JV TIERNEY & CO
MECHANICAL ELECTRICAL & SUSTAINABLE ENGINEERS



Lift Services Specification

TIPPERARY COURTHOUSE AND BRIDEWELL

CCT-JVT-PH1-XX-XX-SP-L-0001

CLONMEL COURTHOUSE AND BRIDEWELL
TIPPERARY

LIFT SERVICES SPECIFICATION
PHASE 1

CCT-JVT-PH1-XX-XX-SP-L-0001

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CLONMEL COURTHOUSE AND BRIDEWELL
TIPPERARY

LIFT SERVICES SUMMARY OF TENDER

LIFT SERVICES TENDER DOCUMENTS	
CCT-JVT-XX-XX-SP-L-0001	**Lift Services Specification**
CCT-JVT-XX-XX-SP-L-0002	Lift Builders Works
CCT-JVT-XX-XX-SP-L-0003	Lift Summary of Tender

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Section No. 1

1 General

1.1 SCOPE OF CONTRACT

1.1.1 The Lift Specialist is to provide all Materials and Labour necessary except any as are specially excluded by the Specification for the Lifts Systems Installations in the proposed Clonmel Courthouse and Bridewell, Tipperary as scheduled hereafter.

1.1.2 A Lift Performance Energy Efficiency Analysis shall be carried out, with the most Energy Efficient Lift Motor and Control System specified.

1.1.3 The Tender shall cover the supply, delivery, erection, testing and maintenance of the Lifts Installations as outlined hereafter and as shown on the Drawings which shall be taken as forming part of the Specification.

1.1.4 The Lift Specialist shall include all labour, materials, import charges and transport which may be required for and in the construction of the Works detailed in the Specification and Drawing and for the use of all necessary scaffolding, ladders, plant, tackles, machinery, tools and other appliances for the workmen together with the carriage thereof to the spot where they are required to be used and their subsequent removal.

1.1.5 The Lifts Work Requirements for the Project shall consist of the Supply, Installation and Commissioning of the following Lifts described in the Schedules:

- Supply of 1no Internal Platform Lift, 3500mm travel distance 400kg, 0.15m/s, Electric Homelift drive system, Machine Roomless, Centre Opening Lift, serving 2 Floors, Part M Compliant Lift (ISO 4190 Class I). 120mm pit, 3500mm travel distance, 1400mm x 1100mm Platform size, automatic slide doors.

- Supply of 1no Internal Platform Lift, 3400mm travel distance 500kg, 0.15m/s, Electric Homelift drive system, Machine Roomless, Through Access Lift, serving 2 Floors, Part M Compliant Lift (ISO 4190 Class I). 120mm pit, 3400mm travel distance, 1400mm x 1100mm Platform size, automatic slide doors.

1.2 DEFINITIONS

1.2.1 **Contractor** – Where this term is used within the Specification it shall be taken as the Design and Build Team.

1.2.2 **Lift Contractor** – Where this term is used within the Specification it shall be taken as the Contractor completing the Lift Installation Works as detailed in this Specification and associated Drawing etc. Depending upon the type of Contract the term Lift Contractor shall equally refer to the Lift Sub-Contractor.

1.2.3 **Electrical Contractor** – Where this term is used within the Specification it shall be taken as the Contractor completing the Electrical Installation Works as detailed in this Specification and associated Drawing etc. Depending upon the type of Contract the term Electrical Contractor shall equally refer to the Electrical Sub-Contractor or Building Services Sub-Contractor.

1.2.4 **Specialist** – Refers to a Specialist Contractor employed by the Building Services Contractor, Mechanical Contractor or the Electrical Contractor to complete a part of the Works on their behalf, the Building Services Contractor, Lift Contractor or the Electrical Contractor shall be fully responsible for all Works undertaken by the Specialist.

1.2.5 **Services Contractor** – Where this term is used it shall refer equally to the Mechanical Contractor and Electrical Contractor completing the Mechanical and/or Electrical Installation Works as detailed in this Specification and associated Drawings etc. Depending upon the type of Contract the term Services Contractor shall equally refer to the Building Services Sub-Contractor, Mechanical Contractor, Electrical Contractor or Design and Build Team.

1.2.6 **Main Contractor** – Where this term is used within the Specification it shall be taken as the Contractor completing the overall Contract for the Client as detailed in the Main Contract Specification and associated Drawings etc. Depending upon the type of Contract this shall equally refer to the Builder, Principal Contractor or the Mechanical or Electrical Contractor if they are the Main Contractor for the Project.

1.2.7 **Engineer** – Refers to a representative of J.V Tierney & Co.

1.2.8 Unless the Clauses in this Specification stipulate “supply only” or “installation only” the words “Supply”, “Provide” or “Install”, shall mean “supply and installation”.

1.2.9 Manufacturer’s Recommendations - shall mean the handling, storage, preparation, installation testing and commissioning of Products in accordance with the Manufacturers printed or written recommendations/ instructions. The Contractor shall inform the Engineer if these instructions conflict with any other specified requirement.

Section No. 2

2 GENERAL CONDITIONS OF CONTRACT

2.1 PROJECT PARTICULARS

PROJECT/SITE	Lift Services Installation at Clonmel Courthouse and Bridewell Tipperary
CLIENT	Tipperary County Council Civic Offices Rosanna Road Tipperary E34 WD51
SERVICES ENGINEERS	J.V Tierney & Co., Consulting Engineers, The Tannery, 53-56 Cork Street Dublin D08 P92R
PROJECT ARCHITECTS	OC and C Architects Limited 16 Merrion Row Dublin 2 D02 CF90
STRUCTURAL/CIVIL ENGINEER	O'Connor Sutton Cronin Consultant Engineers 9 Prussia St, Stoneybatter Dublin D07 KT57
QUANTITY SURVEYOR	Brendan Merry & Partners, 53-56, Cork Street, Dublin 8.
FIRE CONSULTANT	

2.2 BASIS OF CONTRACT

2.2.1 The Design & Build Contractor shall design and price the Lifts Installations as specified in this outline Specification. The Lift Specialist shall refer to the Architect's & Structural Engineers Drawings with respect to the dimensions of Lift Shafts, Opes, Pit Depth, Headroom etc.

2.2.2 The Lift Specialist shall obtain a copy of the Main Contract Preliminary Clauses and include all costs necessary associated with the Main Contract Preliminary Clauses within their Tender Submission. – No further monies shall be forthcoming for any errors or omissions due to the failure of the contractor to not have included for any costs associated with their clauses.

2.2.3 Any deviation from the Specification shall be set out in a separate letter, which shall explain fully the technical details and the reason for any deviation. In the absence of such a letter described above the Engineers shall assume full compliance with the Specification.

2.2.4 If the Tenderer is in any doubt as to the intent detailed within the Works Requirements and the Scope of Works involved in the successful Project completion, they shall submit clarifications in the appropriate manner within the timeframes outlined in the Contract. If no clarifications are sought during this process, then it is deemed the Tenderer is fully aware of the Works involved in completing the Project.

2.2.5 The Design & Build Contractor shall complete fully all Schedules attached to this Specification and shall price each Item in the Tender Summary. Failure to comply fully with this requirement shall invalidate the Tender.

2.3 STANDARDS

2.3.1 The Lifts Installations shall be carried out in accordance with this Specification and shall strictly comply with the Lift Directive and the relevant harmonised EN 81 Series of Standards including all Amendments and relevant Acts, Regulations, Standards and Requirements insofar as they are applicable, including:-

a) EN 81-20: 2014, Safety rules for the construction and installation of lifts. Lifts for the transport of persons and goods. Passenger and goods passenger lifts;

b) EN 81-50: 2014, Safety rules for the construction and installation of lifts. Examinations and tests. Design rules, calculations, examinations and tests of lift components;

c) EN 81-28: 2018, Safety rules for the construction and installation of lifts. Remote alarm on passenger and goods passenger lifts;

d) EN 81-58: 2018, Safety rules for the construction and installation of lifts. Examinations and tests. Landing doors fire resistant test;

e) EN 81-70: 2018, Safety rules for the construction and installation of lifts. Particular applications for passenger and goods passenger lifts. Accessibility to lifts for persons including persons with disability;

f) EN 81-73: 2016, Safety rules for the construction and installation of lifts. Particular applications for passenger and goods passenger lifts. Behaviour of lifts in the event of fire;

g) EN 81-72: 2015, Safety rules for the construction and installation of lifts. Particular applications for passenger and goods passenger lifts.

h) EN 13015: 2001 + A1: 2008, Maintenance for lifts and escalators – Rules for maintenance instructions;

i) European Machinery Directive 2006/42/EC;

j) European Lift Directive 2014/33/EU;

k) NSAI/'National Rules for Electrical Installations' of the Electro-Technical Council of Ireland, ET101: 2008 plus subsequent Amendments;

l) British Standard BS 5655-6:2011 + A1: 2008 "Code of Practice for the Selection and Installation of New Lifts";

m) EN 12385-5: 2002+ A1: 2008, Steel wire ropes. Safety. Stranded ropes for lifts;

n) The relevant sections of British Standard BS 9999: 2017;

o) Buildings for Everyone - A Universal Design Approach – National Disability Authority, 2012;

p) Part M of the Building Regulations;

q) British Standard BS 7255: 2012, Code of practice for safe working on lifts;

r) The Lifts (and Safety Components for Lifts) Regulations 2015 (Compliance shall be achieved by full compliance with EN 81-20: 2014 or EN 81-50: 2014 (As applicable);

s) The Electro-Magnetic Compatibility Directive, 2014/30/EU;

t) The Factory (Electrical) Regulations 1972 Statutory Instrument S.I. No. 3 of 1972 and Amendment S.I. No. 124 of 1979;

u) Low Voltage Directive 2014/35/EU;

v) EN 50274: 2002, Low voltage switchgear and controlgear assemblies – Protection against electric shock – Protection against unintentional direct contact with hazardous live parts;

w) EN 60947-4-1: 2010 + A1: 2012, Low voltage switchgear and controlgear – Part 4: Contactors and motor-starters – Section 1: Electromechanical contactors and motor-starters;

x) EN 60947-5-1: 2016, Low voltage switchgear and controlgear – Part 5: Control circuit devices and switching elements – Section 1: Electromechanical control circuit devices;

y) EN 60947-5-5: 1998 + A2: 2017, Low voltage switchgear and controlgear assemblies – Part 5: Control circuit devices and switching elements – Section 5: Electrical emergency stop devices with mechanical latching function;

z) EN 12015: 2014 and EN 12016: 2013, Electromagnetic compatibility. Product family standard for lifts, escalators and moving walks. Emission and Immunity;

aa) EN 61508: 2010, Functional Safety of electrical/electronic/programmable electronic safety related systems;

bb) CIBSE Guide D: 2015 “Transportation Systems in Buildings;

cc) The provision and the use of Work Equipment Regulations 2014. (P.U.W.E.R);

dd) The Lifting Operations and Lifting Equipment Regulations 2014. (L.O.L.E.R);

ee) The Construction (Design and Management) Regulations 2015 (CDM);

ff) The Contractor’s and Client’s Insurance Requirements covering Works on Site;

gg) Any other relevant European Standards, Codes of Practice applicable to the specific Equipment;

hh) The General Requirements of the Contract and the Particular Specifications of the Engineers;

ii) Safety, Health and Welfare at Work Safety Legislation:-

- 2014 Building Control Regulations;
- Safety, Health and Welfare at Work Act 2005;
- Safety, Health and Welfare at Work (Construction) Regulations 2013;
- Health and Welfare (General Application) Regulations, 2007 (S.I. No. 299 of 2007).

2.3.2 All Electrical Equipment and Installations forming part of the Lifts Installations shall comply with the provisions of Clauses "Wiring Rules" and "Electrical Standards" in Section No. 3 of this Specification.

2.3.3 All Controls and location of Controls shall be in accordance with the current Building Regulations Part 'M'.

2.3.4 All Lift systems shall be certified as a Sub-System in accordance with NSAI/ETCI Rules and CER requirements.

2.3.5 The Tender offered in respect of this Tender Enquiry must include all costs associated with the compliance of the Installation with the Standards specified.

2.3.6 The Tenderer must include the following with their Tender Submittal:-

a) A Statement that the Transportation Installations offered in respect of these Tender Drawings and Specification shall be fully compliant with the European Lift Directive 2014/33/EC;

b) A Copy of the Tenderer's ISO 9001 QA Certification, approved by a Notified Body, must be included with the Tender Submission. The Notified Body number and the name of the Notified Body which covers the Company Declaration Certificate shall be submitted;

c) Confirmation that the Installation shall carry the EC Conformity Marking (CE);

d) Provide full Product Information on the Lifts being offered;

e) Each Tendering Lift Specialist shall submit a detailed description on how BREEAM Certification can be achieved. Include Energy Calculation Sheets to back up the BREEAM Statement as noted above;

f) Each Tendering Lift Specialist shall submit (with Tender Return) detailed Finishes Sheet showing the Technical Platform Details and where the Equipment is manufactured. As part of the Submittal, the technical details include, doors type (heavy duty), motor starts, running current, starts based on Lift Schedules attached i.e. 240,000 starts/annum (minimum) etc.

2.4 LIMITATIONS ON WORKING HOURS AND WORKING SPACE

2.4.1 Construction Working Hours deemed to be between 8.00am and 6.00pm Monday to Friday.

2.4.2 Saturday Working Hours deemed to be between 8.00am and 1.00pm. No Works are authorised to be completed on Sundays.

2.4.3 "Noisy" works and all other operations likely to cause undue disturbance to building occupiers and other building users are to be undertaken outside of normal working hours upon the instructions of the Engineer or Client's Representative at no extra cost to the Contract.

2.5 PROGRAMME FOR COMPLETION OF WORKS

2.5.1 Refer to the Main Contract Preliminaries.

2.5.2 The Programme shall be produced as a bar chart, two copies of which shall be given to the Engineer or Client's Representative and one kept permanently on Site. Actual progress achieved shall be reviewed and measured against this Programme at each Site Meeting. It shall be updated on a weekly basis by the Lift Specialist and issued to the Main Contractor.

2.6 INSURANCE

2.6.1 The Lift Specialist shall make full provision in their Tender for insuring with an approved Insurance Company for the whole of the Lifts Systems and Works relative to Fire Insurance, Compensation, etc. The Lift Specialist shall provide all other necessary Insurances in connection with Employers Liability, National Health and Unemployment Acts, Third Party Risks and for complying with the Conditions of Employment and all Statutes or Statutory Orders in force affecting Employers or Employed. Please refer to the Main Contract Preliminaries for the level of Public Liability Insurance.

2.7 HEALTH & SAFETY INSURANCE

2.7.1 The Lift Specialist shall include for procuring that the Insurance Cover required to be obtained and maintained by the Contractor pursuant to the relevant Clause of the Main Contract shall provide indemnity in respect of any claim for bodily injury or property damage which the Contractor may incur by reason of the performance of the functions and duties of the Project Supervisor for the Construction Stage of the Project.

2.8 DAMAGE TO INSTALLATION OR BUILDING

2.8.1 The whole of the Works shall be under the Contractor's sole charge until the date of Certificate of Completion and notwithstanding any payment which may have been made on account, the Contractor shall make good all damages which may be caused by fire, tempest or from any cause whatever to the Works included in this Contract and shall make good all damages which may arise to the Building or its Contents as a consequence of the erection of the Works.

2.8.2 The Client shall be indemnified by the Contractor and held harmless from all costs, damages and expenses of any and every kind whatever which may be incurred by the Client by reasons of any injury to property or person in connection with the execution of the Works.

2.9 QUALITY

2.9.1 The whole of the Lift Installation Works under this Contract shall be of the best quality material and workmanship and shall be completed to the entire satisfaction of the Client/Engineers.

2.10 APPROVED APPARATUS

2.10.1 Where Materials are specified to be approved, the approval of the Technical Advisory Team/Client in writing must be obtained before such Materials are ordered or constructed.

2.11 WORKMANSHIP

2.11.1 The entire Lift Installation Works shall be carried out by competent tradesmen and Trades Union Labour shall be employed throughout the Contract. Workmanship must be of the highest class.

2.12 SAMPLES

2.12.1 Samples of all Materials, Manufactured Articles or other Goods shall if required be submitted to the Technical Advisory Team/Client for provisional approval before adoption. Such approval shall not relieve the Contractor from the responsibility for making good any defects which may arise as a consequence of failure or otherwise of approved Samples during the Contract Period.

2.13 RECORD DRAWINGS AND MANUALS

2.13.1 On completion of the Contract, the Lift Specialist shall hand over to the Client a complete set of the Lift Drawings developed directly from the Contractor's 3D BIM MEP model, with the exported drawings made available also in AutoCAD dwf & PDF format. Four sets of completed Drawings of the Lift Systems as installed for Record Purpose, together with four copies of Operating Manuals and Maintenance Instructions.

2.13.2 The Design and Build Contractor shall include in this Tender for a 3D BIM Model of both the Design Lifts Model and the Constructed Lifts Model.

2.13.3 The Drawings and Manuals shall be bound in durable covers and shall include:

(a) Clear Instructions for correct operation of the System;

(b) Names and Addresses of Suppliers of Components for which Spare Parts may be required;

(c) Testing and Commissioning Records including statutory Test Certificate;

(d) Asset Register detailing all Equipment installed;

(e) Maintenance Manuals.

2.13.4 Complete Documents shall be handed over to the Technical Advisory Team/Client.

2.14 INSTRUCTIONS

2.14.1 The Lift Specialist shall allow in their Tender for instructing UCC Estates and Facilities Office in the operation of the entire Lift Systems. These Instructions shall be typed out and bound together and handed over to the Technical Advisory Team/Client for approval.

2.15 DEFECTS

2.15.1 Unless otherwise agreed in writing the Defects Liability Period shall be one year form the date on which the Lift Installations were completed by the Lift Specialist to the satisfaction of the Technical Advisory Team/Client.

2.15.2 Any defects or faults which appear before the expiration of the Defects Liability Period which are, in the opinion of the Technical Advisory Team/Client, due to materials or workmanship

not in accordance with the Contract, shall within a reasonable time after receipt of the Engineers written instruction be made good by the Lift Specialist at their own cost.

2.15.3 UCC shall be entirely responsible for the normal maintenance and running cost of the Lifts Installations during and after the Defects Liability Period.

2.16 COMPLIANCE WITH EC DIRECTIVES & REGULATIONS

2.16.1 The Design and Build Contractor shall ensure that all Lift Equipment supplied on the Project shall comply with all other Directives as outlined in the National Standards Authority of Ireland's Information Sheet entitled "New Approach Directives and CE Marking".

2.16.2 Where required under these Directives, all Machinery, Equipment, Apparatus and Systems supplied and installed by the Contractor shall carry the CE Marking which shall comply in every detail with the EC Directives.

2.16.3 Lift Equipment supplied for this Project not carrying the relevant CE Marking shall be removed by the Contractor and replaced with properly marked Equipment, at no additional cost to the Client.

2.17 FREEDOM OF INFORMATION ACT

2.17.1 Please note also the Freedom of Information Act from the 14th October 2014 and that all Public Bodies will not be able to give guarantees of confidentiality which have previously featured in Public Procurement.

2.17.2 Information in relation to this Tender may be made available on demand in accordance with Freedom of Information Act 2014.

2.17.3 You are asked to consider if any of the information supplied by you in this Tender should not be disclosed because of its sensitivity. If this is the case, you should, when providing information, identify same and specify the reasons for its sensitivity. The Contracting Authority will consult with you about sensitive information before making a decision on any Freedom of Information request received.

2.17.4 If you consider none of the information supplied by you is sensitive, please make a statement to that effect. Such information may be released in response to a Freedom of Information request.

2.18 CO-ORDINATION

2.18.1 Before any of the installation work commences the Lift Specialist shall consult the Engineers, and other Contractors to determine the correct height and location of all services and to determine the correct sequence of erection. No claims for extras shall be considered for work done due to the Contractors failure to predetermine the above aspects of the installation before the installation commences.

2.19 HEALTH & SAFETY ACT

2.19.1 The Contractor shall comply with the requirements of the Safety, Health and Welfare at Work (Construction) Regulations, 2013, and with the Health and Safety at Work Act, 2005.

Section No. 3

3 ELECTRICAL REQUIREMENTS

3.1 ELECTRICITY SUPPLY

3.1.1 The Supplies are 400 volts, 3 phase, 4 wire, 50 hertz, 230 volts between phase and neutral. A Supply shall be provided by the Electrical Contractor to the new Lifts Plant location and terminated in 3 phase and neutral metal clad IP66 isolator switch. The Lift Specialist shall be responsible for all necessary Electric Wiring for Plant and Controls, together with all Control Equipment from the isolating switches to the various components in the Panels.

3.1.2 With the Motor Room-less Lift arrangement the Electrical Contractor shall terminate the Sub-Mains Supply in the Lifts Shafts in an agreed position.

3.2 WIRING RULES

3.2.1 Wiring to the provision of this Specification the General Rules for Wiring for the Supply of Electric Energy recommended by the NSAI/Electro Technical Council of Ireland and Directives issued by the Electricity Supply Board shall be strictly adhered to by the Lift Specialist.

3.2.2 The General Rules for wiring herein referred to are the NSAI/National Rules for Electrical Installations of the E.T.C.I., 4th Edition plus Amendments (all relevant parts). Sub-System Certification shall be provided for each Lift Installation in accordance with NSAI/ETCI.

3.3 ELECTRICAL STANDARDS

3.3.1 The entire Electrical Installation including all Electrical Equipment shall comply with all Legal and Statutory Requirements relating to Electrical Installations and Equipment and all Installation Rules and Codes of Practice issued by the NSAI/Electro Technical Council of Ireland where applicable to the Installations.

3.4 SYSTEM OF WIRING

3.4.1 Where cables in conduit are specified, they shall be protected throughout their length by screwed welded galvanised steel conduit, terminating in pressed galvanised steel boxes at the fittings, switches etc.

3.4.2 Conduit shall be Class B. to EN 61386-1:- 2008 and no tubing shall be smaller than the 20 mm. dia. or have metal less than 15 s.w.g. The thickness of metal shall increase in proportion to the increase in diameter.

3.4.3 The capacity of the conduits shall be in accordance with the NSAI/ETCI National Rules for Electrical Installations, 4th Edition plus Amendments.

3.4.4 C.I. oblong intersection joint "T" and other necessary boxes shall be screwed full thread into which the conduit must fit tightly. Screw cutting oil shall be used as a lubricant when screw cutting, which must be afterwards carefully removed.

3.4.5 Tubes are to be properly screwed, the thread fully worked and when screwed up no rings shall be noticeable on the outside of the tubes. Conduits are to be mechanically and electrically continuous across all joints and earthed in accordance with the Clause marked "Earthing".

3.4.6 Surface Conduit shall be run either vertically or horizontally so as to avoid unsightliness and to conform to the architectural features of the Building.

3.4.7 The Conduit shall be to the Engineers Approval and fixings to walls and steelwork shall be adequate in number and in mechanical strength to support the conduit rigidly. All fixings shall be by means of spacer bar saddles using either slotted or keyhole pattern to permit the retaining screws.

3.4.8 The Conduit shall be laid out for the loop in system of wiring and no joints shall be permitted in the wiring, except at outlet boxes.

3.4.9 All bends shall be made as far as possible from conduit and no bend shall have a radius smaller than 2.5 times the outside diameter of the conduit.

3.4.10 Elbows and tees shall not be used except in positions approved by the Engineer.

3.4.11 When complete the Conduit must be water tight and electrically continuous throughout.

3.4.12 No cables are to be inserted until the conduit and boxes are fixed and the plastering complete and no pull greater than 15kg shall be exerted.

3.4.13 Socketed and screwed brass bushes shall be used on all ends through which cables or wire are moved in either direction.

3.4.14 Conductors shall be tinned high conductively copper LSF insulated, 600 volt grade to comply with EN 50525-1: 2011 600/1000 volt grade.

3.4.15 All Conductors shall be stranded and shall not be smaller than 1.5 sq. mm.

3.4.16 Connectors between cables shall be made by means of mechanical connections of approved type.

3.4.17 All Cables from the Controller, including Travelling Cables, shall be of the Low Smoke and Fume Halogen Free (LSZH) type.

3.4.18 The Wiring for Mains Voltage shall be of the Low Smoke and Fume Halogen Free (LSZH) type in phase colours, utilising either, self-coloured Cable, or appropriately coloured ferrules.

3.4.19 Travelling Cables shall be properly supported at each end using clamps, so that the cores are not under strain at the terminals.

3.4.20 Travelling Cables shall include at least 10% spare cores and the requisite number of earth cores. All spare cores shall be terminated in terminal blocks at each end, which shall be clearly marked "SPARE".

3.4.21 Early connection shall be easily accessible and shall have a resistance not greater than that of the equivalent length of the largest conductor to which the connector is fixed.

3.4.22 The maximum voltage drop between any point where the circuit leaves a Sub-Distribution Board and any outlet point shall not exceed five volts.

3.5 SYSTEM OF WIRING: CABLE TRUNKING

3.5.1 Where specified, Cable Trunking shall be manufactured from 1.2 mm. galvanised sheet steel in nominal length of 3.5 m.

3.5.2 Trunking shall be complete with all the necessary couplings, blank ends, attachment assemblies, suspension brackets etc. The trunking and suspension brackets shall be of a design to allow the trunking lid to be removed without disturbing the suspension bracket. Cable retainers shall be installed at 600 mm. intervals.

3.5.3 Cable Trunking Lid shall be galvanised steel with side returns and shall be held with locking bar with slotted stud.

3.6 SYSTEM OF WIRING: FINAL CONNECTIONS

3.6.1 Wiring shall be enclosed throughout (except trailing cables) in trunking and conduit. Where flexible final connections are required they shall be in flexible conduit and approved properly glanded at each end.

3.6.2 The use of flexible cords for final connections is prohibited.

3.7 EARTHING

3.7.1 All Conduit, Motor, Switchgear, Doors and Frames, etc. or any Metalwork whatsoever adjacent to the Electrical Equipment shall be earthed to the Main Earthing System in the Buildings.

3.7.2 The Earthing to be by means of conductor of high conductivity copper and its sectional area shall not be less than 2.5 sq. mm.

3.7.3 The Conductor shall be protected in conduit or copper sheathed throughout its length.

3.7.4 Flexible steel tubing shall not be considered effective for earthing and an earth wire shall be run through the tubing.

3.8 ELECTRICAL DISTRIBUTION & CIRCUIT PROTECTION

3.8.1 The Design & Build Contractor to include for distribution and circuit protection associated with the Lift Drive and Lift Shaft Lighting / Socket Requirements.

3.8.2 The Emergency Lighting in the Lift Shaft, Over Run, Pit and Lift Car shall be connected to the Building's DALI Automatic Emergency Lighting Test System. The Emergency Lighting shall be assigned as a separate Emergency Lighting Testing Group for the Lift on the DALI System/Frontend. Using the DALI Emergency Protocol, a separate automated regime of self-testing individually for the Lifts' Emergency Light Fittings shall be implemented on the Automatic DALI Self-Test Emergency Lighting System. The scheduling of these tests shall then be programmed separately or to coincide with the Lift Maintenance Engineers' Visits. Each individual Emergency Light in the Lift shall report in real time ECG, Inverter, Battery and Lamp failures for all Shaft, Pit and Lift's Cars DALI Luminaires.

3.8.3 The Contractor shall provide wiring details of the Lift proposal in their Submission.

3.8.4 Lift Shaft Lighting to comply with EN81-20: 2014, Clause 5.2.1.9. 200 Lux to be provided at the top of the Lift Shaft.

3.8.5 Emergency Lighting in the Car shall be capable of providing 5 Lux for the three-hour duration at each alarm initiation device in the Lift Car and on the Car Roof, 5 Lux in the centre of the Lift Car 1m above the Floor and in the centre of the Car Roof, 1m above the Floor.

3.9 ELECTRICAL TESTING

3.9.1 The Lift Contractor shall test the Lift Installation to comply fully with the requirements of the NSAI/E.T.C.I. as set out in the national Rules for Electrical Installation Edition 4 plus Amendments and the Lift Specialist shall submit completed Test Certificates in accordance with the above Document.

Section No. 4

4 LIFT SHAFTS

4.1 STRUCTURE

4.1.1 The Lifts shall be installed in new enclosed Structure/Lift Shafts as indicated on Architect Drawings with clear dimensions as indicated in the attached Schedule.

4.1.2 The new Shafts are constructed in reinforced concrete in accordance with the requirements of BS 5655-6:2011, EN81-20: 2014, EN81-50: 2014, EN81-70: 2003, EN81-72: 2015 & BS ISO 4190-1:2010.

4.1.3 The Lift Shafts shall comply with the requirements of EN81-72: 2015 and BS 9999-2017 including:-

- Measures taken to minimise the ingress of water into the Fire-Fighting Lift's Shafts;
-
- Lift pit is 1100mm (this includes any traction lift machine equipment and the necessary safety gear required to comply with EN 81-20

- Provision made to protect all Electrical Equipment within the Lift's Pits from the effects of water. Details of the methods adopted shall be clearly identified within the Tender, and shall include the provision of suitable IP Rating and Mechanical Protection as necessary;

- Headroom from FFL of third floor to underside of lifting eyes is 3400mm (this includes the space required for the traction lift machine room

- Provision of Drainage Channels in front of each of the Landing Entrances;

- Ramping up of the finished floor level in front of the Lifts Entrances;

- Drains to be provided in the Lift Pits to prevent water reaching a defined level;

4.1.4 The Lift Contractor shall be responsible for supplying detailed Drawings for all Builders Works required for the Lifts Shafts and also Drawings showing the details of the opes and other associated works.

4.1.5 The Lift Contractor shall be responsible for making all necessary checks of the Structure in the course of construction to ensure that the Work is carried out in the manner required including tolerances.

4.1.6 The Lift Contractor tractor shall provide detailed Drawings of the Shafts within 14 days of the Order being placed for the approval of the Technical Advisory Team/Client prior to commencing work on Site.

4.2 GUIDES

4.2.1 The Guides for the Lift Cars and the balance weights shall be manufactured from high quality "T" section steel and the Systems including fixings shall comply with BS 5655-6: 2011.

4.2.2 The Lift Specialist shall supply and install all supports into the Lift Shaft Walls.

4.2.3 The Lift Specialist shall mark out all supports and check the fixings prior to fixing the brackets.

4.2.4 The spacing of guide fixings shall not be greater than that required by BS 5655-6: 2011/EN81-20/50:- 2014 and shall be sufficient to withstand the forces due to the operation of the safety gear.

4.2.5 The Car and Counterweight Guides shall be so jointed and fixed to their Brackets that they do not deflect by more than 1.0mm under normal operating conditions.

4.2.6 Detailed Calculations in accordance with Section 5.7 of EN 81-20: 2014 and Section 5.10 of EN 81-50:- 2014 shall be submitted if requested by the Engineer, verifying the Design Deflections and Stresses of the selected Guide Rails.

4.2.7 Wood or Fibre Blocks or Plugs shall not be used for securing Guide Brackets to the Structure.

4.2.8 Unless otherwise agreed with the Engineer, all Car and Counterweight Guides shall be machined, undercut tee section, with tongue and groove plated joints and shall be provided with steel bases.

4.2.9 If lubricated Guide Rails are used, removable oil drip trays shall be provided to facilitate easy emptying of excess oil. The collection of lubricant within a buffer support channel will not be accepted.

4.2.10 The Fixing Pitch between Guide Brackets shall be arranged to restrict the designed deflection below the maximum specified. If due to limitations on the Guide Fixing Pitches caused by construction or structural constraints, this maximum deflection cannot be achieved, suitable Guide Rail Backing shall be provided to achieve the deflection criteria accordingly.

4.3 BUFFERS

4.3.1 Buffers shall be installed in the Lifts Pits for Car and Counterweight and the type required shall be appropriate to the speed of the Car.

4.3.2 Buffers shall comply with the provisions of BS 5655-6:2011/EN81-20/50:- 2014.

4.3.3 All necessary Supports, Mountings and Fixings shall be provided by the Lift Specialist to support the buffers at the correct height above the pit floor.

4.3.4 Buffers of a type tested design shall be installed under the Lift Cars and Counterweights in accordance with the requirements of Section 5.8 of EN 81-20: 2014.

4.3.5 Lifts with Contract Speeds not exceeding 1 m/s shall be provided with Energy Accumulation or Energy Dissipating Buffers. Energy Accumulation Buffers shall be steel, polyurethane or similar material, designed to ensure that they do not compress fully when resisting the motion of the Fully Loaded Car or the Counterweight when the Car is empty. Energy Dissipating Buffers shall be as described below and are preferred.

4.3.6 On Lifts having a Contract Speed in excess of 1 m/s, Energy Dissipating Buffers shall be provided. All Buffers shall be self-resetting. They shall incorporate an Electrical Safety Switch, which operates the Lift Safety Circuits when activated. The Safety Switch shall be manually reset. An electrical contact shall be fitted to each Buffer to register correct resetting after use. Provision shall be made for ascertaining that there is an adequate supply of oil in hydraulic buffers.

4.3.7 Buffers shall be mounted on continuous rolled steel channels laid on the Floor of the Pits and securely located by the Guide Rails.

4.4 LIMIT SWITCHES

4.4.1 Final Limit Switches shall be provided to operate before the Cars or Counterweights comes into contact with the buffers.

4.4.2 Limit switches and their arrangement shall comply with the provisions of BS 5655-6:2011/EN81-20/50:- 2014.

4.5 VOID SCREEN

4.5.1 Where the layout of the Lifts Shafts Equipment produces void(s) with plan dimensions in excess of 350mm deep x 500mm wide, adjacent to an Area accessible by Authorised Personnel during routine Inspection and Maintenance, a Safety Screen shall be provided for the full height and width of any such Void.

4.6 PIT SCREEN

4.6.1 A substantial Screen shall be provided by the Lift Specialist at the bottom of the Pit to screen the counterweight to a height not less than 2500 mm above the Pit Floor.

4.7 PAINTING

4.7.1 All iron and steelwork except specially treated or self-finished surfaces shall be cleaned down and painted with one coat of rust inhibiting primer and two coats of high quality oil paint. This Clause shall apply to all sections of this Specification.

4.8 PIT LADDER

4.8.1 The Lift Specialist shall provide and install a mild steel ladder to EN81-20/50: 2014 requirements between the lowest floor landing and floor of the Lift Pit.

4.8.2 Any additional Ladders required for the Lifts to meet EN81-72: 2015 are to be provided in the ceiling of the Car.

Section No. 5

5 CONTROL SYSTEM AND CONTROLLER

5.1 CONTROL SYSTEM OPERATION

5.1.1 The Control Systems for the Lifts shall be one of the types detailed below and as required in the attached Schedule.

5.1.2 The types of Control shall be as follows as defined in BS 5655-6:2011.

- Automatic Push Button Control;
- Full Up/Down Collective Control;
- Supervisory Control.

5.1.3 In addition to the above a Car Preference Control may be specified in the Schedule for attendant operation as defined in B.S.5655 Part 6:2011.

5.1.4 The Control Systems shall comply fully with the provisions of BS 5655-6:2011/EN81-20/50:- 2014.

5.2 CONTROL SYSTEM OPERATION

5.2.1 The Car Control Stations and Indicator Systems shall comply with BS 5655-6:2011/EN81-20/50:- 2014.

5.2.2 The Car Stations shall comprise anti-vandal proof tactile push buttons with Braille identification suitable for the visibly impaired mounted with a Powder Coated/Brushed 220 Stainless Steel Face Plate. The plate shall be mounted on the door return or adjacent at a height to suit operation by persons in a wheelchair and complying with Part 'M' of the current Building Regulations. Induction Loops shall be provided in all Lifts.

5.2.3 A LED Position Indicator shall be located in the Cars above or at the side of the door with illuminated numerals for Car position and direction of travel.

5.2.4 Push buttons at landings stations, with Car Position and Directional LED Indicators shall be provided as defined in BS 5655-6:2011/EN81-20/50:- 2014 as appropriate for the method of control selected.

5.2.5 All Landing Call Stations to meet the requirements of Part M including being located 500mm from the returning wall.

5.2.6 When required by the attached Schedule Car Position Indictors shall be located over or at the side of the landing doors with illuminated numerals for Car position. The Indicator Units shall be incorporated into the door architrave either above or at the side of the doors.

5.2.7 An audible single stroke gong shall be provided at each landing above each Entrance to indicate that its Car is going to stop.

5.2.8 A Staff Supervisory Access Control Interface shall be provided to limit access to the Lift Cars, each landing control station to allow the Staff to control and switch off the Lifts.

5.3 CONTROLLERS

5.3.1 The Controller for the Lifts shall utilise state of the art electronics with microprocessor, P.C.B's and suitable for fully digital variable voltage variable frequency motor control.

5.3.2 The Controllers shall ensure consistent speed profiles and a levelling accuracy of ±3 mm.

5.3.3 The Microprocessor Controllers and control components shall be mounted in robust, ventilated, sheet cabinets with locking doors electrically interlocked.

5.3.4 The Panels shall be rigidly mounted by the Lift Specialist in a suitable position on the wall of the Shafts of a Motor Room Less System.

5.3.5 The entire Control System and Components shall comply with the provisions of BS 5655-6:2011/EN81-20/50: 2014 and ETCI Regulations and the Clause "Electrical Standards".

5.3.6 The Controllers shall include an hours-run meters for the Lift Motors.

5.3.7 The Controllers shall include phase failure and phase reversal protection.

5.3.8 The Controllers shall allow for the Lifts to home to Ground Floor when not in use.

5.3.9 The Controller Processor shall be suitable for interconnecting to a remote Monitor and Building Management System.

5.3.10 An Audible and Visual Door Zone Indicator shall be provided as part of the Panels/Controllers in accordance with BS 5655-6:2011/EN81-20/50: 2014.

5.3.11 The Control Systems shall incorporate a Fire Alarm homing feature which shall be activated by the operation of voltage free contacts.

5.3.12 When the Fire Alarm feature is activated, if the Lift is descending, it shall continue to the Ground Floor without stopping and on arrival open its doors and discharge the Passengers. If the Lift is ascending, it shall decelerate and stop normally at the next Floor ahead and then without opening its doors shall return to the Ground Floor where the doors will then park open, allowing the Passengers to discharge.

5.3.13 If the Ground Floor is the Floor of the Fire Alarm origin, the Lift Car is to reverse and return to the floor above, with the Car Doors opening and extinguishing the Car Lights and preventing further operation of the Lift until the contact is released. A second Fire Alarm Interface Unit will be required for the Lift Car for this operation.

1. An Instructional Message shall be sounded in all Lift Cars in the event of an Emergency/Fire Activation and the Lift shall be directed to the Ground Floor unless the Fire is on the Ground Floor, where the Lift shall be directed to the Floor above/below (Evacuation Floor) and the doors open to facilitate the safe evacuation of Passengers

5.3.14 The Lift Specialist shall provide a Power Status Indicator Panel as required by BS 9999: 2017 and EN 81-72: 2015.

5.3.15 The Electrical Contractor and Lift Specialist shall provide all associated wiring and containment between the Change-Over Switch Equipment and the Indicator Panel at the Fire Service Access Level.

Section No. 6

6 LIFT CAR AND DOORS

6.1 CAR SLING

6.1.1 Car Slings shall support the Lifts Platforms and Enclosures and shall be constructed of Structural Steel with safety factor to BS 5655-6: 2011/EN81-20/50: 2014.

6.1.2 The Sling arrangement shall be to BS 5655-6: 2011/EN81-20/50: 2014 and must be capable of withstanding the operation of the Safety Gear with full load without permanent deformation and must also be capable of withstanding the impact of the Car on the buffers without permanent deformation.

6.1.3 Quick release pad shoes of heavy construction shall be provided and securely fixed to the cars slings and counterweights frame tops and bottoms to BS 5655-6:2011/EN81-20/50: 2014.

6.2 SAFETY GEAR AND OVERSPEED GOVERNOR

6.2.1 The Cars shall be provided with safety gear to comply fully with the provisions of BS 5655-6: 2011/EN81-20/50: 2014.

6.2.2 The Safety Gear shall be located under the Cars Platforms. The Safety Gear shall be of the instantaneous or progressive type to suit the Cars speed as set out in BS 5655-6: 2011/EN81-20/50: 2014.

6.2.3 The Safety Gear shall be actuated by a centrifugal over speed governor to comply with the provisions of BS 5655-6:2011/EN81-20/50: 2014 and the governor and safety gear shall be adjusted to operate as required by BS 5655-6:2011/EN81-20/50: 2014.

6.3 CAR DOORS

6.3.1 Cars Doors shall be horizontal sliding, single panel to comply with the requirements of BS 5655-6: 2011/EN81-20/50: 2014 and shall match the Landing Doors as specified hereafter. The Doors shall be double skinned and finish per Schedules.

6.3.2 The Doors shall be protected by full height electronic safety edge and in addition by a light ray device.

6.3.3 The Door Operators on the Cars shall be variable frequency motion control.

6.4 LANDING DOORS

6.4.1 Landing Doors shall be horizontal side acting to match the Car door and to comply fully with the requirements of BS 5655-6: 2011/EN81-20/50: 2014. Doors shall be double skinned with finish per Schedule of Finishes.

6.4.2 Each Landing Door shall be of a type providing two-hour fire resistance to EN81-58 and shall meet the requirements of the Fire Officer. An independent test certificate for this shall be required.

6.4.3 The Doors including the frames shall have minimum of two-hour fire rating. The doors shall have a minimum opening of 800mm and stay open for a minimum of 8 seconds with timing adjustment. The Doors including frames and fixing methods shall have mechanical strength not less than that required by EN81-20: 2014.

6.4.4 The Door Operator shall comply with EN81-20: 2014 and shall comprise gravity operated closer and lock. The Doors shall be protected by a full height electronic safety edge.

6.4.5 Wrap around Architraves at each Lift Landing shall be supplied for the installation as indicated in the attached Schedule with the finish as indicated in the Schedule of Finishes.

6.4.6 The Architraves shall totally enclose the structural open with a front return, with totally concealed fixings. The Architraves shall be measured on site and fitted to suit the structural ope.

6.4.7 The Landing and Car Doors for the Lifts shall be side opening.

6.5 LIFT CARS

6.5.1 The inside dimensions of the Lift Cars shall be as indicated in the attached Schedules.

6.5.2 The Cars shall be of substantial construction of approved design and workmanship and shall comply fully with the requirements of EN81-20/50: 2014. Lift Cars shall comply with the requirements of EN81-72: 2015.

6.5.3 The Cars shall be isolated from the Cars Frame with resilient mountings.

6.5.4 The Cars interior finish on the Lifts shall be Brushed 220 Stainless Steel, as indicated on the attached Schedule. The interior shall be to the Technical Advisory Team/Clients Approval which shall be obtained in writing before construction commences.

6.5.5 The Design and Build Contractor shall agree to substitute alternative Materials and Finishes if required by the Architect of equal value to the Materials in the Schedule without extra charge.

6.5.6 The Cars shall be complete with brushed chrome tubular Handrails on 3 internal walls. The Handrails shall have a light reflectance value of 75.

6.5.7 The Passenger Lift Cars shall be complete with LED Lighting with a suspended metal ceiling with cut outs, type and finish as per the Schedule of Finishes. In-Direct LED shall also be provided along the four corners of the Lift Car as well as on the Car Operating Panel.

6.5.8 All Emergency Lighting within the Lift Car to be stand-alone recessed DALI LED Luminaires provided with 3-hour DALI DALI Emergency Invertor and Secondary Cell Battery Set, connected back to the Building's Automatic DALI Emergency Lighting Test System. (None of the Normal Luminaires in the Lift Cars shall be converted to Emergency).

6.5.9 Lighting shall have a minimum of 200 lux at the Floor considering reflectance's of finishes etc.

6.5.10 Emergency Lighting (DALI) shall be provided on the top of the Cars, below the Cars, in the Over-Run Spaces and in the Lift Pits, in accordance with IS 3217: 2013 plus Amendment A1 2017, by the Lift Contractor, and certified as such, in accordance with IS 3217: 2013 plus Amendment A1 2017.

6.5.11 The Emergency Lighting in the Lift Shaft, Over Run, Pit and Lift Car shall be connected to the Building's DALI Automatic Emergency Lighting Test System. The Emergency Lighting shall be assigned as a separate Emergency Lighting Testing Group for the Lift on the DALI System/Frontend. Using the DALI Emergency Protocol, a separate automated regime of self-testing individually for the Lifts' Emergency Light Fittings shall be implemented on the Automatic DALI Self-Test Emergency Lighting System. The scheduling of these tests shall then be programmed separately or to coincide with the Lift Maintenance Engineers' Visits. Each individual Emergency Light in the Lift shall report in real time ECG, Inverter, Battery and Lamp failures for all Shaft, Pit and Lift's Cars DALI Luminaires.

6.5.12 The Cars shall be adequately ventilated to comply with BS 5655-6:2011/EN81-20: 2014 including an automatic Extract Fan mounted on top of the Cars. The Lift Shafts must be ventilated as per EN81-20: 2014.

6.5.13 The Cars shall also be fitted with an Intercom System c/w Induction Loop giving Voice Communication with the Lift Emergency Monitoring Station.

6.5.14 The Cars shall be complete with an Emergency Signal comprising D.C. Bell flush mounted over the Lift Doors at Ground Floor Level operated by a push in the Cars.

6.5.15 The final position of the Bells/Sounders shall be agreed with the Engineer on Site. The System shall be D.C. driven by a D.C. battery charger Unit located in the Control Panels, all in accordance with BS 5655-6:2011/EN81-20: 2014.

6.5.16 The Cars shall be fitted with a Car Top Control Station, a Light Fitting and a 13 Amp Socket Outlet with integral RCBO, all as required by BS 5655-6:2011/EN81-20: 2014.

6.5.17 The Cars shall also be fitted with a Voice Annunciation System. The Voice Annunciation System in the Lift Cars to be bi-lingual, English/Irish.

6.5.18 Toe Guards shall be fitted to the Cars and Landing Sills.

6.5.19 The Cars shall also be fitted with a Half-Height Mirror, full width on the back wall to the top of the Lift Cars.

6.5.20 The Cars shall also be fitted with Induction Coupler for people using hearing aids.

6.5.21 An Induction loop to be placed around the entire car shall be provided as an aid to communication for people with impaired hearing.

Section No. 7

7 LIFT MACHINERY

7.1 ELECTRIC MOTOR

7.1.1 The Electric Motors for the Lifts Systems shall be A.C. suitable for variable voltage, variable frequency and suitable for 400 volt 3 phases 50 Hz operation.

7.1.2 The Electric Motors shall be rated for not less than 240 starts per hour.

7.1.3 The Motors shall comply fully with the provisions of BS 5655-6: 2011/EN 81-20: 2014/EN 81-50: 2014 and shall be specially designed for long life and heavy lift duty.

7.1.4 The Motors shall be protected by thermal overloads phase failure with under and over voltage devices located in the Controllers.

7.1.5 Regenerative drivers to be provided for all Lifts in the Building.

7.1.6 The Drive Systems shall allow for the minimum start/running current to maintain improved power factor and reduced energy consumption.

7.1.7 Unless previously agreed with the Engineer, the Control Systems shall provide fully closed loop feedback for speed control by way of an encoder device mounted directly on the high speed shaft of the Drive Motors or similar agreed method.

7.1.8 At the request of the Engineer the Lift Specialist shall, provide Harmonic Spectrum Data relating to each phase of the Supplies to the Drive Motors:-

- When a Lift Car is accelerating in either direction with Full Contract Load;
- When a Lift Car is accelerating in either direction Empty;
- During Levelling Operations.

7.1.9 The Motors and Controllers for the Lifts shall be capable of a Lift Speed of 1.6 m/sec unless indicated otherwise on the Schedules. All Lift Speeds to be as indicated in the individual Schedules for each Lift.

7.1.10 The Lift Specialist shall mount the Motor Gear above the top floor with the Controllers mounted to one side of the top floor Landing Doors.

7.1.11 The Controllers shall include an electrically operated emergency release devices to operate the Cars to evacuate Passengers in the event of a fault on the Lifts Systems or Electrical Mains Failure.

7.1.12 A Manual Brake Release Device shall be provided for Emergency Operation.

7.2 MOTORISED EMERGENCY RELEASE

7.2.1 The Lift Specialist shall include for Motorised Drive Units to drive the Lifts to the nearest floor, upon mains power failure, for emergency release. TESTING, CERTIFICATES, MAINTENANCE

7.3 TESTING

7.3.1 The Design & Build Contractor shall allow for all necessary pre-commissioning tests required by the Technical Advisory Team/Client. Before the Lifts Cars are installed, the Design & Build Contractor in the presence of the Technical Advisory Team/Client shall verify that all guides are true to dimensions and plumb. A lift gauge shall be used which shall be available to the Engineer for inspection.

7.3.2 On completion the Design & Build Contractor shall carry out all operational tests in full accordance with EN 81-20: 2014, Section 6.3. The results of the tests shall be recorded on a separate test and examination certificate in the format of BS 8486-1: 2007 + A1: 2011. The Design & Build Contractor shall demonstrate that all Materials, Equipment, Workmanship and Systems are wholly satisfactory and in compliance with this Specification. In addition, the Lift Specialist shall fully complete the test form attached to this Specification witnessed by the Engineers. The Design & Build Contractor shall also include for carrying out a second time a selected number of tests on the test form to demonstrate the accuracy of these test results.

7.3.3 When testing is required by the Client for Insurance purposes, the Lift Specialist shall include for carrying out such tests in addition to the tests above.

7.3.4 For all tests the Lift Specialist shall give 14 days' notice in writing to the Engineer/Client.

7.3.5 Once all Commissioning Tests are complete, a repeat of all tests shall be required to be witnessed by the Ancillary Certifier, in accordance with the requirements of the Building Control (Amendment) Regulations 2014. The Lift Specialist shall be required to produce a Design Certificate, in accordance with the Building Control (Amendment) Regulations 2014 at practical completion. This will be a requirement for practical completion. Refer to the Architectural proposed Works Inspection Schedules for further details of Lifts Installation Inspections. An IS 3217: 2013 plus Amendment A1 2017 Certificate and an ETCI Certificate shall be a requirement for the Lifts Installations, which must be appended to the Design Certificate, as noted above.

7.4 CERTIFICATES

7.4.1 The Lift Specialist shall submit the following Manufacturers Test Certificates before the Lifts are commissioned:-

- Fire Test Certificate for Landing Doors/Frames;
- Mechanical Strength Test Certificate for Landing Doors/Frames;
- Certificate for Suspension Ropes/Belts;
- Certificate for Safety Gear and Car Sling indicting factor of Safety;
- ETCI Certificate;
- IS 3217: 2013 plus Amendment A1 2017:2013 Installation Certificate;
- IS 3217: 2013 plus Amendment A1 2017:2013 Commissioning Certificate;
- BC(A)R Design Certificate.

7.4.2 Additional Copies of the Certificates shall be included in the Maintenance Manuals.

7.5 RECORD DRAWINGS AND MANUALS ETC.

7.5.1 The Design & Build Contractor shall provide 4 No. copies of Record Drawings and full Operating and Maintenance Manuals and technical description for the Lifts associated Equipment.

7.5.2 The Lift Specialist shall include in this Tender for a 3D BIM Model of both the Design Lift Model and the Constructed Lift Model developed directly from the Contractor's 3D BIM MEP Model.

7.5.3 The Lift Specialist shall erect in the Lift Control Panels all Notices and Diagrams required by BS 5655-6: 2011/EN81-20: 2014 including Emergency Release Procedures.

7.5.4 The Lift Specialist shall also include for supplying full algorithm details for the programming of the Microprocessor.

7.5.5 In addition, for this Project, the Design & Build Contractor must include for all Project's Online Safety File requirements.

7.6 MAINTENANCE

7.6.1 The Design & Build Contractor shall include in their Tender a fully comprehensive Maintenance Programme for a period of 12 months. The Maintenance Programme shall commence on the date of which the installation was completed and include a minimum of 4 visits in the first year by the Lift Specialist to the satisfaction of the Engineer/Client.

7.6.2 The Design & Build Contractor shall include, in addition, to Maintenance/Service Visits, for responding to 6 No. emergency call outs and carrying out all necessary Work to put the Lifts into Service at each Emergency Call Out.

7.6.3 The Design & Build Contractor shall submit to the Client before the expiry of the period above, details of a fully Comprehensive Maintenance Contract.

7.7 HANDOVER REQUIREMENTS

7.7.1 As a pre-requisite to Substantial Completion in respect of the Contract Works or part thereof, demonstrate to the satisfaction of the Technical Advisory Team/Client that:-

a) All the Contract Works are completed;

b) With the exception of minor snags or limited defects as agreed with the Engineer that could be reasonably completed within an agreed Programme without causing disruption to the Employer's use of the Building or part thereof;

c) All spares, keys, tools and other consumables as stated elsewhere have been supplied and handed over to the Employer;

d) The instruction of the Employer's Staff in the use and correct operation of the installation has been completed satisfactorily. In particular, safety devices and controls demonstration.

e) All Commissioning and Testing completed including the issue of a final Commissioning Repoyrt signed by an approved competent Person;

f) A complete demonstration of the Contract Works with fully functional operational controls tested has been undertaken in the presence and to the satisfaction of the Engineer;

g) All necessary Certification by the Client's Insurers has been completed;

h) All approved Record Documentation including Record Drawings, Operation and Maintenance Manuals, etc., is issued;

i) All information required for the Health and Safety File is issued to the satisfaction of the Planning Supervisor.

7.7.2 The Information shall include:-

- A written description of Plant Operation;
- Control Strategy/Logic Diagrams recording the final version of configuration software installed at handover;
- Details of System Application Software Configuration;
- A Points List including hard and soft-points (all points should have a unique mnemonic);
- A Description of User Adjustable Points;
- Commissioning Record Details;
- Detailed Data Sheets for all Control Components and Equipment;
- Wiring Circuit Details including origin, route and destination of each Cable;
- Basic Security Access to the System;
- Comprehensive Instructions for switching on, operation, switching off, isolation, fault finding and procedures for dealing with Emergency Conditions;
- Instructions for any Precautionary Measures Necessary;
- Instructions for the routine operation of the Control Systems including simple day-to-day guidance for those with limited technical skill;
- Instruction for Servicing and System Upkeep;
- A provision for update and modification;
- All necessary Statutory Authority Approvals have been undertaken and written confirmation established;
- Completion and issue of Log Books in accordance with Building Regulations and in accordance with CIBSE TM31 Building Log Book (Toolkit standard templates).

7.8 TRAINING OF EMPLOYERS STAFF

7.8.1 Prior to Substantial Completion explain and demonstrate the purpose, function and operation of the Lifts Installations including all items and procedures listed in the Operation and Maintenance Manuals:-

- To the Client's Estates and Facilities Staff;
- To the Operational Staff of the Building.

7.8.2 Submit to the Architect for approval a detailed programme for the training of the Client's Staff and Operational Staff.

7.8.3 Time scale – three weeks before commencement of training:-

- Employ the Services of relevant Specialists and Suppliers for the purpose of training and instruction;
- Provide each Person with a comprehensive set of teaching notes and Diagrams;
- Be responsible for the correct operation and maintenance of the Lifts Installation during such periods of instruction;
- All Costs associated with the instruction of the Client's Personnel and required attendance following practical completion shall be included in the Contract Price;
- Following Practical Completion and Occupation be available for a period as agreed with the Architect to assist the Client's Personnel in the operation of the various Systems together with the following:-

  · Controls Specialist;

  · Commissioning Specialist.

7.9 TRAINING

7.9.1 The Lift Specialist shall include for not less than the indicated number of operating days for this purpose and demonstrate the safe day to day running and maintenance of all Lift Systems and Equipment.

7.9.2 The Lift Specialist shall provide training for the operation of the Lifts Installations as follows:-

- Provide all appropriate Reference and Training Manuals;
- Complete initial instruction prior to commissioning of the installed Lifts Systems;
- Provide Site Instruction on the installed Lift Systems;
- Provide Training for all operational functions of the Lifts including all push buttons, indicators and sounders, gongs etc., all key switches and functions controlled thereby and all special control features such, emergency recall switches, Out of service switches etc.
- Include for not less than indicated number of operating days for this purpose and demonstrate the safe day to day running and maintenance of all Lift Systems and Equipment.

8 HEALTH, SAFETY & WELFARE AT WORK (CONSTRUCTIONS) REGS 2013

8.1 PROJECT SUPERVISORS

8.1.1 The Client has appointed Aegis Safety Management as Project Supervisor for the Design Stage of the Project to carry out the duties set out in Article 4 of the Regulations.

8.1.2 The Main Contractor shall be appointed by the Client under a Collateral Agreement to the Main Contract as Project Supervisor for the Construction Stage in respect of the Project pursuant to the Safety, Health and Welfare at Work (Construction) Regulations 2006 & 2013 Amendments. The Contractor shall include all costs for the provision of the Services of Project Supervisor for the Construction Stage pursuant to Articles 6 and 7 of the Regulations.

8.1.3 The Contractor shall include for providing all necessary information as requested by the Project Supervisor for the Construction Stage to enable the preparation and completion of the Safety File excluding Drawings and Specifications which shall be provided by the appropriate member of the Design Team and relevant Sub-Contractors/Specialists.

8.1.4 The Contractor shall include for providing assistance to the appropriate member of the Design Team (and to relevant Sub-Contractors/Specialists) in preparing "As Built" Drawings for inclusion in the Safety File.

8.1.5 The Client shall appoint the Main Contractor as Project Supervisor for the Construction Stage of the Project, to carry out the duties set out in Article 6 of the Regulations.

8.1.6 The Contractor shall include in their Tender for complying fully with the Health, Safety & Welfare at Work Act.

8.2 CO-ORDINATION OF PERSONS ENGAGED IN THE DESIGN OF THE PROJECT

8.2.1 In accordance with Article 4(1) (a) of the Regulations, it is the duty of the Project Supervisor for the Design Stage to co-ordinate the activities of persons engaged in the design of the Project.

8.3 fDUTIES OF NOMINATED SUB-CONTRACTORS AS DESIGNERS

8.3.1 Preliminary Health & Safety Plan

To enable the Project Supervisor for the Construction Stage to develop the Health & Safety Plan for the Project, it is necessary for the Lift Specialist to give the information which is relevant to the requirements of the Regulations in relation to that part of the Works for which they are tendering:-

- A General Description of the Works;
- The time in which it is intended that the Works will be completed;
- Work which will enable Particular Risks as defined in Schedule 2 of the Regulations.

8.4 GENERAL DUTIES AS DESIGNERS

8.4.1 Where a Sub-Contractor/Specialist designs any element of the Works as part of their Contract, the Sub-Contractor/Specialist has a statutory obligation to perform the duties set out in Article 5 of the Regulations in relation to those parts of the Works. These are:-

(a) Take account of the general principles of prevention as specified in the First Schedule of the Principle Regulations (S.I. 44 of 1993) and any relevant Safety & Health Plan or Safety File prepared in accordance with the Health, Safety and Welfare at Work (Construction) Regulations 2013;

(b) Co-operate with the Project Supervisor appointed for the Design Stage or the Project Supervisor appointed for the Construction Stage, as appropriate, to enable that Project Supervisor to comply with these Regulations;

(c) Promptly provide the Project Supervisor appointed for the Design Stage, or the Project Supervisor appointed for the Construction Stage as appropriate, with such information as is known to that Person regarding particular risks to the Safety and Health of Persons at Work as referred to in the Second Schedule which may be associated with the Project and also with such information regarding the nature and scope of the Project to the extent necessary to enable the Project Supervisor to comply with these Regulations;

(d) Take into account any directions from the Project Supervisor appointed for the Construction Stage as appropriate.

8.4.2 It should be noted that under (c) above, the Lift Specialist is required to provide copies of the following documents to the Project Supervisor for the Construction Stage for the purpose of preparing the Safety File.

(a) Drawings showing the Installation as constructed;

(b) Details of the Construction or Installation including Manufacturer's Instructions for the installation of proprietary elements, wiring routes and diagrams;

(c) Full Instructions for the safe maintenance of the construction or installation.

Appendix 1: Lift Schedules

CLONMEL COURTHOUSE AND BRIDEWELL
LIFTS INSTALLATION SPECIFICATION

LIFT SCHEDULES

Internal Platform Lift - Bridewell

1	Internal Platform Lift	
2	Capacity	400kg
3	Speed	0.15 m/s
4	Duty Rating	180 starts/hr.
5	Power Control System	Electric Homelift
6	Method of Control	Microprocessor Controller providing up and down fully collective control with variable frequency motor control and priority staff control. (See BS5655-6: 2011, 7.1.H7).
7	Car Entrances	Side Opening.
8	Landing Entrances	Single Entry.
9	Intercom System/Emergency Call Station	To External Monitoring Station. Hands free auto-dialler and Remote Diagnostics. Engineer's Alarms required on Car Roof and within the Lift Pit. Auto Dialler to be linked to Induction Coupler within Car.
10	Landing Thresholds	Yes.
11	Load Bypass	Yes, to be adjustable from 40% to 80% of rated load. Initial setting to be 400 kg.
12	Load Weighing and Overload Indicator	Yes.
13	Loading Classification	To EN 81-20: 2014, Table B.
14	Buffers	Pneumatic.
15	Levels Served	2 No.
16	Travel	3500mm
17	Floor Identification/Markings	0, 1 (To be agreed)
18	Maintenance Access Panel	Stainless Steel. On the Frame on Top Floor. Located in Landing Door Surround in Brushed 220 Stainless Steel Finish.

19	Shaft Size and Construction	1156mm x 1689mm Concrete/Blockwork.
20	Pit Depth	120mm
21	Head Room	2600mm
22	Machine Room Size	N/A Motor Room Less.
23	Disabled Access	Yes to comply with EN 81-71.
24	Firefighter Lift	No.
25	Evacuation Lift	No.
26	Fire Alarm Recall	Yes to EN 81-73 recall to GF or FF, will not require manual restart after Alarm cleared. If fire on GF, Lift goes to alternative level). Permanent Notices to be provided at each Level indicating – Not to use the Lift in the event of a Fire.
27	Shaft Inserts	To be drilled and fixed by Lift Contractor.
28	Top of Lift Car Handrail	Yes, minimum 1200mm High.
29	Power Supply	Single phase 230V 16A - In the event of Power Failure, Emergency Back-Up Systems operate the Door, Light And Alarm, and lower the Lift to Ground Level.
30	Re-Levelling	Automatic Accurate Revelling.
31	Handwinding Indication	One Touch Operation
32	Door Operator	Closed loop control with adjustable opening and closing times. (Variable Frequency).
33	Advance Door Opening	Yes.
34	Door re-opening on second landing call[1]	Yes.

[1] The number of times that the door can reopen in response to a landing call.

35	Door Dwell Time[2]	Adjustable 2 s to 15 s. Initial settings 2 s for stop in response to a Lift Car call (car call dwell time), 3 s for stop in response to landing call (landing call dwell time).
36	Differential door timing[3]	Yes, reduction to 0.5 s. To operate on detection of Passengers crossing the threshold (-50 Beams minimum) or a destination or door close button being operated.
37	Nudging	Yes, adjustable 10 s to 30 s, initial setting 15 s with audible warning.
38	Parking	Yes, at 0. Doors Closed.
39	False Call Cancellation	Yes.
40	Levelling Accuracy	±3 mm.
41	Ascending Car Overspeed Protection	Required.
42	Car Top Control Station	Mounted vertically to BS7255, Figure C.2
43	Alarm Bell	Yes, in Shaft at lowest Floor.
44	Performance Time[4]	T.B.A.

[2] Door dwell time (in seconds) is the time the door will remain open at a floor with not passenger transfers.

[3] Differential door timing (in seconds) is the time that the reduction in door dwell time as the result of passenger transfers or control actions.

[4] Performance time is the time (in seconds) between the time the door start to close until they are 800 mm open at the next floor. It includes: door open/close time, advanced opening time, flight time, start up delays, etc.

45	Heat into Well	TBA By Tenderer.
46	Electrical Power Requirements	TBA By Tenderer. (<10kW).
47	Energy Saving: Car	After 5 minutes of the Lift remaining idle the Car Lights shall dim to emergency illumination levels. They shall return to full luminance when any of the following occurs: the doors open/close, the Lift moves from its position, a COP pushbutton is operated, or the presence of an occupant is detected.
48	Energy Saving: Controller	After 5 minutes of the Lift remaining idle the standby power of the Controller shall be reduced to less than 50 W.
49	Regenerative Drive System	Yes.
50	BMS	N/A
51	Internal Size of Car.	1100mm W. x 1400 mm D. x 2100 mm H. (Clear or appropriate, must be compliant to ISO 4190-1).
52	Minimum Car Door Entrance Dimensions (Width x Height)	Side Opening 800 mm Wide x 2,000 mm High.
53	Landing and Car Door Operation	Automatic Sliding.
54	Number of Entrances in Car.	1 No. Front Only
55	Landing Door Protection	Passenger Detection/Obstruction Detection shall be provided from 25 mm to 1,800 mm above car floor by electronic passenger detection. (Infra-Red Multi-Beam Protection, minimum of 50 emitters and detectors)
56	Call Pushbuttons	Raised tactile with call acceptance LED illumination in compliance with EN 81-70.
57	Call Registration Indication	Yes
58	Landing Call Stations	Stainless Steel Landing Call Station to be provided at the Landing Door served and mounted local to the car door at 1,050mm over Finished Floor Level and complete with Stainless Steel Cover Plate. Illuminated Buttons.
59	Lift Coming Landing Indicator	Yes on each Floor Electronic.
60	Lift Position Landing Indicator	Yes on each Floor Electronic.

61	Lift Directional Landing Indicator	Yes on each Floor Electronic to EN 81-71.
62	Car and Landing Door Operating Gear.	Variable frequency G.A.L. Model MOD or equal to approval.
63	Voice Annunciation	Yes indicating floor reached. Bi-Lingual, English/Irish.
64	Alarm System	To EN 81-28 connected to an attended service.
65	Car Control Station	Full Height Powder Coated Stainless Steel Plate, aluminium PVC tactile push buttons, inductive couplers, with separate electronic LED floor position direction arrow and staff priority key. Tactile Push Buttons (powder coated stainless steel backing plate for LVR colour contrast to comply with EN 81-70 and Part M Contrast Compliance). Car Operating Panel to be fitted in the left hand return with the centre line of the lowest line of vertical buttons at 1,100 mm from the Floor. Scrolling Dot Matrix Display for floor position. Layout to be agreed.
66	Car Position Indicator (Visual)	Required in Car Operating Panel.
67	Car Position Indicator (Audible)	Required linked to Induction Coupler.
68	Alarm Bell Push	Required in Car Operating Panel.
69	Ventilation	Ventilation grills (continuous slots) shall be positioned to provide natural ventilation at the bottom and top of the Car Walls each to provide a free air movement aperture of 1% of the Car Floor Area.
70	Car Ventilation Extract Fan	Yes on top of Car to provide assisted Ventilation when temperature > 25^0C and be operated by a Key Switch located in the Lift Car.
71	Intercom	Yes in Car.
72	Pit Ladder/Ceiling Ladder	Yes Supplied and fitted by Lift Contractor. Ceiling Ladder to be provided for Lift.
73	Emergency Lighting	Yes on top of Car, in Car, below Car, in Lift Pit in and overrun. 3-Hour Duration connected to the Automatic DALI Emergency Lighting Testing System. Emergency Lights to be DALI and provided with both DALI Control

		Gear and a DALI Emergency Invertor and Secondary Cell Battery Set. Trailing Cable to be DALI for Emergency Lights.
74	Bumper Rails	Yes.
75	Drape Fastenings (Pad Hooks)	Yes.
76	Sump Pump	N/A
77	Sound isolation for Car	Yes
78	Disabled Access Code Compliance	Full Compliance with EN 81-70
79	Sound isolation for Machine	Yes, Car Walls to be supplied with anti-drumming isolation.
80	“As-Installed” Drawings	Yes
81	User Operating Manuals	Yes
82	Safety and other Notices	Yes
83	Witness Testing and Documentation	Yes plus additional Supplementary Tests
84	Safety File	Yes c/w with Lift Layout Drawings, BS 8486 - 3: 2017 Test Cert, Operating Instructions, Maintenance Instructions, EC Declaration of Conformity Cert. for the Lift by the Installer (under Annex XIII) or by Certified Notified Body plus CE Type Test Examination Certs. for the Main Components. Details of the Warranty and Warranty Maintenance. Set of keys for the Lifts. Contact Details of Service Provider.
85	12 months Defect Liability	Yes
86	5-year Fully Comprehensive Maintenance.	To include all attendances, all major components, payable one quarter in arrears.
87	Applicable Standards	Include: EN 81-20: 2014, EN 81-50: 2014, EN 81-28: 2018, EN 81-58: 2018, EN 81-70: 2018, EN 81-71: 2005, EN 81-72: 2015, EN 81-73: 2016, EN 12015: 2014, EN 12016: 2013, EN 13015: 2001 + A1: 2008, ISO 4190-1: 2010, BS 7255:2012, Lifts Directive 2014/33/EU.
88	Well	2 Hour Reinforced Concrete.

		Well Walls to be sealed and painted white (by Main Contractor). Minimum Shaft Thickness of Wall 215mm. Pit Floor to be treated with hard wearing red mastic finish (by Main Contractor).
89	Voice Over	Bi-Lingual, English/Irish.

Internal Platform Lift - Courthouse

1	Internal Platform Lift	
2	Capacity	500kg
3	Speed	0.15 m/s
4	Duty Rating	180 starts/hr.
5	Power Control System	Electric Homelift
6	Method of Control	Microprocessor Controller providing up and down fully collective control with variable frequency motor control and priority staff control. (See BS5655-6: 2011, 7.1.H7).
7	Car Entrances	Double Side Opening.
8	Landing Entrances	Through Access
9	Intercom System/Emergency Call Station	To External Monitoring Station. Hands free auto-dialler and Remote Diagnostics. Engineer's Alarms required on Car Roof and within the Lift Pit. Auto Dialler to be linked to Induction Coupler within Car.
10	Landing Thresholds	Yes.
11	Load Bypass	Yes, to be adjustable from 40% to 80% of rated load. Initial setting to be 400 kg.
12	Load Weighing and Overload Indicator	Yes.
13	Loading Classification	To EN 81-20: 2014, Table B.
14	Buffers	Pneumatic.
15	Levels Served	2 No.
16	Travel	3500mm
17	Floor Identification/Markings	0, 1 (To be agreed)
18	Maintenance Access Panel	Stainless Steel. On the Frame on Top Floor. Located in Landing Door Surround in Brushed 220 Stainless Steel Finish.

19	Shaft Size and Construction	1480mm x 1470mm 1510mm x 1500mm cut out required in ceiling
20	Pit Depth	50mm
21	Head Room	2300mm
22	Machine Room Size	N/A Motor Room Less.
23	Disabled Access	Yes to comply with EN 81-71.
24	Firefighter Lift	No.
25	Evacuation Lift	No.
26	Fire Alarm Recall	Yes to EN 81-73 recall to GF or FF, will not require manual restart after Alarm cleared. If fire on GF, Lift goes to alternative level). Permanent Notices to be provided at each Level indicating – Not to use the Lift in the event of a Fire.
27	Shaft Inserts	To be drilled and fixed by Lift Contractor.
28	Top of Lift Car Handrail	Yes, minimum 1200mm High.
29	Power Supply	Single phase 230V 16A - In the event of Power Failure, Emergency Back-Up Systems operate the Door, Light And Alarm, and lower the Lift to Ground Level.
30	Re-Levelling	Automatic Accurate Revelling.
31	Handwinding Indication	One Touch Operation
32	Door Operator	Closed loop control with adjustable opening and closing times. (Variable Frequency).
33	Advance Door Opening	Yes.
34	Door re-opening on second landing call[5]	Yes.

[5] The number of times that the door can reopen in response to a landing call.

35	Door Dwell Time[6]	Adjustable 2 s to 15 s. Initial settings 2 s for stop in response to a Lift Car call (car call dwell time), 3 s for stop in response to landing call (landing call dwell time).
36	Differential door timing[7]	Yes, reduction to 0.5 s. To operate on detection of Passengers crossing the threshold (-50 Beams minimum) or a destination or door close button being operated.
37	Nudging	Yes, adjustable 10 s to 30 s, initial setting 15 s with audible warning.
38	Parking	Yes, at 0. Doors Closed.
39	False Call Cancellation	Yes.
40	Levelling Accuracy	±3 mm.
41	Ascending Car Overspeed Protection	Required.
42	Car Top Control Station	Mounted vertically to BS7255, Figure C.2
43	Alarm Bell	Yes, in Shaft at lowest Floor.
44	Performance Time[8]	T.B.A.

[6] Door dwell time (in seconds) is the time the door will remain open at a floor with not passenger transfers.

[7] Differential door timing (in seconds) is the time that the reduction in door dwell time as the result of passenger transfers or control actions.

[8] Performance time is the time (in seconds) between the time the door start to close until they are 800 mm open at the next floor. It includes: door open/close time, advanced opening time, flight time, start up delays, etc.

45	Heat into Well	TBA By Tenderer.
46	Electrical Power Requirements	TBA By Tenderer. (<10kW).
47	Energy Saving: Car	After 5 minutes of the Lift remaining idle the Car Lights shall dim to emergency illumination levels. They shall return to full luminance when any of the following occurs: the doors open/close, the Lift moves from its position, a COP pushbutton is operated, or the presence of an occupant is detected.
48	Energy Saving: Controller	After 5 minutes of the Lift remaining idle the standby power of the Controller shall be reduced to less than 50 W.
49	Regenerative Drive System	Yes.
50	BMS	N/A
51	Internal Size of Car.	1100mm W. x 1400 mm D. x 2100 mm H. (Clear or appropriate, must be compliant to ISO 4190-1).
52	Minimum Car Door Entrance Dimensions (Width x Height)	Side Opening 800 mm Wide x 2,000 mm High.
53	Landing and Car Door Operation	Automatic Sliding.
54	Number of Entrances in Car.	1 No. Front Only
55	Landing Door Protection	Passenger Detection/Obstruction Detection shall be provided from 25 mm to 1,800 mm above car floor by electronic passenger detection. (Infra-Red Multi-Beam Protection, minimum of 50 emitters and detectors)
56	Call Pushbuttons	Raised tactile with call acceptance LED illumination in compliance with EN 81-70.
57	Call Registration Indication	Yes
58	Landing Call Stations	Stainless Steel Landing Call Station to be provided at the Landing Door served and mounted local to the car door at 1,050mm over Finished Floor Level and complete with Stainless Steel Cover Plate. Illuminated Buttons.
59	Lift Coming Landing Indicator	Yes on each Floor Electronic.
60	Lift Position Landing Indicator	Yes on each Floor Electronic.

61	Lift Directional Landing Indicator	Yes on each Floor Electronic to EN 81-71.
62	Car and Landing Door Operating Gear.	Variable frequency G.A.L. Model MOD or equal to approval.
63	Voice Annunciation	Yes indicating floor reached. Bi-Lingual, English/Irish.
64	Alarm System	To EN 81-28 connected to an attended service.
65	Car Control Station	Full Height Powder Coated Stainless Steel Plate, aluminium PVC tactile push buttons, inductive couplers, with separate electronic LED floor position direction arrow and staff priority key. Tactile Push Buttons (powder coated stainless steel backing plate for LVR colour contrast to comply with EN 81-70 and Part M Contrast Compliance). Car Operating Panel to be fitted in the left hand return with the centre line of the lowest line of vertical buttons at 1,100 mm from the Floor. Scrolling Dot Matrix Display for floor position. Layout to be agreed.
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67	Car Position Indicator (Audible)	Required linked to Induction Coupler.
68	Alarm Bell Push	Required in Car Operating Panel.
69	Ventilation	Ventilation grills (continuous slots) shall be positioned to provide natural ventilation at the bottom and top of the Car Walls each to provide a free air movement aperture of 1% of the Car Floor Area.
70	Car Ventilation Extract Fan	Yes on top of Car to provide assisted Ventilation when temperature > 25^0C and be operated by a Key Switch located in the Lift Car.
71	Intercom	Yes in Car.
72	Pit Ladder/Ceiling Ladder	Yes Supplied and fitted by Lift Contractor. Ceiling Ladder to be provided for Lift.
73	Emergency Lighting	Yes on top of Car, in Car, below Car, in Lift Pit in and overrun. 3-Hour Duration connected to the Automatic DALI Emergency Lighting Testing System. Emergency Lights to be DALI and provided with both DALI Control

		Gear and a DALI Emergency Invertor and Secondary Cell Battery Set. Trailing Cable to be DALI for Emergency Lights.
74	Bumper Rails	Yes.
75	Drape Fastenings (Pad Hooks)	Yes.
76	Sump Pump	N/A
77	Sound isolation for Car	Yes
78	Disabled Access Code Compliance	Full Compliance with EN 81-70
79	Sound isolation for Machine	Yes, Car Walls to be supplied with anti-drumming isolation.
80	"As-Installed" Drawings	Yes
81	User Operating Manuals	Yes
82	Safety and other Notices	Yes
83	Witness Testing and Documentation	Yes plus additional Supplementary Tests
84	Safety File	Yes c/w with Lift Layout Drawings, BS 8486 - 3: 2017 Test Cert, Operating Instructions, Maintenance Instructions, EC Declaration of Conformity Cert. for the Lift by the Installer (under Annex XIII) or by Certified Notified Body plus CE Type Test Examination Certs. for the Main Components. Details of the Warranty and Warranty Maintenance. Set of keys for the Lifts. Contact Details of Service Provider.
85	12 months Defect Liability	Yes
86	5-year Fully Comprehensive Maintenance.	To include all attendances, all major components, payable one quarter in arrears.
87	Applicable Standards	Include: EN 81-20: 2014, EN 81-50: 2014, EN 81-28: 2018, EN 81-58: 2018, EN 81-70: 2018, EN 81-71: 2005, EN 81-72: 2015, EN 81-73: 2016, EN 12015: 2014, EN 12016: 2013, EN 13015: 2001 + A1: 2008, ISO 4190-1: 2010, BS 7255:2012, Lifts Directive 2014/33/EU.
88	Well	2 Hour Reinforced Concrete.

		Well Walls to be sealed and painted white (by Main Contractor). Minimum Shaft Thickness of Wall 215mm. Pit Floor to be treated with hard wearing red mastic finish (by Main Contractor).
89	Voice Over	Bi-Lingual, English/Irish.

Schedule of Equipment

The Contractor shall complete this Schedule in full and shall be included in their returned Tender Submission.

1. ***Lift Motor***. *(Variable Frequency, Variable Voltage Drive System)*

   (a) Manufacturer
   (b) Model/ Ref. No
   (c) Country of origin
   (d) H.P. full load
   (e) Speed ratio
   (f) Complies with EN81

2. ***Lift Machine***

   (a) Manufacturer
   (b) Model/Ref. No
   (c) Country of Origin
   (d) Brake Manufacturer
   (e) Brake type
   (f) Brake size
   (g) Complies with EN81

3. ***Suspension Ropes/Steel Belts***

   (a) Manufacturer
   (b) Country of origin
   (c) Number
   (d) Diameter
   (e) Complies with EN81

Appendix 2: Lift Commissioning and Test Report
(TO BE COMPLETED AFTER INSTALLATION)

Contract No ..... Type of Lift .....

Site Address .....

Contract Load..... Contract Speed.....

Travel..... No. of Floors..... Date.....

Are guide rails plumb, securely fixed and set to G.A. Dimensions?	
Are all counterweight screens fitted?	
Are all shaft switches and vanes fitted and operating correctly?	
Are final limits set to stop car before car or counterweight strikes buffers?	
Are all shoes on counterweight set and secure?	
Are trailing cables fixed securely?	
Are they handing clear?	
Are car and counterweight buffers fixed securely to fit floor?	
Have all landing door locks been securely fixed and set to operate correctly?	
Are rollers clear of car?	
Does earthing of top, bottom and car door lock contacts blow control fuses?	
Have landing doors the correct clearances on sills and architraves?	

LIFT COMMISSIONING AND TEST REPORT

Are size and number of ropes/belts fitted as specified?

Are all ends of ropes/belts finished off and secured correctly?

Are all main ropes/belts of equal tension?

Are all ropes/belts free of rust, grit and splinters?

Are all eyebolts and equivalent fixings fitted with locknuts and split pins?

Runbys: Above Car ..... Below Counterweight .....

Below Car ..... Above Counterweight .....

Are car shoes secured and fixed square to guide rails?

Is safety gear and safety gear switch set correctly and free in operation?

Is door operation fixed and operating correctly?

Is fixed or retiring cam set and operating correctly?

Have the car doors the correct clearances on sill and car entrances?

Has the car the correct running clearances given on G.A. drawing?

Do all safety circuits on car operate correctly?

Is correct load plate fitted? ..... Does alarm bell work? .....

Is car separately earthed in trailing flexes?

Is motor and gear in alignment?

Does the gear contain the correct and sufficient lubricant?

Has brake been set correctly?

LIFT COMMISSIONING AND TEST REPORT

Will brake hold car with contract load?

Are motor bearing lubricated?

Are all motor electrical connections tight?

Motor manufacturers Name ..... Serial No./s .....

Are all connections tight on controller?

Has controller been checked and left with correct fuses?

Have all timing devices been set correctly?

STALLING TEST

Current ..... Amps Protection tripping time .... sec.

SUPPLY VOLTS

Actual ..... Volts Specified ..... Volts.

D.C. CONTROL VOLTAGE

Lift Standing..... Volts

Lift Running ..... Volts

D.C. CONTROL CURRENT

Lift Standing..... Volts

Lift Running ..... Volts

LIFT COMMISSIONING AND TEST REPORT

	RUNNING TESTS				
Load and Direction	Start H.SP. VOLTS	Run H.SP. AMPS	Run L.SP. AMPS	Travel Time Seconds	Levels Accuracy Inches
No Load Up					
No Load Down					
Full Load Up					
Full Load Down					

SAFETY GEAR TEST (if fitted)

Contract load in Car 11s

Are guide markings equal?

Distance .....

GENERAL REMARKS.

Is hand winding instructions and emergency call number displayed?

Who was instructed on procedure?

Have car, car doors, landing doors and entrances been checked for damage?

Are all indicators illuminating correctly?

Is the car light operating and left clean?

Was test witnessed by customer's representative?

Is so, by Whom?

Mr/Ms .....

Signed:

.....

What relevant Builder's work is outstanding?

.....