated and shall be gate valves of the non rising stem type with gunmetal body and screwed or flanged ends, with wedge type gate and hand wheel of diecast enamelled metal indicating direction of opening. The gland chamber should be packed with a suitable lubricant.

Valves shall be Hattersley Fig. 33 or similar to approval. Non return valves shall be fitted on the discharge side of all heating circulating pumps.

51.8 Provision For Drainage

The Contractor shall include for 19 mm bore gunmetal drain cocks with hose connection at all low points in the system.

51.9 Circulating Pumps

The Contractor shall supply and install in line glandless type circulating pumps with flanged connections fitted with single or 3 phase motors, to the make and manufacture as scheduled which is bound in at the back of this specification. The circulating pumps duties shall be as scheduled on the accompanying drawings.

Suitable starters with phase protection adjustable overload and no-volt releases for the above pumps are included in the control panel.

12 mm test tappings and cocks shall be provided in the suction and delivery sides of the pumps to allow for differential head readings to be taken for test purposes if required. Each tapping shall be blanked off by means of a screwed plug.

51.10 Thermostatic Controls

The boiler control package, including the new M.C.C. controls, shall incorporate a boiler cascade manager which will provide modulation ranging from 5% to 100% of the maximum boiler output. Periodical rotation of the boiler firing sequence will also be incorporated.

The boilers will feature weather compensating which automatically adjusts the flow water temperature in direct relationship to the outside air temperature to ensure that the system will operate at maximum efficiency. The BMS boiler-house control panel will control the heating zones to run according to the system keypad time schedule or an outside frost command to run pumps only.

In the event where outside temperatures drop below 3°C a hardwired frost stat shall enable all boiler-house pumps only. In the event of the LTHW return temperature dropping to 4°C a hardwired immersion frost stat shall enable the boilers.

The new controls package shall provide for an app to be set up, to be agreed with the Principal.

51.11 Boiler-house Control Panels

The control panel incorporating all controls and also suitable starters miniature circuit breakers, switches, etc., for the following times of equipment shall be provided, as detailed on the accompanying drawings. The control panels shall be as per the attached schematic and be as manufactured by Messrs. ABCO Tech Ltd, or EM Comfort Controls Ltd., Wicklow, Manitec Ltd., Limerick. or similar to prior approval. The remote outstation as shown and as detailed shall be supplied, installed, tested and commissioned as part of the system controls.

51.12 Boiler House Controls & Thermostatic Controls for LPHW Circuits

The wall mounted MCC control panel in the heating centre shall incorporate all necessary switchgear and controls etc for the Boilers, Pumps, and Pressurisation Unit.

RUN and TRIP indicating lights shall be provided for all motor drives, in addition to ON/OFF/AUTO switches. Duty/Standby is required for this installation. Holiday Switching will also be provided on the heating centre control panel.

Panel enclosures will be IP 54 rated, and the internal ratings of the board will be IP 20 in accordance with I.E.C 144. Wiring shall be by means of PVC cables, minimum size 1.5sq.mm cross section, unless otherwise stated. Cable shall be enclosed in PVC trunking.

Where enclosed in trunking their spacing shall not exceed 30% and labelled at intervals of 300mm maximum. Cables to any moving parts shall be flexible and housed in PVC spiral wrap or some other equal and approved means of protection.

Two stage frost protection shall also be provided as follows:

(a) A frost stat type (in weatherproof housing) shall be mounted externally in a metal weatherproof enclosure and shall be so arranged that the external stat will start up the circulating pumps independently of the time switch if the external air temperature were to drop below 5°C (positioned on North Aspect of boiler house)

(b) An immersion type frost thermostat type shall be set into the boiler return pipework and shall be so arranged that the stat will start up to the boiler/burner units if the return water temperature were to drop below 4oC.

Temperature controls which shall monitor the signals from the temperature detectors and regulate the outgoing temperature to the heating installation.

51.13 Expansion Systems

Include for the supply, installation, connection, testing and commissioning of the expansion systems as detailed on the accompanying drawings. The anti-gravity loop systems, as shown shall be provided, complete with the specified safety valves (pad lock type) and A.A.V. (valved). The automatic filler unit Armstrong SPU 502 or equivalent shall also be supplied, installed, tested, and commissioned.

51.14 Insulation

The insulation will be specified for all connections, bends, tees and valves. Proprietary jackets with Velcro fixings will be specified for all valves. Additional taping every 2 m will be specified for the insulation within the heating centre plant room.

Internal Pipe Diameter Insulation Thickness (Class “O” Armaflex insulation shall be used throughout”):

- Up to 32mm **32mm**
- Over 32mm and up to 50mm **40mm**
- Over 50mm **50mm**

51.15 Commissioning

The contractor shall include for instructing the personnel responsible for the operation of the system in the correct operation and maintenance of the entire system. During this period he shall go over with them the commissioning and service manuals and shall ensure that they understand fully and are properly instructed in planned maintenance of all aspects of the plant.

A signed statement from the employer stating that such instructions have been given will be required.

51.16 Tests

After completion of the pipework installation and the satisfactory inspection the new pipework systems only shall be pressure tested with air at a pressure of 7 bar (100 p.s.i.) where pressure must be maintained for a period of at least 24 hours. Any drop in pressure will be deemed to indicate failure of the section of sections which must then be repaired at the contractors expense and re-tested until such a time as a satisfactory test has been undertaken. Any items or equipment not designed to withstand the above pressure shall be disconnected during the test.

The contractor will be required to produce all test equipment, including portable air compressors, gauges, etc., or any other items or equipment necessary to carry out safely and satisfactorily the tests specified above.

The contractor shall note that the pipework distribution systems in the school **must not** be subject to this pressure tests.

51.17 Painting

All exposed metalwork shall be thoroughly wire brushed and painted with two coats of approved rust inhibiting paint.

51.18 Disconnection and Removal of Obsolete Services;

This includes for the disconnection and removal, off site, of obsolete services, by this contractor, to include the following;

- Boilers
- Boiler flues
- Pumps
- Pipework valves etc
- Obsolete insulation
- MCC

51.19 Flushing Out Of Systems:

The Contractor shall include for flushing out/filling of the entire heating pipework and radiator systems, using a suitable water treatment (as manufactured by Fernox Irish Agents: Hevac Ltd.). The Contractor shall confirm with the engineer what treatment/agent he intends to use.

51.20 Chemical Dosing System

This includes for the chemical dosing of the entire heating system installation. A suitable protection treatment against scale and corrosion must be added to the heating system during commissioning activities. The selected inhibitor should be applicable for the proposed systems, with the correct concentration achieved. Evidence must be provided that the system is fully protected with the use of such an inhibitor, either by test results, or at least on a company letter headed document, signed by the manager.

ELEMENT 54: GAS SERVICES

54.1 Extent Of Works In This Section:

This section covers the complete works required to connect to new boiler units in the heating centre, as shown and as detailed. The scope of works includes:

- Gas Pipework distribution systems, as shown and as detailed on the accompanying drawings.
- Gas detection and safety equipment in the boiler room including gas sensor, CO monitor, and slam shut valve.
- Supply, installation, testing and commissioning of the new gas detection system complete,
- Test and commission the gas systems.

The contractor shall note the requirements for diverting the existing gas service in the heating centre to external of the plant room, as detailed.

54.2 Pipework

Gas pipework internally, shall be to B.S. 1387, mild steel medium gauge, welded throughout to I.S. 820:2010 standards for natural gas installations. Fittings shall be specifically manufactured for welding and shall have a wall thickness not less than the pipe to which they are welded. Gas pipework shall be painted 2 coats of 'yellow ochre' paint in accordance with BS 1710:1971.

The Mechanical Contractor shall carry out the works in accordance with IS265 & IS 820.

Reducing welds shall not be allowed. Concentric reducers must be used.

All fittings shall conform to the same specification as the pipework materials and standards. Valves on the gas line shall be carbon steel, with stainless steel ball and stem, with PTFE seals. Valves shall be Worcester Series AF 44 anti static, fire safe.

The new gas detection solenoid system fitted to the gas service to the heating centre shall be of the make and manufacture as scheduled. The valve been positioned externally to the boiler-rooms, as shown on the accompanying drawings. The gas detection equipment associated with the system to include the solenoid valve (line size), control panel, sensors, positioned at high level in the boiler house in agreed locations, shall be supplied by this Contractor for wiring by the Electrical Contractor.

CO2 monitors shall be supplied and fitted, tested and commissioned.

54.3 Pipe Supports (within heating centre)

Pipe supports shall generally be the school board type built-in or screwed on according to location.

54.4 Valves

Valve bodies shall be of the globe type and shall be of steel or forged brass construction. Valves manufactured from cast modular iron complying with B.S.2789 may also be used. Valves shall be fire safe / anti-static.

54.5 Testing (natural gas pipework systems)

After completion of the pipework installation and satisfactory inspection the pipework systems shall be pressure tested with air at a pressure of 1.7 bar (25 p.s.i.) which pressure must be maintained for a period of at least 24 hours.

Any drop in pressure will be deemed to indicate failure of the section or sections which must then be repaired at the contractors expense and re-tested until such a time as a satisfactory test has been undertaken. Any items or equipment not designed to withstand the above pressure shall be disconnected during the test.

A Declaration of Conformance Certificate shall be provided by the Contractor in accordance with I.S. 820:2010, which shall record the results of all tests. This shall be available to the gas suppliers when commissioning the installation. The contractor will be required to produce all test equipment, including portable air compressors, gauges, etc., or any other items or equipment necessary to carry out safely and satisfactorily the tests specified above.

54.6 Commissioning:

After satisfactorily completion of the tests the gas valves shall be opened up and pressure regulated adjusted to give a line pressure of 30mbar. The system shall then be checked for gas flow under normal operating conditions and checked for main and sub-distribution pipe pressures.

54.7 Painting

All exposed pipework shall be carefully cleaned and left in readiness for the painting contractors.

The Contractor shall provide for advising the painting contractors of the identity of the various circuits for the application of the correct colour codes to the various services in accordance with B.S.1710 : 1971 and the Engineers instructions.

ELECTRICAL WORKS;

01 Scope of Works

This element of works includes for the supply, delivery to site, off-loading, erection, connection, testing and commissioning of all materials necessary for the electrical works associated with the mechanical services (heating centre) upgrade works. The electrical works include for the provision of all labour supervision, tools and equipment necessary for the efficient completion of the electrical works in the manner specified and to the complete satisfaction of the Engineer by a suitably qualified and experienced registered electrical sub contractor (domestic to this contractor).

The works shall include the following:

- Trace, isolate, and disconnect the existing electrical equipment to allow safe strip out and removal of the redundant heating systems – existing containment to be retained, where possible,
- Installation of boiler control panel and associated controls
- Installation of the gas safety systems control panel and associated controls
- Mechanical Equipment power and control wiring
- Earthing & bonding
- Cable containment systems as required.
- Testing Commissioning and Certification of the upgraded electrical installations

The mechanical contractor shall employ the services of a registered electrical contractor to complete all specialist electrical works. The electrical contractor shall be subject to Engineer's prior written approval.

02 Description Of Operations

Boiler Control Panel

The boiler are enabled via a user defined time schedule or if there is a frost condition as determined by the immersion frost thermostat in the return header. The boiler can be overridden via the keypad or graphic P.C. interface. If the pressurisation unit reads a high or low pressure condition then the boilers are disabled. The flow and return temperatures are monitored by the flow/return header temperature sensors.

Pumps:

The primary heating pump is enabled according to the user defined time schedule or if there is a frost condition as determined by the outside frost thermostat on the north facing wall. The pumps will operate after the boiler is disabled in order to dissipate the heated water around the circuit to prevent a boiler lockout due to high temperature. The pumps can be overridden via the keypad or graphic P.C. interface.

BUILDERS WORKS;

01 Scope of Works

The contractor shall be responsible for all elements of Builders Works as required to complete the mechanical upgrade works as described. The following sections describe the main elements. This contractor to allow for all ancillary elements of Builders Works whether described herein or not as required to complete the heating centres upgrade and reinstatement works as intended.

The works shall include the following:

- Base for expansion vessels/cold water pump set,
- Works to structure to accommodate the new flue
- High and low level vent in the boiler room, as shown,
- New full louvred doors as detailed,

The contractor should include for inspection of the site at tendering stage, so accurate assessment of builders work can be obtained. No claims whatsoever will be entertained by the engineer due to the lack of knowledge of site conditions or existing installations.

The Contractor shall also allow for the supply and fixing of the hardwood louvred doors to replace the existing, as shown. The doors to be treated and painted to selected colour.