ELECTRICAL INSTALLATION CERTIFICATE
BS 7671:2008 - single signature

Certificate number: 140615

Member number: EPP2378 (optional)

ECA

DETAILS OF CLIENT:

ENTRYWAY LTD.
GEORGE LEYBOURNE HOUSE

INSTALLATION ADDRESS:

GEORGE LEYBOURNE HOUSE , FLETCHER STREET , LONDON , E1 8HW

JOB NUMBER (optional)

Sheet 1 of 5

DESCRIPTION AND EXTENT OF INSTALLATION COVERED BY THIS CERTIFICATE

THE NEW SWIMMING POOL INSTALLATION

New installation ☐ Addition ✓ Alteration ✓

FOR DESIGN, CONSTRUCTION, INSPECTION AND TEST

I being the person responsible for design, construction, inspection and testing of the electrical installation (as indicated by my signature below), particulars of which are described above, having exercised reasonable skill and care when carrying out the design, construction, inspection and testing, hereby CERTIFY that the said work for which I have been responsible is, to the best of my knowledge and belief, in accordance with BS 7671:2008 as amended to 2015 except for the departures, if any, detailed as follows:

Departures and comments on existing installations (120.3; 133.5) NONE

Risk assessment attached* *Where appropriate a suitable risk assessment(s) must be attached to this certificate

Name STUART PIPER
Signature Stuart
Position SENIOR ENGINEER
Company PIPER ELECTRICAL
Address HERTS FARM , OLD LOOSE HILL , LOOSE , MAIDSTONE , KENT , ME15 0AN
Date 14-06-2015

I/We recommend that the installation be further inspected and tested after an interval of not more than 5 years.

SUPPLY CHARACTERISTICS AND EARTHING ARRANGEMENTS

Nominal voltage U/Uo 415 V
Frequency F 50 Hz
Alternative source of supply a.c. d.c.
Confirmation of supply polarity ✓

Prospective fault current, Ipf 5.4 kA
External loop impedance, Ze 0.04 Ohms

Number and type of live conductors

1-phase, 2-wire
3-phase, 3-wire
✓ 3-phase, 4-wire

Supply protective device characteristics

Type/BS (EN) 88HRCgG
Rated Current 63 A

Earthing arrangements

TN-S
✓ TN-C-S
TT
Other

Distributor's facility ✓
Installation earth electrode
Type (Rod, plate, tape, etc.)
Location
Resistance Ohms

PARTICULARS OF INSTALLATION REFERRED TO IN THIS CERTIFICATE

Maximum demand

kVA / Amps
60

Main switch or circuit breaker

BS 60947-3 Current rating 100 A
Type SWITCH No. of poles 3
Location POOL PLANT ROOM
Voltage Rating 415 V
Fuse device rating or setting 63 A
RCD trip time ms RCD $1_{\Delta n}$ mA
(Applicable only where RCD is suitable and is used as a main circuit breaker)

Location of main protective bonding connections

GARAGE

Earthing conductor

✓ Copper
Steel
Aluminium

Main protective conductors

CSA 25 mm²
Connection continuity verified ✓

Main protective bonding conductor (to extraneous conductive parts)

Copper
Steel
Aluminium

CSA 10 mm²
Connections verified ✓
Main bonding: To installation pipes
Water ✓ Gas Other

SCHEDULE OF INSPECTIONS (for new installation work only) for DOMESTIC AND SIMILAR PREMISES WITH UP TO 100 A SUPPLY

NOTE 1: This form is suitable for many types of smaller installations not exclusively domestic. All items inspected to confirm as appropriate, compliance with the relevant clauses in BS 7671. The list of items and associated examples where given are not exhaustive.
NOTE 2: Insert ✓ to indicate an inspection has been carried out and the result is satisfactory, or N/A to indicate that the inspection is not applicable to a particular item.

Item no	Description	Outcome (See Note 2)
1.0	**DISTRIBUTORS / SUPPLY INTAKE EQUIPMENT (the Distributor and the person ordering the work should be notified of any unsatisfactory equipment. Evidence of this is to be appended to this Certificate and referenced in the 'Outcome' box)**	
1.1	Condition of service cable	√
1.2	Condition of service head	√
1.3	Condition of Distributor's earthing arrangement	√
1.4	Condition of meter tails - Distributor/Consumer	√
1.5	Condition of metering equipment	√
1.6	Condition of isolator (where present)	√
2.0	**PARALLEL OF SWITCHED ALTERNATIVE SOURCES OF SUPPLY**	
2.1	Adequate arrangements where a generating set operates as a switched alternative to the public supply (551.6)	N/A
2.2	Adequate arrangements where a generating set operates in parallel with the public supply (551.7)	N/A
3.0	**AUTOMATIC DISCONNECTION OF SUPPLY**	
3.1	Presence and adequacy of earthing and protective bonding arrangements:	
	• Installation earth electrode where applicable (542.1.2.3)	N/A
	• Earthing conductor and connections including accessibility (542.3; 543.3.2)	√
	• Main protective bonding conductors and connections including accessibility (411.3.1.2; 543.3.2)	√
	• Provision of safety electrical earthing / bonding labels at all appropriate locations (514.13)	√
	• RCD(s) provided for fault protection (411.4.9; 411.5.3)	√
4.0	**BASIC PROTECTION**	
4.1	Presence and adequacy of measures to provide basic protection (prevention of contact with live parts) within the installation:	
	• Insulation of live parts e.g. conductors completely covered with durable insulating materials (416.1)	√
	• Barriers or enclosures e.g. correct IP rating (416.2)	√
5.0	**ADDITIONAL PROTECTION**	
5.1	Presence and effectiveness of additional protection methods;	
	• RCD(s) not exceeding 30 mA operating current (415.1; Part 7), see item 8.14 of this schedule	√
	• Supplementary bonding (415.2; Part 7)	√
6.0	**OTHER METHODS OF PROTECTION**	
6.1	Presence and effectiveness of methods which give both basic and fault protection;	
	• SELV systems, including the source and associated circuits (414)	√
	• PELV systems, including the source and associated circuits (414)	N/A
	• Double or reinforced insulation i.e. Class II or equivalent equipment and associated circuits (412)	√
	• Electrical separation for one item of equipment e.g. shaver supply unit (413)	N/A
7.0	**CONSUMER UNIT(S) / DISTRIBUTION BOARD(S)**	
7.1	Adequacy of access and working space for items of electrical equipment including switchgear (132.12)	√
7.2	Presence of linked main switch(s) (537.1.4; 537.1.5; 537.1.6)	√
7.3	Isolators, for every circuit or group of circuits and all items of equipment (537.2)	√
7.4	Suitability of enclosure(s) for IP and fire ratings (416.2; 421.1.6; 421.1.201)	√
7.5	Protection against mechanical damage where cables enter equipment (522.8.1; 522.8.11)	√
7.6	Confirmation that ALL conductor connections are correctly located in terminals and are tight and secure (526.1)	√
7.7	Avoidance of heating effects where cables enter ferromagnetic enclosures e.g. steel (521.5)	√
7.8	Selection of correct type and ratings of circuit protective devices for overcurrent and fault protection (411.3.2; 411.4,.5,.6 sections 432, 433)	√

NOTE 1: This form is suitable for many types of smaller installations not exclusively domestic. All items inspected to confirm as appropriate, compliance with the relevant clauses in BS 7671. The list of items and associated examples where given are not exhaustive.
NOTE 2: Insert ✓ to indicate an inspection has been carried out and the result is satisfactory, or N/A to indicate that the inspection is not applicable to a particular item.

Item no	Description	Outcome (See Note 2)
7.0	**CONSUMER UNIT(S) / DISTRIBUTION BOARD(S) continued**	
7.9	Presence of appropriate circuit charts, warning and other notices:	
	• Provision of circuit charts/schedules or equivalent forms of information (514.9)	√
	• Warning notice of method of isolation where live parts not capable of being isolated by a single device (514.11)	√
	• Periodic inspection and testing notice (514.12.1)	√
	• RCD quarterly test notice; where required (514.12.2)	√
	• Warning notice of non-standard (mixed) colours of conductors present (514.14)	√
7.10	Presence of labels to indicate the purpose of switchgear and protective devices (514.1.1; 514.8)	√
8.0	**CIRCUITS**	
8.1	Adequacy of conductors for current-carrying capacity with regard to type and nature of the installation (523)	√
8.2	Cable installation methods suitable for the location(s) and external influences (522)	√
8.3	Segregation/separation of Band I (ELV) and Band II (LV) circuits, and electrical and non-electrical services (528)	√
8.4	Cables correctly erected and supported throughout including escape routes, with protection against abrasion (521; 522)	√
8.5	Provision of fire barriers, sealing arrangements where necessary (527.2)	√
8.6	Non-sheathed cables enclosed throughout in conduit, ducting or trunking (521.10.1; 526.8)	√
8.7	Cables concealed under floors, above ceilings or in walls / partitions, adequately protected agsinst damage (522.6.201, .202, .204)	√
8.8	Conductors correctly identified by colour, lettering or numbering (514)	√
8.9	Presence, adequacy and correct termination of protective conductors (411.3.1.1; 543.1)	√
8.10	Cables and conductors correctly connected, enclosed and with no undue mechanical strain (526)	√
8.11	No basic insulation of a conductor visible outside enclosure (526.8)	√
8.12	Single-pole devices for switching or protection in line conductors only (132.14.1; 530.3.2)	√
8.13	Accessories not damaged, securely fixed, correctly connected, suitable for external influences (134.1.1; 512.2, section 526)	√
8.14	Provision of additional protection by RCD not exceeding 30mA:	
	• Socket-outlets rated at 20 A or less, unless exempt (411.3.3)	√
	• Mobile equipment with a current rating not exceeding 32 A for use outdoors (411.3.3)	√
	• Cables concealed in walls at a depth of less than 50 mm (522.6.202, .203)	√
	• Cables concealed in walls / partitions containing metal parts regardless of depth (522.6.202; 522.6.203)	√
8.15	Presence of appropriate devices for isolation and switching correctly located including:	
	• Means of switching off for mechanical maintenance (537.3)	√
	• Emergency switches (537.4)	N/A
	• Functional switches, for control of parts of the installation and current-using equipment (537.5)	√
	• Firefighter's switches (537.6)	N/A
9.0	**CURRENT-USING EQUIPMENT (PERMANENTLY CONNECTED)**	
9.1	Equipment not damaged, securely fixed and suitable for external influences (134.1.1; 416.2; 512.2)	√
9.2	Provision of overload and/or undervoltage protection e.g. for rotating machines, if required (Sections 445, 552)	√
9.3	Installed to minimize the build of heat and restrict the spread of fire (421.1.4; 559.4.1)	√
9.4	Adequacy of working space/accessibility to equipment (132.12; 513.1)	√
10.0	**LOCATION(S) CONTAINING A BATH OR SHOWER (SECTION 701)**	
10.1	30 mA RCD protection for all LV circuits, equipment suitable for the zones, supplementary bonding (where required) etc.	√
11.0	**OTHER PART 7 SPECIAL INSTALLATIONS OR LOCATIONS**	
11.1	List all other special installations or locations present, if any. (Record separately the results of particular inspections applied).	N/A

Inspected by:

Name (CAPITALS) STUART PIPER **Signature** *Stuart Piper* **Date** 14-06-2015

ELECTRICAL INSTALLATION CERTIFICATE

ECA
Representing the best in electrical engineering and building services

Guidance for Recipients:

This safety Certificate has been issued to confirm that the electrical installation work to which it relates has been designed, constructed, inspected and tested in accordance with British Standards 7671 - *Requirements for Electrical Installations*. This report is an important document which should be retained for future reference.

You should have received an 'original' Certificate and the contractor should have retained a duplicate. If you were the person ordering the work, but not the owner of the installation, you should pass this Certificate, immediately, or a full copy of it, including the schedules, to the owner.

The original Certificate should be retained in a safe place for future reference and be shown to any person inspecting or undertaking further work on the electrical installation. If you later vacate the property, this Certificate will demonstrate, to the new owner, that the electrical installation complied with the requirements of British Standard 7671 at the time the Certificate was issued. For commercial work, the Construction (Design and Management) Regulations require that for a project covered by those Regulations, a copy of this Certificate together with Schedules is included in the project Health and Safety documentation.

For safety reasons, the electrical installation will need to be inspected at appropriate intervals by a skilled person or persons competent in such work. The maximum time interval recommended before the next inspection is stated on Page 1 under 'NEXT INSPECTION'. There should be a notice at, or near, the main switchboard or consumer unit indicating when the inspection of the installation is next due.

This Certificate is intended to be issued only for a new electrical installation of for new work associated with an addition or alteration to an existing installation. It should not have been issued for the inspection of an existing electrical installation. An 'Electrical Installation Condition Report' should be issued for such an inspection.

Where the installation incorporates Residual Current Devices (RCDs) there should be a notice at, or near, the devices, stating that they should be tested regularly. **For safety reasons it is important that these instructions are followed.**

Where responsibility for the *design, construction* and the *inspection* and *testing* of the electrical work is split between the electrical contractor and one or more other parties, the parties individual and respective roles should have been clearly established at the commencement of the work. To have a valid certificate, it is important that the respective parties' roles are reflected in the completed certificate. If the design section of the certificate has not been completed, you should question why those responsible for the design have not certified that this important element of the work is in accordance with the national electrical safety standards.

This Electrical Installation Certificate may include works that directly or indirectly concern the installation of either a fire alarm and/or emergency lighting system. Where works of this nature have been installed and are deemed to be in accordance with either British Standards BS5839 or BS5266 respectively, then this Certificate must also be accompanied by the additional certificates as prescribed by these Standards.

SCHEDULE OF TEST RESULTS

Sheet 4 of 5

ECA

DB Reference no. DB1
Location SWIMMING POOL PLANT ROOM
Zs at DB (Ω) 0.04
I_{pf} at DB (kA) 5.4
Correct polarity of supply confirmed YES / NO YES
Phase sequence confirmed (where appropriate) ☐

Details of circuits and/or installed equipment vulnerable to damage when testing
NONE

Details of test instruments used (state serial and/or asset numbers)
Continuity MEGGER 1552 070907/1864
Insulation resistance MEGGER 1552 070907/1864
Earth fault loop impedance MEGGER 1552 070907/1864
RCD MEGGER 1552 070907/1864
Earth electrode resistance N/A

Tested by:
Name (CAPITALS) STUART PIPER
Signature ..... **Date** 14-06-2015

Circuit details

		Overcurrent device				Conductor details		
Circuit number	Circuit description	BS (EN)	Type	Rating (A)	Breaking capacity (kA)	Reference method	Live (mm²)	cpc (mm²)
A	B	C	D	E	F	G	H	I
1	POOL HEATER	60898	C	40	10	C	10	10
2	POOL HEATER	60898	C	40	10	C	10	10
3	POOL HEATER	60898	C	40	10	C	10	10
4	STEAM GENERATOR	60898	C	20	10	B/C	2.5	2.5
5	STEAM GENERATOR	60898	C	20	10	B/C	2.5	2.5
6	STEAM GENERATOR	60898	C	20	10	B/C	2.5	2.5
7	SPARE							
8	SPARE							
9	SPARE							
10	SOCKET BELOW	61008	C	20	10	B	2.5	1.5
11	LIGHTS POOL FAR SIDE	61008	C	10	10	C	1.5	1
12	LIGHTS CHANGE + POOL	60898	C	10	10	C	1.5	1
13	LIGHTS POOL + PLANT	61008	C	10	10	C	1.5	1
14	VENTILATION FAN	60898	C	20	10	C	2.5	1.5
15	SPARE							
16	IMMERSION	60898	C	20	10	B	2.5	1.5

Test results

	Ring final circuit continuity (Ω)			Continuity (Ω) (R_1+R_2) or R_2		Insulation resistance (MΩ)		Polarity	Z_s (Ω)	RCD (ms)			Remarks (continue on a separate sheet if necessary)
	r_1 (line)	r_n (neutral)	r_2 (cpc)	(R_1+R_2)*	R_2	Live – Live	Live – Earth	Insert ✓ or X	Ω	$@I_{\Delta n}$	$@5I_{\Delta n}$	Test button operation	
	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	N/A	N/A	N/A	0.1		299	299	√	0.06	N/A	N/A	☐	
2	N/A	N/A	N/A	0.1		299	299	√	0.06	N/A	N/A	☐	
3	N/A	N/A	N/A	0.1		299	299	√	0.07	N/A	N/A	☐	
4	N/A	N/A	N/A	0.1		299	299	√	0.12	32	16	☐	
5	N/A	N/A	N/A	0.1		299	299	√	0.11	32	16	☐	
6	N/A	N/A	N/A	0.1		299	299	√	0.11	32	16	☐	
7												☐	
8												☐	
9												☐	
10	N/A	N/A	N/A	0.1		N/A	299	√	0.1	17	7.6	✓	
11	N/A	N/A	N/A	1.02		N/A	299	√	1.97	16.9	7.2	✓	
12	N/A	N/A	N/A	0.78		N/A	299	√	0.9	N/A	N/A	☐	
13	N/A	N/A	N/A	0.43		N/A	299	√	0.85	16.4	11.9	✓	
14	N/A	N/A	N/A	0.26		N/A	299	√	0.40	N/A	N/A	☐	
15												☐	
16	N/A	N/A	N/A	0.1		N/A	299	√	0.11	N/A	N/A	☐	

* Where there are no spurs connected to a ring final circuit this value is also the (R_1+R_2) of the circuit.

ECA

Representing the best in electrical engineering and building services

Used as primary sheet ☐ or used as continuation sheet ☐ of

SCHEDULE OF TEST RESULTS

DB Reference no. DB1

Location SWIMMING POOL PLANT ROOM

Zs at DB (Ω) 0.04 I_{pf} at DB (kA) 5.4

Correct polarity of supply confirmed YES ☑ NO ☐

Phase sequence confirmed *(where appropriate)* ☐

Details of circuits and/or installed equipment vulnerable to damage when testing

NONE

Details of test instruments used (state serial and/or asset numbers)

Continuity MEGGER 1552 070907/1864

Insulation resistance MEGGER 1552 070907/1864

Earth fault loop impedance MEGGER 1552 070907/1864

RCD MEGGER 1552 Earth electrode resistance

Tested by: Name *(CAPITALS)* STUART PIPER

Signature [signature] Date 14-7-16

CIRCUIT DETAILS

TEST RESULTS

Circuit number	Circuit description	Overcurrent device: BS (EN)	Overcurrent device: Type	Overcurrent device: Rating (A)	Overcurrent device: Breaking capacity (kA)	Conductor details: Reference method	Conductor details: Live (mm²)	Conductor details: cpc (mm²)	Ring final circuit continuity (Ω): r_1 (line)	Ring final circuit continuity (Ω): r_n (neutral)	Ring final circuit continuity (Ω): r_2 (cpc)	Continuity (Ω): $(R_1 + R_2)^*$	Continuity (Ω): R_2	Insulation resistance (MΩ): Live - Live	Insulation resistance (MΩ): Live - Earth	Polarity: Insert ✓	Z_s (Ω)	RCD (ms): @$I_{\Delta n}$	RCD (ms): @$5I_{\Delta n}$	RCD (ms): Test button operation	Remarks (continue on a separate sheet if necessary)
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
17	CALOREX HEATER	60898	C	20	10	B/C	4	4	N/A	N/A	N/A	0.1		N/A	299	✓	0.06	N/A	N/A		
18	POOL CONTROL PANEL	60898	C	40	10	B/C	10	10	N/A	N/A	N/A	0.1		N/A	299	✓	0.08	N/A	N/A		

* Where there are no spurs connected to a ring final circuit this value is also the $(R_1 + R_2)$ of the circuit.