

MATERIAL & EQUIPMENT STANDARD
FOR
ELECTRICAL LIGHTING COLUMNS

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*** Notes:**

1) For Attachments see the end of this Standard Specification.

2) Attachments number 4, 6.3, 6.4, 7, 9, 12 and 13 are not applicable to this Standard.

1. SCOPE

This Standard Specification describes the minimum requirements for steel, aluminum and concrete lighting columns with due reference to base COMPARTMENTS, cableway, corrosion prevention and test of columns.

Only the general requirements of individual lighting columns are given in this Standard Specification; the specific requirements of different types of lighting columns will be given in pertinent data sheet.

2. REFERENCES

Lighting columns shall be designed, constructed, tested and quality controlled to the requirements of the edition of the following standards that are in effect at the time of publication of this Standard, the applicability of changes in standards that occur after the date of this Standard shall be mutually agreed upon by the company and supplier.

EN (EUROPEAN NORMS)

EN 40 "Parts 1 to 9 Lighting Columns".

BS (BRITISH STANDARDS)

BS 2901 Part 4 "Aluminum and Aluminum Alloys and Magnesium Alloys".
 BS 3019 Part 1 "Tig Welding".
 BS 3571 Part 1 "Specification of MIG Welding of Aluminum and Aluminum Alloys".
 BS 4872 Part 2 "Tig or MIG Welding of Aluminum Alloys"
 BS 5649 "Lighting Column (see EN 40)"

ISO (INTERNATIONAL STANDARDIZATION ORGANIZATION)

ISO 1459-1973 "Metallic Coating-Protection Against Corrosion by Hot Dip Galvanizing Guiding Principles".
 ISO 1460-1973 "Metallic Coatings Hot Dip Galvanized Coating on Ferrous Materials. Determination of the Mass Per Unit Area-Gravimetric Method".
 ISO 1461-1973 "Metallic Coatings-Hot Deep Galvanized Coatings on Fabricated Ferrous Products-Requirements".
 ISO 2063 "Metallic Coatings-Protection of Iron and Steel Against Corrosion-Metal Spraying of Zinc and Aluminum".

IEC (INTERNATIONAL ELECTROTECHNICAL COMMISSION)

IEC 529 "Classification of Degrees of Protection Provided by Enclosure".

Notes:

- 1) When standards other than EN are used manufacturer/supplier shall submit pertinent deviations from EN standards
- 2) Whenever standards other than IEC are used, it is understood that IEC standards are accepted.

3. UNITS

The International System of Units (SI) in accordance with IPS-E-GN-100 shall be applied, unless otherwise specified.

4. SERVICE CONDITION

See Attachment No. 1.

5. COLUMNS

5.1 Steel Lighting Column

Steel lighting columns shall be made of steel and shall be hot deep galvanized.

The steel shall be equivalent to or better than Euronorm 25-72 grade Fe 360B.

5.2 Aluminum Alloy Lighting Columns

The aluminum alloy used shall be equivalent to or better than aluminum alloys specified in ISO / R 164. ISO / R209, ISO / TR 2136 and ISO / R827. It shall be corrosion resistant. When special site corrosion problems are known, the actual alloy used shall be agreed between the purchaser and the supplier.

5.3 Concrete Lighting Columns

The materials used in concrete columns shall comply with requirement of EN 40 part 9.

5.4 Foundation Bolts

The steel used for foundation bolt shall be equivalent to or better than Euronorm 25-72 grade Fe 360 B.

5.5 Welding

5.5.1 Steel lighting columns-metal arc welding shall comply with BS 5135.

5.5.2 Aluminum lighting column

Filler rods or wire used for gas shielded arc welding of aluminum or aluminum alloys shall be in accordance with BS 2901 part 4.

The preparation for and execution of arc welding shall be in accordance with BS 3019 part 1 for tungsten inert gas welding, or with BS 3571 part 1 for metal inert gas welding and shall be appropriate to the type of joints required by the application.

Welding personnel shall have achieved a level of competence appropriate to the types of joint required which shall be measured by the approval testing procedure set out in BS 4872, part 2.

6. BASE COMPARTMENT AND CABLEWAYS

6.1 Compartment Dimensions

When a base compartment is supplied its free space height width and depth dimensions shall be stated by the manufacturer.

6.2 Compartment Door

The door shall be made from materials specified in En 40 part 3 and shall be corrosion resistant or corrosion protected. On metal columns the door shall be protected to an equivalent degree of protection to that provided on the column. It shall resist unauthorized entry and damage by vandals which might cause an electrically unsafe situation.

The door shall be fitted in a manner that complies with the protection category IP 23 IEC publication 529.

6.3 Attachment of Electrical Equipment

The compartment shall be provided with means of attaching electrical equipment. This attachment shall accord with the national practice of the country in which the column is to be installed. Where a metal tray is used, it shall be of corrosion resistant material or be protected against corrosion. Where a baseboard is used, it shall be manufactured from material which is substantially non-hygroscopic and rot resistant.

6.4 Electrical Cableways

Cableways from the base compartment to the lantern connection shall be a minimum of 18 mm containing diameter unless otherwise agreed between purchaser and supplier.

Cableways from the cable entry slot to the base compartment shall be a minimum of 50 mm containing diameter. All cableways shall be smooth and free from obstruction with no sharp edges, flashes, burrs and the like which might cause abrasion of the cables.

7. PROTECTION CATEGORY

Parts of the column above ground level shall comply with the protection category IP 23 in IEC Publication 529 when assembled in accordance with the manufacturer's instructions.

8. EARTHING TERMINALS

Where columns are to be earthed by means of an earthing terminal on the column or baseboard, the following requirements shall apply:

The earthing terminal provided shall be corrosion resistant, shall have substantial contact surfaces for the attachment of an earthing conductor and shall be readily accessible.


Except for doors there shall be reliable electrical contact between all exposed metal parts of the column and bracket where fitted, and the earthing terminal (this does not include the metal reinforcement in concrete columns). Whether or not this contact includes the door shall accord with the national practice of the country in which the column is to be installed.

The attachment of the fixed part of the terminal shall be designed and executed so as to prevent it from being rotated when the clamping part is moved.

If the fixed part of the terminal consists of a bolt, its dimensions shall not be less than M8.

The clamping part shall be designed so as to avoid any damage to the earth conductor or its insulation during tightening or loosening.

The earthing terminal, or the column or baseboard adjacent to the terminal, shall be distinctly and durably marked with

the symbol .

9. CORROSION PROTECTION

For methods of corrosion protection of lighting columns after fabrication, reference shall be made to EN 40 part 4.

The standard applies to post top column ≤ 20 m nominal height and to columns with brackets ≤ 18 m nominal height.

10. TEST REPORT

A test report shall describe the method of testing in detail and give at least the information listed in Annex A and Annex B of EN 40-part 8.

The age of concrete column at the time of testing shall be at the discretion of the manufacturer but shall not exceed 35 days.

The test shall comply with the requirements of EN 40 part 8.

11. INFORMATION FOR MANUFACTURER / SUPPLIER

See data sheet in Appendix A.

12. DOCUMENTATION TO BE SUPPLIED BY MANUFACTURER

The following documents shall be supplied by the manufacturer/ supplier:

- 1) Design and test moments and resulting deflection
- 2) Report on type testing as specified in EN 40 part 8
- 3) Certificate for the type test specified in EN 40 part 8

APPENDICES**APPENDIX A
DATA SHEET****- TYPE OF COLUMNS:**

. Steel:
 . Aluminum:
 . Concrete:

- SHAPE OF COLUMN:

. Circular uniform: Circular tapered
 . Polygonal uniform: Polygonal tapered

- DIMENSION OF COLUMN:

. Height: m
 . Width of projection: m
 . Planting depth: m

- NUMBER REQUIRED:

- FABRICATION:

. Welded:
 . Seamless:

- COLUMN FOUNDATION:

. Base plate:
 . Flange plate:
 . No plate:

- LANTERN:

. Weight: kg
 . Connection dimension of lantern:
 . Length diameter: mm

- DOOR OPENING IN METAL LIGHTING COLUMN:

. Dimension:mm
 . reinforced:
 . unreinforced:
 . fixing point for fuse box:

(to be continued)

APPENDIX A (continued)**- BASE COMPARTMENT:**

. Description of fuse box:
 . Dimensions: height..... mm width..... mm depth.....mm
 . Incoming cable gland:
 . Outgoing cable gland:

- SHAPE AND DIMENSION OF CABLE ENTRY SLOT:

- EARTHING TERMINAL:

- INGRESS PROTECTION:

. Column :
 . Base compartment:

APPENDIX B

1. DEFINITIONS

1.1 Lighting Column

Support intended to hold one or more lanterns, consisting of one or more parts: a post, possibly an extension piece and, if necessary, a bracket. It does not include columns for catenary lighting.

1.2 Nominal Height

The distance between the center line of the point of entry of the lantern and the intended ground level, for a column planted in the ground, or the bottom of the flange plate, for a column with a flange plate.

1.3 Post Top Column

A straight column without bracket to support the lantern (post top lantern) directly.

1.4 Column With Bracket

A column to support a lantern or lanterns (side entry lanterns) by means of one or more brackets which are integral with, or demountable from, the column.

1.5 Bracket

A component used to support a lantern at a definite distance from the axis of the lower straight portion of a column, of single, double or multiple form and integral with, or demountable from, the column.

1.6 Bracket Projection

Horizontal distance from the point of entry to the lantern to a vertical line passing through the center of the cross section of the column at the ground level.

1.7 Bracket Fixing

The connecting part on a column for securing a separate bracket. It may be of the same size or a different cross section from the column.

1.8 Lantern Fixing

The connecting part on the end of a post top column or of a bracket for securing a lantern. It may be the end of the column or the bracket itself or an additional part having the same or a different cross section from the column or bracket.

1.9 Lantern Fixing Angle

Angle between the axis of the lantern fixing and the horizontal.

1.10 Door Opening

Opening in the column for access to electrical equipment.

1.11 Cable Entry Slot

Opening in the column below ground for the cable entry.

1.12 Planting Depth

The length of the column below the intended ground level.

1.13 Base Plate

Plate below ground level fixed to a planted column to prevent the column sinking into the ground and to help prevent the column overturning.

1.14 Flange Plate

A plate, with an opening for cable entry, attached rigidly to a column entry, which is surface-mounted, to allow it to be secured to a concrete foundation or to other structures.

**ATTACHMENTS
GENERAL**

**ATTACHMENT 1
ENVIRONMENTAL CONDITIONS**

- 1.1** Site elevation : ----- meters above see level.
- 1.2** Maximum ambient air temperature : ----- degree centigrade. (Bare metal directly exposed to the sun can at times reach a surface temperature of ----- degree centigrade.
- 1.3** Minimum air temperature : ----- degree centigrade.
- 1.4** Relative humidity : ----- percent.
- 1.5** Atmosphere : saliferous, dusty corrosive and subject to dust storms with concentration of 70 - 1412 mg/cubic meter, H₂S may be present.
- 1.6** Lightning storm isoceraunic level : ----- storm days / year.
- 1.7** Maximum intensity of earthquake ----- richters.

Note:

Blanks to be filled by client.

ATTACHMENT 2
INSPECTION / QUALITY CONTROL, AND QUALITY RECORDS

2.1 Inspection / Quality Control

2.1.1 The purchaser's inspector, or his authorised representative shall have free access to the manufacturing plant engaged in the manufacture of the equipment, to carry out necessary inspection at any stage of work.

2.1.2 Inspection may include the visit to quality control laboratories, work shops, testing bay etc.

2.1.3 The supplier shall make available technical data, test pieces and samples that the purchaser's representative may require for verification in conjunction with pertinent equipment.

If required the supplier shall forward the same to any person or location that the purchaser's representative may direct.

2.2 Quality Records

2.2.1 The supplier shall maintain appropriate inspection and test records to substantiate conformance with specified requirements.

2.2.2 Quality record shall be legible and relevant to the product involved.

2.2.3 Quality records that substantiate conformance with the specified requirements, shall be retained by manufacturer and made available on request by purchaser.

2.2.4 The supplier shall establish and maintain procedure for identification collection, indexing, filing, storage, maintenance and disposition of quality records.

2.2.5 Supplier shall submit to purchaser: reports, test schedules, and test certificates (in ----- copies) on completion of tests.

Note:

Blanks to be filled by client.

**ATTACHMENT 3
TESTS AND CERTIFICATION**

3.1 General Requirements

3.1.1 Test procedure as proposed by the supplier shall be agreed upon, and approved by the purchaser before any test is carried out.

3.1.2 Purchaser may require witnessed tests to be carried out in the presence of his nominated representative who should be informed at least ----- weeks in advance of the date of the tests and confirmed ----- weeks before the tests.

3.1.3 Test certificates and test reports shall refer to the serial No. of the equipment tested and must bear the purchaser's name, order No. and manufacturer's name and seal.

The certificates shall be approved by the purchaser before shipment instruction are given.

3.1.4 Approval by the purchaser's inspector or representative shall not relieve the vendor of his commitments under the terms of this specification or any associated order.

3.1.5 The equipment may be rejected if measurement and inspection reveal any discrepancies between quoted figures resulting in purchase order and those measured actually.

3.1.6 Any charges incurred by the tests quoted under heading of specific requirements for tests to be quoted as a separate item and are not to be included in the cost of the equipment.

Note:

Blanks to be filled by client.

ATTACHMENT 5
SHIPMENT

5.1 Poles shall be prepared for shipment, according to manufacturer's standard.

5.2 The greatest care must be taken to ensure that shipping and associated documents with exact description for customs release are accompanied with the shipment.

ATTACHMENT 6

GUARANTEE

6.1 Clearance of Defects

The supplier shall guarantee his equipment during commissioning and for one year operation, starting from the completion of seven days continuous service test in site at full load against the following defects:

- All operational defects
- All material defects
- All constructional and design defects

6.2 Replacement of Defective Parts

All defective parts shall be replaced by the supplier in the shortest possible time free of charge including dismanteling reassembling at site and all transportation cost. The above mentioned period shall not however be longer than 18 months from the date of dispatch from the manufacturer's works.

ATTACHMENT 8
LANGUAGE


8.1 All correspondence drawings, documents, certificates, including testing operation and maintenance manuals and spare part lists etc. shall be in English.

8.2 Offers in other languages will not be considered.

**ATTACHMENT 10
GENERAL CONDITIONS OF PURCHASE**

This document will be submitted by purchaser at the time of ordering.

ATTACHMENT 11
SAMPLES OF PURCHASER'S DRAWING TITLE BLOCK

DRAWING NO.	DESCRIPTION				
REFERENCE DRAWINGS					
D					
C					
B					
A					
REV	DATE	DESCRIPTION	REF	CHK	APP
THE NAME OF RELEVANT COMPANY					
DRAWING TITLE :					
DRN. BY	SCALE	MICRO FILM CODE	PROJECT NO.	CHK. BY	APP. BY
JOB NO.		AREA CODE	DWG. NO.	SHEET	REV.

Note:

Appropriate Nomenclature and Registered mark shall be used for quotation and order.

ATTACHMENT 14
FULL ADDRESS OF PURCHASER:

.....

P.O.BOX	No.	CODE	No.
TELEPHONE	No.		
TELEX	No.		
FACSIMILE	No.		

Note:

Blanks to be filled by client.