ELECTRICAL INSTALLATION STANDARDS

CONTENTS

1. GENERAL

Electrical installations must comply with the current electricity standards in the host country and canton (Switzerland and Geneva) and must comply with the applicable requirements, rules and recommendations, including but not limited to:

- ASE requirements;
- ISO, IEC and VDE recommendations and European standards;
- The recommendations of Geneva Industrial Services (electricity service - instructions for the creation and connection to the network of interior electrical installations - PID, requirements for distributors in French-speaking Switzerland);
- Canton and federal regulations and requirements concerning the construction policy, SUVA, and the Canton Labour Inspection Office;
- The low-voltage electrical installation standards (NIBT 2010); changes and updates to this standard must also be followed;
- Standard SN EN 60439.

The equipment used must be brand new, free from all visible or hidden defects, and conforming to EC standards, particularly those governing protection against electromagnetic interference and the emission of electromagnetic interference.

A maximum of eight high-current outlets per circuit must be observed.

Compliance with standards must be verified either by a mark of conformity, or if no standard exists, by a certificate from the manufacturer or the importer acting on its behalf.

The company is responsible for obtaining the certificates and ensuring that the equipment used meets the safety and operating requirements under the anticipated conditions of use.

The equipment supplied must be as listed in Section 14, *Standardisation of the equipment*; all equipment proposed not appearing in this list must be approved by UNOG representatives.

The contractor will have sole responsibility for all equipment delivered.

The equipment must be guaranteed for the intended use and up to its maximum capacity.

Creation of the electrical panel, connections and commissioning must be done in accordance with industry standards. The successful company must present a declaration of conformity accompanied by the test report.

The electrical tests mandated by UNOG must be performed by SECURELEC (see Section 17). For its own testing, the company must use a company other than Securelec. This service provision does not give rise to any entitlement to extra cost, and must be performed immediately after the work and before start of operation. In order for acceptance to take place, the report must not indicate a single defect.

Furthermore, for performance of the low-voltage electrical installation work, the company must hold an installation authorisation issued by ESTI, the Federal Inspectorate for Heavy-Current Installations (www.esti.ch). The installation authorisation must be issued in the name of the company performing the work (delegation of authorisation is not acceptable).

When the work is complete, “provisional acceptance” of the work or installation will be arranged. This provisional acceptance will consist of a range of tests, which are listed in this document. The list of drawings, diagrams and specific documents, as specified in Section 11 of the Specifications document, must be provided at the time of the provisional acceptance. The list of acceptance tests appears in Section 17 of this document.

2. PROTECTION OF PEOPLE, PROPERTY AND THE ENVIRONMENT

Pipes, tubes and cables must not contain any halogen or PVC.

The installation of lighting columns which are cadmium-plated or zinc-plated (with a cadmium content greater than 250 mg per kg) or painted with paint containing PCBs, is prohibited.

The drilling of any holes and any other modifications to the structure or surface of the lighting columns must be done in the factory before the surface treatment is applied. The drilling of holes and cold galvanising are both prohibited.

3. ELECTRICAL INSTALLATIONS IN THE TECHNICAL ROOMS – ROUTING AND WIRING

Electrical wires must be laid in metal cable trays that have been hot galvanised after perforation. The wires must be fixed to the trays with Colson-type plastic straps every 50 cm. For bypasses, bends and transformations, the installer must use prefabricated parts.

Where tubes are used, the installer must use only hot-galvanised metal tubes or aluminium tubes.

The use of plastic cable ducts or tubes is prohibited.

When installing cable trays, profiled sections and installation ducts, it is important to bear in mind the following:

The dimensions of the cable trays must be sufficient, with 50 % spare space, and calculated so as to hold only one layer of cables.

High-current and low-current wiring must be routed using different cable trays, at least 30 cm apart from edge to edge.

All reinforced mounting elements, accessories, separations and fasteners must be supplied by the installer and included in the bid.

All metal parts must be treated to protect against rust.

There must be an adequate number of attachment points to ensure the absolute rigidity of the cable trays.

The cable trays must be connected together using L splice plates, in galvanised perforated sheet metal.

Unless otherwise specified, the cable trays must be attached with galvanised brackets and ladder elements where they are installed in a plane perpendicular to the attachment plane; they must be separated from the attachment surface with galvanised ladder elements where they are laid flat against the attachment surface.

The cable trays must not inhibit natural cooling of the cables.

The selection and number of attachments must be such that, in the least favourable conditions, each cable tray can hold a load of 50 kg between supports, without showing any permanent residual plastic deformation.

Changes of direction in the plane or in elevation must be executed with sectors of no more than 30°. These sectors must be reassembled with either splice plates or welds. The welds must then be ground and protected with two coats of anti-corrosion paint and two coats of aluminium paint. This type of protection will be required for all tailor-made supports.

All these route changes must be made with curved assembly parts, either prefabricated or tailor-made.

The cable trays must be fitted with covers at wall feedthroughs for horizontal routes and at slab feedthroughs for vertical routes. In the latter case, and for power supplies to equipment on the floor, mechanical protection must be maintained up to a height of 2.00 m above floor level.

All cable trays must be earthed.

3.1 Cable tray supports

- The design and dimensions of the exterior shelf fastening devices must be such that they do not damage the cables and do not create permanent residual deformations under normal conditions of use.
- The supports must be industrial type and selected from among the standardised supports, except in exceptional cases where the standardised supports cannot be used, for example where the envelope volume is insufficient as a result of the dimensions of the ducts; in this case, threaded rod supports must be covered by an IRO tube or a steel tube and locked to the cable tray with a nut. This process will increase the rigidity of the threaded rod.

- Distances between cable tray supports are indicated by the various suppliers. These distances must not exceed:
  - ► 1.50 m for cable trays holding major cables from general low-voltage panels.
  - ► 2 m for cable trays holding secondary distribution cables (lighting, power sockets, low-power devices).

3.2 Special case: laying cables in troughs

A trough must be fitted with one or more cable trays. In this case, the cable trays must be attached to one of the side walls. Their widths must steadily decrease from bottom to top and be designed in such a way as to allow access to the internal pathway.

Under no circumstances may cables be laid in a trough without a cable tray.

3.3 Laying cables

When laying cables, be careful to avoid crushing or tearing their sheaths. Avoid bending the cable conductors around too small a radius. The internal curve radius must be not less than the value indicated by the standard or the manufacturers.

Cables must be arranged in a single layer. The single-pole cables in a three-pole link must be arranged in such a way as to balance the impedances with the earth (e.g. in a triangle).

To reduce the impedances of loops and ensure correct distribution of currents in parallel conductors, single-pole cables and isolated conductors belonging to the same circuit must be laid directly beside each other. This rule applies equally to conductors with corresponding protections.

Cable trays must be supported in such a way that cables unwound in advance on the ground can be inserted laterally.

The positioning of cables in the cable tray must allow any cable to be removed without having to work on the entire layer.

Unused cables, tubes and supports must be removed along the entire length. The cables, tubes and supports must then be cleared away, unless otherwise specified.

3.4 Proximity to other, non-electrical pipes

A space of at least 3 cm must be left between electrical and non-electrical pipes, such that any work on one pipe does not risk damaging the others.

Electrical pipes must be at a sufficient distance from heating, hot air and smoke pipes. This measure will prevent the cables from being exposed to a temperature which could be detrimental to them.

Conductors must not share ducts with smoke, ventilation or smoke extraction pipes.

Electrical pipes must not be laid in parallel above pipes which could give rise to condensation, unless measures are taken to protect the pipes from the effects of condensation.

The cables must be protected from mechanical impacts at the floor feedthroughs.

3.5 Wall and floor feedthroughs

No cable may be embedded directly through a wall or floor. It must be protected by a sheath or conduit with a degree of protection of at least 5.

The feedthroughs where pipes cross a wall or the floor must be sealed to prevent the spread of fire from one room to another.

3.6 Proximity to other electrical pipes

Cables carrying 1000 volts or more must not share the same ducts or troughs, nor be placed in the same cable trays or on the same shelves as cables of different voltage.

3.7 Identification and location of cables

The identification and location of the cables must be done at each end, in horizontal and vertical routes and in particular at the points where there are changes in the composition of the layers of cables (at crossing points, etc.). Cable layers must be identified by suitable means, with all useful information to enable identification. The cable identification system must be Duplix brand, ref. 384 52 with UV protection, and the clamps must be Colring brand with UV protection, ref. 320 12 (Legrand catalogue).

3.8 Ends and junctions

Whenever there is a break in continuity, mechanical protection and insulation equivalent to those of the cable must be restored and continuity of earthing ensured. Continuity of the duct, screen or strip must be ensured at junction or distribution boxes. The link ensuring this continuity must be protected mechanically and against corrosion.

The minimum cross-sections of the conductors must be those described in Table 42512.3 of PIE ASE 1000-1.1995.

4. ELECTRICAL INSTALLATIONS OUTSIDE OF TECHNICAL ROOMS AND BASEMENTS

Use of the existing low-current conduits (troughs, cable trays, rails) is preferred, provided the voltage conveyed does not exceed 50 volts and the current does not exceed 3 amps.

The routes of the existing conduits can be viewed on request in the attached drawings.

Where the existing conduits cannot be used, cables must be embedded, i.e. in false ceilings and raised floors.

4.1 Embedded conduits

- Embedding cables diagonal or horizontally is not permitted.
- Conduits must not contain connectors on their embedded pathway.
- The successful company must restore the original state of surfaces after embedding (masonry, paint of the original shade, wall/floor coverings, etc.).

4.2 Conditions for laying cables in false ceilings and raised floors

- In removable suspended (false) ceilings, the conditions for the laying of pipes are those set out in Section 3. The pipes must be fixed or supported independently of the removable panels.
- A maximum of one or two cables may be routed together. It is permitted to lay them in a sheath.
- If there are more than two cables, use of a cable tray is mandatory.
- Ties may not be used to attach two cables or two tubes together. Each tube or cable must have its own separate attachment.
- Embedded descending or ascending cables in sheaths of minimum size 13 or in a concealed space.

4.3 Surface mounting

In the exceptional cases where routing cannot be embedded (in spaces where the original decorative materials would make it impossible to restore the surfaces after embedding), the conduits must be selected and installed in such a way that they merge as discreetly as possible into the existing decoration (for example, through the use of materials with colours in keeping with those on the routing surface).

The spaces must be identified on a case-by-case basis and the laying method validated by UNOG before it is carried out.

4.4 Type of conduits

In the event of exposure to impacts and in all cases up to a height of 1.5 m, the conduit must be an anodised aluminium duct (colour to be selected by UNOG).

5. ELECTRICAL INSTALLATIONS IN THE BASEMENTS OF THE PALACE OF NATIONS AND ITS ANNEXES

The specifications are identical to those set out in Section 3.

6. UNDERGROUND LINES

Whenever possible the existing buried conduits must be used. Where it is necessary to lay new conduits, they should be of type somos smooth PE of diameter 125 mm. A minimum of 60 % spare space must be observed.

7. WIRING STANDARD BOXES AND CABINETS

The wiring must be performed using flexible T wires with end fittings arranged in ducts made from an insulating material with a cover (wiring ducts). It must be rigidly attached at multiple attachment points. No more than two conductors may be connected at each attachment point.

In all cases, it must be possible to disconnect the wiring from a piece of equipment without affecting the operation of the remainder of the installation.

Bridging of multiple wires in a single end fitting and conductor junctions in wiring ducts are not permitted.

The minimum cross-section for the conductors is 1.5 mm^2 for high current and 1 mm^2 for reduced voltage or low current.

The colours of the conductors must comply with the applicable services and standards.

All supply lines up to and including a cross-section of 16 mm^2 must be wired to terminals.

The minimum size of the terminals is 2.5 mm^2; they must be easily identified and easy to replace, and the numbering must correspond to the numbering in the diagram. Terminal separation walls must be installed between each group of terminals linking or supplying the various pieces of equipment.

Wiring cross-sections must be defined by the circuit breakers.

For power circuits, the wiring cross-section must be at least 2.5 mm^2.

The equipment must be arranged in a clear manner, following the equipment layout plan; easily accessible, able to be visually checked, and such as to allow additions and transformations at any time.

Neon lamps are not accepted. The voltage of the lamps must be higher than the operating voltage, or they must have an additional resistor.

The equipment must be protected with thermal magnetic circuit breakers. The use of fuses is prohibited.

The electronic equipment in an equipment room must be supplied from a single supply line to be created by the successful company. Its location (generally in the equipment room itself) is defined by UNOG.

If multiple pieces of equipment are being supplied, the successful company must create a distribution box.

The available electrical power supply is 230 V single phase + earth, 50 Hz, with no backup. All wires and

cables must be tied using Corling black polyamide clamp rings with UV protection.

The selected chutes must “covered” types, with dimensions that allow 50 % free space. Each cover must be identified with a coloured sticker to prevent inversion.

The allocation of each piece of equipment inside the electrical panel must be written in white on a black background on an information plate glued and screwed onto the cover of the top chute (plastic or nylon screws).

The colour of the panel or telecommunication racks must be RAL blue 5015. The panels or boxes must

be WEBER brand or equivalent.

The doors must be locked with a 4 mm square.

The speed controller displays must be installed on the doors of the panels or boxes.

A warning plate made of sheet aluminium, dimensions 118 mm x 170 mm, must be screwed or riveted to the door of every panel whose dimensions are greater than 1000 mm x 1000 mm (reference 175 006 605 in the ELDAS catalogue).

A triangular warning plate of side length 65 mm must be glued to the door of every panel whose dimensions are less than 1000 mm x 1000 mm (reference 175 504 905 in the ELDASW catalogue).

A PVC information plate must be glued and screwed onto the frame of the panel, with white writing on a black background to indicate the normal network supplies, and white writing on an orange background for backup network supplies. It must display the following information:

- The origin of the power supply (electrical panel number and supply line number),
- The cross-section of the power supply cable,
- The maximum current.

The electrical panel must be equipped with a document holder of sufficient size to enable it to hold drawings, diagrams and technical documentation. This document holder must be screwed to the inside of a door.
For panels of height greater than 1.80 m a fluorescent lamp controlled by a limit switch on the door must be installed.

8. SELECTING CABLE CROSS-SECTIONS

The company must install cables with cross-sections conforming to the NIBT, and in all circumstances equal to or larger than those given in the table below. Unless otherwise specified, the cables to be used must be FE 0 cables (halogen free).

Maximum permissible current	Cross-section of conductors in mm^2
10	1.5
16	2.5
20	4
25	6
32	10
40	10
60	16
80	25
100	35
125	50
160	70
200	95
250	120
300	150
350	185
400	240

9. STRUCTURED WIRING CATEGORY 4

9.1 For the installation of new work stations, the cables must be identified as follows:

9.1.1 Both ends of the cable must display the following information:

DN/SRE/Office No., where: DN corresponds to *Distribution*
SRE indicates the *Floor sub-distributor*
Office No. indicates the *office or room*

The label must be stuck to the cable and protected with a heat-shrink sleeve.

9.1.2 Identification every 10 m and at every change of direction must be written in permanent marker and include the following information:

SRE-Connector No.

9.1.3 The work station box must be identified with a black dilophane label, 70 mm x 10 mm, with white writing, indicating:

BAT/SRE/Office/Connector BAT: the building where the office is located
SRE: floor sub-distributor
Office: Office or room
Connector: Connector No.

9.1.4 In the SREs, every 10 connectors, a label holder must be installed and indicate the numbers of connectors with the text POSITION xxx to xxx.

9.1.5 A cat. 4 measurement protocol must be supplied.

9.2 For the installation of 32p or 64p transmission cables, the cables must be identified as follows:

9.2.1 Both ends of the cable must display the following information:

TT-x/origin/SRE, where: TT-x indicates Telephone Transmission, and x is the cable number
"Origin" indicates the main distributor (RGT RET.)
SRE indicates the Floor sub-distributor

The label must be stuck to the cable and protected with a heat-shrink sleeve.

9.2.2 Identification every 10 m and at every change of direction must be written in permanent marker and include the following information:
Origin-SRE-Cable No. in the SRE

9.2.3 The label holder must be placed above the connector group and contain the following information:
TT-x/Pair No./Origin/SRE

9.3 Equipment used

-	Connector, green, POUYET brand	P45839 QE
-	Label holder, POUYET	P44223 AA
-	Outlet, POUYET RJ45	P28755 AB
-	Flush-mounted box, Superbox type	

10. STRUCTURED WIRING CATEGORY 5

10.1 For the installation of new work stations, the cables must be identified as follows:

10.1.1 At both ends of new work stations, the cables must be identified as follows: DN/SRE/Office No. where DN corresponds to *Distribution*
SRE indicates the *Floor sub-distributor*
Office No. indicates the office or room

The label must be stuck to the cable and protected with a heat-shrink sleeve.

10.1.2 Identification every 10 m and at every change of direction must be written in permanent marker and include the following information:
SRE-Patch No. + outlet number

10.1.3 The work station box must be identified with a black dilophane label, 70 mm x 10 mm, with white writing, indicating:

BAT/SRE/Office/patch outlet	BAT: the building where the office is located SRE: Floor sub-distributor Office: Office or room Patch outlet: Patch and outlet numbers

10.1.4 A cat. 5 measurement protocol must be supplied.

10.2 Equipment used:

- Frame patch, 3M, 1 unit, 24 RJ45 for distribution
- Frame patch, 3M, 2 units, 32 RJ45 for transmission

11. STRUCTURED WIRING CATEGORY 6A

Specifications of U/FTP supplies

All components described in this section must conform to the following applicable transmission protocols:

- Category 6A according to EIA/TIA 568B.2-10;
- Class EA according to ISO/IEC 11801 adm 2002.1.

All of the proposed components (cables, connectors, patch panels and others) must come from a single supplier, enabling certification of the wiring installation.
The copper links connecting the distribution racks with the work stations must not contain any halogen or PVC.

12. FILES OF DRAWINGS TO BE SUPPLIED

- Working drawings and files must be submitted for approval before the start of work, including a list of equipment and parts supplied,
- Layout plan and identification of all installations other than lighting must be superimposed on the architect's drawing, with terminal circuits and supply lines identified,
- Layout plan and identification of lighting installations must be superimposed on the architect's drawing, with circuits and supply lines identified,
- Working drawings must show the paths of the cables, and all interconnections between all equipment. The origins of each circuit must be indicated.
- Diagram showing the automatic control system for the lighting controls (circuit boards and control panels), showing in particular the interconnections between the various components of the system (room automatic control system components, centralised technical management system, power panels).
- Every drawing file must be supplied to UNOG in three paper copies and one electronic copy (CD, AutoCAD).

13. DOCUMENTS TO BE SUPPLIED

- Copy of the installation authorisation, issued to the company by ESTI, to be included with the submission of the bid,
- Report of the inspection performed by SECURELEC,
- Declaration of conformity with test report.

14. STANDARDISATION OF THE EQUIPMENT

The brands and types of equipment described below are imposed by UNOG. No changes may be considered without the consent of the head of the control centre subunit or the head of the electricians subunit and the primary contact person during the work phase.

14.1. Equipment on adjustment/monitoring/control panels

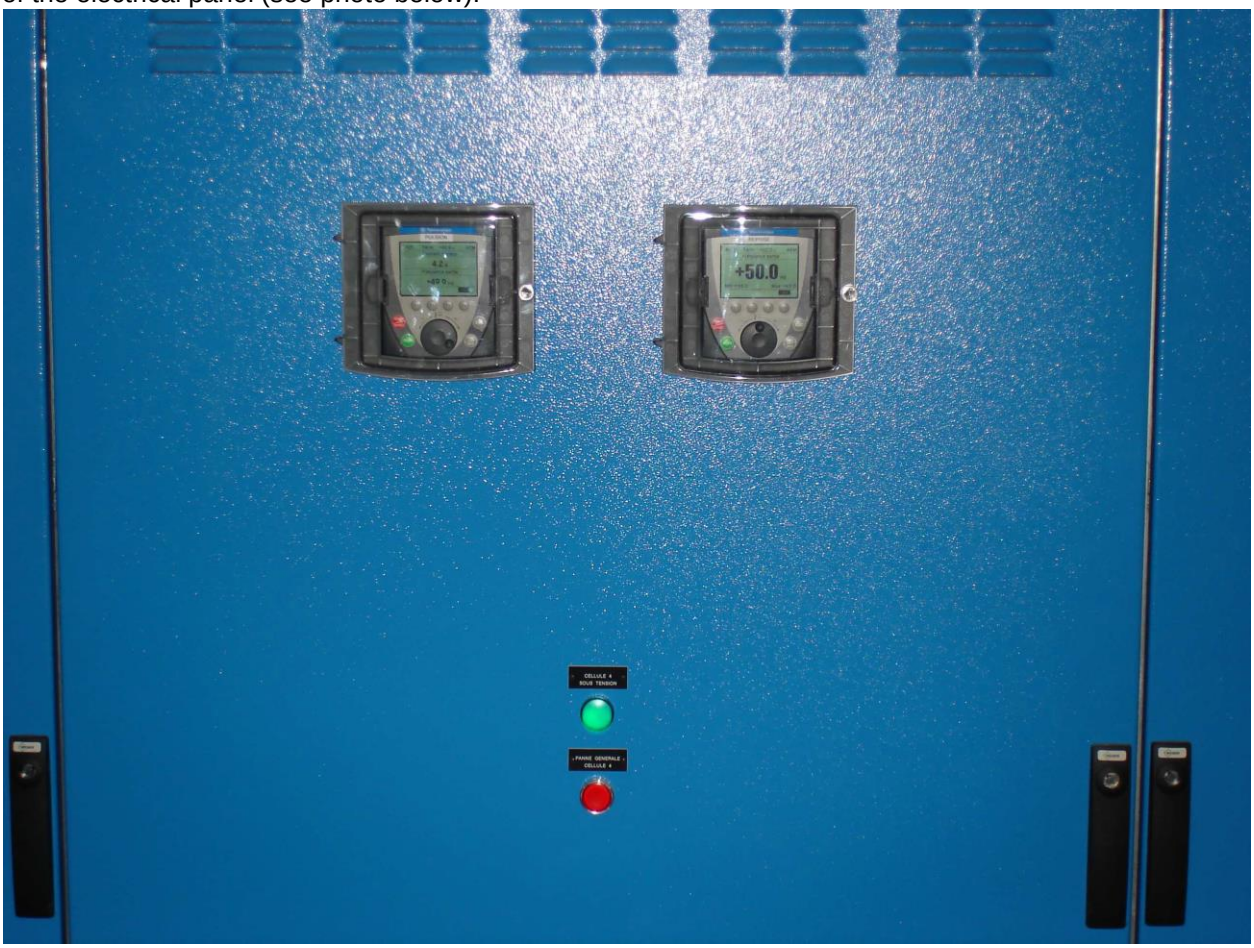
CONTROL	MANUFACTURER
Network controller NAE type MS-NAE 5510-2E	Johnson Controls
Network controller NIE type MS-NIE 5510-1E	Johnson Controls
Expansion module for FEC MS-IOM-xxxx	Johnson Controls
Digital controller FEC 2621	Johnson Controls
Identification of FEC points	Johnson Controls
Electro-pneumatic converters, type EP-8000-2	Johnson Controls
Solenoid valves V11 HBA-100	Johnson Controls
Pressure switches and differential pressure switches	Johnson Controls
Duct temperature sensor, type TS 9101-xxxx	Johnson Controls
Ambient temperature sensor, type RS 9101-xxxx	Johnson Controls
Fresh air sensor, type TS 9101-8322	Johnson Controls
Freezing danger thermostat, type 270xt95008	Johnson Controls
Pressure sensor	Johnson Controls
Pneumatic or electric servomotor for 2 or 3-way valve, any type	Johnson Controls
Servomotor for check valve, any type	Bélimo or Johnson Controls
Main power switch, lockable, with handle on exterior	Schneider Electric
Load switch, lockable	Schneider Electric
Power circuit breakers for motors	Schneider Electric
Circuit breakers for control and signalling	Schneider Electric
Compact circuit breakers, type NS100 630 Icu 36 kA 380/415 V four-pole	Schneider Electric
Distribution supports up to 160 A	Weber Uniline
C-curve circuit breakers, breaking capacity 10 kA, two-pole 2L or four-pole 4L, 1–125 A	Schneider Electric
Differential circuit breaker	Schneider Electric
Pipe circuit breaker, lockable	Schneider Electric
Starters	Schneider Electric
Variable speed drives	Schneider Electric
Contactors and thermal relays	Schneider Electric
Auxiliary contactors	Schneider Electric
230 V or 24 V plug-in relays, timed or programmable, 11 poles	Comat
Interface relay	Phoénix
Plug-in voltage monitoring relay, 11 poles	Bircher
Plug-in rotating field relay, 11 poles	Bircher
Interference suppression module, suitable for programmable logic controllers	Télémécanique

EQUIPMENT	MANUFACTURER
Signal lamps	Schneider Electric
Control switch on control panel	Kraus Naimer
Pushbutton switch	Schneider Electric
Safety switch	Schneider Electric
Door ammeters	Wisar
Transformer, 230/24 V	Hager
Current transformer	Wisar
EIB KNX equipment	ABB
EIB KNX control	ABB

TABLE	MANUFACTURER
Colour RAL blue 5015 door locking with 4 mm square	Weber or equivalent

The current federal standards must be strictly followed in terms of the colours and cross-sections of the conductors to be used.

The mechanism to transfer information from the variable frequency drives must be installed on the front of the electrical panel (see photo below).



14.2. Switchboard equipment

EQUIPMENT	MANUFACTURER
Main power switch, lockable, with handle on exterior	Schneider Electric, ABB or Hager
Load switch, lockable	Schneider Electric, ABB or Hager
Power circuit breakers for motors	Schneider Electric, ABB or Hager
Circuit breakers for control and signalling	Schneider Electric, ABB or Hager
Compact circuit breakers, type NS100 630 Icu 36 kA 380/415 V four-pole	Schneider Electric, ABB or Hager
Distribution supports up to 160 A	Weber Uniline
C-curve circuit breakers, breaking capacity 10 kA, two-pole 2L or four-pole 4L, 1–125 A	Schneider Electric, ABB or Hager
Differential circuit breaker	Schneider Electric, ABB or Hager
Pipe circuit breaker, lockable	Schneider Electric, ABB or Hager
Starters	Schneider Electric
Variable speed drives	Schneider Electric
Contactors and thermal relays	Schneider Electric
Auxiliary contactors	Schneider Electric
230 V or 24 V plug-in relays, timed or programmable, 11 poles	Comat
Interface relay	Phoénix
Plug-in voltage monitoring relay, 11 poles	Bircher
Plug-in rotating field relay, 11 poles	Bircher
Interference suppression module, suitable for	Télémécanique
Terminal blocks	Woertz
Signal lamps	Schneider Electric
Control switch on control panel	Kraus Naimer
Pushbutton switch	Schneider Electric
Safety switch	Schneider Electric
Door ammeters	Wisar
Transformer, 230/24 V	Hager
Current transformer	Wisar
EIB KNX equipment	ABB
EIB KNX control	ABB

EMERGENCY LIGHTING	MANUFACTURER
Backup units	Aprotec, Autotest type
Inverters/electrical cabinets	Aprotec

14.3. Bathroom equipment

EQUIPMENT	MANUFACTURER
Light fittings to be recessed, 600 mm x 600 mm, LED, neutral white	ADDIS, Lazzuli range
Motion detectors with light intensity sensors, 360°, 23 m range, timeout, C123	LUXOMAT, type ENC 230
Electric hand dryer	DYSON type Airblade dB
Bathroom alarm system for people with reduced mobility (PRM)	TYCO Electronic module, type: 33815000 LED room wall light type: 33803010 VLF presence/call button, type: 32782300 VLF call button, type: 32781200 VLF buzzer, type: 32780000 Table-top power supply, type: 58852512 Terminal board, type: 33091000

15. LIGHTING IN OFFICES AND CORRIDORS

The lighting to be installed must be of a low-energy type.
The prohibited light fittings are:

- 230 V halogen light fittings;
- Tungsten-filament light fittings;
- Neon lamps.

Light fittings to be installed in the false ceilings, depending on the application, must be LEDs, neutral white, ADDIS brand, Lazzuli range.

16. KEYS AND SYMBOLS

The library for the electrical panel equipment and the high-current and low-current equipment to be used in drafting the drawings will be supplied to the successful company in electronic format (CD, AutoCAD).

17. ACCEPTANCE OF THE INSTALLATIONS

On completion of the work and after commissioning of the installations, provisional acceptance of the installations will be carried out. This procedure will include the following tests:

- Conformity of the work and equipment to the requirements of the Specifications document, technical standards and electrical wiring diagram;
- Operation;
- Safety devices;
- Protection settings.

During provisional acceptance of the installations, the company must provide the technical file, in triplicate, containing the following documents:

- Files and drawings from studies of the work to be performed;
- Complete electrical wiring diagram: control and capacity;
- Copies of drawings and diagrams in electronic format (CD, AutoCAD);
- Complete maintenance manual;
- Data sheets for the equipment supplied;
- Sheet listing all adjustment points;
- Sheet listing electrical checks;

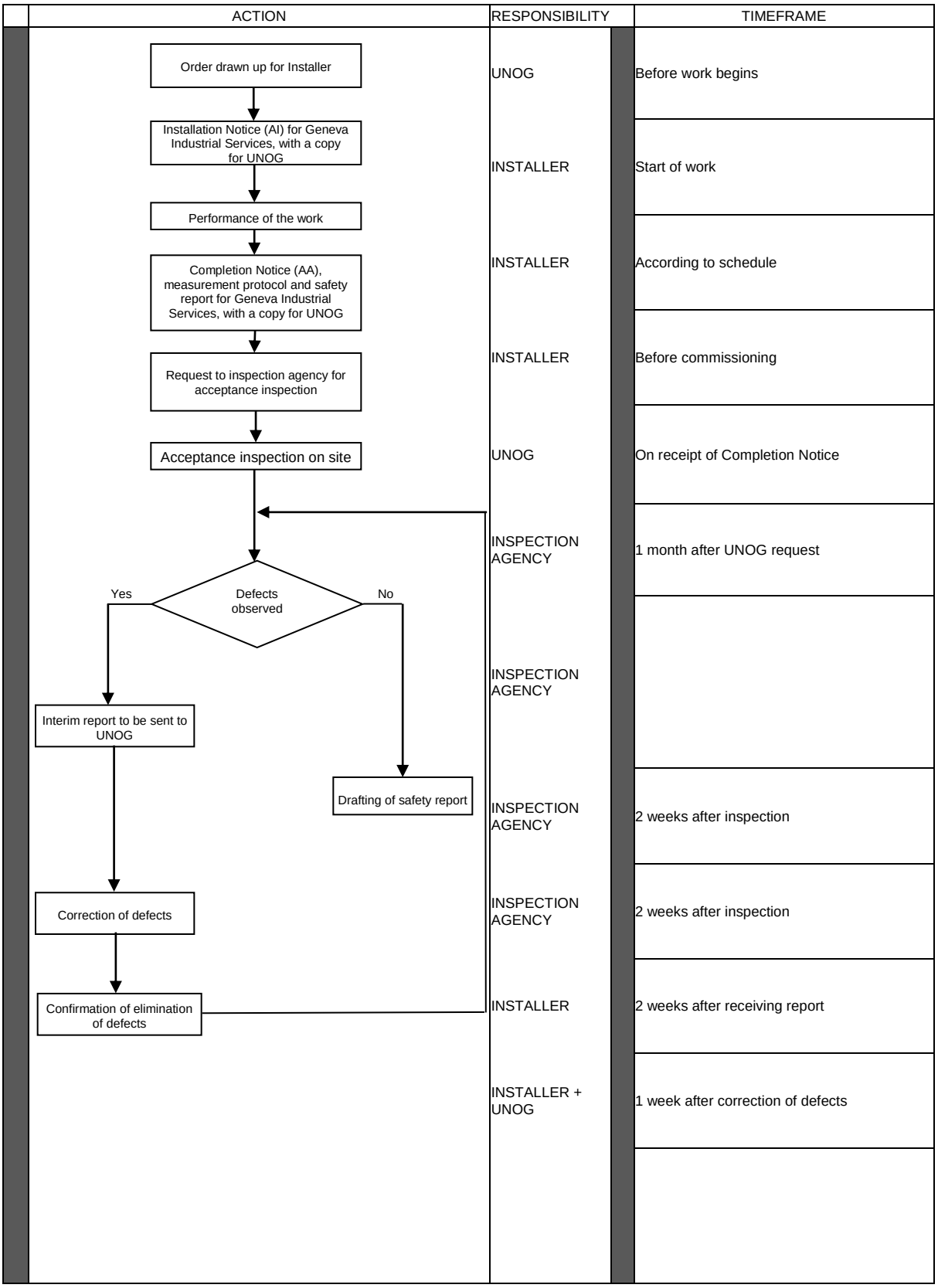
- Commissioning card;
- The completion notice (AA), measurement protocol and safety report for Geneva Industrial Services, issued by the inspection agency engaged by the company.

Provisional acceptance of the installations will be declared upon correct commissioning of the installations and upon handover of the complete files in triplicate, the contents of which are listed above.

18. ACCEPTANCE TESTING UNDER OIBT (FEDERAL LOW-VOLTAGE INSTALLATION ORDER)

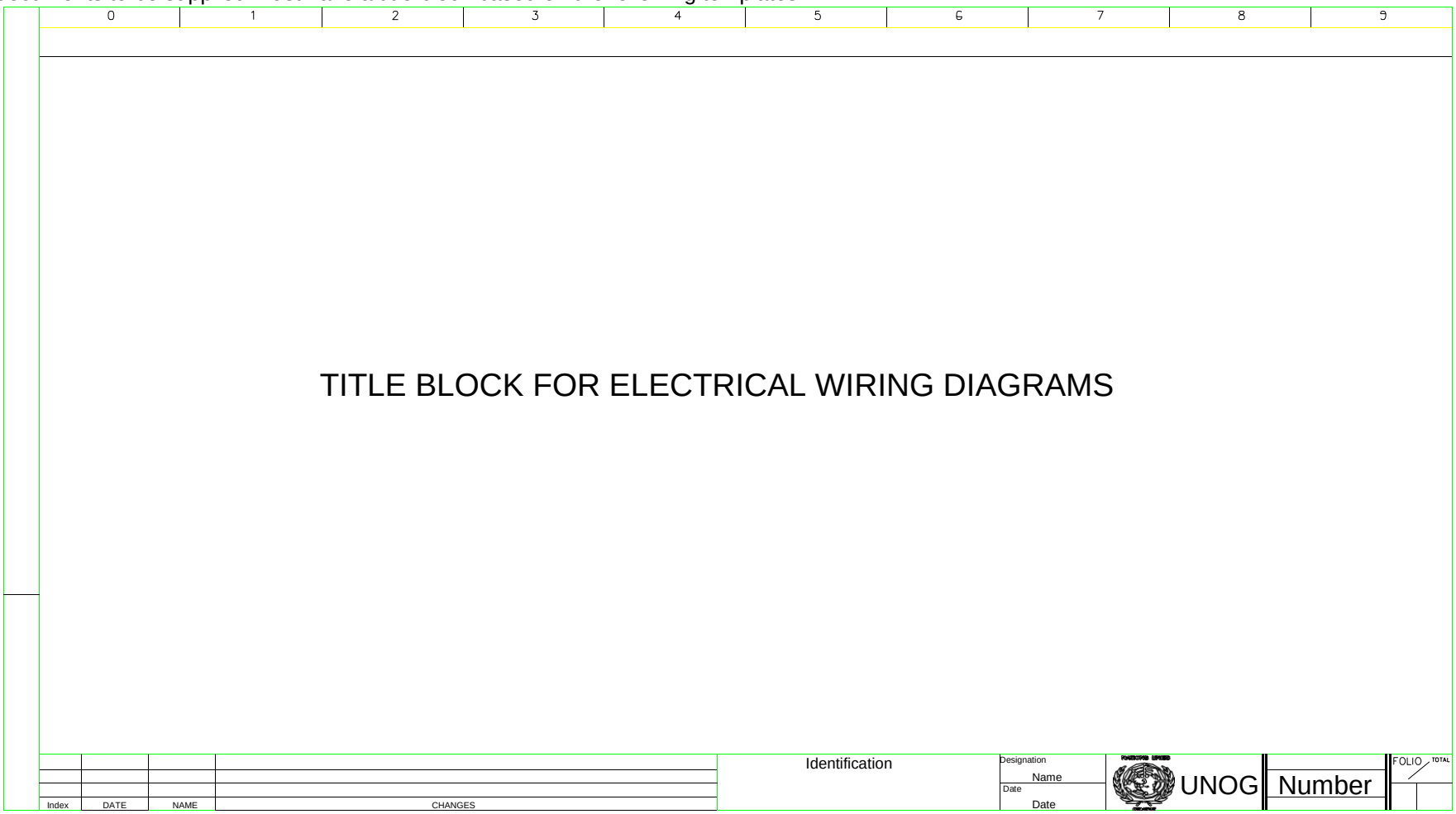
Acceptance testing will be performed according to the following process and timeframes:

ACCEPTANCE TESTING UNDER OIBT *PROCEDURE*



19. TITLE BLOCKS

All documents to be supplied must have a title block based on the following templates:



Title block for drawings

Company name and address

Location: PN or annexes
Location: building
Location: floor or room

Drawn on: DATE
By: NAME
Checked by: VERIFIER

Ind	Date	Name	Changes

LOGO

Main title
Secondary title

DRAWING NUMBER
NUMBER

Scale	Page	Index
SCALE	PAGE	IND