METHODOLOGY BOOKLET

Production, modification and provision of electrical diagrams for TOURS CHRU

Version	Modifications	Date	Written by	Approved by
V1.0	Document created on	03/07/2018	Algo'Tech - JPV	CHRU TOURS-DSTP-PB
V1.1	Incorporation of DSTP-PB comments	24/08/2018	Algo'Tech - JPV	CHRU TOURS-DSTP-PB
V1.2	Incorporation of DSTP-PB comments	13/09/2018	Algo'Tech - JPV	CHRU TOURS-DSTP-PB
V1.3	Incorporation of template diagrams	05/10/2018	Algo'Tech - JPV	CHRU TOURS-DSTP-PB
V1.4	Correction of name of Empty grid template file	13/12/2018	Algo'Tech – JPV	CHRU TOURS-DSTP-PB
V1.5	Modification of file and document naming rules (pg 8 and pg 9)	25/01/2019	CHRU - PB	
V1.6	Reference of documents, Agency List file	12/02/2019	Algo'Tech – JPV	
V1.7	Choice of single-line or multi-line	14/02/2019	CHRU - PB	
V1.8	Entry of data in Excel (pg 9)	19/02/2019	CHRU - PB	
V1.9	Illustration showing example of columns	19/02/2019	Algo'Tech – JPV	

The Technical Services and Assets Division (CHRU D.S.T.P.) reserves the right to accept or request modifications required and specific to this document for specific elements and installations.

Version

The specific details given in this document pertain to “standard requirements”.
When additional recommendations feature in the Special Technical specifications for CHRU practices, these additional specifications will need to be taken into account for the installation described.
The use and distribution of this electrical CAD graphic charter are free of copyright and subject only to the acceptance of these terms and conditions.

Warning

The TOURS CHRU (Regional University Hospital) excludes liability for any errors or omissions that may appear in this document and accepts no responsibility for any harm that may result from the use of this document by a third party.

Conditions of use and distribution of the electrical CAD graphic charter

1. The EPR (Electricity, Production and Systems) CAD graphic charter is a document designed and drafted by the electricity subsidiary of the operating/maintenance department of the CHRU Technical Services and Assets Division.
2. The purpose of the charter is to standardise the creation and exchange of electricity CAD data.
3. The charter and its updates are managed by the CHRU.
4. The distribution of modified versions of the charter is prohibited.
5. Any distribution of the charter must make reference to the author: CHRU
6. The charter can only be distributed in its printed version or in electronic format together with its annexes (various Excel and Elec’View files).
7. Use of the charter must be monitored and supported using measures enabling CAD data to be monitored.
8. Individuals are responsible for asking the Technical Services Division for the latest available versions of the Charter.

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1 CONTACT US

1.1 CONTACT THE TOURS CHRU

You can reach the CHRU_TOURS Electricity, Production and Systems (EPR) department using the following contact details:

CHRU de TOURS
Direction des Services Techniques et du Patrimoine
2 Boulevard Tonnellé
37000 Tours cedex 9

EPR Department
Mr. Lionel François
Tel: +33 (0)2 47 47 47 14
Fax: +33 (0)2 47 47 37 35
l.francois@chu-tours.fr

1.2 CONTACT THE COMPUTER COMPANY ALGO'TECH INFORMATIQUE

Below is a list of contact telephone numbers, fax numbers and email addresses for our various departments:

Technical support (Monday to Friday: 9am / 12pm - 2pm/5pm)
Telephone: +33 (0)5.59.01.59.61
Fax: +33 (0)5.59.01.59.69
Email: support@algotech.fr

Training course registration department
Telephone: +33 (0)5.59.01.59.60
Fax: +33 (0)5.59.01.59.69
Email: infos@algotech.fr

Sales department
Telephone: +33 (0)5.59.01.59.60
Fax: +33 (0)5.59.01.59.69
Email: commercial@algotech.fr

2 OVERVIEW

This “TOURS CHRU methodology booklet” was produced to facilitate the creation and reworking of diagrams using the ‘Pack’ElecBuilder software. It supplements comprehensive training on the software, which is essential to use the product correctly in order to ensure compliance with requirements and the CHRU’s graphic charter.

2.1 GRAPHIC CHARTER

2.1.1 OBJECTIVES OF THE CAD GRAPHIC CHARTER.

The CAD graphic charter is implemented at Tours CHRU to produce computer-aided design electrical diagrams, in order to harmonise as-built diagrams received. This charter defines the technical rules pertaining to CAD data exchange between the CHRU and external service providers. It also defines the applicable procedures in the case of non-conforming files or files not submitted.

The objective of the charter is to ensure that external service providers use CAD data on the CHRU computer system in order to facilitate the use of this data by the different Technical Service Division departments, as well as their integration in the CHRU IS (Information System).

The charter forms an integral part of the contract with external service providers.

2.1.2 USE OF THE CAD GRAPHIC CHARTER.

Use of the CAD graphic charter is decided by the CHRU.
It is the sole point of reference for any questions or support concerning its application.

2.1.3 SCOPE.

The charter generally applies to all electrical as-built diagrams produced as CAD data.

2.1.4 ACCESSIBILITY AND UPDATE OF THE CAD GRAPHIC CHARTER.

All information indicated in this charter is available to the Technical Services and Assets Division.

2.2 CAD SOFTWARE.

A computer operating Windows, Microsoft Excel, and the Algo'Tech Informatique Pack'Elec Auto'Fil software is required to ensure compliance with directives. Obsolete versions of this software may not be adequate and must be updated or replaced at the service provider's cost.
Application of the directives was tested on Pack'Elec 2018.0.0.28.

2.2.1 VALID VERSIONS OF ELE/XLS FORMAT

Two exchange formats are required:

- Under the Pack'ElecBuilder software in .ele format, version 2016 or later.
- Under the Microsoft Excel software in .XLS format (97/2003), the diagram creation format using the Auto'Fil module.

2.2.2 PROCEDURE IN THE EVENT OF NON-COMPLIANCE WITH THE GRAPHIC CHARTER

CAD data sent to the TOURS CHRU Technical Services Division that cannot be used or that is observed to be non-conforming to TOURS CHRU standards, must be corrected and resent to the CHRU within 30 days of the date on which the file to be modified was returned by the CAD manager (as indicated by the postal date stamp).
If the service provider is unable to send the data within the allocated time frame, TOURS CHRU reserves the right to apply late penalties on the basis defined in the relevant contract sections.

2.2.3 CAD DATA COPYRIGHTS

The service provider transfers ownership of the CAD data when handing it over within the limit defined by the GCC governing intellectual property, chapter 4, option B (Public intellectual services contract: general conditions of contract, article B-21, 22, 23, 24,25).

2.2.4 SPECIFIC AND OTHER CASES

The specific cases and problems associated with the application of the Charter must be governed by the CHRU's electrical CAD data manager.

The supplier of the data must ensure that media submitted are free of viruses. All data media must be checked using a suitable anti-virus program.

3 DATA EXCHANGE CONTENT

3.1 LIBRARY OF PERMITTED SYMBOLS

The Elec'View and Excel file formats support the exchange of objects of very different kinds and that are often complex.
To enable reading of diagrams that are faithful to the original as well as simple and effective integration, only CHRU library symbols are permitted. The symbol library is incorporated in the "elec.CHRU_TOURS" standard file

The following library files must be used

3.1.1 THE AUTO'FIL ENVIRONMENT

- ..\Autofil\Modèles\Grille Vide_ CHRU_TOURS.xls :

→This is the Auto'Fil spreadsheet template to be used to create new diagrams.

- ..\Autofil\Modèles\Biblio-AutoFil - CHRU_TOURS.xls
- ..\Autofil\Modèles\Blocs-Autofil - CHRU_TOURS.xls

→These two files are object libraries to be used when creating Auto'Fil Excel spreadsheets.

- ..\Autofil\Modèles\Parametrage Autofil - CHRU_TOURS.xls

→This is the graphic configuration to be used for diagram .XLS→.ELE conversion

- ..\Autofil\Modèles\Liste Agences - CHRU_TOUS.xls

→This is a file used to list the contact details for the departments issuing the diagrams

3.1.2 THE CAD ENVIRONMENT

- ..\Normes\elec. CHRU_TOURS

→This is the CAD symbol library. This is accompanied by its "paraelec. CHRU_TOURS" parameters file, as well as other supplementary databases. ***. CHRU_TOURS

A "paraelec. CHRU_TOURS" parameters file is attached with the charter. This file contains the CHRU's "electrical preferences". It defines a number of options governing the software's CAD functions.

- Classification of symbols and their parameters:
- Association of a suitable electrical performance.
- Generation format of folios automatically generated by CAD processing options (cover page, connector block drawings, cable schedule, nomenclature, etc.), choice, content, position of figures taken from the library.

3.1.3 NEW SYMBOLS

A symbol library (standard) is supplied with the charter (elec. file). However, if a symbol is required for the diagram but is not available in this library, the service provider can create a symbol using attributes and use it on the diagram. In this case, the created symbol must be approved by the CHRU prior to being added to the charter and its library. The charter will then be subject to an update managed by the CHRU.

3.2 AUTO'FIL / CAD FILES

3.2.1 FILE NAMES

The file names refer to:

- the type of document,
- the name of the equipment to which it corresponds,
- the role of the equipment.

It is presented in the following format:

[SC]-[NAMING_EQP]-[ROLE]

- SC: Document type.[1]
- a dash.
- [NAMING_EQP]: identifier of the equipment shown in the diagram (as per the naming rules "EPR 007_1_Naming rules".
- a dash.
- [ROLE]: role of the equipment (capital letters are reserved for the first character of the role and for medical or technical terms).

Example from the diagram of a standard Connection Control Cabinet at Bretonneau:

SC-B1A01AD_04-Standard chassis SCAN 1B

[1] SC: Diagram – SY: Synoptic PL: Drawing – ND: Design calculation

3.2.2 DOCUMENT REFERENCES (SC – SY – PL – ND)

The document reference refers to:

- the type of document,
  - SC for diagrams (“SChémas” in French)
  - SY for synoptic diagrams (“SYnoptiques” in French)
  - PL for building drawings (“PLans de bâtiment” in French)
  - ND for design calculations (“Notes De calcul” in French)
- the naming of the equipment to which it corresponds.

It is presented in the following format:

[SC]-[NAMING_EQP]

- SC: Document type.[2]
- a dash.
- [NAMING_EQP]: identifier of the equipment shown in the diagram (as per the naming rules"EPR 007_1_Naming rules".

Example for a design calculation of a UPS connection control board at Trousseau:

ND-T0104TDO02

For each table, the service provider must provide:

- The .XLS Auto’Fil file containing the description of the power section, as well as the general titles and file revision indices.
- The .ELE file containing the drawing of the control section, as well as the results of the CAD processing options.
- The PDF export corresponding to the aforementioned .ELE file.

New files must be named in compliance with this format. For modifications to existing documents that are incorrectly indexed, the service provider must return the documents duly renamed.

3.2.3 PROVISION OF DOCUMENTS

Documents must be provided electronically:

- in a .zip format archive (maximum size 5Mb)
- or via the FTP server or on a USB stick if files are larger than 5Mb

Documents will be supplied on a CD-ROM (2 copies).
They must be accompanied by 3 paper copies printed in A4 format, with pages stapled together in the top left corner, in landscape, printed on one side only, in colour, with 4 holes punched at the top.

[2] SC: Diagram – SY: Synoptic PL: Drawing – ND: Design calculation

For the title, numbering of CD-ROMS and file structure, the company must liaise with the design office and conform to the latter's specifications.

All data must be included in the associated Excel file. If the data needs to be entered directly in the .ELE file, in CAD, a request must be submitted to the CHRU, which will pre-approve or reject the input method (creation of specific layer).

3.2.4 NAME OF ELECTRICAL SWITCHBOARDS

The name of the electrical switchboards is supplied by the CHRU, and is based on the electrical structure of installations and in accordance with the naming rules used for BMS.

3.2.5 FONTS - STYLES

In terms of fonts and styles, the service provider must use "ARIAL" or "TIMES NEW ROMAN" font for new documents. This font must be no smaller than size 10. Documents supplied by the CHRU will remain in their existing format.
If it is necessary to use other formats, the service provider must request approval from the CHRU. Upon approval, the service provider must provide the CHRU with the file. Failure to do so will result in diagrams being returned.

4 DIAGRAM DETAILS

The diagram is a file made up of several folios categorised as follows:

- Folio D_001: diagram cover page
- Folio E_100: table of folio indexes
- Folios F_001 to F_099: descriptions of sources, power folios
- Folios F_100 and higher: remote control, automaton folios, etc.
- Folios F_600 and higher: connector blocks
- Folios F_700 and higher: cable schedule
- Folios F_800: List of terminals

4.1 COVER PAGE

The cover page will be divided into two equal sections:

4.1.1 RIGHT-HAND SECTION

This section contains the presentation of the CHRU site to which the document applies and includes the following information:

- The CHRU logo only
- Centre Hospitalier Régional Universitaire
- HOPITAUX DE TOURS
- Technical Services and Assets Division
- The site name.

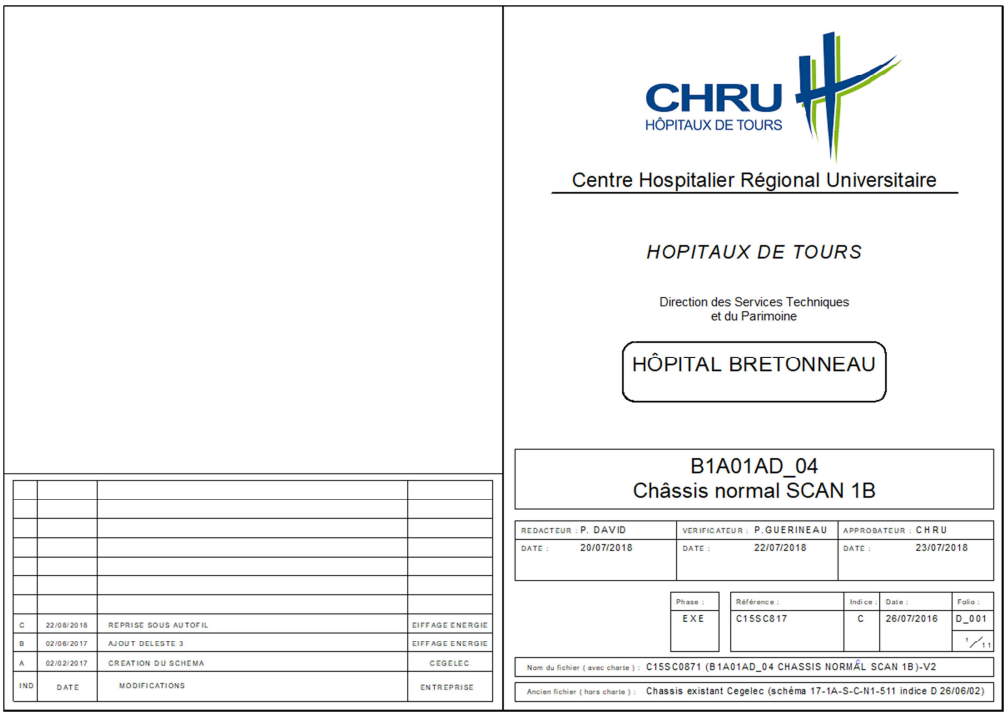
A title block comprising:

- The name of the equipment.
- The role of the equipment.
- The name of the latest drafter, checker, approver.
- The modification or creation, check and approval dates.
- Work phase: PRO, EXE, DOE.
- The diagram number.
- The folio index.
- The document creation date.
- The number of the folio followed by the total number of folios.
- Name of the computer file. (Former and new in the case of the revision of an existing document).

4.1.2 LEFT HAND SECTION

This will take the form of a grid used to track document updates, with each row respectively indicating:

- The index.
- The modification or creation date.
- The modification description.
- The name of the company that modified or created the document.



C	22/08/2018	REPRISE SOUS AUTOFIL	EIFFAGE ENERGIE
B	02/08/2017	AJOUT DELESTE 3	EIFFAGE ENERGIE
A	02/02/2017	CREATION DU SCHEMA	CEGELEC
IND	DATE	MODIFICATIONS	ENTREPRISE

CHRU HÔPITAUX DE TOURS

Centre Hospitalier Régional Universitaire

HOPITAUX DE TOURS

Direction des Services Techniques et du Parimoine

HÔPITAL BRETONNEAU

B1A01AD_04
Châssis normal SCAN 1B

REDACTEUR : P. DAVID	VERIFICATEUR : P.GUERINEAU	APPROBATEUR : CHRU
DATE : 20/07/2018	DATE : 22/07/2018	DATE : 23/07/2018

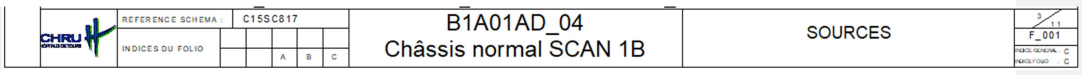
Phase :	Référence :	Indice :	Date :	Folio :
EXE	C15SC817	C	26/07/2016	D_001 1/11

Nom du fichier (avec charte) : C15SC0871 (B1A01AD_04 CHASSIS NORMAL SCAN 1B)-V2

Ancien fichier (hors charte) : Chassis existant Cegelec (schéma 17-1A-S-C-N1-511 indice D 26/06/02)

4.2 TITLE BLOCK ON OTHER SHEETS

- The CHRU logo.
- The name of the equipment.
- The role of the equipment.
- The diagram number.
- A 10-box grid for the indexes of the modified folio.
- The number of the folio following by the total number of folios.
- The name of the folio.



CHRU HÔPITAUX DE TOURS	REFERENCE SCHEMA : C15SC817	B1A01AD_04 Châssis normal SCAN 1B	SOURCES	3/11 F_001
	INDICES DU FOLIO : A B C			

4.3 SPECIFIC CASE OF EQUIPMENT COMPRISING SEVERAL COLUMNS

The devices in each column must be represented to be traced in the diagram in line with the physical distribution by row and column of an item of equipment. Each new column requires a new folio with new device numbering (see CHRU naming rules).
The name and role will change in the new title block.

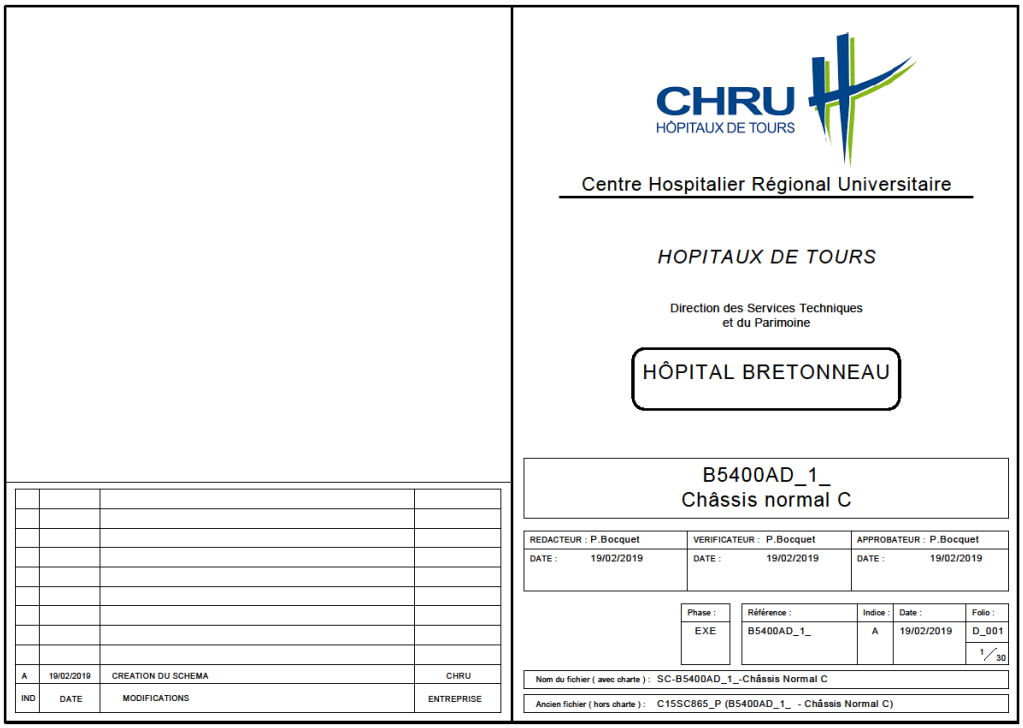
Example:

On the cover page for a connection control cabinet, we find: “B5400AD_1_” for the name and “Standard chassis C” for the role.
This connection control cabinet comprises 6 columns:

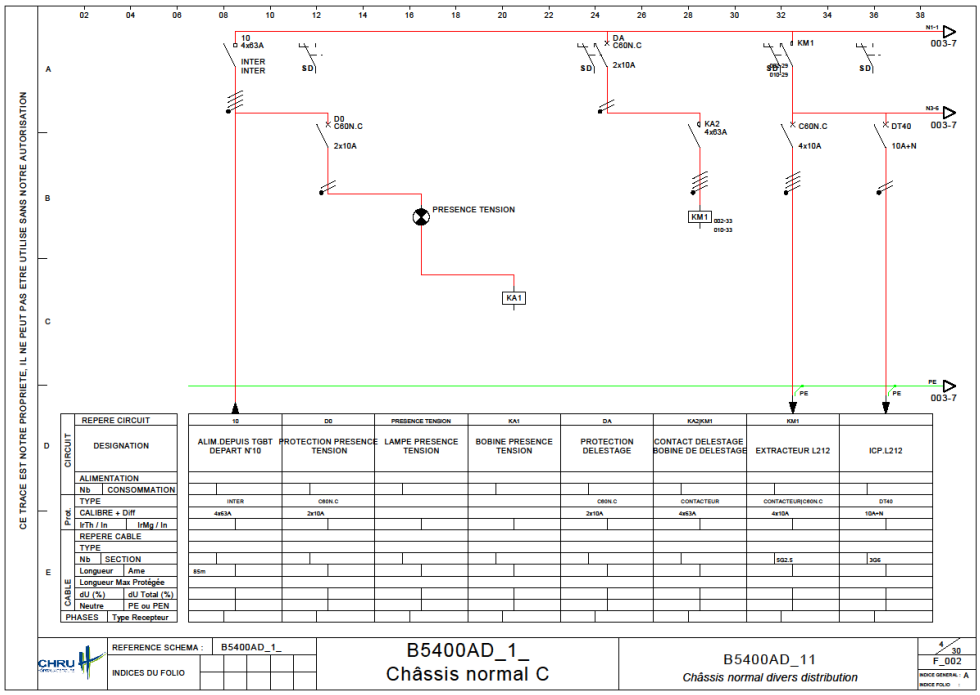
- For column 1, the folios of the connection control cabinet diagram will be named B5400AD_11 and its associated role, which is in our example: “Standard chassis different connection control”.
- The following is written in the title block for column 2: “B5400AD_12” for the name and “Tomotherapy standard chassis” for the role.

And so on for the other columns.

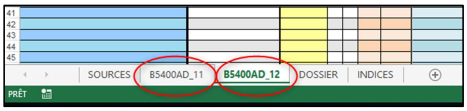
On the cover page:



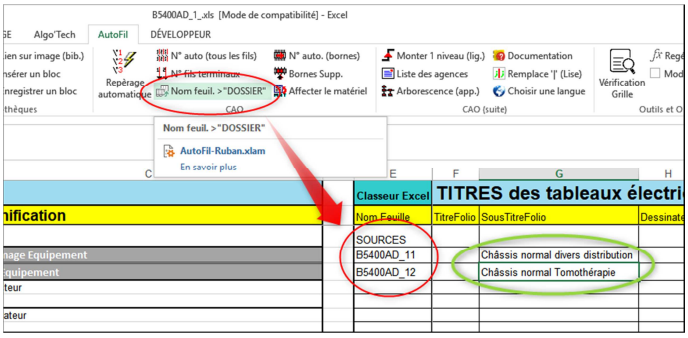
In the diagrams:



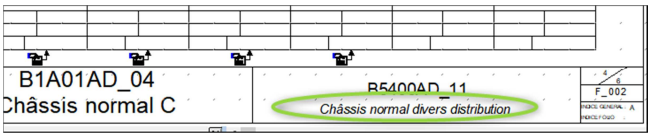
The description over several columns is created using several Excel sheets in the Auto'Fil Excel file:



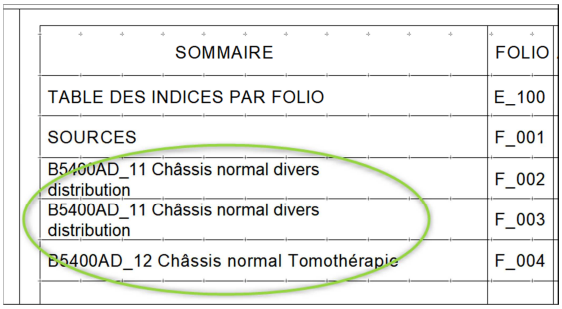
You can use the "**Sheet name.> FILE"** macro in the Excel Auto'Fil menu (red circles below)
You can enter the **FolioSubTitle** corresponding to each sheet (green circles below)



This information refers to the folio title block



This information is also reported on folio E_100



SOMMAIRE	FOLIO
TABLE DES INDICES PAR FOLIO	E_100
SOURCES	F_001
B5400AD_11 Châssis normal divers distribution	F_002
B5400AD_11 Châssis normal divers distribution	F_003
B5400AD_12 Châssis normal Tomothérapie	F_004

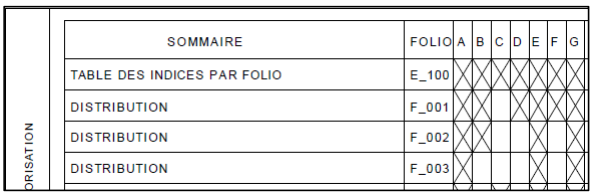
4.4 REVISION OF DOCUMENTS SUPPLIED BY THE CHRU

All documents supplied by the CHRU, in any format, must be brought into compliance with this document.

4.5 INDEX MANAGEMENT AND CONTENTS

The contents of the title blocks and folio indexes must be correctly assigned.
Using the Pack'ElecBuilder software CAD functions, folio E_100 therefore includes all of the information.
It will take the form of a grid used to track diagram updates, with each row respectively indicating:

- The type of folio (cover page, table of indexes per folio, source management, distribution, etc.).
- The names of the folios.
- The modification indexes



SOMMAIRE	FOLIO	A	B	C	D	E	F	G
TABLE DES INDICES PAR FOLIO	E_100							
DISTRIBUTION	F_001							
DISTRIBUTION	F_002							
DISTRIBUTION	F_003							

4.6 EXCEL DESCRIPTION

In the Auto'Fil Excel file, you will be ask to describe:

- a sheet to describe the cable connections of each SOURCE.
- a sheet for the "PERMANENT" section of the installation.
- a sheet for the "DELESTE 2" (DECONNECTION 2) section of the installation, as required.
- a sheet for the "DELESTE 3" (DECONNECTION 2) section of the installation, as required.

Commentaire [RC1]: Sens de "DELESTE" à confirmer. Comprendre "DECONNEXION"?

Commentaire [RC2]: Idem



This distinction will therefore automatically appear in the contents for the generated diagram:

SOMMAIRE	FOLIOS		
SOURCES SOURCE 1	F_001	à	F_001
SOURCES SOURCE 2	F_002	à	F_002
PERMANENT	F_003	à	F_004
DELESTE 2	F_005	à	F_005
DELESTE 3	F_006	à	F_006

4.7 SOURCE MANAGEMENT

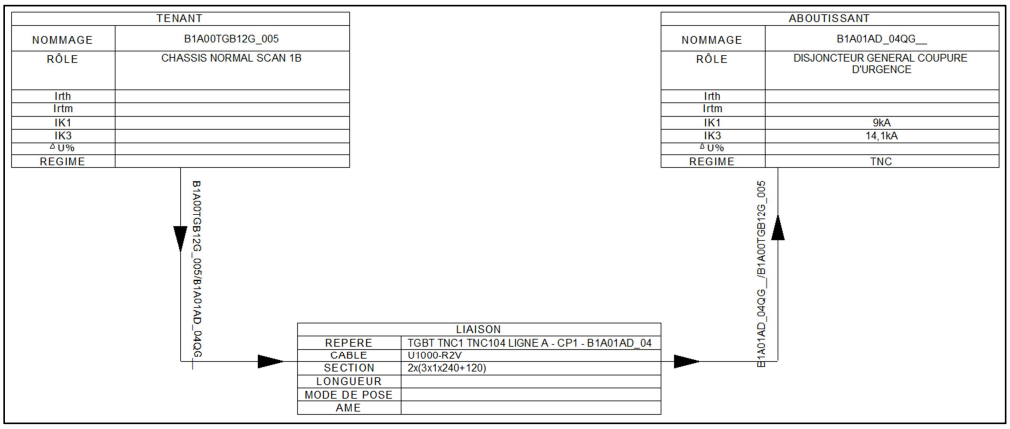
Electrical sources that power the switchboard must be described:

- Information about the START POINT (upstream protection of cable)
- Information about the cable (marking, type, section, length)
- Information about the END POINT (downstream protection of cable)

All diagrams concerning the supply of an electrical cabinet or a building must include the following information on the source management page:

- the origin of the power source(s) and the number of the corresponding diagram.
- the cable length.
- the section, nature and type.
- the cable marking (start point/end point) at each end.
- the short-circuit current at entry to the cabinet.
- the design calculation must be supplied.

Identification of the Start point/End point cables



4.8 DIAGRAM

For each “equipped” column of the diagram, the following information will be completed by the company.

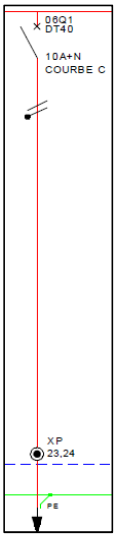
CIRCUIT	REPERE CIRCUIT	
	DESIGNATION	
	ALIMENTATION	
	Nb	CONSOMMATION
Prot.	TYPE	
	CALIBRE + Diff	
	IrTh / In	IrMg / In
CABLE	REPERE CABLE	
	TYPE	
	Nb	SECTION
	Longueur	Ame
	Longueur Max Protégée	
	dU (%)	dU Total (%)
	Neutre	PE ou PEN
PHASES	Type Recepteur	

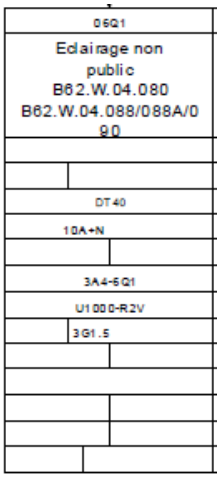
Next to each circuit breaker, the company must specify:

- its identification
- its rating and adjustment
- its trip curve
- its type or type of tripping device
- adjustments
- table of O/F and SD ancillary device facts

Commentaire [RC3]: Confirmer le sens de “table des vérités”.

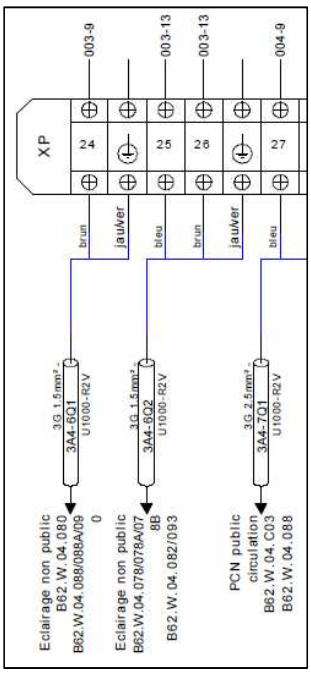
Example:





4.9 CONNECTOR BLOCKS

When they exist, connector blocks must be shown in the diagrams in the following format:



The name of the connector block, the numbers of the wires and the numbers of the terminal will be filled in. Wired outgoing connections must be shown and identified as below.

4.10 CABLE SCHEDULE

Folio F_700 is the cable schedule. It lists information about the cables connected to the electrical cabinet.
Description of the cable schedule folio:

- The power or command or alarm or reconnection function.
- The cable number preceded by “CC” for command, e.g.: CC1, CC2, etc.
- The cable number preceded by “CP” for power, e.g.: CP1, CP2, etc.
- The connection room and the cabinet or the switchboard
- The type of cable: e.g. U1000RO2V
- The conditioning: e.g. 5G (number of conductors)
- The section: e.g. 25mm²
- The start point: e.g. HV terminal 5 with connector block
- The end point: e.g. TL-01.03 with connector block
- The start current.
- Any other comments (fire resistance, etc.).

CABLE	BORNIER	DESTINATION	TYPE / NATURE	CARACTERISTIQUES		REMARQUE
				Section	Longueur	
3A4-5Q1	XP	Eclairage public circulation + éclairage secours B62.W.04.C03	U1000-R2V	5G 1.5		
3A4-5Q1ES	XP	Télécomande éclairage Secours circulation B62.W.04.C03	U1000-R2V	3G 1.5		
3A4-5Q1PCE	XP	Tableautin PCE42 Poste de soins B62.W.04.076	CR1/PRC	5G 1.5		

4.11 LIST OF TERMINALS

This folio
gives the list of connector blocks as well as the number of terminals.

BORNIER	BORNIER AMONT	NOMBRE DE BORNES	OBSERVATION
XE		88	
XF		36	
XP		100	

4.12 CHOICE OF SINGLE-LINE OR MULTI-LINE

For automation diagrams (EPR and BMS domain).
Distribution must be multi-line.

For purely Electrical Distribution (EPR without automation) diagrams, the diagrams must be single-line.