CEB DISTRIBUTION CONSTRUCTION STANDARDS

CEB:DCS-2:2021

OVERHEAD SERVICE CONNECTIONS

CEYLON ELECTRICITY BOARD

SRI LANKA

CEB Approved Construction Standards
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DOCUMENT HISTORY

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Revision 1 DCS – 2:2021	May, 2021	Reviewer: OH Service Connection Sub Committee, Distribution Design Committee (for Distribution Coordination Branch) Approver: Distribution Coordination Committee	i) Electrical clearances updated as per the Electricity (Safety, Quality and Continuity) Regulations No. of 2016 ii) Requirement of load balancing during investigation stage when service connection is provided. iii) 10m 300kg RC pole and ABC configuration added for pole selection chart for overhead service connections iv)Addition of description for fixing electricity meter on perimeter wall v) Drawings updated as per the latest CEB Specifications

This revision of Construction Standard for Overhead Service Connections is prepared as a continuous process of updating the standardization of construction methods and relevant materials.

APPLICABLE STANDARDS AND REGULATORY DOCUMENTS

Ceylon Electricity Board Material Specifications
Ceylon Electricity Board Operational Safety Rules
Sri Lanka Electricity Act No.2(E)of 2009
Sri Lanka Electricity (Amendment) Act, No.31 of 2013
Electricity Sector Performance Standards Regulations Gazette No. 1975-44

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CONSTRUCTION STANDARD FOR OVERHEAD SERVICE CONNECTIONS

1 INTRODUCTION

Electricity distribution has developed rapidly and various systems have been adopted with different pole sizes and materials for service connection construction. Standardization of construction methods for service connections would offer advantages both to the customer and to the Ceylon Electricity Board and its contractors. The CEB has introduced this Construction Standard for Service Connections for the use of all CEB staff and their contractors for providing service connections.

2 SCOPE

This standard includes guidelines, selection of materials, methods of construction and material requirement for different packages for overhead service connections.

3 DESIGN CRITERIA

3.1 Environmental Parameters

The following physical design parameters have been accepted in the CEB.

Table 1 : Environmental Parameters

Climate	:	Equatorial, intense sunshine, heavy rain, salt and dust laden atmosphere.
Ambient air temperatures		
Minimum	:	7 °C
Normal range	:	27 °C
Mean annual	:	32 °C
Maximum	:	40 °C
Average annual rainfall	:	2400 mm
Relative humidity	:	90%
Maximum wind velocity	:	34 m / sec
Altitude	:	MSL to 1900 m above MSL
Isokeraunic (Thunder days) level	:	100 days
Solar radiation	:	4.5 kwh/m^2/day

3.2 System Parameters

Table 2 : System Parameters

Nominal system voltage	:	400 / 230 V
Maximum system voltage	:	424 /244V
Type of system grounding	:	Neutral Earthed at Distribution Substation
System frequency	:	50 Hz
Allowable nominal maximum voltage drop in LV distribution	:	5%
Allowable voltage drop on service wire	:	1%

3.3 Clearance Parameters for Low Voltage Lines

3.3.1 Minimum Statutory Clearances

Table 3 : Minimum Statutory Clearances

Description	Clearances (m)	
	Bare / Semi insulated conductor	Insulated wire
Ground clearance required across Public Roads	5.5m	5.5m
Ground clearance required in places where accessible to Vehicular traffic	4.9m	3.7m
Ground clearance required in places where inaccessible to Vehicular traffic	4.6m	2.7m
Vertical clearance to building	2.4m	0.15m
Horizontal clearance to building	1.5m	0.15m
Vertical or horizontal clearance to telephone line	1.2m	0.6m
Vertical or horizontal clearance to trees	Vertical-2.7m Horizontal-1.5m	0.15m
Vertical or horizontal clearance to Railway (To the top of the line)	6.7 m	6.7m
Vertical or horizontal clearance to 33kV Line	1.5 m	1.5 m
Vertical or horizontal clearance to 11kV Line	1.2m	1.2m

3.3.2 Minimum Electrical Clearances

Table 4 : Minimum Electrical Clearances

Minimum clearance between live metal and earth	46 mm
Minimum clearance between live metal of different phases	150 mm

4 CONSTRUCTION OF OVERHEAD SERVICE CONNECTIONS

4.1 Guidelines on fixing electricity meter on customer premises wall

4.1.1 Service lines should be routed as far as practicable to avoid interference or crossing lands owned by third parties. When a premises is situated at a considerable distance away from the distribution main, the service main should be routed along the access road to the premises except in instances where a property of the person to whom the service is given is only affected. Avoid crossing lands of a third party as far as possible. Notice under Item 3 of Schedule 1 of the Electricity Act no. 20 of 2009 and its latest relevant amendments should be served to the third party when crossing such land is unavoidable.

4.1.2 If the service connection length is less than 110m, insulated service main wire (Drawing No. **SC-08**) shall be used for both Single Phase and Three Phase Domestic/General Purpose service connections, using 6m poles shown in Drawing No. **SC-01**, **SC-02**, **SC-03** and **SC-04**. The length of a span of insulated service main wire shall not exceed 40 meters.

4.1.3 Insulated service main wire length of a Single Phase or Three Phase service

connection in a private property for Domestic/General Purpose where no future customers are anticipated shall not exceed 110m. If the length of the service connection is longer than 110m in a private property, the excess length shall be constructed out of Aerial Bundled Conductor (ABC) 2 Core/4 Core using 8.3m/9m poles shown in Drawing No. **SC-05** and **SC-06** respectively.

In the event future customers are expected from this service connection on the way, the whole length of service line up to the required pole shall be constructed out of ABC (2 Core/4 Core) using 8.3m /9m poles and the rest of the line shall be of insulated service main wire. The length of a span of ABC Line shall not exceed 40 m.

4.1.4 ABC (2Core/4Core) may be strung on 8.3m/9m poles with the approval of Area Engineer, if a higher strength of the line is required.

4.1.5 In the event where the third service connection is requested from an existing service line along the same route, the existing service wire up to the required tapping pole shall be replaced with ABC (2Core/4Core) using 8.3/9m poles.

4.1.6 ABC shall be strung on 8.3m/9m poles along roads and foot paths for giving service connections. However, under special circumstances Bare Aluminium Conductors shall be drawn on 8.3m/9.0m poles on Area Engineers approval.

4.1.7 In every category of service connection, the last span should be of insulated service main wire and generally not exceed 30m; however, in special circumstances it may be appropriate to change the last span slightly by obtaining the approval of the Area Engineer.

4.1.8 Special precautions shall be taken to avoid any possible voltage fluctuations in the system before providing the service connections to small industrial establishments such as Saw Mills, Metal Crushers and Welding Plants etc. A separate circuit shall be drawn from the transformer to such customers' installations in order to minimize the voltage fluctuations to the other customers.

4.1.9 A separate feeder shall be drawn in providing service connections to Telecommunication towers.

4.1.10 Materials should not be accepted from applicants for service connections under any circumstances except the Service Bracket/Support.

4.1.11 Existing poles may be used for giving service connections to a customer using additional D-Brackets & Insulators for AAC and Multiple Service Connection (MSC) Boxes/ T off piercing connectors (Single/Multiple) for ABC. However, existing Medium Voltage Steel Towers should not be used as supports when service connections are given.

4.1.12 To provide electricity supplies for multiple connections in the same building, structure or land, after applying diversity factors, a single service wire/ABC should be drawn to a Multiple Service Connection Box (Multiple Service

Connection Box/Cabinet/Busbar Chamber as described in Clause 5.9) installed at the common metering point, preferably located in a common place i.e. underneath the stairway, ground floor, lobby etc.

Diversity Factors which are acceptable for the respective year should be used when selecting the MSC Box.

The load wires of separately metered installations should be brought to the common metering point.

4.1.13 Load balancing of the distribution line shall be ensured before the service connection is provided. This should be decided at the investigation stage.

4.1.14 In case where network capacity limitation exceeds, such cases shall referred to the Area Engineer to take network improvement proposals from Provincial Planning Engineer.

4.2 Guidelines on fixing or shifting electricity meter on customer premises boundary wall for retail customers

4.2.1 There are four types of networks between the metering point and the distribution board of the customer premises.

Table 5 : Cable selection for fixing or shifting electricity meter on customer premises boundary wall

Type of network	Service Load Wire	
	Connection by overhead cables or Cables laid along wall	Connection by underground Cables
a) Single/Three phase connection – 30A up to 110 m	2 x 10 mm^2, Al PVC insulated-Twin flat both cores insulated	6 mm^2 Cu/PVC/SWA/PVC two/four cores
b) Three phase connection – 60A up to 110 m	2 x 16 mm^2, Al PVC insulated-Twin flat both cores insulated	16 mm^2 Cu/PVC/SWA/PVC or XLPE two/four cores

For c) and d) above, equivalent capacity overhead line shall be drawn from the metering point to the building and the maximum total line length should be less than 500 m.

Type of network	Connection from LV network to the metering point	Balance part of the network	
		Overhead	Underground
c) (i) Single phase connection – 30A beyond 110 m and up to 500 m	2 x 50 mm^2 LV ABC from LV network up to metering point by CEB	2 x 10 mm^2, Al PVC insulated-Twin flat both cores insulated	1 x 35 mm^2 LV Al/XLPE UG Cable
(ii) Three phase connection – 30A beyond 110 m and up to 500 m	4 x 70 mm^2 LV ABC from LV network up to metering point by CEB		4 x 35 mm^2 LV Al/XLPE UG Cable
d) Three phase connection – 60A beyond 110 m and up to 500 m	4 x 70 mm^2 LV ABC from LV network up to metering point by CEB	2 x 16 mm^2, Al PVC insulated-Twin flat both cores insulated	4 x 35 mm^2 LV Al/XLPE UG Cable

4.2.2 When the service wire to be drawn along the wall of the customer premises, it shall be done with care with weatherproof conduits up to 110m from the existing LV network. If the service load wire is drawn as overhead network, 6 m heavy gauge GI pipes of 75 mm shall be erected and the last span of the service wire shall be not greater than 30 m. The service load wire shall be 10 mm^2 with PVC insulated for 30 A connections and 16 mm^2 with PVC insulated for 60 A connections.

4.2.3 If the service load wire is buried from the distribution board to the metering location, armoured underground cables shall be used. The cable should be buried at least 0.7 m below the ground. Sand should be filled over and under the cable and suitable soil shall be filled up to the ground level. The cable warning tapes, and cable warning tiles should be placed 0.3 m and 0.6 m below the ground level, respectively. End termination which is facilitated by using a proper armoured gland kit shall be supplied and installed by CEB. Cables that are not categorized as standard underground cables, shall be avoided for underground cabling.

4.2.4 The meter should be placed at the cubicle provided in front of the boundary wall of the customer as per the **Drawing No. SC 16**. The cubicle should be securely locked from the road side/front side and facilities for locking is required to provide at the cubicle in addition to the sealing arrangement by

CEB. Meter enclosure shall be with minimum IP 65 rating.

4.2.5 Separately accessible residual current device (e.g. RCCB) with sensitivity of 30 mA shall be installed by the customer inside the IP 65 rated cubicle probably in the back of the boundary wall with a proper earthing arrangement for protection of the cable in between the distribution board and the metering point. Earth electrode and earth wire should be available for reliable operation of protective circuit breaker and to facilitate earthing of metallic part of meter enclosure. Earth electrode resistance shall be less than 35 Ω.

4.2.6 Customer has to erect a heavy gauge top sealed GI pipe with a diameter of 50 mm^2 and height of 6m adjacent to the boundary wall, for guiding the service wire from the overhead line. In case when the overhead line is at the other side of the road, erection of an additional 8.3 m pole at the boundary wall end shall be done if necessary to guide the service wire. The service wire shall be drawn through suitable conduits at boundary wall of the customer.

4.2.7 A certificate from a chartered electrical engineer certifying the conformity of standards of customer installation has to be provided with the application, by the customer.

5 TECHNICAL INSTRUCTIONS FOR CONSTRUCTION OF OVERHEAD SERVICE CONNECTIONS

5.1 Supports

5.1.1 6m Poles are designed for use only within customer premises and with insulated wires. It should not be used as tapping poles at the existing LV lines. 6m Pole designs are as follows

Table 6 : Available 6m poles

Pole Type	Drawing No.	Purpose	Relevant CEB Specification
6m/50kg RC	SC-01	Service connection only	44-1:1996
6m/50kg PS Spun	SC-02	Service connection only, where transport is difficult, For non-coastal areas	44-4:2017
6m/50kg Light Weight RC	SC-03	Service connection only, where transport is difficult, For non-coastal areas	44-5: 2017
5.8m Galvanized Iron Tubular Pole	SC-04	Service connection only, where transport is difficult, For non-coastal areas	66:1998
6m/1.2kN of UBL Wooden	6m+150 mm or-75mm,	Service connection only, where transport is difficult	81:2001, SLS848 Part 3(for pole dimensions)

5.1.2 Loose "MID SPAN" tapping shall be avoided. In case where mid span tappings are required, then a new pole (8.3m or 9m) shall be erected on the distribution line and existing line be connected on to the new pole using D Brackets or Piercing connectors/Suspension clamps as per the **Drawing No. SC-17, SC-18 and SC-19**.

5.1.3 Poles shall be vertically erected and pits rammed to avoid wash out due to rain etc. The back filling of pole pits shall be done with earth or gravel and well rammed. The filling shall be up to a height not less than 25 cm above ground level.

5.1.4 Avoid water drains when locating pole pits.

5.1.5 Loading, transporting, unloading and stacking of poles shall be carried out in such a manner as to reduce the stresses on the concrete poles. The poles shall be transported with the full length of pole resting on the bed of the trailer used for transport. The smaller surface area shall rest on the bed of the trailer. However additional iron bracket may be provided if poles are to be transported in a slanted position, in this case the narrow surface area shall fall on the slanting plane, for the pole to take up the bending moments that develop.

5.1.6 The pole position shall be pointed out at site as decided at the time of estimation.

5.1.7 Selection of Poles for service connection

Table 7 : Selection of poles for service connections

Pole size	Purpose	Max. No. of wires	Ground Clearance (m)		Max. Span (m)	Buried length (m)
			Statutory requirement	Max. possible		
6m 50kg	Single phase or Three phase insulated wire Service Connection in a private property/along the road	Refer Clause 3.3	3.7/3.5/2.7*	4.2	40	1.0
8.3m 100kg	LV line along the road which are inaccessible to the vehicular traffic	2 Nos of ABC	2.7	6.0	35	1.4
		4 Nos. 7/3.40mm AAC	4.9	5.0	45	1.4
8.3m 100kg	LV line along the road which are accessible to the vehicular traffic	2 Nos. ABC	3.7	6.0	35	1.4
		4 Nos. 7/3.40mm AAC	5.48	5.5	30	1.4

Pole size	Purpose	Max. No. of wires	Ground Clearance (m)		Max. Span (m)	Buried length (m)
			Statutory requirement	Max. possible		
9m 115kg	LV line along the road which are accessible to the vehicular traffic	2 Nos. ABC	3.7	6.6	35	1.5
		4 Nos. 7/3.40mm AAC	5.48	5.52	45	1.5
10m 300kg	LV line along the road accessible to the vehicular traffic and more clearance is required	2 Nos. ABC	3.7	7.43	35	1.7
		4 Nos. 7/3.40mm AAC	5.48	7.23	40	1.7

* Inaccessible to the vehicular traffic and public–2.7m
  Accessible to the vehicular traffic and public–3.7m
  Accessible to vehicle but not for Public–3.5m

5.1.8 Selection of span for Service Connection (6m/50kg Service Pole)

Table 8 : Selection of span for Service Connection

Configuration	Angle of deviation (Deg.)	Max. span (m)
01 Nos. Insulated Service Wire 7/1.35	60	40
-do-	90	33
02 Nos. Insulated Service Wire 7/1.35	15	40
-do-	90	30
01 Nos. Insulated Service Wire 7/1.70	40	40
-do-	90	32
02 Nos. Insulated Service Wire 7/1.70	10	40
02 Nos. Insulated Service Wire 7/1.70	15	38
-do-	20	37
-do-	30	35
-do-	40	32
-do-	45	31
-do-	60	26
-do-	90	22

5.1.9 When angle of deviation is greater than 90^0, each case shall be analysed separately to determine the maximum span.

5.1.10 Single Phase and Three Phase Service Connection Arrangements are indicated in the **Drawing No. SC-21** and **SC-22.**

5.1.11 Construction methods of ABC and AAC overhead lines for service connections shall be followed as given in the "CEB Distribution Construction Standards No. 03- "Overhead LV Line Construction".

5.2 Service Wire

5.2.1 Types of Service Wire

a) Twin Service Main Wire

The cable is twin, one core is Brown colored PVC/XLPE Insulated, the other core bare, laid parallel and both cores sheathed with Black PVC overall as per **Drawing No. SC-08**.

b) Twin Flat Service Main Wire

The cable is twin flat, one core is Gray colored PVC/XLPE Insulated and the other core is Black colored PVC/XLPE Insulated and both laid parallel and sheathed with Black PVC overall as per **Drawing No. SC-08**.

5.2.2 Details of the Service Wires

Table 9 : Details of Service wires

Service Wire Type	**7/1.35mm**	**7/1.70mm**
Nominal Cross Section Area mm2	2 x 10	2 x 16
Ultimate Tensile Strength kg	370	590
Maximum working load kg	110	180
Conductor Resistance Ohm/km (Single)	2.997	1.979
Maximum Current Rating Amp.	46	65
Service Wire Type	**7/1.35mm**	**7/1.70mm**
Approximate Weight kg/km; Twin	155	211
Flat Twin	157	214

5.2.3 Single Phase, 30A Service Connection shall be given with $10mm^2$ Twin Service Main Wire where phase Conductor is insulated Brown and the neutral conductor is bare and sheathed together.

5.2.4 Three Phase Service shall be given with;

i. One Twin Flat Service Main Wire where both conductors are insulated Gray and Black and sheathed together &

ii. One Twin Service Main Wire where phase conductor is Insulated Brown and the neutral conductor is bare and sheathed together.

For 30A and 60 A Service connections, Service Main Wires of $10mm^2$ and $16mm^2$ shall be used respectively.

5.2.5 Service wire shall be properly bound to the insulator at either end using Aluminium Binding Wire No. 11 as per **Drawing No. SC-17 and SC-18, Detail C.**

Conductor Strands should not be used as binding wire.

5.2.6 Service wire shall not be under tensioned to cause unnecessary sag nor should it be over tensioned to cause damage to the conductor or slanting of the tap off pole.

5.2.7 Service wire shall be directly connected to the distribution line as follows;

Table 10 : Connector types in service connections

Conductor	Connector Type	Drawing No
ABC	Piercing Connector (**Drawing No. SC-08**)	**SC-19**
Bare (AAC)	H Type Compression Line Tap (**Drawing No. SC-08**)	**SC-17 & SC-18** Details A & B

5.2.8 Removal of outer PVC Sheath of the Service Wire beyond the tapping point of neutral shall not be allowed as per **Drawing No. SC-17 & SC-18.**

5.3 Service Line Tap for AAC

H-type compression service line taps shall be used at tap off points of Service Connections in AAC lines.

The number of crimps per connector shall be two or more.

Cleaning Brush (Wire Brush) shall be used to clean surfaces of Aluminium and Copper conductors before inserting the conductor to the connector.

Either "G" Head type hydraulic compression tool or hand operated mechanical tool shall be used with "O" or "D3" type dies for compression of H Type connectors. The number of crimps per connector shall be two when using "G" Head type hydraulic compression tool and four crimps with hand operated mechanical tool.

5.3.1 **H Type Compression Service Line Tap**

Compression connector is made out of high strength and high conductivity Aluminium or Aluminium Alloy as per **Drawing No. SC-09**.

The internal faces of connector are coated with oxide inhibiting grease/compound to improve electrical contact and ensure maximum electrical performance of fittings.

The contact surfaces of the compression connector are uniform to provide effective contact with the conductors.

5.4 Service Line Tap for ABC

5.4.1 Insulated Piercing Service Connectors

Piercing connectors shall be used to connect the insulated service wire to Aerial Bundled Conductor Distribution Lines.

After placing the conductor in the connector, the connector bolt shall be tightened until shearing of its head. Once fixed, piercing connector shall never be removed or reused.

Piercing connectors are insulated and suitable for use on live lines.

It is of insulation piercing type on main and tap conductors as per **Drawing No. SC-09**.

An insulating cap is provided with the connector to tightly insert the tail of the service cable in to the cap to prevent water penetration to the service wire.

5.4.2 Selection of insulated Piercing Connectors for Service Tappings;

Table 11 : Selection of insulated piercing connectors

Connection Type	Cross Section of Conductors (mm^2)	
	Main (Insulated Conductors/ Cables)	Tap (Insulated Aluminium)
30 A & 60 A	70-95, 54.6-70	10-25

5.4.3 Cleaning of Conductor for Jointing

Cleaning Brushes of proper type shall be used to clean surfaces of conductors and cables.

The handles of the brushes for copper are Copper coloured while those for Aluminium are Aluminium coloured.

5.5 D-Bracket and LV Insulators

5.5.1 D Brackets

i) They are suitable for use with 90mm x 76mm (13 ½" x 3") LT Insulators and made out of 30mm x 6mm Flat Iron. All holes on the "D" Brackets are of the same size to allow a 16mm bolt to pass through as per **Drawing No. SC-10**.

ii) Insulator bolt and Pole bolt are made of 16mm round steel bars and lengths are 120mm and 200mm respectively.

iii) The Flat Iron Washer 50 mm x 3.2 mm is provided with the bolts.

5.5.2 General Description of LV Insulators (Porcelain)

i) The Insulators are made out of good commercial grade porcelain. They are Brown or White Glazed.

ii) Dimensions are;

Table 12 : LV Insulator dimensions

Overall diameter	90 mm
Height	76 mm
Bore	19 mm
Diameter of Grove	9.5 mm
Tolerance	+ 5%

The Insulator is suitable for use with a single center Bolt of 16mm as per **Drawing No. SC-10**.

5.5.3 Service Wire shall be fitted to

i) An Insulator fixed at the top or bottom of the existing "D" Bracket by replacing the existing 120 x 16 mm bolt with a 200 x 16 mm bolt and nut as per **Drawing No. SC-17** and **SC-18 (Type 1).**

Or

ii) An Insulator fixed using extra holes in the existing LV line pole with "D" Brackets as per **Drawing No. SC-17** and **SC-18 (Type 2)**.

5.6 kWh Meter and Breaker

5.6.1 kWh meters and MCCB/MCB shall be installed vertically inside the meter enclosure as per **Drawing No. SC-13** for single phase connections and **Drawing No. SC-14** for three phase connections.

5.6.2 Insulated Service Main wire shall be connected to the meter directly and thereafter to the MCCB/MCB to prevent tampering.

5.6.3 Bimetallic pin shall be used in connecting aluminium service wire to the meter terminal made of copper to prevent galvanic corrosion. Proper die shall be used in crimping the aluminium conductor of the service wire.

5.6.4 Connections between Meter and the MCCB/MCB shall be done using copper conductors to prevent galvanic corrosion as both terminals are made of copper.

5.6.5 Meter enclosure shall be installed by means of brass screws and plastic roll plugs/ anchor bolts.

5.6.6 Terminal Cover of the meter and the meter enclosure shall be sealed using meter seals to prevent access by unauthorized personnel. For three phase connections,

load wire shall be connected via neutral link."

5.6.7 kWh meters shall be located outside the house at a place where it is protected from rain, direct sunlight, falling objects and easy access to get meter readings.

5.6.8 Meter connections shall be done as per **Drawing No. SC-12**.

5.6.9 Selection of kWh Meters

Table 13 : Selection of kWh meters

Purpose	kWh Meter Size	Operation Voltage
30 A single phase Service Connections	01 No. Single phase 10-40 A	240 V
30 A three phase Service Connections	01 No. Three Phase 40-100 A	240 / 415 V
60 A three phase Service Connections	01 No. Three Phase 40-100 A	240/ 415 V

5.6.10 Description of kWh Meters

The meters are 240 Volt, 50 Hertz, Single Phase, 2 wire or 415 Volts, 50 Hertz, three Phase 4 Wire kWh Meters.

The meter base, terminal covers and the terminal block are made of insulating material and equipped with collapsible carrying handles.

Provision is available to seal the meter cover and terminal cover separately to prevent tempering.

Each terminal has two screws for effectively clamping the cable.

The words "Property of the Ceylon Electricity Board" is engraved on the name plate and the serial number is also engraved on the name plate of the meter.

5.6.11 Selection of MCCB/MCB

Table 14 : Selection of MCCB/MCB

Purpose	MCCB/MCB Size	Service Wire Size
Single phase 30A Service Connection	32 A 1P	10 mm^2
Three phase 30A Service Connection	32 A 3P	10 mm^2
Three phase 60A Service Connection	63 A 3P	16 mm^2

5.7 Meter Enclosure

5.7.1 A meter enclosure shall be installed as per **Drawing No. SC-20**.

The meter enclosure has a base and a cover. The base is suitable for mounting on a wall with screws as per **Drawing No. SC-12** for single phase and **Drawing No. SC-13** for three phase.

Suitable holes are provided on the base for wiring the load and main cable to the kWh meter as well as the MCCB/MCB.

The cover is transparent for viewing the kWh meter clearly.

Facilities are provided for sealing the enclosure to prevent access by unauthorized persons.

5.8 Service Bracket/Support

5.8.1 Service bracket of 50 x 50 x 5 mm (or 60 x 60 x 6 mm) angle iron with suitable holes and conduit pipes, bends and clips (**Drawing No. SC-10)**

Or

Arrangement made according to the **Drawing No. SC-15**, by the customer as required according to the location of the meter.

Or

Dead end clamp, Service attachment fitting and Cable Support for Service Drops as shown in **Drawing No. SC-10**, shall be supplied and installed by CEB.

5.8.2 The down run of the service wire shall be brought to the meter box in a visible manner. However, open conduit runs from service bracket to the meter are allowed as per **Drawing No. SC-10** and **SC-15**.

5.9 Multiple Service Connection Arrangements

5.9.1 The available Multiple Service Connection (MSC) arrangements are;

i) 60A three phase **Multiple Service Connection Box/T off piercing connector (Single/Multiple)** for ABC, for pole mounted applications.

ii) 60A three phase **Multiple Service Connection Cabinet** with Meters, for wall mounted applications

iii) Three phase Metal Clad **Busbar Chambers** for wall mounted applications with 160A/400A/1000A/1600A rated currents.

5.9.2 **Details of 60A three phase Multiple Service Connection Box for pole mounted applications**

5.9.2.1 The enclosure has a base and cover molded separately and assembled to form a complete unit by means of minimum two hinged/locking points and with sealing mechanism. Enclosure is not openable once sealed.

The enclosure is light gray colored and made of a material of non-metallic, rust free, flame retardant, not generating burning droplet in a fire.

It is suitable for outdoor use, weather resistant, withstands UV radiation, prevents the deterioration due to direct sunlight & natural weathering and groove & rubber strip in cover avoids water seepage/leak.

Rated fault level -18kA.

5.9.2.2 Following connections can be provided with this Multiple Service Connection Box;

Table 15 : Connections possible with Multiple Service Connection Box

	Cable Size (mm^2), Type and Max No. of Cables
Incoming Cable	3x70mm^2+54.6 mm^2, XLPE ABC, Aluminium -01 no.
Outgoing Cables*	PVC/XLPE insulated, Aluminium Service Main Wire - 6 x 10 mm^2 for 06 nos. 1ph/30A Or - 4 x 10/16 mm^2 for 02 nos. 3ph, 30/60 A

*No. of outgoing cables depends on the no. of service connections that can be given based on the diversity factors as explained in 4.1.12.

5.9.2.3 Holes for incoming and outgoing cables with suitable sized grommets are provided at the bottom of the box.

5.9.2.4 The box shall be mounted on rectangular, spun or wooden poles using two stainless steel tapes with suitable fixing arrangement or on flat surfaces with screws which are provided along with the box.

5.9.2.5 Cable connection area of the box have clearance of minimum 60 mm from cable entry side to prevent flashovers during maintenance and usage over time.

5.9.2.6 If the multiple service connection length is more than a span length, single cable of same size of incoming cable shall be drawn up to the last pole of the line where Multiple Service Connection Box is attached.

5.9.3 Details of 60 A three phase Multiple Service Connection Cabinet for wall mounted applications

5.9.3.1 Cabinet is anticorrosive, rust proof, shock proof, dust and vermin proof and of flame retardant and for wall mounted applications. It shall be installed indoors or outdoors without exposing to rain.

Rated fault level -10 kA.

5.9.3.2 This cabinet has two compartments;

i) Cable compartment: to accommodate incoming cable, constructed with 3x1ph DIN rail type, 63A type D MCBs and removable solid neutral link and connected to the meter cabinet through insulated busbars or other means with capacity of 63A.

ii) Meter compartment: to accommodate maximum 4 nos. 1ph/3ph meters and DIN rail type MCB of 32A/63A for each meter. Cover is transparent and separate opening with a shutter with locking/sealing facility is provided to facilitate operating the MCB connected to meter.

Many meter compartments may be coupled together to extend the number of service connections. The connection between meter cabinets is provided by extending busbars and are of tamper-proof.

5.9.3.3 Both compartments are compacted and in combination and no exposed wire connections between compartments.

5.9.3.4 Cabinet has a suitable fixing arrangement on wall with screws that are provided with the cabinet.

5.9.3.5 Following connections can be provided;

Table 16 : Connections with MSC box

	Cable Size, Type and No. of Cables
Incoming Cable to cable compartment	01 No. Twin Service Main wire and 01 no. Twin Flat Service Main wire of 16 mm^2 (Ref. Dwg. No. SC-07).
Cables connections in meter compartment between busbar and meter	- 2 x 6mm^2 1C PVC Cu, per 1ph or - 4 x 6mm^2 1C PVC Cu per 3ph/30A or - 4 x 10 mm^2 1C PVC Cu per 3ph/60A

In above both Multiple Connection arrangements (box for pole mounted and cabinet for wall mounted), interior busbar arrangement is either Copper or Aluminium alloy and are insulated. In case of Aluminium conductors, suitable bimetallic connections such as Tin (Sn) or Nickel (Ni) plating shall be incorporated to directly connect to Copper busbars.

Removable screws shall be used in fixing cables.

5.9.4 Details of three phase Metal Clad Busbar Chambers for wall mounted applications

Table 17 : Details of three phase Metal Clad Busbar Chambers for wall mounted applications

MCCB Rating (A)	**Busbar Rating (A)**	**Cu/PVC/XLPE Cable Size (mm^2) and No. of cables (Incoming)**
100	160	4x1C 70 mm^2 or 3x70 mm^2 +1x54.6 mm^2 ABC
160	160	4x1C 70 mm^2 or 3x95 mm^2 +1x70 mm^2 ABC
250/400	400	250 mm^2 - 4x1C 95 mm^2 400 mm^2 - 4x1C 185 mm^2
630/1000	1000	630 mm^2 - 2x (4x1C 150) 1000 mm^2 - 2x (4x1C 300)
1250/1600	1600	1250 mm^2 - 3x (4x1C 240 mm^2) 1600 mm^2 - 3x (4x1C 300 mm^2)

Max. no. of 3ph Outgoing Service Connections (Outgoing) depends on the customer requirement and CEB technical limitations.

5.9.4.1 These Metal Clad Busbar Chambers are metal enclosed wall mounted type and accommodate four busbars for three phases & neutral and ratings are as shown in **Drawing no. SC-14**.

5.9.4.2 A rubber sealing is provided to each cable entry point to eliminate the damages to the cable insulation and to prevent insects to the chamber.

5.9.4.3 Fixing brackets are welded to the base and withstand the weight of the box and the cables connected to the busbars. Brackets have 12mm holes to insert 10mm anchor bolts which are provided with the box.

5.9.4.4 A common earthing point connecting all metallic parts except live parts is provided to connect the earthing wire to the common earthing point through a lug.

5.9.4.5 Incoming cable shall be drawn to the Busbar Chamber through the suitable/adjustable TPN MCCB and shall be close as much as possible to avoid tampering.

5.9.4.6 Busbar unit rating, Main incoming MCCB rating & it's setting, incoming conductor and no. of circuits shall be selected depending on the combination of service connections and total power demand with respect to the prevailing diversity factors.

5.9.4.7 Busbar Chamber shall be installed as close as practicable to the Electricity Meter/ Meters and the existing Electricity Meter/ Meters are to be shifted close to Busbar as practicable to discourage illicit tapping.

6 SAFETY OF PERSONNEL AND EQUIPMENT

It is the responsibility of the supervising officer to ensure the safety of the personnel and the equipment as stipulated in the CEB Operational Safety Rules.

7 DRAWINGS

7.1 Drawings for Materials required for Overhead Service Connections

Description	Drawing No.
6m 50 kg Reinforced Concrete Pole	SC-01
6m 50 kg Spun Pre-stressed Concrete Pole	SC-02
6m 50kg Light Weight Reinforced Concrete Pole	SC-03
Galvanized Iron Tubular Service Connection Pole	SC-04
8.3m 100kg Reinforced Concrete Pole	SC-05
9m 115kg Reinforced Concrete Pole	SC-06

Description	Drawing No.
10m 300kg Reinforced Concrete Pole	SC-07
Service Main Wire	SC-08
Line tap & Piercing Connector	SC-09
D-Bracket, Shackle Straps, GI Bolts & Nuts	SC-10
Service Bracket and Dead-end Clamp for Service Drop	SC-11

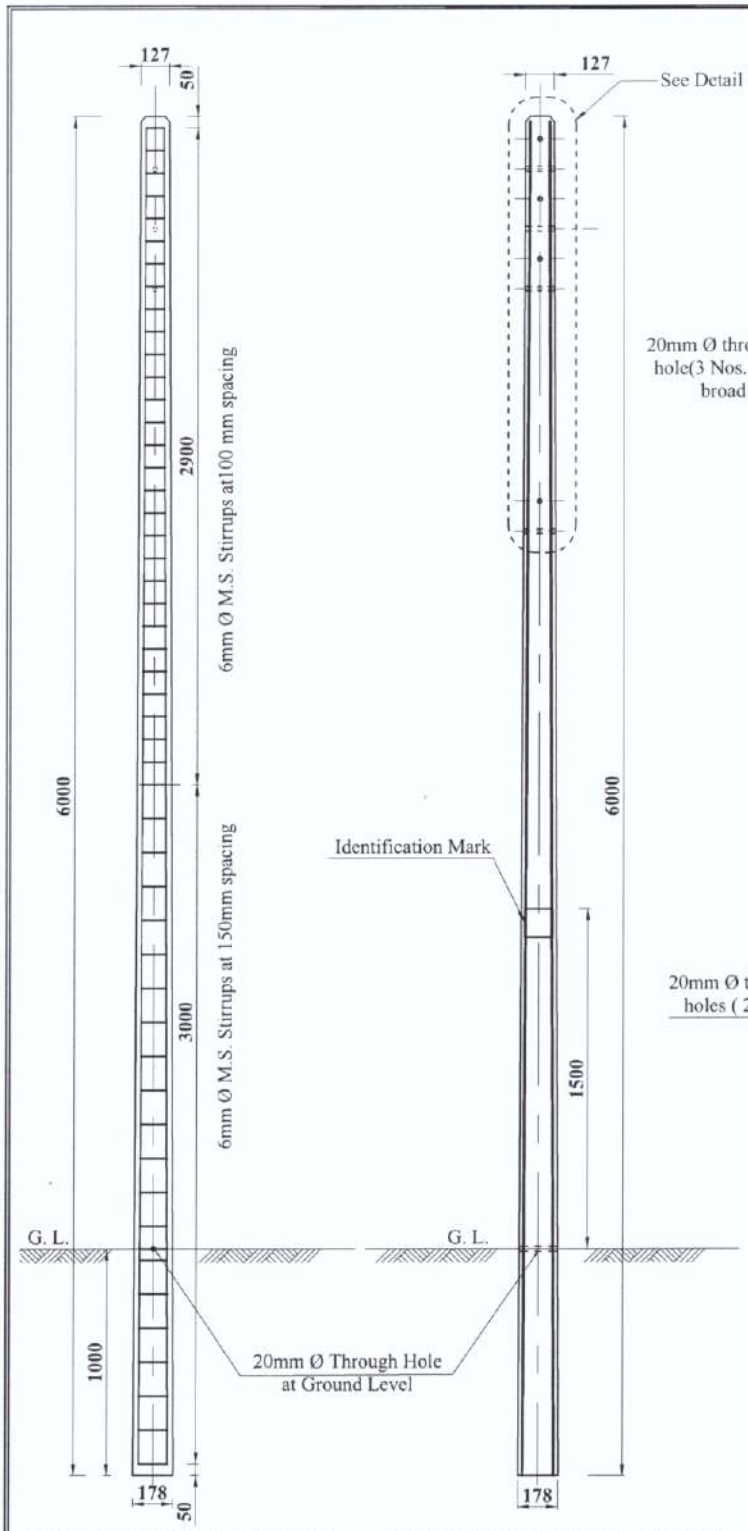
7.2 Different Arrangements for Service Connections

Description	Drawing No.
Single and Three Phase kWh Meter and Wiring Arrangement	SC-12
Single Phase Meter Box Arrangement	SC-13
Three Phase Meter Box Arrangement	SC-14
Typical Multiple Connection Busbar Chamber Arrangement	SC-15
Service Connection, Meter Box Fixing Arrangement at Perimeter Wall	SC-16
Tapping Point Arrangement and Material Kit (Single and Three Phase)	SC-17
Intermediate Tapping Point Arrangement and Material Kit (Single and Three Phase)	SC-18
Tapping Point Arrangement for Aerial Bundled Conductor (Single and Three Phase)	SC-19
Intermediate Service Pole Arrangement (Single and Three Phase)	SC-20

7.3 Minimum Safety Requirements

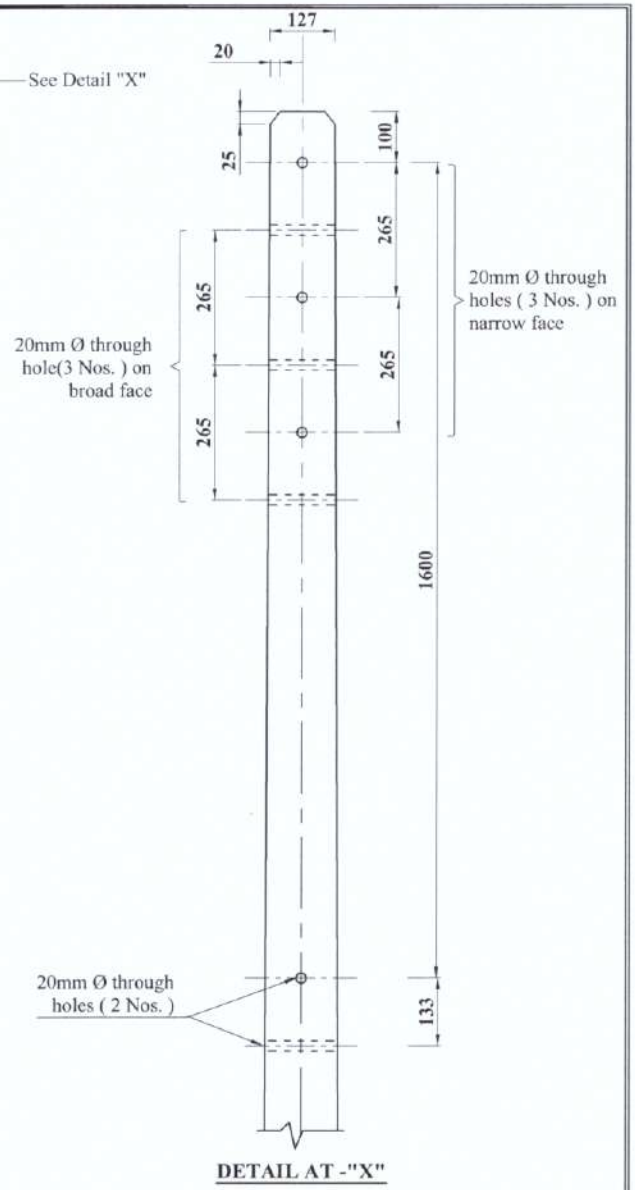
Description	Drawing No.
Minimum Clearance for Single and Three Phase Service Connections (Within Customer Premises)	SC-21
Minimum Clearance for Single and Three Phase Service Connections (Outside Customer Premises)	SC-22

Annex A - DRAWINGS



SECTIONAL ELEVATION OF BROAD FACE

ELEVATION OF NARROW FACE



DETAIL AT -"X"

NOTES

1. Concrete to have a cube strength of 25N/mm² at an age of 28 days (concrete grade 25)

2. Main Reinforcement to be deformed high yield steel having a characteristic strength of 450 N/mm².

3. Stirrups to be mild steel having a characteristic strength of 250 N/mm².

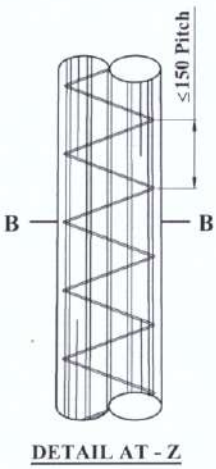
4. Minimum cover to all reinforcement (including stirrups) to be 25 mm.

5. Maximum size of coarse aggregate to be 20 mm.

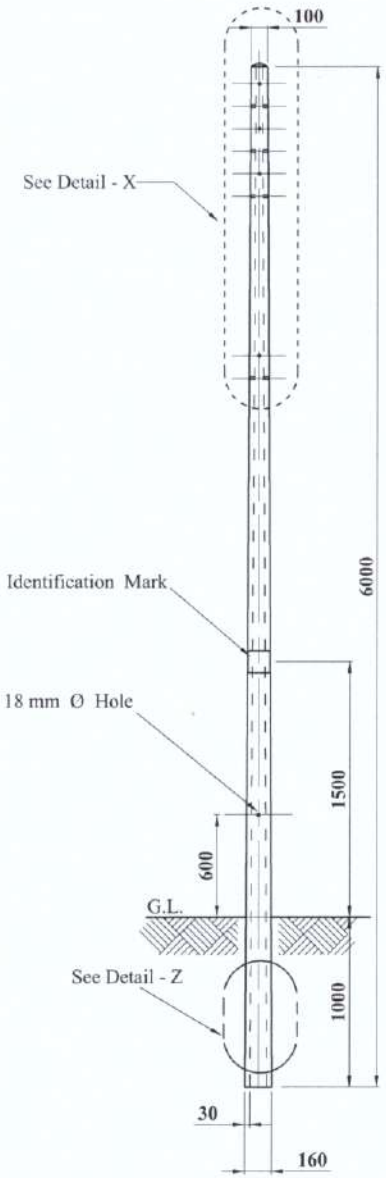
6. Approximate Weight of the pole is 345 kg.

ALL DIMENSIONS ARE IN MILLIMETERS.

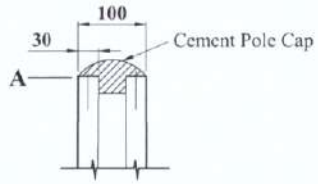
CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	6 m / 50 kg RC POLE	DRAWN : Harsha
		DATE : May 2021 REV NO : 01
DISTRIBUTION COORDINATION BRANCH	Extract of Distribution Construction Standards DCS - 1 : 1997	REVISION APPROVED BY CHAIRMAN, DISTRIBUTION DESIGN COMMITTEE
		DRG NO : SC-01
		SOURCE : DCS 2: 1996



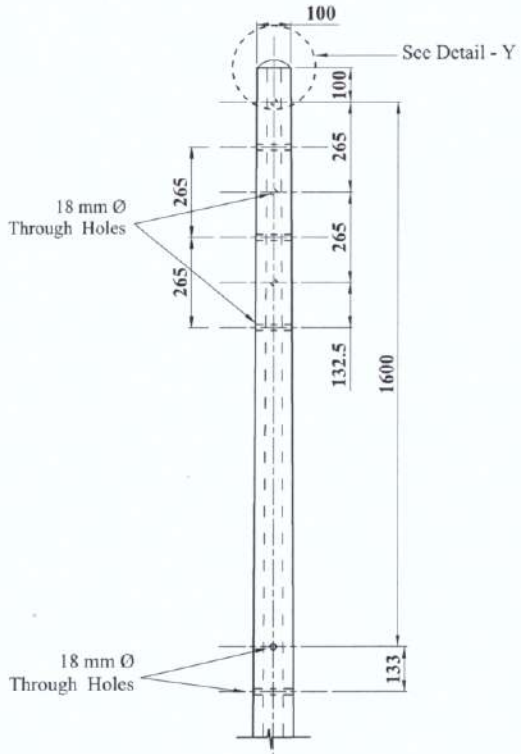
DETAIL AT - Z



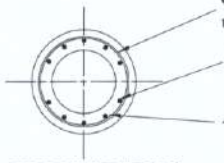
SIDE ELEVATION



DETAIL Y



DETAIL AT - X



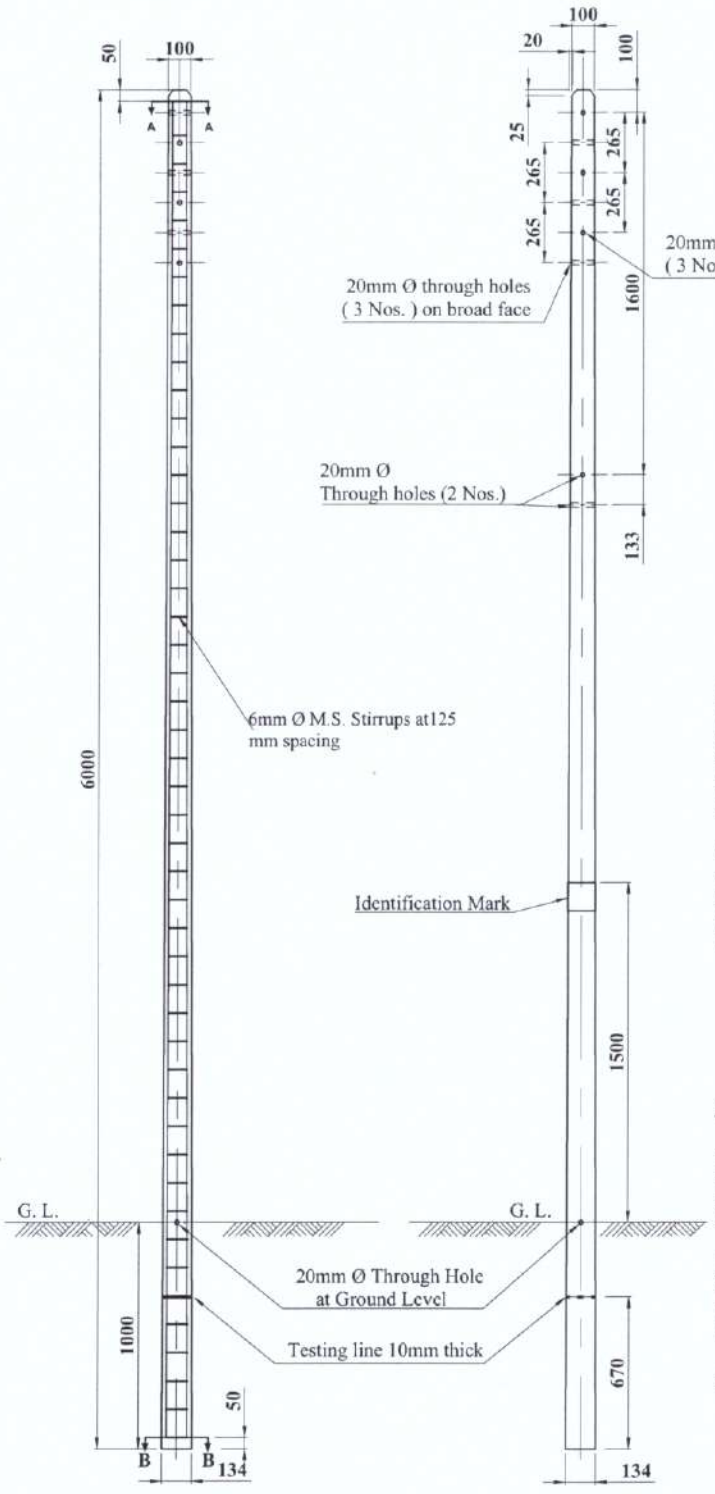
CROSS SECTION AT B-B

NOTE :

* All Holes 18 mm. Ø
* Minimum cylindrical strength of concrete shall be 50 N/mm^2 at an age of 28 days
* Maximum working load = 50 kg
* Overall height of pole = 6.0m
* Buried length =1.0m
* Factor of safety = 2.5
* Minimum covering = 9mm
* Nominal tensile strength of 6mm Ø H.T. Wires shall be 1670 N/mm^2
* Yield strength of Mild Steel (MS) wires shall be 250 N/mm^2
* Length of the N.T. wires shall be at least 2.5m from bottom of the pole.
* A continuous spiral link shall be provided upto the length of N.T. wires.
* H.T. wires shall be continuous through out the pole height.
* Approx. weight of the pole shall be less than 160 kg

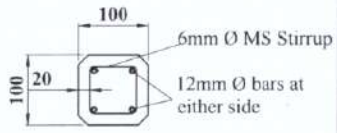
ALL DIMENSIONS ARE IN MILLIMETERS.

CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	6 m / 50 kg PRE-STRESSED SPUN CONCRETE POLE	DRAWN : Harsha
		DATE : May 2021 REV NO. 1
	Extract of CEB Specification 044:2016	DRG NO : SC-02
DISTRIBUTION COORDINATION BRANCH		SOURCE : DS&S/2016/044-4A

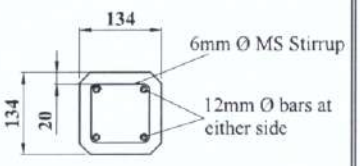


SECTIONAL ELEVATION OF BROAD FACE

ELEVATION OF NARROW FACE



SECTION A-A



SECTION B-B

NOTE:-

1. Concrete to have a cube strength of 25 N/mm² at an age of 28 days (Concrete Grade 25)
2. Main reinforcement to be deformed high yield steel having a characteristic strength of 460 N/mm²
3. Stirrups to be mild steel having a characteristic strength of 250 N/mm²
4. Minimum cover to all reinforcement (including stirrups) to be 20 mm.
5. Maximum size of coarse aggregate to be 20 mm.
6. As a guide a mixing ratio of 1:1 1/2:3 is suggested.
7. The identification mark shall be located at approximately 1500mm above ground level ,and consist of following information.
   (i) Date of manufacture
   (ii) Serial number
   (iii) Name (Identification) of manufacturer

SPECIAL NOTES:-

This pole is designed to carry a service connection of 03 nos. insulated service wires (without earth wire) for a maximum span of 40m an out of alignment of maximum 0.2° is allowed.
Approximate weight of the pole shall be less than 200kg.

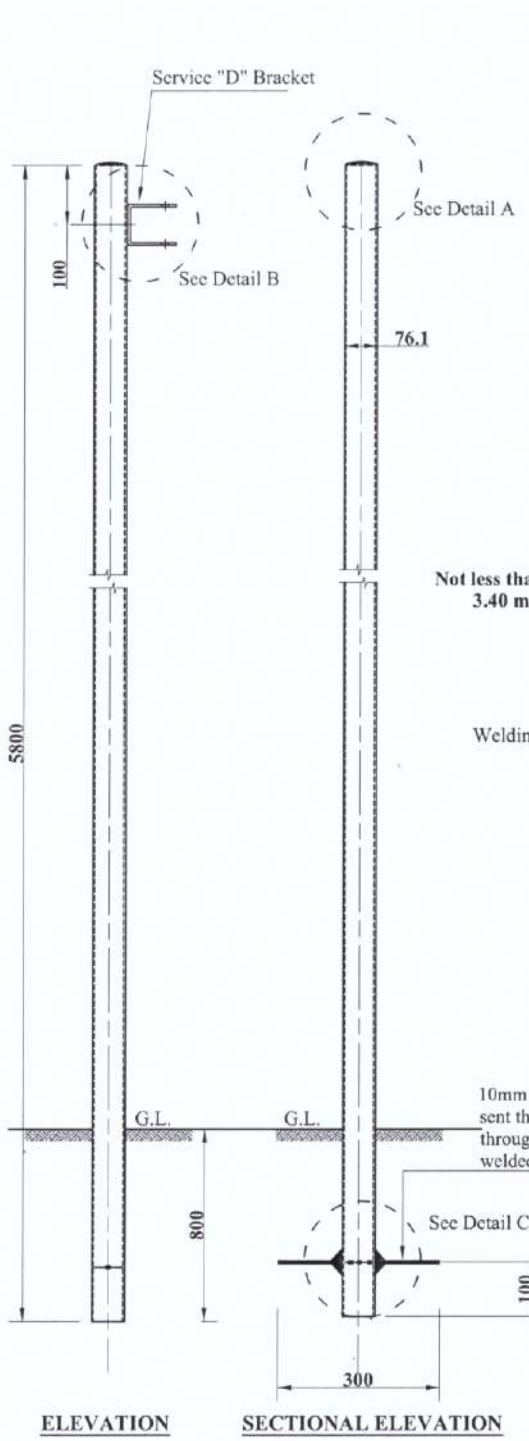
DESIGN CRITERIA:-

This pole is designed for working load of 50 kg. Transversely acting at a distance of 0.6 m below the top of the pole.

Factor of Safety = 2.5

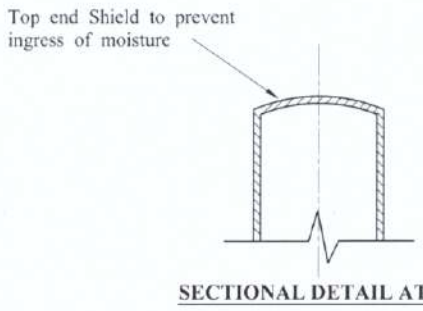
ALL DIMENSIONS ARE IN MILLIMETERS.

CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	6m / 50 kg LIGHT WEIGHT REINFORCED CONCRETE POLE	DRAWN : Harsha
		DATE : May 2021 REV NO : -
	Extract of CEB Specification 044:2017	DRG NO : SC-03
DISTRIBUTION COORDINATION BRANCH		SOURCE : DS&S/2016/044-5A

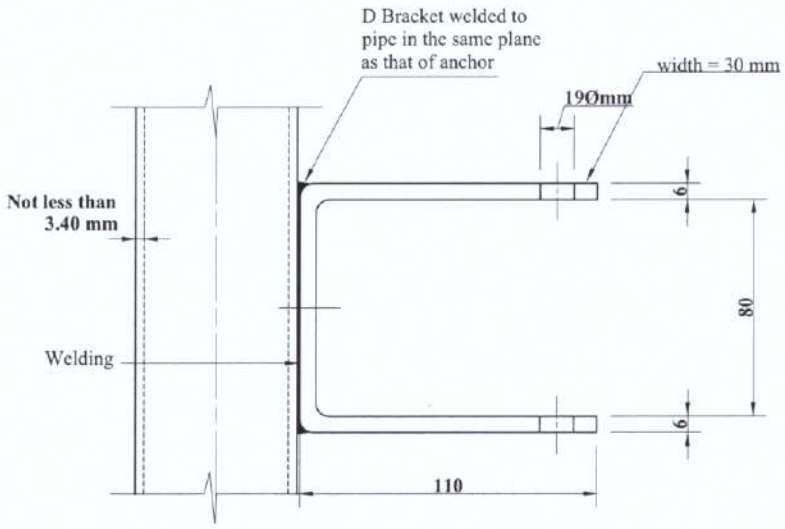


ELEVATION

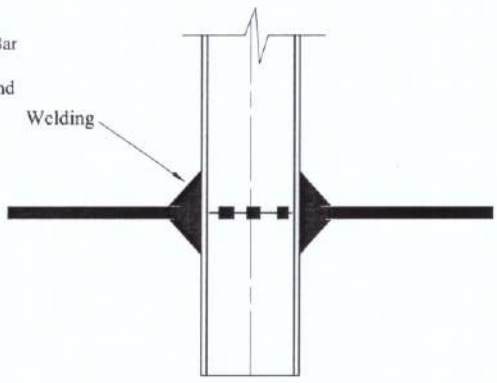
SECTIONAL ELEVATION



SECTIONAL DETAIL AT A



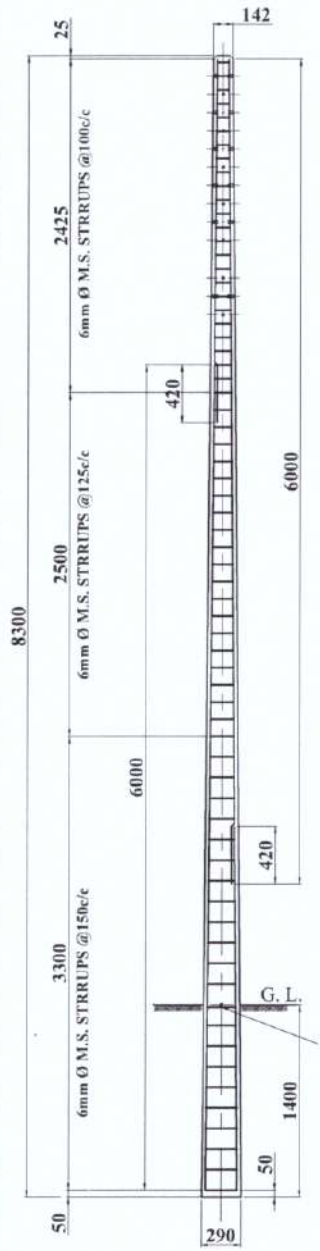
DETAIL AT - B



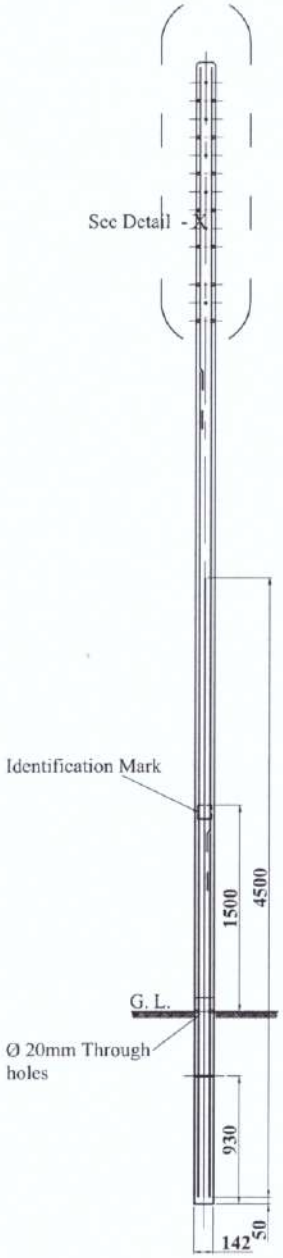
DETAIL AT - C

ALL DIMMENSIONS ARE IN MILLIMETRES

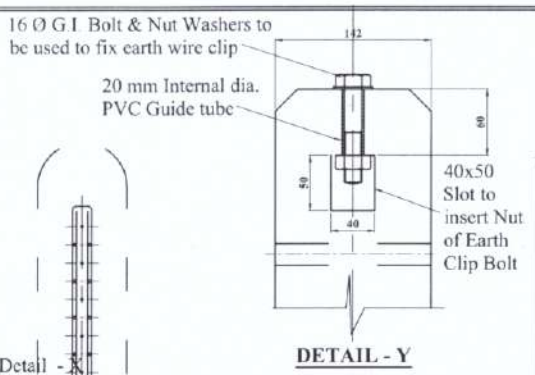
CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	CONSTRUCTIONAL FEATURES OF TUBULAR SERVICE CONNECTION POLES	DRAWN : Harsha
		DATE : May 2021 REV NO : 01
	Extract of CEB Specification DS&S/1998/066-2	DRG NO : SC-04
DISTRIBUTION COORDINATION BRANCH		SOURCE : DS&S/1998/066-2



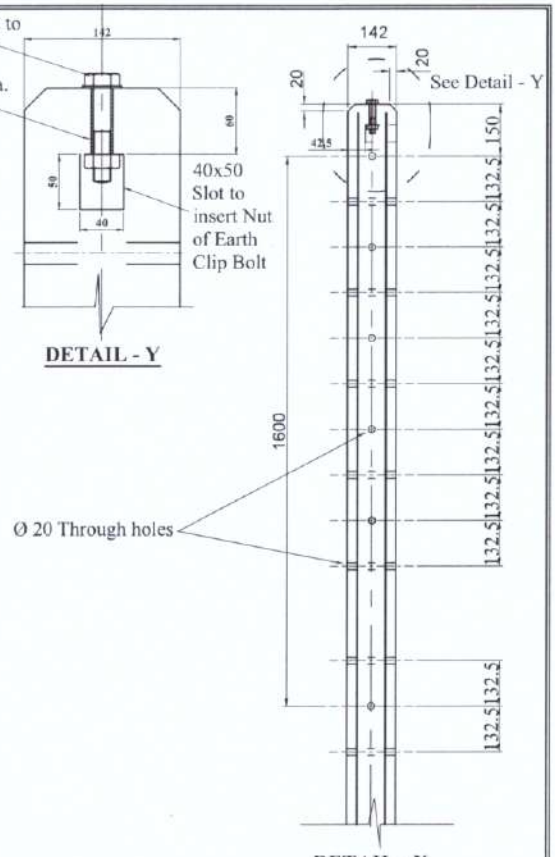
SECTIONAL ELEVATION OF BROAD FACE



SECTIONAL ELEVATION OF NARROW FACE



DETAIL - Y



DETAIL - X

NOTE

1. Concrete to have a Cube Strength of 25 N/mm^2 at an age of 28 days (concrete grade 25)
2. Main Reinforcement to be deformed high yield steel having a Characteristic Strength of 450 N/mm^2
3. Stirrups to be mild steel having a Characteristic Ctrength of 250 N/mm^2
4. Minimum lap length of 10mm Øhigh yield steel bars to be 41x dia.
5. Minimum cover to any reinforcement to be 20 mm.
6. Maximum size of coarse aggregate to be 20 mm.
7. Laps formed in the adjacent bars in the same face of the pole must be staggered.
8. As a guide a mixing ratio of 1:1 1/2:3 is suggested.
9. The Identification Mark shall be located at approximately 1500mm above ground level ,and consist of following information.
   (i) Date of Manufacture
   (ii) Serial Number
   (iii) Name (Identification) of Manufectuer

SPECIAL NOTES

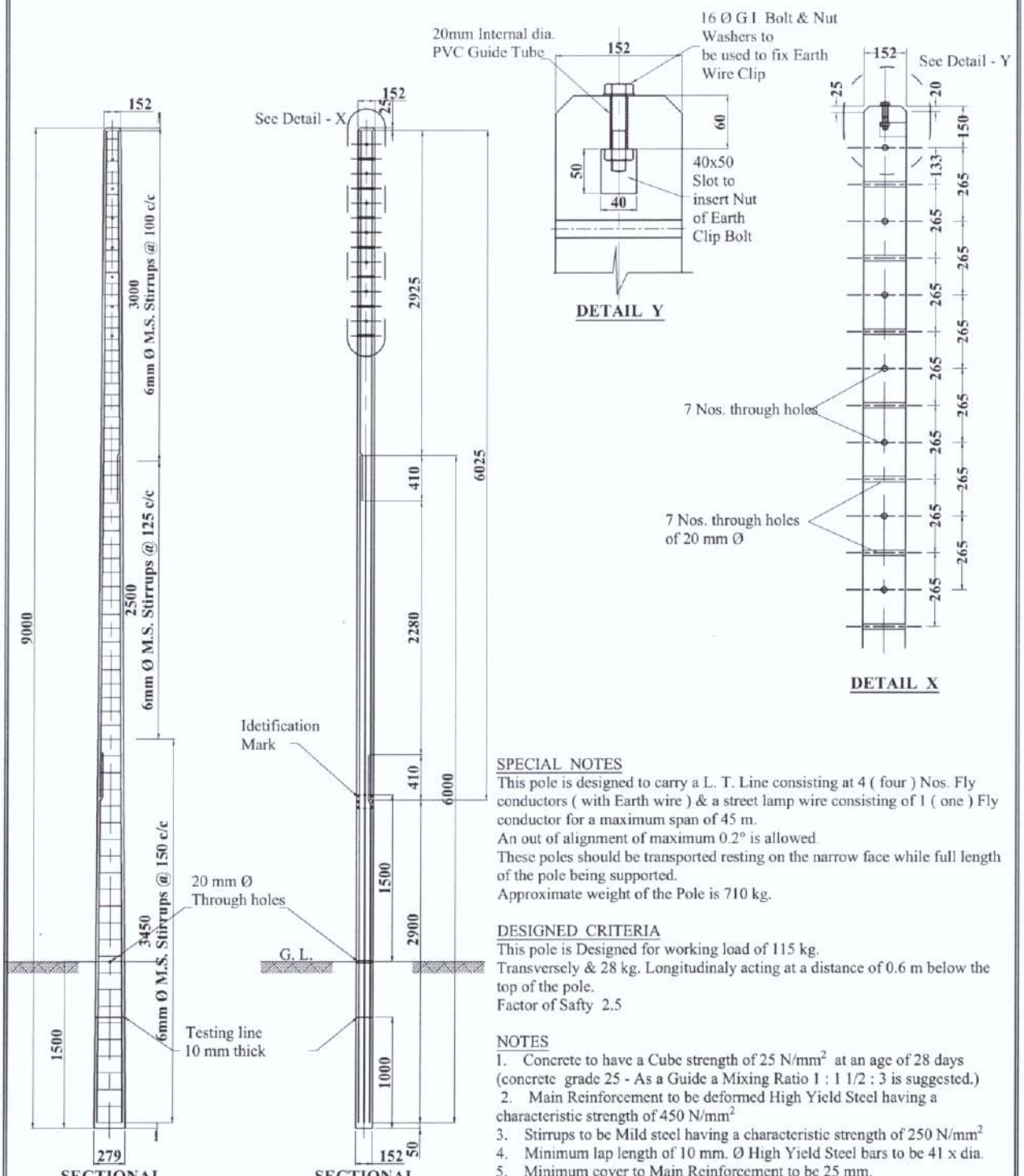
This pole is designed to carry a L.T. line consisting at 04 nos. Fly Conductors with a single Earth Wire, for a maximum span of 45m. An out of alignment of maximum 0.2° is allowed. The pole shall be casted so that the narrow face is resting on the base plate, and shall be transported resting on the narrow face while full length of the pole being supported.
Approximate weight of the pole is 610 kg.

DESIGN CRITERIA

This pole is designed for working load of 100kg. transversely & 25kg longitudinaly acting at a distance of 0.6 m below the top of the pole.
Factor of Safety = 2.5

ALL DIMENSIONS ARE IN MILLIMETERS

CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	8.3 m / 100 kg REINFORCED CONCRETE POLE	DRAWN : Harsha
		DATE : May 2021 REV NO : 01
	Extract of CEB Specification 044-1 : 1996	DRG NO : SC-05
DISTRIBUTION COORDINATION BRANCH		SOURCE : DCS 2: 1996



SPECIAL NOTES

This pole is designed to carry a L. T. Line consisting at 4 (four) Nos. Fly conductors (with Earth wire) & a street lamp wire consisting of 1 (one) Fly conductor for a maximum span of 45 m.
An out of alignment of maximum 0.2° is allowed.
These poles should be transported resting on the narrow face while full length of the pole being supported.
Approximate weight of the Pole is 710 kg.

DESIGNED CRITERIA

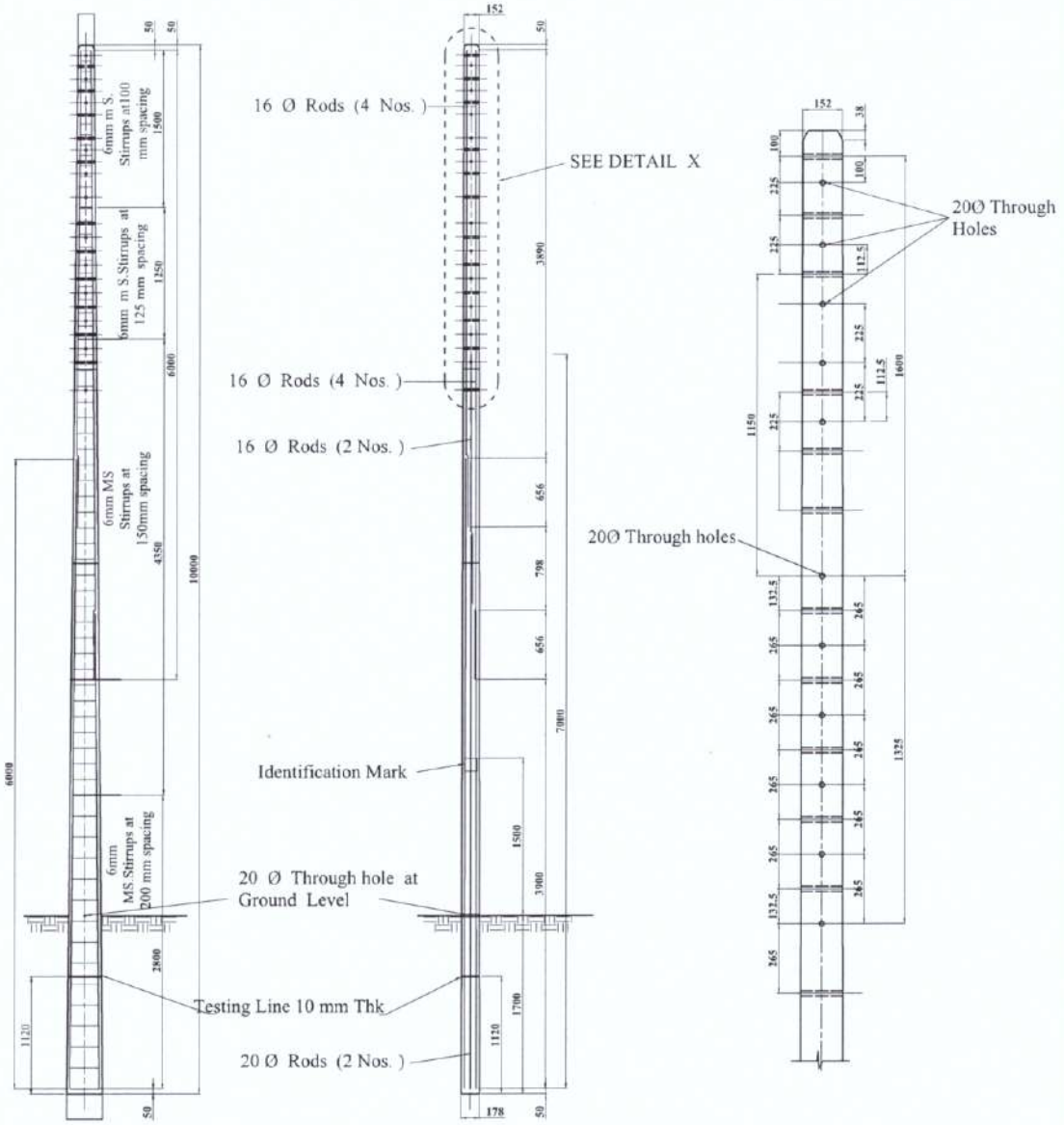
This pole is Designed for working load of 115 kg.
Transversely & 28 kg. Longitudinaly acting at a distance of 0.6 m below the top of the pole.
Factor of Safty 2.5

NOTES

1. Concrete to have a Cube strength of 25 N/mm^2 at an age of 28 days (concrete grade 25 - As a Guide a Mixing Ratio 1 : 1 1/2 : 3 is suggested.)
2. Main Reinforcement to be deformed High Yield Steel having a characteristic strength of 450 N/mm^2
3. Stirrups to be Mild steel having a characteristic strength of 250 N/mm^2
4. Minimum lap length of 10 mm. Ø High Yield Steel bars to be 41 x dia.
5. Minimum cover to Main Reinforcement to be 25 mm.
6. Maximum Size of coarse aggregate to be 20 mm.
7. Laps formed in the adjacent bars on the same face must be staggered.
8. Approximate weight of the pole is 710 kg.

ALL DIMENSIONS ARE IN MILLIMETERS

CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	9.0 m / 115 kg REINFORCED CONCRETE POLE	DRAWN : Harsha
		DATE : May 2021 REV NO : 01
	Extract of CEB Specification 044-1 : 1996	DRG NO : SC-06
DISTRIBUTION COORDINATION BRANCH		SOURCE : DCS 2/ 1996



SECTIONAL ELEVATION OF BROAD FACE

SECTIONAL ELEVATION OF NARROW FACE

DETAIL X

NOTES :

1. Concrete to have a Cube Strength of 25.0 N/mm at an age of 28 Days. (Concrete Grade 25)
2. Main Reinforcement to be Deformed High Yield Steel having a Characteristic Strength of 450 N/mm^2
3. Stirrups to be Mild Steel having a Characteristic Strength of 250 N/mm^2
4. Minimum Lap Length of High Yield Steel bars to be 41 x dia.
5. Minimum Cover to all Reinforcement (including Stirrups) to be 25 mm
6. Maximum Size of Coarse aggregate to be 20 mm
7. Laps Formed in the Adjacent Bars in the same face of the Pole must be Staggered.
8. 8. As a Guide a Mixing Rate of 1:1 1/2 :3 is Suggested.

ALL DIMENSIONS ARE IN MILLIMETERS

SPECIAL NOTES

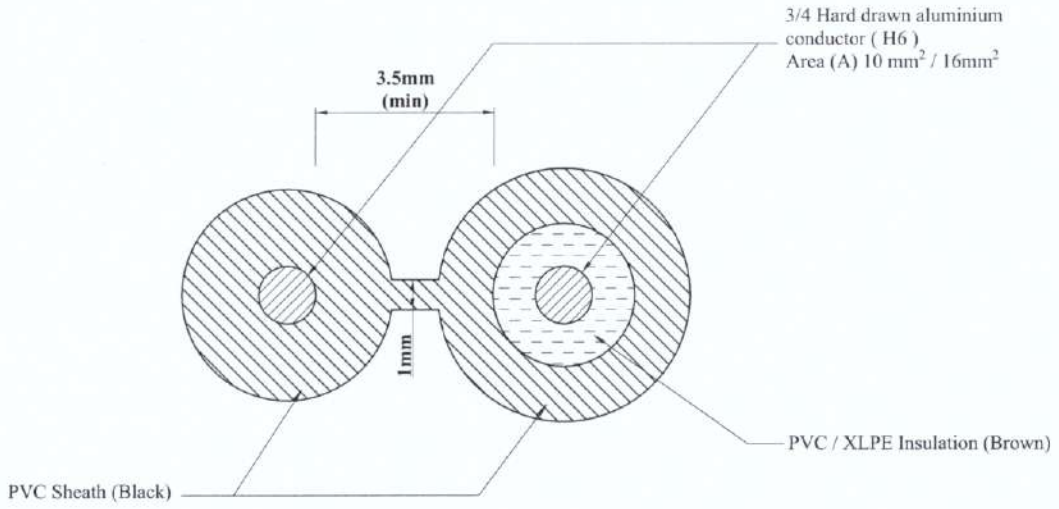
These poles should be transported resting on the narrow face while full length of the pole being supported. Approximate weight of the Pole is 1010 kg

DESIGN CRITERIA

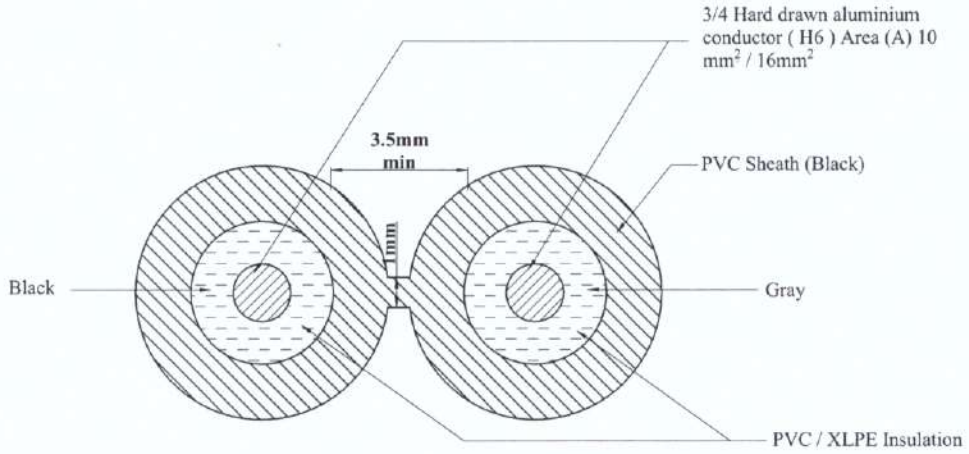
The pole is designed for working load of 300kg transversly and 75kg longitudinally acting at a distance of 0.6m below the top of pole.

Factor of Safty - 2.5

CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	10.0 m / 300 kg REINFORCED CONCRETE POLE	DRAWN : Harsha
		DATE : May 2021 | REV NO : 01
	Extract of CEB Distribution Construction Standard : DCS-1 DS&S/95/7705	DRG NO : SC-07
DISTRIBUTION COORDINATION BRANCH		SOURCE : DCS 2: 1996



(a) TWIN SERVICE MAIN WIRE
(PHASE CORE INSULATED, NEUTRAL CORE BARE & BOTH SHEATHED)



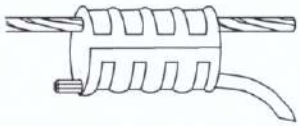
(b) TWIN FLAT SERVICE MAIN WIRE
(BOTH CORES INSULATED AND SHEATHED)

CONNECTION TYPE	CABLE COMBINATION	
	TWIN SERVICE MAIN WIRE	TWIN FLAT SERVICE MAIN WIRE
1 Phase 30A	01 No. of 10 mm²	-
3 Phase 30A	01 No. of 10 mm²	01 No. of 10 mm²
3 Phase 60A	01 No. of 16 mm²	01 No. of 16 mm²

ALL DIMENSIONS ARE IN MILLIMETRES

CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	PVC / XLPE INSULATED ALUMINIUM SERVICE MAIN WIRE	DRAWN : Harsha
		DATE : May 2021 REV NO. : 01
DISTRIBUTION COORDINATION BRANCH	Extract of Distribution Construction Standards DCS 2 : 1996	DRG NO : SC-08
	REVISION APPROVED BY CHAIRMAN, DISTRIBUTION DESIGN COMMITTEE	SOURCE : DCS 2: 1996

H -TYPE COMPRESSION SERVICE LINE TAP



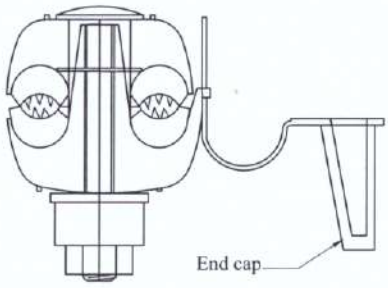
ISOMETRIC VIEW

Al/Al 7/3.4 - 7/1.35 : 7/1.70
Fly (10mm^2) (16mm^2)

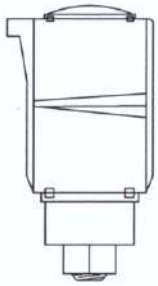
FRONT VIEW

SIDE VIEW

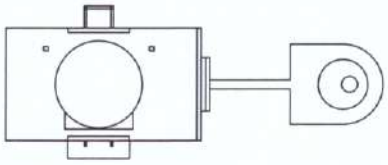
INSULATED PIERCING CONNECTOR FOR SERVICE CONNECTIONS



FRONT VIEW



SIDE VIEW

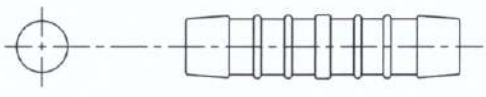


TOP VIEW

CLASSIFICATION	
CONDUCTOR TYPE (ABC / Service)	PL CODE
70-95 / 10-25	D 12- 60- 1

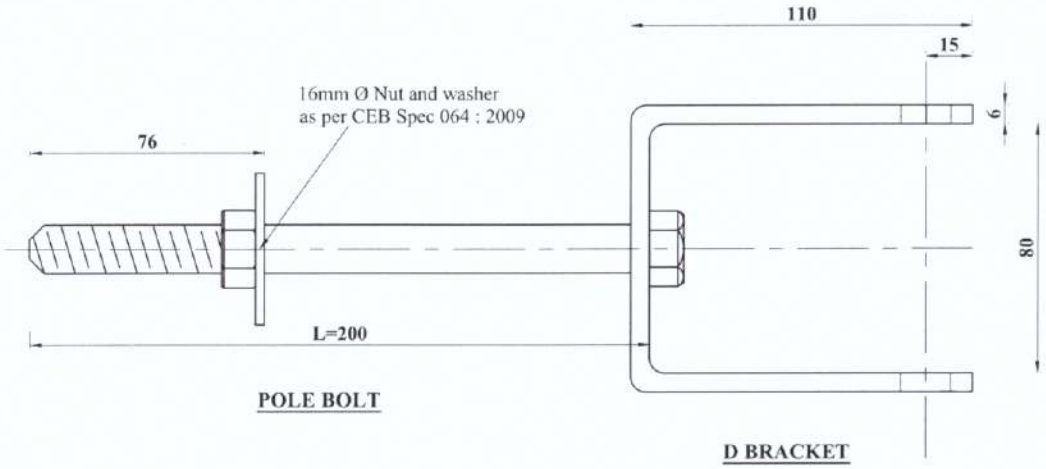
PRE-INSULATED COMPRESSION SLEEVE FOR ALUMINIUM SERVICE MAIN WIRE

CLASSIFICATION OF SLEEVES		
CONDUCTOR SIZE (mm^2)	COLOUR CODE	PL CODE
10	Green	D 12- 14- 1
16	Blue	D 12- 15- 1



SIDE VIEW FRONT VIEW / PLAN VIEW

CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	"H" TYPE COMPRESSION SERVICE LINE TAP FOR AAC & INSULATED PIERCING SERVICE CONNECTOR AND SLEEVES FOR ABC	DRAWN : Harsha
		DATE : May 2021 REV NO : 01
	Extract of Distribution Construction Standards DCS 2 : 1996	REVISION APPROVED BY
DISTRIBUTION COORDINATION BRANCH		CHAIRMAN, DISTRIBUTION DESIGN COMMITTEE
		DRG NO : SC-09
		SOURCE : DCS 2: 1996

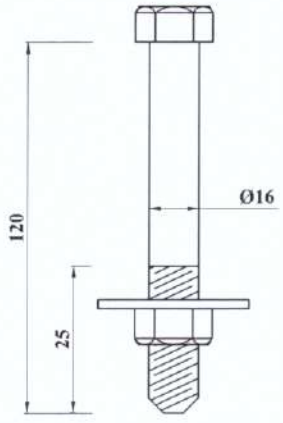


POLE BOLT

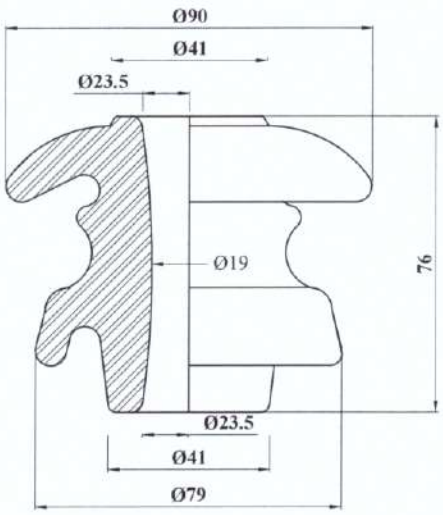
D BRACKET

BOLTS USED WITH POLE TYPES

POLE BOLT LENGTH (L)	TYPES OF POLES
200 mm	RC POLES
180 mm	SPUN POLES
120 mm	G.I. POLES



INSULATOR BOLT

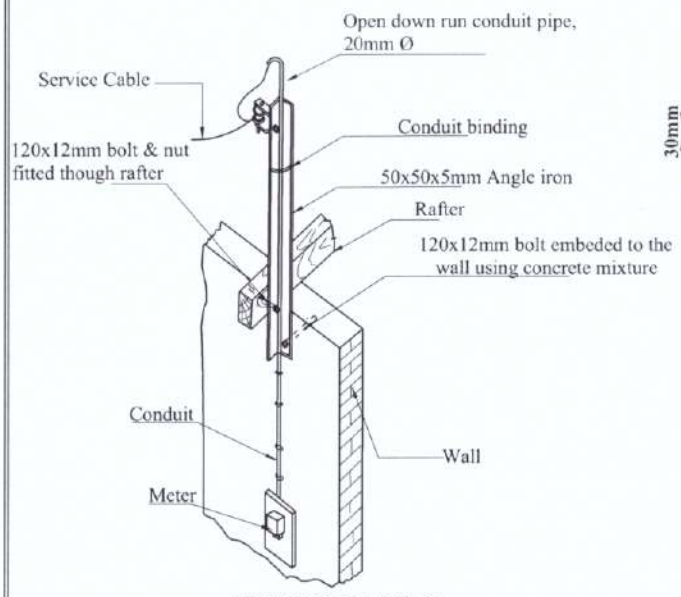


L V INSULATOR

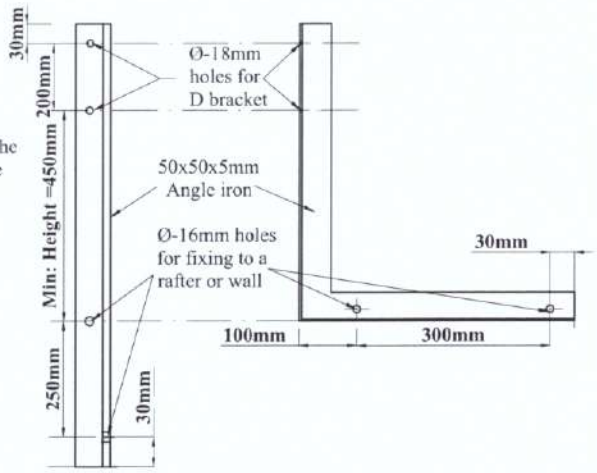
ALL DIMENSIONS ARE IN MILLIMETRES

CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	D BRACKET -POLE BOLT -INSULATOR BOLT & INSULATOR	DRAWN : Harsha
		DATE : May 2021 REV NO : 01
DISTRIBUTION COORDINATION BRANCH	Extract of Distribution Construction Standards DCS 2 : 1996	REVISION APPROVED BY CHAIRMAN, DISTRIBUTION DESIGN COMMITTEE
		DRG NO : SC-10
		SOURCE : DCS 2 : 1996

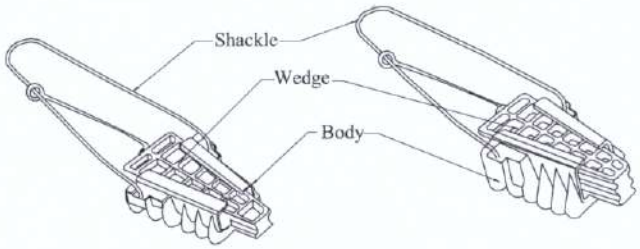
CEB Approved Construction Standards - Chairman - Dist. Coord. Committee



SERVICE BRACKET
FIXING ARRANGEMENT

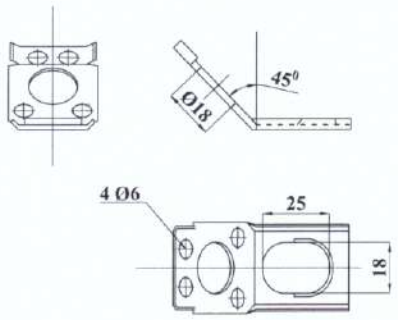


SERVICE BRACKET
SINGLE PHASE OR THREE PHASE

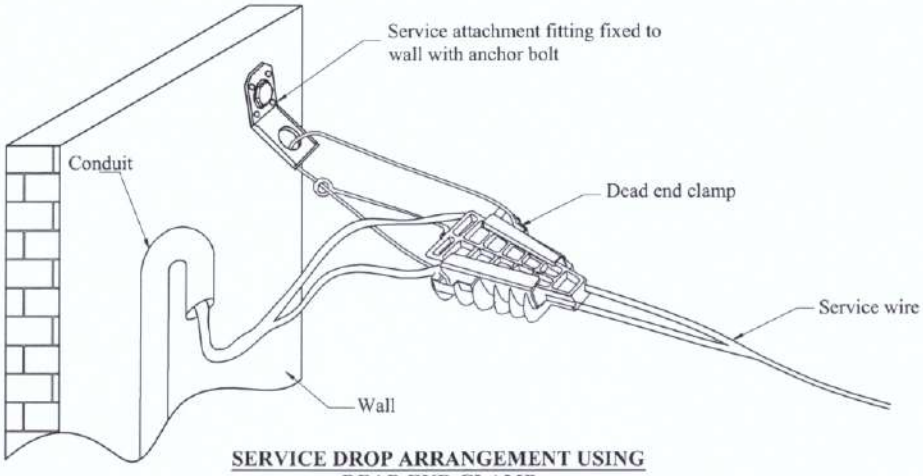


DEAD END CLAMP
(SINGLE PHASE)

DEAD END CLAMP
(THREE PHASE)

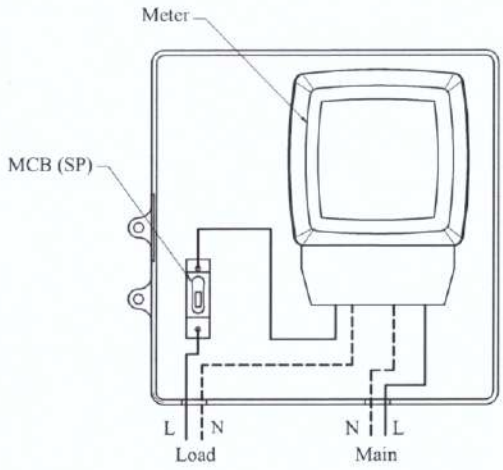


SERVICE ATTACHMENT FITTING
(CORROSION PROOF STEEL OR HARD PVC)

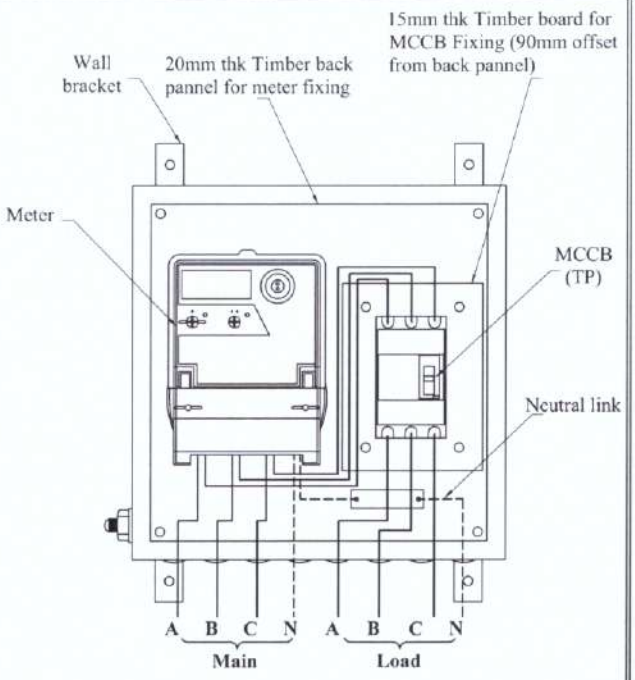


SERVICE DROP ARRANGEMENT USING
DEAD END CLAMP

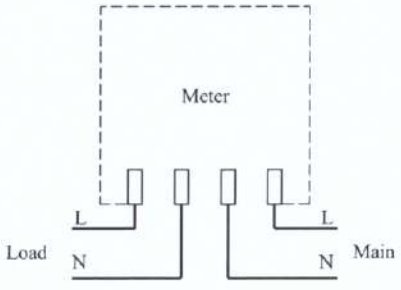
CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	SERVICE BRACKET AND DEAD END CLAMP FOR SERVICE DROPS	DRAWN : Harsha
		DATE : May 2021 REV NO : -
	Extract of Distribution Construction Standards DCS 2 : 1996	DRG NO : SC-11
DISTRIBUTION COORDINATION BRANCH	REVISION APPROVED BY CHAIRMAN DISTRIBUTION DESIGN COMMITTEE	SOURCE : DCS 2: 1996



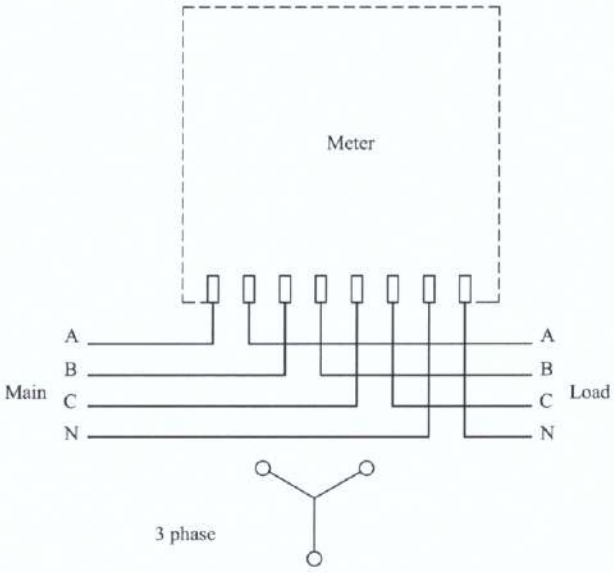
WIRING ARRANGEMENT OF SINGLE PHASE METER



WIRING ARRANGEMENT OF 3 PHASE METER

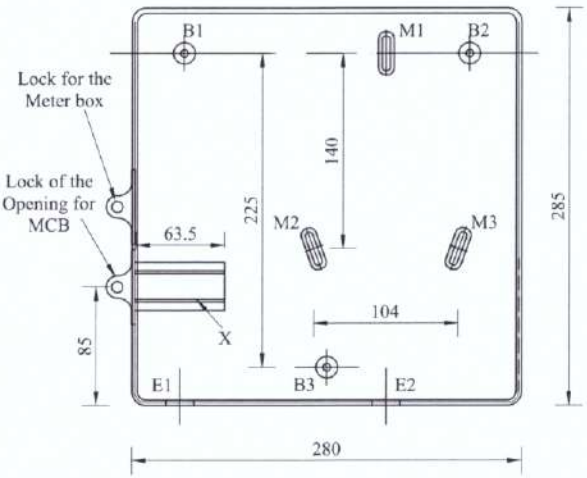


CONNECTIONS FOR A SINGLE PHASE METER, TWO WIRE SYSTEM

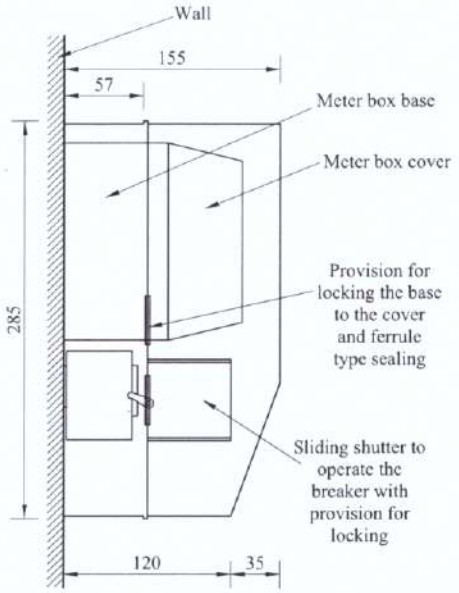


CONNECTIONS FOR A THREE ELEMENT METER USED ON A THREE-PHASE, FOUR WIRE SYSTEM

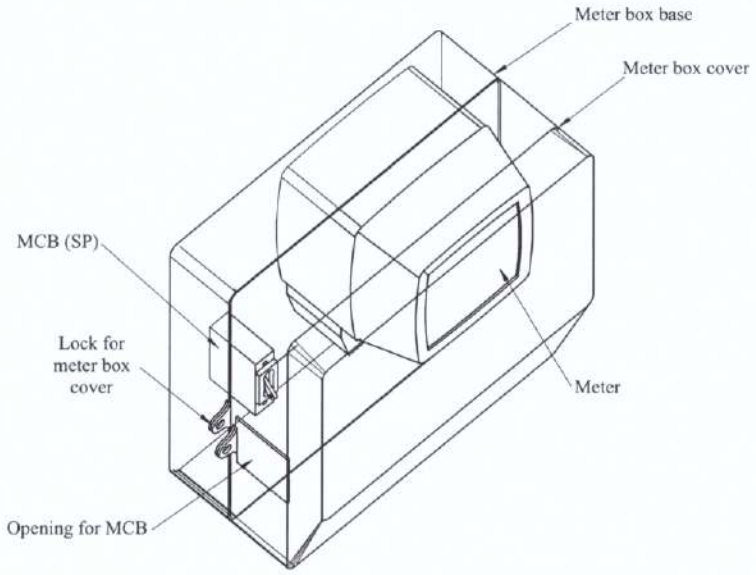
CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	SINGLE PHASE AND THREE PHASE kWh METER AND WIRING ARRANGEMENT	DRAWN : Harsha
		DATE : May 2021 REV NO : 01
DISTRIBUTION COORDINATION BRANCH	Extract of Distribution Construction Standards DCS 2 : 1996	REVISION APPROVED BY CHAIRMAN,DISTRIBUTION DESIGN COMMITTEE
		DRG NO : SC-12
		SOURCE : DCS/2/1996



FRONT ELEVATION OF METER BOARD



SIDE ELEVATION

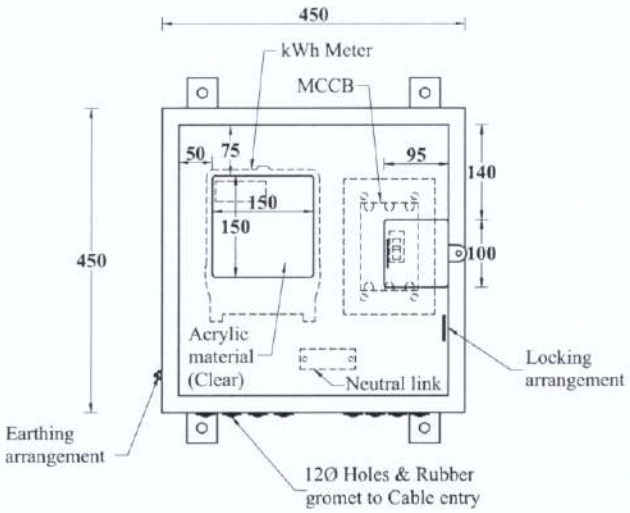


ISOMETRIC VIEW

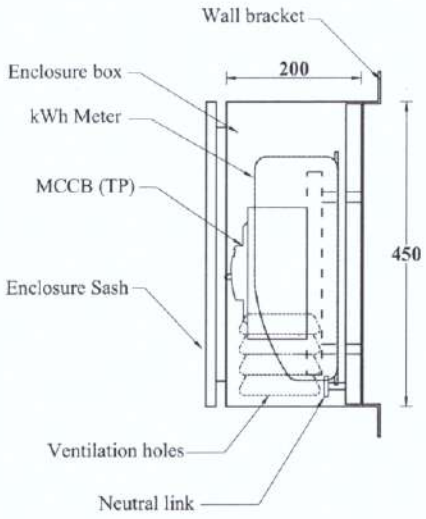
M1,M2,M3 - Slotted holes of 5.5mm x25mm
B1,B2,B3 - Base fixing holes 5.5mm Ø
E1,E2 - Slots 20mm x 15mm
X - Unit Moulded DIN railing for MCB & Neutral Connector

ALL DIMENSIONS ARE IN MILLIMETERS

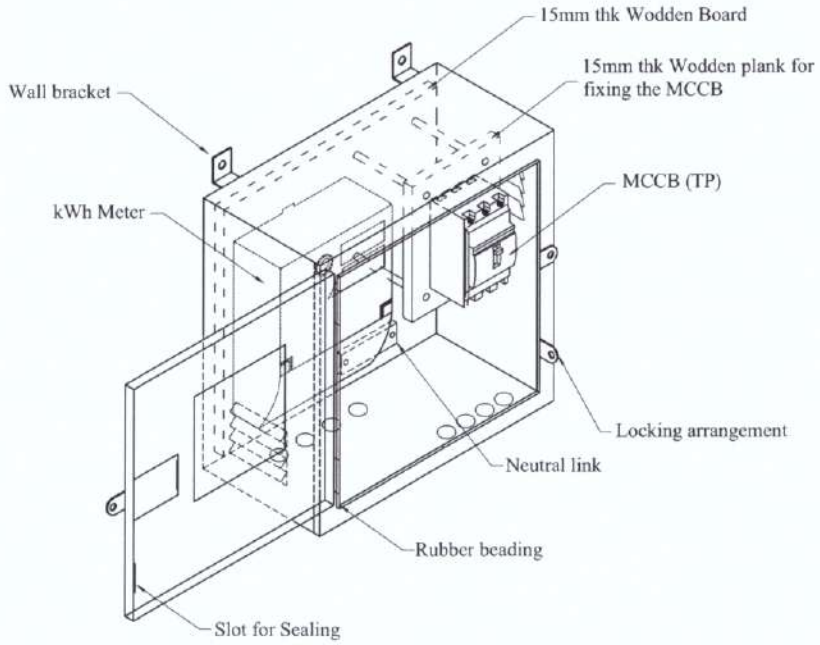
CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	SINGLE PHASE METER BOX ARRANGEMENT	DRAWN : Harsha
		DATE :May 2021 / REV NO: 01
	Extract of CEB Specification 038: 2014 / REVISION APPROVED BY	DRG NO : SC-13
DISTRIBUTION COORDINATION BRANCH	CHAIRMAN DISTRIBUTION DESIGN COMMITTEE	SOURCE : 038 : 2014



FRONT ELEVATION



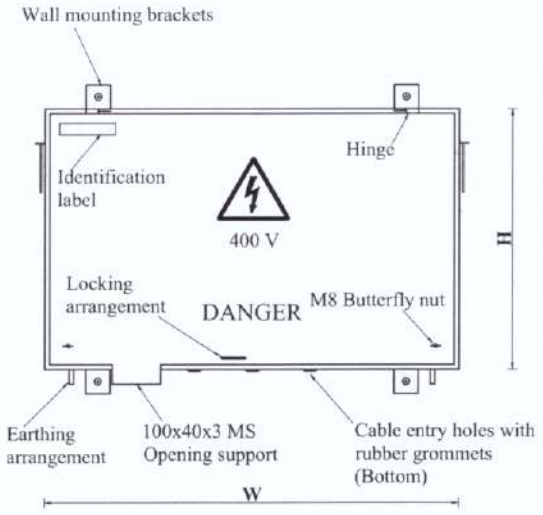
SIDE ELEVATION



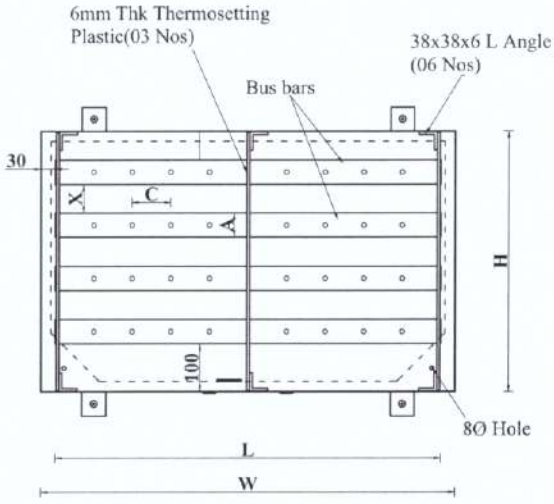
ISOMETRIC VIEW

ALL DIMENSIONS ARE IN MILLIMETRES

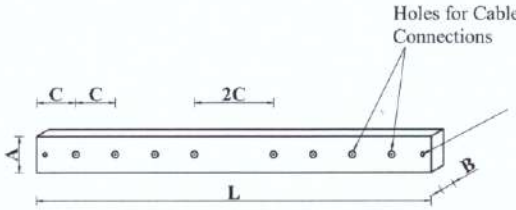
CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	THREE PHASE METER BOX ARRANGEMENT	DRAWN : Harsha
		DATE : May 2021 REV NO : 01
	Extract of CEB Specification 2003: 50-1 — REVISION APPROVED BY	DRG NO : SC-14
DISTRIBUTION COORDINATION BRANCH	CHAIRMAN,DISTRIBUTION DESIGN COMMITTEE	SOURCE : 2003 : 50-1



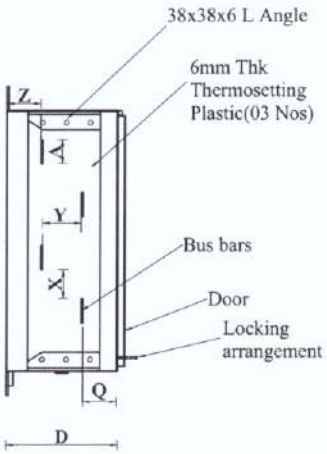
FRONT ELEVATION



SECTIONAL FRONT ELEVATION



TYPICAL DETAIL OF BUS BAR (FLAT COPPER)

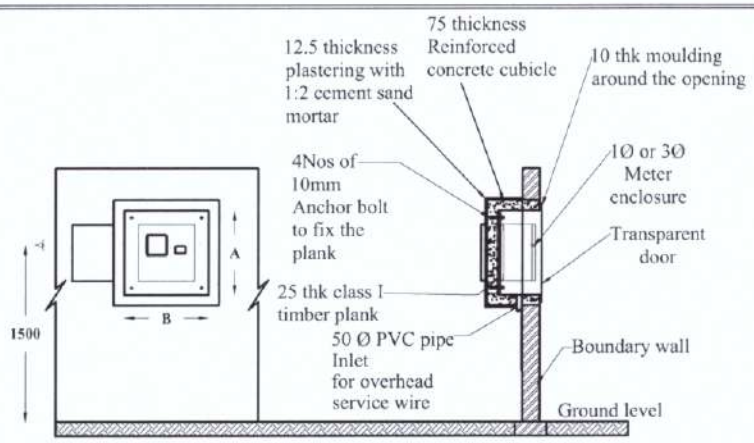


SECTIONAL END ELEVATION

	NOMINAL DIMENSIONS OF BUS BARS AND ENCLOSURES				
		160A	400A	1000A	1600A
BUS BARS	A (mm)	25	50	50	75
	B (mm)	4	4	10	12
	L (mm)	840	800	800	1120
	X (mm)	60	60	60	60
	Y (mm)	80	80	80	80
	Z (mm)	70	70	70	70
	Q (mm)	70	70	70	70
	No. of Holes for Cable Connections	10	8	8	6
	Hole Size -Ø (mm)	10	10	14	14
	Hole Spacing -C (mm)	70	80	80	140
ENCLOSURES	W (mm)	900	860	860	1180
	H (mm)	444	544	544	644
	D (mm)	232	232	244	248

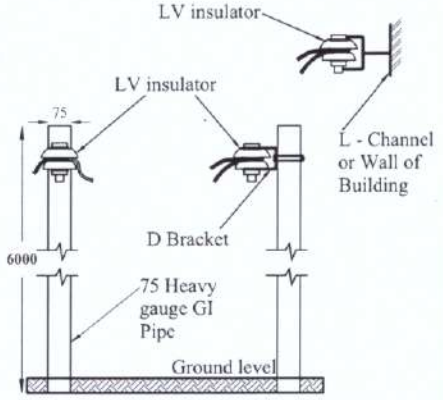
ALL DIMENSIONS ARE IN MILLIMETRES

CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	TYPICAL MULTIPLE CONNECTION BUSBAR CHAMBER ARRANGEMENT	DRAWN : Harsha
		DATE : May 2021 REV NO
	Extract of CEB Specification 147 : 2018	DRG NO : SC-15
DISTRIBUTION COORDINATION BRANCH		SOURCE : 147:2018



FRONT ELEVATION

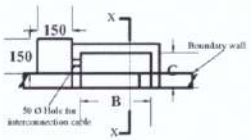
SECTION X-X



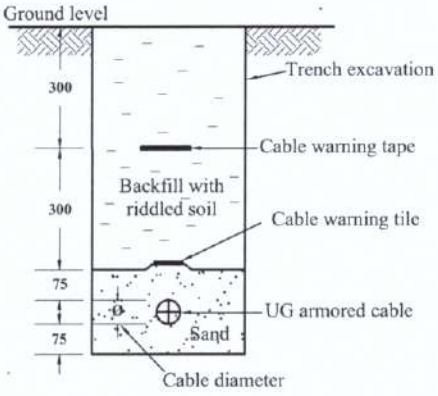
FRONT ELEVATION

END ELEVATION

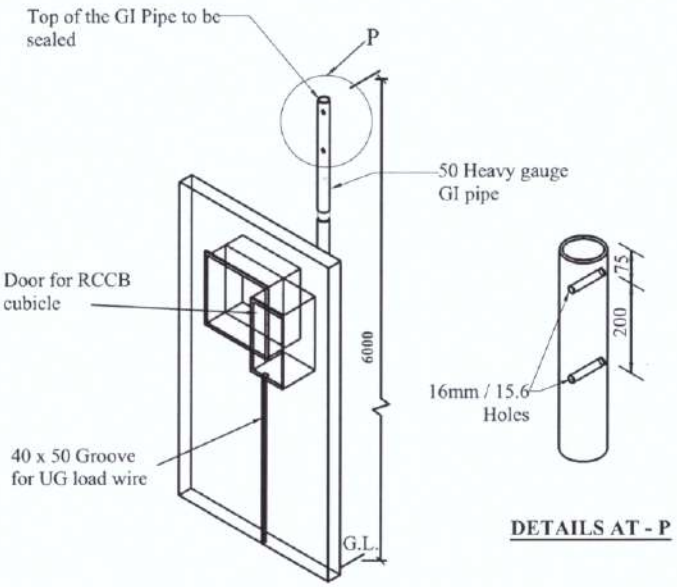
OVERHEAD ARRANGEMENT



PLAN VIEW



UG ARRANGEMENT



DETAILS AT - P

DETAILS FOR LAYING SERVICE CABLE

Notes:

1. Cubicle should be water proofed and sealed.
2. UG cable should be placed under ground as per the details for the load cable laying.
3. The size of the UG armored load cable must be as follows.

- 1Ø-30A :- 6 mm² 2 Core Copper
- 3Ø-30A :- 6 mm² 4 Core Copper
- 3Ø-60A :- 16 mm² 4 Core Copper

4. For the overhead service wire

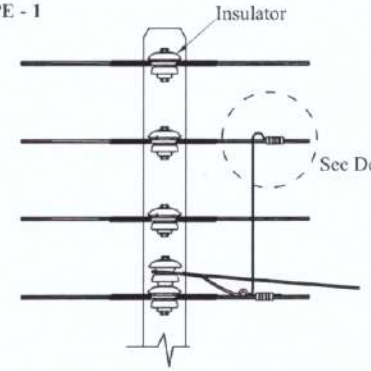
- 50 Dia. PVC pipe should be placed under the cubicle to insert the cable as indicated

	A	B	C
1Ø Connection	400	500	175
3Ø Connection	900	900	300

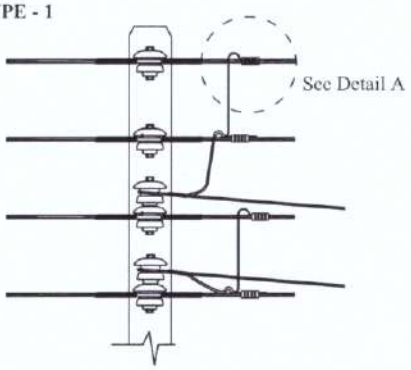
ALL DIMENSIONS ARE IN MILLIMETRES

CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	FIXING ARRANGEMENT OF METERS ON BOUNDARY WALLS	DRAWN : Harsha
		DATE : May 2021 REV NO :
	Extract of Distribution Coordination Committee Circular 2021/DCC/COM-1 — APPROVED BY CHAIRMAN DISTRIBUTION DESIGN COMMITTEE	DRG NO : SC-16
DISTRIBUTION COORDINATION BRANCH		SOURCE : -2021/DCC/COM-1

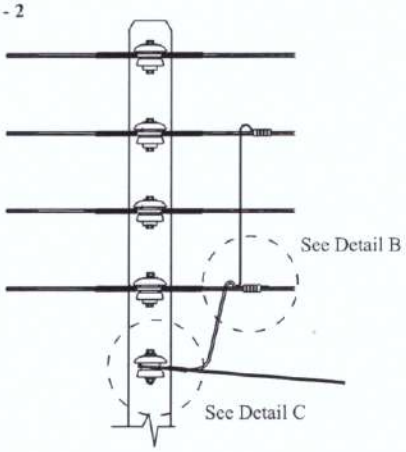
TYPE - 1



TYPE - 1

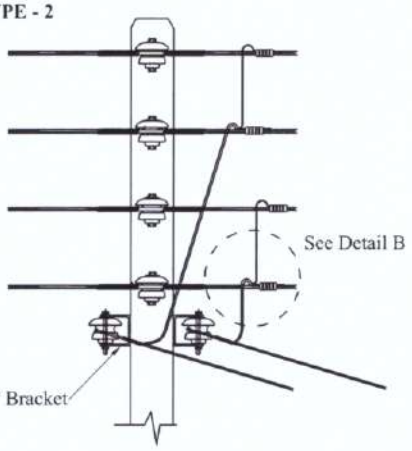


TYPE - 2

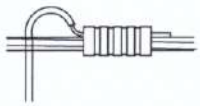


SINGLE PHASE

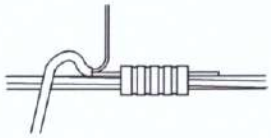
TYPE - 2



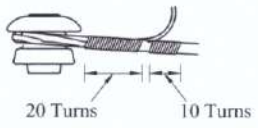
THREE PHASE



DETAIL - A



DETAIL - B



DETAIL - C

TAPPING POINT ARRANGEMENT - MATERIAL KIT CONTENT

CODE	ITEM DESCRIPTION	UNIT	QUANTITY REQUIRED			
			SINGLE PHASE		THREE PHASE	
			TYPE - I	TYPE - II	TYPE - I	TYPE - II
B 02 10 1	D Bracket W/O Insulators & Bolts	Nos.		01		02
B 07 10 1	G.I.Washer 16mm	Nos.	-	01	-	02
B 07 45 1	Bolts & Nuts G.I. 120x16mm	Nos.	-	01	-	02
B 07 55 1	Bolts & Nuts G.I. 200x16mm	Nos.	01	01	02	02
C 01 10 1	Insulators L.T. 90x75mm	Nos.	01	01	02	02
D 06 10 2	Al. Binding Wire N. 11	kg	0.03	0.03	0.06	0.06
D 10 55 1	H Type Compression Service Tap Al/Al 7/3.40 to 7/1.35 - 7/1.70	Nos.	02	02	04	04

CEYLON ELECTRICITY BOARD

DISTRIBUTION COORDINATION BRANCH

DISTRIBUTION STANDARDS & SPECIFICATIONS

TAPPING POINT ARRANGEMENT AND MATERIAL KIT (SINGLE PHASE AND THREE PHASE)

Extract of
Distribution Construction Standards
DCS 2 : 1996

REVISION APPROVED BY

CHAIRMAN
DISTRIBUTION DESIGN COMMITTEE

SCALE : Not to Scale

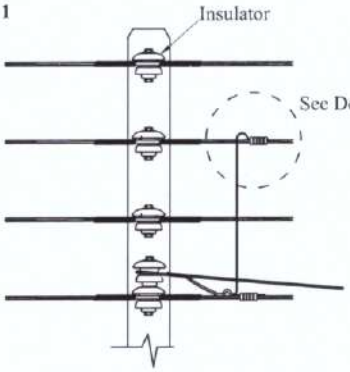
DRAWN : Harsha

DATE : May 2021 REV NO : 01

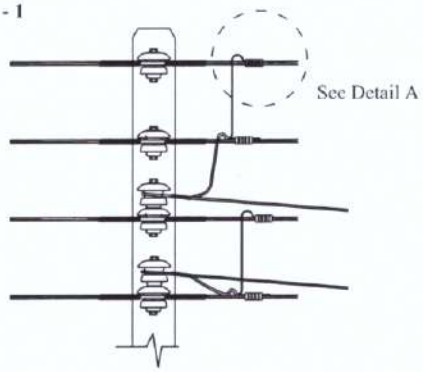
DRG NO : SC-17

SOURCE : DCS 2:1996

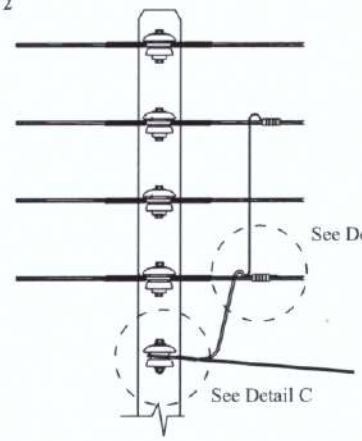
TYPE - 1



TYPE - 1

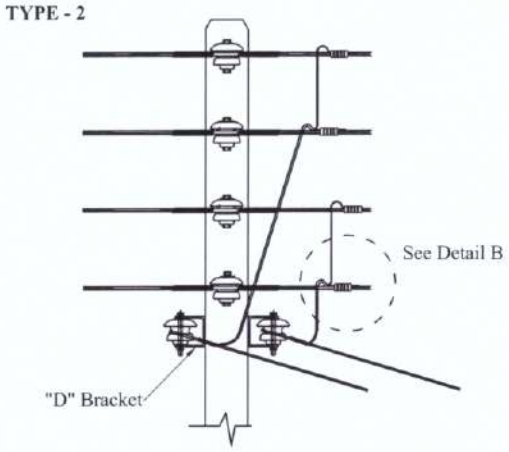


TYPE - 2

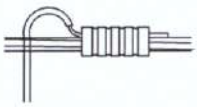


SINGLE PHASE

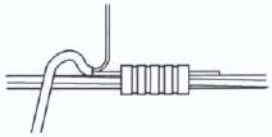
TYPE - 2



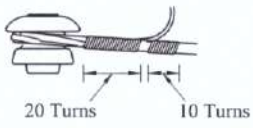
THREE PHASE



DETAIL - A



DETAIL - B



DETAIL - C

TAPPING POINT ARRANGEMENT - MATERIAL KIT CONTENT

CODE	ITEM DESCRIPTION	UNIT	QUANTITY REQUIRED			
			SINGLE PHASE		THREE PHASE	
			TYPE - I	TYPE - II	TYPE - I	TYPE - II
A 02 11 1	R C Poles 8.3m	Nos.	01	01	01	01
B 02 10 1	D Bracket W/O Insulators & Bolts	Nos.	04	05	04	06
B 07 10 1	G.I.Washer 16mm	Nos.	04	05	04	06
B 07 45 1	Bolts & Nuts G.I. 120x16mm	Nos.	03	05	02	06
B 07 55 1	Bolts & Nuts G.I. 200x16mm	Nos.	05	05	06	06
C 01 10 1	Insulators L.T. 90x75mm	Nos.	05	05	06	06
D 06 10 2	Al. Binding Wire N. 11	kg	0.27	0.27	0.3	0.3
D 10 55 1	H Type Compression Service Tap Al/Al 7/3.40 to 7/1.35 - 7/1.70	Nos.	02	02	04	04

CEYLON ELECTRICITY BOARD

DISTRIBUTION COORDINATION BRANCH

DISTRIBUTION STANDARDS & SPECIFICATIONS

INTERMEDIATE TAPPING POINT ARRANGEMENT AND MATERIAL KIT (SINGLE PHASE AND THREE PHASE)

Extract of Distribution Construction Standards DCS 2 : 1996

REVISION APPROVED BY

CHAIRMAN
DISTRIBUTION DESIGN COMMITTEE

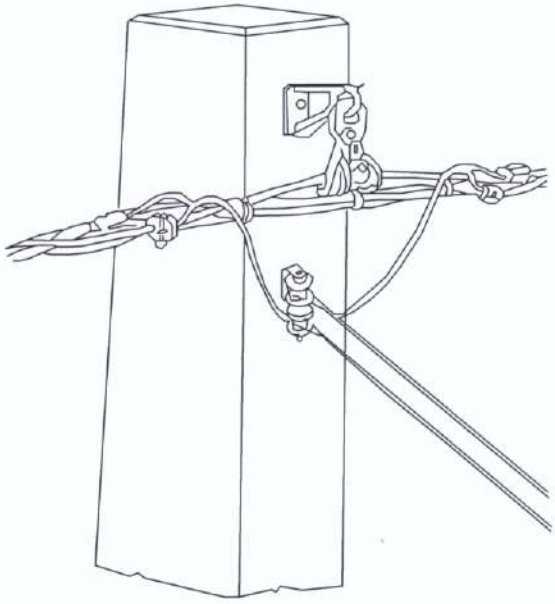
SCALE : Not to Scale

DRAWN : Harsha

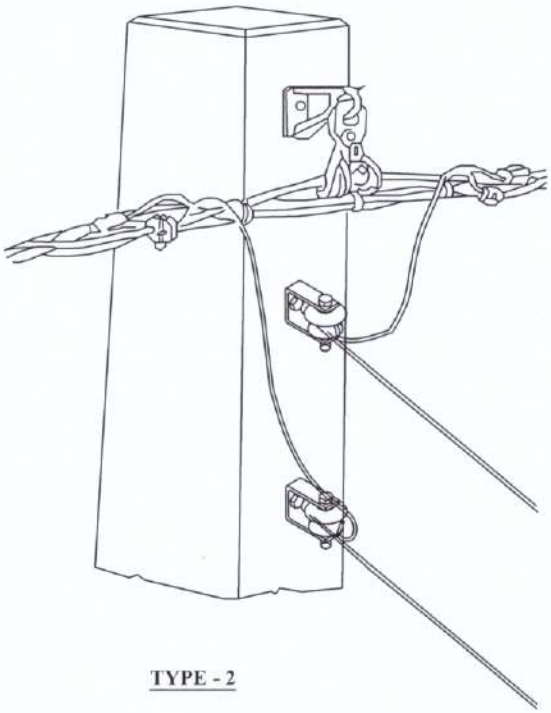
DATE : May 2021 | REV NO : 01

DRG NO : SC-18

SOURCE : DCS 2: 1996



TYPE - 1



TYPE - 2

TAPPING POINT ARRANGEMENT - MATERIAL KIT CONTENT					
CODE	ITEM DESCRIPTION	UNIT	QUANTITY REQUIRED		
			SINGLE PHASE	THREE PHASE	
				TYPE - I	TYPE - II
B 02 10 1	D Bracket W/O Insulators & Bolts	Nos.	01	01	01
B 07 10 1	G.I.Washer	Nos.	01	01	02
B 07 45 1	Bolts & Nuts G.I. 120x16mm	Nos.	01	-	02
B 07 55 1	Bolts & Nuts G.I. 200x16mm	Nos.	01	02	02
C 01 10 1	Insulators L.T. 90x75mm	Nos.	01	02	02
B 12 60 1	Connection piercing for ABC 230/400V 50-70/16-35 sqmm	Nos.	02	04	04
D 06 10 2	Al. Binding Wire N. 11	kg	0.03	0.06	0.06

CEYLON ELECTRICITY BOARD

DISTRIBUTION COORDINATION BRANCH

DISTRIBUTION STANDARDS & SPECIFICATIONS

TAPPING POINT ARRANGEMENT FOR AERIAL BUNDLED CONDUCTOR (SINGLE PHASE & THREE PHASE)

Extract of
Distribution Construction Standards
DCS 2 : 1996

REVISION APPROVED BY

CHAIRMAN
DISTRIBUTION DESIGN COMMITTEE

SCALE : Not to Scale

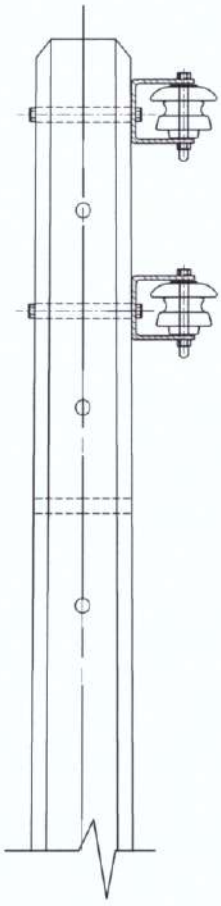
DRAWN : Harsha

DATE : May 2021 | REV NO : 01

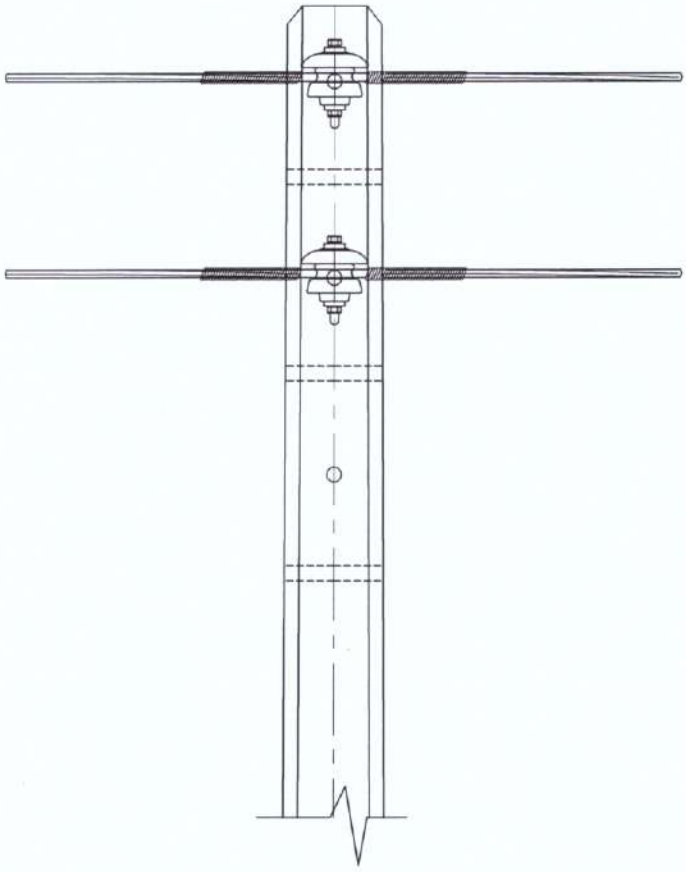
DRG NO : SC-19

SOURCE : DCS 2 : 1996

CEB Approved Construction Standards
Chairman - Dist. Coord. Committee



FRONT VIEW

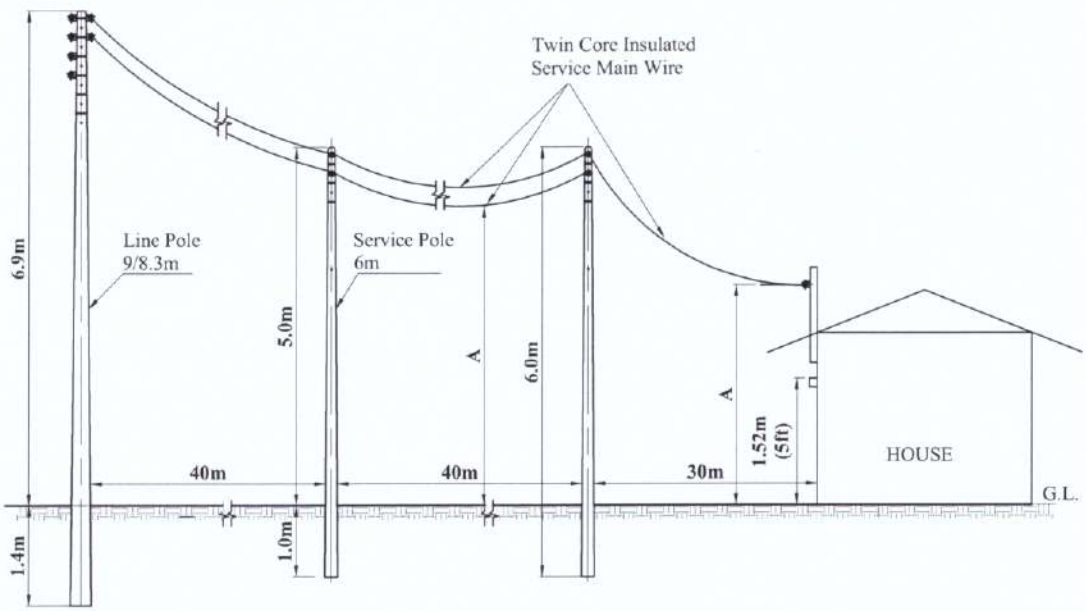


END VIEW

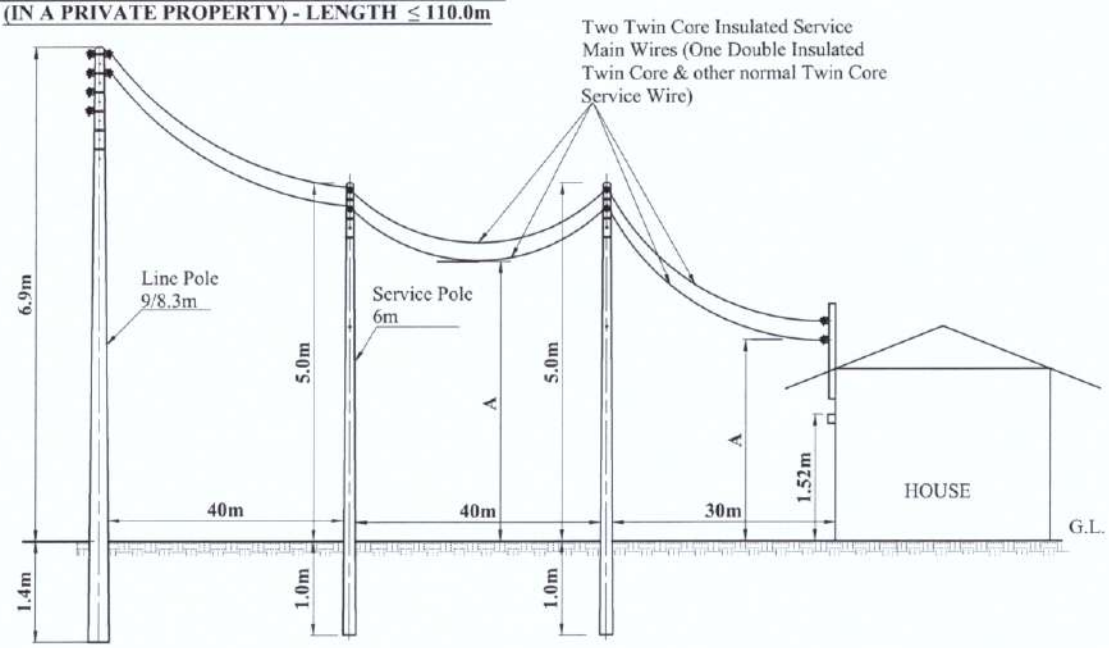
INTERMEDIATE SERVICE POLE ARRANGEMENT - MATERIAL KIT CONTENT				
CODE	ITEM DESCRIPTION	UNIT	QUANTITY REQUIRED	
			SINGLE PHASE	THREE PHASE
A 02 03 2	R C Poles 6m 50kg	Nos.	01	01
B 02 10 1	D Bracket W/O Insulators & Bolts	Nos.	01	02
B 07 10 1	G.I.Washer	Nos.	01	02
B 07 45 1	Bolts & Nuts G.I. 120x16mm	Nos.	01	02
B 07 55 1	Bolts & Nuts G.I. 200x16mm	Nos.	01	02
C 01 10 1	Insulators L.T. 90x75mm	Nos.	01	02
D 06 10 2	Al. Binding Wire N. 11	kg	0.03	0.06

CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	INTERMEDIATE SERVICE POLE ARRANGEMENT (SINGLE PHASE & THREE PHASE)	DRAWN : Harsha
		DATE : May 2021 REV NO :
	Extract of Distribution Construction Standards DCS 2 : 1996	DRG NO : SC-20
DISTRIBUTION COORDINATION BRANCH		SOURCE : DCS 2 : 1996

SINGLE PHASE SERVICE WITH INSULATED WIRE (IN A PRIVATE PROPERTY) - LENGTH ≤ 110.0m



THREE PHASE SERVICE WITH INSULATED WIRE (IN A PRIVATE PROPERTY) - LENGTH ≤ 110.0m



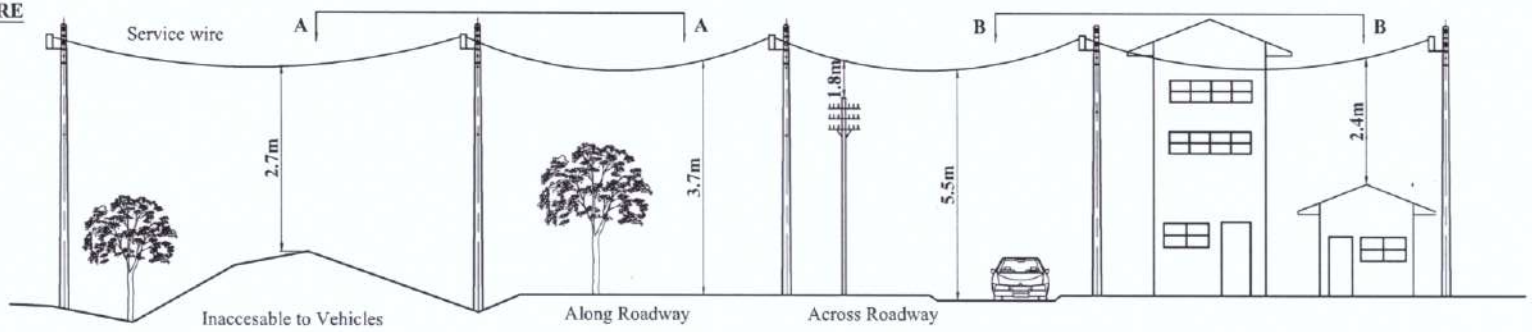
DESCRIPTION	HEIGHT (A)
Line is over any road way used by vehicles and the public have access	3.7m
Line is over any road way used by vehicles and the public does not have access	3.5m
Other places (Not used by vehicles and public does not have access)	2.7m

ALL DIMENSIONS ARE IN MILLIMETRES

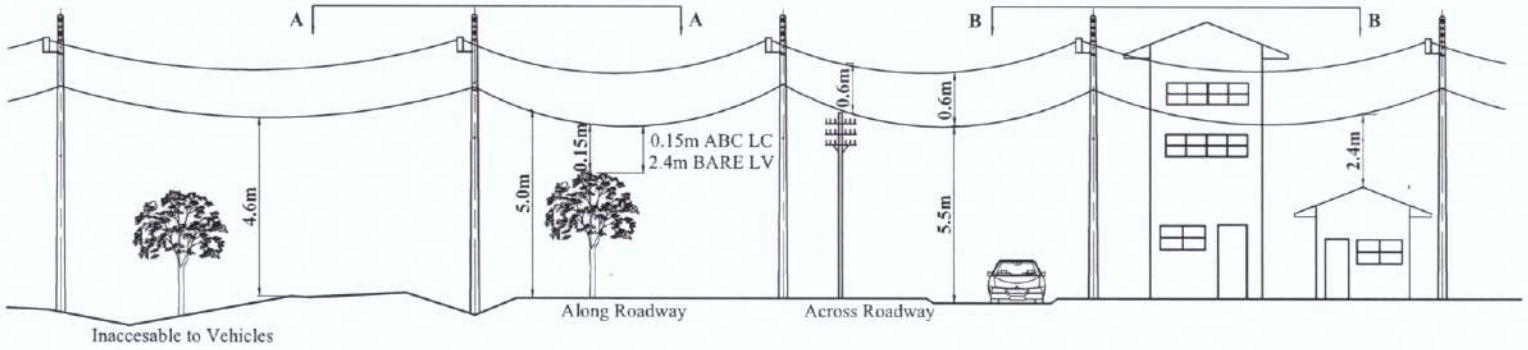
CEYLON ELECTRICITY BOARD	DISTRIBUTION STANDARDS & SPECIFICATIONS	SCALE : Not to Scale
	MINIMUM CLEARANCE FOR SINGLE PHASE AND THREE PHASE SERVICE CONNECTIONS (WITHIN CUSTOMER PREMISES)	DRAWN : Harsha
		DATE : May 2021 REV NO. -
	Extract of Distribution Construction Standards DCS 2 : 1996 — REVISION APPROVED BY	DRG NO : SC-21
DISTRIBUTION COORDINATION BRANCH	CHAIRMAN DISTRIBUTION DESIGN COMMITTEE	SOURCE : DCS 2: 1996

CEB Approved Construction Standards
Chairman - Dist. Coord. Committee

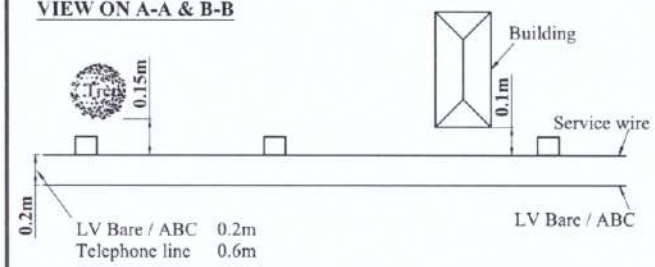
SERVICE WIRE



LOWER CONDUCTOR SERVICE WIRE WITH LV BARE/ABC ABOVE



VIEW ON A-A & B-B



CEYLON ELECTRICITY BOARD

DISTRIBUTION COORDINATION BRANCH

DISTRIBUTION STANDARDS & SPECIFICATIONS

MINIMUM CLEARANCE FOR SINGLE PHASE AND THREE PHASE SERVICE CONNECTIONS (OUT SIED CUSTOMER PREMISES)

DESIGNED BY

CE (Design)

APPROVED BY

CHAIRMAN
DISTRIBUTION DESIGN COMMITTEE

SCALE : Not to Scale

DRAWN : Harsha

DATE : May 2021 **REV NO:** -

DRG NO : SC-22

SOURCE : -

CEB Approved Construction Standard - Chairman - Dist. Coord. Committee