AVISON YOUNG

Department for Environment Food & Rural Affairs

Perfromance Specification
EA, Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS
Hydraulic Lift Refurbishment

December 2020

Contents

Appendices

Date: December 2020

Doc Ref: 01C000592

Version: -

1. Preliminaries

Hydraulic Lift Refurbishment

EA, Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS

SECTION 1 – PRELIMINARIES

1.1 INSTRUCTIONS & DESIGN

The tenderer shall examine the numbers on each page of the Specification / Schedules of Work and if any page is missing or duplicated, or if any text or figures are indistinct, he shall immediately notify the Project Manager.

The tenderer shall not alter the text of the tender documents without the written authorisation of the Project Manager/Lift Consultant. Any unauthorised amendment will be ignored.

A price or rate shall be entered against each item in the Specification, including the Preliminaries. Any item not priced will be deemed to have been allowed for in the other prices or rates. Before a tender is accepted, an analysis of all prices in the Preliminaries shall be provided; the analysis shall include in respect of temporary works and accommodation, separate details of setting-up, maintaining, moving, clearing away and the like, in order that interim payments may be equitably valued.

Tenderers are to price and extend the Specification and complete the tender documents in black ink that can be clearly reproduced on photographic copies.

Tenders received by any other means, including facsimile, will be invalid.

The Employer is not bound to accept the lowest or any tender.

The Employer accepts no liability for any costs incurred in the preparation and submission of tenders.

The term Project Manager and Lift Consultant are interchangeable and both equals the same.

For the avoidance of doubt the Contractor is responsible for the design and workmanship of all items of the works. This document is performance specification only.

1.2 SHORT FORM OF CONTRACT

NEC3

Engineering and Construction

Short Contract

A contract between The Environment Agency

and **TBC**

for Proposed works to existing passenger lifts

2. Contract Data

	The *Employer* is
Name	Environment Agency
Address	Environment Agency Rivers House Bridgwater, Wylds Road, Bridgwater, Somerset TA6 4YS
E-mail address	FacilitiesHelpdeskBr@environment-agency.gov.uk
The *works* are	Lift Refurbishment Works
The *site* is	Rivers House Bridgwater, Wylds Road, Bridgwater, Somerset TA6 4YS
The *starting date* is	TBC
The *completion date* is	TBC
The *period* for reply is	3 weeks
The *defects date* is	52 weeks after Completion
The *defects correction period* is	5 working days
The *delay damages* are	£500.00 per week
The *assessment day* is	the last working day of each month
The *retention* is	2.5%
The United Kingdom Housing Grants, Construction and Regeneration Act (1996) as amended by the Local Democracy, Economic Development and Construction Act 2009 applies	No
The *Adjudicator* is	the person appointed as follows: In the event that a first dispute is referred to adjudication, the referring Party at the same time applies to the RICS to appoint an *Adjudicator*. The application to the RICS includes a copy of this definition of the *Adjudicator*. The referring Party pays the administrative charge made by the Institution. The person appointed is also *Adjudicator* for later disputes.

The interest on late payment is 4% per annum above the Bank of England Base Rate.

The *Contractor* is not liable to the *Employer* for loss of or damage to the *Employer's* property in excess of £5,000,000 for any one event.

Contract Data

The *Employer* provides this insurance None

Insurance Table		
Event	**Cover**	**Cover provided until**
Loss of or damage to the *works*	The replacement cost	The Employer's certificate of Completion has been issued
Loss of or damage to Equipment, Plant and Materials	The replacement cost	The Defects Certificate has been issued
The *Contractor's* liability for loss of or damage to property (except the *works*, Plant and Materials and Equipment) and for bodily injury to or death of a person (not an employee of the *Contractor*) arising from or in connection with the *Contractor's* Providing the Works	Minimum £5,000,000 in respect of every claim without limit to the number of claims	
Liability for death of or bodily injury to employees of the *Contractor* arising out of and in the course of their employment in connection with this contract	The amount required by the applicable law	
Failure of the *Contractor* to use the skill and care normally used by professionals providing works similar to the *works*	Minimum £1,000,000.00 in respect of every claim without limit to the number of claims	12 years following Completion of the whole of the *works* or earlier termination

The A*djudicator* nominating body is the RICS

The *tribunal* is litigation in the courts

The *conditions of contract* are the NEC3 Engineering and Construction Short Contract (June 2005), and as amended June 2006, September 2011 and April 2013, and the following additional conditions

Z1 Sub-Contracting

Z1.1 The *Contractor* submits the name of each proposed sub*contractor* to the *Employer* for acceptance. A reason for not accepting the sub*contractor* is that his appointment will not allow the *Contractor* to Provide the Works. The *Contractor* does not appoint a proposed sub*contractor* until the *Employer* has accepted him.

Z1.2 Payment to sub*contractor*s and suppliers will be no more than 30 days from receipt of invoice.

Z2 Environment Agency as regulatory authority

Z2.1 The Environment Agency's position as a regulatory authority and as *Employer* under the contract is separate and distinct. Actions taken in one capacity are deemed not to be taken in the other.

Z2.2 Where statutory consents must be obtained from the Environment Agency in its capacity as a regulatory authority, the *Contractor* is responsible for obtaining these and paying fees. The *Employer's* acceptance of a tender and the *Employer's* instruction or variation of the *works* does not constitute statutory approval or consent.

Z2.3 An action by the Environment Agency as regulatory authority is not in its capacity as

Employer and is not a compensation event.

Z3 Delete the text of Clause 60.1(12) and replace by:
The *works* are affected by any one of the following events
- War, civil war, rebellion revolution, insurrection, military or usurped power
- Strikes, riots and civil commotion not confined to the employees of the *Contractor* and sub-*Contractor*s
- Ionising radiation or radioactive contamination from nuclear fuel or nuclear waste resulting from the combustion of nuclear fuel
- Radioactive, toxic, explosive or other hazardous properties of an explosive nuclear device
- Natural disaster
- Fire and explosion
- Impact by aircraft or other device or thing dropped from them

Z4 Confidentiality & Publicity

Z4.1 The *Contractor* may publicise the works only with the *Employer*'s written agreement

Z5 Correctness of Site Information

Z5.1 Site Information about the ground, subsoil, ducts, cables, pipes and structures is provided in good faith by the *Employer* but is not warranted correct. The *Contractor* checks the correctness of any such Site Information he relies on for the purpose of Providing the Works.

Z6 The Contracts (Rights of Third Parties) Act 1999

Z6.1 For the purposes of the Contracts (Rights of Third Parties) Act 1999, nothing in this contract confers or purports to confer on a third party any benefit or any right to enforce a term of this contract.

Z7 Design

Z7.1 Where design is undertaken, it is the obligation of the *Contractor* to ensure the use of skill and care normally used by professionals providing similar design services.

Z7.2 The *Contractor* designs the parts of the works which the Works Information states he is to design

Z7.3 The *Contractor* submits the particulars of his design as the Works Information requires to the *Employer* for acceptance. A reason for not accepting the *Contractor's* design is that it does not comply with either the Works Information or the applicable law.

The *Contractor* does not proceed with the relevant work until the *Employer* has accepted his design

Z7.4 The *Contractor* may submit his design for acceptance in parts if the design of each part can be assessed fully.

Z7.5 The *Employer* own the *Contractor's* rights over material prepared for this contract by the *Contractor* except as stated otherwise in the Works Information. The *Contractor* obtains other rights for the *Employer* as stated in the Works Information and obtains from a sub*contractor*/consultant equivalent rights for the *Employer* over the material prepared by the sub-*Contractor*/sub-consultant. The *Contractor* provides to the *Employer* the documents which transfer these rights to the *Employer*.

Z7.6 No use may be made by the *Contractor* of any material prepared for this contract by them, for purposes other than those stated in the Works Information without the

Employer's prior agreement.

3. Works Information

Definitions

This document will be construed using the definitions and interpretations set out within clause 11 of the conditions of contract. Where attachments to this Works Information do not utilise such terminology, the following definitions will apply:

-"Contractor" and/or "Tenderer" will mean the *Contractor.*

-"Employer", "Client", "Environment Agency" and DEFRA/or "EA" will mean the *Employer.*

-"Project" will mean the *works.*

-"Specification" will mean Works Information.

- Lift Consultant & CA shall mean PM.

The works are as described within the schedule of works documentation.

For the avoidance of doubt the *Contractor* shall be responsible for all the design work required in delivering all of the *works*.

Health and Safety

The *Contractor's* health and safety policy shall take account of and be compatible with the *Employer's* code of practice set out or referred to in Appendices A, B, C & D and provisions set out in Appendices A, B, C & D. The *Contractor* may be required to submit its health and safety policy and procedures to the *Employer.* The *Contractor* shall comply at all times with its health and safety policy and procedures and shall ensure that its subcontractors comply at all times with the *Contractors* health and safety policy and procedures.

The *Contractor* and the *Employer* shall ensure that health and safety matters are considered of the highest priority and are managed in a proactive way. The *Contractor* shall treat legal standards for health and safety as a minimum to be exceeded at all times.

The *Contractor* shall demonstrate that all activities on site comply with the *Employer's* current approved code of practice (as detailed or referred to in Appendices A, B, C & D) and shall maintain all necessary records and evidence on site.

All health and safety incidents that are connected with the works shall be immediately reported to the *Employer*. All incidents shall be promptly investigated and the result of the investigation recorded in writing and sent promptly to the Employer.

The *Employer* may carry out its own investigation into any health and safety incidents and where it chooses to do so the *Contractor* shall promptly offer all reasonable assistance to the *Employer's* investigating offices at the Contractor's own cost.

The parties shall comply with the provisions of Appendices A, B, C & D.

Quality Assurance

The *Contractor* shall have, or be in the process of obtaining, ISO 9001 and ISO 14001 registration. The *Contractor's* quality management systems must comply with the requirements of ISO 9001 and ISO 14001.

The *Contractor's* systems should be OHSAS 18001 compliant.

Where applicable, the use of Eurocodes is mandatory and all relevant Environment Agency Operating Instructions will be made available to the *Contractor* at project level. The

Contractor must adhere to the standards and procedures described therein.

Programme

An indicative programme is required to be submitted with the tender. This will be used for the assessment of tenders only and will not be the first Accepted Programme.

The first programme will be submitted for acceptance no later than 1 week from the *starting date.*

- The *starting date*, access dates, key dates and Completion Date
- The date the *Contractor* plans to complete the works
- The order and timing of the operations which the *Contractor* plans to do in order to provide the works
- The *Employer's* critical milestones
- The actual progress achieved on each operation and its effect upon the timing of the remaining work
- The effects of implemented compensation events

Any other changes which the *Contractor* proposes to make to the programme

Works Information

Title	**Date or revision**	**Publicly available?**
AY Specification.	December 2020	No

Constraints on how the *Contractor* Provides the Work

Site Preparation & General Preambles

1. The works must not restrict the operations of the Environment Agency on site or neighbouring buildings.
2. It is the contractor's responsibility to ensure that all necessary measures are implemented to protect building users from the hazards of the work in progress.
3. All CDM Regulations apply.
4. All waste is the property of the contractor and must be legally disposed of away from site by the contractor.
5. Site to be made secure and fencing must be kept locked shut at all times.

All workmanship to be in strict accordance with manufacturers' recommendations, British Standards, and all applicable codes of practice.

Access

Access to the building shall be via those indicated on the tender invite.

The *Contractor* shall ensure that all access routes shall be protected and kept clear of materials throughout the duration of the works.

The *Contractor* shall ensure throughout the period of this Contract that the occupants of any neighbouring or adjoining premises have unimpeded access to their respective premises.

For specific access and access restrictions etc requirements please consult the Pre Construction H&S Plan enclosed within Appendix B.

Where the works require some temporary revision to the access arrangements, the *Contractor* is to be responsible for agreeing all such arrangements and the payment of any costs or any effect on the works.

The *Contractor* is to allow for any additional investigations that it deems necessary for successful completion of the works, as detailed in the Works information section of this Scoping Document.

Working times
The *Contractor* will be permitted to work between 8.30am and 5.00pm on weekdays (Monday to Friday).

Noisy works, in particularly around the installation of the platform lift may require out of hours working. The contractor is to consider the proposed scope and allow for this when submitting their tender.

Works Information

Requirements for the programme

The *Contractor* submits his programme with the *Contractor's* offer for acceptance. The *Contractor* shows on each programme which he submits for acceptance (in the form of Gantt chart showing the critical path, proposed order and timing to undertake the works and proposed plant and labour resources) the following:

(a) Period required for mobilisation/ planning & post contract award
(b) Starting date
(c) Each of the activities listed within the Price List
(d) Any key third party interfaces: lead in periods for materials and sub-*Contractor*s; time required to obtain consents/waste permits; stated constraints; *Contractor*s risks.
(e) C ompletion date

Item	**Date by which it will be supplied**
The below items will be required from the Contractor following their successful appointment to the contract: • Construction Phase H&S Plan of the Works • Detailed programme of Works • RAMS • Material selection for Contractor's design elements of the works	At pre start meeting, prior to commencement of the works
The contractor is to allow for undertaking all works within normal working hours (Monday to Friday 08.00 to 17.00), other times strictly by prior agreement.	At pre start meeting, prior to commencement of the works
The above times may vary to suit the working hours of the client. The contractor will be required to liaise with the client to programme/stage the construction work to minimise disturbance.	Note
Any alterations to these hours of working proposed by the contractor must be with the express permission of the Employers representative at least 2 days in advance.	Note
The works are to be carried out in such a way as to cause the least inconvenience possible to the adjoining owners and the general public.	Note
The contractor is to provide all necessary protection and security for the site for the duration of the contract.	Prior to and during the works.
The works must be undertaken in such a manner to limit the amount of superficial damage to surrounding and common areas. The common areas must be protected from damage. The contractor will be responsible for reinstating any damaged surfaces on completion of the main contract works. The Contractor is to undertake a schedule of condition before commencement.	Prior to and during the works.
The contractor may assume the use of existing electrical supply to operate machinery in connection with the works.	Note
The contractor should ensure they comply with the Environment Agency's Safety is Paramount Information, Constructing a Better Environment document, including, but not limited to the following requirements:	Prior to and during the works.

The project will be registered with the Considerate Constructors Scheme (CCS) and the contractor should therefore make allowance to ensure they comply with all the requirements of the scheme. CCS posters must be displayed on all public site information boards and additional banners erected where they are clearly visible to the public.	At pre start meeting, prior to commencement of the works
All contractors, sub-contractors, designers and routinely visiting Environment Agency staff shall be CSCS or affiliated scheme registered.	Prior to and during the works.
In addition to the CSCS, CPCS, and CBH requirements detailed above, anyone acting as: • Site Manager and/or • Site General Foreman, • Area Operations team members supervising works*, • ECC Site Supervisors and ECC Project Managers , Must hold as a minimum a current CITB or IOSH Site Management Safety Training Scheme qualification.	At pre start meeting, prior to commencement of the works
Everyone acting in the roles described above, must have attended CIRIA's 'Environmental Good Practice on Site' training or CITB 'Site Environmental Awareness Training Scheme within the last 5 years. Contractors may wish to provide comparable in-house environmental training. This must be approved by the Environment Agency's Construction Safety, Health & Environment Manager.	At pre start meeting, prior to commencement of the works
The Principal Contractor is entirely responsible for safety and environmental management on site during construction. Risk assessments, method statements and permits must be produced in a style, language and level of detail suitable for the employees who will be working to them.	At pre start meeting, prior to commencement of the works
Contractors must include a schedule of risk assessments and method statements for significant activities during construction in or with their project Health and Safety Plans. The schedules must be updated when changes occur on site or new hazards/activities come to light. Revised schedules must be forwarded to the ECC Project Manager, and the Site Supervisor.	At pre start meeting, prior to commencement of the works
Site activities must be undertaken in accordance with the essential pollution prevention requirements and further best practices identified in PPG 6 Construction and demolition sites.	Prior to and during the works
All operatives are to wear the following PPE as a minimum on site: • Long trousers of a suitable kind • Safety boots with steel toe cap and mid sole • Safety helmet • High visibility vest or jacket • Suitable gloves • Suitable glasses when carrying out any activity unless the RA removes the requirement. A sufficient quantity and variety of PPE such as gloves, glasses, high visibility clothing and so on must be provided to allow for the immediate replacement of damaged or lost items, and to supply occasional visitors attending site.	Prior to and during the works

Construction teams must ensure adequate segregation between plant, vehicles and pedestrians. Adequate arrangements must be in place to prevent persons being put at risk from operated plant. Fencing must be erected on landing areas, with means of fall protection.	Prior to and during the works
Each Contractor must include within inductions, information regarding the SHE Code of Practice, and what this means in respect of individual health, safety and environmental performance and behaviour. Inductions should be appropriate to the level of risk, the activities on site and will include site specific SHE risks associated with the project. In particular the key items from the Environmental Action Plan (EAP) where relevant, will be shared during the induction.	Prior to and during the works
Projects lasting for 30 days or more must be inspected by the Contractor's own competent HS&E Advisor normally at two week intervals with at least one visit being for the purposes of an inspection which will be recorded. Following each recorded inspection, and within four working days of the visit, the HS&E Advisor's report will be provided to the following as appropriate: • Environment Agency Project Manager • Project Manager • Site Supervisor	Prior to and during the works
Clearing away of existing equipment, site areas etc will be undertaken by client prior to commencement of works, unless otherwise stated within the price list.	Prior to and during the works

Site Information

Title	Date or revision	Publicly available?
• EA Pre Construction H&S Plan and associated documents including Asbestos information.	November 2020	Y
• On site maintenance and other H&S information?		

4. Contract Data

5. The *Contractor's* Offer

The *Contractor* is

Name

Address

Telephone .....

Fax .....

E-mail address .....

The percentage for overheads and profit added to the Defined Cost for people is .....

The percentage for overheads and profit added to other Defined Cost is .....

The *Contractor* offers to Provide the Works in accordance with the *conditions of contract* for an amount to be determined in accordance with the *conditions of contract.*

The offered total of the Prices is .....

Enter the total of the Prices from the Price List.

We declare that this tender was prepared and is submitted in good faith. We declare that we have not communicated to any person other than the *Employer* the amount or the approximate amount of the offered total of the Prices and the Prices have not been adjusted or fixed by arrangement or in collusion with any third party (other than in confidence to obtain insurance quotations or finance required in connection with the tender). We undertake that we will not enter into any such communication or enter into a collusive arrangement whether in relation to this tender or a tender submitted or to be submitted by a third party.

We also undertake that we have not and will not

(a) corruptly solicit, receive or agree to receive; or

(b) offer or agree to give directly or indirectly to any employee, consultant or *Contractor* of the *Employer*;

any thing, service or money for doing or not doing anything or showing favour or disfavour to any person, in relation to this contract or any other contract to which the *Employer* is party.

If we or an employee or authorised agent or sub*contractor* or consultant are in breach of the above declarations and undertakings we agree that the *Employer* may terminate the contract and the payment due is assessed as if clause 90.3 (Reason 3) applied.

Signed on behalf of the *Contractor*

Name .....

Position .....

Signature ..... Date .....

6. Price List

Entries in the first four columns in this Price List are made by the tenderer.

If the *Contractor* is to be paid an amount for the item which is not adjusted if the quantity of work in the item changes, the tenderer enters the amount in the Price column only; the Unit, Quantity and Rate columns being left blank.

If the *Contractor* is to be paid an amount for the item of work which is the rate for the work multiplied by the quantity completed, the tenderer enters the rate which is then multiplied by the expected quantity to produce the Price, which is also entered.

The below items are the Employers Requirements.

Item Nr	Employers Requirements Item	Unit	Quantity	Rate	Price
	Please refer to the specification sections within this documents				

Early Warning/ Risk Register			
Risk Item	**Unit**	**Rate**	**Price**
Risk from falling			
Crushing by manhandling plant equipment			
Electric shock from concealed wiring.			
Occupied office with staff and people movements.			
Contractor / office staff using same building entrance.			
Covid 19 and Associated Issues with Materials and Workforce.			

7. Proposed Sub-*Contractor*s

	Name and address of proposed sub*contractor*	Nature and extent of work
1.	**Form of Contract:**	

2.	**Form of Contract:**	
3.	**Form of Contract:**	
4.	**Form of Contract:**	

8. The *Employer's* Acceptance

The *Employer* accepts the *Contractor's* Offer to Provide the Works.

Signed on behalf of the *Employer*

Name ……

Position ……

Signature …… Date ……

1.3 CONSTRUCTION PROGRAMME

For tendering purposes the Lift Contractor shall base their tender on the programme stated in the Pre-Construction Information or Construction Phase Plan, the actual programme will be subject to agreement on the placement of order.

1.4 TENDER RETURN

The completed tender documentation shall be returned in accordance with the tender invite requirments.

9. Lift Performance Specification

Hydraulic Lift Refurbishment

EA, Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS

SECTION 2 – LIFT SPECIFICATION

2.1 GENERAL

This specification relates to the refurbishment of two passenger lifts as detailed at the noted site in compliance with the Tender Documentation and Specification. The Works shall include all that is necessary to complete the project and other specified works.

All new/replacement equipment provided shall comply with the standard specification as shown in the Lift Performance Schedule of this specification and all other relevant codes and standards.

SAFed supplementary testing, as required/requested shall be completed within a **maximum of 3 weeks** of placement of order.

Where equipment is noted as being retained, the Lift Contractor shall, as a minimum allow for the works indicated in the Lift Performance Schedule to be carried out. Should the Lift Contractor consider any of the equipment to be unusable or that it is more expedient or economical to replace or modify the equipment, he shall note this in his tender and offer a cost reduction.

Where plant or equipment is to be refurbished or modernised, as a minimum the works indicated in the Lift Performance Schedule shall be carried out. Where the Lift Contractor considers that it is more expedient or economical to replace the equipment, he shall note this in his tender and offer a cost reduction.

2.2 LIFT WELL

The lift and lift equipment is to be installed within the existing lift well structures.

The Lift Contractor is to ensure that the existing well structures including any nibs supporting the landing sills are sound and suitable for their purpose and the lift contractor is to take this into account when submitting his tender.

The Lift Contractor shall ensure that any new equipment is compatible and suitable for the installation and use within the existing structure, headroom and pit depth.

2.3 TECHNICAL DETAILS

The following technical details indicate the lift details following **completion of the Works**.

Lift Reference – Passenger Lifts

General	
Number of Lifts and type	Two passenger lifts
Machine room location	Remote – located via external plant room
Well Construction	Block and steelwork
Electricity Supply	400v – 3 phase and neutral
Headroom	3500mm - existing to be confirmed by site measurement
Travel	6800mm - existing to be confirmed by site measurement
Pit Depth	1200mm - existing to be confirmed by site measurement
Well Sizes	1850(w) x 2100(d)mm - existing to be confirmed by site measurement
Load	630kg (8 person)
Speed	0.63m/s
Floors Served	3
Stops and Openings	G, 1 and 2
Control System	Duplex control (down collective)
Roping System	1:2 indirect acting
Clear Openings	800(w) x 2000(h)mm
Starts Per Hour	180 (90 motor starts)
Lift Car	
Clear internal dimensions	1100(w) x 1400(d) x 2100(h)mm
Car Operating Panel Type	New car operating panel flush fitting in sidewall, push buttons with tactile markings, one floor button for each floor back light with call accepted signals, door open and door close pushes, car preference service key switch, enunciator and induction loop. Lift number, address and load to be engraved at top of car operating panel. To be compliant with EN81-70.
Car Position and direction Indicators	To be included with new car operating panel
Ventilation	Visible high and low level natural ventilation with profile cut vents and backing plates
Overload Indicator	Incorporated in new car operating panel
Emergency Intercom System	Commercially available hands free alarm and emergency breakdown intercom system with autodial. Inductive loop and symbol are to be provided for persons with impaired hearing. Provide GSM unit with autodialler system to enable sim operation as well as fixed line.

2.4 EQUIPMENT SCHEDULE

The following tables indicate the action to be taken on key items of equipment e.g. retained, refurbished or new. The works called for shall be carried out as stated in the appropriate section.

Where any part is found to be unusable for any reason it shall be replaced on a like for like basis or with a CE marked product. Where an exact replacement cannot be obtained or where a safety component is to be replaced it shall be replaced with a component in accordance with the Lift Performance Schedule, the latest standards and to be CE marked where applicable.

Equipment declared to be retained or refurbished is to be reused unless during the Lift Contractor's survey or installation it is found in an unsuitable condition or does not lend itself suitable for the installation as a whole or with the new equipment.

The Lift Contractor shall check the existing equipment in particular the electrical equipment for signs of damage or degradation. Should any equipment prove to be defective the Lift Contractor shall inform the Lift Consultant immediately. The Lift Contractor shall ensure that all equipment is operational before setting the lifts to work.

It is deemed that the Lift Contractor has included all costs associated with the retained equipment whether retained or not:

The following table shall be read in conjunction with the technical details as set out in 2.3, the finishes as indicated in 2.5, the Health and Safety and EN81-80 items noted in 2.6 and other relevant sections of the Specification and documentation.

Lift Reference – Passenger Lifts

Components	Retain	Refurbish	New	Comments
MACHINE ROOM				
Access to machine room		■		
Machine room door		■		Provide notices, ensure correct locking provided
Machine room lighting			■	
Electrical mains supply	■			
Mains switch and distribution board			■	Ensure correct fuse rating of lockable isolator, provide distribution board for auxiliary services
Hydraulic Tank Unit			■	Sited within catchment tray
Valve Block			■	Digital control
Pump unit and pump motor			■	
Hand lowering facilities			■	
Heating/Cooling facilities			■	
Muffler			■	
Hydraulic hoses and pipe work			■	
Controller and associated components			■	UK based, open protocol control system
Trunking and conduit		■		Reuse where possible, renew where not
Wiring and travelling cables			■	
Unintended movement			■	
Notices and tools			■	
LIFT SHAFT				
Well Lighting			■	
Car guides & brackets		■		Clean, degrease, check for alignment and secure
Ram guides & brackets		■		Clean, degrease, check for alignment and secure
Over-speed governor & tension weight			■	
Safety gear		■		
Hoisting ropes & terminations			■	
Governor rope & terminations			■	
Car guide shoes			■	Renew shoe liners to provide correct operation
Ram guide shoes			■	Renew shoe liners to provide correct

Components	Retain	Refurbish	New	Comments
				operation
Car and Ram oil pots				
Hydraulic ram				
Ram head pulley assembly				Thorough examination and certificate
Well switchgear				
Position system				
Trunking and conduit				Reuse where possible, renew where not
Door operator				
Car top maintenance control				
Lift pit maintenance control				
Car roof (working area)				Provide clear working man space, remove trip hazards and mark safe refuge area
Car sling				Clean, degrease, check for alignment and secure
Car anchorage (including tension equalisation)				
Car overload device				
Car body				Clean, degrease, check for alignment and secure
Platform				Clean, degrease, check for alignment and secure
Buffers				
Guarding within the well				
LIFT CAR				
Lift car finishes/car reline works				As detailed in 2.5
Entrance protection				
Door components				
Door panel(s)				
Door shoes				
Car sill(s)				
Intercom system				
LANDING DOORS				
Landing Push Stations				Replace push station, centrally mounted
Position Indicators				Indicators to be installed above each landing entrance
Landing door components				Landing doors to be renewed with durable entrance frames, minimising making good requirements
Landing door locks				
Landing doors panels				
Landing door shoes				
Landing door sills				
Architraves, slam posts				
Toe guards/Fascias				

2.5 LIFT CAR AND LANDING FINISHES

A design board and samples of all alternative car, door and landing finishes are to be provided for consideration and design agreement. The following detail indicates the preferred design for lift car and

landing finishes. If the Lift Contractor is unable to comply with any specifically noted details, these should be listed in the covering letter, with any proposed alternatives.

Lift Reference – Passenger Lift

Lift Car	
Ceiling	New suspended ceiling panel with LED downlighting
Lighting	LED down light fittings with lighting to provide 100 lux.
Emergency Lighting	New, to achieve a minimum 10 lux above COP
Sidewalls	Hard wearing high pressure laminate (colour TBC by client)
Rear wall	Mirror to upper half of wall, high pressure laminate below (colour TBC by client)
Front returns	New brushed stainless steel
Skirting	New brushed stainless steel
Car Controls	New full height C.O.P mounted in the side wall
Hand Rails	New brushed stainless steel to be fitted for full EN81-70 compliance
Cornice	New stainless steel cornice
Car Floor	New hard wearing rubberised flooring (Altro/Amtico/etc.)
Car Doors	New brushed stainless steel
Car sills	New aluminium car sill for new car doors
Sundries	Fixed hooks and protective drapes for movement of furniture, etc. (1 interchangeable set of drapes)
Landings	
Landing doors	Replace existing frames and door panels (complete), replace all running components, pick-up and kicking rollers, new shoes etc.
Pushes	New down collective pushes, white LED surrounds with duel illumination
Indicators	New dot matrix indicators (black/white) on all floors, located above each landing frame

2.6 HEALTH AND SAFETY AND EN81-80 IMPROVEMENTS

When undertaking works on the lift, the Lift Contractor shall include for current standards to be applied "as far as reasonably practicable" such that the lift can be brought into line with the Health and Safety at Work Act 1974, EN81-80 and other relevant standards.

Any additional observations regarding technical limitations or Health and Safety issues must be brought to the attention of the Lift Consultant at the time of tender. They must be clearly stated and a cost must be applied, as no additional cost will be considered.

2.6.1 Health and Safety Improvements

Lift Motor Room

- Install emergency intercom for 2 way communication between the motor room, car top, pit and car
- Motor room floor to be sealed to prevent oil contamination of building in the event of hydraulic pipe or tank rupture
- Provide a means of unintended movement protection
- Upgrade consumer unit to incorporate RCD protection to all auxiliary components
- The pipe and cable duct between machine room and shaft should be sealed to prevent the propagation of fire
- Provide a fire extinguisher within the motor room
- Upgrade motor room lighting and provide emergency back-up facility
- Provide Handwinding indicator and audible alarm to aid rescue of entrapped passengers
- Ensure motor room temperature is kept at a constant to meet manufacturers guidelines

Lift Shaft and Pit

- Upgrade shaft lighting to provide increased shaft lux levels, emergency backup and 3-way switching
- Replace car top controls with fully compliant alternative (emergency lighting and alarm)
- Provide pit control set for engineer's use as detailed in EN81-20
- Provide manual release cable to rear of landing door in G floor, for engineer egress
- Install removable oil catchment trays to the base of the guides to assist with oil disposal
- Seal lift pit to prevent oil contamination in the event of rupture
- Define and sign safe refuge area within the pit and upon the lift car top
- The hydraulic pipe and hydraulic system should be tested including a 200% pressure test of the systems
- Car tops to be fitted with kick boards and mid-rails to supplement car top handrails
- Installation of full shaft facias are recommended to reduce gap from car front to shaft wall
- Secondary stop switch to be installed in lift pit of Lift 1
- Electrically interlocked pit prop and securing bracket to be installed
- RCD protected electrical socket to be installed in lift pit for engineers access
- Pit ladder of compliant length (1m above G floor sill) to be installed
- Renew polyurethane pit buffers due to age and anticipated degradation of material

Landing Doors and Frames

- Install landing indication to inform passengers of direction of travel, floor and lift status to comply with the Equality Act 2010 (formerly DDA compliance)
- Provide full fire proofing around landing entrances

Lift Car

- Restore car load capacity to match floor area (i.e. 630kg/8 person)
- Improve car lighting levels to ensure a minimum of 100 lux is achieved with new emergency lighting

2.7 BUILDERS WORK AND ELECTRICAL INSTALLATION

This section relates to the builders and electrical work forming part of the Works.

The Lift Contractor shall make due allowances within his tender for the position and protection of the retained lift equipment, such that it is safe and suitably located to enable the scaffold to be erected in the lift well as necessary.

The Lift Consultant shall have the right to instruct the Lift Contractor to remove from site all plant or equipment he considers to be faulty or dangerous.

Heating and Cooling shall also be the responsibility of the Lift Contractor to meet the ambient temperatures outlined in BS 5655 / EN81 for machine room equipment. Consideration shall be given to solar heat gain to the lift machine, etc. located within the lift well.

The Lift Contractor shall at all times be aware that this building will be occupied and that residents/staff may be using the stairways and corridors. Therefore care must be taken when carrying out works on Site. The lobby area is to be boarded to protect the flooring, other protective measure shall be used to protect all areas including the stairwell carpets, decorative finishes and floor finishes throughout the building, from dust, oil and other deposits which may be present during the works. These protective measures must be properly and safely maintained until removed. Safe and free passage shall be afforded to staff at all times.

The Site shall at all times be kept in a clean and reasonable condition. At the end of each working day the Site shall be left in a clean and tidy condition.

At the time the lift Works are carried out the Lift Contractor may be the Principal Contractor on site and will be totally responsible for all their site attendances, builders' works and electrical works without

exception. All protection to existing finishes will be the responsibility of the Lift Contractor and this must be taken in to account, especially when unloading and distributing equipment.

Any additional observations regarding additional attendances or Health and Safety issues must be brought to the attention of the Lift Consultant at the time of tender. They must be clearly stated and a cost must be applied. No additional cost will be considered after placement of order.

2.7.1 Builders Works and Attendances

The Lift Contractor shall allow for all cutting away and making good to the structure of the building to allow all cables/conduits fixtures and fitting to be installed. The Lift Contractor shall allow for all hoardings protective screens and any other protection that for health and safety reasons may be needed during the works, including making good where hoardings have been fixed to the building.

The lift well shall be painted internally with two coats of good quality paint, white for the walls and red for the floor.

The lift machine room shall be painted internally with two coats of good quality paint, white for the walls and red for the floor.

All cutting out and making good inclusive of periphery decoration and making good to surrounding areas of landing entrances, including landing fixtures, after the Works has been completed. This includes the renewal of carpet tiles, skirting boards, etc. to restore internal landing finishes.

Installation and testing of lifting eyes/beams as required for the installation of the lift will be the responsibility of the Lift Contractor.

The existing well structure shall be checked by the Lift Contractor for security and suitability for continued use any defects are to be reported to the Lift Consultant within 15 working days of acceptance of the order. Any ledges or recesses shall be ramped or protected.

2.7.2 Electrical Works and Requirements

The Lift Contractor's electrical installation shall begin from the lift supply termination outlet in the machine room, the position of which is to be agreed. The existing mains cables are to be reused; should this not be suitable either due to rating or EMC requirements the Lift Contractor is to allow for replacing the cable with one of a suitable type. When noted in the Particular Specification alternative power supplies for the lift will be provided.

The electrical installation shall comply with the current edition of the BS 7671 Requirements for Electrical Installations. All cables other than travelling cables or those which are metal sheathed shall be enclosed in galvanised metal conduit and/or trunking.

Within 15 working days of receiving the order, the Lift Contractor shall confirm that the existing mains supply and any auxiliary supply are suitable for their needs; they shall provide details of the mains and auxiliary power supply requirements to run the installed equipment and any auxiliary equipment associated with the lift. This shall include the type of mains and termination required and consumer unit details. The Lift Contractor shall provide mains cables for the lift from the mains termination to the lift equipment, which shall be provided to meet the requirements of the installed equipment. The Lift Contractor shall determine the suitability and load characteristics of the supply to the building and therefore the machine room / machinery space and it's suitability for any existing and new lift equipment and revised application. If required the Lift Contractor shall liaise with the appropriate electricity supply company to confirm acceptability. Where specified a lockable fused mains isolator is to be located near to point of access to the machine room (provide additional switches if existing mains supply cannot be readily and easily moved). The following shall be strictly adhered to in the execution of the works:

a) The IEE Regulation
b) Health and Safety at Work Act 1974
c) Electricity at Work Act 1990

d) Building Regulations
e) Construction (Design and Management) Regulations 2015
f) Management of Health and Safety Regulations

The installations shall be tested by the Lift Contractor in the presence of the Lift Consultant who shall witness all tests. The tests to be carried out shall be those described in the IEE Regulations, Section 6.

The Electrical Contractor / Lift Contractor shall provide typed test certificates. Hand-written certificates are not acceptable.

The Electrical Contractor / Lift Contractor shall issue a completion certificate upon completion of the works and before handover.

The Electrical Contractor shall agree times and dates with the Lift Consultant before disconnecting any electrical supplies, giving notice to the Lift Consultant in accordance with the Contract Conditions.

All new lighting and power installation within the lift well shall be undertaken by the Lift Contractor. The Lift Contractor shall supply and fit MCB's within the new distribution boards in the lift machine room.

The existing provisions shall be retained and upgraded as necessary to ensure their suitability for continued use, with new equipment being supplied as necessary to ensure the provisions are available in the machinery space(s).

2.7.3 Schedule of Electrical Work

Upgrade lift well lighting to 50 lux, install 3 way switching and include emergency lighting
Install 13A RCD socket outlets in lift machine room, pit and on car top
Upgrade lighting in machinery space provides 200 LUX at the lift equipment
Upgrade emergency lighting in machinery spaces

Ensure each lift has the following separate protection within the distribution board:

Switched lighting in lift machine room / machinery space
Lift car lighting switched from machine room / machinery space
Lift well lighting switched from machine room / machinery space, pit and car top
Heating and cooling in lift machine room/ machinery space with thermostat control
Spare ways.

LIFT PERFORMANCE SCHEDULE

2.8. GENERAL

Where the singular is noted in the Tender Documents and there is more than one unit covered by the Specification the singular shall be taken to read as the plural.

The intention is to bring the lift into line with the latest standards and Health and Safety practices as far as is reasonably practical and provide suitable access and delivery equipment to suit the needs of the building.

The Lift Contractor will be responsible for carrying out work in the machine room, lift well, lift pit and areas adjacent to the landing entrances, including the lift landing architraves and doors as indicated.

The Lift Contractor is reminded that they may be the Principal Contractor on site. The Works shall include all attendances, Builders Work and Electrical Work that are necessary to complete the project.

The Works undertaken must comply with all relevant Acts, standards, and regulations and in particular, Health and Safety at Work Act 1974, good working practices and all other relevant standards and codes, whether noted or not below:

- BS EN 12385 - Wire Ropes for Lifts and Hoists
- BS DC BS ISO 22199 – Electromagnetic compatibility Product family standard for lift, escalators and moving walkways
- BS 5655 - Code of Practice for Lifts
- BS 7255 - Safe Working on Lifts
- BS 7671 - BS 7671 - Requirements for Electrical Installations – IET wiring installations
- BS 7801 –Code of practice for safe working on escalators and moving walks
- BS 8300 - Code of Practice for Disabled Access
- BS 8486 – Specification for means of determining compliance with BS EN 81
- BS 8501 – Graphic symbols and signs. Public information symbols
- BS 9999 – Code of practice for fire safety in the design, management and use of buildings
- BS EN 81-1, 2, 3, 11, 20, 21, 22, 28, 29, 31, 41, 43, 58, 70, 71, 73 & 80 Lift Standards
- BS EN 81-20 and 50 Lift Standards and Codes of Practice
- BS EN 627 – Specification for data logging and monitoring of lifts, escalators, and passenger conveyors
- BS EN 13015 – Maintenance for lifts and escalators. Rules for maintenance instructions
- BS EN 12015 – Electromagnetic compatibility. Product family standard for lifts, escalators and moving walks, Emissions
- BS EN 12016 – Electromagnetic compatibility. Product family standard for lifts, escalators and moving walks, Immunity
- BS EN 50214 – Flat polyvinyl chloride sheathed flexible cables
- BS EN 13015 Maintenance of Lifts and Escalators
- BS ISO 4190 – Lift (elevator)installation. Control devices, signals, and additional fittings
- BS ISO 18738 Lift (elevators) Measurement of lift ride quality
- DD 265:2008 - Protocol for communications between a lift alarm system and an alarm receiving station
- Building Regulations including Part M Access for the Disabled
- Construction (Design and Management) Regulations 2015
- DC BS ISO 25745 Energy Performance of lifts and escalators
- Disability Discrimination Act
- Equality Act 2010
- EEC Lifts Directive
- Electricity Council Engineering Recommendation G5/4
- European Directive on EMC 89/336/EEC
- Health and Safety at Work Act 1974
- Management of Health and Safety at Work Regulations 1992
- Provision of Work Equipment Regulations 1998
- SAFed Guidelines on the supplementary tests of in-service lifts
- The Lift Regulations 1997
- The Lifting Operations and Lifting Equipment Regulations 1998
- The Machinery Regulations 1992
- Workplace (Health and Safety) Regulations 1992

The Lift Contractor is to formulate the fixed tender sum on the basis of the period shown in the Tender Documentation. Alternative working procedures can be adopted to minimise the onsite time subject to agreement. No work shall start until all of the materials are available on site, all assembly works that can be completed, all site works that can be carried out is completed and permission has been agreed with the Client.

All ancillary works shall also form part of this Specification, which are detailed in this section and the Tender Documentation.

All retained steelwork which forms part of the overall lift installation and the structural elements of the lifts themselves, which are not finished surfaces, shall be de-greased, cleaned and wire brushed and treated with rust inhibiter. Painted surfaces shall be de-greased, cleaned and wire brushed then treated with rust inhibiting gloss paint of at least 2 coats.

2,9 METHODS AND PROCEDURES

Where a building is occupied the Lift Contractor's attention is drawn to the fact that the rights of free access for other building users must be respected at all times and such access shall not at any time be impeded. The Lift Contractor's Construction Phase Plan, Method Statement and Risk Assessments shall detail the measures being taken to ensure the safe and free movement of persons is maintained throughout the building.

Where a site may be subjected to vandalism the Lift Contractor shall take this into account when preparing their tender and allow for any measures they deem necessary to cover for such eventualities within their tender and make suitable allowances in their design and when selecting components and equipment.

The Lift Contractor is to take all necessary safety precautions whilst inspecting, surveying, and undertaking work on an existing installation and work within safety barriers, which must be erected whilst working on the landings or accessing the lift. Free and safe access to the stairs and lift-landing lobbies shall be maintained at all times. The Lift Contractor shall take into consideration the requirements of the Pre-Construction Information, the nature of the Works, site workers and those visiting, residing in, working in or staff occupying the building.

The measures taken to ensure that the other workers, occupants and visitors maintain unrestricted access to and free movement around the building during the Works is to be incorporated within the Construction Phase Plan, Health and Safety Plan and method statement for the Works.

The Lift Contractor shall take all reasonable steps to reduce noise, fumes, dust, and dirt from their Works. Before carrying out any particularly noisy or dusty operations the Client or their authorised representative on site must be consulted. In all circumstances there shall be minimum disruption to any occupants' operations. All measures shall be taken to ensure co-operation and coordination with any occupant's activities especially during, wet trades, operations likely to cause noise or fumes and mixing of concrete/cement.

The working day shall be as noted in the Pre-Construction Information or Construction Phase Plan.

Noisy operations are only permitted as specified in the Pre-Construction Information or Construction Phase Plan.

The Lift Contractor's attention is drawn to the location of the lift well and the proximity of the accommodation, hence the noise guaranteed by the lift equipment shall be a fundamental consideration.

All necessary action shall be taken in designing and installing the equipment to reduce and/or eliminate vibration and transmission of air borne noise. The Lift Contractor shall state the maximum noise level generated by their equipment measured 1m from source 1.5m above the finished floor level and the frequencies at which it occurs. Within the accommodation and circulation areas adjacent to the lift doors, the noise level shall not exceed NR38.

Under no circumstances are landing openings to be left open and/or unprotected at any time. Due to available space it may not be possible to erect full hoardings, therefore when necessary timber or metal covers shall be fitted over all the entrance apertures.

The entrance cover at the main entrance level shall be lockable from the outside and opened from the inside without a key, at other floors they shall be removable from the inside the lift well.

The Lift Contractor shall give an irrevocable commitment that all materials and labour required to complete the Works is available at least two weeks before any lift is taken out of service. The Lift Contractor shall include within their tender, the method statement, a programme of activities both on and off site for evaluation prior to the placing of an order. Should the Lift Contractor receive an order for the Works they shall provide a detailed programme clearly stating the on and off site operations to be carried out on a daily basis, the programme must be agreed before any work commences.

Redundant materials shall be dismantled and removed from site by the Lift Contractor. All such materials shall be deemed as scrap and due allowance for their scrap value shall be allowed for in the tender price. All materials shall be disposed of in compliance with relevant Act, Regulations, Standards, and local authority requirements.

The Lift Contractor is to use directly employed labour where possible for the whole of the project including project management and testing. Any sub-contract labour used (electrical, building, etc.) will be the sole responsibility of the Lift Contractor.

Upon completion of each phase of the contract and at the end of each day the Lift Contractor shall clear away all rubbish and excess materials and leave the site in a clean and tidy condition.

Where temporary electrical supplies and lighting are provided by the Lift Contractor, they shall be fed from the available supplies.

Where there are no storage facilities available on site, it will be the Lift Contractor's responsibility to provide any necessary storage for small items and tools. Large items shall be delivered to site as and when required by the Lift Contractor. The Lift Contractor shall take all necessary precautions and allow access where other services are located in the machine space/machine room.

The Works shall comprise the whole of the labour and unless otherwise indicated, all the materials necessary to complete the works with such tests, adjustments, commissioning and maintenance as prescribed in the schedules and as may otherwise be required to give an effective reliable installation in fulfilment of the Contract.

The Lift Contractor shall be responsible for protecting all finishes including floors, walls, and ceilings. The Lift Contractor shall be responsible for making good the existing wall and floor finishes in a good workman like manner, to the entire satisfaction of the Lift Consultant and Client.

The Lift Contractor shall at all times strictly observe the requirements of the Health and Safety at Work Act (1974) and shall comply with all relevant Statutory Regulations and Instruments including EC Directives in force or coming into force during the Works programme.

Upon completion of the lift the Lift Contractor shall finally clear away all rubbish and excess materials and leave the site in a clean and tidy condition.

2.10 INTEGRITY OF EXISTING STRUCTURE

The Lift Contractor shall satisfy themselves that the structures are suitable for continued use and inform the Lift Consultant of any defects they consider require further investigation.

2.11 QUALITY OF MATERIALS AND WORKMANSHIP

All materials shall be suitable for the application and be the best of their respective kinds including those not specifically described. The Lift Contractor shall ensure that experienced, competent, and qualified tradesmen are employed in carrying out the work.

2.12 MAINTENANCE DURING INSTALLATION AND AFTER COMMISSIONING

The Lift Contractor shall include for carrying out fully comprehensive maintenance and repair from the date of the order through procurement, installation and from practical completion of the project to the successful completion of the defects liability period. The maintenance shall include all equipment, labour, and consumables, 12 calendar monthly visits for routine lubrication, adjustment and checking whether the equipment is to be retained or not.

Also to be included shall be a 24-hour callout service for all breakdowns. The Lift Contractor shall provide a report after each breakdown and send it to the Client stating the nature of the fault and the corrective action taken. Response time for callouts shall be stated within the tender within the Lift Specification and Tender Document.

The Lift Contractor shall undertake Supplementary Tests in accordance with the Safety Assessment Federation (SAFed) 'Guidelines on the Supplementary Tests of in-service lifts', as requested by a competent person, over the contract and defects liability period.

2.13 NEW / REPLACEMENT EQUIPMENT

The following Design Intent Specification shall be read in conjunction with all other relevant sections of this Specification and other tender documentation. Where new equipment is called for it shall be compatible with any new or existing equipment and comply with all current relevant standards and codes as well as the following:

2.14 LIFT WELL AND MACHINE ROOM

New lift wells will be constructed in accordance with the Lift Contractor's requirements and EN81.

New and existing lift wells shall be painted with good quality paint to reduce the potential for dust, etc. white for the walls and ceiling of the lift well and machine room and red for the lift pit floor and machine room floor. A safe refuge area should be identified within the lift pit and on car top where achievable. Insufficient man spaces should be clearly and conspicuously marked "No Safe Refuge".

The lift well shall be imperforate or with holes not exceeding the size allowed by EN294 and to prevent contact with the equipment for at least 2.5 metres above the highest stepping point for a normal lift, this shall be increased to a minimum of 3.5 metres in any area subjected to vandalism. The lift well enclosure shall be able to withstand the forces imposed by the equipment and as given in EN81.

In common lift wells, rigid wire mesh screens shall be provided and fixed by the Lift Contractor to effectively separate individual wells. The screens shall extend the full depth and height of the wells and shall be formed from heavy gauge wire mesh panels, suitably supported in rigid steel frames. Any voids between the lift car roof and lift well with an area of 300mm² or greater, should be sufficiently guarded.

Where the lift well has large vertical spaces between openings electrically interlocked access doors shall be fitted at a maximum distance of 11 metres to enable emergency access and the ropes to be inspected. The access doors shall be fitted with warning signage and electrical safety interlock switches that are not affected by windage.

The headroom and lift pit shall provide clearances and over travels in accordance with EN81. If this is not possible due to the existing site restraints, alternative safety devices shall be provided in conjunction with safe systems of work. All necessary notified body and district surveyor approvals shall be obtained by the Lift Contractor.

Lift machine rooms shall be provided with a safe means of access with stairs or ladders in accordance with EN81. Enclosed lighting shall be provided with an illumination level of 200lux at floor level and at the equipment and working areas with emergency lighting to enable safe emergency release to be carried out.

Rope hole kerbs and noise baffles shall be fitted. An RCD socket outlet shall be provided in the machinery space. Where there are different levels greater than 500mm, steps, ladders and guardrails shall be provided. The floor surfaces shall be made smooth and be treated with non-slip materials. Where voids exist in the motor room floor these shall be made smooth or covered with tread plate or similar, fixed in position.

Lifting beams shall be tested and marked with safe working load. Wherever there is reduced headroom the lifting beam or protrusion/obstruction shall be fitted with head protection marked with yellow and black stripes.

Where a pulley room or sub floor is provided, rope hole kerbs and noise baffles shall be fitted. An enclosed light with an emergency light shall be provided, operated by a switch adjacent to the access door as part of the well lighting system. An RCD socket outlet shall be provided, and an emergency stop

switch shall be fitted adjacent to the access door with additional switches accessible from the working area if the stop near the door cannot be reached from any work area.
Where machine sheaves are within the well area these shall have fire resisting screens fitted between the lift well and motor room.

2.14.1 Machine Room Access

New or existing machine room access door shall be fitted with a lock that can be locked from the outside using an FB4 key and opened from the inside without a key.

2.15 ELECTRICAL INSTALLATION

2.15.1 Electrical Installation

The electrical installation shall comply with the current edition of the IET Regulations for the Electrical Equipment of Buildings. All cables other than travelling cables and those that are metal sheathed shall be enclosed in conduit and/or trunking.

The Lift Contractor shall wire and install a 13-amp switch RCD socket outlet located on top of the lift car, in the pit and adjacent to the controller fed from 16A type B MCB's in the lift services distribution board.

Steel conduit shall be of heavy gauge, welded, mild steel tubing. All conduit and accessories shall be galvanised and comply with BS4568 Parts 1 and 2 (with amendments to date) and be manufactured by a member of the Conduit Manufacturers Association.

All junctions shall be made with fittings complying with BS4568. Space-bar type saddle supports complying with BS4569 Part 2 shall be used.

Flexible metallic conduit may be used only for motors or other equipment subject to vibration or on equipment that will need to be positioned during running adjustments. End adapters shall positively grip the flexible conduit and earth continuity conductor, which shall be visible. All flexible conduits shall be LSF-sheathed.

Steel trunking for ducts shall comply with BS4678 Part 1 for surface runs and Part 2 for under floor trunking. To avoid a multiplicity of conduits, trunking may be used in place of or in conjunction with steel conduit.

Cables run in conduit or trunking shall be 300V/500V LSF insulated with copper conductors complying with BS6004, or with BS6500 if properly terminated and adequately supported. Power and signal cables shall be segregated and routed to prevent interference from line pollution and noise. Multicore cables having more than 5 cores, but otherwise in accordance with BS6004 or BS6500, may be used for interconnection between controllers and other items.

Controller internal wiring shall not support combustion. It shall be colour coded and preferably in accordance with BS6231. In general, it shall be bunched and run in trays or purpose made slotted plastic cable trunking.

Positive fixings of cable ends shall be ensured by purpose made clamps or pinch type terminals, or by the use of crimped cable tags or other equally suitable termination devices. Each terminal shall have an efficient locking device. Connector strips with unlocked gripping screws and without centre stops shall not be used. Connections and devices of the plug-in type shall be so designed and arranged that if their withdrawal does not require the use of a tool, it will be impossible to reinsert the plug correctly. Where cables are required to be shielded the correct type of terminations shall be used with 360-degree enclosure.

Travelling cables shall comply with EN50214. Where the rated speed of the lift is greater than 1.60 m/sec. only cables of circular cross section shall be used. Their construction shall include fillers of dry cotton or other suitable fibrous material and a textile braid covering over assembled cores (including the fillers). Additionally, rubber insulated cables shall have a covering of textile braid on each core insulation.

The travelling cables shall be supported at each end so that the cores are not under strain at the terminals. Where appropriate for the correct installation and operation of the cables, they shall have a strain bearing centre. They shall include at least 10% spare cores and the requisite number of protective conductor cores. The arrangement of the terminals at both ends shall be similar and individually marked terminals at both ends shall be similar and individually marked for identification and those for the normal car lighting and door motor supplies shall be shielded and clearly labelled.

Before fitting, circular travelling cables shall be hung down the lift well for at least 24 hours with their lower ends suitable weighted and free to rotate in order to eliminate any tendency to twist in service.

All cable is to be tested at the manufacturer's works and a test certificate with date of manufacture is to be attached by seal to each coil. No cable is to have been manufactured more than 3 months prior to delivery.

Where a fireman's lift or firefighting lift is called for the Lift Contractor shall confirm that any existing changeover switchgear is suitable for their requirements within 15 days of receiving the order and all cables shall be of a low smoke and fume type.

Where new mains changeover switch gear is provided it will fulfil the requirements of BS 9999 and EN81-72 and be suitable for the lift drive. The Lift Contractor shall advise their supply requirements within 15 days of receiving an order.

All conduit and trunking are to be mechanically and electrically continuous and all exposed metal used in connection with the lift installation, including the car, is to be efficiently earthed. Additional earth bonding in the form of heavy copper wire or tape is to be provided if necessary, to obtain satisfactory earth continuity. Earthing conductors shall not be less than 2.5mm copper connected where necessary to substantial earth clips.

Where any trunking or conduit passes through a fire compartment or wall it shall be sealed according, both externally and internally to the degree of fire resistance of the element of the construction it passes through and any sealing which is disturbed during installation shall be reinstated. Where lift guides are connected to the steels of a steel framed building the guides shall be suitably and adequately earthed.

2.15.2 Electromagnetic Compatibility and Radio and Television Suppression

Electrical equipment shall comply with ISO22199, ISO22200, EN12015 and EN12026 and other relevant standards.

Suitable suppressers shall be provided and installed by the Lift Contractor as necessary for all equipment and circuitry to prevent interference with radio and television reception.

Interference suppression components shall not be connected into any circuit where their failure may cause unsafe connection. The Lift Contractor shall include for the complete installation to be tested and provide written confirmation to the Lift Consultant that the installation complies with the relevant standards.

2.15.3 Electrical Mains Supply

New electricity supplies will be 400V +10% -6% with an allowance of 4% volt drop from the intake room to the termination point, 3 phase 50Hz + 1% terminating in a fused main isolating switch provided in the position required by the Lift Contractor. The separate car light supply will be 240V line/neutral terminating in a 6-amp type B MCB within a dedicated lift services distribution board in the position required. All necessary wiring, conduit, trunking, and fittings from this point shall be provided and installed by the Lift Contractor. Harmonic distortion imposed on the supply shall not exceed that indicated in G5/4.

2.15.4 Mains Switch and Distribution Board

The Lift Contractor shall ensure that the isolating switch for each lift is suitably marked with the lift designation number. It shall be possible to lock the mains switch in the OFF position. The switch shall be

located near the point of access, where an existing switch is not located near to the point of access an additional switch shall be provided near the point of access by the Lift Contractor. Where more than one access door is provided an additional mains switch shall be provided adjacent to the secondary point of access. Where a group of lifts have split, machine rooms additional isolators shall be provided in the remote location. Should the Lift Contractor require different arrangements to the above this shall be stated in the tender.

2.15.5 Well Lighting

The Lift Contractor shall supply and install energy saving fluorescent bulkhead light fittings with emergency lighting in the well to give 50 lux throughout the well, at one metre above the car and at pit floor level. Location of the initial fittings shall not exceed 0.5 metres from the highest and lowest points in the well. The span of the intermediate fittings shall not exceed 5 metre centres, and preferably be positioned 1500 mm above each landing entrance level. A fault or failure of the bottom light fitting shall not cause loss of the complete well lighting system; this includes failure due to the ingress of damp or water.

The lights shall be controlled by three-way switching inclusive of an intermediate switch. One switch located in the motor room and the other 1100mm above the lowest floor served within easy reach of the landing when the landing door is open. The lights shall be fed by a circuit separate from the lift equipment. The intermediate switch will be fitted to the car top to allow operation of the well lighting from the car top control.

A permanent clearly legible notice shall be fixed immediately adjacent to the switches marked 'WELL LIGHT SWITCH' and clearly identifying the respective well.

In addition to the above where a lift is a fireman's lift, or a fire fighting lift the well lighting shall be in accordance with BS 9999 and BS EN81-72.

2.16 HYDRAULIC SYSTEM

The hydraulic system shall comply with the requirements of British Standards, EN81-2 and EN982 where applicable and be manufactured by Bucher Hydraulic or similar quality product. The Contractor shall state in their tender the best levelling tolerance that can be maintained with the drive systems proposed. The system shall be fitted with high- and low-pressure switches. An anti-creep timer shall be fitted within the controller.

2.16.1 Power Unit

The hydraulic tank unit shall be sealed to prevent oil leakage and designed and selected to provide adequate oil capacity to provide sufficient safety margins for the lift travel involved. The pump and pump motor shall be mounted on one robust bed plate or within the power unit assembly if it is suitably rigid. The motor, pump and bearing(s) shall be so mounted and assembled that proper alignment of these parts is maintained under all normal operating conditions. The power unit shall be rated such and shall operate with the minimum of noise and vibration with isolators on the machine room floor.

An oil filter shall be fitted in the pump inlet. Where necessary, stopcocks shall be provided to enable the filter to be cleaned or changed without significant loss of oil.

The pump motor shall be of a type and it shall run with the minimum of noise and vibration.

The power unit shall run without appreciable noise or hum. It shall be specifically designed for heavy-duty service, capable of frequent reversals and smoothly driving varying loads up to the maximum specified duty. The drive unit shall be capable of a minimum 45 motor starts per hour.

The drive motor shall be specially designed and constructed for lift operation. It shall be suitable for a 400V, 3 phase, 50 hertz supply and shall have a speed not exceeding 3000 rpm.

The motor manufacturers test certificates shall be submitted to the Lift Consultant for approval before the machine is delivered to site. Compliance with this clause does not relieve the Lift Contractor from the responsibility of installing equipment, which will meet the commissioning tests and normal operating requirements of the installation.

The hydraulic system shall be complete with a pressure gauge, hand pump, hand lowering valve and maximum and minimum oil level indicators.

Oil tank heater complete with adjustable temperature control shall be provided. Where necessary to achieve the required number of motor starts per hour. Temperature controlled oil coolers or forced heating/cooling system shall be provided as required.

A clearly engraved permanent data plate shall be fixed to the tank unit stating the manufacturers name, the type/frame size, and full relevant technical data.

Where the pump motor power is 30 kW or more a separate re-levelling motor shall be provided.

2.16.2 Hydraulic Ram

Cylinder(s) shall be so mounted to ensure that they are only subjected to axial loads. All necessary supports and mountings of the cylinders shall be provided by the Lift Contractor.

A rupture valve shall be installed at the take off point on the cylinder, where more than one cylinder is provided a balancing pipe between the rupture valves shall be fitted to equalise the pressures.

Where the platform is connected directly to the cylinder, suitable mountings shall be used that withstand the type of loading. A device shall be incorporated which will initiate the closing of the lowering valve in the event of the car being prevented from descending. Where an indirect acting system is utilised an overspend governor and safety-gear shall be provided. In some circumstances, it may be permitted to provide a safety gear operated by a slack rope system complete with an electrical interlock in place of the overspeed governor; however, this must be agreed in writing by the Lift Consultant before the order is placed. Where truck loading is to be used, clamping devices or pawl arms shall be fitted to prevent the lift sinking during loading.

Whenever indirect acting systems are utilised they shall be of a type that requires steel wire suspension ropes designed for the purpose, the pitch diameter of the ram head pulley or any other pulley in the system shall not be less than 40 times the nominal diameter of the hoist ropes. Ram head pulleys shall be suitably mounted to, and secured, to the ram and the assembly suitably guided either by separate ram head guides or by the car guides.

All ram head pulleys shall be provided complete with all necessary mounting supports including the drilling and fixing. The Lift Contractor shall give full consideration to the height of the lift well. Clearances in accordance with EN81-2 should be allowed when siting the lift equipment, especially for maintenance around the pulleys / sheaves.

All pulleys shall be flanged both sides and necessary provision made to avoid:

- The suspension ropes leaving the pulley / sheave
- The introduction of objects between the ropes and grooves
- Persons coming into contact with the sheave
- The devices used to meet the above requirements shall be so constructed that they do not hinder inspection or maintenance

2.16.3 Hydraulic Pipe Work and Hoses

Rigid steel pipes shall be used between the tank and the cylinder(s) complying with the requirements of BS: 778. All welded joints shall comply with the requirements of BS: 2633.

Short lengths of hydraulic rubber hose shall be used for final connection to the tank unit and ram(s)/cylinder(s). Pipes shall be installed so as to avoid twisting sharp bends and chafing with protection provided at all rubbing points. Pipes and joints shall be installed to allow inspection to be carried out over their entire length.

Hydraulic piping and rubber hoses shall be effectively isolated from the building structure to minimise the transmission of vibration.

2.17 SHEAVES AND PULLEYS

The pitch diameter of the sheave shall not be less than 40 times the nominal diameter of the hoist ropes. The traction sheave shall be secured to the drive spider by means of flanged /spigot joint and fitted bolts or to the drive shaft by at least two fitted keys located at 90º to each other.

All sheaves shall be flanged both sides and necessary provision made to avoid:

- the suspension ropes leaving the sheave
- the introduction of objects between the ropes and grooves
- persons coming into contact with the sheave or pulley
- devices used to meet the above requirements shall be so constructed that they do not hinder inspection or maintenance

Diverter sheave and pulleys (if provided) shall comply with the requirements of the traction sheave and should be mounted to supporting steels or rafts. All diverter sheave mounting supports including the drilling and fixing of it shall be provided by the Lift Contractor. The Lift Contractor shall give full consideration the fixed height in the machine room and well and the accessibility of the equipment for maintenance.

2.18 HAND PUMPING / LOWERING FACILITY

The hand pumping/lowering arrangement shall comply with EN81-2.

A hand-lowering valve and hand pump shall be provided or in cases where the time taken to hand-lower or hand pump the system would be excessive a battery-operated backup system shall be fitted.

A visual and audible device, having a loud arresting tone, shall be installed within the controller. This device shall indicate the car position and operate a sounder and indicator when the car reaches a floor level in the hand pumping mode. The hand pumping audible device shall be energised by a trickle charge battery pack having a 3-hour operating capacity.

The Lift Contractor shall provide and fix permanent notices in prominent positions close to the hand pumping position. The notices shall clearly state that hand pumping must only be carried out by authorised personnel and set out precise instructions for carrying out the hand pumping procedure.

2.19 PULLEY AND WELL GUARDING

Effective protection shall be provided by removable guards to all rotating parts, in accordance with EN81 and the Workplace Regulations 1992. Traction sheaves, handwinding wheels, brake drums, governors, tension pulleys and similar smooth rotating parts shall also be painted yellow. All electrical equipment shall be protected to at least IP2X rating.

2.20 CONTROLLER AND DRIVE SYSTEM

2.20.1 Drive Control – Variable Speed AC or DC

The drive shall be essentially an AC or DC motor specifically designed for lift services. The control system shall be of a solid-state drive module - closed loop - of a variable voltage/variable frequency type. Alternatively, the drive shall be a variable speed DC system driven from a regenerative solid-state converter.

For lift speeds of 0.75 m/s or greater the control system shall ensure smooth 'S' Curve transition from start to acceleration and from acceleration to full speed, from full speed to deceleration and then to stop with minimum flight times without appreciable noise regardless of the floor to floor heights. All necessary chokes and filters shall be provided to ensure a high-quality system is provided without noise. For lift speeds of less than 0.63 m/s or less the transitions between fast and levelling speeds and also final stopping shall be accomplished smoothly and without appreciable noise for varying loads up to and including the maximum rated duty for both directions in the hauling and overhauling modes. The limits of stopping and floor levelling accuracy shall be +/-10mm maximum and normally better than +/- 3mm. It shall be possible to adjust the jerk, acceleration, and deceleration within defined limits, which must be stated in the tender.

Solid state units incorporated in the drive control module shall be adequately rated and suitable for arduous lift duty.

The tenderer shall state in their tender, the floor levelling accuracy that can be achieved and the maximum heat dissipation for the equipment.

2.20.2 Control System – Simplex and Group Control

Other than for two floor simple push button control the control shall be a micro-computer processor-based system to perform all of the functions of safe lift motion and door control. The system shall perform car operational and group supervisory control, of proven reliability incorporating detector heads and vanes or magnetic tape transducers in the well. The Lift Contractor shall submit full details of the system proposed with their tender.

Each main function, namely traffic demand calculations, permanent car position control, car motion control and door operating control, to be individually supervised by a set of processors. The system is to be co-ordinated to ensure an immediate response to any change in traffic conditions, which may occur.

Microcomputer systems shall be designed to accept reprograms with the minimum system down time. The transmission of all information between cars and controller cabinets shall be carried out serially.

Access to all components should be from the front only; if access is required to the rear of components for maintenance or adjustment then it shall not be necessary to dismantle parts of the controller for this purpose.

Suitable devices shall be included to prevent the lift equipment interfering with the building system and electromagnetically compatibility shall be assured. The equipment must comply in all respects with the Electricity Association Engineering Recommendation G5/4 for permitted harmonic currents, published by The Electricity Association and the EMC European Directive. This condition shall apply to the single sub-main feeder cable, with lifts in their most onerous condition.

Materials used in the construction of the control equipment shall not support combustion. All components shall be rated at the maximum temperature present within the cabinet and the manufacturers shall take account of the effect of heat generated by resistors, relay and contactor coils, lamps, and other components and adjacent equipment in the machine room. Where solid state components require more stringent environmental conditions than those specified in EN81 to ensure correct and stable lift operation, the Lift Contractor shall include for providing the necessary equipment to achieve the correct conditions. Full details of this equipment shall be submitted with the tender.

All insulating materials and metal components shall be suitably finished to prevent deterioration under an arduous working environment. Plastics, elastomers, resin bonded laminates, base metals and alloys shall be of best quality selected from the appropriate British Standards as applicable. Conductor insulation and mouldings used within the control cabinet shall be flame retardant and track resistant. Low toxic hazard plastics are to be used for insulating materials.

All plug-in connectors shall be polarised so that it is impossible to reverse connections. Alternatively, a special tool shall be required to assemble and dismantle the plug-in connectors.

All power cables and terminations shall be effectively segregated from control cables and terminals. Where the voltage of a terminal exceeds 24 volts the voltage shall be marked on the terminal.

The preferred voltage used for control circuits and safety circuits is 24 volts or less, but it shall not exceed 100 volts, which shall be obtained via a double wound transformer incorporating efficient smoothing circuits. The positive line shall be protected by an instantaneous overload circuit breaker. The negative pole shall be earthed at the rectifier through a removable link. The removable link is for test purposes and no switch, fuse or device shall be placed in that position or circuit. Removal of the link shall prevent operation of the lift.

The brake solenoid and any retiring cam shall operate on direct current.

The return side of all relay circuits shall be effectively earthed. All relays, contactors, and interlocks, whether in safety or sequential circuits, shall fail to safety.

The design of all circuits and interlocks must comply with the requirements of EN81. The system shall be arranged that if the landing lock circuit is by passed the doors are prevented from closing until the by-pass is removed.

The controller shall incorporate manual reset adjustable time-lagged overload protection and any necessary protection against overheating of motors, including the door operator motor. Electronic timing devices are preferred to mechanical or oil damped timing devices. Where the detection of overheating of the motor windings is by temperature sensing devices, e.g. thermistors embedded in the windings, a device on the controller shall cut off the supply to the windings in all live conductors until the temperature lowers so they automatically re-set. The occurrence shall be recorded in the controller. The controller shall also be fitted with an over temperature sensor to shut the lift down should the operating range of the equipment be exceeded.

In addition to protection against overload, the controllers shall incorporate devices to protect against phase failure and phase reversal. The operation of any of these devices shall disconnect the electrical supply to the controller and drive or pump motor. Separate independent starting contactors shall be fitted. Full details of the devices proposed shall be submitted with the tender.

The combined characteristics of the fuses and overload protection shall be sufficient to prevent damage to switch gear, including protective, instrumentation and solid-state components.

A test facility shall be incorporated within the control cabinet. When switched to test mode it shall not override the top of car test control. It shall be clearly labelled as a test facility.

Each component mounted on and inside the cabinet and all terminals shall be clearly identified by permanent labels with codes or abbreviations exactly matching those used on the wiring diagrams and a classification shall be provided.

An insulating rubber mat extending the full width of the cabinet by 1m deep shall be provided in front of each controller and where necessary at the rear. The mat shall be of the correct thickness and comply with the relevant British Standards.

Any new controller and drive system shall be compatible with any new or existing equipment it is being used with and designed to suit the speed as stated or existing speeds. If the gear / motor are found to be unusable due to deterioration, the controller should be designed to meet the full replacement drive system.

On group control systems optimised response to landing calls shall be achieved by computing the relative system response of each car to each call. The computation of each RSR time to a call shall be based on, but not limited to, such relevant factors as distance, service to previously assigned calls, car load, direction, door and motion status and coincidence of car and landing calls. The car with the least RSR shall have the call assigned to it. RSR computations for each landing call shall be repeated several times per second and the landing call assignment shall be changed if a more suitable car is found.

A car without registered car calls arriving at a floor where both up and down landing calls are registered shall initially respond to the landing call in the direction that the car was travelling.

When the cars are stationary at a landing the call push buttons on that landing shall also serve as an open-door push button. Open door push buttons shall also be provided inside the lift cars. If for any reason, the doors are prevented from closing and the car is unable to respond to a call the call shall be transferred to another car.

Car call priority shall be incorporated in control system to ensure that the passengers entering the car have a period of 3 seconds (adjustable) after the doors have closed before the car can respond to a landing call.

At no time shall it be possible for the car to move unless all landing, car and access doors are closed, locked, and proving contacts made.

2.20.3 Standard Control Features

All control systems shall provide as a minimum the following features and facilities:

Anti-Nuisance Feature – An anti-nuisance feature shall be provided to prevent operation due to repeated interference with the door sensing devices or the operation of all the car pushes within a given but adjustable time period. Details of the Lift Contractor's proposals shall be submitted with the tender.

Car Preference/Independent Service – A car preference key switch shall be provided to enable the car to be controlled exclusively from the car operating panel.

When the car preference service is selected the lift car shall not respond to any landing calls and a message shall be displayed on the position indicators indicating that the lift is on car preference service. Five keys shall be provided for each car preference switch.

If the lift is part of a group of lifts the lift shall be detached from the group control operation and operate only to calls made from within the lift.

Up Peak Facility – When incoming traffic at the main entrance lobby increases as indicated by a car leaving the lobby filled to a predetermined adjustable level of its capacity within a predetermined adjustable time period, a car assigned to an upper floor shall be called to the lobby and the control system shall instigate an UP PEAK demand feature. Cars shall be automatically dispatched from the lobby, responding to car calls, when they become loaded to more than a predetermined adjustable level of the capacity or if not loaded to capacity on an adjustable time interval. Once all the car calls have been answered the car shall return to the main entrance level for reassigning.

When all calls have been cleared on the system one car will automatically home to the ground floor and park with the doors closed. The cars shall continue to operate in this manner until the lobby traffic has been reduced to a predetermined level.

Initial initiation setting for the loading capacity shall be set at 70% of full load with automatic dispatch taking place when the car is loaded to 80% of its full load.

Down Peak – When a car leaves an upper floor loaded to 80% of its capacity or down calls above the lobby increase to a predetermined level; assignment of a car to the lobby shall cease and the car, after discharging its passengers, shall be dispatched upwards. The cars shall continue to operate in this manner until the down traffic has reduced to a predetermined interval.
When all calls have been cleared on the system and the load in two consecutive downward journeys reduces to below 50% of their capacity, one car will automatically home to the ground floor and park with the doors closed.

Auto Bypass – The lift control system shall include a feature that prevents a lift car being allocated calls and stopping in response to landing calls when the lift car is loaded beyond a predetermined

percentage of its rated contract load. This percentage shall be adjustable on site to suit the site conditions and to assist with traffic handling. Any call not allocated to a car that is prevented from answering a landing call due to its load condition shall be allocated to the first available car moving in the direction of the call, or to a free car.

Lift Overload – A car overload device shall be incorporated which shall prevent the doors closing and the lift moving when the load in the car reaches 110% of its rated capacity. Visual and audible notification should be clearly visible within the COP to notify passengers of this function when activated.

Alarm Indicator – Where there is more than one lift in a building or there is a group of two or more lifts, provision shall be made to indicate from which lift the alarm has been raised. An indicator panel shall be provided and located in an agreed potion. A reset key switch shall be provided to cancel the indicator when action is taken to free any trapped passengers. The illumination of the alarm indicator shall be via a 3-hour battery backup system. 5 copies of the key shall be provided.

Stopping Levelling and Re-levelling – The drive/control system shall incorporate self-levelling and re-levelling systems that shall bring the car level to any landing within a tolerance of +/-3mm regardless of the direction of travel. The automatic self-levelling system shall correct for over travel, under travel and rope stretch.

The levelling tolerance shall be maintained in either direction irrespective of the load condition. Re-levelling of the lift car shall be instigated such that the lift car does not reach a distance of more than 6 mm above or below the level of the landing sill.

Fire Alarm Recall – A facility shall be provided within the control system for interconnection with the fire alarm system and returning the lift to the main exit floor on operation of the fire alarm system even when the lift is not to be connected to an existing fire alarm system. This is so that it can be made operational at a later date if required. The system shall be suitable for either a single fire alarm floor or two fire alarm floors, such that if the fire alarm is from the normal fire service exit floor the lift shall returns to an alternative floor, the alternative floor is to be agreed. The Lift Contractor shall liaise with others as necessary to test, commission and demonstrate the system.

The feature shall be in compliance with EN81-73. The Lift Contractor shall include for terminating the wiring in a terminal box located in a suitable position if the feature cannot be connected at the time the lift is commissioned.

Down Collective – When called for the lift shall be arranged to operate as down collective, only answer landing call in the down direction in the order they are approached as the lift travel down the lift well. Calls that are missed shall be answered as soon as a car becomes available.

Fault Logging – Included within the controller shall be a fault event logging system with retrieval capability. This system shall be easy to operate and shall store information on at least 100 past events. Full details shall be supplied with the tender. The faults shall be easy to retrieve and understand and be complete with the time and date of occurrence.

The recorded fault shall include as a minimum the following:

- out of service
- lift fails to start
- doors fail to open
- doors fail to close
- tipped landing lock
- drive fault
- safety edge failure

Limited Management System – Where a Limited Management system is required it shall, as a minimum, be capable of transferring the details noted above. Fault Logging via an agreed linkage system to either a local or remote BMS as called for. The control system shall be capable of storing and transmitting the information as necessary to a Building Management System (BMS).

2.20.4 Additional Control Features

The control system shall be arranged to provide the following control features when called for:

2.20.5 Special Facilities

Provision shall be made that enables the Managing Agent to set the control system to operate as the following options during the life of the lift without incurring additional cost:

- When all calls have been cleared the car will remain at the floor, at which it last stopped, unless the control system has instigated and UP or DOWN peak feature.
- When all calls have been cleared the car will automatically home to the parking floor
- It shall be possible to set parking with door open or closed as selected
- It shall be possible to set the parking floor at any of the served floors

2.20.6 Fireman's Control Feature

A facility shall be provided within the control system to enable the lift to respond to operation of the fireman's Switch. When the fireman's switch is activated the lift shall in all respects function as if it had been switched on to firefighting control in accordance with EN 81-72 and BS 9999. All car and landing calls shall be cancelled, and the lift shall proceed to the fire access floor and park with its door open. If travelling towards the fire service floor it shall continue without stopping to answer any calls and stop at the fire access floor. If the lift is travelling away from the fire access floor it shall stop and change direction and proceed to the fire access floor without opening its doors. On reaching the fire access floor it shall park with its doors open.

The lift shall respond to calls made from the car in accordance with BS 9999. The lift doors responding to constant pressure on the door open and door close buttons in accordance with BS 9999.

2.20.7 Fire Fighting Control Feature

A facility shall be provided within the controls system to enable the lift to respond to operation of the firefighting Switch. When the fire fighting switch is activated the lift shall in all respects function in accordance with EN 81-72 and BS 9999. All car and landing calls shall be cancelled, and the lift shall proceed to the fire access floor and park with its door open. If travelling towards the fire service floor it shall continue without stopping to answer any calls and stop at the fire access floor. If the lift is travelling away from the fire access floor it shall stop and change direction and proceed to the fire access floor without opening its doors. On reaching the fire access floor it shall park with its doors open.

The lift shall respond to calls made from the car in accordance with BS 9999. The lift doors responding to constant pressure on the door open and door close buttons in accordance with BS 9999.

2.20.8 Evacuation Control Feature

When called for a facility shall be provided within the controls system to enable the lift to respond to operation of the Evacuation control switch. When the Evacuation control switch is activated the lift shall in all respects in accordance with BS 9999. All car and landing calls shall be cancelled, and the lift shall proceed to the fire access floor and park with its door open. If travelling towards the fire service floor it shall continue without stopping to answer any calls and stop at the fire access floor. If the lift is travelling away from the fire access floor it shall stop and change direction and proceed to the fire access floor without opening its doors. On reaching the fire access floor it shall park with its doors open.

The lift shall respond to calls made from the car in accordance with BS 9999. The lift doors respond in accordance with BS 9999.

2.20.9 Split Service Feature

Where there is more than one lift in a group of lifts it shall be possible to split lifts from the main grouping, as necessary. With a four (4) car group, it shall be possible to split the lifts into one group of two lifts and two single lifts, or for the lifts to work as two groups of two lifts, the lifts serving different floors. The ability to split the grouping of lifts shall be provided via three position switches on the lift controllers. A label shall be provided with the switch to indicate its function.

2.20.10 Controller

The control system shall be housed in an enclosed, preferably wall mounted, or floor mounted, IP43 cabinet of neat appearance, fabricated from materials to the architect's choice not less than 1.00 mm thick. Hinged doors with lockable handles shall be fitted to the front of the cabinet. When in their open position all components shall be easily accessible for maintenance and replacement.

Each controller cabinet containing memory equipment shall be properly shielded from line pollution and incorporate positive ventilation and air filtration. The cabinet shall be constructed in accordance with BS EN 60439 Part 1.

Where the controller is an MRL type and forms part of the lift entrance, the controller cabinet shall be fire rated to at least the same rating as the lift entrances and any gaps between the inside of the controller and the lift well shall be fire stopped. 5 sets of keys for the controller shall be provided with one set being left on the car top in secure place adjacent to the car top control unit. Task lighting providing at least 200 lux and emergency lighting shall be provided inside the lift controller.

2.20.11 Limit Switches

The final limit switches and any well mounted terminal stopping switches shall be operated directly by the car with a fixed ramp or similar positive device.

The switches shall be securely fixed and in such a manner that normal horizontal movement or 'float' of the car shall not affect their operation.

The operation and function of the switches shall be in accordance with EN81, and not reliant on a spring for correct operation.

The upward travel of the car at the top terminal shall be limited by means of an 'up' inspection / maintenance limit switch which will be activated when maintenance control is switched to the TEST position. In this position the constant pressure of the RUN and UP buttons shall enable the car to travel up sufficiently to facilitate inspection of the equipment from the roof of the car. The limit switch shall ensure that the car will stop at a level which will enable safe escape and prevent a person 1800mm high standing on the roof of the car from being in any danger of making accidental contact with any overhead equipment or well structure should pressure on RUN and UP buttons be maintained.

2.20.12 Car Position System

The car position system shall be capable of determining the lift position at all times and ensuring the car stops and levels and re-levels into floor within the noted tolerances of the floor level.

2.21 SAFETYGEAR AND OVERSPEND SYSTEM

2.21.1 Safetygears

Safetygears shall have been type tested in accordance with Appendix F3 of EN81 and shall bear the type approval mark. The safetygear shall be compatible with the overspeed governor where applicable.

When bi-directional safetygears are fitted to provide ascending overspeed protection in addition to providing descending / free fall protection they shall be fitted to the car sling below the platform and shall comply in all respects with EN81. Where a counterweight safetygear is required it shall be fitted to the underside of the counterweight frame.

The safetygear shall be operated by suitable overspeed governors in the well, motor or pulley room. The safetygear shall be released by moving the car in the opposite direction to that of its operation, in the up direction for decent and down for ascending operation, by means of the handwinding devices. The safety gear shall be tested on site in accordance with the requirements of the appropriate standards and this document.

2.21.2 Overspeed Governor and Tension Weight

An overspeed governor, operating ropes, pit tension sheaves and frames shall be provided. The operation of the governor and tripping speed settings shall comply with the requirements of EN81. Governors shall be type tested in accordance with Appendix F4 of EN81 and shall bear the type approval mark.

The governor data plate shall show the rated speed and both the mechanical and electrical contact tripping speeds and the normal contract speed, with all speeds indicated in m/s.

Means shall be provided to enable the governor's operation to be tested with the car travelling at contract speed. A convenient means for manual release of the governor jaws shall be provided.

The tension weight frame in the pit shall be fitted with a positively acting switches with contacts connected in the control circuit potential line.

Governor and tension frame shall be protected by adequate guards in compliance with EN81. All sheaves shall be painted yellow.

2.22 UNINTENDED MOVEMENT PROTECTION

A device to prevent the unintended movement of the lift shall be provided; the device shall be capable of stopping the lift car moving in either direction. The device shall be automatically activated to prevent the lift car moving more than 150mm above or below any floor level at which the lift has stopped.

2.23 GUIDANCE SYSTEM

All car, counterweight guides shall be steel rigid tee section with smooth machined rubbing surfaces. The ends of each length of guide shall have machined tongue and grooved joints to ensure accurate alignment. The guides shall be bolted together by steel fish plates complying with EN81 and ISO 7465. Car guide deflection shall not exceed 5 mm at any point inclusive of any deflection of any support steelwork and the fabric of the lift well. Where the lift speed exceeds 1.25 m/s the deflection shall be reduce to a maximum of 3 mm inclusive of any deflection of any support steelwork and the fabric of the building.

All necessary rail clips, brackets, sole plates, and buffer supports shall be provided and fixed by the Lift Contractor. Drilling of all steelwork, concrete and brickwork required to secure the guides and lift equipment to the building structure shall be carried out by the Lift Contractor. The Lift Contractor shall supply inserts in good time where they are to be built into the new well, where provided.

The Lift Contractor shall accurately plumb within 1.5mm and bone the car and counterweight guides, ensuring all joints are smoothly lapped. All guide clips must be examined and checked to ensure each clip is correctly fitted and secure. Any shims shall be of steel construction. The thickness of any shimming/packing to obtain proper alignment of the guides shall not exceed 25mm.

The guides, joints and attachments shall be sufficient strength to withstand the forces imposed on them due to the operation of the safety gear when stopping a fully laden car. The method of supporting the guides shall limit their deflection to 3mm maximum under all conditions so as not to affect normal operation of the lift.

The guides shall rest on steel bases combined with buffer mountings and any necessary oil drip trays.

The guides shall be drilled with M10 holes, 300mm from the bottom, to facilitate main earth bonding. The Lift Contractor shall liaise with other Contractors to provide a route into the lift pit for bonding cables.

Where the counterweight is guided by steel wire ropes four ropes shall be provided or the ropes shall be fitted with rigid guides.

2.23.1 Guidance Shoes

Four adjustable heavy pattern sliding guide shoes fitted with renewable linings of low friction durable material shall be fitted to each car and counterweight frame. Where lift speeds exceed 1.0m/sec the guide shoes shall be spring loaded and self-aligning. Any necessary lubrication shall be applied by automatic means. All guide shoes shall be of a design suitable for the loads imposed on them and roller guide shoes shall be designed such that that will not readily flat spot in use and cause vibration.

Lifts operating with a contract speed of 1.6m/s or greater will be fitted with spring loaded roller shoes.

2.24 SUSPENSION SYSTEM

Suspension ropes shall not be less than 11mm in diameter. A minimum of 4 ropes, independent of each other, shall be provided.

The suspension ropes shall comply with the requirements of BS329 and shall be pre-formed. The rope construction shall be either 6 x 19 (12/6+6F/1) FC Langs lay, or 8 x 19 (9/9/1) FC Ordinary lay. Suspension ropes shall be made of wire having a tensile strength of 140kgf/mm or be dual tensile.

A data plate shall be fixed to the car sling crosshead near to the suspension rope anchorage in a conspicuous position, giving the following data:

- The maximum static load on the ropes in kilograms
- The rated load and speed of the lift in kilograms and metre per second
- The length in metres and details of the rope construction
- Car weight

The ropes shall be attached to the car and pit anchorage, or dead-end hitches in the case of 2:1 roping arrangements, by means of Bulldog grips, thimbles and eyebolts or equal alternative method complying with EN81.

Rope termination shall be arranged so that the whole of the rope anchorages and terminations can be carried safely from a single inspection point.

Anchorage plates, fixings and associated supporting steelwork shall be supplied and fixed by the Lift Contractor.

Multi reeved roping systems (2:1, 3:1, 4:1, etc) will be permitted, but the travel permitted will be limited in accordance with the following formula.

$$\text{Maximum Travel (m)} = \frac{0.3 \times \text{Smallest Sheave Diameter}}{\text{Rope Ration}}$$

Where:

Sheave diameter is in (mm)
Roping ration is 2 for 2:1, 3 for 3:1 and 4 for 4:1 etc

Automatic devices shall be provided for equalising the tension of the suspension ropes and in addition provision shall be made to enable each rope to be adjusted independently in service.

A locking device or anti-twist rope shall be fitted to the eyebolts after the ropes have been attached to the anchorage plates.

Ropes shall be delivered to site on the manufacturers reel and remain thereon, properly protected, until fitted to the lift.

Before ropes are delivered to site, the Lift Contractor shall submit a "Certificate of Test and Examination" to the Lift Consultant for approval. The Certificate shall be in the form required for ropes used within the jurisdiction of the United Kingdom Statutory Regulations.

Other means of supporting the lift car will be considered, but only if full details are provided with the tender.

The fleet angle of the ropes between fixed sheaves or pulleys shall not exceed 0.4 degrees and shall be no more than 1.0 degrees where the centres are variable.

2.25 ROPE SHEAVES AND PULLEYS

Sheaves shall be manufactured from high grade cast iron. The diameter of each sheave shall not be less than 40 times the hoist rope diameter. The sheave shall be of a quality of material and sufficient dimensions to allow re-grooving. All the pulleys and sheaves shall be fitted with anti-jump bars and guards to prevent contact.

2:1 reeving sheaves shall have amply proportioned, low friction bearings preferably of the sealed for life lubricated design.

The sheaves and pulleys shall have the necessary provisions to avoid:

- The suspension ropes leaving the grooves under slack rope conditions
- The introduction of objects between the ropes and grooves
- All sheaves shall be effectively guarded to avoid accidental bodily contact
- The devices used to meet the above requirements shall be so constructed that they do not hinder inspection or maintenance of the sheaves or bearings
- Governor rope and terminations
- Buffers
- Car top control

2.26 CAR, CAR FRAME AND PLATFORM

2.26.1 Car Sling

The car sling shall consist of a steel frame and platform fabricated from rolled steel angle and channel sections, suitably braced and stiffened, incorporating the safety gear below the platform.

The platform shall be effectively isolated from the frame by means of oil retardant isolation rubber pads of suitable resistance and density.

The car sling shall be of a strength and rigidity to withstand forces resulting from the operation of the safety gear or buffer impact in accordance with EN81.

Data plates shall be fitted to the crossheads clearly engraved with the static car mass, the size, construction and length of the suspension ropes and car weights.

2.26.2 Car Roof

The car roof shall be rigidly constructed and be able to support the weight of two persons and resist a vertical force of 2000N at any position without permanent deformation. All components mounted on the car roof shall be located in one position to enable a safe means of access to the roof to be achieved.

2.26.3 Car Roof and Maintenance Control System

A maintenance mechanics control station shall be fitted on the car roof within 1 metre of the landing sill complying with the requirements of EN81 and BS7255. Its location and design shall prevent it from being damaged or operated accidentally.

In addition to the facilities or controls stated in EN81 the following shall be provided:

- Permanent light fittings, with low energy fluorescent lamps and emergency light suitably protected and separately switched
- 13-amp RCD sockets complying with the requirements of BS1363 which shall be fed from the car light supplies
- Intermediate switch for well lighting
- A permanent notice reading "TOOLS AND HAND LAMPS TO BE CERTIFIED DOUBLE INSULATED TYPE, MAXIMUM 1000 WATTS" shall be fixed adjacent to the 13-amp socket outlets
- Where a reduced headroom situation exists clearly worded warning notices shall be mechanically fixed adjacent to the control stations
- Normal and emergency breakdown intercom connected to machine room and lift pit
- There shall be sufficient space to accommodate a rectangular block not less than 500 mm x 600 mm x 1200mm resting on one of its faces. This are shall be clearly marked on the car top

Where there is more than one car entrance a stop switch shall be fitted within 1 m of each entrance and a clearly marked door test switch shall be provided for each car entrance.

All buttons and operating devices to be permanently marked in accordance with EN81 and BS 7255.

2.27 CAR ENCLOSURE, DÉCOR AND LIGHTING (INCLUDING EMERGENCY LIGHTING)

2.27.1 Lift Car Enclosure

The construction of the car enclosure shall satisfy the requirements of EN81.

Special attention shall be given to the elimination of vibration and transmission of noise to the car enclosure. High density oil resistant pads shall be fitted as required between the enclosure and the supporting sling. The external surfaces of the enclosure shall be fire retardant and treated with anti-drumming compound or pads, as necessary.

The car ventilation shall comprise visible apertures of adequate size located along the side and rear walls below the ceiling level and above the skirting. Masking plates shall be mechanically fixed externally to the apertures and be so positioned to prevent small objects from being pushed through the apertures.

The car interior lighting shall be provided as detailed elsewhere in this specification. The interior car lighting shall provide an illumination value of at least 100 lux at floor level or the same as the landings or brighter so that there are no significant change between the levels at all floors and the threshold of the lift. The car lighting shall comply with EN81-70 and not cause glare, shadow, or pools of light. The car light shall be fed from a separate supply to that of the lift drive system. Unless otherwise indicated the car light switch located in the car operating panel shall be a three way switch engraved ON, OFF and TEST in the test position only the emergency light shall be operational, in the OFF position no lighting shall be operational and in the ON position the normal and emergency lighting shall be operational. Key to be trapped in TEST position.

A car operating panel shall be located in the lift car in accordance with BS EN81-70, with side opening doors on the closed jamb sidewall and on the right-hand side when viewed from the landing with centre opening doors.

The car enclosure and fittings shall have sufficient mechanical strength to resist forces applied during normal operation, the impact on its buffers and the application of the safety gear. The car roof and roof trap, if fitted, shall withstand the weight of two men. All glass shall be safety/laminated glass in

accordance with the Workplace Regulations and a certificate shall be provided in the maintenance manuals.

Where a roof trap is fitted on fireman's lift or a fire fighting lift it shall be electrically interlocked with the safety circuit to prevent operation should the trap be opened. It shall be possible to open the trap from the roof. When the roof trap is open it shall not project beyond the line of the lift car roof.

Where there are excessive gaps around the lift car fixed or demountable guardrails shall be provided on the car roof. Where there is reduced headroom a notice shall be fitted stating reduced headroom and the safe working area painted on the car roof in accordance with BS7255.

The exterior of any enclosure shall be covered with a fire-retardant material if the design incorporates non fire-retardant material.

2.27.2 Emergency Car Lighting

A maintained emergency lighting system shall be provided that will energise automatically upon failure of the supply to the normal interior car light in full compliance with EN81 and BS: 5266 system type M3.

The emergency lighting unit shall be a self-contained pack mounted on the car roof and shall incorporate nickel cadmium batteries, charger, and control circuit. The unit shall be supplied from the live side of the car light switch and shall illuminate one of the general-purpose luminaries (over the operating pushbuttons).

The batteries shall have sufficient capacity to maintain emergency lighting for a period of 3 hours. The illumination of the emergency lighting shall be such that horizontal luminance of at least 10 lux is provided over the alarm button in addition to some general illumination in the car.

The emergency lighting unit battery shall be automatically recharged upon restoration of the normal mains supply. After being discharged the battery shall within a 14-hour period be capable of again meeting the requirements of the Specification. At the end of its discharge period the battery shall provide not less than 85% of its normal voltage at 15º C with the normal load connected.

2.27.3 Emergency Alarm and Intercom System

The Lift Contractor shall provide and install an emergency alarm capable of being heard within the accommodation and reassurance alarms fitted on the car top.

The emergency alarm system shall be powered by a self-contained power supply unit incorporating nickel cadmium batteries, charger, and control circuit. The unit shall be supplied from the live side of the car light switch.

The Lift Contractor shall supply and install a normal and emergency intercom system comprising a microphone/speaker unit mounted in the car, car top, pit and motor room and connected to an external telephone line. The microphone/speaker unit shall be mounted in the car operating panel at a suitable height and shall be activated by pressing the emergency alarm button. When activated the system shall provide high quality two-way voice communication with adjustable sound volume and a telephone activated indicator shall be provided. The unit will be capable of being pre-programmed with at least three emergency numbers, which will be dialled automatically until answered. The unit must be capable of differentiating between a line being answered personally and an answer phone service. The alarm / intercom system shall be fully compliant with EN81-28 and EN81-70 and be complete with an induction loop system, etc.

A permanent, engraved clear and concise instruction notice shall be incorporated in the unit faceplate.

Where there are two or more lifts in a group or there are more than two lifts in a building the alarm system shall be arranged to operate an alarm indicator panel on the main floor landing and at a remote location.

The Protocol used between the alarm device and the service provided shall be in accordance with DD 265.

2.27.4 Entrance Protection

Non-contact type sensitive devices shall be provided across the full lift entrance. The device shall be of a type that detects wire trolleys or ribbon type leads.

2.28 BUFFERS

Energy accumulation or energy dissipation type buffers complying with EN81 as appropriate shall be installed beneath the car and counterweight within the pit.

Energy accumulation type buffers shall be of the helical spring type and have a constant spring rate.

Steel buffer striking plates of ample proportions shall be fitted to the car sling and counterweight frame to ensure that buffer impact loads are evenly distributed.

The Lift Contractor shall supply and fit all necessary steelwork, mounting plates including steel stools, columns or stands to secure and support the buffers at the appropriate height above the pit floor.

With the car on the fully compressed buffers there must be adequate clearance and man clearance between the lowest part of the car and pit.

Buffers for fireman's or firefighting lift shall be in accordance with BS 9999, EN81-2, EN81-2, and EN81-72.

2.29 FIREMAN'S LIFTS

Where a fireman's lift or a lift with fireman's service is called for, the well and equipment within the well shall be in accordance with BS 9999 and BS EN81-72 as far as is reasonably practical within the confines of the existing building. Where it is agreed that the landing entrances are not being changed and protected to prevent ingress of water into the lift well the Lift Contractor shall advise the precautions being taken, or it will be assumed that special measures are being taken to protect the equipment against the ingress of water, moisture and condensation.

Electrical equipment in the well shall be positioned at least 1 m from the front of the lift well and protected as appropriate for the application. Where it is not possible to locate electrical equipment more than 1 m from the front of the lift well or more than 1 m above the pit floor the Lift Contractor shall take precautions to prevent the ingress of water and moisture into the equipment and electrical switches and wiring. The Lift Contractor is to agree measures with the Lift Consultant before starting work.

A fireman's switch shall be suitably positioned in an agreed position at the main fire access level in the lobby of the fireman's lift. The switch shall incorporate an intercom for communication between the fireman's access point, the lift car and the lift machine room and the fire communication point within a building where one is provided. Where an auxiliary supply is provided the switch shall also provide indication of the status of the lift supply, green for normal supply and red for auxiliary supply with suitably engravings. The cover of the unit shall be engraved 'Fireman Switch'. The switch and the operation of the lift on fireman's service shall be as that for a fire fighting lift in accordance with EN81-72 and BS 9999. However, the lift is not to be designated or recorded as a fire fighting lift.

Where new mains and auxiliary supplies are provided, and a new changeover switch is fitted. The changeover from the normal mains supply to auxiliary supply shall be in accordance with BS 9999 and BSEN81-72.

A suitable means of escape and rescue from the lift car shall be provided; arrangements are to be agreed with the Engineer.

A fire alarm sounder and indicator shall be provided on the car top and integrated into the operation of the maintenance control on the car top.

All landing fixtures and fittings shall be to at least IPX3.

2.30 CAR AND LANDING ENTRANCES

2.30.1 Operation

Lift car and landing doors shall be operated smoothly by a high-speed electric door operator which shall drive open or close the car and landing doors simultaneously. The type of operator shall enable minimum flight times to be achieved with fast door opening and slow closing speeds. The door operator and associated controls shall be of the highest quality being the premier type currently available from the Lift Contractor's range.

The door dwell times, opening and closing speeds shall be fully adjustable.

The drive motor and speed reduction unit shall be mounted on the car headers with dampers to prevent noise transmission or vibration to the lift car and be capable of driving the car and landing doors through a solid metal linkage system. The door drive motor unit and linkage system must be designed for intensive and arduous duty. The connecting ramp or coupler between the car and landing doors shall be of robust metal construction and can only be engaged when stopping at a landing.

In normal service it shall only be possible for the car doors to operate in the levelling zone of the landing at which the car is stopping or has stopped. During lift travel the doors shall be locked if the distance between the car and landing sill exceeds 150mm. The distance between the car and landing door panels shall not exceed 120mm over the width of their operation. Advanced door opening shall be provided to minimise the flight times except where the elderly or children would use the lifts. When advanced opening is fitted the doors are to be open the maximum to prevent persons leaving the lift as stated in EN294 when the lift arrives at floor level.

The kinetic energy values and forces imposed by the closing doors as defined in EN81 for horizontally sliding doors must be considered as absolute maximum values, as the lift may be used by children, the elderly or the less able.

An extra low voltage, non-contact, multi-beam detection device shall be provided and so located to give full protection along the leading edge of the car door panel and for the full height and width of the door opening.

The device shall detect any type of obstruction in the path of the doors when closing. It shall provide a minimum protection zone of 50mm in front of the leading edge of each panel and the extent of this zone shall be adjustable. Upon detecting an obstruction, the doors will stop before striking the obstruction and reverse to the fully open position. Pressure operated door reversal devices, mechanical type retractable shoes or safety edges are not acceptable. The detection device shall not be susceptible to dust or sunlight.

An alternative method of providing effective door protection may be offered for consideration provided full details are supplied with the tender submission.

Upon arrival of the car at the selected landing the car and landing doors will automatically open and remain open for a predetermined period of time. The door dwell time shall be readily adjustable by authorised personnel. Registration of a call inside the car shall override the door dwell time and cause the doors to close subject to the detection and door monitoring devices.

'Door open' and 'door close' buttons shall be provided in the car operating panel. These buttons shall only be operative whilst the car is stationary at a floor. Momentary pressure of the 'door open' button shall cause the car and landing doors to open only if they are coupled together. Momentary pressure of the 'door open' button whilst the doors are closing shall stop them and reverse their direction to the fully open position. Operation of the 'door close' button shall reduce the door dwell time to 0.5 seconds.

Landing locks shall be in accordance with EN81 and have clear dustproof covers which enable the locks to be visually inspected. Multi-door panels shall be fitted with slave locks and / or mechanically interlocked. It shall be possible to open the landing doors in an emergency with the aid of triangular release key unless otherwise specified to suit the environment i.e. vandal resistant. The landing locks shall not be accessible from any position.

Where shutter gates are fitted on the car and the landing doors are hinged the distance shall not exceed 150mm. Where power operated doors are provided on the car and there are swing doors on the landings the car doors shall only operate when the landing doors are closed and the landing doors shall not be unlocked until the car doors are fully open.

The lighting level on the landings shall enable persons to see they are stepping into the lift car.

2.30.2 Car and Landing Doors

The car and landing door panels shall consist of horizontally sliding metal panels in accordance with the types set out in the Lift Specification and Tender Document.

The panels shall be of rigid hollow metal construction formed from 1.5mm minimum thickness steel.

The landing doors shall be constructed to be rigid and withstand the forces given in EN81 unless otherwise specified to suit the environment. The landing door panels shall be adequately guided at the top by suitable rollers of sufficient diameter to ensure smooth operation and to withstand the pressures exerted on the doors from repeatedly meeting obstructions. At the bottom, shoes shall be provided which fully engage the landing threshold so they cannot be forced out. Emergency guidance shall be provided to guide the doors should the running surfaces wear out. Gravity or spring closers shall be fitted to automatically close the doors. The landing entrance assembly shall be 2-hour fire rated, unless highlighted by the Lift Consultant. Where vision panels are fitted these shall be between 60mm and 150mm wide at least 1000mm above the floor, a minimum of 6mm thick laminated glass, a minimum glazed area of 0.015 metres sq. with a minimum of 0.01 metres sq. per vision panel otherwise a car indicator shall be fitted.

Where glass doors are specified, they shall be of laminated glass with or without a flush stainless-steel frame. The protective devices detailed in EN81 shall be fitted either Teflon inlayed polish, opaque glass to 1100mm or finger detectors. Advance door opening shall not be fitted where the lift is to be used by the public and the size of the entrance shall allow sufficient time for children to remove their hands before the doors open.

In their open position the doors shall provide clear openings in accordance with the dimensions specified in the Lift Specification and Tender Document.

Each panel shall be top suspended and run in accurately formed tracks on hanger assemblies incorporating polyurethane rollers fitted with low friction life lubricated bearings. Adjustable up thrust or 'kicking' rollers shall be fabricated as a common assembly, which in turn shall be rigidly fixed to supporting steelwork attached to the well structure or car frame as applicable. All necessary supporting steelwork and fixings shall be provided by the Lift Contractor.

Each panel shall be accurately guided in a bottom track by means of two sliding shoes. The shoes shall be easily replaceable from the well side of the doors without the need to remove the door panels. Each guide block unit shall incorporate a robust safety flange extending downwards into the bottom track such that, in the event of the collapse or breaking adrift of the normal rubbing surfaces of the guide block, the safety flange will prevent the bottom of the door panel from being forced into the lift well. The landing doors shall be fitted with self-closing devices to automatically re-close the doors.

The drive panels shall be fitted with electro-mechanical interlock devices and the slave panels shall be mechanically connected in accordance with EN81.

Doors to be marked on the rear of the panel(s) with clearly legible notice, the corresponding floor number, to ensure maintenance issues can be swiftly relayed.

The leading edge of each landing door panels shall incorporate a reinforced sight guards so as to effectively mask any gaps between the hoist way face of the landing doors and the door sills. The sight guards shall extend the full height of the entrance.

In an area where the lift is likely to be subject to vandalism the doors shall be designed to suit the environment and in accordance with EN81-71. The type of emergency door release is to be agreed with the Lift Consultant.

2.30.3 Landing Door Locks

Each set of landing doors shall be fitted with electro-mechanical locks incorporating interlock functions and compatible with the door operators. The design of the locks shall comply with the requirements of EN81, be vandal resistant with Perspex covers.

Locks shall have been type tested in accordance with Appendix F1 of EN81 and shall bear the type approval mark.

It shall be impossible to open the landing doors unless the car is stationary at the particular landing. It shall further be impossible for the lifts to move or be kept in motion unless all landing doors are properly mechanically locked and all electrical interlocks and proving contacts are made.

The only exception to the above is:

- When a lift car is re-levelling at floor level and within the re-levelling zone which shall not exceed 20mm
- When the lift car is approaching a floor at levelling speed in response to a call for that floor and is within the landing-levelling zone. This zone must not exceed 0.35m above or below the door level.

The Lift Contractor shall state the maximum landing door gaps that the door locks will tolerate. This shall be on the basis of what will be demonstrated during the acceptance tests by use of rectangular obstruction standing 100mm high on the sill (on the go/no-go principle).

The locks shall be provided with emergency release devices which will enable only authorised persons to open the landing doors from the landing side by means of a specially shaped key of the triangular type detailed in EN81. The emergency release mechanisms shall be of robust design suitable for rough usage with the apertures fitted with a 3mm wide escutcheon rings on the visible faces of the door panels or alternatively in the headers. Where vandal resistance is required the mechanisms shall be fitted in the architrave headers and the key inserted through an aperture offset from the triangular release to prevent operation by common objects.

2.31 DOOR SILLS TOE GUARDS AND FACE PLATES

The car and landing door sills shall be heavy section extruded aluminium suitable for rough usage. The length of the sills shall be such that they extend beyond the ends of the door panels with the doors in the fully open position.

Heavy section rolled steel angle struts or equivalent shall be bolted between the landing sills and door tracks to provide a rigid door support frame.

The horizontal running clearance between cars and landing door sills shall not exceed 30mm and be of a constant distance reflective of correctly aligned installation.

On the car a toe guard having a minimum depth of 750mm and extending at least 100mm beyond the full width of the opening shall be fitted below the threshold in accordance with EN81. The toe guard shall be formed from sheet steel of not less than 1.6mm and shall be rigidly braced back to the car platform steelwork. Where the lift pit is reduced a collapsible toe guard may be fitted.

A toe guard or fascia on the landing extending at least 100mm beyond the full width of the clear opening and formed from 1.6mm sheet steel shall be fixed below each landing sill. Fascia's shall present a flush surface to the lift well continuously between the sill and the door header at the floor below. A toe guard conforming to the requirements of EN81 shall be provided in the pit below the lowest sill.

2.32 CAR AND LANDING STATIONS INCLUDING INDICATORS

The design of the car operating panel shall be agreed with the Lift Consultant, but it will typically be hinged and locked by at least two flush mounted Yale type locks or flush mounted with either secret or invisible fixings. The travelling cables shall be either directly connected to the relative item of equipment or be terminated in a terminal box which shall be in an easily accessible position on the car top or housed behind the car operating panel and readily accessible when the panel is opened. All buttons shall be of the self-illuminating type incorporating tactile markings in relief, including the alarm push.

2.32.1 The Car Operating Panel

Car operating panels shall incorporate the following:

- Manufactures name and serial number
- The rated load in kg and persons
- A call button corresponding to each floor served with half illumination
- Main floor button to be green and proud of COP
- Car preference key switch (key only to be removable in the Normal position)
- Door open button
- Door close button
- Alarm button
- Telephone activated indicators
- Flush mounted speaker / microphone grille
- Car position and direction indicators
- Overload warning indicator
- An induction loop with the appropriate symbol for the emergency passenger alarm
- All car and call buttons to have blue backlit halo lights

To facilitate use by disabled persons the car operating panel shall be mounted in the sidewall of the lift car at the centreline of the nearest button to the front of the lift car is at least 400 mm from the front wall, the highest button in the lift car station shall be placed no higher than 1.1 metres above the car floor level and an audible enunciator warning of floor arrival shall be provided. The illuminating alarm button and door control buttons shall be located such that their centre line is 900mm above the floor level on the lift car. Full details of the maximum wording and possible wordings shall be provided.

Each button shall be tactile marked in relief with Braille markings corresponding to the floors served. The same designations shall be used for the car position indicator. All other symbols shall conform to EN81-70 and BS8300. All buttons shall have background illumination by means of blue backlit halo illumination with full illumination for car acceptance. Car floor buttons shall remain illuminated when pressed and will revert to reduced illumination when the car arrives at the selected floor.

The wording of the overload indicator shall only be discernible when illuminated.

A blue digital LCD indicator shall be located in the car station having clear and legible characters not less than 50mm high complying with EN81-70. The alpha-numerical characters shall correspond to those engraved on the car operating buttons and the enunciators.

A permanent load plate measuring at least 150mm wide x 100mm high legibly engraved with characters not less than 30mm high showing the contract load capacity in persons and kilograms shall be fitted in a conspicuous position on the car operating panel. The engraving shall be black in-filled.

Unless specified otherwise, car position indicators shall be positioned such that their centre line is not less than 1,600 and not more than 1,800 mm above the car floor level.

Where a fireman's or firefighting lift is called for the push buttons and indicators shall be in accordance with BS 9999 and BS EN81-72.

2.33 LANDING FURNITURE

The landing call pushes shall be located between 900 and 1100mm, have background illumination and incorporate self-illumination to indicate call acceptance and audible signals on each and every operation. The buttons shall remain illuminated when pressed and will only revert to reduced illumination by a car arriving at the floor in response to the appropriate directional call.

Blue digital LCD position indicators shall be located at all floors with digital direction arrows incorporating pre-arrival sounders located at positions to suit disabled passengers, complying with EN81-70. All face plates fitted to signals and operating boxes shall be flush mounted and finished as stated in the Lift Specification and Tender Document. Where specified multi-function TFT screen indicators shall be provided in the lift car stations and on the landings at the levels specified to provide additional information including time, temperature, financial and news information. Provision shall be incorporated to give information about the tenants or functions on each floor level and building management information.

Landing position indicators and direction arrows shall be positioned in accordance with the Lift Consultant's requirements and be position such that their centreline is not less than 1,800mm and not more than 2,500mm above the finished floor level unless agreed otherwise in writing.

The arrival of a lift at a floor shall be accompanied by an audible signal, one sound for up and two sounds for down.

2.34 PAINTING

All steelwork shall be thoroughly cleaned of all scale and rust removed prepared, primed, and painted two coats of good quality oil paint in the factory before delivery to site. Parts not accessible after installation shall be given two coats of paint in the factory.

On completion of erection and prior to commissioning a final coat of paint shall be applied giving a gloss finish.

Where paint finishes are specified for car or door decorative finishes, the paint shall be spray applied to give a smooth and blemish free finish to colour and grade specified by the Lift Consultant. Samples of colours and grades so selected must be submitted and approved before the work is executed.

The specification and materials used are to be to the approval of the Lift Consultant.

2.35 NOTICES AND TOOLS

A purpose made rack shall be provided and fixed by the Lift Contractor in the motor room to provide storage for the lock release key and any other tools and keys necessary for emergency use or safe release of trapped passengers. Barriers complying with PM26 shall be provided by the Lift Contractor for working on the landings and where applicable the control panel.

Clear and detailed instructions regarding the moving of the lift in an emergency, shall be durably mounted and fixed in a readily accessible position in the motor room. A danger notice complying with the requirements of EN81 shall be supplied and fixed by the Lift Contractor to the outside of the machine room door or attached to the door lock keys. The Lift Contractor shall also supply and fix durably mounted "Treatment of Electric Shock" notices in the machine room complying with Statutory Requirements. Where more than one lift is installed in the same well lift number labels shall be fixed to the main switches, machines, generators, controllers, etc. All notices shall be supplied and fixed before the acceptance tests commence.

Encapsulated non-fading straight-line wiring diagrams shall be mounted in a readily accessible location in each machine room. Full details of operational sequences of the control equipment related to and

incorporating the same nomenclature and symbols used in the line diagram shall be supplied in booklet or other suitable form by the Lift Contractor for retention in the machine room.

LG1s and Type Test Certificates shall also be properly displayed in the machine room.

2.36 QUALITY OF EQUIPMENT

All equipment provided as part of the contract shall have being commercially available for at least two years and the Lift Contractor shall be able to demonstrate its reliability for at least the same period. Equipment that does not fulfil the above criteria may be considered if its suitability for the application can be demonstrated to the satisfaction of the Lift Consultant.

The doors shall be smooth in their operation and of a robust design suitable for the application and it shall be possible to adjust their speed in order to maximise their performance and the performance of the lift as necessary.

Vibration and noise measurements shall be made in accordance with BS ISO 18738 on two consecutive up and down journeys.

2.36.1 Ride Quality

Accelerations levels shall be measured as root mean square (RMS) values using a time constant of 0.125s (fast), and the maximum values recorded in each 1/3rd -octave band from 1-80 Hz inclusive over each complete cycle. The following limits shall apply:

Horizontal Vibration – Frequency range 1-80 Hz inclusive: maximum (RMS) acceleration and deceleration shall not exceed O.08 m/s² and applied to any time during a complete cycle, in any 1/3rd -octave band in the frequency range specified.

Vertical Vibration – At maximum speed: maximum (RMS) acceleration level in any 1/3rd -octave band should not exceed 0.08 m/s² in the frequency range 1-80 Hz.

During acceleration / deceleration and start / stop periods: the maximum (RMS) acceleration level in any 1/3rd -octave band should not exceed 0.1 m/s² in the frequency range 1-80 Hz.

The acceleration and deceleration of a lift shall be set between O.3 m/s² and 1.2 m/s² depending on the lift speed as agreed with the Lift Consultant to maximise the lift performance.

The Jerk shall be as set between 0.3 m/s³ and 2.2 m/s³ depending on the lift speed as agreed with the Lift Consultant.

2.36.2 Noise

Noise levels shall be measured with a precision grade sound level meter set to ‘fast’ response and shall not exceed the values noted below unless otherwise agreed in writing by the Lift Consultant.

- Noise levels within the lift shaft shall not exceed 75dBA Lmax(f)
- The noise level within the lift car shall not exceed 50 dBA
- The noise level generated by the lift doors shall not exceed 60 dBA
- The noise level generated by the lift with the landing doors closed shall not exceed 45 dBA on any lift lobby

Structure-borne noise levels from lift operation

Where habitable rooms are directly adjacent, vibration levels from lift operation (including both lift motor and car movement along the guide rails) shall not exceed the following as measured on the lift shaft wall partying the residential unit:

Table 8383/T1 – Lift Shaft Wall Vibration Level Limits

Maximum acceleration level (dB) ref. 1 x 10^{-6} m/s^2 at Octave Band Centre Frequency (Hz)			
63	125	250	500
80	80	75	75

Achievement of the above may require isolation of certain lift system components (e.g. roller frames, guide and deflection pulleys, cable fastening points and switchgear). The supplier shall ensure any mount selection is sufficiently resilient to provide isolation, but at the same time sufficiently stiff not to affect lift operation. The guide rails should not be fixed to the lift shaft wall facing the residential unit.

2.37 RETAINED EQUIPMENT

Where plant and equipment is noted to be retained it shall be retained unless during the Lift Contractors survey or installation it is found not to be in a suitable condition or does not lend itself suitable for the installation as a whole and the new equipment. Any new plant or equipment shall be provided in accordance with the relevant parts of this Specification.

Where equipment is to be retained it shall be retained unless it is incompatible with any new equipment, it does not lend itself to modification to be compatible with the new or modified equipment where retained equipment or it is economically prudent to provide new equipment in its place.

The Lift Contractor shall check the existing equipment in particular the electrical equipment for signs of damage. Should any equipment prove to be defective the Lift Contractor shall inform the Lift Consultant immediately. The Lift Contractor shall ensure that all equipment is operational before setting the lift to work. The Lift Contractor shall advise in their tender any retained equipment that is considered to be obsolete or not suitable for continued use for at least the next 5 years.

The exterior of any retained car enclosure shall be covered with a flame-retardant material if the material is not already of such a type.

It is deemed that the Lift Contractor has included all costs associated with the retained equipment whether retained or not.

All retained plant and equipment shall be thoroughly inspected at the start of the works, as required by a SAFed supplementary tests. They shall be checked for wear, correct operation, and alignment. A report on the condition of the components shall be issued to the Lift Consultant within 15 working days prior starting work on site. Failure to provide a written report prior to 15 days will be taken to mean that the Lift Contractor is providing a minimum 5-year guarantee on the retained equipment.

All retained equipment shall be cleaned and painted and recharged with oil or grease as appropriate. Idle rope systems on traction lifts shall be replaced with overspeed devices on accordance with 2.8.2 unless otherwise agreed in writing by the Lift Consultant. Guide sections shall be of 'Tee' section and worn or damaged sections replaced as necessary unless otherwise agreed in writing by the Lift Consultant. Landing lock not activated by gravity shall be replaced or modified to ensure that failure of the actuating device does not cause unlocking of the door or gate.

2.37 Refurbishment and Modernisation of Equipment

Where plant and equipment is noted to be refurbished or modernised it shall be retained unless during the Lift Contractor's survey or installation it is found not to be in a suitable condition or does not lend itself suitable for the installation as a whole and with the new equipment. Any new plant or equipment shall be provided in accordance with the relevant parts of this specification. The Lift Contractor shall advise details of all the new equipment included.

The following Specification shall be read in conjunction with all other relevant sections of this Specification and the other Tender Documentation. Where equipment is to be refurbished or modernised

it shall be retained unless it is incompatible with any new equipment or it does not lend itself to modification to be compatible with the new or modified equipment.

Where equipment is to be refurbished or modernised it shall comply with the following:

- The Lift Contractor shall check the existing equipment in particular the electrical equipment for signs of damage. Should any equipment prove to be defective the Lift Contractor shall inform the Lift Consultant immediately. The Lift Contractor shall ensure that all equipment is operational before setting the lift(s) to work. The Lift Contractor shall advise in their tender any retained equipment that is considered to be obsolete or not suitable for continued use for at least the next 5 years. It is deemed that the Lift Contractor has included all costs associated with the refurbishment or modernisation of the existing equipment whether retained or not.
- All plant and equipment to be refurbished or modernised shall be thoroughly inspected immediately after placement of order, as required by SAFed supplementary tests. They shall be checked for wear, correct operation and aligned. A report on the condition of the above components shall be issued to the Lift Consultant within 15 working days of placement of order. Failure to provide a written report within 15 days will be taken to mean that the Lift Contractor is providing a 5-year guarantee on the retained equipment.

Where equipment is as being modified or refurbished, as a minimum the following works shall be carried out on the equipment to be retained and refurbished or modernised:

2.38 Lift Well and Machine Room

Existing machine room(s) and lift well(s) shall be checked for structural strength and condition any defects to be brought to the attention of the Lift Consultant.

The existing lift well and machine room shall be painted to seal against dust, etc. White for the ceiling and walls, red for the floor of the machine room and pit. Any pulley rooms shall also be painted as noted.

2.38.1 Machine Room Access

Where an existing machine room access door opens inwards it shall be changed to open outwards. Unless otherwise stated in the Tender Document, an FB4 type lock shall be installed to enable the motor room door to be opened from the inside, without the need of a key.

2.38.2 Lift Pit

An emergency light unit and an RCD socket outlet shall be installed in the pit if they are not already provided. Failure of the emergency lighting unit or RCD Socket outlet due to short circuit, damp or water ingress shall not cause the loss on any other circuit or supply.

Where any electrical safety switches or electrical circuit in the pit may become damp or wet, particularly any that are fundamental to the operation of the lift, shall be of a type that will not be affected by submersion in water, damp or humidity.

A safe means of accessing the lift pit shall be provided in accordance with the EN81 Standards.

Where an existing pit access door is provided the Lift Contractor shall ensure that it open outwards and has an electrical safety interlock fitted.

2.39 Electrical Installation

2.39.1 Electrical Installation

Where the existing is being retained it shall be checked for correct operation and damage, any new wiring shall be in accordance with the IEE Regulations.

Existing trunking and conduits shall be cleaned, and the wiring checked for wear and damage. Any damaged or defective wiring shall be replaced. The Lift Contractor shall provide assurances that the retained existing control equipment is maintainable for at least the next 5 years. Any missing lids and any damaged trunking and conduit shall be replaced.

Earth continuity of the trunking and conduit shall be checked, and any missing, damaged, defective, or unsuitable parts shall be replaced.

2.39.2 Electromagnetic Compatibility, Radio and Television Suppression

Where the existing installation is being retained it shall be checked for compliance with relevant standards.

2.39.3 Electrical Mains Supply

The Lift Contractor shall check and confirm the suitability and compliance of any retained supply and wiring for the new lift installation. Where they consider the wiring to be unsuitable, they shall include for costs associated with replacing it. If the mains are not suitable, they shall indicate such in their tender. Failure to advise the unsuitability of the supply will be taken as the Lift Contractor having included all necessary costs associated with making it suitable and compliant if it is not acceptable.

2.39.4 Mains Switch and Distribution Board

Where the existing provisions are being retained that shall be upgraded as necessary to ensure their suitability for continued use, with new equipment being supplied as necessary to ensure the provision of the following:

- Switched fused lockable isolators per lift
- Lift well lighting with emergency lighting
- 13A RCD socket outlets in lift motor room, pits and on car tops
- Lighting in machinery space provides 200 LUX
- Emergency lighting in machinery space
- Mains Switches and Distribution Boards
- Ensure that distribution boards per lift are fitted with the following separate ways:
    - Switched lighting in lift machine room/machinery space
    - Lift car lighting switched from machine room/machinery space
    - Lift well lighting switched from machine room/machinery space, pit, and car top
    - Tubular heating in lift machine room/machinery space with thermostat control
    - Spare ways

2.39.5 Well Lighting

Any retained well lighting shall be checked and made to operate via three-way switching, with switches being located in the machine room (controller of an MRL), on the car top and in the pit. Well lighting shall be arranged on a per lift basis. Failure of the bottom fitting due to short circuit, damp or water ingress shall not cause failure of the well lighting system.

Where the lift is or is to be a fireman's or firefighting lift the additional requirements of BS 9999 and EN81-72 shall be incorporated into the system.

2.40 Hydraulic System

Where parts of the existing hydraulic system are being retained that shall be checked in accordance with SAFed supplementary inspections and a report of their condition provided to the Lift Consultant within 15 working days of placement of order.

Valve blocks shall be checked, and any damaged, defective, or degraded parts replaced.

Rams shall be checked for correct alignment and plumb and their bearings and seals replaced, as necessary.

New equipment or replacement parts shall comply with the requirements of British Standards, EN81-2, EN982 and Section 2.3 of this Specification where applicable and be manufactured by Bucher Hydraulic or similar quality product and be of the type compatible with the power system specified. Accumulators shall be replaced with new units as appropriate for the application. The Contractor shall state within their tender the best levelling tolerance that can be maintained with the drive systems proposed. The system shall be fitted with high- and low-pressure switches. An anti-creep timer shall be fitted in the controllers.

2.40.1 Power Unit

The hydraulic system, motor, pump, valve block, hoses and pipe work shall be thoroughly inspected at the start of the works, as required by SAFed supplementary tests. They shall be checked for wear, correct operation. A report (including any obsolescence) on the condition of the system and components shall be issued to the Lift Consultant within 15 working days of placement of order.

All grime shall be removed from the outer casings which shall be de-greased, wire brushed cleaned and painted with two coats of good quality paint. All fixings shall be inspected for soundness and tightened as required. The isolation shall be renewed if fitted.

Existing oil shall be removed, and the system flushed out and cleaned and all bearings and seals checked for wear. The bearings shall be checked for wear and replaced if necessary.

The Lift Contractor is required to give assurances as to the condition of the motor, pump, valve block, etc. which shall accompany the tender documents. If the part of the unit or the complete unit is found to be unusable due to deterioration, an optional cost for replacement parts or a new unit should be submitted along with the design details.

The Lift Contractor shall ensure and confirm that the existing unit is suitable for continued use with the drive control system being supplied. Any changes due to the incompatibility of equipment shall be at the Lift Contractor's expense.

The existing drive system shall be cleaned, and the wiring and components checked for correct operation, wear, and damage. Any damaged, defective, or worn wiring or components shall be replaced. The Lift Contractor shall provide assurances that the existing drive equipment is maintainable for at least the next 5 years.

The pump and pump motor mounting shall be checked and replaced if necessary. The motor, pump and bearing(s) shall be so mounted and assembled that proper alignment of these parts is maintained under all normal operating conditions. The power unit shall be rated such and shall operate with the minimum of noise and vibration with isolators on the machine room floor.

Any oil filter shall be cleaned or replaced. Where not already provided a stopcock shall be provided to enable the filter to be cleaned or changed without significant loss of oil.

The Lift Contractor shall confirm that after refurbishment, the hydraulic power unit will be capable of at least the minimum number of starts per hour specified in the schedules.

Compliance with this clause does not relieve the Lift Contractor from the responsibility of installing equipment, which will meet the commissioning tests and normal operating requirements of the installation.

The hydraulic system shall be complete with a pressure gauge, hand pump, hand lowering valve and maximum and minimum oil level indicators.

Oil tank heater complete with adjustable temperature control shall be provided. Where necessary to achieve the required number of motor starts per hour, temperature-controlled oil coolers or forced heating/ventilation shall be provided as required.

A clearly engraved permanent data plate shall be fixed to the motor stating the manufacturers name, the type/frame size, and full relevant technical data.

Where the pump motor power is 30 kW or more a separate re-levelling motor shall be provided.

2.40.2 Hydraulic Rams

Ram and pipe rupture valves shall be thoroughly inspected at the start of the works, as required by SAFed supplementary tests. They shall be checked for wear and correct operation. A report (including any obsolescence) on the condition of the system and components shall be issued to the Lift Consultant within 15 working days of placement of order.

Rams shall be checked for alignment and to ensure that they are mounted such that they are only subjected to axial loads. All necessary adjustments, supports, and mountings of the cylinders shall be provided by the Lift Contractor.

Where the platform is connected directly to the cylinder, the mountings shall be checked for suitability for continued use with any existing or revised arrangement and that they will withstand the type of loading applied. Any existing device, which will initiate the closing of the lowering valve in the event of the car being prevented from descending, shall be checked and replace if found to be defective, where such a device is not already fitted, one shall be installed. Where an indirect acting system utilises an idle rope system it shall be replaced with an overspeed governor compatible with any retained or new safety gear. If an existing over-speed governor system is being retained it shall be inspected as called for in SAFed supplementary tests. In some circumstances, it may be permitted to provide a safety gear operated by a slack rope system complete with an electrical interlock in place of the overspeed governor; however, this must be agreed in writing by the Lift Consultant before the order is placed. Where truck loading is to be used, clamping devices or pawl arms shall be fitted to prevent the lift sinking during loading, if they are not already provided. Any existing systems shall be checked for correct operation and any worn or defective components replaced.

Whenever indirect acting systems are retained they shall be of a type that requires steel wire suspension ropes designed for the purpose, the pitch diameter of the ram head pulley or any other pulley in the system shall not be less than 40 times the nominal diameter of the hoist ropes. Ram head pulleys shall be checked as required by SAFed Supplementary tests and their mountings checked for suitability for continued use. Ram head guide shoes shall be replaced unless otherwise agreed in writing by the Lift Consultant.

Clearances in accordance with EN81-2 should be allowed when sitting the lift equipment, especially for maintenance around the pulleys/sheaves.

All pulleys shall be arranged to avoid:

- The suspension ropes leaving the pulley / sheave
- The introduction of objects between the ropes and grooves
- Persons coming into contact with the sheave
- The devices used to meet the above requirements shall be so constructed that they do not hinder inspection or maintenance

2.40.3 Hydraulic Pipe Work and Hoses

Existing hoses and pipe work shall be checked and any defective or worn parts replaced.

Existing pipe supports are to be checked and replaced if found to be defective in any way. Hydraulic piping and rubber hoses shall be effectively isolated from the building structure to minimise the transmission of vibration.

2.41 SHEAVES, PULLEYS AND ANCHORAGES

Sheaves and pulleys shall be thoroughly inspected at the start of the works, as required by SAFed supplementary tests. They shall be checked for wear, correct operation, and the sheaves are to be checked for plumb with the existing guides. A report on the condition of the above components shall be issued to the Lift Consultant within 15 working days from placement of order.

All grime shall be removed from the outer casings of existing pulleys, over-wheel steelwork and rope anchorages. They shall be degreased, cleaned and wire brushed before being repainted with good quality paint. Before being returned to service they shall be recharged with oil or grease as appropriate. All fixings shall be inspected for soundness and tightened as required. All bearings and seals shall be checked for wear and replaced if necessary.

2.42 HANDWINDING /LOWERING FACILITY

The handwinding or hand pumping arrangement shall comply with EN81. A spoke-less smooth rimmed handwinding wheel shall be provided if not already available. The hand wheel shall be painted yellow and shall be clearly and permanently marked UP and DOWN with arrows corresponding to the direction of lift travel. When the wheel is fixed to the hoist unit it shall be guarded to prevent persons coming into contact in accordance with the Workplace Regulations 1992.

Where the force required to hand-wind the lift exceeds 400N emergency electrical control shall be provided.

A visual and audible device, having a loud arresting tone, shall be installed in the controller. This device shall sound when the car reaches a floor level in the handwinding mode. The handwinding audible device shall be energised by a trickle charge battery pack having a 3-hour operating capacity. Indication of the car position shall also be provided in the vicinity of the handwinding signals during handwinding.

The Lift Contractor shall provide and fix permanent notices in prominent positions close to the handwinding position. The notices shall clearly state that handwinding must only be carried out by authorised personnel and set out precise instructions for carrying out the handwinding procedure.

2.43 PULLEYS AND WELL GUARDING

The Lift Contractor shall ensure that all guarding is suitable and adequate for its purpose. Where moving parts are not guarded or inadequately guarded new guards shall be fitted in accordance with the Workplace Regulations, this includes the provisions of masks, toeguards, facia plates, etc. as necessary and appropriate.

2.44 CONTROLLER AND DRIVE SYSTEMS

If the Lift Contractor considers that the control system or drive is not suitable for retention due to degradation obsolescence or other reasons they shall state this in their tender and provide a report (including any obsolescence) on the condition of the control and control equipment clearly stating the reasons for their views.

2.44.1 Drive System

Where an existing drive unit is being retained it shall be checked for correct operation and signs of degradation, deterioration, and damage. Any damaged or defective wiring or degradation or worn components shall be replaced. The Lift Contractor shall provide assurances that the existing drive equipment is maintainable for at least the next 5 years.

A report (including any obsolescence) on the condition of the drive and drive components shall be issued to the Lift Consultant within 15 working days from placement of order.

2.44.2 Control System – Simplex and Group Control

Where the existing controller and control system are being retained, they shall be cleaned, and the wiring and components shall be checked and inspected for wear, degradation, damage, correct operation, and suitability for continued use over the next five years. Any damaged or defective wiring or damaged, defective, or worn components shall be replaced. The Lift Contractor shall prove the correct operation of the lift system and control features as required by the Lift Consultant. As part of their tender the Lift Contractor shall provide assurances that the existing control equipment is maintainable for at least the next 5 years.

The existing control system shall be overhauled and modified as necessary to comply with EN81-70.

The existing wiring shall be reused as far as is reasonably practical as shall the travelling flexes, where the Lift Contractor considered them to be unsuitable for continued use, they shall include for replacing them.

If the Lift Contractor considered the hoist unit to be unsuitable due to deterioration, they should include for modifications to the controller to suit the full replacement drive system.

Over current and short circuit protection devices shall be checked, and new equipment fitted if it is found to be defective.

2.44.3 Controller

The controller shall be cleaned and checked for suitability for continued use and the earth continuity checked. Where the locks are damaged, they shall be replaced. 5 new controller keys shall be provided for new or existing locks.

2.44.4 Limit Switches and Car Option System

Limit switches and their contacts shall be checked for wear and correct operation and replaced if considered unsuitable for continued use. Where over-travel or maintenance limits are not provided, new limits shall be fitted.

Unless the car position system has been replaced within the last 12 months a new car position system shall be provided.

2.45 SAFETYGEAR AND OVERSPEED SYSTEM

Retained safetygears, their jaws and the overspeed system shall be inspected at the placement of order, as required by a SAFed Thorough Examination a Supplementary Test as indicated in Section ‘4’ of the Guidelines on the supplementary testing of in-service lifts. They shall be cleaned and checked for wear, correct operation, and soundness of fixing. A report on the condition of the above components shall be issued to the Lift Consultant within 15 working days of placement of order.

All fixings shall be inspected for soundness and tightened as required. They shall be checked for wear, correct operation, and the sheaves are to be checked for plumb with the existing car pickup and tension weight.

2.45.1 Safetygears

Retained safetygears and their jaws shall be thoroughly inspected at the start of the works, cleaned, and checked for wear, correct operation, and soundness of fixing to car frames. New electrical safety cut out switches, as required by EN81 shall be fitted and the inertia springs shall be replaced.

Safetygears and their fixings shall be de–greased, wire brushed and cleaned. All fixings shall be tightened and checked for overall soundness.

The safetygears shall be replaced if any defect is found during the inspection or at final testing stage. Safetygears are to be operated by compatible overspeed governors and tension weights. Where new safetygears are provided, ascending over-speed protection shall also be provided if it is not provided by some other means.

Where an existing safetygear is retained on a traction lift that is operated by an existing idle ropes or slack rope system it shall be replaced or modified to incorporate an overspeed system in compliance with EN81-2.

2.45.2 Overspeed Governors and Tension Weights

All switches, springs, bearings, and seals etc. shall be checked for wear and replaced as necessary and the speed setting checked and reset if necessary.

The Lift Contractor shall provide an optional cost in case they are found to be unusable due to deterioration, along with the design details.

The Lift Contractor shall give assurances of the condition of the existing overspeed governor and tension weight is suitable for continued use with the safetygear being used. Any changes due to the equipment not being compatible will be at the Lift Contractor's expense.

2.46 UNINTENDED MOVEMENT PROTECTION

Any device to prevent the unintended movement of the lift shall be checked for correct operation and suitability for continued use and a report provided to the Lift Consultant within 5 working days of placement of an order.

2.47 GUIDANCE SYSTEM

2.47.1 Car and Ram Guides

The car and ram guides shall be checked and adjusted for correct alignment, deflection, and distance between guides. They shall be cleaned, de-greased and their backs painted. All fishplates, bolts and shims shall be inspected for tightness and tightened as required.

At the base of each guide a firmly fitted but removable steel fabricated oil drip tray shall be supplied and positioned, where one is not already provided.

The Lift Contractor shall confirm that the guides are suitable for continued use with the any revision to loads and lift arrangement. If they considered them unsuitable any costs associated with replacing them should be included in the tender price otherwise it will be assumed that they are giving assurances as to their condition and suitability for continued use.

2.47.2 Car and Ram Guide Brackets

All grime shall be removed from the guide brackets and fixings, which shall be inspected, checked for soundness, and tightened as necessary, cleaned, and painted with two coats of good quality paint.

The Lift Contractor shall give assurances as to the condition of the guide brackets which should accompany the tender documents. If they are found to be unusable due to deterioration the cost for their replacement as deemed necessary shall be included in the tender, along with the design details. Any changes due to the equipment not being compatible will be at the Lift Contractor's expense.

2.47.3 Guide Shoes

Where existing car and ram guide shoes are being retained they shall be checked for alignment with the safetygear and for their suitability for continued use, any liners shall be replaced, their fixings checked and all grime removed, they shall be cleaned, wire brushed, and painted with two coats of good quality paint.

The Lift Contractor shall check the existing car and ram guide shoes for their suitability for the application and continued use, giving assurances as to this effect. If the guide shoes are found to be defective or unsuitable for continued use the Lift Contractor shall include for replacement shoes. All sliding guide

shoes shall be provided with suitable guide lubricators as appropriate for the speed and application. Roller guide shoes that are flat spotted or showing signs of degradation shall be replaced.

2.48 SUSPENSION SYSTEM

2.48.1 Mains Suspension and Governor Ropes, Rope Terminations

The main suspension ropes, governor ropes and fixings shall be checked, and the Lift Consultant informed if they are defective and not suitable for continued use for the next 5 years. If they are found to be unusable due to deterioration costs shall be included in the tender for replacing them. The Safety factor of the existing system shall be checked, and it is found to be less that that called for in EN81-2 they shall be replaced with suitable alternatives.

The rope terminations and anchorages shall be cleaned and checked, with suitable means of rope tension equalisation being provided where suitable means, if not already provided. If the Lift Contractor considers that rope tension equalisation cannot be fitted at either the lift car or pit anchorage, they shall state the reason in the tender. Means shall be provided to ensure that the ropes cannot untwist in use. Anchorages and terminations shall be arranged to enable easy and safe access and inspection.

2.48.2 Rope Sheaves and Pulleys

Where sheaves or pulleys are noted as being retained, they shall be retained unless found to be damaged or unsuitable for continued use for the revised installation.

They shall be thoroughly inspected at the award of contract, as required by SAFed supplementary tests. They shall be checked for wear, correct operation and for plumb with the existing car pickup and tension weight. A report on their condition shall be issued to the Lift Consultant within 15 working days from placement of order.

They shall be degreased, cleaned wire brushed and painted with two coats of good quality yellow paint. New bearings and seals shall be fitted before they are returned to service.

2.49 CAR, CAR FRAME AND PLATFORM

2.49.1 Lift Car, Car Frame and Platform

The lift cars and platforms shall be thoroughly inspected for damage, any damage being reported to the Lift Consultant. After cleaning, any rust is to be removed and treated; all painted surfaces shall be repainted with two coats of good quality paint and all unpainted surfaces to be treated with a corrosion preventative treatment. Any timber floor or sub-floor shall be replaced, and the underside of the platform shall be fireproofed, as necessary. The car frames and their fixings, including the platforms shall be de–greased, wire brushed cleaned and painted with two coats of good quality paint. All fixings shall be tightened and checked for overall soundness.

When a new door operator is called for, the lift car and platform shall be altered to suit it.

Where ascending overspeed protection is being provided by the provision of a bi-directional safetygear the car frame and safetygear pickup shall be modified to suit the new equipment.

Where load weighing is not already provided a suitable means shall be incorporated into the design of the lift system. As a minimum the load weighing system shall be capable of measuring 110% contract load and at least one other loads setting that can be adjusted to suit traffic demands etc. (e.g. adjustable between 50% and 100% load), the preliminary setting shall be for 80% which shall trigger auto bypass of landing calls.

Where a fireman's or firefighting lift is called for any electrical equipment shall be located at least 1m from the front of the lift car or it shall be suitably protected. Where any timber is retained the Lift Contractor shall fire protect it. All materials uses shall be in compliance with EN81-72 and BS 9999 and be fire treated or fire proofed or protected as necessary and of a kind that do not give off harmful fumes.

2.49.2 Car Roof

A flat free-standing area of at least 0.12m² shall be provided on the car roof the smallest dimension of which shall be 0.25m². Where there are voids greater than 300mm² around the car roof an appropriate safe means of reducing the void shall be provided or balustrades in accordance with EN81-2 shall be provided.

The safe refuge area shall be clearly defined and marked.

2.49.3 Car Roof Maintenance Control System

The operation of any retained maintenance control unit shall be proved to be in compliance with BS7255 or it shall be replaced by the Lift Contractor. Car top lighting and emergency lighting shall be provided where they are not already provided, as shall an RCD socket outlet. Where there are two or more car entrances, emergency stop switches shall be positioned within 1m of the entrance in an easily accessible position. The main maintenance control unit shall be safely accessible from the landing entrance and be no more than 1m from the landing entrance.

2.50 CAR ENCLOSUREM DÉCOR AND LIGHTING INCLUDING EMERGENCY LIGHTING

2.50.1 Lift Car Enclosure

The existing car enclosure shall be modified as necessary to suit any new equipment and to meet the requirements as set out in the Lift Specification and Tender Document, EN81-28, EN81-70, and EN81-80. Ventilation in accordance with BS EN81-2 clause 8.16. shall be incorporated where top and bottom ventilation is not already provided.

Where EN81-70 compliance is to be incorporated the enclosure shall be modified to incorporate new car operating panel(s) in compliance with EN81-2, EN81-28, and EN81-70. The car operating panels are to be positioned such that the alarm button is located 900 mm above the finished floor level of the car. The push buttons and key switches shall be positioned such that they are between 900 and 1100 mm above the car floor level, no key switches or push buttons shall be higher than 1200 mm above the car floor level.

New car-operating panel(s) shall be fitted with EN81-70 compliant fixtures and fittings.

The front wall of the lift cars shall be cleaned to the satisfaction of the Lift Consultant, or replaced, or re-skinned in accordance with the Lift Specification and Tender Document.

Handrails in accordance with EN81-70 shall be provided as called for in the Lift Specification and Tender Document, where they are not already provided.

Lift car interior lighting with emergency lighting shall be overhauled to provide illumination in accordance with EN81-2 and EN81-70, changing of lighting fittings shall be from inside the lift cars when new light fittings are provided. In areas where the lift is likely to be subjected to vandalism the light fitting shall be designed and selected with the environment in mind. In such areas it may be acceptable to provide light fittings that are changed from the top of the lift car, details to be agreed with the Lift Consultant.

Any timber making up the exterior of the lift car shall be protected by a fire-retardant coating.

2.50.2 Car Décor

The lift car décor shall be modified as necessary to accommodate any changes to accommodate new or amendments to codes and standards as well as any design and equipment changes. The finishes shall be as noted in the Lift Specification and Tender Document with any retained finishes being cleaned down and modified, as necessary.

Where new lighting is to be installed it shall be of a low energy type and provision shall be made for turning the lighting off after an adjustable time period of inactivity. Any new lighting shall be complete with emergency lighting in compliance with this Specification and any other relevant standard.

2.50.3 Emergency Car Lighting

The operation of any existing emergency lighting system shall be checked, and assurances given of its suitability for continued use for at least 5 years. If the Lift Contractor considers it to be unsuitable for retention, they shall include for a new replacement system. The system shall be in compliance with EN81-2.

2.50.4 Emergency Alarm and Emergency Passenger Alarm System

Where an existing alarm system and/or a passenger emergency intercom is being retained it shall be retained unless the Lift Contractor considered it unsuitable for continued use, or it is incompatible with their 24-hour monitoring system. The Lift Contractor shall include all cost associated with its replacement should they consider a replacement is essential.

Where an existing hands-free intercom, in compliance with EN81-28, is fitted the telephone number shall be changed and an induction loop fitted if one is not already provided in accordance with EN81-28, EN81-70 and BS8300. The intercom shall be integrated with an engineer's alarm and intercom system where one is not already provided. Otherwise a hands-free intercom shall be fitted and connected to a 24-Hour emergency voice link with induction loop in accordance with EN81-28, EN81-70, BS8300 and be inclusive of all wiring to and terminations in the machine room.

The operation and suitability of any existing alarm sounder shall be confirmed by the Lift Contractor or it shall be deemed that they have included for new equipment.

2.50.5 Entrance Protection

The Lift Contractor shall inspect the existing electronic door detectors and confirm their suitability for continued use and give written assurances to this effect. Door protection system shall be of a type that does not rely on contact between the user and the leading edge of the closing door panels in accordance with EN81-70, 5.2.3 and 5.2.4.

A new non-contact type entrance protection system shall be provided if the Lift Contractor considered the existing to be unsuitable or defective.

2.51 CAR BUFFERS

Buffers shall be thoroughly inspected at placement of order, as required by SAFed supplementary tests. They shall be checked for wear, correct operation and any switches shall be checked and replaced if necessary. A report on the condition of the buffers shall be issued to the Lift Consultant within 15 working days of placement of order.

Existing buffers shall be checked and secured in position where the existing fixings are inadequate. If they are found to be unsuitable for retention the Lift Consultant shall be informed, any replacement buffers shall be of a type not affected by damp or humidity and they shall be mounted on stools, as necessary.

All grime shall be removed from the surface/outer casings which shall be de-greased, wire brushed cleaned and painted with two coats of good quality paint. All fixings shall be inspected for soundness and tightened as required.

The Lift Contractor shall ensure, confirm, and give assurances as to the condition of the buffers and their suitability for continued use and compatibility with all other lift equipment and the lift speed, which should accompany the tender documents. If they are found to be unusable due to deterioration or they are not compatible with other equipment a cost for replacing them shall be included in the tender. Any changes due to the equipment not being compatible will be at the Lift Contractor's expense.

Where existing buffers of an energy accumulation type are fitted, they shall be secured to the pit floor.

2.52 CAR AND LANDING DOORS - OPERATION

2.52.1 Door Operators, Car Entrance Equipment and Doors

Where the existing operator is noted as being modified the Lift Contractor shall provide assurances in writing that the existing door operator is suitable for continued use for at least the next five years, any additional work they consider necessary to the operator to be included and advised to the Lift Consultant.

Existing door operators are to be refurbished and any retained gear units, brakes, clutches, motors, solenoid units, or drive veins shall be inspected, and replacements fitted, as necessary. The retained equipment is to be thoroughly cleaned down to remove all grime, etc. Any damage shall be reported to the Lift Consultant before clean-down commences.

Painted surfaces shall be repainted with two coats of good quality paint; unpainted surfaces shall be treated to prevent corrosion. The existing car and landing doors shall be refurbished/replaced with new running gear, rollers, bottom door guide shoes, toe guards, sight guards, main rollers, kicking rollers, locks, etc. as necessary.

Where an existing design has incorporated astragals and the design is retained, they shall be replaced. Where possible the design of the door and entrance shall be amended to eliminate the astragals providing this does not infringe the existing fire certification of the landing doors.

Existing locks that are not gravity activated are to be replaced or modified to ensure the lock engages if any spring or other actuating device fails.

An optional price is to be provided for replacement of the existing car entrance equipment with modern VF drive entrance equipment that is to operate in conjunction with the existing car and landing doors, toe-guards, and sills. In areas subject to vandalism the design shall be suitable for the environment they will be installed in.

2.52.2 Car and Landing Door – Panels

Where the existing doors are noted as being retained that shall be retained unless during the Lift Contractor's inspection, they are found to be defective. They shall have their front faces cleaned, re-linished/ re-skinned / painted or replaced as called for in the schedules of finishes. The backs of the existing door panels are to be cleaned and painted, with floor numbers clearly marked.

2.52.3 Landing Door Locks

Where the existing locks are noted as being retained, they shall be retained unless during the Lift Contractor's inspection they are found to be defective or they are not gravity activated. Defective locks shall be replaced with new type tested and CE marked locks where exact like for like replacements are not available. They shall be checked, and their contacts renewed. Locks that are not gravity activated are to be replaced or modified to ensure the lock engages if any spring or other actuating device fails.

Consideration shall be given to the effects of any change on any fire certification of the entrances.

2.52.4 Door Sills, Toe Guards and Face Plates

Existing sills, toe guards and face plates shall be checked for wear, security, and suitability for continued use, before being cleaned and repainted as appropriate.

The existing car sills shall be inspected and thoroughly cleaned down or replaced, as necessary.

2.52.5 Landing Entrances and Fronts

If the existing doors and entrance fronts are found to be damaged the damage the Lift Contractor shall include allowances for their replacement and report their condition to the Lift Consultant in their tender.

Landing entrances shall be fitted with emergency unlocking devices as noted in EN81-2 where the existing system is non-compliant. The fire rating of the new lift entrances shall be as a minimum equal to that of the existing entrances.

The existing landing entrances are to be cleaned and the door panels and architraves are to be relinished, re-skinned or cleaned and painted, as noted in the Lift Specification and Tender Document. The landing entrances shall be refurbished with new astragals, top tracks, new locks, slave locks, running gear, rollers, bottom door guide shoes, toe guards or fascia's, sight guards, main rollers, kicking rollers and pick-up gear as appropriate. The backs of the door panels are to be cleaned and painted; the appropriate floor designation shall be clearly marked on the back of the doors.

Where not already provided, emergency release devices in accordance with EN81-2 shall be provided in the Landing doors. In areas likely to be subjected to vandalism and appropriate type shall be agreed with the Lift Consultant.

The existing landing entrances may be certified fire resisting. This is to be established before submitting the tender and all costs are to be included. Where the existing landing entrances are fire rated care shall be taken not to invalidate the original fire certification.

The self-closuring of the landing doors shall be checked, and remedial action taken where their operation is not in accordance with EN81-2, with new parts being fitted, as necessary.

Existing multi panelled landing doors shall be fitted with mechanical interlocks where they are not already fitted. Slave door contacts shall be fitted if not already provided wherever there is a possibility of a door panel not closing due to a failure of the linkage system.

2.53 CAR AND LANDING STATIONS INCLUDING INDICATORS

2.53.1 Car Operating Panel Face Plates

Any retained car operating panel shall be inspected and cleaned and checked for compatibility with any new equipment, any unsuitable or defective equipment shall be replaced with equipment in accordance with this Specification. All the pushes inspected and replaced as necessary to. All illumination contained in pushes shall be replaced with LED type illumination. Position indicators shall be checked for compatibility with any new equipment and any defective units replaced. Any new fittings shall be in compliance with EN81-70.

2.53.2 Landing Stations and Position Indicators

The existing fixtures and fitting shall be relocated in accordance with EN81-70 and the existing preparations are to be made good. New landing push stations and indicator are to be provided as detailed in the Lift Specification and Tender Document. Where there are no existing fittings, or the fittings are not suitable, compliant, or compatible with the retained or new equipment they shall be replaced with new fittings. All fixtures and fitting are to be provided in compliance with EN81-70, BS8300 and the Equalities Act 2010 Regulations. Allowances being made for all cutting away, making good and periphery decoration.

Where the lift operates as full collective the landing push plates are to be flush type with single pushes at terminal floors and two pushes at intermediate floors. Flush fitting landing position indicators are to be provided at each floor

Where the lift operates as down collective or non-selective collective the landing push plates are to be flush type with single pushes at all floors. Flush fitting landing position indicators are to be provided at each floor.

Finishes around the landing fittings and entrances are to be made good up to 1m from the entrance and fixtures and fittings.

2.53.3 Fireman's Switches

Where an existing fireman's switch is being retained it shall be checked for damage and overhauled with new electrical contacts being fitted.

The Lift Contractor shall confirm that the switch is suitable for continued use and compatible with the control system or a new switch shall be provided. The Lift Contractor shall allow all costs necessary for its replacement if they consider it necessary and indicate in their tender the reason.

2.53.4 Other Landing Fixtures and Fittings

All landing fittings are to be of a flush type and the design is to be agreed with the Lift Consultant.

Where more than one lift shares a lobby an alarm indicator per lift shall be provided at the main entrance level which shall illuminate to indicate the lift in which the alarm has been activated. Cancellation of the alarm indicator shall be via a key operated switch in the panel.

2.54 NOTICES AND TOOLS

Where existing notices are being retained, they shall be inspected and retained unless during the inspection they are found to be missing, out of date or unsuitable for continued use. Notice should be newly installed in this circumstance.

10. Form of Tender

Hydraulic Lift Refurbishment

EA, Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS

SECTION 3 – FORM OF TENDER

FOR
THE LIFT WORKS AS NOTED IN THE LIFT SPECIFICATION
TO
TWO HYDRAULIC PASSENGER LIFTS
AT
RIVERS HOUSE, BRIDGWATER, SOMERSET TA6 4YS

Dear Sirs

We, the undersigned, agree to undertake the design, manufacture, delivery, refurbishment and the commissioning of TWO passenger lifts and associated work in accordance with the specification prepared by AY, for the following sums which shall be FIXED for the period of the Contract, and remain open for acceptance for a period of 6 months.

a)	Refurbishment and commissioning of Lift 1, including all specified items (Section 2)	Total	£
b)	Refurbishment and commissioning of Lift 2, including all specified items (Section 2)	Total	£
c)	H&S works as detailed in Section 2.6.1 (included above) on a **per lift basis**	H&S per lift	£
d)	Price for refurbishment of both lifts (As total specification)	Total	£

PROGRAMME (AS WORKS)

Delivery of materials to site from receipt of Order	Total		weeks
Removal of non-retained existing equipment	Total		weeks
Lift Works including associated works	Total		weeks
Testing and commissioning	Total		weeks
Total programme from placement of order	Total		weeks

Signed: _____

For and on behalf of: _____

Date: _____

Status of Signatory: _____

Witness: _____

Address: _____

GENERAL INFORMATION

FUTURE MAINTENANCE COSTS

a)	Comprehensive maintenance for 1st calendar year after completion of final lift installation.		INCLUDED
b)	Comprehensive maintenance for 2nd calendar year after completion of final lift installation. (total)		£
c)	Comprehensive maintenance for 3rd calendar year after completion of final lift installation. (total)		£

LABOUR RATES

Normal working	£
Late Working	£
Weekend Working	£
Holiday and Bank Holiday Working	£

CALLOUT RESPONSES

Response Times to Callouts			
During Normal Working Hours	Entrapment		Hours
08:00 to 17:00	Breakdown		Hours
Out of Normal Working Hours	Entrapment		Hours
Including weekends and Bank holidays	Breakdown		Hours

11. Additional Tender Documentation

Hydraulic Lift Refurbishment

EA, Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS

SECTION 4 – ADDITIONAL TENDER DOCUMENTATION

Further to the information based on the specific Works contained within this document, additional information has been issued for clarification regarding equipment performance, CDM Pre-Construction information and contract conditions.

The additional information issued is to form the underpinning foundation of the tender documentation and therefore should be taken into full consideration during the tender process.

I, the undersigned, have read, understood and allowed for the information contained within the following documents, as part of my tender application process:

No.	Document Title	Issue No.	Confirmation
1)	Lift Performance Schedule (Hydraulic)		
2)	Pre-Construction information		
3)	Contract Conditions/Alterations		

Signed: _____

For and on behalf of: _____

Date: _____

Status of Signatory: _____

Witness: _____

Address: _____

12. Non-Collusion

Hydraulic Lift Refurbishment

EA, Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS

SECTION 5 – CERTIFICATE OF NON-COLLUSION

In recognition of the principle that the essence of tendering is that the awarding authority shall receive bona fide competitive tenders from all those tendering.

WE CERTIFY THAT:

The tender submitted herewith is a bona fide tender that is intended to be competitive.

We have not fixed or adjusted the amount of the tender under or in accordance with any agreement or arrangement with any other person.

We have not done and we undertake that we will not do at any time before the hour specified for the return of the tender any of the following acts:

communicate to a person other than the person calling for this tender the amount or approximate amount of the proposed tender (except where the disclosure, in confidence, of the approximate amount of the tender was essential to obtain insurance premium quotations required for the preparation of the tender);
enter into any agreement with any person that they shall refrain from tendering or as to the amount of any tender to be submitted and;
offer to pay or give any sum of money or valuable consideration directly or indirectly to any person for doing or having done or causing or having caused to be done in relation to any other tender any act or thing of the sort described above.

IN THIS CERTIFICATE

'Person' includes any person or any body or association corporate or incorporate.

'Any agreement or arrangement' includes any transaction of the sort described above, formal or informal and whether legally binding or not.

Signed: _____

Position: _____

For and on behalf of: _____

Date: _____

13. Equipment Performance Data

Hydraulic Lift Refurbishment

EA, Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS

SECTION 6 – EQUIPMENT PERFORMANCE DATA

6.1 TECHINICAL INFORMATION

The Lift Contractor shall submit sufficient data for components and assemblies that will clearly portray the equipment covered by his tender. The following schedule shall be completed where indicated. The Lift Contractor shall indicate where components have been designed or modified to suit this project.

6.2 EQUIPMENT SCHEDULE

Item	Component and Information / Detail				
1.	**ELECTRICITY SUPPLY**				
Mains switch		Type Rating		A	
Auxiliary consumer unit for supplies to local lighting and power circuits		Type Rating		A	
Total current demand from the declared supply for each lift when raising the contract load		**Starting** **Running**		**A** **A**	

2.	**LIFT POWER UNIT**				
Tank					
Manufacturer					
Type					
Capacity					
Pump					
Manufacturer					
Type reference or serial no.					
Flow Rate L/Min:					
Pressure Floor Loss:					
Maximum Working Pressure:					
Lift Motor					
Manufacturer					
Type reference or serial no.					
Rated output power (Kw)		Speed ratio: rpm			
Rated current amp:	Full load running		Starting		
Pump					
Manufacturer					
Type reference or serial no.					
Maximum Working Pressure:					
Working Pressure:					

3.	**SUSPENSION ROPES**				
Manufacturer					
Quantity		Diameter (mm)			
Construction		Lay			
Tensile strength - grade					
Maximum breaking load		(kN)			
Type of rope tension equalising device					
Type of connection to car and anchorage					

4.	**OVERSPEED GOVERNOR**
Lift Car Governor	
Manufacturer	
Type	

Number of type test certificate					
Contract speed (m/s)					
Tripping speed (m/s)	Electrical		Mechanical		
Rope diameter (mm)		Rope connection			
Construction		Lay			
Maximum breaking load (kN)					
Type of tensioning device & switch					

5. CAR FRAME					
Manufacturer					
Type and construction (Monocoque?)					
Rope Hitch - Type					
Platform / Enclosure	Isolated		Non isolated		
Platform Load weighing Device					
Enclosure type and manufacture					
Car Safety Gear					
Manufacturer					
Type					
Maximum	Load Rating (Kg)		Speed rating (m/s)		
Capable of arresting upward motion	**Yes / No**				

6. HYDRAULIC SYSTEM					
Ram					
Manufacturer					
Type reference or serial No					
Diameter (mm)		Wall thickness (mm)			
Maximum working pressure					
Length (m)					
Drawings or illustration					
Pipe Rupture Valve					
Manufacturer					
Type reference or serial No					
Number of type test certificate					
Rated flow rate l/min					
Maximum Flow rate l/min					
Drawings or illustration of governor					

7. GUIDE RAILS / FIXINGS					
Car Guide Rails	Type		Location	Side / Rear / Right / Left	
Method of fixing & type					
Ram Guide Rail	Type		Location	Side / Rear / Right / Left	
Method of fixing & type					

8. WIRING / TRAVELLING CABLES			
Wiring			
Wiring system		Cable Type	
Connections			
Trunking		Conduit	
Travelling Cables			

Manufacturer		Type	
Construction			

9. LIFT WELL POSITIONING SYSTEM			
Manufacturer		Type	
Location		**Levelling accuracy: (All Loads) mm**	

10. WELL SWITCHES			
Manufacturer		Type	
Illustration or reference			
Conduit connection			

11. CONTROLLER			
Manufacturer		Reference/serial	
Type			
Wiring connections		Motor overloads	
Emergency Lowering buzzer			
Temperature tolerance			
Drive			
Manufacturer			
Type reference or serial no.			
Rated output power at full load / speed			

12. LIFT CAR			
Platform			
Construction			
Front wall/door returns finish & construction			
Rear wall finish and construction			
Side walls finish and construction			
Roof finish and construction			
Lift Car Operating Panel			
Manufacturer			
Finish			
Location			
Button type, maker & reference			
Alarm button type, maker & reference			
Car Position Indicator type, maker & reference			
Key switches, type, maker & reference			
Ceiling and Lighting			
Ceiling type			
Ceiling pattern			
Number and type of light fittings			
Emergency Lighting Type			
Output	Watts	Battery duration hours	
Battery recharging time hours			
Emergency Intercom System			
Manufacturer		Type	

12. LIFT CAR	
Telephone line requirements	

13. CAR DOORS			
Manufacturer			
Type			
Configuration		Surface finish	

14. DOOR OPERATOR				
Manufacturer				
Type				
Nominal (sec)	Opening time		Closing time	

15. DOOR DETECTOR (Door Safety Edge)	
Manufacturer	
Type	
Field covered	

16. DOOR CAM or VANE	
Type: (Fixed/Retiring/Retiring cam)	
Manufacturer	

17. CAR TOP INSPECTION UNIT			
Manufacturer		Type	
Light with rechargeable supply included		Yes / No	

18. LANDING DOORS			
Manufacturer			
Type			
Configuration		Surface finish	
Fire rating (hours)		Type of automatic closers	

19. LANDING DOOR LOCKS	
Manufacturer	
Type	
Method of locking un-driven panel	

20. LANDING FIXTURES	
Landing Position Indicator(s)	
Manufacturer	
Type	
Location(s) floor(s)	
Faceplate design and finish	
Landing Arrival & Directional Indicators	
Manufacturer	
Type	
Location(s) floor(s)	
Faceplate design and finish	
Landing Buttons	
Manufacturer	
Type	

Location(s) floor(s)			
Faceplate design and finish			
Fire Control Switch			
Manufacturer			
Type		Location	
Faceplate design and finish			
Landing Intercom Unit(s)			
Manufacturer			
Type			
Location(s) floor(s)			
Faceplate design and finish			
Local Alarm			
Manufacturer			
Type			
Power supply type and duration			
Location			
Faceplate design and finish			

21. UNINTENDED MOVEMENT PROTECTION			
Manufacturer			
Type/Form of protection			
Activation distance (mm)			
Car Buffers			
Manufacturer			
Type & Number		Load capacity (kg)	
Illustration / Drawing / Reference			
Access Ladder			
Pit stop switch type & number			
Electrical socket with RCD			
Intercom system			

22. PERFORMANCE	
Rated number of starts per hour	
Levelling Guarantee (mm) ±	
Group call calculation methods	
The maximum noise level generated by the equipment measured 1 metre from source and 1.5 m above the FFL and the frequency / frequencies at which this the noise occurs.	
a) From the hoisting machine	
b) During door operation	
c) Lift running 1 m from lift entrances with doors closed	
d) Lift running in the lift car	

Any other technical information in support of your tender

Appendix A
Designer's Risk Assessment

Appendix B

EA Pre Construction Health & Safety information

Avison Young
3 Brindleyplace, Birmingham, B1 2JB