

**Ministry of Electricity
Planning and Studies Office
Baghdad – Iraq**

Specification No.

D-13

**TECHNICAL SPECIFICATION
OF
STREET LIGHTING POLES**

REVISION

YEAR 2009

YEAR 2013

1- Scope of the tender:

Tenderers are invited to submit their offers for the supply of poles (7 m, 10 m, 12m and 15 m) octagonal galvanized steel, base plated poles for the street lighting of major traffic routes completed with anchor bolts and connection box with supporting plates through locked door.

2- General information:

The poles will be used for street lighting of minor and secondary roads of urban and rural areas intended for traffic and social safety purposes.

3- General requirements:

3-1 Ambient temperature:

Highest max. (In the shade)	55 deg.C ⁰ for about 6 hours a day
Lowest (min)	-10 deg. C ⁰
Max yearly average	+30 deg .C ⁰
Max daily average	+40 deg.C ⁰

3-2 Sun temp.

Black object under direct sun shine may attain a temp of +80 deg. C⁰

3-3 Air humidity:

max	92% at 40 deg.C ⁰
min	12%
yearly average	44%
max wind velocity	125 km/hr

3-4 Altitudes:

From sea level up to	1000m
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3- 5 Sand storms:

The poles are subjected to strong and frequent sand storms, adequate precaution must be taken to deal with, for suitable degree of protection.

3-6 Wind Velocity:

Max velocity (for design purpose) (140 KM/ HR).

3-7 Composition of Soil:

The soil consists mainly of hard clay containing deposit gravel.

4- Technical requirements :

4-1 System data:

a.11 KV System	
Nominal voltage	11000 volts
Highest system voltage	12000 volts
System	3-phase, 3wire neutral earthed through resistance of 21.1 Ohm limiting the earth fault current to 300A
Short circuit breaking current	25 KA R.M.S at 11000 volts

b. 0.4 kV system	
Nominal voltage	400 Volts
System	3phases, 4 wires with neutral solidly grounded.
Frequency	50 Hz

4-2 Standards:

All equipment and accessories shall be with the latest issue of the international electro - technical commission (I.E.C) specifications, where there specifications are incomplete or not yet published, then national standards of tenderers country shall be considered subject to our approval. EN10025 or NFEN 10/49 for steel grades (for high yield strength steels)
NFP 22- 470, 22-471 and 22-473 for welding.
ASTMA 123, BS729, NF A 91-121 for galvanization.

4-3 Deviations:

The tenderer shall particularly mention in his tender all deviations of his offer from the specification described in these tender documents.

4-4 Types of poles:

Four types of poles are required, 7, 10, 12 and 15 meter height.

5- General specifications:

The street lighting poles shall be manufactured from steel sheets and having the following features.

5-1 Shaft:

5-1-a 7, 10 meter height galvanized steel shaft octagonal cross section and tapered from bottom to top, and made of one piece.

5-2-b 12, 15 meter height galvanized steel shaft with octagonal cross section and tapered from bottom to top, and made from two pieces joined together by slip joint method, the slip joint overlap must be at least 1.5 times the largest inside diam. of the female section.

5-3-c For all types, the thickness of the shaft wall will be 4mm minimum.

5-4 Inspection door:

For all types, the shaft may be equipped with inspection door, it may have a triangle key that forces the door out when opening, the door may be at 500 mm above ground level and its dimensions do not exceed 400 mm.

5-5 Base plate :

All types may have a base plate welded to the lower part of the shaft from outside and inside to serve for fixing the shaft to concrete foundation by means of four bolts, thickness of the plate shall not be less than 25 mm, and its dimensions are 400x400 mm with a center distance 300x300 mm between holes, the shapes of holes are oval.

5-6 Anchor bolts :

For all types, 4 anchor bolts with j-shaped made of steel grade at least equivalent to the grade of the steel used for the shaft, each bolt provided with a washer and 3 nuts, for 10m pole dimension of the bolt may be 24 mm diam, 500mm length, and for 15m, 27mm diam, 700 mm length.

5-7 Mini brackets :

All types may be fitted by single or double bracket made of galvanized steel tube with arm outreach=800mm and angle of tilt =15°. The arm mounted on the top of the shaft and able to support single or doubled lanterns of 60mm side entry, the arm shall hold in its position by headless screws.

5-8 connection box:

All types may have a connection box made from fiber glass reinforced polyester used as connector for supply cable and fitted by 10 amp m.c.b, the main cable should be 4x (16-25)mm² copper.

5-9 Supporting plate :

All types may have supporting plate made from galvanized steel used for mounting inside the shaft and supporting cable connection box, details of fixing arrangement shall be given to the successful tenderer.

5-10 Earthing connection:

For all types an earthing connection point may be provided inside the shaft near the door opening without reducing the space of electrical gear.

5-11 Galvanization :

All components of street lighting poles may be hot-dip galvanized, all component must be well protected against corrosion, minimum thickness of zinc coatings is 85 µm and min density 500 gm/m² on both inside and outside surfaces.

6- Drawings and documents :

The tenderer may specify the following clearly:

6-1 Thickness of galvanization.

6-2 Operational sequence of the galvanization procedure.

6-3 Dimension of the foundation for the following soil bearing capacities:

0.5 kgm/ sqcm

1.0 kgm/ sqcm

1.5 kgm/ sqcm

2.0 kgm/ sqcm

6-4 Total area subjected to wind pressure and loading.

6-5 The poles may be used with lanterns weight appr.30kg. The manufacturer may give guarantee that poles can support such weight, all calculations must be submitted.

6- 6 Dimension of pole at top and bottom and dimensions of base plate.

6-7 Shaft wall thickness.

6-8 Max weight (kg)

6-9 Foundation volume (m³)

6-10 Max. Bending moment. (m.kg)

6-11 Max shear stress (kg)

6-12 Foundation plan and elevation.

6-13 Detail drawings for the poles.

6-14 The standard at which the poles are manufactured and welding and galvanization standards must be stated and shall be an internationally acceptable standards.

6-15 Dimensions, details and drawings of mini-brackets with arms.

7- Tests:

A- Type test:

Type test certificates to prove the general design of the poles must be submitted , the certificates are for test have been carried out on identical equipment and detailed in the relevant I.E.C which pertain to the equipment being tested .

B- Routine test:

The tests shall be carried out on our behalf by our inspector (international inspection bureau) witnessed by our engineers.

- Mechanical, impact and deformation tests.**
- Visual inspection and dimensional checks.**
- Any other tests given by the relevant I.E.C recommendation.**

8- Spare Parts:

- Necessary and recommended spare parts.

9 - Samples:

The following items should be submitted with the offer (offers without sample will be rejected).

A. Cable terminals M.C.BS box.

B. Anchor bolt with nuts and washers.

Schedule of material

1- Complete pole include (shaft with hinged door, welded base plate.) for:

A: 7 m pole

B: 10 m pole

C: 12 m pole (two-pieces).

D: 15 m pole (two-pieces).

E: others

2- Supporting plate with cable terminal M.C.BS box suitable for cable 4x (16-25) mm² copper.

3-Anchor bolts, complete set (4 anchor bolts with 12 nuts and 4 spring washers).

4- Mini – bracket with arm:

A: For single lantern.

B: For double lantern.

5- Accessories:

All necessary accessories:

A: Arm supporting screws.

B: Triangle keys.