

## INDEX

### SECTION ONE

#### GENERAL TECHNICAL SPECIFICATION

##### GENERAL REQUIREMENTS

DESCRIPTION	CLAUSE NO.
Scope	1.1
Tenders	1.2
Builders Work	1.3
Manufacturers Drawings	1.4
Installation/Electrical Drawings	1.5
Checking of Drawings	1.6
Record Drawings	1.7
Spare Parts & Tools	1.8
Maintenance Manuals	1.9
Return of Documents	1.10
Sub Contracting	1.11
Tenderer to Enquire	1.12
Contract Conditions	1.13
Regulations	1.14
Standards	1.15
Guarantee	1.16
Variations	1.17
Day-works	1.18
Completion	1.19
Programme	1.20
Site Meetings	1.21.
Hours of Working	1.22
Architects & Engineers Drawings	1.23
Drying Out of Building	1.24
Storage	1.25
Setting to Work	1.26
Scaffolding	1.27
Energy	1.28
Temporary Lighting	1.29
Protection in Transit/Moving of Equipment	1.30
Noise Abatement	1.31
Incompetent Workmen	1.32
Fire Precautions	1.33
Materials Not to be Used	1.34
Samples	1.35
Interruption of Services	1.36
Earthing Bonding	1.37
Radio Interference	1.38
Segregation of Services	1.39
Snagging	1.40
Labelling	1.41
Final Account	1.42
Calculations	1.43
CDM Regulations	1.44
Coordination of Services	1.45
Note	1.46

**SECTION ONE**  
**GENERAL TECHNICAL SPECIFICATION**  
**GENERAL REQUIREMENTS**

**1.1 SCOPE**

The Service Installation Phase comprise of:

All systems specified in this Document and shown on the Tender Drawings.

Unless otherwise stated, the works shall include: manufacture, works testing, commissioning, making good defects before handover and making good defects which occur during 12 months defects liability period, provision of "as fitted" drawings , Operation and Maintenance Manuals, labour and all materials necessary to form a complete installation whether or not each necessary component is indicated, plant and equipment in every respect "fit for purpose".

Testing/commissioning, water treatment, thermal insulation and control systems shall be carried out by specialists, under the control and supervision of the Mechanical Contractor.

The name(s) of the proposed specialist (s) shall be indicated in Appendix 1 for consideration by the Consulting Engineer.

It is the Contractor's responsibility to provide his specialists/Contractors with all information they require, design or installation wise.

Certain aspects of the works may have to be designed by the Contractor or his Specialist as detailed in the relevant sections of the specification.

It is the Tenderer's responsibility to obtain quotations/prices from all manufacturers / specialists / suppliers during Tender Stage and to ensure that such components must be included in the tender price. It is the responsibility of the Tenderer to clarify any question that may arise with the Consulting Engineer prior to submitting his Tender. No extra costs will be allowed for want of knowledge.

Where indicated the Contractor shall allow in his tender price for the 12 months comprehensive planned maintenance following acceptance of the completed installation.

The Contractor shall give notice as required by the Director of Environmental Health upon completion of installation of boilers and flues. Copies of the notice shall be sent to the Consulting Engineer and to the Main Contractor.

The Contractor shall include in his price for the cost of all transport, offloading, hoisting and transporting about the site, and all scaffolding required for carrying out the complete installations.

The Contractor is required to guarantee the performance of the installation.

His guarantee shall include the performance of all units and guarantees shall be obtained in respect of any equipment supplied to him by his Contractors. Where equipment of his own supply is to operate in conjunction with equipment supplied by others, the Contractor must ensure compatibility so that a completely integral system results.

## 1.2 TENDERS

Tenders shall be on a Fixed Price Basis unless otherwise stated.

The Tenderer is requested to submit with his Tender, a completed Appendix 2 showing the manufacturers, his reference of catalogue numbers and guaranteed delivery period after an order has been placed for each items of equipment an materials listed on the Appendix. Failure to complete the Appendix may result in unfavourable consideration of the Tender.

The Tenderer is required to submit with his Tender a completed Appendix 3 showing details of the labour and material rates on which he prepared to carry out the work authorised to be done on a daywork basis. The labour rates may be on a fixed rate per hour, or a standard time laid down by the rate fixing body of the industry concerned, plus a stated percentage. These labour rates and added percentages shall be inclusive of all profit, supervision and establishment charges. The material rates shall be the basic rates of purchasing (after all cash and trade discounts have been deducted) plus a stated percentage.

The Tenderer shall, within 14 days of being so requested, produce a schedule of rates showing in detail the quantities, prices and extensions used in the calculations of the Tender figure and the successful Tenderer must accept the responsibility for the accuracy of any quantities and extensions contained therein. The schedule shall balance with the items of the summary of prices as submitted with the tender. The Schedule shall be part of the tender and in the event of the Contract being awarded, the quantities and extensions shall be cancelled and the net rates in the said schedule shall be used for measurement evaluation of any alteration in addition to or omission from the works as described. If it should not be practical however to apply rates in the manner described such alterations, additions and omissions cannot be so agreed, then they shall be obtained on the basis of the value of the materials used and labour employed them on daywork at the rates in the schedule of Day work contained in this document.

The Contractors Tender must include the manufactures specified. No deviation will be considered.

Any dimensions shown on the drawings are believed to be correct, however the Contractor shall be responsible for checking all site dimensions relevant to his works prior to commencement with the installation.

Requests to the Main Contractor for extension of time for submitting tenders must be made not less than 5 days before the time for termination of tendering. Extensions will be allowed only at the discretion of the Consulting Engineer.

Unless otherwise stated, all tenders are to be based on supplying new equipment and materials. All materials used in the execution of the work shall be manufactured by a member county of the EEC unless otherwise specified under the respective sections of this Specification.

In cases where the Contractor is obliged to include for any articles or materials not of such manufacture, notwithstanding the terms of this Specification, he shall give details of all such articles and materials stipulating country of origin. The onus rests strictly with the Contractor to ensure that any Contractor who may be employed by him complies rigidly with this clause.

The Contractor must ensure that the relative safety marks or standard numbers have an equivalent British and EEC Standards Institute Specification and also meet with the Specification. It is the Contractors responsibility to check prior to installation that all products have CE (European Community) mark affixed where appropriate.

In the case of a discrepancy or in between the Specification and Tender Drawings or an obvious error or omission in any thereof, the request for clarification shall be made in writing to the Consulting Engineer prior to submission of the Tender.

The Specification and the accompanying tender drawings shall be read jointly as one document.

The tender drawings are for tendering purposes only and unless stated otherwise, must be treated as of a diagrammatic nature for the sole purpose of producing the tender price.

The drawings are detailed as to indicate the design intent and it is the Tenderer's responsibility to use his expertise and experience and include the necessary allowances for diversions which may be required due to structural projections, floor construction, lighting and false ceiling supports, soil waste and rainwater pipes, electrical cable or trunking runs, sprinklers and fire protection equipment and other trades work. No claim will be entertained for such diversions which may be required during the progress of the Contractor's site work which could have been reasonably foreseen. In such instances, the Contractor shall accept the Consulting Engineer's judgement.

The Tenderer shall include for all parts and events of the Contract Works which reasonably and obviously would be inferred as required for the satisfactory, safe and complete operation of the works of the involved, whether expressly described or otherwise.

The Tenderer shall include for specialist work stated in the tender documents.

The Contractor in tendering shall be deemed to have made a thorough examination of all the Contract Documents, the site and all features thereof including all services, drains or mains affecting the proposed works to ascertain precisely the nature and extent of same and the conditions under which the Works will have to be executed.

The Contractor shall be responsible for obtaining his own information on all matters and items which can in any way influence his tender.

The Main Contractor documents, which incorporate the general conditions and preliminaries of the Main Contract, together with the Contract Drawings, may be examined at the Architect's Office, by prior appointment.

No claim will be considered arising from want of knowledge in this respect.

The Contractor shall establish the positions of, protect, uphold and maintain in operation all pipes, ducts, sewers, service mains, overhead cables, etc, during the execution of the works, or temporary works when the occupation of the buildings or associated buildings by others dictates.

No oral, telegraphic or telephonic proposals or modifications will be considered unless confirmed in writing by the Contractor to the Consulting Engineer and Main Contractor before the time set for termination of tendering.

The contingency sum detailed in the tender form to be included by the Contractor shall be either expended or deducted, as directed by the Consulting Engineer, in whole or in part, at his discretion. However, the Contractor shall make due allowance within his overall timescale for the possible expenditure of the contingency.

### **1.3 BUILDERSWORK**

The Contractor shall furnish thorough the Main Contractor for comments within three weeks of the order being placed, or such reasonable time as may be agreed to the Consulting Engineer, Architect and Structural Engineer, duplicate copies of dimension/work drawings relating to the structural requirements in the building. These drawing shall show the positions and dimensions of openings, chases, foundations, bases and supporting structures. Drawings shall be complete with all necessary details such as pockets, cast in bolts, live and dead point landings and floor loadings.

After the Consulting Engineers, Architects and Structural Engineers comments have been incorporated in the Contractors drawings up to ten copies of each drawing shall be provided to the Main Contractor for distribution by the Contractor for construction and record purposes.

Changes to modified drawings shall be subject to the same procedure. Up to ten copies of each drawing shall be provided to the Main Contractor for distribution by the Contractor.

The Contractor shall be required to reimburse the Main Contractor for any additional openings, chases, etc., required and not shown on the Contractor's builderswork drawings, or agreed with the Main Contractor. Any such openings shall only be allowed with written approval by the Architect and Structural Engineer.

All plant and equipment illustrated on the tender drawings are indicated in their approximate position. Their exact positions shall be determined by the Contractor after examination of both Architect's and Structural Engineer's detailed drawings, and shown on the working drawings as called for under Clause 1.5 of this Specification.

Note:- The Contractor shall allow in his tender price for preparing the above drawings and costs for changes required and printing.

Drilling of holes and welding to the building structure is not permitted without the Engineer's permission. It is the Contractors responsibility to obtain such permission prior to carrying out the works.

#### **1.4 MANUFACTURERS DRAWINGS**

Within four week of the order being placed, or such reasonable time as may be agreed with the Consulting Engineer, the Contractor shall obtain and submit duplicate certified manufacturer drawings for any component which may be considered necessary by the Consulting Engineer. The Contractor shall allow the costs for these drawings in his tender price and submit the documents to the Consulting Engineer, via the Main Contractor.

#### **1.5 INSTALLATION DRAWINGS**

The Contractor shall furnish the Consulting Engineer through the Main Contractor for comments within four weeks of the order being placed, or such reasonable time as may be agreed, two copies of his installation drawings before starting any fabrication, ordering any equipment or commencing with the installation. These drawings shall be based on the tender drawings and/or Co-ordination drawings showing details of the Contractors proposal for the execution of the works. The drawings shall be in such detail as to enable the works to be installed.

The drawings shall be fully dimensioned and include details such as levels, sections, brackets details, isometrics, pipe gradients, co-ordination with building structure and other services, etc and show all item of the installation. Exact details required are to be agreed between Contractor and Consulting Engineers. It is not permitted to replace the Consulting Engineers title of the Tender Drawings with his own title and use the drawings as his Installation Drawings. The Contractor shall submit up to 10 copies of the approved drawings to the Main Contractor for distribution.

The co-ordination with the Main Contractor and all other trades and site conditions is the responsibility of the Contractor.

All drawings are to be produced in the following scales:-

Floor Layouts:	1:100
Floor Layouts:	1:50 min for multi services
Core Areas:	1:20
Boiler, Plant Room:	1:20 1:10 min
Details	1:10 1:5

The Contractor shall furnish the Consulting Engineer through the Main Contractor for comments two copies of drawings of all electrical work associated with his contract, including control systems. Drawing shall be in the form of "straight line" and comprehensive wiring diagrams, clearly showing the location and function of each component with the Manufacturers figure, number or identifying symbol.

These drawings shall be integrated so that they form complete details the installation, the wiring details shall show the information for each group of components so they function as intended. For example: isolators, starters, time switches, thermostats, etc., should be shown correctly related to the fan or heater motor as required. Typical wiring diagrams will not be accepted.

Note:- The Contractor shall allow in his tender price the preparation of drawings, costs for incorporating changes and printing.

## **1.6 CHECKING OF DRAWINGS**

Checking of drawings by the Consulting Engineer will be for general arrangement and appearance only and will not relieve the Contractor of responsibility for non-compliance with the Contract Documents.

No claim will be allowed for work that may have to be removed or replaced on a claim that the works was placed in accordance with dimensions and/or comments shown on checked drawing.

The Contractor shall allow a minimum of one working week (5 days) for checking the drawings by the Consulting Engineer.

## **1.7 RECORD DRAWINGS**

The Contractor, on completion of the installation shall hand over two sets of drawings showing a complete and accurate record of actual installation as fitted on site. Where any work is buried or hidden, the Contractor shall be responsible for making such records as the work progresses. All drawings shall be fully dimensioned.

These Record Drawings shall be of a standard at least equal to the Installation Drawings and shall be supplemented by Manufacturer's drawings and shall carry all Manufacturer's reference numbers, etc., for all items and plant and components.

These drawings shall be submitted to the Consulting Engineer through the Main Contractor for comments in the first instance and shall be in form of paper prints. After checking, three copies of each record and manufacturer drawing shall be submitted to the Main Contractor.

The Main Contractor shall hand these documents together with the Maintenance Manuals to the Consulting Engineer. Final payment excluding retention will only be considered by the Consulting Engineer on receipt of these records.

Drawings shall be prepared to the scales indicated in clause 1.5.

One plastic type, framed drawing of each boiler and plant room schematic size AO shall be permanently fixed in the relevant plant/boiler rooms. The same type drawing showing the whole gas pipe installation shall be fitted in the Boiler Room. Scale to be suitable to show the whole installation in clear detail Position and scale to be agreed with Consulting Engineer.

The gas supply line diagram shall be provided as detailed in British Gas Publication IM/16 for all gas system installed.

The Contractor shall allow in his tender price for the costs for preparing the documents specified in clause 1.7.

All valves in boiler houses, plant and equipment rooms shall be numbered. Numbers shall correspond with schematic diagrams.

## **1.8 SPARE PARTS AND TOOLS**

### **MECHANICAL SERVICES**

At handover, the Contractor shall provide to the Client the following items for maintenance and operation of the plant specified. Costs shall be indicated as a separate item in the relevant tender summary.

- a. Tools and tool holder for boilers.
- b. Two spare washers and renewable discs for each size of valve as necessary.
- c. Sufficient lubricating, oils, greases, packing materials for plant, valves, etc., for twelve month period after handover.
- d. Two keys for each size of lockshield valve.
- e. Two keys for air vents.
- f. Other tools etc., as may be supplied by manufacturers or necessary in maintaining the plant in good operation, which shall include a small tool kit containing pliers, 1 small and 1 large screwdriver, for slotted and cross head and 12" adjustable spanner, two sets of spanners and tools necessary for the maintenance of the oil or gas burner.
- g. Spare parts if required for all fans.
- h. 2 No. fusible links for each type of fire damper.
- i. One set of spare filter material for each plant in addition to a clean set of filter media which shall be provided after completion of plant testing and commissioning.
- j. 1 No. spare load limit relay to be provided when screw or centrifugal refrigeration machines are installed or when specifically called for.
- k. 1 No. spare set of 'O' rings for evaporation/condensor when required.
- l. 1 spare set of bursting discs.
- m. 1 No. spare set of joint rings for each calorifier/storage cylinder.
- n. 1 No. bulb for each run and trip light, up to a total of 24.
- o. 1 No. spare set of vee belts for each motor/fan pump drive.
- p. 6 No. spare control relays.
- q. 3 spare fuses for each fuse rating installed.
- r. 2 sets of all keys for air handling unit panels etc.

It is the Contractors responsibility to ensure that he obtains the signature from the Client or his Representative upon handing over the above spares and tools. The Contractor shall allow in his price for the items listed above.

### **ELECTRICAL SERVICES**

If the Contract Works include for the Electrical Works then the Contractor shall include the supply of the following spares which shall be handed to the Clients representative upon completion of the installation works.

- a. One complete set of HRC fuses of each size used in switch and fusegear.
- b. One size of each cartridge fuses for 13 amp plug tops, clocks, fused connection units and luminaires.
- c. Two number MCB's of each size up to 60 amp.
- d. Ten spare glasses and cover opening keys for fire alarm Breakglass Unit.
- e. Two number spare lamps of each size, wattage and type.

All spare fuses shall be housed in a fibre glass or rust proofed sheet metal cabinet fixed in the main LV switchroom. The cabinet shall be labelled "SPARE FUSES".

Note: all spare parts shall be housed in a suitable wall mounted cabinet provided and installed by the Contractor in a location to be agreed with the Consulting Engineer.

## **1.9 MAINTENANCE MANUALS**

The Contractor and his specialists shall give working and maintenance instructions and demonstrate the operation of the plant, equipment, controls and installation carried out by him, to the Client. These instructions shall continue over a period of time to suit the requirements of the Client and/or Consulting Engineer but shall not exceed 10 consecutive days. The instructions shall not be carried out at the same time as any other testing or regulating takes place, but upon completion of the works.

Two weeks, prior to handover, the Contractor shall submit to the Consulting Engineer for approval/comments one copy of the Operating and Maintenance Instruction containing all information to enable the Client to operate and maintain the installation and equipment, comprising fully detailed section including the following.

General description of the scope, purpose, and manner of working each system or apparatus forming part of the works including diagrammatic drawings.

Instructions for safe starting up, operating and shutting down of each system including any precautionary measures necessary for ensuring health and safety and avoidance of mis-use.

Instructions for planned preventive maintenance to maintain the equipment in accordance with the manufacturers recommendations.

Schedules of emergency measure and instructions for dealing with fault diagnosis techniques and remedial action for each system/apparatus.

Schedules of equipment with manufacturer works, reference numbers, names and addresses and telephone/fax numbers, instruction leaflets and literature including lists of standard replacement parts.

Data on general setting of controls associated with design conditions.

Recommended precautions to prevent/minimise the development of Legionella.

Schedule of commissioning data and copies of test certificates including all manufacturers test certificates.

Set of Record/As Built Drawings.

Schedule of control sequences together with wiring diagrams and plant interconnections and internal wiring of equipment.

Three copies of the final/approved complete documents shall be bound in stiff backed binders A4 size and handed to the Consulting Engineer prior to handover for comments.

All the contents shall be mounted in clear PVC pockets sealed on three sides, open at the top.

The Contractor shall include for all costs and expenses for preparing and delivering these documents.

In the event of the Contractor failing to comply with this clause in a reasonable time the Consulting Engineer has the power to instruct the work to be carried out by others and deduct the resultant costs from the Contractors final account.

The Contractor shall allow for easy access to all items which require to be maintained on a regular basis.

The Consulting Engineer will not accept the installation unless the Contractor hands over the manuals prior to hand over date.



## **1.10 RETURN OF DOCUMENTS**

The Tender Documents and specification remain the property of the Consulting Engineer and shall be returned at the completion of the work. They shall not be used by the Contractor for any other work without obtaining prior approval of the Consulting Engineer. He shall not publish or disclose any particulars of the scheme in any trade or technical paper or elsewhere.

Unsuccessful Tenderers shall retain the Consulting Engineers tender documents and return same upon request from the Consulting Engineer.

## **1.11 SUB CONTRACTING**

The Contractor shall not assign, Sub Let or Sub Contract any part of the manufacture, supply or installation of the work without written consent of the Consulting Engineer.

In the event that the Contractor does, with the written consent of the Consulting Engineer, assign, Sub Let or Sub Contract any part of the design manufacture, supply or installation of the work, the Contractor shall remain responsible for the portion of the work that is Sub Let, it's completion to the satisfaction of the Consulting Engineer and compliance with the tender documents.

## **1.12 TENDERER TO ENQUIRE**

Tenderers shall be deemed to have satisfied themselves as to the local conditions and accessibility of the site, the full extent and nature of the work, the supply or conditions affecting labour, carriage, unloading, crange, storage and safe custody of materials, the scaffolding, tackle and tools necessary and the execution of the Contract generally.

### **a. COLLUSION BETWEEN TENDERERS**

Should, in the opinion of the Consulting Engineer, collusion between Tenderers have taken place in the preparation of quotations, prices submitted by parties to such action shall be disregarded when Tenders are being considered.

### **b. ACCEPTANCE OF TENDERS**

The Client does not bind himself to accept the nomination of the lowest or any tender, nor to pay any expenses incurred by the Contractor in estimating.

### **c. ROYALTIES AND PATENT RIGHTS**

The price quoted by the Contractor shall include any Patent Royalties which may be legally demandable in respect of any articles, systems, processes or inventions included in his Tender.

### **d. VALUE ADDED TAX**

The Contractor's attention is drawn to the fact that Value Added Tax as laid down in the Finance Act 1972 and covered by latest amendments will be required to be paid at the full rate on the cost of the supply of goods and services to him by Suppliers and Sub Contractors, whether nominated or otherwise. The payment and recovery of such tax will be the entire responsibility of the Contractor who shall be deemed to have allowed in his tender for all incidental costs and expenses which he may incur thereby.

### **e. QUALITY OF MATERIALS**

The whole of the materials used in the works shall be of the best quality of their respective kind, free from all flaws, defects and adulteration of any description and should any materials used thereon appear to the Consulting Engineer to be of an inferior quality or workmanship and improper he shall have full power to reject such inferior quality of materials or work and the Contractor shall forthwith at his own expense remove and reinstate same.

It is the Contractors responsibility to ensure that all terminal fittings and other materials in contact with potable water installation must be of an approved type and as listed in the Water Research's Water Fittings and Materials Directory.

The Consulting Engineer shall also have full power to order the alterations and reinstating of all work he may deem of an inferior character or contrary to the true intent and meaning of this Contract. The Contractor shall forthwith alter and reinstate with proper and improved materials and workmanship all such condemned at his own expense.

The Consulting Engineer shall at all times have the entire control of the works and he shall at all times have the full power to inspect the same in all stages of their progress and shall be at liberty to suspend any portion thereof which is not executed in conformity with drawings and specification and shall be at liberty to apply or order to be applied at the expense of the Contractor, such tests as he may consider necessary for ascertaining the quality of the works and materials.

#### **f. EXTENDED WARRANTIES**

The Contractor shall submit with his tender the costs per month for a possible extension of the 12 months defects liability period to 24 months, if so required in the documents.

#### **1.13 CONTRACT CONDITIONS**

The tender documents are intended to indicate the general requirements necessary to allow successful installation of the works.

If however, any conditions contained within the specific tender documentation and/or Main Contract Conditions are at variance with any clause contained within Section One of this Specification then the Tenderer shall bring the matter to the attention of the Consulting Engineer during Tender Stage for clarification. Should such a point be raised after the order has been placed the Contractor shall accept the Architects/Consulting Engineer's decision.

#### **1.14 REGULATIONS**

The whole of the work carried out by the Contractor shall comply in all respects with good practice and the latest Enactments and/or Revisions of the relevant Statutory Instruments and Regulations which include the following:-

The Building Regulations 2016

The Factories Act 1961

Offices, Shops and Railway Premises Act 1963

Fire Precautions Act 1971

Control of Pollution Act 1974

All relevant Asbestos Regulations, Codes of Practice, Guidance Notes.

The Control of Legionellosis HSE & HS (G) 70

The Prevention or Control of Legionellosis (including disease) Approved Code of Practice HSC.

Gas Act 1984

The Bye Laws of the Local Authorities concerned

Any special requirements of the Local Electricity, Gas and Water undertakings, Building Control, Fire Officer, Acts of Parliament

The Health and Safety at Work Act 1974

British Standard Specification "Kite Mark" where appropriate; Codes of Practice, ISO, IEC, CEN and Eurovent Standards, as applicable.

CIBSE and HVCA Codes of Practice

Insurance Companies Requirements

Manufacturers Recommendations

NIC EIC Regulation

EEC Directives

The Environmental Protection Act 1991

The Electricity at Work Regulations 1989

Clean Air Act

Energy Conservation Act  
The I.E.E. Regulations for Electrical Installation (Latest Revisions)  
British Gas Corporation Codes of Practice  
British Standards  
Gas Fired Equipment and appliances shall be certified and approved by British Gas.  
CDM Regulations 2015  
Work at Height Regulations 2005.

To minimise the risk of Legionnaires Disease, the Contractor shall observe and incorporate in his price/installation of the following:

All drains from Air Cooling Units shall be trapped. An air break shall be provided in each branch drain, discharging into main drainage pipes. Drainage/drip trays for fan coils shall be sloped and provided with a means to prevent complete drainage. Glass traps shall be installed for easy inspection. CIBSE technical memorandum TM13, all relevant Codes of Practice, Health & Safety Executive and COSHH, Documentations shall be observed and implemented.

No interpretation of this clause shall prejudice any part of this document where requirements may be in excess of those called by any of the above mentioned authorities.

Should there be anything contained in or, implied by this document or the drawings refer to therein or subsequent instructions, written or verbal, received by the Consulting Engineer which conflicts the requirements outlined in fulfilment of his obligations under these Acts and Regulations, then the Contractor shall bring such conflicts or hindrance to the notice of the Consulting Engineer without delay, and obtain a Resolution of the problem before proceeding with the execution of the installation.

#### **1.15 STANDARDS**

All equipment supplied and work executed shall be of a standard not less than that set out in the current appropriate British Standards Code of Practice and general Good Practice.

The Contractor shall adhere strictly to the Tender Document and no deviation therefore will be allowed unless by special permission in writing from the Consulting Engineer.

#### **1.16 GUARANTEE**

In case the installation or any part thereof should after acceptance or during testing fail, the Contractor shall without delay rectify such matters at his own expense.

The Contractor shall at his own expense make good by repair or replacement any defects in the installation of any part thereof determined by the Consulting Engineer which arise within a period of twelve months from the date of practical completion installation, provided that the installation of any part thereof has been used in a reasonable manner. The issuing by the Architect of the Final Completion Certificate at the end of the Defects Liability Period does not relieve the Contractor of any responsibility relating to defect liability.

If the Contractor should fail within the time stipulated by the Consulting Engineer to make good or replace defects, the client and/or the Consulting Engineer reserves the right to correct deficiencies or by sub contracting and charge the cost to the Contractor, together with any loss consequent upon shortage of production, output of work or loss on sales and rent.

#### **1.17 VARIATIONS**

The Consulting Engineer shall be at liberty to order any extra or to omit any part of the work.

No variations shall be undertaken without written authorisation from the Main Contractor. Where possible variations shall be costed before the instructions are given and work undertaken. The price of each authorised variation shall be submitted by the Contractor to the Main Contractor and wherever possible agreed prior to the execution of the works, but no later than 7 days after authorisation or upon completion of the work whichever is earlier.

The value of all Contract variations shall be determined by the Quantity Surveyor of the Consulting Engineer in accordance with the Main Contract Conditions.

The Contractor shall keep a Schedule of all variations. A copy of same shall be submitted to the Consulting Engineer on every first working day of each month during the contract period. The schedule list each variation and details of the number of the Architect's Instruction, costs, and reason for variation.

#### **1.18 DAYWORKS**

Dayworks will not be allowed unless authorised by the Architect. All accepted daywork will be priced in accordance with the appropriate "Definition of Prime Cost of Dayworks" as published by RICS and the appropriate contracting organisation.

When executing work on a daywork basis, the Contractor shall submit Daywork Sheets daily to the Clerk of Works or another officer duly authorised for certification.

#### **1.19 COMPLETION**

The Contractor shall leave the work complete and in clean, sound perfect condition, shall clear all rubbish as it accumulates and make good at his own expense any damage which may have been caused to any property of the client by reason of the execution of his installation. Failure to comply with this requirements may lead to non acceptance of the works by the Consulting Engineer.

#### **1.20 PROGRAMME**

The Contractor shall agree a detailed programme with the Main Contractor at the earliest possible date. The programme shall include delivery dates of all goods and materials vital to meet the requirements of the programme and indicate the strength of the labour force upon request by the Engineer that the Contractor has checked with his suppliers that all goods and materials can be made available at the required times.

The responsibility of preparing an accurate and practicable programme and for complying with it rests entirely with the Contractor and the Main Contractor. Two copies of the programme shall however be submitted to the Consulting Engineer for his information as soon as it has been agreed.

If the Contract is likely to be affected by seasonal changes then the Contractor shall allow in his Tender for all such sums as he considers necessary to compensate for time which may be lost due to inclement weather conditions.

Throughout the contract, the preparation of the Contractor's drawings, the placing of orders for materials and their subsequent progressing and the retention on site of adequate labour force including supervision, shall be done in sufficient time to comply with the full requirements of the programme.

The Contractor shall submit a copy of the programme agreed between the Main and Contractor to the Consulting Engineer.

The Contractor shall provide all necessary and proper supervision during the execution of the work and shall constantly employ on site at least one good, competent foreman, who shall have had previous experience of the class of work involved.

When, in order to complete the work within the stipulated time, it becomes necessary for the Contractor or his Contractors to work additional hours during the day, or additional days, during the week or both, these additional hours and /or days shall be worked and any extra cost resulting from them, shall not give rise to any additional expenses to the Client.

The Contractor shall be excused any liability for delay in delivery in installation of works which the Contractor shows has risen due to causes outside the reasonable control of the Contractor, provided

that the Contractor gives the Consulting Engineer notice, in writing, immediately on learning of any cause likely to delay the delivery and/or the installation of the works.

Delays in delivery or delays in installation or the works which are deemed to be within the control of the Contractor may give rise to a charge in respect of losses, consequential or otherwise which the Client may suffer.

#### **1.21 SITE MEETINGS**

The Contractor will be required if demanded to have an official representative in attendance at any site meeting which may be held by the Main Contractor, Architect or Consulting Engineer.

The Contractor shall submit a written report to the Consulting Engineer on the first day of each month during the progress of works outlining work completed to date.

The Contractor shall arrange for his Supervising Engineer or Foreman to keep on site a detailed record of the progress of the works and details of all instructions received in writing and given verbally on site, with times, dates and names of persons giving such instructions. This record shall be at the disposal of the Consulting Engineer as and when required by him.

One copy of all diary notes shall be forwarded monthly to the Consulting Engineer whilst the Contract is in progress.

#### **1.22 HOURS OF WORKING**

The Contractor will be deemed to have included in his tender price for all expenses which may be incurred in working over time to fulfil the date of completion or as an incentive to recruit or retain labour.

Where, owing to the default of the Contractor, it may be necessary for the work to be carried out other than normal working hours, he shall so carry out the work, without additional payment.

If the Contractor is otherwise authorised in writing to work at other than normal working hours, he shall be allowed the net additional cost incurred in respect of wages for tradesmen and labourers.

#### **1.23 ARCHITECTS AND ENGINEERING DRAWINGS**

In order to understand the project fully. Tenderers should on application inspect such documents prior to submitting the tender. No claim will be entertained based on lack of knowledge of these documents.

#### **1.24 DRYING OUT OF BUILDING**

The Main Contractor will, subject to the approval of the Architect, be allowed to use the heating system for drying out the building, but only in collaboration with the Contractor, who must provide the skilled supervision for working of the plant. All costs incurred by the Contractor for labour, supervision, maintenance of plant, insurance and fuel shall be agreed between Main Contractor and Contractor and shall not form part of this Contract.

All plant and associated equipment must be reinstated "as new" prior to the commencement of the Defects Liability Period.

The use of the heating by the Main Contractor for the purpose of drying out the building will in no way release the Contractor any responsibility under the terms of this Contract.

## **1.25 STORAGE**

The Contractor shall be responsible for the reception and off-loading of all materials, plant, tubes, fittings, etc., delivered to site and shall provide proper storage for them with adequate protection from weather and unprotected areas. No materials stored on the ground outside will be approved for use on the installation covered in this document.

Any items suffering damage during transit, storage or erection shall be replaced without any charge to the Client.

All off loading will be carried out by the Contractor and all items loaded will immediately be placed by the Contractor in a suitable storage area or at a point defined by the Main Contractor.

The Contractor shall make his own arrangements for the storage of his materials in an area of suitable size provided by the Main Contractor. All materials stored within the building shall be protected from damaging the structure both new and existing and the Contractor shall provide such protection to the satisfaction of both the Engineer and the Main Contractor.

The distribution of materials and plant of his supply around the building will be the responsibility of the Contractor and all associated costs shall be deemed to be included.

The Contractor shall also be responsible for the protection of all materials as supplied and handed to him as "Free Issue" items by the client for incorporation in the works against damage or loss prior to and during installation, until the works are either handed over to the Client or until a Certificate of Practical Completion has been issued by the Architect.

## **1.26 SETTING OUT OF WORK**

The position of all fittings, equipment and other apparatus shown on the tender drawings are approximate and are only intended to indicate the arrangements of the work.

The Contractor shall be responsible for the accuracy of the setting out of the Contract Works and for the correctness of the positions, levels and dimensions of the works, including the marking out of all builderswork. The Contractor shall supervise and be responsible for the accuracy of all information provided by him.

If at any time, during the progress of the work any errors arise, the Contractor shall at his own expense remove and amend the work to the satisfaction of the Architect, and shall become liable for any costs associated with such error including any delay caused to the Main Contract.

## **1.27 SCAFFOLDING**

The Contractor may use the scaffolding provided by the Main Contractor while it remains erected upon site. Details shall be discussed and agreed between the parties concerned. The responsibility for this arrangement rests with the Main Contractor and Contractor.

## **1.28 ENERGY**

Electricity will be available to and at no cost to the Contractor for use of lighting and portable tools during this Contract. The electricity is not available for electric heating, welding or any other purpose and the connection shall be made only at positions agreed with the Consulting Engineer.

The necessary water and gas for the purpose of the Contract will be provided at no extra cost to the Contractor.

## **1.29 TEMPORARY LIGHTING**

The Tenderer shall include for any temporary lighting he may require during the erection period. Should this be required the connection will be made by the Contractor.

### **1.30 PROTECTION IN TRANSIT, MOVING OF EQUIPMENT**

Packing and protection of any part of the equipment shall be adequate and up to best practices for such deliveries when involving long transport and rough handling. All surface or parts subject to damage by rust or corrosion when in transit and prior to installation shall be protected by application of rust preventative coating or covering.

Units and/or accessories shall be clearly identified and/or match marked prior to despatch to ensure efficient and economical installation.

Floor pavements etc., shall be protected by the Contractor when moving heavy equipment of his supply.

### **1.31 NOISE ABATEMENT**

The Contractors attention is drawn to the Control of Pollution Act 1974 with reference to the control of noise in relation to any construction works and to obtaining of any necessary prior consents from the responsible authority.

It is the responsibility of the Contractor to ascertain from the Authorities concerned prior to the submission of his tender, whether the requirements and restrictions related to hours of working permissible, maximum noise levels not to be exceeded, methods of working and/or type of plant to be employed.

The Contractor shall comply with all requirements and restrictions which may be imposed and shall allow for the cost of such compliance and all resultant programme requirements.

### **1.32 INCOMPETENT WORKMEN/WOMEN**

The Contractor shall at the request of the Architect when advised by the Consulting Engineer immediately remove from the site any person employed thereon by him who may, in the opinion of the Consulting Engineer, be incompetent or commit an act of misconduct. Such persons shall not be employed again on site without the written permission of the Architect.

### **1.33 FIRE PRECAUTIONS**

The Contractor shall ensure safe methods of working are followed when using equipment, liquids or gases which create a fire or explosion hazard, or toxic fumes. Petroleum products and other inflammable or vaporising liquids shall be used and stored in accordance with the regulations applicable to those products.

### **1.34 MATERIALS NOT TO BE USED**

Asbestos or asbestos based products; including crocidolite

Lead or materials containing lead which may be ingested, inhaled or absorbed.

Urea formaldehyde foam or materials which may release formaldehyde

Other substances generally known to be deleterious at the time of specification

Other substances not in accordance with British Standards or Codes of Practice where such exist.

### **1.35 SAMPLES**

The Contractor shall allow in his price for submitting samples of any part of the installation and for executing small specimens of work, if required to do so by the Consulting Engineer, Architect and/or Main Contractor.

### **1.36 INTERRUPTION OF SERVICES**

The Contractor shall not without the permission of the Consulting Engineer interrupt or interfere with the operation of any existing services such as sewers, drains, gas, water, sprinklers, electric light, power cables, etc., and in the case of works for Statutory Authorities or private owners, without the prior permission of such Authority or Client and the Consulting Engineer.

The Contractor shall be responsible for any damage caused to any existing services and shall make good damage to the satisfaction of the Consulting Engineer, Authorities or Client, as the case may be.

### **1.37 EARTH BONDING**

The Contractor shall in conjunction with the Electrical Contractor make all necessary provisions to allow the Electrical Contractor to carry out all earth bonding as called for under the current I.E.E. Regulations.

Where the Mechanical Contractor is responsible for the electrical wiring associated with his installation it is his obligation to arrange for the bonding to be carried out by an N.I.C.E.I.C. registered electrician in accordance with current I.E.E. regulations.

### **1.38 RADIO INTERFERENCE**

All apparatus that would be likely to cause radio and /or television interference shall be provided with an appropriate anti suppression device.

### **1.39 SEGREGATION OF SERVICES**

Segregation of all piped services from Electrical Services shall be obtained at all times. Wherever the pipework and Electrical Services run parallel with one another, a minimum of 150mm shall be allowed between them.

Where pipework and electrical services cross one another and/or at right angles to one another, this minimum distance of 150mm shall also be maintained.

In the event of this 150mm spacing being unobtainable, reference must be made to the Consulting Engineer prior to installation and his ruling as to the allocation of services shall be final.

### **1.40 SNAGGING**

On completion of each installation or service or sections or such installation or services the Contractor shall carry out his own detailed and thorough snagging and rectify all defects. When the Contractor is satisfied that there are no outstanding items he shall invite the Consulting Engineer to carry out his own inspection. A representative of the Contractor shall be present. Any items which the Consulting Engineer feels requires attention, shall be rectified by the Contractor in the time stipulated by the Consulting Engineer. A further inspection will then be carried out by the Consulting Engineer.

Should it be found that not all defects have been rectified, the Consulting Engineer will charge the Contractor direct for the abortive visits on an hourly basis plus all expenses. No further inspection will be carried out until the Consulting Engineer has received payment.

The responsibility for any problem/delay that may arise because the Contractor failed to fulfil his obligations specified in his clause, rests entirely with the Contractor.



#### **1.41 LABELLING**

All equipment, plant control, instruments, damper positions, indicating lamps, valves, pumps, etc., shall be permanently labelled. Labels for electrical apparatus shall be of perspex 5mm thick with chamfered edges and reverse engraved on the back with white lettering over painted black.

All other labels shall be of brass engraved with black lettering or of an approved form on laminated plastic material engraved black on white.

#### **1.42 FINAL ACCOUNT**

On practical completion of the works, the Contractor shall provide the Consulting Engineer with his Draft Final Account.

#### **1.43 CALCULATIONS**

On request, the Contractor shall submit all calculations for design work carried out by him or his Contractors to the Consulting Engineer.

#### **1.44 CDM REGULATIONS**

The Contractor shall be aware of the need to comply with the CDM Regulations 2015. He shall also make due allowance for compliance with the Pre-Construction Information Pack and The Construction Phase Plan. The Contractor shall make allowance for the provision of any design information provided by the Contractor to the CDM Co-ordinator which shall include detailed methods of controlling hazardous works in construction or future maintenance. The Contractor shall make allowance for provision of any relevant information for inclusion in the Health and Safety File via the Principal Contractor.

#### **1.45 COORDINATION OF SERVICES**

The Sub Contractor shall be responsible for the coordination of services with the Main Contractor and all other trades and all on site conditions.

#### **1.46 NOTE**

No tender will be considered unless the Tenderer submits the following documents filled in completely with his tender:-

- a. Appendix 1 - List of Proposed Contractors
- b. Appendix 2 - Schedule of Deliveries
- c. Appendix 3 - Schedule of Daywork Rates
- d. Appendix 4 - Summary of Tender Drawings
- e. Appendix 5 - Fixed Price Tender
- f. Appendix 6 – Tender Summary