Gerald Honey Partnership
Lift • Escalator • Cradle Access System Consultants
16 St Johns Hill, Sevenoaks, Kent TN13 3NP
Tel: 01732 458222 E-Mail: ghp@geraldhoney.co.uk

PROJECT No: C20512

DATE: 7th October 2021

CONTRACT DOCUMENTS INCORPORATING

1. **Terms & Conditions**
2. **Specification**
3. **Forms of Tender**
4. **Pre-Construction Information**
5. **Maintenance Contract**

RELATED TO:

PASSENGER LIFT REPLACEMENT

AT:

MAPLE HOUSE
11 KINGS SQUARE
BRISTOL
BS2 8JH

CLIENT:

Elim Housing Association
Units 3 & 4 Pinkers Court
Briarlands Office Park
Gloucester Road
Rudgeway
Bristol
BS35 3QH

ISSUE
FINAL DOCUMENT

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

MAIN INDEX

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

INDEX TO SECTIONS

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

INDEX TO SECTIONS

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

INDEX TO SECTIONS

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

INTRODUCTION & PREAMBLE

On behalf of our client, Elim Housing Association you are invited to provide a competitive **FIXED PRICE TENDER** for the design, manufacture, supply, delivery, installation, all associated builders and electrical works, testing, commissioning and 12 months maintenance relative to the renewal of the passenger lift at Maple House, 11 Kings Square, Bristol BS2 8JH, all as detailed within the specification.

The tender may only be presented in the prescribed form with the Specification document duly completed in full and returned with Technical Sections (5 & 6) and Financial Sections (8, 9 & 10) signed by a Director of your company. Should you find any necessity to deviate from the Specification this should be indicated in your covering letter and fully detailed within section 9 of the Specification returned, including confirmation of any financial implications relevant to any deviations. Any incomplete tender in this respect may not be considered further, this includes items such as the technical information sheets and request of programming details.

Special care and adequate supervision must be given in maintaining safe working conditions on site, no breaches will be acceptable. All work areas, including the lift machine room, must be kept secure when not occupied by the Lift Contractor and fully guarded under normal working conditions. These conditions, particularly supervision, must be carried out to the letter with all specialised sub-contracted, as well as direct employed labour. A responsible Foreman must be on site during all working hours, including periods when sub-contracted labour may only be present.

Suitably qualified and competent personnel shall carry out the extent and scope of the works detail within this specification, proof of competence shall be provided to the engineer upon request.

All site operatives are to wear clean overalls at all times and these are to display not only the company's logo but also a sealed photographic company identification pass.

All refuse and items of old equipment are to be stored within the Contractors agreed work area and as it accumulates must be removed at least weekly from site. All deliveries are to be to an agreed access point. When equipment is to be delivered to site, prior notice must be given to site engineers so that disturbances are kept to a minimum. The client or his representatives will not be available for any unloading or acceptance of packages or delivery notes.

It is anticipated that the Lift Contractor will offer the best and most economical solution that shall result in the minimum of work required to comply with the specification.

All associated builders and electrical works are to be included and are to form an integral part of the pricing and programme details submitted. It is essential that any specialist sub-contractor works are carefully integrated to ensure completion by the agreed date. As engineers holiday breaks occur replacement personnel are to be made available to maintain programme. It is imperative that your most competitive delivery and on site periods are provided at the time of tendering, but with full consideration given to your ability to maintain progress as detailed.

The Contractor shall establish whether the rating, capacity and condition of the existing lift mains power supply is suitable for retention with their proposed new equipment, including new main drive system and if applicable new hoisting machine. If it is determined that the existing supply is not adequate then due allowance shall be made by the Contractor for the installation of a new, suitably, rated power supply from an appropriate position in the building within his tender.

Any additional visits by the Lift Consultant later than two weeks following the agreed completion date necessitated by the Lift Contractor not having fulfilled the works specified or agreed, will be contra charged to the Lift Contractor at the Lift Consultant's hourly rate applicable at the time.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

INTRODUCTION & PREAMBLE

The tender shall be open for a period of 26 weeks from the date of return.

Any queries or clarifications required relating to this specification document shall be referred to the Lift Consultant before completion of the tender submission.

CDM 2015

The Contractor will be required to provide a Construction Phase Plan which is to include site specific Risk Assessment and Method Statements (RAMS) as required for the works being carried out as part of the contract.

The information and requirements of the INTRODUCTION & PREAMBLE form an integral part of the Contract requirements.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 1

CONDITIONS OF CONTRACT

1:1 DEFINITIONS

1:1:1 In this contract (which will be made by the acceptance of a Tender and will comprise the accepted tender, an order (from the Employer) and/or other documents (if any) referred to therein) the following words and expressions used in the Contract Documents shall have the meanings attached to them as defined below:

1:1:2 The **"Employer"** shall mean Elim Housing Association, Units 3 & 4 Pinkers Court, Briarlands Office Park, Gloucester Road, Rudgeway, Bristol BS35 3QH.

1:1:3 The **"Engineer"** shall mean Gerald Honey & Partners Limited, 16 St John's Hill, Sevenoaks, Kent TN13 3NP.

1:1:4 The **"Contractor"** shall mean the successful and appointed Contractor.

1:1:5 The **"Architect"** shall mean – Not applicable.

1:1:6 The **"Principal Contractor"** shall mean the successful Lift Contractor.

1:1:7 The "**Principal Designer**" shall be Gerald Honey & Partners Limited, 16 St John's Hill, Sevenoaks, Kent TN13 3NP.

1:1:8 **Practical Completion** shall be the date on which the Installation is placed into service and on which minor outstanding items may remain incomplete, following the Engineer's witness test. **However, where a LEIA contract Guarantee Bond is offered, Practical Completion will only be issued following the completion of all defects identified during the Witness test, from which the LEIA bond shall become effective.**

1:1:9 **Completion** shall be the date upon which the Engineer shall have certified that the outstanding items have all been completed and is the commencement date for the 12 months Defects Liability and Maintenance Period (See section 4 for details). **However, where a LEIA contract Guarantee Bond is offered this will be issued on the same date as the Practical Completion.**

1:1:10 **Non-Completion** shall be where the agreed date for completion is not met by the Contractor and where items remain outstanding and from when any liquidated and ascertained damages may apply.

1:1:11 **Final Completion** shall be the date on which retention monies shall be released and which will normally be 12 months after the date of Completion.

1:1:12 **The Works** shall be the removal and safe disposal of the existing lift and the installation a new traction MRL passenger lift including all associated builders and electrical works as specified in C20512.

1:1:13 **Maintenance** shall mean the fully comprehensive service care of the lifts in their entirety.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 1

CONDITIONS OF CONTRACT

1:2 INSTRUCTIONS FOR TENDER

1:2:1 The contractor should immediately acknowledge receipt of the tender documents and either confirm his intention to submit a tender by the required date in accordance with the documentation, or return all documentation advising of the reason for non-submission of a tender. (Returning a tender invitation with suitable explanation will not preclude the contractor from being invited to tender on other projects).

When completing the tender documents, the contractor should complete the following sections as applicable in their entirety and return them with the original tender documents.

(1) TECHNICAL & CONSTRUCTIONAL DETAILS OF EQUIPMENT
(2) PERFORMANCE DATA
(3) FORM OF TENDER & SUMMARY (Both Financial & Programme)
(4) DECLARATION
(5) SCHEDULE OF DEVIATIONS FROM THE CONTRACT.

Any other submittals specifically requested at tender stage should also be attached.

1:2:2 The completed tender should be returned in the envelope provided by the due-in time and date.

1:2:3 The contractor shall tender in accordance with the provisions laid out in the Tender documents and any drawings made available.

1:2:4 The tender submitted shall be held not to be modified or varied by any conditions which may be printed on the Contractor's letter paper which may accompany the tender, except where such conditions shall have been discussed with the Engineer prior to the submission of the tender and accepted by the Engineer in writing.

1:2:5 A detailed method statement is to accompany the tender highlighting key operations and processes and paying particular attention to Health & Safety issues for both installation engineers and the general public.

1:2:6 The Specification indicates generally the requirements of the installation. Where the Contractor's tender for carrying out the work is based on any deviations from the Specification, in respect of any materials, method of installation, performance, builder's work or the like, such deviations shall be clearly set out in a covering letter or schedule to be submitted with this Tender.

1:2:7 In the absence of such a covering letter or schedule it will be deemed that the price quoted by the Contractor includes for the whole of the work to be carried out as specified herein. No such later requests for deviations will be considered.

1:2:8 Any qualifications made must be specific: any generalisations will be interpreted by the Engineer as meaning that the terms of the Specification are **not** being met.

1:2:9 Any tender submitted with literature or standard printed forms other than that required by the Specification may not receive further consideration.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 1

CONDITIONS OF CONTRACT

1:2:10 No alteration to the text of these Contract Documents will be permitted. Any qualifications to the Contract Documents must have been agreed in writing by the Engineer prior to the submission of the Tender.

1:2:11 The Employer does not bind himself to accept the lowest or any tender and will not be liable for any costs incurred by any Contractor in the preparation of such tender.

1:2:12 The delivery and installation periods are of great importance and will be taken into strict account in the tender analysis. The tenderer is to indicate his most competitive delivery and installation periods based upon receipt of instructions within the acceptance period of the tender.

1:2:13 Where a detailed maintenance specification and tender is to be submitted at the same time as the Tender for the main works you should be aware that both tenders will be evaluated jointly. You may return both tenders in the same envelope.

1:3 SUFFICIENCY OF TENDER

1:3:1 The Contractor shall satisfy himself as to the correctness and sufficiency of his tender/quotation to cover all his obligations under the Contract and all matters and things for the proper completion and maintenance of the works. The prices shall include for the detailed design, manufacture, supply, delivery, installation, test and maintenance, undertaking and carrying out of everything required by the documentation or, in the opinion of the Employer or his appointed representative reasonably to be inferred therefrom.

1:3:2 Any other conditions submitted by the Tenderer with this tender which conflict in any way with its terms and conditions will not be accepted unless agreed by the Engineer in writing prior to the tender return date.

1:3:3 Submission of a tender will imply that this is understood and agreed.

1:3:4 Where the tender is requested as fixed price, the fixed price element will relate to the manufacturing and installation periods which have been given in the programme.

1:3:5 The Contractor shall, at the time of tender:

(1) where builder's and electrical work are included with his tender, give a detailed list of works, or

(2) where builder's and electrical work are to be provided by "others" give detailed breakdown of <u>all</u> his requirements, including electrical loadings, structural load, scaffold requirements and temporary power and lighting requirements.

1:3:6 One "site copy" of the Specification will be provided by the Engineer to the successful contractor.

1:4 EXECUTION OF WORK

1:4:1 The Contractor shall provide all necessary and proper superintendence on site and all operatives must be familiar with and experienced in the specific works being undertaken.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 1

CONDITIONS OF CONTRACT

1:4:2 One of the Contractor's operatives (the "responsible operative") shall assume responsibility for the site management and shall in the absence of the Contractor direct other operatives until a certificate of Completion has been issued by the Engineer.

1:4:3 This responsible operative shall have charge of all documents, drawings, specifications and the like concerning the installation and shall receive and execute any instructions which may be given from time to time by the Engineer. He shall be responsible for the "site copy" of the Specification and shall make it available upon request.

1:4:4 The responsible operative shall also have charge of the Construction Phase Plan, and shall ensure completion of all appropriate documents required and the issuing of all instructions to other site operatives to ensure compliance with the agreed method of working and all safety procedures.

1:4:5 Work involving multiple installations must be attended to by an experienced charge hand and such person shall be fully familiar with all aspects of the contract, including those areas where programme and costs are concerned.

1:4:6 Where the size and complexity of the Contract dictates and this is agreed by the Engineer, the Contractor shall provide a Project Manager to be responsible for all areas of the Contract.

1:4:7 The Contractor shall cease to employ upon the site any person who in the opinion of the Engineer or Employer is incompetent or in any other way conducts himself in a manner prejudicial to the progress of the Works.

1:5 CO-ORDINATION

1:5:1 During the progress of the Contract the contractor will be required to co-ordinate his work and liaise with the Engineer and any other contractors on site at all times to ensure that the installation is completed within the contract period agreed.

1:6 QUALITY OF WORK

1:6:1 The design, manufacture, supply, delivery, installation, test and maintenance of the equipment and associated works shall be to the entire satisfaction of the Engineer and Employer who reserve the right to inspect any part of the installation whether on site or at the manufacturer's works and to call for samples of any materials it is proposed to use on this Contract. Design responsibility remains with the Contractor and the satisfaction of the Employer or Engineer does not alter this.

1:6:2 The site engineers employed shall be fully experienced in all aspects of the works including setting out and other preliminary procedures.

1:6:3 Any work required under this Specification, the quality and/or method of installation of which has not been specified shall conform to good practice for the type of work involved.

1:6:4 The Contractor is to be fully accredited to ISO 9001 Quality Management Assurance, which will cover design and manufacture of the Works in all aspects and that all proposed sub-contractors are equally accredited. The Quality Management System must be checked for full compliance by the Contractor's nominated notified body no less than once every 6 months.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 1

CONDITIONS OF CONTRACT

1:6:5 Where it is necessary for the Contractor to deviate from British Standard Specification BS5655, European Standard BSEN81 series or other appropriate Standards, the Engineer is to be advised and his written agreement obtained before submission of a Tender.

1:7 STANDARDS & REGULATIONS

1:7:1 These shall be as defined within Section 4, Specification of Work, of the Contract Document.

1:8 DESIGN RESPONSIBILITY

1:8:1 This tender shall be read in conjunction with the Introduction & Preamble, Specification, Drawings, Schedules and Conditions of Contract and Preliminaries being construed as a whole and the Contractor shall carry out such work accordingly. The Contractor will be held responsible for the works embodied therein and shall take all necessary particulars and provide at his own expense all other necessary working and detailed drawings of equipment specified or to be supplied herein, copies of which must first be submitted for approval before the work is put into hand.

1:8:2 THE CONTRACTOR IS RESPONSIBLE FOR ANY DEFECT OR INSUFFICIENCY IN The design of the work as contained in the Contractor's proposal and in what the Contractor is to complete in accordance with the Employer's requirements and conditions (including any further design which the Contractor is to carry out as a result of change in the Employer's requirements) NOTWITHSTANDING THAT A THIRD PARTY MAY HAVE SUPPLIED THAT DESIGN.

1:8:3 The Contractor's liability for loss of use, loss of profit or other consequential loss arising in respect of the Contractor's design liability (where indicated in the immediately proceeding paragraph) shall be separately considered in the amounts due to those amounts or rates set out and payable as liquidated and ascertained damages in the event that the lift Contractor fails to complete the work by the Completion date.

1:8:4 The Contractor shall be responsible for any designs, drawings, specification, orders or other particulars supplied by him and for any discrepancies, errors or omissions in the same.

1:8:5 This Contract includes for materials, designs, manufacturing, supply, delivery, installation, tests and maintenance for the whole of the work necessary commencing from the incoming supply or disconnector, all in accordance with the Sections of this Specification whether specifically mentioned, inferred, or otherwise agreed, together with the remedying of defects period as provided herein. Where components are replaced due to failure within the 12 months Defects Liability and Maintenance Period such replaced equipment shall also be covered by a further 12 months Defects Liability and Maintenance Period subject to the Contractor retaining an interest in the maintenance of the plant.

1:9 MATERIALS

1:9:1 Where materials and manufacturers have not been specified the materials shall be of the highest possible grades of their respective kinds and shall conform where relevant to the British and / or European Standard Specification for such materials.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 1

CONDITIONS OF CONTRACT

1:9:2 All unspecified materials proposed for use by the Contractor on the Contract will only be considered by the Engineer if in his opinion the material is acceptable and is equal in all respects and is in no way inferior to that which has been specified by manufacture or duty. The decision as to whether any material is "equal" or "approved" will be determined solely by the Engineer whose decision in this respect will be final.

1:9:3 Materials approved for use on other contracts will not necessarily be approved for use under this contract. Where written approval is given for the use of certain materials those materials will be used throughout. Any samples which have been submitted shall be retained by the Engineer.

1:9:4 All specified materials to be used under this Contract shall be new, shall comply fully with the relevant British and / or European Standard Specifications and on delivery to site shall not be removed without the consent of the Engineer or Employer. If any material is considered by the Engineer to be in any way unsuitable or inferior in quality, damaged, or not of the required standard it shall be removed by the Contractor forthwith at his own expense. Suitable material approved by the Engineer shall be substituted for any rejected.

1:9:5 Any of the Contractor's plant and material on or off site must be properly stored and protected to prevent damage to the material itself and is to be packed or protected even on a temporary basis so as to prevent any form of safety hazard. Extensions to the programme shall not be granted for items mislaid or stolen due to incorrect or insecure storage.

1:9:6 The Contractor shall provide information sufficient to allow the Employer or his agent to access the control system and where appropriate interrogate or modify the operation of the system within its operating parameters. Replacement or new components shall be supplied at reasonable rates and in reasonable times as may be necessary to maintain the installation in the proper working order.

1:9:7 The Contractor shall warrant that all software, systems and equipment shall not contain any value or date that will cause any interruption to the safe operation of the lift.

1:9:8 The Contractor shall not transport to, use, generate, dispose of or install at the site of the Works any Deleterious Materials or Hazardous Substances except in accordance with Environmental Laws applicable at the time of performing the Works. The Contractor shall use the Standard of Care not to cause any release of Deleterious Materials or Hazardous Substances into, or contamination of the environment, including soil, the atmosphere, any water course or ground water, except in accordance with Environmental Laws applicable at the time of performing the Works. It is the Contractor's responsibility to comply with this Clause 2.1.8 based on the Environmental Laws in effect at the time its services are rendered."

The Contractor will not specify or use in the Works any substance and/or material that is not in conformity with any relevant British or European Standards or Codes of Practice or which is generally known to the UK construction industry to be deleterious to health and safety or the durability of the Project and/or the Works in the particular circumstances in which it is used or which is not used in accordance with the guidance contained in the publication "Good Practice in the Selection of Construction Materials" British Council for Offices (edition current as at time of such specification).

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 1

CONDITIONS OF CONTRACT

Deleterious Materials

The following materials are not to be used in the works unless it can be demonstrated, to the satisfaction of the Engineer , that they are safe during manufacture, installation and use, and that they are suitable:

a) Asbestos or asbestos-containing products, as defined in the United Kingdom's The Control of Asbestos Regulations 2012, or any statutory modification or re-enactment thereof.

b) Lead, where the metal or its corrosive products may be directly ingested, inhaled or absorbed. Applications of lead such as roofing, flashings, rainwater goods and copper alloy fittings containing lead which are specifically required will be acceptable, until equal or better alternatives are available.

c) Lead based paints and primers.

d) Urea formaldehyde foam or materials which may release formaldehyde beyond British Standard limits.

e) Pitch polymer DPC.

f) Materials which generally comprise mineral fibres, either man-made or naturally occurring, which have a diameter of 3 microns or less and a length of 200 microns or less, or which contain any fibres not sealed, encapsulated, or otherwise stabilised to prevent fibre migration. Products that may contain these fibres include insulation, fire protection and air filters. For mineral fibre insulation products, test evidence must be available and produced confirming that the materials fulfil the requirements of European Directive 2014/33/EU or Lifts Regulations 2016 and the CLP Regulation (EC) No 1272/2008 (The Classification, Labelling and Packaging of Substances and Mixtures) and consequently are not classified as a possible human carcinogen.

g) Chlorofluorocarbons or hydro chlorofluorocarbons or any goods and/or materials containing the same (e.g. materials in which CFCs, HCFCs or HFAs have been used as blowing agents).

h) High alumina cement in structural elements.

i) Wood wool slabs in permanent formwork to concrete or in structural elements.

j) Calcium chloride in admixtures for use in reinforced concrete.

k) Aggregates for use in reinforced concrete that do not comply with BS EN 12620:2013 and aggregates for use in concrete that do not comply with the provisions of BS EN 1992-1-1:2004 + A1:2014.

l) Polychlorinated biphenyls (PCBs), polychlorinated terphenyls (PCTs) or any goods and/or materials containing the same.

m) Sea dredged aggregates that do not comply with the chloride limits specified in BS EN206:2013+A1:2016, BS EN 12620:2013, BS EN 1744-1:2009+A1:2012 1 and BS 8500-1:2015

n) Lindane - wood treatment / insecticidal spray.

o) Pentachlorophenol (PCP) or timber treated with Pentachlorophenol – biocide / wood preservative.

p) Chromated Copper Arsenate (CCA) timber preservative treatment.

q) Tributyltin (TBT).

r) Medium density fibreboard (MDF) that is neither zero formaldehyde nor conforms to class E1 according to BS EN 13986:2004 + A1:2015.

If wishing to use any of the materials that are listed above, detailed observations shall be prepared for the Engineer based upon the guidelines contained within the document

'Good Practice in the Selection of Construction Materials' published by the British

Council for Offices (BCO:2019).

Note: Latest edition, any subsequent addendum, upgrade or revision to the above.

Note: The contractor is required to confirm within the tender document section 8, and provide written confirmation as part of the tender submission and signed by an Executive Director of the company as evidence of full compliance with this clause.

1:10 TESTING OF MATERIALS

1:10:1 The Engineer shall have the power to charge against and recover (by deduction or otherwise) from the Contractor the cost of testing materials or components which may have to be submitted to the Engineer for testing and which, upon test, are found to be faulty or not in accordance with the requirements of this Specification.

1:10:2 In the event that a test proves any materials or components to be faulty the Contractor shall, at his own cost, prove to the Engineer the acceptability of all replacements and/or other works.

1:11 VISITS TO SITE

1:11:1 Where the specification calls for works on existing lifts the Contractor must visit the site before submitting his tender to satisfy himself as to the local conditions which may influence his tender. The submission of a tender shall be deemed to confirm that the provisions of this clause have been complied with.

1:11:2 No subsequent claim for any extra costs incurred by the Contractor in carrying out work not included for in this Specification, but the necessity for which should have been foreseen by the Contractor by inspecting the site will be considered by the Engineer.

1:11:3 The site may be inspected on application to the Engineer or Employer.

1:11:4 Contractor’s staff visiting the site must comply with local house safety rules and permit to work systems.

1:11:5 Any representatives of the Contractor shall carry formal identification including an authorised photograph.

SECTION 1

CONDITIONS OF CONTRACT

1:11:6 Where drawings are provided as part of the contract particulars, they shall not infer that the Contractor need not visit the site, and any discrepancies on drawings shall be brought to the attention of the Engineer and Architect for verification and clarification.

1:12 DEFECTS LIABILITY

1:12:1 The Defects Liability and Maintenance Period shall commence from the issue of the Completion Certificate and shall continue in force for 12 months from that date unless extended in accordance with the requirements of this Specification.

1:12:2 If after carrying out witness tests the Engineer's decision is to place the lift in service pending the completion of items, then the Contractor will be required to maintain the lift free of charge until Completion. This arrangement is in addition to the 12 months included maintenance period which would normally follow on from Completion.

1:12:3 On group or multiple lift installations the 12 months Defects Liability and Maintenance Period will not commence until all lifts have been accepted by the Engineer and a Completion Certificate issued.

1:12:4 Where a lift installation is completed before the main contract for the building the Defects Liability and Maintenance Period must run from the main contract completion date. Where this is unknown, the Contractor must indicate a cost on a per month per lift basis for extending the Defects Liability and Maintenance Period as necessary. This cost must include the associated maintenance which is necessary to validate the Defects Liability and Maintenance Period.

1:12:5 Where the Contract provides for phased completion, the 12 months Defects Liability and Maintenance Period will run on each phase from completion of all lifts in that phase.

1:12:6 During the 12 months Defects Liability Period the Contractor shall provide all cleaning material and necessary lubricants and make good or replace at his own expense any part that shall be found to be defective or show signs of any weakness or undue wear in consequence of faulty design, workmanship, material or maintenance.

1:13 OVERTIME WORKING

1:13:1 The Contractor shall give at least 48 hours written notice of his desire to carry out work at any other time outside the normal working hours of the site.

1:13:2 Additional overtime working at the Employer's expense will only be allowed on the written instruction of the Engineer and only the nett cost in respect of the non-productive element of such overtime will be reimbursed to the Contractor.

1:13:3 Where the contract programme is delayed by the Contractor, overtime working shall take place to re-establish the programme at no additional cost to the Employer. Where other contractors may also be required to work overtime or otherwise incur extra costs as a result of such delays, the Contractor will be liable for the reimbursement of all such costs.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

CONDITIONS OF CONTRACT

1:13:4 No extension to programme will be accepted for delays where it can be established that the Contractor did not voluntarily work overtime or employ additional labour in order to meet the agreed programme, nor will the voluntary working of overtime reduce the Contractor's responsibility for the delay.

1:13:5 Extensions to programme will only be considered where contract variations have been issued or if the regular progress of the Contractor's work is materially affected by any of the following events. The Contractor must give immediate notice of the fact to the Engineer, as soon as it becomes reasonably apparent. The Engineer may, if he agrees with the Contractor's submissions, grant a fair and reasonable extension of time to the agreed completion date if the Works are directly affected by any of the following:

1. Force majeure
2. Exceptionally adverse weather
3. Fire and flood damage unless caused by the Contractor’s negligence
4. Civil commotion
5. Unreasonable delay in Engineer's or Employer’s instructions
6. Variations issued by the Engineer or Employer.

1:14 DETERMINATION

1:14:1 In the event of the Contractor committing an act of bankruptcy or being a company going into liquidation whether voluntary or compulsory (other than voluntary liquidation for the purpose of reconstruction or amalgamation) or if the Engineer shall certify to the Employer that in the opinion of the Engineer the Contractor has committed a breach of material provision of the Contract or have in the opinion of the Engineer failed to make proper progress with the works for 14 days after receiving from the Engineer written notice of default, then the Employer may give to the Contractor notice in writing of their intention to take the whole or any specified part of the Works out of the hands of the Contractor and may thereupon enter upon the site and the works and expel the Contractor therefrom and may themselves use the materials and plant thereon for the completion of the Works and employ any other contractors to complete or may themselves complete the work and upon such entry this Contract shall either wholly or with reference to the part of the work so specified (as the case may be) be determined save as to the rights and powers conferred upon the Employer and the Engineer thereby. Any notice given by the Employer under this Section shall state expressly that it is a notice under Section 1 Item 1:13 of these conditions.

1:15 RE-LETTING

1:15:1 In the event that determination of the Contract takes place, the Employer and Engineer may re-let any or all of the outstanding works as they may see fit, provided that they have made a fair and reasonable assessment of the work carried out already and have properly paid the Contractor.

1:15:2 Any retentions held from the Contract shall be held for a period of 12 months from completion of the project and released on application by the Contractor, provided he has delivered a true and proper claim for the outstanding amount.

1:15:3 Any damages, losses or extra costs incurred by the Employer or Engineer will be taken into account in assessment of the sum outstanding to the Contractor at determination.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 1

CONDITIONS OF CONTRACT

1:16 ASSIGNMENTS OR SUB-CONTRACTING

1:16:1 The Contractor shall not without the written consent of the Employer, which consent may be given subject to such conditions, if any, as the Employer may think fit to impose, transfer, assign or sub-let, directly or indirectly, the Contract or any portion thereof for the benefit or burdens thereof to any person, company or firm.

1:16:2 The Contractor may, with the prior written permission of the Engineer, sub-contract any portion of the Contract where such sub-contracting is customary in the trade. The Engineer retains the right to vet and approve any proposed sub-contractors. (A list of approved sub-contractors and suppliers is provided at the end of this document).

1:16:3 Where the Contractor proposes to use installation engineers on a sub-contract basis, such engineers must be engaged for the full course of the work including the testing period and completion of outstanding items and **under no circumstances** must sub-contract labour be responsible for the purchase or supply of materials, or testing of the completed works.

1:16:4 Where sub-contracting takes place the Contractor shall be responsible for the observance of these conditions by the sub-contractor and shall be responsible to the Employer in respect of any claims resulting from this work. A list of proposed sub-contractors who may be used shall be submitted by the Contractor at the time of the tender, and where these are not from the approved list, approval shall be sought from the Engineer by the Contractor for their use.

1:17 PAYMENT

1:17:1 No payment for any work executed under this Contract shall be made unless and until the Contractor shall have delivered a true and proper claim therefore in such form and containing such details of value as the Engineer may require.

1:17:2 Claims for payment shall be set out as in the attached format and shall relate to the value of material delivered to site and the actual work completed. In exceptional circumstances and by prior agreements the contractor may apply for up to 30% of the contract sum at material order or placement of instruction.

1:17:3 Where material has been manufactured but not delivered to site, a claim may be submitted provided that the material is permanently labelled, stored and bonded by the Contractor and that this has been verified by the Engineer.

1:17:4 Payment for works and materials shall be made generally as follows:

(i) Once all material has been delivered to site at the commencement of the installation up to 70% of the Contract Sum.

(ii) During site progress and up to Practical Completion stage payment up to 90% of the Contract Sum.

(iii) At issue of Completion Certificate up to 97.5% of the Contract Sum.

(iv) At issue of Final Completion Certificate 100% of the Contract Sum.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

CONDITIONS OF CONTRACT

1:17:5 The Contractor is responsible for submitting payment application in the prescribed format for release of retentions.

1:17:6 Any variations to the Contract Sum must be substantiated by variation orders or agreed price variation and confirmed in writing by the Engineer.

1:17:7 The Employer undertakes to make payment to the full value of the Payment Certificate issued by the Engineer and such payments will be made by the Employer within 45 days of receipt of the Engineer's Payment Certificate.

1:17:8 The value of any application submitted by the Contractor may be reduced, if in the view of the Engineer, the passing of any such application in its original form will be an over-valuation. In this event Payment Certificates will be issued showing a lesser amount as determined by the Engineer and depending upon the stage of work reached.

1:17:9 Where delivery of materials may affect the conditions of payment, the Engineer will make the necessary visit to the Contractor's Works to establish the full extent of materials available. In this circumstance any materials stored at the Contractor's Works will be labelled and held in bond as the property of the Employer. The Contractor hereby agrees that the property in such materials shall pass irrevocably to the Employer upon issue of the Engineer's certificate.

1:17:10 PAYMENT ALTERNATIVE (where a Contract Guarantee is offered).

1:17:11 Where the Contractor does not accept retentions from the Contract Sum the following terms of payment shall apply:

(i) Upon work commencing on site and delivery of all materials up to 65% of the Contract Sum.

(ii) Monthly Valuations and Certification of works done up to the issue of the Practical Completion Certificate up to 95% of the Contract Sum.

(iii) At issue of the Completion Certificate up to 100% of the Contract Sum.

(iv) Following the completion of the 12 months defects liability period the Contract Guarantee Bond shall deemed to have expired.

1:18 PROVISIONAL OR CONTINGENCY SUMS

1:18:1 Any provisional sum that may be indicated in the Tender Summary Sheet hereof shall be used in whole or in part, or otherwise deducted as the Engineer shall direct.

No provisional sum is to be indicated in the documents by the contractor, unless specifically requested.

1:18:2 Expenditure from provisional or contingency sums will be determined and agreed in writing by the Engineer and substantiated by a detailed cost from the Contractor.

1:18:3 Funds for provisional or contingency sums will not form any element of the contract value until expenditure from the funds has been agreed and notified in writing. Accordingly, contractors should not base their tenders on further expectation of payment or profit from these sources.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 1

CONDITIONS OF CONTRACT

1:19 FINAL ACCOUNT

1:19:1 The Final Account when submitted shall show all details of variation orders together with the dates of all relevant correspondence.

1:19:2 Where a fixed price period has been exceeded through no fault of the Contractor, then price variation may apply from date of the proposed completion to the actual completion date.

1:19:3 Price variation, where applicable, shall be calculated in accordance with the LEIA Formula of Contract Price Adjustment, and shall be submitted only with the final account.

1:19:4 Prices quoted are to be in £ Sterling and fluctuations in exchange rate will not be accepted.

1:20 DAMAGES

1:20:1 The Contractor shall indemnify the Employer against all costs arising as a result of his failure to perform his obligations in accordance with the Contract. For the purpose of this Contract, the Employer's liquidated and ascertained damages will be applied at the rate of **1%** of the Contract Sum per week or part thereof up to a maximum of ten weeks. In addition, any further costs incurred by other parties affected by such delay but which cannot be pre-estimated, such as other Contractors' costs, will be charged to the Contractor.

1:20:2 If the Contractor fails to complete the Works by the agreed date for Completion, or any extension thereto as set out in Clause 1:26 then the Engineer shall issue to the Contractor a notice to that effect in which the extent of the delay shall be quantified and the total amount of Employer's liquidated and ascertained damages and other parties' costs will be summarised and totalled. As a minimum, the liquidated and ascertained damages for late Completion will be 1% of the Contract Sum per week.

1:20:3 This total sum shall be payable by the Contractor to the Employer and may be offset against any monies otherwise due from the Employer to the Contractor.

1:20:4 Where the programme involves phased completions, damages shall be restricted to lateness only incurred within each phase.

1:21 INSURANCES

1:21:1 The Contractor shall produce annually to the Employer or on request at any time a certificate of insurance or satisfactory evidence that he is fully insured with a reputable insurer for all purposes of this Contract against all third party risks in relation to persons and property and against liability whether at common law or under statute in respect of accident or injury to workmen employed on the work whether or not being employees of the Contractor.

1:21:2 This certificate of insurance must be furnished within 15-days of request. Failure to provide such a certificate of insurance may be taken by the Employer to indicate that the Contractor has failed to meet his obligations to provide the insurance cover under this Contract.

SECTION 1

CONDITIONS OF CONTRACT

1:21:3 The Contractor shall immediately give notice in writing to the Employer and all insured parties in the event of cancellation or material change of its insurance policy which may affect the Employers or any insured party's interest.

1:21:4 If the Contractor does not furnish proof of insurance as requested under Clause 1:20:2 then the Employer may take up such insurance and deduct the premiums and any other costs from the Contractor's annual premium.

1:21:5 The Contractor shall not be liable for any loss, damage, injury or delay due to any cause beyond its control including (without prejudice to the generality of the foregoing expression) act of government, strike, lockout, fire, lightning, aircraft, explosion, flooding, riot, civil commotion, act of war, malicious mischief or theft, PROVIDED THAT if the Works in respect of any lift or lifts shall be materially interrupted for a period of 72 hours or more by such cause as aforesaid and as a result thereof there is a failure in the equipment resulting in loss of use then the annual premium payable in respect of the period of such interruption shall be reduced to such extent as may be reasonable having regard to such loss of use and the proportion that the affected equipment bears to the whole PROVIDED FURTHER that such reduction of annual premium shall not apply insofar as the Employer is insured against such loss.

1:21:6 Under normal circumstances gas or electric burning or welding or dry disc grinding is not permitted. Where special circumstances necessitate this operation, the Contractor shall provide specific insurance coverage and shall take all necessary fire and other safety precautions where required by the Insurer, Local Fire Officer or other Authority.

1:22 ARBITRATION

1:22:1 If any dispute or difference should arise not being a matter or thing in respect of which by the Contract the Engineer or the Employer are expressly or by implication required or permitted to decide then such dispute or difference shall be referred to and be determined by a single arbitrator under the provisions of the Arbitration Act 1996, or any statutory modifications or re-enactments thereof. At this time the arbiter shall be appointed by the President of the Institution of Mechanical Engineers.

1:23 VALUE ADDED TAX

(1) In this clause "tax" shall mean value added tax and "exempt supply" "invoice" "value added tax" "taxable persons" and "taxable supply" have the same meaning as in the Value Added Tax A 1994 or any amendment to or replacement thereof (hereinafter referred to as "the Act") including any amendment (Value Added Tax Regulation (Amendment) 2017) or re-enactment thereof.

(2) The Contractor shall be deemed not to have allowed in his tender for any tax payable by him as a taxable person to the Commissioners of HM Revenue & Customs being tax chargeable on any taxable supplies to the Employer which are to be made under the contract.

(3) The Contractor shall not in any application for payment for the supply of any goods and services under the Contract include any element on account of tax in any items or claims contained in such application or in any item or claim contained in such application show any amount of money on account of tax as a separate item or claim.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 1

CONDITIONS OF CONTRACT

(4) At the same time as payment (other than payment in accordance with this sub-clause) for goods or services which were the subject of a taxable supply provided by the Contractor as a taxable person to the Employer is made in accordance with the Contract there shall be paid by the Employer a sum (separately identified by the building owners and in this Clause referred to as "the tax payment") equal to the amount of tax chargeable on that supply. Within seven days of each payment the Contractor shall:

(a) if he agrees with that payment or any part thereof issue to the Employer an authenticated receipt of the kind referred to in the Regulation 13(4) of the Value Added Tax Regulations 1995 (1995/2518), together with Value Added Tax (Amendment No.2) Regulations SI 2012/1899, in respect of that payment or that part, or:

(b) if he disagrees, notify the Employer in writing that he disagrees stating at the same time the grounds of his disagreement, and for the purpose of this sub-clause the reference to Regulation 13(4) of the said Regulations of 1995 shall be treated as a reference to any enactment corresponding to that Regulation for the time being in force in consequence of any amendment or re-enactment of the said Regulation 1995.

(5) (a) If any dispute difference or question arises between the Employer and the Contractor in relation to any of the matters specified in Section 83 of the Act, then:

(i) if the Employer so requires the Contractor shall refer the matter to the Commissioners for their decision on it.

(ii) if the Contractor refers the matter to the said Commissioners (whether or not in pursuance of sub-paragraph (i) above) and the Employer is dissatisfied with their decision on the matter the Contractor shall at the Employer's request refer the matter to a Value Added Tax Tribunal by way of appeal under Section 40 of the Act whether the Contractor is so dissatisfied or not.

(iii) a sum of money equal to the amount of tax which the Contractor in making a deposit with the said Commissioners under Section 84(3) of the Act is required so to deposit shall be paid to the Contractor, and

(iv) if the Employer requires the Contractor to refer such matter to the Tribunal in accordance with (ii) above then the Employer shall reimburse the Contractor any costs or expenses reasonably and properly incurred in making that reference less any costs awarded to the Contractor by the Tribunal.

(5) (b) The Employer shall without prejudice to their rights under any Clause hereof be entitled to recover from the Contractor:

(i) any tax payment made to the Contractor of a sum, which is in excess of the sum (if any), which in all the circumstances was due in sub-clause (4) of this Clause.

(ii) in respect of any sum of money deposited by the Contractor pursuant to sub-clause (5)(a)(iii) of this Clause a sum equal to the amount repaid under Section 84(8) of the Act together with any interest thereon which may have been determined thereunder.

(6) If after the date for the return of tenders any supply of goods or services which are to be provided to the Employer by the Contractor in accordance with the Contract shall as a result of an order made by the Treasury under Section 31(2) of the Act become an exempt supply then there shall be paid to the Contractor any amount of account of tax in respect of those goods and services comprised in that supply which the Contractor has had to pay and which he has due to that

exemption been unable to recover from the said Commissioners. Provided always that before such amount is included in any contract the Employer requires to satisfy themselves as to the Contractor's entitlement under this sub-clause.

1:24 GENERAL MATTERS

1:24:1 In the interest of safety it will not be permissible for site staff to play radios, cassette recorders or other similar devices irrespective of whether or not these items are audible to others or are of the headphone type.

1:24:2 All site staff are to wear regularly cleaned close fitting overalls bearing the company's full trading name and it is expected that at all times staff will be required to conduct themselves in an orderly and well-mannered fashion.

1:24:3 Unless with the agreement of the Engineer, under no circumstances must the Contractor take instruction from other contractors under separate terms of employment. Only the Employer or Engineer is empowered to give direct instruction outside of the Contractor's supervisory and management staff.

1:24:4 Access for personnel and materials shall be discussed and agreed with the Employer and Engineer prior to commencement of work on site. Normally these shall be restricted to the immediate vicinity of the lift shaft and machine room/space although where special access is needed, this shall be approved by the Employer or his representative on site and any abuse of this requirement may result in the person being prohibited from the site and any resulting extra costs being charged to the Contractor.

1:25 PRINCIPAL CONTRACTOR

1:25:1 From commencement of appointment the Contractor will assume the role of Principal Contractor for the purposes of the Construction (Design & Management) Regulations 2015 (or any amendment or replacement thereof). He shall liaise at all times with the Principal Designer and provide information/advice as and when required.

1:25:2 From commencement of work the Construction Phase Plan shall become the responsibility of the contractor, who will be passed the file by the Principal Designer and who must then maintain and the Construction Phase Plan through to site completion of the Works.

1:25:3 The Principal Contractor shall complete the appropriate method statements and risk assessments as called for within the pre-tender Pre-Construction Information and as is appropriate to the scope of the Works envisaged and method for undertaking the Works.

1:25:4 At the conclusion of the Works, the Construction Phase Plan is to be developed into Health & Safety File and passed back to the Principal Designer fully completed with all appropriate records for onward transmission to the Employer, together with a copy of the Operating and Maintenance Manual.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 1

CONDITIONS OF CONTRACT

1:26 PROGRAMME

1:26:1 The Contractor will, either as agreed or within one month of acceptance of his tender, produce for the Engineer's approval, a detailed programme for the whole works, indicating all essential key dates for the provision of information or data, procurement of materials and labour, approvals, site events and the like, and completion to enable regular monitoring of the progress of the works throughout the whole Contract period.

1:26:2 The Contractor shall satisfy the Engineer that materials which have been placed on order will be delivered in due time for the satisfactory execution of the works within the target programme as agreed with the Engineer.

1:26:3 Visits may be made to the Contractor's offices, workshops and suppliers by the Engineer to ensure that the manufacturing process is proceeding in accordance with the agreed programme.

1:26:4 The Contractor shall ensure that the dates of deliveries covered by orders placed with other manufacturers, suppliers or sub-contractors are confirmed at regular periods between the placing of the order and the date of delivery. Any variations to the dates of supply must immediately be given to the Engineer with revised sequencing of the project to fulfil the original agreed Completion date.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 2

PRELIMINARIES

The Contractor shall ensure that his tender sum covers for the provision of the following lift specific preliminaries in addition to the specified works, where these are necessary for the proper execution of the Contract.

2:1:1 Safety, health and welfare of workpeople. It is a requirement of this Contract that the Contractor uses the appropriate numbers and skill level staff such that each operation is undertaken safely.

2:1:2 Holidays for workpeople.

2:1:3 Transport for workpeople.

2:1:4 First Aid facilities, to include on site First Aid trained personnel.

2:1:5 Site Welfare Facilities.

2:1:6 Keeping clean public and private roads, paths, drains and sewers where such works become necessary as a direct result of the lift contract works.

2:1:7 Demolition, excavation and the removal of all spoil to an authorised tip.

2:1:8 All gangways and passages shall be kept free of obstruction.

2:1:9 Floors shall be kept free of oil, water and any other spilled liquid, swarfs, wires, paints and tools.

2:1:10 All exits, entrances, stairways and ramps are to be kept clear.

2:1:11 No shavings or other inflammable waste shall be allowed to accumulate.

2:1:12 All working areas to be kept as tidy as possible and to be left tidy when work stops each day. All areas including the immediate places of work are to be left locked and secured during those times when the areas are unattended.

2:1:13 In the interest of safety it will not be permissible for site staff to play radios, cassette recorders or other similar devices irrespective of whether or not these items are audible to others or are of the headphone type.

2:1:14 Toilet, washing and messing facilities.

2:1:15 All site staff are to wear regularly cleaned close fitting overalls bearing the company's full trading name and it is expected that at all times staff will be required to conduct themselves in an orderly and well-mannered fashion.

2:1:16 When special permission is granted for gas burning/welding equipment, pressurised gas bottles must be stored external to the building and removed from the premises following the completion of each item of work. Where works extend beyond the close of the working day then all pressurised gas bottles, inert or otherwise, must be removed from the premises and immediate areas.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 2

PRELIMINARIES

2:1:17 Any accident or dangerous occurrence must be reported in writing to the Lift Consultant and Employer. Where the incident is serious it must be reported to the Health & Safety Executive on the appropriate form. Any action to be taken must be immediate.

2:1:18 Safeguarding the works, material and plant against damage and theft.

2:1:19 Police regulations and Local Authority licences.

2:1:20 The particular requirements of the Electricity Supply Company within the area shall be identified and complied with having particular regard to power factor and power factor correction.

2:1:21 Wherever the works present a safety hazard, purpose-made hoardings using new materials must be provided and maintained throughout. Their construction is to be in accordance with the enclosed sketch. [**See Sketch Nº1**] and must include secondary entrance protection in the form of a barrier rail and kick board when landing doors are removed. These hoardings must be firmly secured to avoid unauthorised removal, and shall be repainted between each phase of works.

2:1:22 Hazard warning notices to be provided to all protective screens and hoardings in accordance with the drawings enclosed.

2:1:23 Protection to all floors, walls and ceilings in the vicinity of the works.

2:1:24 Protection to all architraves and entrances.

2:1:25 Fencing and security of any storage area provided by the Employer.

2:1:26 Weatherproofing where the works result in the building being temporarily exposed to the elements.

2:1:27 Prevention of the spread of dust.

2:1:28 Temporary protection of completed finishes including car interiors, doors, architraves, pushes and enclosures.

2:1:29 The Contractor shall cover up and protect the equipment and work from rough treatment, dust, grit, frost or injury from other causes.

2:1:30 Deliveries shall be made in the manufacturer's packing cases and when these are to be stored outside, then a secure waterproof covering shall also be provided.

2:1:31 All parts of plant which are liable to rust shall be covered for protection during the progress of the work. Upon completion this covering shall be removed and all parts restored. The completed installation shall be handed over perfectly clean with all finishes unimpaired.

2:1:32 Only properly certified coded welders shall be used, where welding is necessary and when permitted.

2:1:33 Only suitably qualified lift adjusters/testers shall be employed to test and witness test the lift installation.

2:1:34 Prior to painting all welds shall be cleaned and all traces of flux residue removed.

SECTION 2

PRELIMINARIES

2:1:35 Plant, tools and vehicles, barriers and lifting facilities, whether temporary or permanent.

2:1:36 Site office facilities and communications equipment.

2:1:37 Craneage and associated Road Closure licenses

2:1:38 Certified scaffolding required for the successful and safe completion of the contract. Where scaffold free installation is to be undertaken the contractor should highlight this in his method statement accompanying his tender.

2:1:39 Final cleaning in preparation for hand-over.

2:1:40 Chasing apertures forming new and making good for landing pushes, indicators and other signals.

2:1:41 Where holes must be formed in existing machine room/space slabs, these must be referred to the contractors Structural Engineers for confirmation and acceptance.

2:1:42 Where any structural modification to the lift shaft, pit, machine room/space or wheelhouse is necessary or if there is any increase in the load bearing factor on the building structure a structural engineer's assessment and report must be provided.

2:1:43 Co-ordination and notification of the delivery of materials and receipt of equipment on site.

2:1:44 Lifting beams to be supplied and fitted (or supplied only for building-in on new construction sites) to suit all lifting requirements in the machine room/space and head of the lift shaft if appropriate.

2:1:45 All lifting beams are to be tested and marked with their safe working load using a purpose-made permanently fixed label, bearing the current certificate number.

2:1:46 Controllers are to be fully simulation tested prior to delivery to site and the Lift Consultant may elect to view these tests at the Contractor's Works.

2:1:47 All test weights, test tools, thermometers, instruments and personnel required for testing and equipment examination are to be provided. All test instruments are to be marked with the current and next due calibration dates.

2:1:48 Provide sufficient inserts in due time to be built into the lift shaft structure by others in locations determined on the general arrangement drawings. If other forms of fixings are proposed they shall be the lift contractor's responsibility.

2:1:49 Where the method of guide or other fixing is not into inserts the Contractor will be responsible for all fixings and the forming of suitable holes or pockets and the provision of any special bolts, clips etc., together with any supporting or secondary steelwork that may be necessary.

2:1:50 All supplementary steelwork and fixings are to be provided by the Contractor.

2:1:51 All works shall be performed by fully qualified trade's person.

2:1:52 Temporary power and task lighting together with an adequate supply of replacement lamps.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 2

PRELIMINARIES

2:1:53 Where work is being undertaken to multiple Lift installations with a common set of landing pushes, allowance shall be made for providing temporary pushes in the event that the final pushes cannot be fitted without disruption to the Lifts remaining in service. Any disconnection and/or reconnection necessary shall be carried out outside normal working hours to ensure the minimum of inconvenience to the Employer.

2:1:54 Arrangements for transporting to the site the equipment and plant required for the execution of the work. All items of equipment and material shall be off-loaded, hoisted, distributed, positioned and handled on site by the Contractor. The Contractor will be required to manufacture and deliver the materials at such time as may be necessary to achieve the agreed programme.

2:1:55 Full site meetings will be held at regular intervals during the currency of the on-site works. The Contractor will be required to have representatives in regular attendance at these meetings. The representative shall be totally familiar with the particular contract and shall be authorised to make decisions on behalf of the Contractor. If it is warranted then additional site meetings may be called on the same basis.

2:1:56 The Lift Consultant may require the attendance of sub-contractor's representatives at certain of the site meetings.

2:1:57 If an adequate area within the premises is not available for the storage of removed and redundant equipment on a consolidated basis, then the Contractor must allow for piecemeal removal of equipment. Proper protection of areas allocated for storage must be provided for any material stored on site prior to its removal.

2:1:58 The Contractor is to allow in his tender for the cost of overtime working which is to avoid excessive disruption or inconvenience and to meet the agreed programme. Disruption or inconvenience is, for example: spray cellulosing in occupied premises or the disconnection / interconnection of multiple Lift installations or noisy and disruptive works.

2:1:59 The Employer will provide free of charge a 240 volt electrical power supply for use by the Contractor of small power tools, temporary lights and power. The Contractor will be responsible for providing all necessary 110V transformers, leads, plugs, &c, from this supply and ensure that these shall be kept in a safe condition.

2:1:60 Where the presence of asbestos has been highlighted, removal or treatment shall be carried out in accordance with Guidance Notes issued by the Health & Safety at Work Executive available at HMSOs. It shall be carried out by qualified specialists who shall furnish certification of proper disposal.

2:1:61 Lubricant and hydraulic fluid must be removed and disposed of by a licensed waste disposal contractor.

2:1:62 The Lift Contractor shall be responsible for the removal of the redundant lift equipment and shall ensure that such works are carried out in a careful and workmanlike manner to avoid damage or nuisance to the occupiers and/or users of the building or adjacent property.

2:1:63 Equipment shall be degreased and drained of any lubricant before removal from the machine room/space.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 2

PRELIMINARIES

2:1:64 Removed or redundant equipment will not be allowed to build-up on site and must be removed regularly by the Contractor. Adequate protection must be supplied to protect any area allocated for redundant material consolidation on site, or where the transport of waste through the site may cause damage.

2:1:65 Adequate protection to existing finishes will be provided by the Contractor at all times and any damage made good at the conclusion of the contract by the Contractor, or by the appropriate specialist at the cost of the Contractor.

2:1:66 A minimum of two experienced lift engineers must be employed at all times on site.

2:1:67 Adequate allowance shall be made for off-site storage of all materials unless otherwise stated.

2:1:68 The contractor will be required to provide a Construction Phase Plan which is to include site specific Risk Assessment and Method Statements (RAMS) as required for the works being carried out as part of the contract.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 3

SUBMITTALS

The following shall be provided by the Contractor in the quantities and at the time indicated in the schedules unless otherwise advised by the Engineer.

Brochures and Other Information: To be submitted with the Tender.

	Type of Brochure/Information	Number of Copies
1	Pushes and Indicators	1
2	Door Construction	1
3	Communication System	1
4	Auto Recharge Units	1
5	Group System Operation	N/A
6	Drive System Operation	1
7	Electronic Detection Equipment	1
8	Details of Fire Fighting Control Operation	N/A
9	Door Drive System	1
10	Full Electrical Details	1
11	Fire Certificate for Total New Landing Entrances	1
12	Heat Output Details	1
13	Hand Winding Device [gearless only]	1
14	Details of Proposed Overlay System	N/A
15	Motor-Drive Details	1
16	Noise Level in Machine Room/Space	As requested
17	Traffic Analysis Report for morning up-peak and lunch time two way traffic	N/A

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 3

SUBMITTALS

Drawings for Review: To be provided no later than 6-weeks after instruction to proceed has been given.

	Type of Drawing	Number of Copies
1	Machine Room/Space General Arrangement	2
2	Shaft & Pit General Arrangement	2
3	Lift Car Interior [Coloured Pictorial]	2
4	Lift Car Construction	2
5	Car Station Panel [quarter full size]	2
6	Guide Fixing Detail	2
7	Scaffolding Detail	2
8	Access Door & Hatch Location	N/A
9	Switch and Lighting Locations	2
10	Entrance Fixing Detail	2
11	Machine Supporting Steelwork	2
12	General Builders Work Drawing	2
13	Landing Push Station & Indicator Faceplates	2

Samples: To be submitted no later than 4-weeks after instruction to proceed has been given.

	Type of Sample	Number
1	Operational Push Button	1
2	Typical Key Switch	1
3	Rigid Sample Board with permanent attached samples fully labelled	As called for

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 3

SUBMITTALS

Drawings for Distribution: To be submitted 2-weeks after final comment and revisions:

	Type of Drawing	Number of Copies
1	Machine Room/Space General Arrangement	2
2	Shaft & Pit General Arrangement	2
3	Lift Car Interior [Coloured Pictorial]	2
4	Lift Car Construction	2
5	Car Station Panel [quarter full size]	2
6	Guide Fixing Detail	2
7	Scaffolding Detail	2
8	Access Door & Hatch Location	2
9	Switch and Lighting Locations	2
10	Entrance Fixing Detail	2
11	Machine Supporting Steelwork	2
12	General Builders Work Drawing	2
13	Landing Push Station & Indicator Faceplates	2

Owner Manual(s): A draft copy shall be submitted to the engineer for comment and approval at least 2 weeks before the date of Practical Completion with the final document being submitted on Completion.

The Manual(s) shall be in the form of A4 sized hard-backed ring binders with a copy provided in electronic format on recordable media. The Owner Manual(s) shall contain, as a minimum, the following information:

The complete maintained on site Construction Phase Plan developed into a Health & Safety File.
Full Drawing Issue
"As Installed" Wiring Diagrams
Test Certificates in accordance with BS5655 Part 10.1.1:1995 / PAS 32-1:1999 / / BS8486-3:2017 (New Lifts)
Stainless Steel Grade Specification Certificate
Rope Test Certificates
Component Type Test Certificates
CE Certificate of Conformity (where applicable)
Electrical Installation Test Certificates (where applicable)
Structural Engineers Report (where applicable)
Landing Entrance Fire Test Certificate (where applicable)

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 3

SUBMITTALS

Maintenance Instructions
Lubrication Chart
Handwinding Instructions
Operating Instructions
Component Description and Part Number List
Diagnostic Check Chart
Full description of Control System
Specialist Finish Cleaning Schedule

Manuals, "As Installed" drawings and operating instructions may also be required in electronic format. You should indicate the extra cost for current AutoCAD system compatibility.

Sub-Contractors:

Tenderer's are to state the proposed sub-contractors to be used for the following work at the time of the tender in addition to the technical and constructional details of equipment requested:

1. Builders Work

2. Electrical Work

3. Lift Engineers (where sub-contracted)

4. Specialist Finishes

5. Steel Fabrication and Enclosure work

6. Access and Guarding

7. Layout Draughtsman

Please see the approved list of sub-contractors and specialists at the rear of the Specification.

Where the Contractor proposes the use of named specialists, sub-contractors or suppliers at the time of tender, these may not be varied without the written approval of the Engineer.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SCHEDULE Nº1: GENERAL REQUIREMENTS

Details	Lift No.	
Type of Lift	Passenger	
Carrying Capacity	8 Persons / 630kg	
Operating Speed	1.0 m/s	
Roping Arrangement	System Standard	
Motor Drive System	VVVF	
Control System	Simplex Full Collective	
Floors Served	5	
Floor Designation	B, G, 1, 2 & 3.	
Machine Room Location	MRL	
Car Entrance Type	2 Panel Side Opening Automatic	
Landing Entrance Type	2 Panel Side Opening	
DIMENSIONS (Information Only: Lift Contractor to verify within Section 5)		
Lift Shaft	Width Depth	1580mm 1700mm
Lift Car	Width Depth Height	1100mm 1400mm 2200mm
Entrance	Width Height	800mm 2000mm
Machine Room	Width Depth	N/A N/A
Total Travel	10720mm	
Pit Depth	1210mm	
Headroom	3390mm to underside of lifting beam.	
SPECIAL REQUIREMENTS		
Fire Fighting Lift to BS EN 81 - 72		
Fire Fighting Control Only to BS8899		
Standby Generator Interface		
BMS Interface		
Fire Recall	YES	
Fire Evacuation		
Eco-Mode Control System	YES	
Regenerative Drive System		

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SCHEDULE Nº2: LANDING FIXTURES AND FINISHES

Detail	Lift No.
Landing Door Finish Ground	Stainless steel.
Others	Stainless steel.
Landing Entrance Finish Ground	Stainless steel.
Others	Stainless steel.
Extended Architrave Finish Ground	Stainless steel.
Others	Stainless steel.
Sill Type	Heavy duty aluminium extrusion.
Pushplate Finish Ground	Stainless steel.
Others	Stainless steel.
Other Faceplates Ground	Stainless steel.
Others	Stainless steel.
Pushbutton Type	Micro movement with halo LED dual illumination, BSEN81-70 compliant.
Number of Risers	1
Landing Indicators Ground	Colour TFT
Others	Colour TFT

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SCHEDULE Nº3: LIFT CAR FIXTURES AND FINISHES

Details	Lift No.
Car Door Finish	Stainless steel.
Car Sill Finish	Heavy duty aluminium extrusion.
Front Return and Overgate Panel Finish	Stainless steel.
Position Indicator Type	Colour TFT.
Separate Faceplate	N/A
Pushbutton Type	Micro movement with dual halo LED illumination, BSEN81-70 compliant.
Number of Car Stations	1
Faceplate Finish	Stainless steel.
Side Wall Finish	Stainless steel.
Rear Wall Finish	Stainless steel with half mirror.
Skirting	100mm stainless steel.
Ventilation	Natural
Flooring	Altro Suprema safety flooring.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SCHEDULE Nº3: LIFT CAR FIXTURES AND FINISHES

Details		Lift No.
Ceiling		White powder coated.
Lighting		LED with combined 3 hour emergency.
Handrail	Type	Round section BSEN81-70 compliant.
	Finish	Stainless steel.
	Walls	2
Drapes and Studs		N/A
Telephone Unit-Emergency Communication System		Hands free BSEN81-70 & BSEN81-28 compliant.
Fan Unit		N/A
Air Purifier Unit		N/A
Lift Car weight allowance (where finishes not specified)		

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SCHEDULE 4

OUTLINE SCOPE OF WORKS

The following list will indicate generally the project outline. The tenderer must refer to the relevant sections within the main body of the Specification for full details of requirements.

KEY: R = Retain; R/O = Retain & Overhaul; N = New; * = Contractor's Option to Renew	
Equipment	**Lift No**
Control Panel	-
Control Panel (Eco-Mode)	N
Control Panel (Regenerative Drive)	-
Gearbox/Brake	N
Drive Motor	N
Emergency Handwinding System (Machine Roomless)	N
Position Reference Device	N
Car Overspeed Governor	N
Car Guides	N
Counterweight Guides	N
Car Sling	N
Car Guide Shoes	N
Car Safety Gear	N
Car Platform	N
Car Sill	N
Car (Base)	N
Car Interior	N
Car Operating Panel(s)	N
Car Door Operator (Front)	N
Car Door Operator (Rear)	-
Car Door Top Track(s)	N
Car Door Hanger Rollers	N
Car Door Bottom Shoes	N
Car Door Lock(s)	N
Car Door Panels	N

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SCHEDULE 4

OUTLINE SCOPE OF WORKS

KEY: R = Retain; R/O = Retain & Overhaul; N = New; * = Contractor's Option to Renew	
Equipment	**Lift No**
Car Door Detectors	N
Car Toe Guard(s)	N
Car Top Control	N
Pit Controls	N
Divertor Pulleys	N
Top Pulley Wheels	N
Counterweight	N
Counterweight Overspeed Governor	-
Counterweight Guide Shoes	N
Counterweight Safety Gear	-
Landing Door Top Tracks	N
Landing Door Hangers	N
Landing Door Rollers	N
Landing Door Locks	N
Landing Door Panels	N
Landing Door Bottom Shoes	N
Landing Door Sills	N
Landing Door Closers	N
Landing Door Cording Systems	N
Shaft Fascia Panels	N
Car Buffers	N
Counterweight Buffers	N
Ascending Overspeed Protection	N
Protection Against Involuntary Movement from Landing with Doors Open	N
Automatic Battery Recovery System	-
Reduced Headroom and Pit Protection	-

Maple House
11 Kings Square
Bristol
BS2 8JH

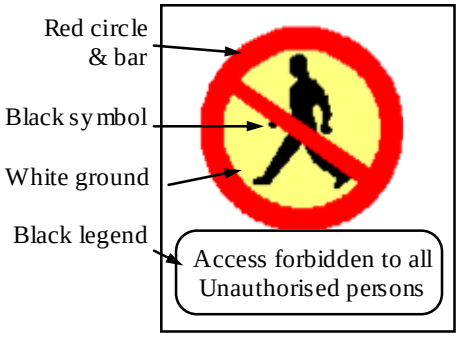
Project No. C20512

SCHEDULE 4

OUTLINE SCOPE OF WORKS

KEY: R = Retain; R/O = Retain & Overhaul; N = New; * = Contractor's Option to Renew	
Equipment	**Lift No**
Pit Mechanical Device	-
Hoist Ropes	N
Governor Rope(s)	N
Compensation	-
Travelling Cables	N
Wiring	N
Car Position Indicator(s)	N
Hall Position Indicators	N
Hall Lanterns	N
Landing Push Buttons	N
Architraves/Transoms	N
Shaft Lighting	N
Guarding	N
Painting	N
3-PH Supply	N
1-PH Supply	N
Remote Monitoring	-
Building Management System	-
Associated Specific Works	N
Air Purifier System	-

Notice No.1

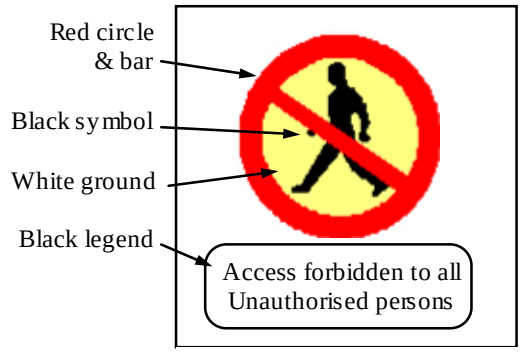


Notice No.2

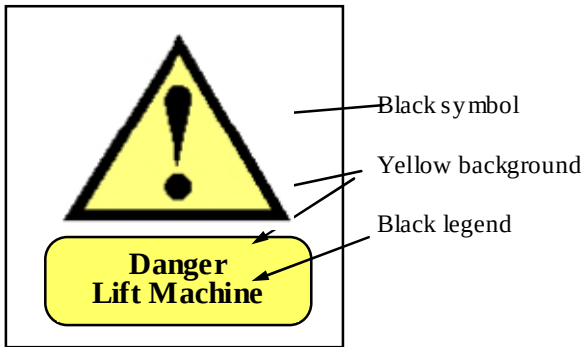
Notice No.3

Typical examples of safety signs and warning notices on outside of Escalator entry.

Notice No.4

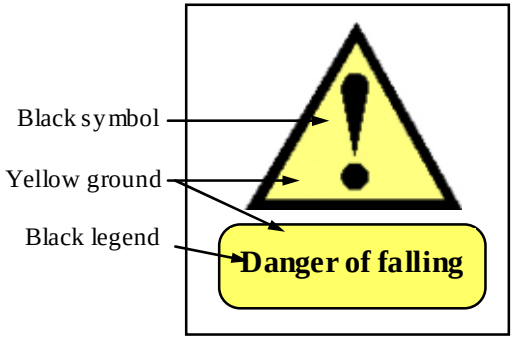


Notice No.5

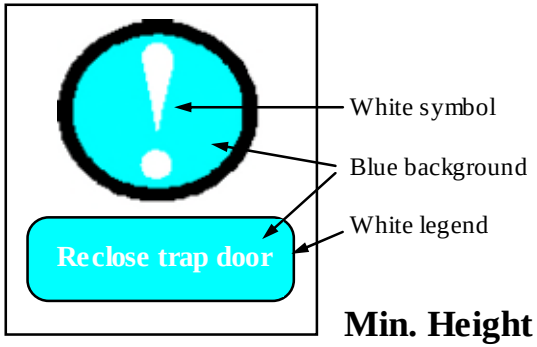


Typical examples of safety signs and warning notices on outside of machine

Notice No.6



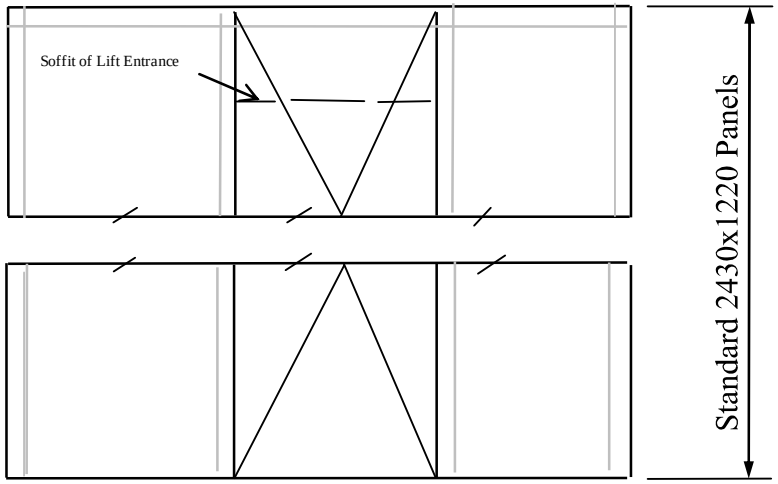
Notice No.7



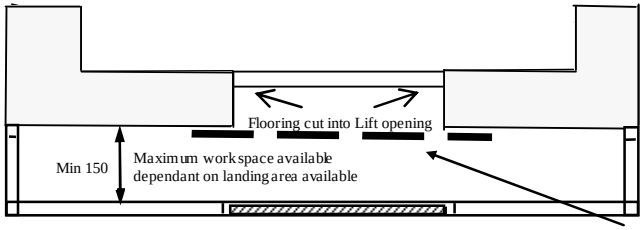
Min. Height of all Symbols 120 mm

Typical examples of safety signs and warning notices associated with trap doors.

TYPICAL DETAIL OF LANDING HOARDINGS



ELEVATION



PLAN

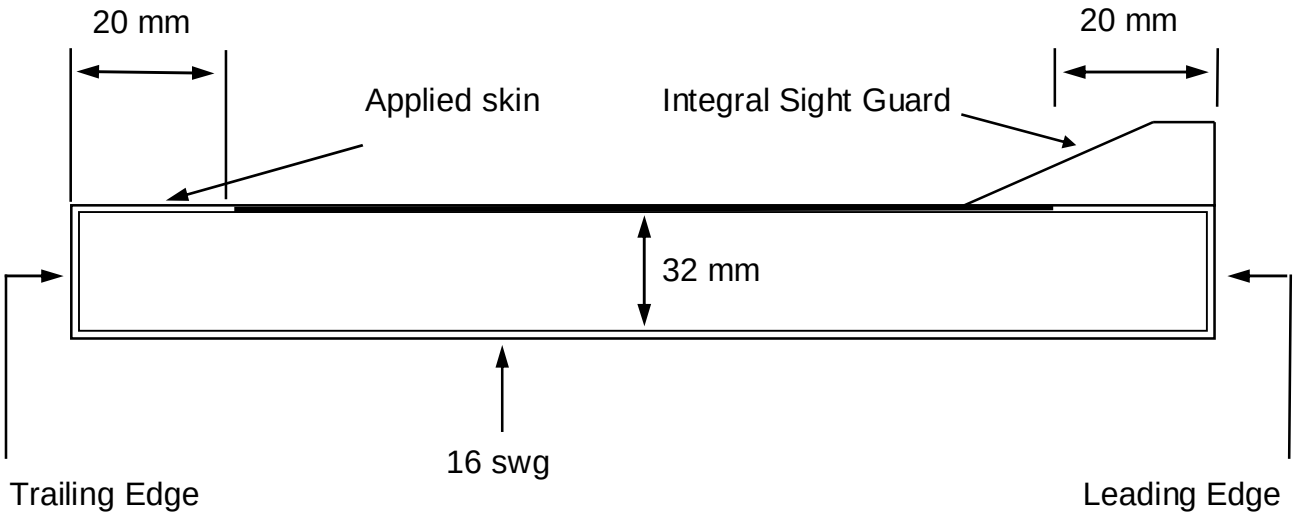
Hoarding constructed from 50x50 framing with cladding, flooring and roof from adequate thickness plywood, 6mm min..
Outside to be free from dangerous projections.

1.Hinged doors to be self closing and fitted with Danger Notice, bolted on the inside and fitted with a Yale type latch on outside with common key for all locks.

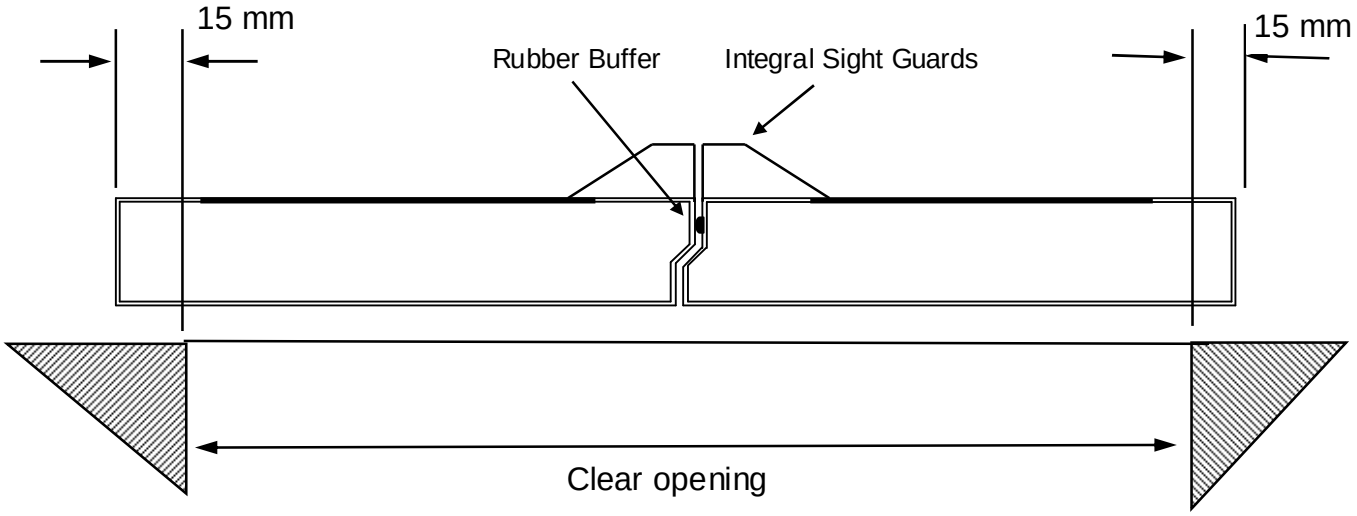
2.Hoardings to be painted white emulsion and repainted where dismantled and reused.

3.Secondary entrance protection in the form of a barrier rail and kick board must be provided when landing doors are removed .

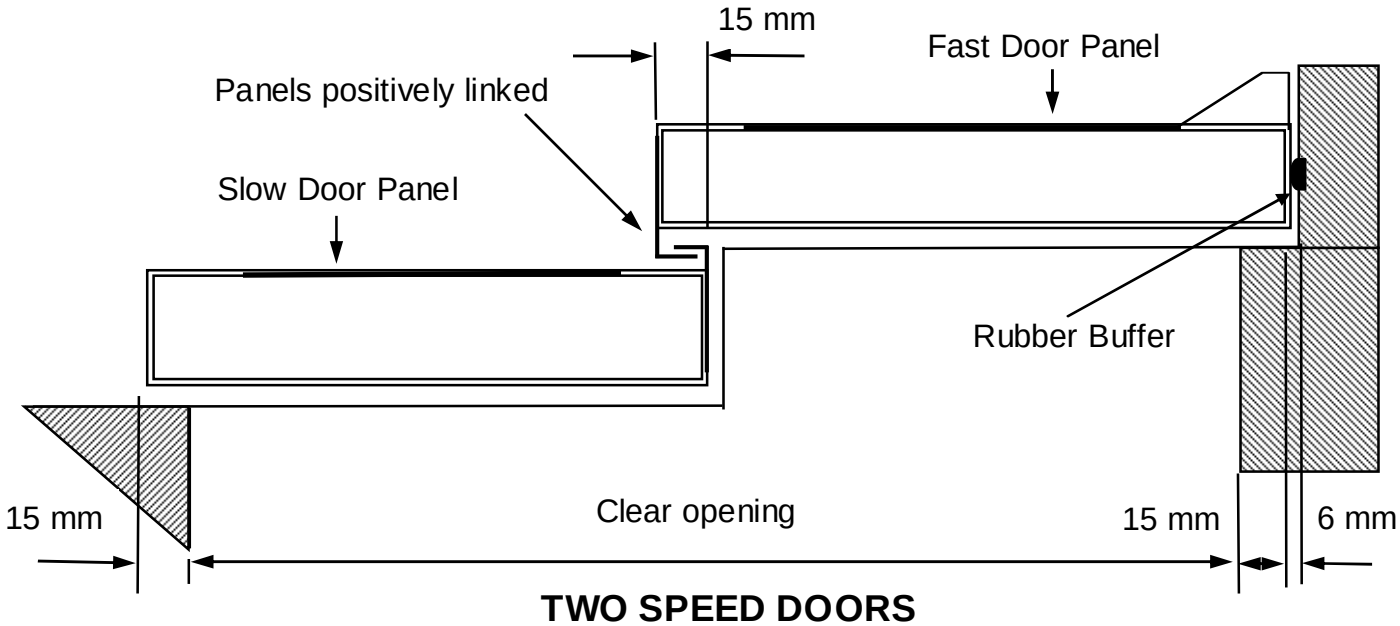
Sketch No.1



TYPICAL PAN CONSTRUCTED DOOR



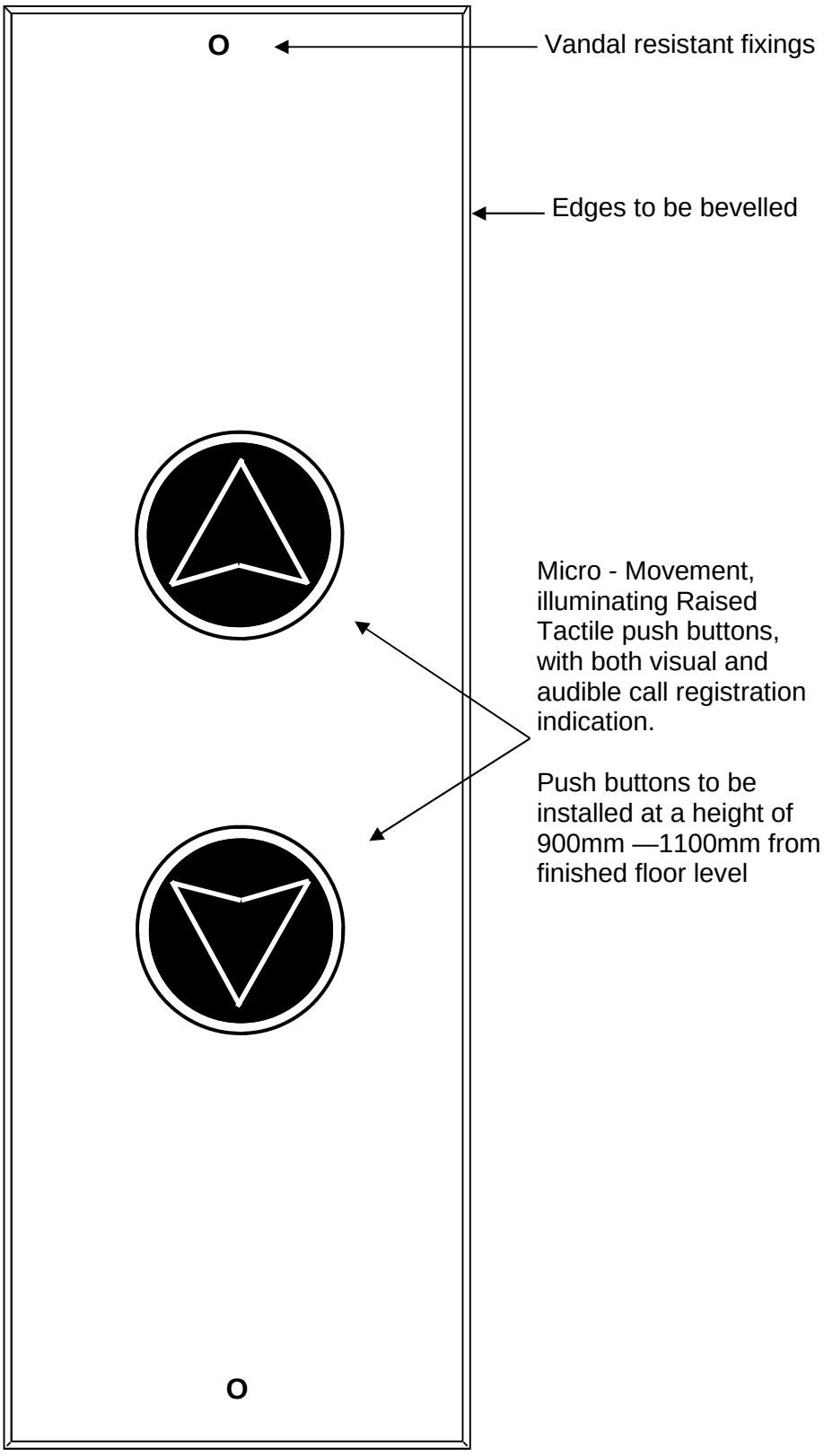
CENTRE OPENING DOORS



TWO SPEED DOORS

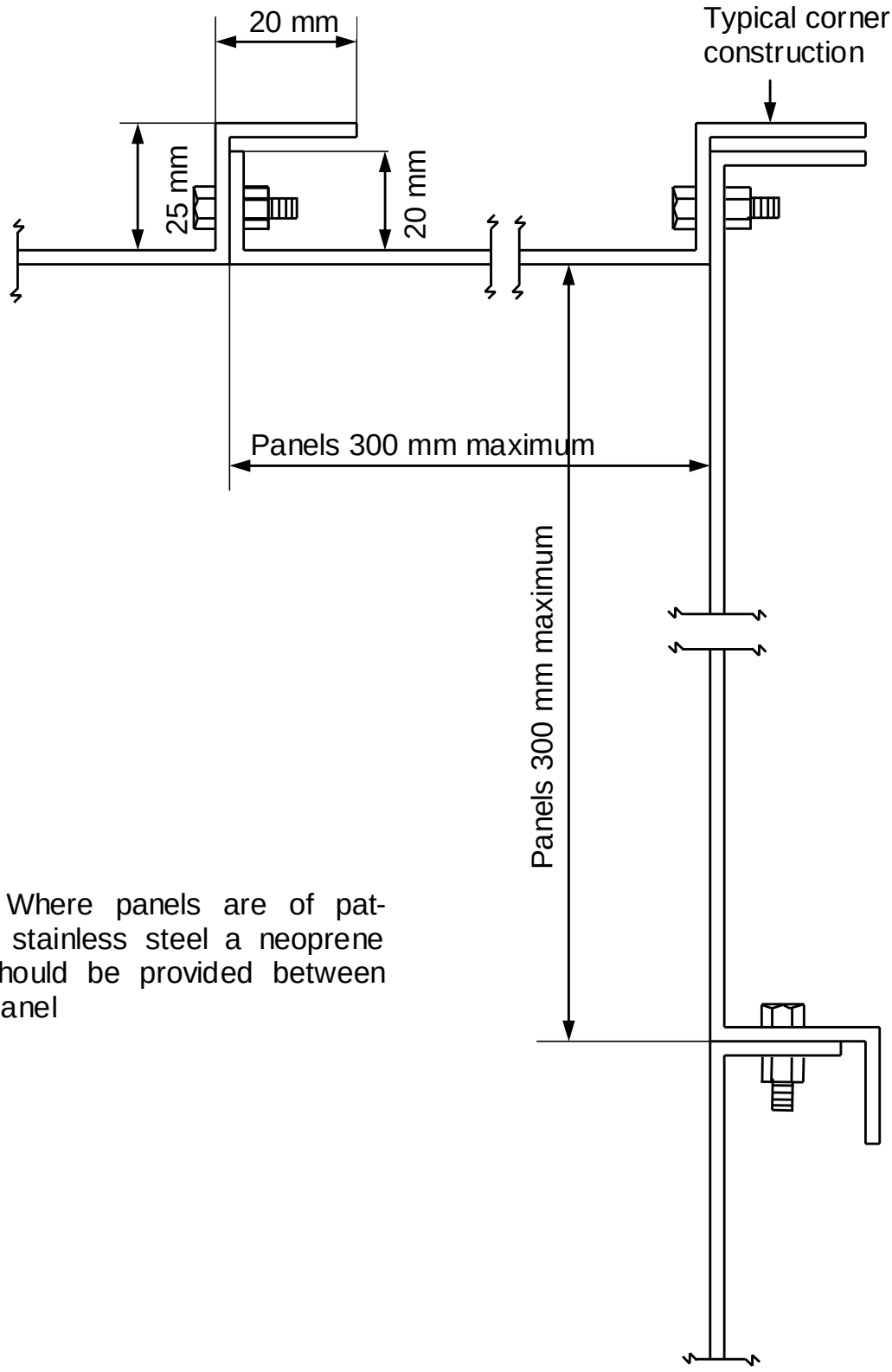
SK No. 2

TYPICAL LANDING PUSH DETAIL



SK No. 3

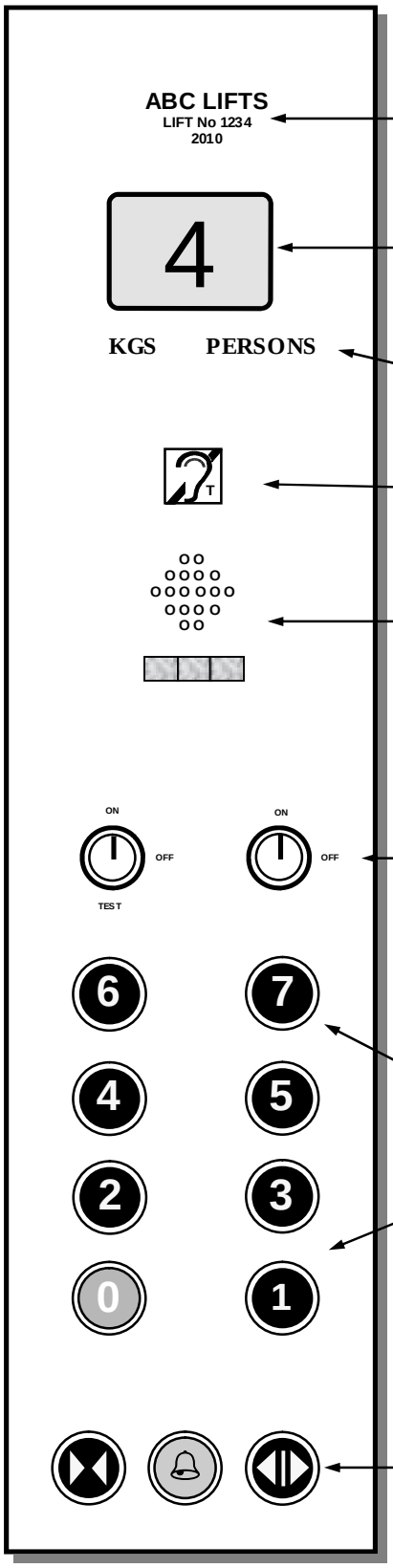
TYPICAL ARRANGEMENT OF STEEL LIFT CAR PANELS



Note: Where panels are of patterned stainless steel a neoprene infill should be provided between each panel

SK No.4

CAR OPERATING PANEL [Diagrammatic only]



Lift Contractors name, lift identification no., year of installation and CE marking where applicable

Dot Matrix Position Indicator[Character height to be a minimum50mm], incorporating "Lift Overloaded","Lift Returning to Ground Floor on Fire Service" advisory scrolling notices.

Load details engraved in kgs & persons [minimum height 15mm]

Inductive Loop Symbol

Emergency Communication System activated by the press of the Alarm Button with visual indication of Alarm being raised, answered and reset . Space behind to accommodate a speaker.

Key operated Light Switch with Emergency Light Test Facility.

Key operated Car Preference Switch

Micro - Movement, illuminating Raised Tactile push buttons, with both visual and audible call registration indication.

Main exit floor to be green and raised 5mm from faceplate.

Push buttons installed at a height of between 900mm—1100mm from FFL

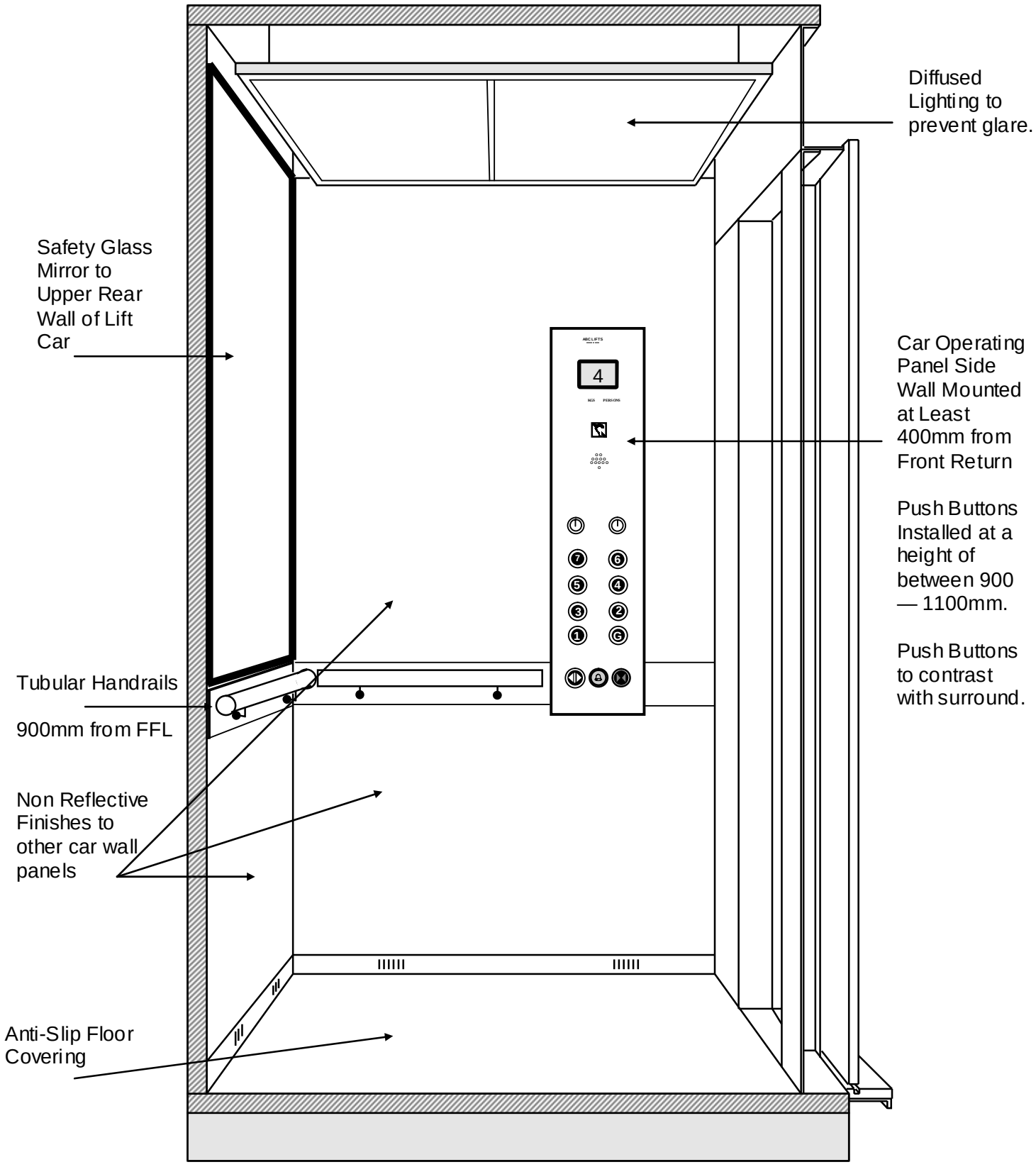
Door Open / Close Push Buttons [Door Open illuminating during door close cycle]

Alarm Push, yellow [illuminating during Mains Power failure]

FINAL DESIGN AND LAYOUT TO BE APPROVED BY THE ENGINEER

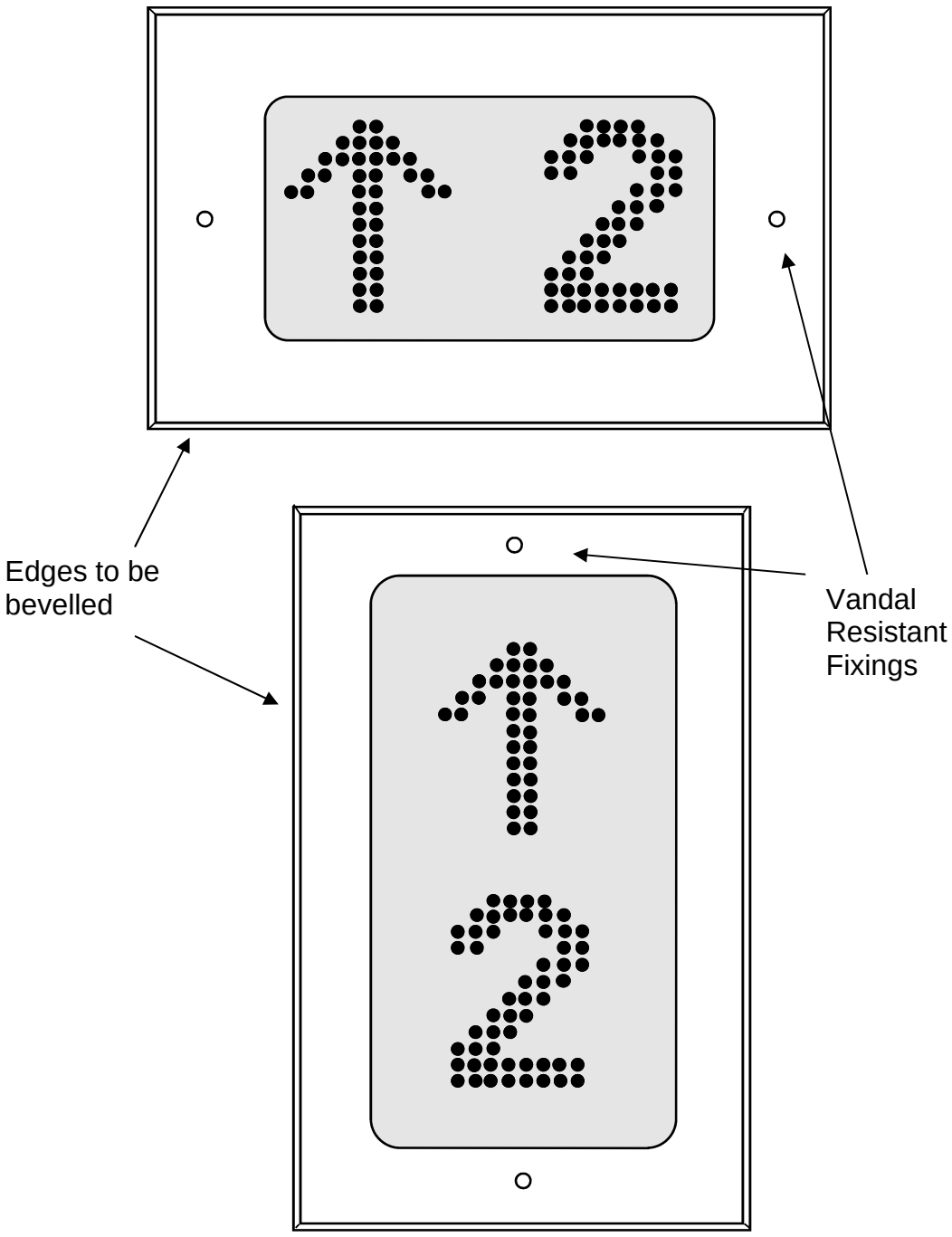
SK No. 5

STANDARD DDA COMPLIANT
LIFT CAR PERSPECTIVE



Sk No.8

TYPICAL HALL POSITION & DIRECTION OF TRAVEL INDICATOR



FINAL DESIGN & LAYOUT TO BE APPROVED BY THE ENGINEER

SK No. 9

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

4:1 STANDARDS & REGULATIONS

The installation shall as a minimum conform to the following current British (BS) and European (EU) Code & Standard where applicable together with any amendments or updates issued.

The references below shall not be considered to be fully exhaustive, and any other applicable Standards & Regulations shall be included where the contractor considers them appropriate for the Scope of works.

1. Asbestos removal or protection must be carried out in accordance with Control of Asbestos Regulations 2012.
2. British Code & Standards including the following series: 2655, 5655; 5656; 8899 9999.
3. European Codes & Standards EN81 series.
4. International Codes & Standards BS ISO 8100 series.
5. BS 7255:2012 Code of practice for safe working on lifts.
6. BS 7671:2018/A:1 2020 Requirements for electrical installations, IET Wiring Regulations current edition.
7. BS 8300: 2018 Design of an accessible and inclusive built environment. Buildings – Code of practice.
8. BS 8486-series Examination and tests of new lifts before putting into service. Specification for means of determining compliance with BS EN 81-20. Electric / Hydraulic lifts, can be used for guidance when testing existing lifts.
9. BS EN12015: 2014 – Electro-Magnetic compatibility. Product family standard for lifts, escalators and moving walkways. Emission.
10. BS EN12016:2013 – Electro-Magnetic compatibility. Product family standard for lifts, escalators and moving walkways. Immunity.
11. BS EN12385-5: 2002 - Steel wire ropes. Safety. Stranded ropes for lifts.
12. BS EN13015:2001 + A1:2008 – Maintenance for lifts and escalators. Rules for maintenance instructions.
13. BS EN13411-6:2004 + A1:2008 – Terminations for steel wire ropes. Safety Asymmetrical wedge sockets.
14. BS EN13411-7:2004 + A1:2008 – Terminations for steel wire ropes. Safety Symmetrical wedge sockets.
15. EN ISO 13857:2019 Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs.
16. BS ISO 14798:2013. Lifts (elevators), escalators and moving walks. Risk assessment and reduction methodology.
17. BS ISO 18738-1:2012. Measurement of ride quality. Lifts
18. BS EN50214:2006 – Flat polyvinyl chloride sheathed flexible cables.
19. BS EN60204-1:2006 + A1:2009 – Safety of machinery. Electrical equipment of machines. General requirements.

SECTION 4

SPECIFICATION

20. BS EN61000 series (including 3.2, 4.3, 4.4 and 6.3) – Electromagnetic compatibility (EMC). Limits.
21. BS EN 61111:2009. Live working. Electrical insulating matting.
22. Building Regulations (including Part M & P).
23. COSHH Regulations 2002.
24. Fire Authority requirements.
25. Fire Regulatory Reform (Fire Safety) Order 2005.
26. SAFed LG1 Guidelines on the supplementary tests of in service lifts 2020 .
27. SAFed LR1 Recommendations – Safe working on lifts – Car top controls and pit access 2016.
28. Health and Safety at Work Act 1974.
29. Management of Health & Safety at Work Regulation 1999, plus amendment 2006.
30. Manual Handling Operations Regulations 1992 plus amendment 2002.
31. Personal Protective Equipment Regulations 2002.
32. Provision and Use of Work Equipment Regulations 2018 (EU) 2016/425.
33. The Electricity at Work Regulations 1989.
34. Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR).
35. Requirements of the Health & Safety Executive.
36. Scaffolding (Working at Height Regulation 2005).
37. Supply of Machinery (Safety) Regulations 2008, and amendments 2011.
38. Site Waste Management Plans Regulations 2008.
39. The Construction (Design & Management) Regulations 2015.
40. The Electric Equipment (Safety) Regulations 2016.
41. The Equality Act 2010 including (Specific Duties and Public Authorities) Regulation 2017.
42. The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER).
43. The Lift Directive 2014/33/EU.
44. Lifts Regulations 2016 (UKCA)
45. The Working at Height Regulations 2005, plus Amendment 2007.
46. Work Place Health Safety and Welfare Regulations 1992, including L24 (second addition).
47. Local Democracy, Economic Developments and Construction Act 2009.
48. Control of Noise at work 2005.
49. Control of Vibration at work 2005.
50. Local by-laws and any other statutory requirements.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

51. ISO 3008-2:2017. Fire-resistance tests. Lift landing door assemblies.
52. DD CEN/TS 81-76:2011 - Safety rules for the construction and installation of lifts. Particular applications for passengers and goods passenger lifts. Evacuation of disabled persons using lifts.
53. DD CEN/TS 81-83:2009. - Safety rules for the construction and installation of lifts. Existing lifts. Rules for the improvement of the resistance against vandalism.
54. EN 81-82:2013 – Safety rules for the construction and installation of lifts. Existing lifts. Rules for the improvement of the accessibility of existing lift for persons with disability.
55. BS EN ISO 25745-3:2015. Energy performance of lifts, escalators and moving walks. Energy calculation and classification of escalators and moving walks.
56. BS ISO 8102-6:2019 Electrical requirements for Lifts Escalators and Moving Walkways
57. BS EN ISO 12100:2010 Safety of machinery. General principles for design. Risk assessment and risk reduction.

4:2 SCHEDULE OF CONTRACT INTERFACES

See attached Appendix 1.

4:3 AC GEARLESS DRIVING MACHINE - NEW

Main Drive Shaft
The motor shaft shall be machined from a single steel forging. The motor shaft shall incorporate a rim which shall be bolted to the brake assembly and incorporate a flange for the sheave to be bolted too in such a manner that the sheave can be quickly replaced should this become necessary.

Traction Sheave
The sheave shall be separate, it shall not be integral with its shaft and it shall incorporate a bolted rim.

The sheave diameter shall not be less than 40 times the diameter of the hoisting ropes.

The traction sheave shall have a minimum hardness of Brinell 210. A certificate of test to be provided by the Contractor.

Where the design or positioning of the machine requires a smaller traction sheave to achieve the required angle of wrap, the number of suspension ropes shall be increased to achieve the required traction/rope pressures.

Pedestal Bearing
Where an outboard pedestal bearing is provided it shall be of a proprietary manufacture, and where appropriate, suitably designed for bottom drive arrangement.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

Bearings
Bearings must be sleeve or roller type and may be of the sealed-for-life type. All bearings on a common shaft shall be of the same type.

Bedplate and Supporting Steelwork
Where the machine requires a separate bedplate or supporting steelwork it shall be manufactured from standard steelwork sections. The machine supports shall have machined faces. Packing other than fine shimming shall not be accepted and designs for supporting steelwork shall be by proven calculation.

Isolation
Suitable sound isolation to the approval of the Engineer shall be provided to prevent the transmission of noise and vibration from the machine to the building structure. The assembly is to be suitably fixed to prevent any pitching or tilting.

Drilling of Steels
The Lift Contractor shall supply, drill and tap the main supporting and all secondary steels as necessary.

Rope Retainers
The main machine and any associated pulleys are to have rope retainers, which shall prevent the main hoisting ropes leaving their respective grooves through rope bounce, &c.

Brake
The brake shall:

Be fail safe and self-adjusting.

Under any normal load and speed conditions, smoothly bring the car to a standstill.

Sustain a static load 25% in excess of contract load.

Have an approved means of mechanical release.

Incombustible brake linings are to be used and where the linings are not bonded, they shall be riveted with a minimum of 8 copper or soft rivets per shoe, each firmly clenched with the correct form of oversetting tool.

Brake springs, when used, shall be supported and in compression.

Brake linings shall not contain asbestos.

Any device for the adjustment of spring tensioning must be fitted with lock nuts.

The brake shall be mechanically applied at all times until the hoisting machine is under power.

If the brake shoes do not lift, power will be disconnected from the driving machine through an over-torque detection device and/or a brake disconnector proving switch.

The brake coil terminals shall be fully enclosed.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

The bearing surface of the brake coupling shall be formed from a single forging.

Double Wrap Pulley
Where secondary double wrap pulleys are used these shall be formed from high quality cast iron. All retaining rings shall feature locking tabs or if bolt fixed these shall be drilled and wired to maintain adjustment.

The divertor pulley shall have a minimum hardness of Brinell 210. A certificate of test to be provided by the Contractor.

Sealed for life roller bearings shall be used.

Emergency Handwinding
If not already provided as part of the hoisting machine design, the machine shall be modified to incorporate an emergency handwinding device.

Where a mechanical device is provided it shall comprise a self-sustaining reduction gearbox and handwinding wheel.

The device must be manually operated and designed such that when placed in situ the electrical supply to the lift motor will be positively disconnected.

Where the design is such that the device can be moved to individual hoisting machines an appropriate storage facility shall be included.

The handwinding device is to include all necessary electrical circuits, mountings, retaining devices and instruction notices.

Where an electrical or other means of emergency hand winding device is provided, this must be agreed with the lift consultant prior to submission of the tender return.

4:4 EMERGENCY HANDWINDING EQUIPMENT (MACHINE ROOMLESS) - NEW

The Lift Contractor shall provide suitable means to hand wind the lift from a remote point. The method shall be in accordance with BSEN81 and have the approval of the HSE. If the system relies on the lift being out of balance to move the lift car, suitable safe means of ensuring an out of balance condition shall be provided as part of the contract.

4:5 DIVERTOR PULLEYS - NEW

New rope divertor pulley(s) shall be provided by the Contractor. These shall be formed from high quality cast iron. All retaining rings shall feature locking tabs or if bolt fixed these shall be drilled and wired to maintain adjustment.

The divertor pulley(s) shall have a minimum hardness of Brinell 210. A certificate of test to be provided by the Contractor.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

Rope retainers are to be provided to the pulley wheels, which shall prevent the main hoisting ropes leaving their respective grooves, through rope bounce or the application of the safety gear.

Sealed for life roller bearings shall be used.

4:6 TOP PULLEY WHEELS - NEW

New Pulleys shall be installed. They shall be manufactured from high quality cast iron. All retaining rings shall feature locking tabs or if bolt fixed these shall be drilled and wired to maintain adjustment.

The rope pulleys shall have a minimum hardness of Brinell 210. A certificate of test to be provided by the Contractor.

The lift contractor shall provide all necessary new supporting steel work where required.

Rope retainers are to be provided to the top pulley wheels which shall prevent the main hoisting ropes leaving their respective grooves, through rope bounce or the application of the safety gear.

Sealed for life roller bearings shall be used.

4:7 VARIABLE FREQUENCY MOTOR (0.63m/s and above) - NEW

The motor shall be induction AC type incorporating forced ventilation.

The control of the motor shall be achieved, through power transistors, by finite adjustment to the frequency and voltage of an AC power supply through a Pulse Width Modulator incorporating minimum four-quadrant regeneration.

Current EMC standards and regulations shall be complied with.

The motor and its control shall be compatible to the power supply to the machine room/space and is to incorporate a sound filter to dampen the Pulse Width Modulator enabling the Lift to run at all loads/speed without appreciable noise or hum.

The motor drive shall be by means of a **Closed Loop** System incorporating Field Orientation Flux Vector Control that must be fully adjustable to give optimum performance throughout the intended travel of the Lift. Suitable rotational shaft position and speed information is to be provided by a high resolution encoder mounted on the non-drive end of the motor shaft.

All speed referencing devices shall be directly driven and must not incorporate drive belts or spur gears.

The regulator will respond to feedback signals derived from the motor speed, motor voltage, distance to travel and load within the Lift car.

Lift position information is to be provided by a digital reference device located either on the Over-speed Governor or Driving Machine.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

The system is to have an accurate method of controlling acceleration and the rate of change in acceleration. The acceleration should initially be set at 0.8 mps^2. It shall be adjustable to between 0.8 mps^2 and 1.2 mps^2.

The motor control shall incorporate direct floor approach and stopping, with the machine brake being applied only after the car is stationary.

The system shall maintain its speed between -2% and +2% of its designed operating speed.

Protection to the motor windings shall be in the form of thermistors with additional protection provided by the inverter should any of the following occur:

1. Over-current in the drive circuit.
2. Over-voltage of the intermediate circuit.
3. Under-voltage of the intermediate circuit.
4. Network voltage asymmetry not correct.
5. Temperature rise of the semi-conductor cooling plates.
6. Regulator electronic voltages incorrect.
7. Operation of the electronic braking network incorrect.
8. The speed of regulator becomes saturated.

The motor shall bear the actual manufacturers name and data plate. All motor terminals shall be readily accessible and of screw fixed or bolted design located within a terminal box.

Lifting eyes are to be provided to the motor casing.

The motor shall be rated for a Lift duty of 240 starts per hour.

Motor bearings shall be of the roller type.

In the event the driving machine requires site assembly it must be carried out by the manufacturer or approved agent.

The levelling accuracy shall have a tolerance of +/- 3mm.

The encoder or other means of speed reference shall be so sited that easy access is provided and the items are not subject to accidental damage.

In the event of loss of feedback from the speed reference device, under normal conditions and on car top control, the lift will immediately shut down and the brake will be applied. The Lift will no longer attempt to respond to calls until the speed reference device has been satisfactorily reinstated.

Where the hand winding wheel is separate from the driving machine, tacho-generators or other feedback encoders should not be mounted at the motor end of the high speed shaft.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

4:8 INSTALLATION WIRING

The contractor shall provide all new wiring from the fused mains disconnector for the lift installation unless otherwise specified.

Under no circumstances will it be permitted to run conduits or trunking above floor level in the motor room/space where this will constitute a tripping hazard.

When floor trunking is used it will lie flush with the floor level and incorporate chequer plate covers, which shall be removable for their entire length.

All cables shall be enclosed throughout their length in heavy gauge galvanised steel conduit or trunking. Any conduit finishes where disturbed shall be re-coated with galvafroid or similar.

No machine or control panel isolation shall be bridged by conduit or trunking systems.

Trailing cables are to be suspended without the use of junction boxes. They shall be suspended from a cable hanger incorporating clamps that will secure the cable without damage or undue pressure on the conductors or insulation.

The cable anchorage shall be installed at the top and approximately halfway position of travel. Beyond the halfway point additional intermediate clamps are to be fitted every 3 metres which shall be carried from the shaft wall or guides. Clamps must be in accordance with the manufacturer instructions.

Each trailing cable shall contain a minimum of 20% spare ways, together with 2 twisted screened pairs.

Trailing cables will be terminated direct to the controller, at one end and either within the car station panel or in a junction box on the car top at the other.

Under no circumstances will junction boxes in alternative locations be permitted.

Flexible metallic conduit shall be used only as approved by the Engineer in cases where it is necessary to provide for adjustment or to reduce the transmission of noise and vibration. Flexible conduit length to be a maximum of 450 mm. Where such approval is given the flexible conduit shall terminate in suitable couplings and shall positively grip the flexible conduit, and an additional earth continuity conductor shall be run outside the conduit between lengths.

The conduit shall be screwed between lengths and into all boxes and fittings and where bends or sets are required they shall be made from the conduit.

Hexagonal male brass bushes shall be used to terminate new conduit in boxes where an adequate screwed spout outlet is not provided.

All cables and wiring shall be of the same manufacturer and only one make of cable shall be used on the entire installation. All new cables shall be multi-strand and the minimum area of any one conductor shall not be less than 1mm sq (except travelling cables).

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

All wiring and travelling cables shall be 600/1000 grade having low smoke and fume insulation (LSF).

It must not be possible for any travelling cable to foul any fittings or equipment in the lift shaft and a suitable screen shall be fitted up to the halfway point in the shaft constructed from a non-combustible material. The cable screen must be of maximum width for the area of the shaft occupied by the cable and if of weld mesh, must be of continuous length, having a grid size no greater than 13mm. Any form of flexible screen must be fitted with an adjustable tensioning device capable of having adjustment of at least 100mm.

All cables and travelling cables shall be subjected at the maker's Works to the appropriate voltage tests, tests for thickness of insulation, insulation resistance, fire resistance and flexibility.

Screened ways are to be incorporated for intercom and car telephones terminated separately in the machine room/space and Lift car as approved by the Engineer.

The terminations to car lighting, Air Purifier System and fan supplies are to be shrouded and labelled.

All fixed items and components are to be fully earth bonded using 6mm insulated cable, the earthing to include such items as pit ladders, guards, lifting beams, &c.

To ensure EMC compliance the lift contractor shall provide all necessary earthing in accordance with the control panel, drive and motor manufacturer requirements. This may require change to the existing earthing arrangements within the building and the lift contractor shall be satisfied that the existing mains supply earthing is adequate.

The use of armoured cable is to be discussed and approved with the Engineer.

All trunking fittings shall be of a standard proprietary manufacture except where special fittings are necessary.

A cable strainer is to be provided in every 3 metre length of trunking.

Existing trunking and conduit may be reused where the existing run is not subject to extensive modification and where it is rigidly fixed, not corroded and in good condition and where the earth continuity satisfies current earthing requirements.

4:9 STOP / RUN SWITCHES

Stop/run lock down switches shall be supplied and installed in accordance with the following. When placed in the stop position they will cause the lift to stop and prevent it being started until returned to the run position. It must not be possible for the switch to be accidentally returned to the run position.

The switch knob is to be of a push/pull type and coloured red, it shall be a minimum of 50 mm in diameter and must clearly indicate when the switch is in the OFF position.

Maple House
11 Kings Square
Bristol
BS2 8JH

SECTION 4

SPECIFICATION

1. In the lift pit and within 1 metre of the entrance installed 1.3 metres above the lowest floor level served.
2. At low level within the lift pit where the normal stop/run switch is inaccessible from the pit floor.
3. Adjacent to the traction sheave side of the main hoisting machine.
4. Within the top pulley wheel area.
5. In the secondary level of the machine room/space.
6. On the car top within 1 metre of any landing entrance.

4:10 SUSPENSION ROPES

New suspension ropes are to be provided.

No design shall carry less than four 11mm diameter ropes.

The safety factor of the suspension ropes shall be at least 12.

Where design deviates from the Code Standard proof of Notified Body approval shall be provided by the Lift Contractor upon request.

The ropes shall be delivered to site suitably wrapped and protected and all shall be cut from a common length.

The Lift Contractor shall provide appropriate test certification applicable to the method of suspension.

An automatic device shall be provided for equalizing the tension of suspension ropes.

Where other means of suspension are employed e.g. synthetic ropes or steel cored belts etc. the Lift Contractor shall provide a permanent means of checking/testing their integrity.

4:11 ROPE TERMINATIONS

The rope terminations shall be:

a) Ferrule secured eyes shall be terminated in accordance with the manufacturers requirements (EN 13411-3).

b) Self-tightening wedge sockets shall be terminated in accordance with the manufacturers requirements (EN 13411-6 or 7).

c) Swage terminals shall be terminated in accordance with the manufacturers requirements (EN 13411-8).

Car and counterweight hitches shall be of a multi-point design.

SECTION 4

SPECIFICATION

Rope terminations shall be provided with a means of ensuring the uniform tensioning of each rope fall.

Two removable extension stools (where over-travels permit), 150mm maximum in length, are to be mounted on the underside of the counterweight to allow for initial rope stretch.

Adjustment of the locknuts on rope terminations shall allow for raising the counterweight by 150mm relative to its suspension ropes.

Following completion of the installation and having given time for rope stretch, the Contractor shall return to site to shorten the ropes to maintain the necessary over travels. Any necessary overtime premium shall be included within the tender sum. (This shall also relate to governor and compensating ropes where fitted).

Wire lanyards are to be run through the car and counterweight terminations to prevent twisting. This is to be done as soon as the ropes have been fitted and properly tensioned.

Rope tails shall be between 150mm and 300mm long with the ends whipped and tied back.

4:12 ASCENDING OVERSPEED PROTECTION

The lift shall be provided with a means of protection against over-speeding in the up direction (Ascending overspeed protection).

The means shall comprise of speed monitoring and speed reducing elements, these shall detect an overspeed of the lift car in the up direction and shall cause the lift to stop, or at least reduce its speed to that for which the counterweight buffer is designed. The means shall be active during normal or manual rescue operations.

The following systems will be accepted to fulfil the above criteria on the understanding that the lift contractor shall demonstrate compliance of the system installed within the operating and maintenance manuals.

- Bi-directional safety gear.
- Dual brake systems.
- Sheave brake system.
- Rope brake system (Excluding compressed air systems).
- Dynamic braking of the motor (gearless).

4:13 SAFETY GEAR (CAR) - NEW

A new safety gear is to be provided which shall be designed to protect against uncontrolled movement of the lift car and any overspeed, in both directions and under all conditions, unless other means of ascending overspeed protection has been provided e.g. Dual brake systems or Dynamic braking (gearless machines). The lift contractor shall demonstrate compliance of the system installed within the operating and maintenance manuals.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

The safety gear shall be mounted on the lift car frame and where appropriate the counterweight.

Where suitable the car safety gear may be of a bi-directional design.

At speeds up to 0.63 m/s they may be instantaneous types.

At speeds of 0.63 m/s and above a progressive type shall be provided.

Each safety gear shall be provided with a positively operating switch that does not rely on spring tension, such that in the event of the safety gear being engaged, supply to the motor and brake will be disconnected and require manual resetting.

The safety gear mechanism, when engaged, shall be released, without the need to remove any load from the lift car, either through the raising of the car or counterweight as required.

4:14 UNCONTROLLED MOVEMENT OF LIFT WITH OPEN CAR DOORS

The lift shall be provided with a means of protection against unintended movement of the car away from floor level in the up and down direction with the landing door/s not in a locked position and the car door/s not in the closed position.

The means shall:

a. Detect unintended movement of the car, causing the car to stop and keep it stopped.

b. Capable of performing as required without assistance from any lift component that, during normal operation, controls the speed or retardation, stops or keeps it stopped, unless there is built-in redundancy and correct operation is self-monitored.

c. Activate at the latest when the car leaves the unlocking zone.

d. Act on the car or counterweight or rope system

e. Stop the car at a distance of not more than 1.2m away from the landing.

f. The vertical distance between the landing sill and the lowest part of the car apron shall not exceed 200mm.

g. The free distance from the car sill to the landing door lintel or from the landing sill to the car door lintel shall not be less than 1m.

h. Stop the car with a maximum retardation of 1g.

i. Require the intervention of a competent person for release.

j. Operate an electrical safety device.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

4:15 OVERSPEED GOVERNOR (CAR) - NEW

The safety gear is to be operated by an overspeed governor which shall come complete with operating rope and tension weight frame.

The operating rope shall be a minimum of 8.0mm diameter and the sheave diameter is to be a minimum of 30 times the rope diameter.

The over-speed governor shall be of a design compatible with the safety gear.

An electrical contact shall be fitted to the governor tension weight, which shall operate to interrupt the safety circuit before the loss of rope tension. The contact shall be lock-off type.

The governor is to be totally enclosed mounted on a steel baseplate so designed to spread the fixing points away from the governor rope holes.

The idler pulley shall be provided with a solid debris guard.

A test groove shall be provided to demonstrate governor and safety gear operation at contract speed.

The governor shall be provided with an electrical contact, which will operate before the governor reaches the mechanical tripping speed.

Where the overspeed governor is in an inaccessible location it shall be capable of being remotely tripped and reset from a key switch mounted on the control panel.

4:16 CONTROL SYSTEM GENERAL REQUIREMENTS (ENERGY SAVING)

Control Cabinet

A new control panel shall be provided being of the enclosed steel cabinet type with louvered ventilation, finished internally and externally in powder coating or plastic skin plate. The identity of all the contactors, relays, solenoids, and other equipment in the controller shall be clearly indicated by means of permanent, heat resistant non-fade, plastic labels. A nomenclature to abbreviations and symbols used will be affixed to the inside of the control panel or control panel door.

Access shall be from the front only unless complexity of equipment necessitates rear entry also. The doors shall be full height and width of the panel and shall be of double hinged mechanically latched type.

The enclosure shall provide protection to IP23 Standard.

All cable entry shall be from below.

The new controller must be designed and constructed to pass through the building without any alteration to the building fabric. Notwithstanding this requirement, the controller shall be of a suitable design to be comfortably accommodated within the motor room.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

Two external lifting eyes are to be fitted to the top of the controller cabinet to allow lifting without distortion.

All resistors are to be mounted externally to the main control equipment in a housing mounted to suit the site conditions and with suitable ventilation.

Doors shall not be of the lift-off type and shall be separately earthed.

A notice shall be permanently attached to the inside of the control panel door detailing the final torque settings of the drive motor programmed into the inverter.

Where location dictates, control panel(s) shall be sound isolated.

Control Components
The system shall be microprocessor controlled.

Electrical safety devices shall be implemented in an intrinsically fail safe manner via electromechanical devices.

Means of residual current protective device (RCD) not exceeding 30 mA shall be provided for all circuits over 50 V AC on the lift car, landing controls & indicators, and safety circuits.

Solid state controllers shall always revert to a safe condition under all failure modes.

The microprocessor section of the control panel shall be separately mounted, such that the inadvertent connections of high voltages or physical damage from falling objects are prevented.

All input/output lines must be capable of withstanding short circuits and the application of 500v for short duration i.e. megger tests, without permanent damage.

An electronic permanent display, non-resettable, digital trip counter shall be provided to record the number of journeys for the lift.

Each control panel is to be provided with a visual display showing the operating status of the Lift and incorporating LED indicators which show each of the following sequences:

- Power on.
- Power to each processor board.
- Lift in service.
- Lift direction.
- Calls registered for car and landing.
- Door open/door close.
- Door Detector operation.
- Lift overload.
- Lift on car preference.
- Lift on door hold.

Eco-Mode
The control system shall incorporate an Eco-Mode which shall be programmable by time of day.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

The Eco-Mode system shall provide various stages of shut down of non-essential supplies/control circuitry. Typically, this will require the car light/fan/air purifier/indicators/speech controls and other peripherals being turned off after pre-determined periods of inactivity.

Normal resumption of these supplies are to be made upon the activation of a car/landing call, special service or inspection control.

If any push button is pressed, either within the car or on a landing, or a fault condition arises the car lights shall switch on. When the car is on Car Preference Control the car lights shall remain switched on at all times. This facility shall be provided in conjunction with a permanently illuminated Alarm Push Button.

When in Eco-Mode the system shall evaluate the demand and where this is deemed to be 'light' then the control of the acceleration, jerk and speed of the lift will be reduced for single call journeys.

Over-ride Controls
The control cabinet shall be provided with an external changeover switch to convert from NORMAL to INSPECTION operation, together with UP and DOWN buttons, and an OVER-RIDE button.

When switched to INSPECTION all safety circuits will be in use. On operating the continual pressure OVER-RIDE button, the safety gear switch on the car, slack rope and chains switches, buffer switches, over travel limits, and governor switch shall be over-ridden. This OVER-RIDE button is to assist in the release of the safety gear or to move the Lift from the over travel limits.

This INSPECTION/NORMAL switch will NOT OVER-RIDE the mechanics control stations or any other part of the safety circuit.

Landing & Car Door By-Pass
A bypass device shall be provided to facilitate maintenance of the car and landing door electrical contacts. The device shall be protected against unintended use by mechanical movable means. The device shall be clearly identified for purpose and only function where the required criteria within EN81 has been satisfied.

Maintenance/Normal Service Switch
For each individual Lift a MAINTENANCE/NORMAL SERVICE switch is to be provided on the control cabinet which will prevent the Lift answering its landing calls.

Door Isolation Switch
A door isolation switch is to be provided on the control cabinet which will prevent operation of the car doors.

Terminal Floor Calls
Provision to facilitate the input of at least terminal calls shall be provided for maintenance purposes.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

Car Lighting

The car lighting shall switch off automatically when there has been no activity of the lift car for more than a 5 minute period (adjustable). If any push button is pressed, either within the car or on a landing, the car lights shall switch on. If a fault condition arises or when the car is on Car Preference Control the car lights shall remain switched on at all times. This facility shall be provided in conjunction with a permanently illuminated Alarm Push Button.

Emergency lighting shall be provided, in the event of a power failure the emergency car lighting will continue to operate normally under emergency supply for 3 hours at a minimum of 5 lux from the same source as the alarm, air purifier and fan, but separately fused.

Remote Overspeed Governor Operation

Where a remote overspeed governor is installed which cannot be easily accessed from outside the lift shaft, a key switch shall be provided on the control cabinet to operate and reset the governor.

Where the Contractor's standard custom-built control system is proposed all items detailed in the specification are features and components that will be required as a minimum.

Interrogation/Service Tool

Where the preferred method for interrogating the lift control system when fault finding or altering specific lift operating parameters is by the use of a portable or handheld device, then any such device shall be permanently located within the controller cabinet and shall become the employer's property. It shall be site specific and any unique identification number shall be recorded on the device.

Where the method of interrogation is through 'on board' diagnostic systems, any security devices/codes required to gain access to the system in order to retrieve information from the control panel shall be provided with full explanation on their use.

Such interrogation equipment shall not allow unauthorised personnel to alter parameters on the control system which may affect lift safety. Different levels of secure access facility on interrogation equipment is therefore permissible.

The Contractor's control system must be of proven design. No prototype equipment or components will be accepted. Any system with a RESTRICTED design protocol will not be acceptable.

Special cooling and/or filtration equipment is to be incorporated to reduce the spread of dust through the controller and to maintain satisfactory ambient temperatures and prevent local hot-spots.

The following items are required:

- Phase failure/phase reversal protection.
- Double journey timers.
- Automatic homing [switched].
- Door nudging with audible signal.
- All control equipment to be protected by miniature circuit breakers not fuses.

SECTION 4

SPECIFICATION

- Door open/door close timers fully adjustable for dwell and operating speeds.
- Anti-interference features for all car controls.
- Earth terminals and full earth bonding.
- Supplies to printed circuit boards shall be protected by miniature circuit breakers.
- Microprocessor based car position reference system.
- Thermal overloads for main motor protection or alternatively protection within the controller software.
- Car and landing door lock short-circuit protection.
- A device shall be fitted that determines the lift machine and machine room/space temperature. An over temperature will cause the lift to shut down at the next floor in a controlled manner.
- Lift alarm push button to be permanently illuminated even in the event of a power failure.
- The door open push button shall illuminate during the door close cycle.
- Suitable outputs shall be provided to initiate speech generation. The processor shall provide advanced signals to highlight such items as “Doors Closing” etc.

Speed Reference Device Failure

In the event of loss of feedback from the speed reference device, under normal conditions and on car top control, the lift will immediately shut down and the brake will be applied. The Lift will no longer attempt to respond to calls until the speed reference device has been satisfactorily reinstated.

Equipment Reliability

The control circuit where fed from an alternating current source shall be greater than 110V and not greater than 240V.

On relay components the "VOLTAGE RELIABILITY" shall be at least 80%, i.e. the control circuits must operate at 25% below design voltage.

The "COMPONENT RELIABILITY" shall not be less than three million, i.e. the expected number of operations between two failures.

All timers shall be of solid state design.

All car and landing call acceptance indicators will illuminate until the call is answered.

The lift should not interfere with the reception of radio and television programmes or the supply of computer-related equipment. The lift equipment shall be fitted with the necessary interference suppression and filtration components during manufacture.

Car position reference systems shall be actuated by one of the following:

Digital Encoders; Transducers

Any other proposed system shall be with the approval of the engineer.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

Car Preference

Car preference operation will be provided. With the key in the ON position the Lift will be removed from NORMAL operation and will respond only to car calls and will ignore all other automatic operations. The key will be captivated when in the "ON" position.

When under car preference the Lift will park with both car and landing doors open.

The Lift will respond to continuous pressure on the selected car floor push only and only the first call will be answered. For any subsequent call it will be necessary to press the car button to achieve further door closing.

Wiring Diagrams

Contract specific, including authorised and recorded post-test revisions, plastic encapsulated wiring diagrams are to be provided within the machine room/space in addition to those supplied with the O & M Manuals.

4:17 HANDWINDING SYSTEM

An electronic handwinding system shall be provided which shall incorporate both audible and LED illumination. The equipment shall be wall-mounted adjacent to its corresponding hoisting machine and shall be easily viewed from the normal handwinding position. Where the control panel is situated close to the hoisting machine, the handwinding system may form part of the control panel if the landing floor level indicators can be easily seen from the normal handwinding position.

A control switch mounted on the handwinding unit shall initiate the operation of the handwinding system. When switched "ON" and under handwinding operation, it will indicate both visually and audibly as the Lift becomes level with a landing floor level. The unit shall display the position of the lift car relative to its position within the lift shaft.

Supply to the handwinding system shall be from an independent low-voltage source incorporating an emergency supply which automatically becomes available in the event of mains power failure.

Irrespective of the position of the mains supply switch, the operation of the ON/OFF switch on the handwinding buzzer system shall render all other controller components inoperative and an illuminating indicator shall be sited adjacent to the handwinding switch to notify that the system is switched on.

4:18 FULLY COLLECTIVE CONTROL

Following registration of a landing call, the Lift will respond to that call only when it is travelling in the direction of the call.

It will store this call in memory if travelling in the opposite direction and answer it sequentially when travelling in the direction of the call.

If the Lift responds to a floor where both UP and DOWN calls are registered (lift 1 only) it will respond only to the call in the direction in which it is committed to travel.

If no car call is then placed and there are no further hall calls in that committed direction, the doors will re-open, and its committed direction will reverse and it will respond to the other call.

Car calls will be answered sequentially as their destinations are reached irrespective of the order in which they were registered. As each car call is answered it will be cancelled.

Each controller is to incorporate automatic logging which will have an indicator display board to show a record of events covering the following Lift functions:

Primary safety circuit failure.
Primary loop failure.
Car door switch fault.
Landing door lock fault.
Failure of doors to open.
Lift overloaded condition.
Landing and car calls cancelled.
Shutdown due to successive failed attempts to start.
Limited force door closing having been operated.
Memory failure.
Programme error.
Stuck landing/car call button.
Service to engineers visit.
Two spare signal/record facilities.

4:19 FIRE RECALL SYSTEM (EN81-73:2005)

On the operation of the Fire Control switch or Building Fire Alarm system, if a lift is travelling away from the Fire Service Access Level it shall stop (without opening its doors) at the next available floor according to the lift speed and minimum slow down distance of the drive system. The lift shall then reverse direction and travel without stopping to the appropriate Fire Service Access Level.

When returning to the designated landing lift doors shall open on all lifts to allow any passengers to exit and shall remain open. Where national regulations do not permit the doors to remain open a means shall be provided to open the doors even with the power on to allow Fire Fighters to check that lift cars are empty.

All control push buttons shall remain inoperative until the Fire Control Switch or Building Fire Alarm has been reset.

A ‘No Entry’ sign shall be displayed at the designated floor to indicate that the lift/s shall not be used.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

4:20 GUIDE RAILS, SUPPORT BRACKETS AND FIXINGS - NEW

Car and counterweight guides shall be of tee section.

The guides shall be smooth, plumb and straight and their fixings and brackets secure in all respects.

Guides and their fixings shall withstand the application of the safety gear without deformation when stopping a fully laden car or counterweight. Under all operating conditions guide rail deflection shall not be greater than the Code Standard requirements.

Where cantilever car arrangements are provided the contractor shall be required to provide sufficient information to the engineer that the guide brackets and fixings are suitable for their intended application. The design shall consider the need to provide a smooth and quiet operation during lift movement.

Their faces shall be of machined steel having a minimum section T89B.

The back of each guide is to be machined at the point of connection to allow for the guides to be coupled and interlocked with tongued or grooved sections on their respective ends.

The base of the guides shall be carried within the lift pit on steel channel sections which will also act to locate and support the car and counterweight buffers.

The guides shall be delivered to site with a waterproof protective coating on all machined surfaces and where practicable all protective coverings shall remain in place during construction.

The base of each guide shall be fitted with a purpose manufactured drip tray, unless guide shoes are of the roller type.

The guide brackets shall be of substantial RSA or RSC steelwork sections.

Flat steel bar is permitted in restricted situations only.

The brackets shall be designed to support the guides without undue flexing.

The car guide brackets whether of the adjustable or of single piece design shall not require packing for a distance in excess of 13mm unless such packing is required to accommodate discrepancy in the verticality or winding of the Lift shaft.

Where adjustable brackets are used, the adjustable section shall be pinned after alignment.

Where guide fixing brackets are of the "flat strap" type that are not set to cover distance in their design, then only solid packing having a bearing surface of no less than 100mm sq shall be provided. The means of packing flat strap brackets with the use of locking nuts on continuously threaded studding will not be acceptable.

Where solid packing is used in excess of 25mm, 75% of all packing shall be as single piece.

Sliding guide clips shall be used.

SECTION 4

SPECIFICATION

The guides shall terminate within 75mm of the underside of the top of the shaft and fitted with a physical stop.

The guides shall be pinned to the lowest guide brackets to prevent any movement during the application of the up direction safety gear where installed.

The setting out of each lift shaft shall take into account all discrepancies and tolerance should be allowed for any out of plumb or twist conditions presented by the shaft construction.

Where counterweights are positioned to the rear of the car, they shall be positioned on centre lines parallel to the car guides.

Where counterweights are contained within combination brackets to the side of the Lift car the guide system shall be set out as a single exercise.

On group systems all Lifts shall set out to the established site grid lines.

The Engineer may call for a set of the actual shaft plumbing's taken on site by the site operatives so these must be retained by the Contractor for reference purposes.

4:21 ENERGY ACCUMULATION BUFFERS - NEW

The buffers shall be capable of bringing the car/counterweight to a gradual and positive stop.

Energy accumulation buffers shall be located in the pit beneath car and counterweight and securely fixed to the base support.

The steel buffer supports shall be of robust construction securely fixed between their respective guides and be of sufficient height to maintain the necessary over travel of the Lift and maximise man clearance.

Spring buffers, when provided, shall incorporate an impact cap.

In the cases where buffers are fixed to the underside of the Counterweight or Car the impact area shall form an obstacle (pedestal) of a height not less than 300mm. Unless the Cwt screen extends to within 50mm of the pit floor.

4:22 COUNTERWEIGHT - NEW

The counterweight shall be of steel framed bolted or welded construction with multiple section cast iron weights, which shall be suitably clamped.

Where makeweights are employed, they shall be full width and depth of the counterweight frame and secured by the same clamping device.

The counterweight shall adequately withstand buffer impact.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

Where any accessible spaces exist below the well, the counterweight shall be equipped with a safety gear, and the pit shall be designed for an imposed load of 5000 N/²m.

4:23 PASSENGER LIFT CAR FRAME & PLATFORM - NEW

The car frame shall be of rolled or pressed channel and angle construction and shall be capable of sustaining a fully loaded car without permanent deformation with an evenly distributed load. The frame shall be of bolted or welded construction and the use of set screws or rivets is strictly forbidden.

The design of the car frame shall incorporate a load weighing device.

The load weighing device shall prevent operation of the lift in the event of the contract load being exceeded.

The load weighing device shall provide auto-bypass information to the control system in addition to conventional load weighing. When overloaded the Lift car shall be prevented from moving.

For call transfer the load weighing device shall be operational when the load is 80% or more of the contract load. Load weighing devices shall automatically reset.

When of a cantilever construction, the car frame and guide shoes shall be designed to minimise guide shoe/roller shoe pressure to ensure a smooth and quiet operation.

The platform shall be of steel frame supporting a timber sub-floor of exterior grade plywood of 25mm thickness. The underside of the timber sub-floor shall be fully lined in sheet steel which shall be fixed at 150mm centres.

Car isolation is to be provided between platform and car frame. The isolation shall be of oil-resistant resilient compound pads of suitable density for the contract load and car weight.

Isolation shall be fitted to the top of the car enclosure and may be of an adjustable design. It shall not be fitted until the Lift car has been plumbed and levelled with all ancillary items and components attached.

Plumbing and alignment shall be made by packing to the floor frame, not by jacking of the top of car isolation.

The frame shall be of bolted or welded construction and the use of setscrews or rivets is strictly forbidden. Adequate clearance must be provided beneath the crosshead section to allow adjustment of the hoist ropes.

Buffer plates shall be provided to the underside of the car frame.

The design of the car frame shall ensure that the rope termination pick-up point shall be as close to balanced as possible.

Maple House
11 Kings Square
Bristol
BS2 8JH

SECTION 4

SPECIFICATION

4:24 GUIDE SHOES - NEW

The car shall be provided with four self-adjusting guide shoes with renewable liners, adjustable stops and lubricators as the design requires.

The counterweight will be provided with fixed guide shoes with renewable liners and lubricators as the design requires.

The car guide shoes shall be designed to withstand at least 125% normal guide shoe pressure.

4:25 STATIC BALANCING

Prior to the final adjustment of the guide shoes the lift car shall be statically balanced to ensure even weight distribution with the unrestrained car suspended vertically.

Additional weights shall be provided as needed to achieve satisfactory static balancing. Weights shall be of steel or cast iron, secured to channels which are fixed to the lift car.

The contractor is to ensure that any additional weight added to the car and counterweight must not compromise the safety gear capacity, machine sheave shaft loadings and rope calculations.

4:26 LIFT CAR CONSTRUCTION - NEW

Lift cars will be constructed in sheet steel, but the mechanical strength shall be sufficient to withstand a force of 300N applied at right angle over an area of 5cm² at any point from the inside towards the outside, without permanent deformation greater than 1mm, or elastic deformation greater than 15mm.

Also withstand a force of 1000N applied at right angle over an area of 100cm² at any point from the inside towards the outside, without permanent deformation greater than 1mm.

The sheet steel where applied to the exterior of the lift car must return around all external angles and where sections are joined, an overlap of at least 50mm is required.

Wedge fixings where used at corner junctions shall be screw fixed and shall not rely on the wedging only.

Sheet steel construction the panels are to be 16 swg sheet steel each being a maximum of 300mm wide, each fully treated with anti-drumming compound which shall be fire resistant.

A suitable composite infill material shall be provided between abutting steel panels.

All steel panels shall be of rigid construction to prevent twisting, warping or flexing during operation.

Flanges shall be bolted at 200mm centres.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

The lift car roof shall be constructed in sheet steel and internally finished in accordance with the schedule of finishes.

An inductive loop cable shall be fitted and wired to all speech units within the lift car.

Ventilation shall be provided to the side and rear walls at upper and lower levels which shall be fitted with back scoops to assist air circulation and to prevent the insertion of objects which may touch any fixed or moving equipment in the lift shaft.

The car station panel design and arrangement shall be to the approval of the Engineer.

The car station panel shall be of a hinged design there shall be a minimum of 3 tensioned locking points and when unlocked, the hinged return shall spring open. It shall be possible to snap lock the car station panel from within the Lift car.

Where the lift operates within an environment which has a high risk of vandalism, the car station panel shall be unlocked from the car roof and shall be equipped with a retaining chain and/or wire lanyard.

The car entrance sill shall be fully supported across its length and shall be raised above the sub-floor level to suit the floor finish thickness indicated in the *Schedule of Finishes,* which form part of the works.

The car lighting shall switch off automatically when there has been no activity of the lift car for more than a 5 minute period (adjustable). If any push button is pressed, either within the car or on a landing, the car lights shall switch on. If a fault condition arises or when the car is on Car Preference Control the car lights shall remain switched on at all times. This facility shall be provided in conjunction with a permanently illuminated Alarm Push Button.

Emergency lighting shall be provided, in the event of a power failure the emergency car lighting will continue to operate normally under emergency supply for 3 hours at a minimum of 5 lux from the same source as the alarm, air Purifier and fan, but separately fused.

4:27 CAR OPERATING PANEL

The facilities and features shown elsewhere within the specification shall be provided, with the design and final layout to be approved by the Engineer. The push buttons shall be installed at a height of between 900mm & 1100mm from the finished car floor and positioned on the side wall 400mm from the front return. Push button pressels shall be in contrast to their surroundings.

Where applicable a CE marking and notified body identification number shall be displayed in a position to be agreed by the engineer.

Where called for the following will be provided:

Alarm Button
The alarm button shall be permanently illuminated and yellow in colour and shall incorporate a tactile bell shape symbol. It shall be fully illuminated during power failure.

SECTION 4

SPECIFICATION

The alarm button shall be located below the car call push buttons.

Audible Annunciator

A programmable audible annunciator is to be incorporated which shall be simply and easily recorded to provide a variety of messages within the lift car. The volume shall be adjustable and as a minimum the available messages shall comprise *'Doors Opening', 'Doors Closing', 'Lift Going Up', 'Lift Going Down',' Lift Overloaded' and 'Floor N' where N is the actual floor where the lift is positioned.*

The voice messages shall be of high quality and clarity.

Emergency Communication System

In the event of the alarm button being pressed an Auto-Dial system will be activated and will sequentially dial a minimum of three preset numbers, which shall be notified by the employer.

Communication from the auto dial unit shall be to a 24 hour manned call centre.

The emergency alarm device shall be equipped with both visual and audible signals, integrated into the car operating panel, comprising of:

- A yellow illuminating pictogram in addition to the audible signal for the emergency alarm transmission to indicate that the alarm has been given.
- A green illuminating pictogram in addition to the audible signal normally required (voice link), to indicate that the emergency call/alarm has been registered. The audible signal (voice link) shall have a sound level between 35dB(A) and 65dB(A), adjustable to suit site conditions.
- An induction loop shall be provided to aid people with impaired hearing.

The type and manufacturer of the auto-dial system shall be an approved device and shall be of such design which does not prevent other contractors from maintaining or reprogramming the system.

The auto-dial unit shall be installed behind the car operating panel faceplate or front return panel.

The operational procedure of the auto-dialler shall be engraved on to the car station panel.

The auto-dialler is to be enabled by the operation of the alarm bell push button and disabled at the receiver terminal.

With the exception of a time-out facility that will be initiated by operation of the alarm push button, it shall not be possible to enable the system to listen into the Lift car.

A timer unit capable of 0 to 60 minute setting shall be incorporated which will allow the receiving station to communicate with the car at any time during the agreed set period, which can only commence on operation of the alarm push button.

The alarm push button will also operate a "comfort" alarm bell mounted on the car top and a separate Alarm Bell mounted at Main Floor level.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

Car Light Switch
The car light switch shall comprise a three position double pole switch within a unit of similar size to the car pushes.

Position 1 is to be ON
Position 2 is to be OFF
Position 3 is to be TEST which will test the emergency lighting unit within the lift car.

Car Position Indicator
A visual display unit incorporating a colour TFT position indicator behind a coloured diffuser shall be located in the car station panel. It shall be a minimum of 50mm in height and shall incorporate a scrolling feature as well as separate direction of travel indication.

The visual display unit shall be located within the car operating panel positioned at a height between 1600mm and 1800mm above the car finished floor level.

The visual display unit shall be easily visible and legible and shall be capable of displaying a variety of standard messages, as well as floor position, including but not restricted to:

Lift Overloaded
Lift Out of Service
Lift on Preference Control
Lift on Fire Control
Lift Returning to Main Floor

Car Preference
A key operated car preference switch is to be incorporated in the car operating panel. The key shall be captivated when in the "ON" position.

Car Push Buttons
The car push buttons shall be of micro movement design with raised tactile facility and shall have both audible and visual call registration indication.

The push buttons shall have dual LED illumination and their pressels shall be in contrast to their surroundings.

A single operation of the push buttons shall register a call on the lift control system, whilst subsequent operation of the push shall initiate quick close of the doors.

The main exit floor push button shall be green in colour and project from the car operating panel by 5mm.

Door Open Push
A door open push shall be provided with LED illuminated halo which shall be activated during the door closing cycle.

Door Close Push
A door close push shall be provided.

Maple House
11 Kings Square
Bristol
BS2 8JH

SECTION 4

SPECIFICATION

Overload Warning Indicator
A message shall be announced when the lift car becomes overloaded and the visual indicator shall display a standard message to advise of the overload condition. Both audible and visual messages will cease when the overload condition has been corrected.

4:28 MECHANICS CONTROL STATION – CAR TOP

The mechanics car top control station shall be mounted vertically within 1m of the landing entrance, and easily accessible from the landing threshold (where a through car condition exists it shall be accessible from the side with the majority of landing entrances).

The mechanics car top control station shall contain maintenance and test switches, direction push buttons, a 13amp switch socket outlet with RCD protection, and a proprietary brand of 16 watt twin fluorescent bulkhead light fitting with polycarbonate or similar shatter resistant diffuser.

The light fitting shall also be provided with an emergency power source from an independent supply of 3 hours duration with a minimum of 5 lux.

It is permissible to feed the emergency car lighting from this source provided that 3-hour duration is maintained in each case.

All car top lighting and power points shall come from a common source but shall be individually fused.

All switches and push buttons shall be clearly marked with their functions, with the push buttons being distinguished by colour also.

Operation of these switches and push buttons shall be as follows:

Roof Light Switch
Control of Roof Light

Shaft Light Switch
In addition to the shaft lighting switch circuits specified for machine room/space and lift shaft, an intermediate switch shall be incorporated on or near the mechanics car top control, which will provide the shaft lighting system with a third point of operation.

Stop / Run Switch
The stop switch shall be a push/pull type (push to stop pull to run). The button shall be at least 50mm in diameter and coloured red.

The stop button shall be proud of its shroud only in the “run” position.

The button shall show visual indication of both operational positions and incorporate the word STOP placed on or near it.

The stop button shall be position at the extreme top right position on the car top control panel.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

Inspection/Normal Operation Switch
NORMAL - Normal operation
INSPECTION - Car and landing push buttons isolated: push buttons on mechanics control panel become operative, and the Inspection/Normal Operation switch becomes illuminated.

The words NORMAL and INSPECTION shall be clearly marked on or near the switch.

The switch is to be protected against involuntary operation and of a bi-stable design. The switch shall be shrouded.

The switch shall be positioned in the extreme top left on the car top control panel.

Returning to normal shall only be effected by switching all the inspection switches back to normal.

Door Control Switch
The words DOOR OPEN AND CLOSED placed on or near the switch and shall be position to the extreme bottom left on the car top control panel.

Up, Run and Down Direction Buttons
The up direction button, the run button and the down direction button shall be arranged centrally and vertically in line with the up direction button positioned at the top of the car top control panel, it shall be possible to activate the run and direction buttons with one hand.

When pressed the car shall move at the designed test speed in the UP or DOWN direction (only whilst the respective direction button and the intermediate run button are depressed). These shall operate under constant pressure.

Engineers Alarm Button
An enshrouded continuously illuminated alarm push in yellow and engraved **alarm** over a red back ground and located below the stop button.

Up Inspection Safety Limit
A mechanically operated UP inspection limit is to be incorporated in the control circuit so that when the INSPECTION switch is in the INSPECTION position and the UP button is depressed, the car shall stop at the top of the lift shaft low enough to ensure that a 2 metre tall person standing on the top of the car shall be in no danger of coming into accidental contact with any overhead equipment or structure. Immediately after the UP test limit has been set and checked for final position the limit supporting arm, in addition to the conventional clip fixings, is to be twice pinned through the guide flange. In addition, a notice is to be fitted with the wording WARNING - DO NOT MOVE UP INSPECTION SAFETY LIMIT.

4:29 MECHANICS CONTROL STATION – PIT AREA

The mechanics pit control station shall be mounted vertically within 0.30m of the pit refuge space.

The mechanics pit control station shall contain maintenance and test switches, direction push buttons. All switches and push buttons shall be clearly marked with their functions, with the push buttons being distinguished by colour also.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

Operation of these switches and push buttons shall be as follows:

Stop/Run Switch
The stop switch shall be a push/pull type (push to stop pull to run). The button shall be at least 50mm in diameter and coloured red.

The stop button shall be proud of its shroud only in the “run” position.

The button shall show visual indication of both operational positions and incorporate the word STOP placed on or near it.

The stop button shall be position at the extreme top right position on the car top control panel.

Inspection/Normal Operation Switch
NORMAL - Normal operation
INSPECTION - Car and landing push buttons isolated: push buttons on mechanics control panel become operative, and the Inspection/Normal Operation switch becomes illuminated.

The words NORMAL and INSPECTION shall be clearly marked on or near the switch.

The switch is to be protected against involuntary operation and of a bi-stable design. The switch shall be shrouded.

The switch shall be positioned in the extreme top left on the car top control panel.

Returning to normal shall only be effected by switching the inspection switch back to normal, and in conjunction with the electrical reset device located on the landing mechanical release device or within a locked cabinet in close proximity to the pit access door (where provided).

Up, Run and Down Direction Buttons
The up direction button, the run button and the down direction button shall be arranged centrally and vertically in line with the up direction button positioned at the top of the car top control panel, it shall be possible to activate the run and direction buttons with one hand.

When pressed the car shall move at the designed test speed in the UP or DOWN direction (only whilst the respective direction button and the intermediate run button are depressed). These shall operate under constant pressure.

Note; where mechanics control stations are provided within lift pit area, these shall be installed in conjunction with the following:

- Pit prop safety devices.
- Safe man clearances identified.
- Access control monitoring (mechanical lock release).
- Resetting of access control monitoring switches via reset button on the switch or electro mechanical means within the lift lobby area, together with resetting required at the control panel.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

4:30 INFRA-RED ENTRANCE PROTECTION

A protective device shall be fitted to the full height of the leading edge of the car doors. Its field of operation shall be a minimum of 50mm from the leading edge and it shall initiate re-opening before any contact with obstruction.

It shall comprise a curtain of intersecting beams and shall continue to function with up to 25% failure in any of the modules.

4:31 CAR DOOR OPERATOR - NEW

The new door operator(s) shall provide a high speed, smooth and quiet motion of the car and landing doors.

The door speed during operation shall have sinusoidal characteristics with variable speed control.

The doors shall be driven by an AC Variable Frequency or Linear controlled motor in both opening and closing directions.

The lift shall normally park with the doors closed.

All couplers shall be of metal construction, and where moving skates are used then, for rigidity in door coupling, twin pick-ups are to be used.

All door gear components shall be of the same manufacture.

The car top door operating equipment shall be provided with suitable removable mechanical protection constructed to withstand a force of 1000 Newton's without permanent deformation or damage.

4:32 CAR ENTRANCE - NEW

The car doors are to be constructed in 16 swg sheet steel.

The doors shall be of welded construction incorporating purpose-designed mounting plates, cross-bracing and fire-retardant anti-drumming compound.

The steel mounting plates shall be of a minimum 6mm thick suitable for drilling and tapping. [*The use of RIVNUTS or similar fixings will not be acceptable*].

Door hangers shall be fixed with bolted fixings into the door panel and will allow a minimum of 15mm penetration.

The door panels shall incorporate additional stiffening at their base for the fitting of door shoes.

The finished faces of the door panels shall show no visible fixings or weld marks and, where facing material is applied, it shall be fully wrapped and riveted in addition to the bonding material. [*See Sketch SK No 2*].

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

It is permissible to profile the leading edge of the door panels.

The top track shall be separately fixed to the header to allow for replacement.

All rollers shall be polyurethane tyred with a steel boss and shall incorporate a minimum of 2 bolted fixings into the door assembly.

Provision shall be made to adjust the door height by 5mm.

Where the design of the top track does not prevent the rollers from leaving the tracks or tipping, anti-kicking rollers will be required.

Two sliding shoes per door panel shall be provided each having an offset vertical flange secured to the well side of the door so that the shoes can easily be replaced without lifting the doors.

In the event of the failure of the door shoes and/or fixings the doors must be retained in their bottom track.

The bottom track shall be machined, supported throughout its length and all packing used is to be steel full size of the track section.

Where dissimilar metals abut they shall be separated by a plastic membrane to prevent electrolytic corrosion.

The door contact for each door panel shall be housed within a substantial casing and shall be easily adjustable. It must *not* be possible to open the car doors while the Lift is in motion.

The clearance between door panel and surrounds shall be between a minimum of 3mm and a maximum of 6mm.

The back edge of the doors shall overlap the clear entrance width by a minimum of 15mm [*See Sketch SK No 2*].

Where the entrances are arranged as 2-speed, an approved mechanical link shall be provided between the fast and slow speed doors, and the slam post is to be formed as a rebate for the fast speed door.

The fast and slow speed doors shall each overlap by a minimum of 15mm and shall overlap the architraves by 15mm.

Where any doors contain glass vision panels these shall be of approved Laminated Safety Glass only.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

4:33 LANDING ENTRANCE - NEW

The landing doors are to be constructed in 16 swg sheet steel.

The doors shall be of welded construction incorporating purpose-designed mounting plates, cross-bracing and fire-retardant anti-drumming compound.

The steel mounting plates shall be of a minimum 6mm thick suitable for drilling and tapping. [*The use of RIVNUTS or similar fixings will not be acceptable*].

Door hangers shall be fixed with bolted fixings into the door panel and will allow a minimum of 15mm penetration.

The door panels shall incorporate additional stiffening at their base for the fitting of door shoes.

The finished faces of the door panels shall show no visible fixings or weld marks and, where facing material is applied, it shall be fully wrapped and riveted in addition to the bonding material. [*See Sketch SK No 2*].

It is permissible to profile the leading edge of the door panels.

The top track shall be separately fixed to the header to allow for replacement.

All rollers shall be polyurethane tyred with a steel boss and shall incorporate a minimum of 2 bolted fixings into the door assembly.

Provision shall be made to adjust the door height by 5mm.

Where the design of the top track does not prevent the rollers from leaving the tracks or tipping, anti-kicking rollers will be required.

Two sliding shoes per door panel shall be provided each having an offset vertical flange secured to the well side of the door so that the shoes can easily be replaced without lifting the doors.

In the event of the failure of the door shoes and/or fixings the doors must be retained in their bottom track.

The bottom track shall be machined, supported throughout its length and all packing used is to be steel full size of the track section.

Where dissimilar metals abut, they shall be separated by a plastic membrane to prevent electrolytic corrosion.

The gate contact for each door panel shall be housed within a substantial metal casing and shall be easily adjustable. It must *not* be possible to open the doors while the Lift is in motion.

The clearance between door panel and surrounds shall be between a minimum of 3mm and a maximum of 6mm.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

The back edge of the doors shall overlap the clear entrance width by a minimum of 15mm [*See Sketch SK No 2*].

Where the entrances are arranged as 2-speed, an approved mechanical link shall be provided between the fast and slow speed doors, and the slam post is to be formed as a rebate for the fast speed door.

The fast and slow speed doors shall each overlap by a minimum of 15mm and shall overlap the architraves by 15mm.

All landing entrance assemblies are to be certified for 2-hour fire rating. **The submission of a valid Fire Test Certificate and entrance design is required at tender submission stage.**

All landing entrance designs and method of installation must be compatible with the lift shaft front wall construction, and installed in accordance with the manufacturer design requirements.

The landing doors shall be located within a bolted angle section frame, which shall consist of two side angles, a bottom sill and a connecting header.

The wall anchors shall be designed to suit the building fabric.

Where sills are fitted to concrete nosing's the recesses are to be cleaned prior to the positioning of the sill and a bonding agent applied prior to the bedding in of the sill. (Bonding agents must be applied in accordance with the manufacturer's instructions).

Where tracks are fitted to a steel angle nosing the angles are to be provided by the contractor and any steel packing used shall be full size track section.

Electro mechanical interlocks shall be provided to each door panel and these shall be provided with metal removable covers. The locks shall be pinned following final positioning. All contacts shall be enclosed.

A triangular lock release mechanism shall be provided at each landing door panel.

A spring loaded lever action automatic door closer shall be provided to each door panel.

Alternatively, gravity type closers may be incorporated. These however, must be metal weights running within plastic tubes fixed to the door frame or other fixed position. Tubes fixed to the rear of the moving door panels will not be acceptable.

Rubber buffers shall be provided to the rear of the doors to prevent them opening more than 5mm beyond the clear opening width.

A full height sight guard shall be fixed to the edge of the leading door panel and shall be finished in the same material as the landing doors. The sight guard may be formed as part of the door panel folding process.

Where any doors contain glass vision panels these shall be of approved Laminated Safety Glass only.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

4:34 STEEL ARCHITRAVES - NEW

The architraves shall be constructed in 3 pieces.

They shall be of steel construction of a minimum 14 swg.

Architraves shall be back filled with concrete.

Steel reinforcing is to be provided at the top of the uprights to securely fix the soffit panel across its full depth.

Fixings shall be designed to suit site conditions.

The architraves shall incorporate additional ties to the 2 uprights to ensure satisfactory bonding of the infill material.

The structural integrity of the architrave shall not be less than that of the original entrance / architrave.

The architraves shall project from between 20mm and 25mm form the finished front wall.

Where the entrance is fire certified the installation of the architrave and any associated fixings shall not compromise the fire integrity of the entrance.

4:35 STEEL ENTRANCE TRIM - NEW

A rectangular section steel trim is to be fitted within the entrance reveals.

In addition to the vertical fixings, the trim shall be fixed to the header of the door frame and all fixings shall be concealed.

The trim shall be of 16 swg steel.

An allowance shall be made for the trims to be made measuring 100mm deep and to project by 13mm from the entrance reveals. The final size of the reveals has yet to be established and may be varied from the above.

4:36 PROTECTIVE SCREENS & GUARDS

1. Equipment guards shall comprise a profiled rod frame with 10 SWG welded mesh infill. Mesh shall be a maximum of 20mm grid. The fixings for the guards are to be easily removable. All fixings shall be of a standard size and require the use of a specific tool for releasing. The tool shall be provided and kept mounted on the machine room/space toolboard. Framed hinged access flaps shall be provided, sensibly sited for ease of inspection and maintenance.

Maple House
11 Kings Square
Bristol
BS2 8JH

SECTION 4

SPECIFICATION

2. Where light fittings are suspended giving less than 2.1 metres clearance they shall be provided with a wire mesh guard.

3. Steel fascias of a minimum 16 SWG shall be provided the full width of the header. Bracing and stiffening is to be provided to prevent distortion. The header is to extend from sill level to the header of the floor below.

4. A ramped toe-guard shall be fitted to the underside of the car of sheet steel construction. It shall extend 50mm beyond each side of the clear opening and be ramped and braced back to the underside of the car. The toe-guard shall be 16 SWG steel sheet minimum and extend 750mm below the car sill. Countersunk screw fixings shall be used at 150mm centres.

   Where a shallow pit depth prevents the use of a standard 750mm fixed length toe guard, a sliding multi-leaf toe guard shall be installed to provide maximum protection for the given dimensions. This design of toe guard shall incorporate an electro-mechanical locking mechanism, released through the use of a standard euro key, such that the lift will only operate normally when the toe guard is in its raised position.

   Instructions on the release of the toe guard to its full length shall be mounted on the face of the toe guard.

5. The counterweight screen shall be of sufficient rigidity to ensure that when a force of 300N is applied over an area of 5cm²the screen shall not deflect to cause the counterweight to collide with the screen. The screen can be of imperforate sheet metal or weld steel mesh, but shall, include an inspection panel to assess the over-travel between the counterweight and buffer. Where clearance does not permit the use of an angle frame, either a flat bar or rod frame is permissible.

   The counterweight screen shall extend from the lowest point of the counterweight when resting on a fully compressed buffer, and a position of no more than 300mm above the pit floor, to a height of no less than 2.5 metres from this point. Where the counterweight guide rails are greater than 150mm from the shaft wall, this area shall also be guarded, apertures for compensation are permitted.

6. A permanent pit access ladder shall be fitted. It shall comprise flat steel steps and a separate grab rail and shall be easily accessible from the lowest terminal landing. Where a removable ladder is provided it shall be electrically interlocked.

7. A balustrade shall be fixed to the rear and sides of the car roof where a void of 300mm or more exists around the perimeter of the car roof. The height of the balustrade shall be 700mm where the void is 500mm or less and 1100mm high where the void is in excess of 500mm. The balustrade shall not run greater than 150mm of the perimeter of the Lift car. The rail shall be a minimum of 35mm square section and when a force of 1000N is applied at any point on the top edge of the balustrade in shall resist without elastic deformation greater than 50mm, also it shall not bridge the car isolation.

   In addition, a 100mm kicking board shall be provided to the car top, which shall be painted in black and yellow diagonal stripes. Where the overhead clearances do not permit the installation of fixed height balustrades, purpose designed folding balustrades shall be provided. Folding balustrades shall incorporate electrical interlocks such that the balustrades must be secured in their folded/stored position before the lift is able to return to normal operation. Advisory/warning signs are to be fixed to the car top and/or balustrades to inform users of the safety procedures when entering the lift shaft.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

4:37 HALL FIXTURES

General
The fixtures shall be fitted within plastic or steel back boxes.

The back boxes shall be keyed before building-in and lie flush with the finished front wall. Where existing back boxes can accommodate the units specified they may be re-used.

Faceplates shall be of 3mm thickness with edges bevelled at an angle of 30º to the face.

Faceplates shall be secured by at least 2 tamper-proof fixings and shall be directly earthed.

Push Buttons
The push buttons shall be of micro movement design with raised tactile facility and shall have both audible and visual call registration indication.

The push buttons shall have dual LED illumination and their pressels shall be in contrast to their surroundings.

Push buttons shall be of the same type and design as the car pushes.

The push buttons shall be installed at a height of between 900mm-1100mm from finished floor level.

Direction of Travel/Position Indicator [Hall Lanterns]
The Hall Lantern shall comprise a visual display unit incorporating a colour TFT indicator behind a coloured diffuser. The display will show the intended direction of travel and car position.

The illumination shall have a minimum size of 50mm x 40mm.

The unit shall incorporate an electronic and audible adjustable tone generator which shall sound once when the committed direction of travel is UP, and twice when the committed direction of travel is DOWN.

The display shall remain illuminated while the Lift is at the floor and until the doors have commenced to close.

The display shall incorporate a scrolling feature as well as separate position and direction of travel indication.

The visual display unit shall be easily visible and legible and shall be capable of displaying a variety of standard messages, including but not restricted to:

Lift Overloaded
Lift Out of Service
Lift on Preference Control
Lift on Fire Control
Lift Returning to Main Floor

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

Alarm
The lift audible alarms shall be clearly identifiable from other building signals. The alarms shall be located within 6 metres of the lift shaft at the main floor and on the car top.

4:38 3-PHASE ELECTRICAL SUPPLY - NEW

The electrical installation shall conform to current IET Wiring Regulations and shall be tested and certified in accordance with these Regulations.

The Contractor shall install a new electrical supply to the machine room/space, terminating in a suitably rated HRC switched fused disconnector, adjacent to the machine room/space access point [one supply per lift].

The new mains supply shall be 415 volts 3-phase, neutral and separate earth rated to suit the new lift equipment.

The new disconnector shall incorporate a facility to lock the switch in the “OFF” position.

In order to avoid potential problems with the control and motor drive systems it is vital that the buildings earthing arrangements are checked and verified for compatibility with the new equipment.

4:39 SINGLE-PHASE ELECTRICAL SUPPLY - NEW

The electrical installation shall conform to current IET Wiring Regulations and shall be tested and certified in accordance with these Regulations.

A certificate from a NICEIC registered electrician is to be issued confirming the adequacy of the new supply.

A new single phase supply will be provided which is to be terminated in a suitable consumer unit per lift or group to separately supply the following:

(a) Car lighting and car emergency lighting.
(b) Shaft lighting.
(c) Machine space/pulley room lighting.
(d) Machine space /pulley room/pit emergency lighting.
(e) Machine space heating.
(f) Machine space ventilation.
(g) Alarm supply.
(h) Machine space, lift pit and/or pulley room power sockets.

The lift contractor shall install the new supply and all necessary wiring.

It is vital that the buildings earthing arrangements are checked and verified for compatibility with the new equipment.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

4:40 SINGLE PHASE ELECTRICAL REQUIREMENTS

The electrical installation shall conform to current IET Wiring Regulations and shall be tested and certified in accordance with these Regulations.

The following is to be provided by the Lift Contractor:

Machine Space Lighting
Machine Space lighting shall comprise double tube fluorescent fittings sensibly sited to give an even spread of light with a minimum of 200 lux at floor level in all work areas.

It is permissible to retain existing fluorescent light fittings where these are in good condition and sensibly sited, but new tubes and starters are to be fitted.

All machine space lighting shall be switched from a position adjacent to the normal machine space access. The switch to incorporate an emergency machine space light test facility.

Light fittings adjacent to control equipment, hoisting machines and access door shall incorporate an emergency light conversion unit to operate either existing or new luminaires giving 3 hours maintained illumination.

Secondary machine spaces shall be provided with light fittings of similar characteristics. All fittings to be approved by the Engineer.

Machine Space Heating
Enclosed tubular heaters with remote thermostatic controls shall be wall mounted and positioned safely.

The heaters shall be fed from a separately protected supply.

The heater must be capable of maintaining the machine room/space at a minimum of 5ºC with an outside ambient air temperature of 0ºC.

A suitable protective guard shall be provided.

All fittings to be approved by the Engineer.

Power Outlets
13 amp socket outlets shall be provided close to the position of the main switch in the machine space and adjacent to the stop/run switch in the lift pit and secondary machine rooms.

The socket outlet is to be switched and shall incorporate an illuminated indicator to show power ON.

If the supply for the emergency lighting of the Lift car is taken from the machine room/space, it shall be from a switched outlet point incorporating an illuminated indicator and positioned adjacent to the main switch.

All power socket outlets shall have RCCD protection.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

All fittings to be approved by the Engineer.

Lift Shaft Lighting
Shaft lighting shall comprise twin bulkhead fluorescent fittings with each lamp wired to operate independently should either lamp fail. The level of lighting shall be at least 50 lux, 1 metre above the car roof and the pit floor even when all doors are closed, and a minimum of 20 lux within all other areas.

Diffusers shall be of a high impact resistant prismatic type held by captive screws.

Fittings shall be located at 500mm from the head of the shaft, 500mm from the pit floor and one at each floor level.

The shaft lights shall be positioned such that lamps or tubes can be easily replaced from the car top.

All fittings to be approved by the Engineer.

The luminaire within the pit area and top of shaft shall incorporate an emergency back-up supply providing 3 hours maintained illumination.

Shaft lighting shall be 2-way and intermediate switched. The switches shall be located as follows:

One in the machine space.
One on the car top (on or adjacent to the car top control unit).
One within the lift shaft accessible from the lowest terminal floor landing. The lowest terminal floor shaft light switch shall incorporate a facility to test the pit emergency luminaire.

The wiring shall be within galvanised steel conduits, and all bends and elbows shall be completed with the use of access boxes fitted with screwed covers.

4:41 LIFTING BEAMS - NEW

Suitable lifting facilities shall be installed in the machine space/top of the shaft, marked with their Safe Working Load upon a traffolyte label secured to the beam and a copy of the Test Certificate(s) shall be plastic encapsulated and displayed in the machine space.

4:42 LIFTING BEAM – RETAIN & OVERHAUL

The existing lifting facilities if to be reused are to be inspected, tested and marked with their Safe-Working Load upon a traffolyte label secured to the beam and a copy of the Test Certificate(s) shall be plastic encapsulated and displayed in the machine space.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

4:43 GENERAL STEELWORK

Where the specification provides for equipment requiring supporting, adapting or additional steelwork the Lift Contractor shall be responsible for supply and fit. The location, position of all such steelwork shall be identified on the Lift Contractors drawings.

4:44 STRUCTURAL ASSESSMENT

The lift contractor shall allow for cost and arrange with an appropriate specialist to verify the adequacy of the existing building fabric to suit the loadings imposed by the new equipment. The structural survey and report is to be carried out by a qualified Structural Engineer and provided with the layout drawings.

4:45 ASBESTOS SURVEY

The lift contractor shall allow for cost and arrange with an appropriate specialist to undertake a full (type 2) Asbestos survey of the lift housing structure and associated working areas.

4:46 PAINTING

The following schedule of painting is for guidance and pricing purposes only. The final finish colours may vary and will be advised by the Engineer prior to work being undertaken.

All painting including priming and undercoating shall be completed in accordance with the paint manufacturer's instructions.

Any factory-sprayed equipment shall be to the standard contractor's colour. If any factory-sprayed equipment becomes damaged then it must be properly re-sprayed on site to leave the equivalent of a factory applied finish.

Where equipment to be painted on site has become rusted, or is otherwise coated in some form of protection, it shall be solvent cleaned, all rust and deposits removed and then painted in accordance with the paint manufacturer's instructions.

All spray painting shall be undertaken outside of normal working hours.

All paint shall be non-toxic and low fume.

Final Finish Colours

Royal Blue Gloss:

Complete hoisting machine.
Generator.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

Black Gloss oil-based enamel to
BS4800 BS No 00-E-53

All machine supporting steels.
Machine bedplate.
Diverter mountings.
Machine room/space access ladders and barriers.
Rope hole reducers.
Toolboard.
Lifting beams (where less than 2.1 metres clear headroom,
2" YELLOW diagonal stripes to be added).
Matt Black shaft side of car and landing doors.
Door frames and angle nosing's.
Guide brackets and guides.
Car and balance weight frames.
Fascia's and toe-guards.
Buffer channels and drip trays.
Decking.
External faces of lift car (unless Zintec or stainless steel sheet) and car top equipment.

Grey Gloss oil-based enamel to
BS4800 BS No 00-A-01

Shaft division steels and top steels.
Shaft screen framing and screens.

Yellow Reflective to BS4800

All rotating pulleys, sheaves, flywheels.
Brake release device.
Counterweight frame and fillers.
Car top perimeter.
Access ladders.
Car top and pit area refuge spaces.

Orange Reflective to BS4800

All wire mesh guards except shaft division screens.
2:1 pulley guards.
Car top barriers.
Rope traverse guards.

Spray cellulose semi-gloss to BS4800 colour to selection

Landing entrances.
Car entrances.
Lift car.

Machine space, shaft and pulley rooms

At the commencement of site works all machine, shaft and pulley room walls and ceilings shall be sealed with a suitable sealant and one coat of white emulsion applied.

At the conclusion of the installation two further coats of white emulsion are to be applied to machine, shaft, ceilings and pulley rooms and two coats of proprietary floor dressing are to be applied to each floor.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 4

SPECIFICATION

Lift Pit
The lift pit is to be cleaned, degreased and painted with two coats of proprietary floor dressing, up to 300mm from the pit floor upon completion.

4:47 **NOTICES** [See Sketch SK No1]

Where standard wording is used notices shall be of the prescribed standard size.

All notices shall be in English.

Notices shall be screw fixed.

Notices shall be screw fixed or engraved on the relevant item.

All non-standard signs shall be manufactured from Paxolene, Traffolyte or Fibrolyte, or similar purpose-made material.

They should be engraved through the face of the base material to display the colour of the middle layer.

A suitable notice, above the ground floor entrance, shall be fitted, to advise that the lift car has been wired with an inductive loop system.

The colours of signs and notices shall be as follows:

Prohibition:	White script on red background.
Warning:	Black script on yellow background.
Mandatory:	White script on blue background.
Emergency/Safe Condition:	White script on green background.
Information:	Black script on white background.

Machine Space Notices:

Notices of the appropriate kind shall be fitted to the following, where applicable:

Machine room/space door and access traps.
Controller doors advising of live condition.
To consumer units and all controlled electrical circuits.
Identification of each machine controller isolator, governor & generator.
Direction of rotation of hoisting motor.
Gear lubricant type.
All run/stop switches.
Wheelhouse doors.
Fully detailed and illustrated handwinding instructions incorporating the use of the emergency handwinding floor level indicator system.
Emergency passenger release procedure.
Electric shock notices.
Asbestos / Asbestos free brake linings.

SECTION 4

SPECIFICATION

Tool board identification.
Governor data plate information.
Intercom and telephone terminations and systems.

Safe working loads on lifting beams. The load details must be in the form of a separate notice and painting of this information on the steels will not be acceptable.

Where applicable, a notice shall be displayed to advise the correct procedure, when gaining access to the lift car top from the landing entrance, to operate the lift on test control and to return the lift to normal service when exiting the shaft.

All electrical junction box terminals shall be identified with a permanent label.

Lift Shaft Notices:

Restricted headroom.
Advising clearance from crosshead and where applicable restricted headroom.
UP test limit.
Pit switch.
Shallow or deep pit configuration.
Shaft lighting switch.
Hydraulic buffer oil type.
Buffer data plate.
Sump pump details.
Car crosshead data plate.
All mechanics car control station switches.
To the rear of each landing entrance the relevant floor number will be stencilled in 75mm high white numerals.

4:48 MISCELLANEOUS

Control Panel mats, appropriately marked with their safe insulation value, are to run the full width of the control cabinet and to a minimum of 1 metre to the front of the cabinet. Where rear access is required then a suitable insulating mat shall be provided.

Tool Board. The board shall accommodate the landing door release key, tool for release of all guarding, hand winding wheel brake release device and padlock for mains disconnector. Each component shall be clearly identified by permanent labels and the design of the complete unit shall be approved by the Engineer. A pocket enclosure shall be provided for the Maintenance Log Cards and Supplementary Test Certificates.

Legend for all controller components.

Maintenance Log Cards.

A portable collapsible entrance barrier complete with requisite danger notice, stored within the machine room/space.

SECTION 4

SPECIFICATION

A mechanical restraint where the safe man clearance space beneath or on top of the car is below the minimum requirements as defined within the Harmonised European Standard.

A wall mounted spares cabinet is to be provided of sheet steel construction having a key lockable door and adjustable shelf to be approximately 600mm high, 600mm wide, 300mm deep. The cabinet shall be similar in design and finish to the control panel cabinet. (This will only be required on group installations).

3 sets of operating and emergency keys with all identifying labels.

A handwinding wheel and brake release lever shall be provided.

The **safe refuge spaces** shall be clearly marked and identified within the pit and on the car top.

Where equipment or procedures require a preset sequence or events these shall be detailed on notices in appropriate locations as required by the Lift Consultant.

A facility shall be provided to enable **emergency manual movement** of the lift car under all load conditions.

4:49 TESTING, WITNESS TESTING & HANDING OVER

After installation the Contractor shall carry out his own testing and commissioning procedures following which they shall complete any outstanding items. A copy of the Contractor's items list and completed test sheet must be supplied to the Engineer appointed to carry out the Witness Test. Only after this has been received will witness testing be undertaken.

Where the lift contractor has not completed this procedure, resulting in the failure of the witness test, where the unit requires subsequent retesting, we reserve the right to contra charge the lift contractor for the abortive test/visit by a negative variation order.

Witness Testing will be carried out in accordance with the appropriate Sections of British Standard Specification 5655: Part 10.1.1:1995, PAS 32-1:1995 and/or BS8486-3:2017 plus all subsequent revisions. It will be carried out in the presence of the Engineer and shall incorporate all requirements as set out in the Specification.

Full dynamic tests shall form part of the full witness test procedures. These shall be but not necessarily confined to:

- Rated load/rated speed buffer tests to car and counterweight.
- Minimum rated load/rated speed or lower (depending on Code Standard Requirements) car and counterweight safety gear test.
- Uncontrolled upward movement test.
- Movement away from landing with car door open test.
- 125% rated load brake test.
- Rope brake test.
- Traction test.
- Door pressure test.

SECTION 4

SPECIFICATION

Full control and dispatching systems check shall be undertaken upon completion of each lift in any group.

The cost of any consequential damage to the lift car, finishes and equipment shall be covered by the Lift Contractor.

All test weights, thermometers, instruments and personnel shall be provided together with the appropriate "Test and Examination" Certificates duly completed including all Certificates required.

Personnel carrying out the witness tests shall be the Test Engineer who tested on behalf of the Contractor.

Items requiring rectification following the test shall be carried out by the installing engineers who should also be present during the witness testing procedure.

The Contractor shall not offer the installation for witness testing until all works are completed including the Contractor's own testing and application of all finishes.

The Contractor shall give a minimum of one weeks' notice to the Engineer prior to the date for testing and immediately advise of any changes.

If the installation is not ready for testing at the appointed time then any subsequent visits by the Engineer may be to the cost of the Lift Contractor. [*It is to be noted that test items are considered to be adjustments and minor rectifications only*].

Following completion of the witness testing a date will be set for the completion of any outstanding items. When these have been confirmed by the Contractor as completed, the Engineer will accept the installation at a formal handover in the presence of the Contractor.

Tenderers are to note that their programme must include for the testing and snagging periods and completion will not be granted until all items have been accepted.

A full set of Test Certificates and where appropriate CE marking and Declaration of Conformity shall be provided upon completion including a grading certificate for all stainless steel, plus Certificates for all electrical services.

4:50 TWELVE MONTHS DEFECTS LIABILITY & MAINTENANCE PERIOD

From the date of **Completion** on the project the contractor shall commence the fully comprehensive maintenance and defects liability which shall continue for 12 months or as otherwise agreed.

Regular maintenance shall be carried out monthly and shall include the cleaning, oiling, greasing, adjustment and replacement or repair of all parts of the installation and accessories as necessary to ensure satisfactory operation of the installation, including checking of levelling and making any necessary adjustments. Maintenance visits must be carried out strictly on a one visit per Lift, per month basis and under no circumstances will the routine maintenance visit be incorporated with the periods of attendance for breakdowns or other specific requests.

SECTION 4

SPECIFICATION

Any components which become necessary but are not covered by the Defects Liability shall be provided at no extra cost.

The servicing of the Lift during the initial twelve months Defects Liability & Maintenance Period shall include the full cleaning of the lift machine room/space, lift pit and lift shaft and shall include the cleaning and dusting of all voids, ledges, and internal building fabric in addition to the installed Lift equipment.

The Contractor will not be permitted to store cleaning material, grease or oil in the lift shaft or machine room/space.

The Contractor shall renew all lamps which may be found at the time of any inspection to be defective. This includes shaft lighting, machine and car lighting.

A report shall be made available, upon request, which shall provide details of the following:

The service visits performed and their dates.

Whether the installation is in a satisfactory and serviceable condition.

A detailed list of all breakdowns and other site attendance together with the remedial action taken.

The Contractor must attend to breakdowns and emergency visits on a 24-hour a day basis at no extra cost.

The Contractor shall include for giving full instructions as to the running, operation and hand winding of the installation to the Employer's appointed staff or their client's appointed employees.

Failure to submit the reports as requested will result in the final payment not being released. [Refer to appropriate section in this Specification].

4:51 ASSOCIATED SPECIFIC WORKS

The information and requirements of the INTRODUCTION & PREAMBLE form an integral part of the Contract requirements**.**

- Protective covering to landing architraves.
- Fire stopping around fire rated entrances.
- A colour/shade differential between car and landing floor finishes.
- Making good of any holes in lift shaft or machine room/space, including any fire stopping where applicable.
- Protective covering to existing finishes.
- Making good of existing finishes to agreed demarcation line.
- Special key switch operations.

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 5

TECHNICAL & CONSTRUCTIONAL DETAILS OF EQUIPMENT

The following information, where appropriate to the installation, shall be supplied by the Contractor when submitting his tender:

HOIST MOTOR	**Lift No.**
Make & Type	
Starts per hour	
Motor R.P.M.	
Lift Speed	
Type of Ventilation	
Protection	
Starting Current	
Full Load Running Current	
KW Rating	
HRC Disconnecter Rating	
Heat Output	
Average Power Factor	
Drive System	
Open or Closed Loop	
Initial Jerk Rate	

BRAKE	**Lift No.**
Type	
Size	

SAFETY DEVICE (DOWNWARD MOVEMENT)	**Lift No.**
Manufacturer & Type	
Location	
Method of Release	

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 5

TECHNICAL & CONSTRUCTIONAL DETAILS OF EQUIPMENT

SAFETY DEVICE (UPWARD MOVEMENT)	**Lift No.**
Manufacturer & Type	
Location	
Method of Release	

SUSPENSION ROPES / BELTS	**Lift No.**
Manufacturer & Type	
Number & Arrangement	
Diameter	
Tensile Strength	
Construction & Lay	
Breaking Strain Per Rope	
Type of Anchorage	
Number of Compensating Ropes	
Diameter of Compensating Ropes	

PROTECTION AGAINST INVOLUNTARY MOVEMENT FROM LANDING WITH DOORS OPEN	**Lift No.**
Manufacturer & Type	
Location	
Method of Release	

REDUCED PIT AND HEADROOM REFUGE SPACE PROTECTIVE DEVICES	**Lift No.**
Manufacturer	
Type	
Location	

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 5

TECHNICAL & CONSTRUCTIONAL DETAILS OF EQUIPMENT

GOVERNOR (CAR)	Lift No.
Manufacturer & Type	
Mechanical Tripping Speed	
Electrical Tripping Speed	

GOVERNOR ROPE (CAR)	Lift No.
Manufacturer	
Diameter	
Tensile Strength	
Construction & Lay	
Breaking Strain	
Form of Anchorage	

CONTROL PANEL	Lift No.
Manufacturer	
Type	
Control Voltage	
Eco-Mode Incorporated?	YES / NO
Regeneration Module Incorporated?	YES / NO
Floor/Wall Mounted	
Front/Rear Access	

SHAFT POSITIONING REFERENCE SYSTEM	Lift No.
Manufacturer	
Type	
Control Voltage	

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 5

TECHNICAL & CONSTRUCTIONAL DETAILS OF EQUIPMENT

GUIDES & FIXINGS	**Lift No.**
Manufacturer	
Car Guide Size	
Pitch of Fixings	
Counterweight Guide Size	
Pitch of Fixings	
Independent or Combination Car/Counterweight Brackets	

BUFFERS (CAR)	**Lift No.**
Manufacturer & Type	
Number	
Rate of Retardation	
Stroke	

BUFFERS (CWT)	**Lift No.**
Manufacturer & Type	
Number	
Rate of Retardation	
Stroke	

COUNTERWEIGHT	**Lift No.**
Type	
Type of Rope Anchorage	

CAR & CAR FRAME		**Lift No.**
Approximate Weight of Car and Sling		
Isolation		
Internal Car Sizes:	Width:	
	Depth:	
	Height:	

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 5

TECHNICAL & CONSTRUCTIONAL DETAILS OF EQUIPMENT

LIFT SHAFT		**Lift No.**
Existing / New		Existing / New
Construction		Masonry / Concrete / Steel Frame
Internal Shaft Sizes:	Width:	
	Depth:	
	Pit:	
	Headroom:	

GUIDE SHOES	**Lift No.**
Manufacturer & Type	
Length of Sliding Shoe	
Insert Material	
Number & Diameter of Rollers	
Spring Loaded ?	YES / NO

DOOR OPERATOR (FRONT)	**Lift No.**
Manufacturer	
Type	
Type of Door Motor Protection	
Type of Passenger Protection	
Type of Car/Landing Door Coupler	
Out of Floor Zone Locking	YES/NO

CAR & LANDING ENTRANCES		**Lift No.**
Manufacturer		
Type		
Clear Entrance Dimensions:	Width:	
	Height:	
Type of Emergency Release		
UK Certificated Fire Rating (Landings)		YES/NO
Sill Type and Support		

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 5

TECHNICAL & CONSTRUCTIONAL DETAILS OF EQUIPMENT

OPERATING FIXTURES		**Lift No.**
Manufacturer (Car and Landing)		
Type (Car and Landing)		
Type of Position Indicators		
Manufacturer of Position Indicators		
Indicator Display Size:	Width:	
	Height:	

COMMUNICATION SYSTEM	**Lift No**
Manufacturer	
Type	

TELEPHONE NUMBERS TO BE USED FOR EMERGENCY CASES:

NAMES AND ADDRESSES OF PREMISES WHERE INSTALLATIONS SIMILAR TO THOSE BEING OFFERED MAY BE INSPECTED BY THE LIFT CONSULTANT:

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 6

PERFORMANCE DATA

The tenderer is to complete the following information to evaluate Lift Performance, Handling Capacity and Ride Comfort.

	Detail	
1.	Full door opening time.	Secs
2.	Full door closing time.	Secs
3.	Door dwell time.	Secs
4.	Is advanced door opening included?	Yes / No
5.	Acceleration from zero to full speed.	Secs
6.	Deceleration from full speed to zero.	Secs
7.	Floor to floor flight times [door open to door open] for:	
	[i] Single floor run	Secs
	[ii] Two floor run	Secs
	iii] Three floor run	Secs
8.	Jerk rate initial setting.	Secs
9.	Adjustment in jerk rate.	Secs
10.	Vibration	Secs
11.	Noise Levels	Secs

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 7

APPROVED SUB-CONTRACTORS AND SPECIALISTS

The following list of suppliers and sub-contractors is offered to the Contractor as a guide to the preferred specialists who are known by the Engineer. This list is not to be considered definitive and does not prevent the tenderer from offering his own equipment where this is of approved and equal design and performance or putting forward an alternative from a different source.

The Engineer, however, reserves the right to sanction the use of equipment or sub-contractors at all times, whether mentioned in this list or not and it is to be noted that all sub-contractors are to be quality assured to ISO 9001 – 2000.

The tenderer shall not, without the written authority of the Engineer, put forward a product or sub-contractor at the tender stage and then substitute an alternative product or sub-contractor when the work proceeds.

At all times the tenderer will be responsible for the performance and design of equipment and/or sub-contractors.

Builders & Associated Works
Drurycourt Ltd
P H Jackson & Son (Building) Ltd
Elevator Building Services
M D Construction (Bolton) Ltd

Steel Structures
Drurycourt Ltd
Evans Turner (Finishes) Ltd
Propbrook Ltd
Scott Fabrications
Major Lift Services Ltd
Essex Wire Works Ltd

General Guarding
As Steel Structures, plus
Liftech Ltd
Cocare Ltd
Delmark
Surrey Engineering
Seagrave Metal Works
Triple A Lift Refurbishment (NW) Limited
Bramptons Lift Manufacturers Ltd

Hoisting Machines
Hollister-Whitney Elevator Corporation
Sassi Lift Systems Ltd.
Lift Components Ltd
Leroy Somer - Gearless
Global Lift Equipment

Motors
Loher
Sassi
Ziehl Abegg

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 7

APPROVED SUB-CONTRACTORS AND SPECIALISTS

Pulleys & Divertors
Pye London
Brownings Electric
Hollister Whitney
Sassi

Door Operators (Speed to be electronically adjustable)
GAL Manufacturing
MAC
Propbrook
Selcom
Sematic
Prisma

Car/Landing Entrances
GAL
MAC
Propbrook
Selcom
Sematic
Prisma
Mullhouse
Meiller
Earlswood

Control Systems
International Lift Equipment Ltd
Kollmorgen UK Ltd
Lester Controls Ltd
Lifteknic Ltd
Liftstore (Thames Valley Controls Ltd)
Motion Control Engineering (MCE)
NEW
Digital Advanced

Specialist Finishes [Lift Cars, Entrances &c]
Evans Turner (Finishes) Ltd
P H Jackson & Son (Building) Ltd
Mulhouse Ltd
H H Martyn
Lift Cars Ltd
Triple A
MarCo Specialist Interiors Ltd
Stirling
GB Lifts

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 7

APPROVED SUB-CONTRACTORS AND SPECIALISTS

Pushes & Indicators
Liftstore
GAL
Schaffer
Drucegrove
Adams
Switching Components
Lift Components
C.E.Electronics
A & A
Stentorgate

Car Door Protection / Detectors
Memco
Sonaray
Visulux
Drucegrove/Formula Systems
T L Jones

Lift Factors (where not listed above).
International Lift Equipment Ltd
Sassi
Lift Components Ltd.
Shorts Lifts
Global Lift Equipment Ltd
Wittur
CTV
NEW
Atwell

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 8

FORM OF TENDER & SUMMARY

FINANCIAL

LIFT INSTALLATION AS SPECIFIED:	**£**
Lift 1	**£**
Builders Works	**£**
Electrical Works	**£**
Asbestos Survey	**£**
Structural Survey	**£**
TOTAL COST AS SPECIFIED	**£**
CONTINGENCY	**£**
COST PER LIFT PER MONTH FOR EXTENDED WARRANTY	**£**
CURRENT FULLY COMPREHENSIVE CONTRACT SUM	**£**
CURRENT LEIA SERVICE INDEX	
CURRENT LEIA – INSTALLATION INDEX	

Working Director's Signature: _____

Name & Address of Company Tendering: _____

_____

_____

Date: _____

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 8

FORM OF TENDER & SUMMARY

PROGRAMME

DRAWING PRODUCTION FROM RECEIPT OF ORDER	**Weeks**
CLIENT DRAWING APPROVAL PERIOD	**Weeks**
MANUFACTURING PERIOD FROM APPROVAL OF DRAWING (Including delivery to site).	**Weeks**
LIFT INSTALLATION PERIOD: **LIFT 1** [This shall be the full period on site including preliminary works and electrical work through to completion of the Contractor's testing procedure] **Builders / Electrical Works**	 **Weeks** **Weeks**
Consultant's Test	**1 Day**
Snagging Period	**Weeks**
TOTAL CONTRACT PERIOD	**Weeks**
FIXED PRICE EXPIRES	
TENDER OPEN FOR ACCEPTANCE	**26 Weeks**

Working Director's Signature: _____

Name & Address of Company Tendering: _____

_____

_____

Date: _____

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 9

DECLARATION

I/WE declare that the tender submitted is a bona fide tender and has not been prepared in collusion with other tenderers.

The tender fully covers the order, design, manufacture, supply, installation and maintenance as detailed in the Specification and covered by the Conditions of Contract and Contract Documents and it will be my/our intention to complete the said works in an efficient and workmanlike manner within the period stated, subject to there being no delays on the part of others.

I/WE confirm that we have made sufficient allowance in this tender for the resources of both time and money in order to undertake the works in a safe manner and have included in our Safety Plan the requirements of the Pre-Tender Safety Plan.

I/WE will also ensure that the methods employed with the installation and all completed works will meet the highest level of quality for the given item/component and the installation as a whole.

I/WE declare that in submitting this tender, Ref: I/WE confirm having a full understanding of the works/equipment involved and I/WE have familiarised myself/ourselves with the scope and intent of all works covered by my/our tender.

Signature [Director's signature only]: _____

For & On Behalf of: _____

_____

_____

_____

Date: _____

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 9

SCHEDULE OF DEVIATIONS FROM THE CONTRACT

[To be completed by the Lift Contractor]

Clause Nº	Deviation

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 9

SCHEDULE OF DEVIATIONS FROM THE CONTRACT

[To be completed by the Lift Contractor]

Clause Nº	Deviation

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 10

DETAILS OF PROPOSED SUB-CONTRACTORS & SPECIALISTS

Where the sub-contractors proposed are not from the approved list the Contractor must confirm details so that they can be approved by the Engineer.

Name and Address of Proposed Sub-Contractor	Scope of Proposed Sub-Contract Works

Working Director's Signature: _____

Name & Address of Company Tendering: _____

_____

_____

_____

Date: _____

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

SECTION 11

FORMAL AGREEMENT

This Agreement is made the day of *between

[hereinafter called "the Employer"] on the one part and

of
[hereinafter called "the Contractor"] whereby the following is agreed in respect of the Lifts installed at as shown in the Schedules of the tender documents.

Accepted Tender Sum £ p.a.

Qualifications and amendments agreed [leave blank pending agreement being made*]

Doc Ref:	Qualification Ref:	Doc Ref:	Qualification Ref:	Doc Ref:	Qualification Ref:

* Where indicated the Contractor to leave blank

Client Signature: _____ Contractor's Signature: _____

Title of Signatory: _____ Title of Signatory: _____

Witness Signature: _____

Title of Signatory: _____

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

APPENDIX 1

SCHEDULE OF ATTENDANCES AND ASSOCIATED WORKS

The Lift Sub-Contractor is to make due allowance within his tender for the following associated works and attendances:

SCHEDULE OF ATTENDANCES AND ASSOCIATED WORKS				
Item	**By LC**	**By MC**	**N/A**	**Remarks**
1. Use of shared welfare facilities.		✓		
2. Space only for materials and plant.		✓		
3. Unloading.	✓			
4. Secure storage.	✓			
5. Distribution to proximity of works.	✓			
6. Site Safety lighting.	✓			
7. Three phase and single phase power supply for the lift.		✓		New riser by lift contractor
8. Setting out.	✓			
9. Working drawings.	✓			
10. Comment on drawings.		✓		
11. Fire proofing to service holes passing through fire walls.	✓			
12. Special access / hard standing.	✓			
13. Hoisting / craneage.	✓			
14. Testing.	✓			
15. Power during testing and commissioning.		✓		
16. Protection of unfinished/completed works.	✓			
17. Provision of tools.	✓			
18. Competent full time supervisor.	✓			
19. Safety officer.	✓			

Maple House
11 Kings Square
Bristol
BS2 8JH

Project No. C20512

APPENDIX 1

SCHEDULE OF ATTENDANCES AND ASSOCIATED WORKS

The Lift Sub-Contractor is to make due allowance within his tender for the following associated works and attendances:

SCHEDULE OF ATTENDANCES AND ASSOCIATED WORKS				
Item	**By LC**	**By MC**	**N/A**	**Remarks**
20. Protection of lift car.	✓			
21. Lifting beam installation and testing.	✓			
22. Lift Machine supporting steelwork.	✓			
23. Permanent shaft lighting and power.	✓			
24. Temporary task lighting/hand tools, leads etc.	✓			
25. Shaft scaffolding (when required).	✓			
26. Sealing of lift shaft interior walls.	✓			
27. Pit access ladder.	✓			
28. Guide fixings.	✓			
29. Entrance sills and architraves.	✓			
30. Entrance sill support angles.	✓			
In addition, the Lift Contractor (LC) shall place all waste arising from these works in the facility provided on site by the Main Contractor (MC).				