

# DEENDAYAL PORT AUTHORITY

An ISO 9001:2008 & ISO 14001:2004 Certified Port

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No.: EL/WK/2853

Date: 18/10/2024

## EXPRESSION OF INTEREST

EXPRESSION OF INTEREST [EOI] for "Annual rate contract for 11 KV distribution network at license area of DPA at Kandla"

(This Notice is issued only to elicit Expression of Interest from the parties interested in the work and does not constitute any binding commitment from the Deendayal Port Authority to proceed with the work or invite any or all the parties in the subsequent bidding process. The Open Tenders will be issued subsequently.)

Executive Engineer (Electrical), DPA invites Expression of Interest for the work of "Annual rate contract for 11 KV distribution network at licensed area of DPA at Kandla" from the reputed firms from those who have executed similar work in Government/Public sectors and other leading Private Organizations. The Expression of Interest (EOI) documents containing details of Scope of Work and Technical Specifications are enclosed herewith.

The interested firms are requested to submit their expression of interest for the said work in BOQ format as enclosed at Annexure-I. The completed EOI (Expression of Interest) shall be signed & submitted to the office of the undersigned on or before 04/11/2024. A signed & scanned copy of EOI is also acceptable through e-mail Id. [xene@deendayalport.gov.in](mailto:xene@deendayalport.gov.in)/[xenedpa@gmail.com](mailto:xenedpa@gmail.com)

Yours faithfully,

-- sd--

Executive Engineer (Electrical)  
Deendayal Port Authority

## SCOPE OF WORK

1. This Annual Maintenance Contract shall be carried out on the basis of 24 X 7 for existing 11 KV Overhead transmission lines & network in the jurisdiction of Deendayal Port Authority.  
The overhead line consist of.

The tender is for carrying out works under the Annual Rate Contract for

- (i) 7.5 Kilometer Double circuit 11KV line running from 66KV DPA Substation to EMMAMI (DC-1 & DC-2).
- (ii) 5.5 Kilometers, Single circuit 11KV line running from Port Power House to EMMAMI (SIPC).
- (iii) 4.4 Kilometers, Single circuit 11KV line running for Thermal 66KV Substation to AEGIS.
- (iv) 6.5 kilometers Single circuit 11KV line running from thermal Four pole structure to 7<sup>th</sup> Oil jetty.
- (v) 15 Kilometer Single Circuit 8<sup>th</sup> Oil jetty running from thermal Four pole structure to 8<sup>th</sup> Oil jetty.
- (vi) 1.5 Kilometer 1,2 ,3 & Oil jetty Substation 1 & From Port thermal 66KV substation.
- (vii) 10 Kilometer Overhead line, DP structure, Transformer & LT Panel along with 40 nos' of 20mtr High mast tower.

However, if any new 11 KV infrastructure is developed, then in future, the same shall be maintained by Contractor, though it is not included in the present scope. However, the materials will be provided by DPA if available otherwise the contractor will bring the same & DPA will reimburse on production of Invoice.

2. The Annual Maintenance Contract will be entered initially for two years for Part 1 & 2 of the Schedule, however the same is likely to be extended for further period of One year or up to the finalization of new AMC contract on the same rates and terms & conditions of the existing tender by mutual consent and approval of DPA.
3. The scope of work consists of providing connection to HT or LT consumers by laying of service/transmission line from nearest power source, supply & fixing of 11 KV /LT accessories to complete the line etc. as the case may be & as per the site requirement and as directed by Engineer-In-Charge.
4. **The detailed scope of work** is as per Schedule-B and the quantities mentioned inSchedule – B are indicative and the payment shall be made as per actual quantity / work if excess executed items as per site requirement on monthly basis. The scopeof ARC Includes.
- Fault finding & rectification of fault on tripping of existing overhead lines.
  - ARC for work of improving/strengthening or laying of new line.
  - Revamping the 11 KV Overhead Lines.
  - Providing new HT connection to consumer within the distribution licensearea of DPA.
  - Repairing / re-strengthening of damage pole/ bend pole from groundpoles.
  - Earthing,( to provide board on each earthing chamber and mention the value )
  - Loading / Unloading & shifting of materials from any location to site on 24X 7 basis.

## 5. MAINTENANCE SPARES

The items which cover only supply items in Schedule "B" shall be supplied by the contractor as per the following schedule for the first year of AMC.

- (i) 50% of quantity of each of the individual item from Schedule "B" **PART B of BOQ (Section VI)** of Electrical item to be supplied within **30-60 days from the issue of work order** with written intimation of Engineer-in-charge except for item no.
- (ii) Remaining Quantity of material of the Supply Items to be supplied in **240 -280 days from the date of issue of work order** with written intimation of Engineer-in-charge.
- (iii) However, whenever the quantity of **Electrical Part B item supplied** by Contractor is exhausted within 2 year of ARC period and if any requirement arises prior to completion of the contract variation in Quantities of Schedule of **Part B** shall be considered by DPA. The overall as well as individual variations shall be  $\pm 30\%$  in quantity for which the rate quoted by the bidder and accepted by the employer shall be applicable.

6. **Deployment of Manpower:** The Contractor shall deploy adequate skilled manpower to meet the time bound target given by DPA during the tenure of contract to restore the power supply. The required manpower to be deputed at Port Power House /Oil jetty on 24 Hrs. X 7 days basis in three shifts duty with a new utility type vehicle of not prior to 2025 R.T.O. passing. The vehicle shall be inclusive of separate driver in all 3 shifts for each vehicle fuel (Diesel), lubricants & all type of maintenances. As & when any tripping occur in any of the Over-Headlines, Staff has to attend the site for patrolling, rectification of line fault and report to site supervisor of AMC & ARC contractor as well as Shift-In-charge of DPA. Minimum 2 Linemen & 2 Helpers are to be deployed in each shift round the clock in two gangs with one Electrical Supervisor to monitor in Each Shift. However, in case of exigency, more no. of staff to be deployed to complete the work / rectification of fault for restoration of power supply or release of new connection.

The following minimum manpower shall be deployed by the Contractor to carryout effective maintenance & restoration of Over Head power as per the instructions of the Engineer-in-charge The manpower deployed in two parts, part-1 of manpower will attend the call of overhead line of DC-1. DC-2, SIPC & Aegis; while part-2 will attend the call of overhead line from thermal substation to Oil-jetty 1 to 4, Oil jetty 7, Oil jetty -8 & 10Km line of KK Road. However, the supervisor will monitor both the team.

Staff mentioned in the chart shall be posted as per their location separate attendance register & DPR should be maintained as per the location and separate Daily progress report book in which signature of individual person should be there & duly verified by DPA in-charge stationed respective substation. General staff should be stationed at Power house substation for Part -1 & for Part -2, staff should be stationed at Oil Jetty No.1 Substation and as per the situation posting of the staff should be carried out from Power house Substation.

The above posting of the supervisor staff can be changed as per the situation arise and as per the requirement of DPA site in-charge i.e. JE / AE. The posting done to the staff should be informed though WhatsApp to concern officer.

### **STAFF PROFILE:**

S/N	Designation	Requirement	Qualification	Experience
1	Electrical Supervisor	1 in Each Shift	Diploma in Electrical Engineering	Having experience of minimum 5 years in 11 KV overhead lines.

2	Electrician	2 in each shift + 1 reliever	ITI in trade of Electrician	Having experience of minimum 3 years in 11 KV Overhead line & operation / Maintenance along with it he should have experience of climbing on all type of poles "OR" experience of having 2 years in 11 KV Overhead line & operation / Maintenance if he has apprenticeship training from any Electricity board OR if he has worked in previous ARC for complete 2 Yrs time period.
3	Lineman	4 in each shift + 2 reliever	ITI in trade of Lineman	Having experience of minimum 8 years in 11 KV Overhead line and also Experience of climbing on all type of poles "OR" experience of having 5 years in 11 KV Overhead line with apprenticeship training / worked in previous ARC for complete 2 Yrs.
4	Helper	6 in each shift + 3 reliever.	SSC Pass certificate	Should have at least 1yr work experience in Overhead line work & knowledge of 11KV Overhead lines tools & equipment's for the above work.
5	Helper (Unskilled)	5 in General Shift	Nil	Certificate not essential however, they should have knowledge of electrical field and work under electrical contractor specially excavation of cable fault.
6	Vehicle Driver	2 in each shift + reliever	Having the valid Driving License	Having knowledge of Over Head line material & tools Should have 4 wheeler License & Adhar card
<b>Vehicle:</b> Vehicle including 24 Hrs. driver, fuel (Diesel), lubricants & maintenance. Min. running of vehicle will be 3000 KM per Month. ( <b>Vehicle Model: 2025</b> )				

Note:

- 1) Deployment of above staff is for Item No. 1 of Part-A only along with DPA Gate pass, and follow the model duty roaster.
- 2) For execution of items of Part-B; separate man power to be deployed as and when required during execution of work DPA Gate pass is required. However, Vehicle if idle can be used during execution of items of Part.

7.

**WORKING DAYS AND HOURS:**

The working days for the maintenance contract will be all days throughout the year. The working hours for day to day maintenance will be as follows:

- a). General Shift: 09.00 Hrs to 17.00 Hrs.
- b). 1<sup>st</sup> Shift 07.00 Hrs to 15.00hrs
- c). 2<sup>nd</sup> Shift 15.00 Hrs to 23.00 Hrs.
- d). 3<sup>rd</sup> Shift 23.00 Hrs to 07.00 Hrs.

Accordingly, Contractor shall prepare the Duty Roaster and the same shall be submitted to the Engineer-in-charge and the staff should follow the duty roaster, no staff will be entertained to violate the roaster and will be marked absent.

Arrival & Departure of staff should be well-planned to up-keep the maintenance requirement. Punctuality should be maintained at site any person coming late will not be tolerated a grace period of 10 minutes will be accepted above 10 minutes period absent will be marked against the above candidate. Prior permission should be obtained from the Engineer-in -charge for coming late in written only in that condition he may be allowed to attend his duties. The staff should leave the site at end of each shift only after arrival of staff of next shift if any person leaving the site before time, the person will be marked absent.

Model Roster for Service Engineer, Site Supervisor, Technicians, Helpers for both Part 1 & 2. Of ARC team To be submitted to Site in-charge every month along with Gate pass zerox Copy of the staff.

**MODEL DUTY ROASTER FOR STAFF PART -2**

	Mo	Tue	We	Th	Fri	Sa	Su	Mo	Tu	We	Th	Fri	Sat	Su	Mo	Tu
<b>Site Supervisor</b>																
Site Supervisor 1)	W	1	1	1	1	1	1	W	3	3	3	3	3	3	W	2
Site Supervisor 2)	1	W	3	3	3	3	3	3	W	2	2	2	2	2	2	W
Site Supervisor 3)	3	3	W	2	2	2	2	2	2	W	1	1	1	1	1	1
Site Supervisor R)	2	2	2	2	2	2	W	1	1	1	2	2	2	W	3	3
<b>Shifting Staff for Attending &amp; Monitoring of 11KV Over Head Line of Outside Cargo Jetty KK Road DP structure</b>																
<b>ELECTRICIAN</b>																
Electrician (1)	W	1	1	1	1	1	1	W	3	3	3	3	3	3	W	2
Electrician (2)	1	W	3	3	3	3	3	3	W	2	2	2	2	2	2	W
Electrician (3)	3	3	W	2	2	2	2	2	2	W	1	1	1	1	1	1
Electrician (1)	2	2	2	W	1	1	1	1	1	1	W	3	3	3	3	3
Electrician (2)	1	1	1	1	W	3	3	3	3	3	3	W	2	2	2	2
Electrician (3)	3	3	3	3	3	W	2	2	2	2	2	2	W	1	1	1
Electrician (R)	2	2	2	2	2	2	W	1	1	1	2	2	2	W	3	3
<b>HELPER</b>																
Helper (1)	W	1	1	1	1	1	1	W	3	3	3	3	3	3	W	2
Helper (2)	1	W	3	3	3	3	3	3	W	2	2	2	2	2	2	W
Helper (3)	3	3	W	2	2	2	2	2	2	W	1	1	1	1	1	1
Helper (1)	2	2	2	W	1	1	1	1	1	1	W	3	3	3	3	3
Helper (2)	1	1	1	1	W	3	3	3	3	3	3	W	2	2	2	2
Helper (3)	3	3	3	3	3	W	2	2	2	2	2	2	W	1	1	1
Helper (R)	2	2	2	2	2	2	W	1	1	1	1	1	1	W	3	3

**Shifting Staff for PART-2 Attending & Monitoring of 11KV Over Head Line of Outside Cargo Jetty ( Oil jetty  
1-4,OJ -7 & OJ-8)**

**LINE MAN**

Lineman (1)	W	1	1	1	1	1	1	1	W	3	3	3	3	3	3	W	2
Lineman (2)	1	W	3	3	3	3	3	3	W	2	2	2	2	2	2	W	2
Lineman (3)	3	3	W	2	2	2	2	2	W	1	1	1	1	1	1	1	1
Lineman (1)	2	2	2	W	1	1	1	1	1	1	W	3	3	3	3	3	3
Lineman (2)	1	1	1	1	W	3	3	3	3	3	3	W	2	2	2	2	2
Lineman (3)	3	3	3	3	3	W	2	2	2	2	2	2	W	1	1	1	1
Lineman (R)	2	2	2	2	2	2	W	1	1	1	2	2	2	W	3	3	3

**HELPER**

Helper (1)	W	1	1	1	1	1	1	1	W	3	3	3	3	3	3	W	2
Helper (2)	1	W	3	3	3	3	3	3	W	2	2	2	2	2	2	W	2
Helper (3)	3	3	W	2	2	2	2	2	W	1	1	1	1	1	1	1	1
Helper (1)	2	2	2	W	1	1	1	1	1	1	W	3	3	3	3	3	3
Helper (2)	1	1	1	1	W	3	3	3	3	3	3	W	2	2	2	2	2
Helper (3)	3	3	3	3	3	W	2	2	2	2	2	2	W	1	1	1	1
Helper (R)	2	2	2	2	2	2	W	1	1	1	1	1	1	W	3	3	3

**MODEL DUTY ROASTER- PART -1**

	Mo	Tue	We	Th	Fri	Sa	Su	Mo	Tu	We	Th	Fri	Sat	Su	Mo	Tu
<b>Shifting Staff for PART -1 Attending &amp; Monitoring of 11KV Over Head Line of Outside Cargo Jetty (DC-1,DC-2, SIPC &amp; Agies )</b>																
<b>LINE MAN</b>																
Lineman (1)	W	1	1	1	1	1	1	W	3	3	3	3	3	3	W	2
Lineman (2)	1	W	3	3	3	3	3	W	2	2	2	2	2	2	W	2
Lineman (3)	3	3	W	2	2	2	2	W	1	1	1	1	1	1	1	1
Lineman (1)	2	2	2	W	1	1	1	1	1	1	W	3	3	3	3	3
Lineman (2)	1	1	1	1	W	3	3	3	3	3	3	W	2	2	2	2
Lineman (3)	3	3	3	3	3	W	2	2	2	2	2	2	W	1	1	1
Lineman (R)	2	2	2	2	2	2	W	1	1	1	2	2	2	W	3	3
<b>HELPER</b>																
Helper (1)	W	1	1	1	1	1	1	W	3	3	3	3	3	3	W	2
Helper (2)	1	W	3	3	3	3	3	W	2	2	2	2	2	2	W	2
Helper (3)	3	3	W	2	2	2	2	W	1	1	1	1	1	1	1	1
Helper (1)	2	2	2	W	1	1	1	1	1	1	W	3	3	3	3	3
Helper (2)	1	1	1	1	W	3	3	3	3	3	3	W	2	2	2	2
Helper (3)	3	3	3	3	3	W	2	2	2	2	2	2	W	1	1	1
Helper (R)	2	2	2	2	2	2	W	1	1	1	1	1	1	W	3	3
<b>HELPER (Unskilled)</b>																
Helper (1)	2	2	2	2	2	2	W	2	2	2	2	2	2	W	2	2
Helper (2)	2	2	2	2	2	2	W	2	2	2	2	2	2	W	2	2
Helper (3)	2	2	2	2	2	2	W	2	2	2	2	2	2	W	2	2
Helper (4)	2	2	2	2	2	2	W	2	2	2	2	2	2	W	2	2
Helper (5)	2	2	2	2	2	2	W	2	2	2	2	2	2	W	2	2

Driver of Vehicle of Part-1 & Part-2																
Driver (1)	W	1	1	1	1	1	1	W	3	3	3	3	3	3	W	2
Driver (2)	1	W	3	3	3	3	3	3	W	2	2	2	2	2	2	W
Driver (3)	3	3	W	2	2	2	2	2	2	W	1	1	1	1	1	1
Driver (1)	2	2	2	W	1	1	1	1	1	1	W	3	3	3	3	3
Driver (2)	1	1	1	1	W	3	3	3	3	3	3	W	2	2	2	2
Driver (3)	3	3	3	3	3	W	2	2	2	2	2	2	W	1	1	1
Driver (R)	2	2	2	2	2	2	W	1	1	1	1	1	1	W	3	3

## 8. Responsibilities of Contractor:

- It is fully the responsibility of the contractor to deploy qualified Site Engineer, Site Foreman, Electricians and Wiremen on experience, relevant License/permits to handle electrical equipment's, etc., as applicable. The Contractor has to submit the **Notarized Aadhaar Card/Election Card, Educational & Experience.**
- Certificates of his deployed personnel along with Profile of Staff. In case of Helper to Artisans, the Notarized copy of Aadhaar Card/Election Card shall be submitted along with Profile of Staff. No person below 18 years should be deployed for Maintenance Contract. The deployed personnel of Contractor should be well conversant with Indian Standards, Indian Electricity Rule and acts as applicable and should have knowledge of electrical and Industrial safety practices.
- Contractor will ensure consistency of work and work force, correct trouble shooting, good workmanship, follow all safety procedures and will make all necessary efforts to maintain healthy environment and reliable services.
- If any of the staff members appointed by Contractor is found to be 'not competent', he has to be replaced by a right person within a time, as instructed by Electrical Engineer- In-charge
- In no case, the contractor or his/her employees shall claim job / employment with DPA. No transport facility shall be provided for the contractor or his employees.
- It is purely contractor's responsibility to get his staff acquainted/trained with the site conditions, operation and maintenance procedure, equipment detail, safety devices, scope of work etc.,
- Contractor will be responsible for any act of theft, sabotage, misdeed, indiscipline, and negligence on the part of contractor or his employees. Penalty or legal action, as decided by EIC shall be imposed on the contractor.
- The contractor or his supervisor shall meet the EIC or his nominee every day to receive the details of issues / complaints to be attended and after attending to these complaints, a report on the same is to be submitted to the concerned Officer.
- The contractor shall maintain Cell phones (Android type) offset round the clock with net facility for video conference & communication **One set for part-1 Staff, One set for part-2 Staff, One set for Oil jetty 8<sup>th</sup> berth Electrician & One set for** ARC Supervisor for controlling ARC staff of both part at the cost and responsibility of the Contractor.
- The Contractor shall arrangement for the latest computer & printer facility in the site office allowed by DPA free of cost to submit the daily report & provide documents and as per requirement all the documents to be

submitted to DPA. Along with this cupboard should be available at both site to keep the minimum consumable, tools & material for site.

- The contractor is responsible for restoring power in case of faults occurring in the above-mentioned areas. The contractor must ensure that their deployed personnel are equipped with all the necessary tools and resources required for prompt and effective troubleshooting and resolution of electrical issues. This includes having access to testing equipment, replacement parts, and any other tools deemed essential for restoring power.
- DPA will not be responsible for death, accident or injury to the Contractor's employees engaged by him, which may arise in the course of their duty at our premises, nor shall we be responsible and be liable to pay damages or compensation to such persons or to third parties. The Contractor shall at all times indemnify and keep DPA indemnified against all claims which may be under the Workmen's Compensation Act, 1923, or any statutory modifications thereof or otherwise for or in respect of any damages or compensation payable in consequence of any accident or injury sustained by any workman or other person/ person at the Centre or premises, building, equipment's etc. is attributable to the Contractor or his workmen, such damages shall be made good by the Contractor or his workmen, such damages shall be made good by the Contractor.

## 9. **DOCUMENTATION**

- a) Substation Equipment's parameters should be recorded in daily logbooks. Detailed inventory records like Consumables, materials movement, material consumption; materials disposed etc. also should be maintained. In all documents, for each work, contractor should get signature from Engineer In-charge (Electrical) or his nominees.
- b) Detailed inventory records like materials movement, material consumption, materials disposed etc. also should be maintained. In all documents, for each work, contractor should get signature from Engineer In-charge (Electrical) or his nominees.
  - Following Register is to be strictly maintained by AMC Contractor during AMC period as the Contract Labour (Regulation & Abolition) Central Rules, 1971
  - Muster Roll Register Form No:-16.
  - Register of Wages i.e. Form No:-17.
  - Register of overtime i.e. Form No: - 23.
  - Register of advance pay i.e. Form No:-22.
  - Register of accident, major accident & dangerous occurrence i.e. Form No:-29
  - Register of Workman employed by Contractor i.e. Form No:-13.
  - 
  - A. Profile of staff personnel for posted staff during AMC period.
  - B. Consumable register & Store Requisition.
  - C. Tools and Plants.
  - D. Entry Permit of Staff & Vehicle (Gate Pass).
  - E. Maintenance Register of High Mast
  - F. Earthing value register to be maintained every month as per EIC.
  - G. Duty Roaster 3 copies
  - H. Power failure register
  - I. Maintenance & Diesel record register of DG set inside cargo jetty

All the documents prepared by the contractor will be the property of DPA. The contractor will not share the information contained in the above said log books registers with any outside person without written permission of EIC. The contractor will hand over the logs and registers to DPA at the time of completion of contract period.

## 10. **Tools & tackles**

Following measuring instruments after the date of issuance of LOI should be available at site for Part -1 & Part-2 ARC.



## Measuring Instruments

Sr No	Description	Quantity of Measuring Instruments of <b>PART-1</b>	Quantity of Measuring Instruments of <b>PART-2</b>
1	Multi meters(Fluke / Megger / Motwane)	1 No	2 No
2	Lux meter (Fluke make)	1 no	2 No
3	5000V Megger (Fluke /Motwane make) (digital )	2 No	2 No
4	Earth resistance measurement instrument (0.1 Ohm LC) with kit (Fluke / Motwane make)	1 No	1 No
5	Phase sequence meter. ( Fluke / Kyoritsu)	1 No	
6	Tong tester. (Fluke / Megger / Motwane)	1No	2 No
7	Underground Cable live detector	1 No	

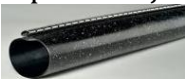
## Tools & Tackles

Sr No	Description	Quantity of tools of <b>PART-1</b>	Quantity of tools of <b>PART-2</b>
1	Double end open spanner from size 6-7 to 30 – 32 size (Taparia / Stanley make)	1 Sets	2 sets
2	Double end ring spanner from size 6-7 to 30 – 32 (Taparia / Stanley make)	1 Sets	2 Sets
3	6-7 to 30 – 32 size (metric) set (Taparia / Stanley make)	1 Sets	2 Sets
4	Adjustable wrenches (12 inch) (Taparia / Stanley make)	1 Sets	2 Sets
5	Hydraulic Crimping tool Make Dowell's / Jaison	1 Sets	2 Sets
6	Allen keys set	1 Sets	2 Sets
7	Tubular spanner set (Taparia / Stanley make)	1 Sets	2 Sets
8	Star screw driver set (Taparia / Stanley make)	1 Sets	2 Sets
9	Screw driver set (Taparia / Stanley make)	2 Sets	2 Sets
10	Hammers each (1lb & 2lb)	2 Sets each	2 Sets each
11	Electrical Grinder of make (MILWAUKEE/MAKITA / DeWalt/ BOSCH)	1 No	1 No
12	Battery operated Grinder along with extra battery of below mentioned make ( <b>Milwaukee</b> make model 18VDC, 61UU61 “OR” <b>DeWALT</b> make model 18V XR Cordless Die Grinder Brushless DCG426P2-QW, “OR” <b>Bosch</b> make model GWS 18V-7 125mm Cordless Angle Grinder)	1 No	1 No
13	Hammer Drill Machine (MILWAUKEE/MAKITA / DeWalt/ BOSCH)	1 No	1 No
14	Battery operated Drill M/c with extra battery of below mentioned Make ( <b>Dewalt</b> make, DCD9962P2-QW or <b>Bosch</b> make, GDS 18V 1050 cordless, <b>Makita</b> make-DDF458RFE )	1 No	1 No
12	High voltage discharge rod including operating rod	2 Sets	2 Sets
13	Dual mode Air Blower (Normal and Heating Mode of make MAKITA / DeWalt/ BOSCH/ Ralli wolf)	1 No	1 No
14	Emergency lights with 4 Hrs, battery backup.	3 Nos.	3 Nos.
15	Cable Jointing Kit (Gas bottle & Burner)	1 Kit.	
16	Spade – 4 Nos.	3 Nos.	3 Nos.
17	Aluminium Ladder as per site requirement Medium & Big each	2 Nos.	2 Nos.
18	RCC Breaker M/c with Drill Bit	1 No.	1 No.
19	Pliers to every Electrician and Wireman	25 Nos.	25 Nos.
20	Line Tester to every Electrician and Lineeman	25 Nos.	25 Nos.

21	Test lamps to every Electrician and Lineman	25 Nos.	25 Nos.
22	Torches to every Electrician & Lineman	--	
23	First aid kits at power house , estate office, oil jetty	5 Nos.	
The list is not exhaustive. During the contract period, the contractor is required to bring any other required measuring instrument and tools & tackles at his own cost on the written instructions of EIC.			

11. **Consumables:-** During the contract period, Consumables as mentioned below is to be provided by Contractor at his own and has to maintain in the register & the same is to be Deposit in DPA store and the same consumable will be issued on production of requisition by Contractor

<b>CONSUMABLES</b>			
Sr No	Description	Minimum Qty for PART-1	Minimum Qty for PART-1I
1	Araldite & M-Seal	250 gms. each	250 gms. each
2	Insulation tape / PVC tape	150 roll	150 Roll
3	H.T Tape /AVL Tape	10 Roll each	10 Roll each
4	Water proof flex adhesive sealant Tape	10 Roll	10 Roll
5	Space heater for Panels	10 no's	10 no's
6	11KV Insulation tape (Self amalgating & fusing) RS Pro / stanvac /3M	50 Nos.	50 Nos.
7	HC-80 (Anti Tracking Spray) make Aarna Lube Pvt ltd / stanvac /ASV	10 tin's	10 tin's
8	Bitumen Impregnated Cotton Tape	15 Nos.	15 Nos.
9	WD-40( make ASV /Penetroil / Aeresol)	20 tin's	20 tin's
10	Anti rust spray (3M/TS-50 banna sprays)		
11	Elepro 200 (Moisture Displacer) make ASV	10 tin's	10 tin's
12	Aluminum Foil Tape (Cravity Sealing Tape) make 3M	5 No	5 No
13	Scotch 23 ( High Voltage Tape ) make 3M	10 no's	10 no's
14	Scotch fill Putty ( Insulation Putty ) make 3M	5 No's	5 No's
15	Foam Tape ( Gasket Form Tape) make 3M	5 No's	5 No's
16	Water proof Tape heavy duty water leakage tape (150mm width & above).	05 Nos.	05 Nos.
17	On Line Contact Cleaner	10 Tins.	10 Tins.
18	Aluminum Foil Tape (Cavity Sealing Tape)	10 Nos.	10 Nos.
19	Scotch 23 ( High Voltage Tape)	10 Nos.	10 Nos.
20	Scotch fill Putty ( Insulation Putty )	10 Nos.	10 Nos.
21	Foam Tape ( Gasket Form Tape)	5 Nos.	5 Nos.
22	Emery paper/ Scotch Brite	15 Nos. each	15 Nos. each
23	Lugs & ferrule for LT cable size up to 150 sq.mm	100 Nos.	100 Nos.
24	Lugs & ferrule for HT cable size up to 150 sq.mm	50 Nos.	50 Nos.
25	Lugs & ferrule for HT cable size from 150 sq.mm up to 300Sqmm	50 Nos.	50 Nos.
26	IIKV HT & 1.1 KVLTL Heat shrink Tubes.	20 no's each for HT & LT	20 no's each for HT & LT
27	Indication lamps LED type / lamp holder	100 each	100 each

28	Cotton waste /Muslin cloth	100 Kg /50 Mtr.	100 Kg /50 Mtr.
29	Stainless steel and washer	6mm x 40 mm 50No's 8mm x 40mm 50No 10 mm x 40mm 50 No's 12 mm x 40 mm 50 No	6mm x 40 mm 50No's 8mm x 40mm 50No's 10 mm x 40mm 50No's 12 mm x 40 mm 50 No's
30	M.s Nut bolts and washer	6mm x 40 mm 50No's 8mm x 40mm 50No 10 mm x 40mm 50 No's 12 mm x 40 mm 50 No	6mm x 40 mm 50No's 8mm x 40mm 50No's 10 mm x 40mm 50No's 12 mm x 40 mm 50 No's
31	HT Heat shrink wraparound sleeves for cable repair and joint outer re-jacketing . 	i) Suitable for 150Sqmm 10no's. ii) Suitable for 300Sqmm 06 no's. iii) Suitable for 400Sqmm 04 no's	i) Suitable for 150Sqmm 10no's. ii) Suitable for 300Sqmm 06 no's. iii) Suitable for 400Sqmm 04 no's
32	LT Heat shrink wraparound sleeves for cable repair and joint outer re-jacketing .	i) Suitable for 10-25 Sqmm 10 no's. ii) Suitable for 35-50 Sqmm 15 no's. iii) Suitable for 70- 95 Sqmm 10 no's iv) Suitable for 120-185 Sqmm 5 no's v) Suitable for 220-300 Sqmm 5 no's	i) Suitable for 10-25 Sqmm 10 no's. ii) Suitable for 35-50 Sqmm 15 no's. iii) Suitable for 70- 95 Sqmm 10 no's iv) Suitable for 120-185 Sqmm 5 no's v) Suitable for 220-300 Sqmm 5 no's
33	Steel weld ( make Stanvac /Loctite/ JB weld)	5 tin	
34	One Minute Epoxy Putty, (make Stanvac Z814 / horse brand /Loctite)	5 Syringe	
35	Enamel paint (20Ltr) Tin Grey (make Berger / Asian/Jotun)	1Tin	1Tin
36	Enamel paint (20Ltr) Tin Black (make Berger / Asian/Jotun)	1 Tin	1 Tin
37	Red oxide (20Liter) Tin make (Berger / Asian/Jotun)	1tin	1tin
38	Turpentine (20Liter) Tin	1 tin	1 tin
39	Brush small & big size	10no's each	10no's each

Consumables are to be provided by the contractor during period of maintenancecontract at his own cost for carry out routine maintenance as mentioned in tender. The mentioned minimum quantity of consumables shall be recoup every month during currency of Maintenance Contract. The list is not exhaustive. During the contract period, the contractor is required to bring any other required consumables at his own cost on the written instructions of EIC.

## 12.

### **Uniform & PPE:**

The Contractor has to provide Uniform to all the employees deployed for Maintenance Contract with Logo of the contractor. Also all the employees of Contractor shall wear the Uniform and PPE while on

duty the uniform should be with company Logo.

The following PPE shall be provided by Contractor to his deployed staff during Maintenance contract.

Sr no	Description	For Staff of PART 1 &2
1	Helmet	For each Staff member
2	Safety Shoes	For each Staff member
3	Goggles	For each Staff member
4	Rain Coat	For each Staff member
5	Reflective Jacket	For each Staff member
6	H.T Rubber Hand Gloves	Each Substation 2 no's
7	Face Shield (fire Proof)	Each Substation 2 no's
8	Gum boot	For each Electrician /Linemen
9	Pole Climbing Shoe (80 Kg)	6 pairs

13. The work shall be carried out on Over Head, underground network. DPA will not be responsible for failure of equipment in the working area. Contractor has to provide suitable safety & PPE equipment to his workers, and has to obtain Group Insurance for working at height of 12 Mtrs.
14. No idling charges will be paid by DPA. However, as per need, DPA may arrange outage on Sunday/holiday & the contractor is bound to execute the work.
15. The Contractor has to execute the work as per instructions given by Engineer- in-Charge or his nominee.
16. Scope of work includes sufficient man power (on 24 X 7 basis) with necessary advanced tool & tackles and vehicle to carry out allotted work within stipulated time limit.
17. The Pole shall be supplied & erected properly with suitable identification indicator at every pole for each network, which also includes muffing to pole by C.C. mix.
18. The contractor shall quote the rate for Part-A per month basis to attend & Monitor the Trouble shooting, fault finding etc. consisting only deploying of manpower with related tools & tackles to attend the line faults like re- jumpering or making of blown D.O. fuses and other accessories urgently require to restore the power supply. Removing the excess sag of overhead line, tightening of stay, cross-arm etc. as per IS norms. The time frame for erection / installation / replacement of item is as under: Execution / erection of pole and its ancillary items are 24 Hrs. for each pole.
19. In the existing or new crossing of rail/road HT/LT cable, if got damaged for any reason, the same shall be attended by the contractor, to the satisfaction of the concern EIC/concern AE (E), Deendayal Port Authority. The rail/road crossing to be carried out with horizontal boring. The HDPE pipe required for horizontal boring is in the scope of contractor. However, the HT/LT cable will be supplied by DPA free of cost if available; otherwise the contractor shall arrange the same and the payment, for the supply of cable, shall be reimbursed by DPA on submission of invoice / bill from the supplier from whom the contractor has purchased after approval of competent authority. No excess payment will be made by the DPA on account of horizontal boring and excess manpower. The support for fault finding machine to locate the fault in U/G cable will be provided by DPA subject to availability. However, if fault finding machine is out of commission, contractor has to arrange fault finding machine for detecting fault. If during raining season or in case of rain, the site is inaccessible for HDD to restore power or otherwise all the arrangement at their own cost for HDD work shall be made by the contractor.

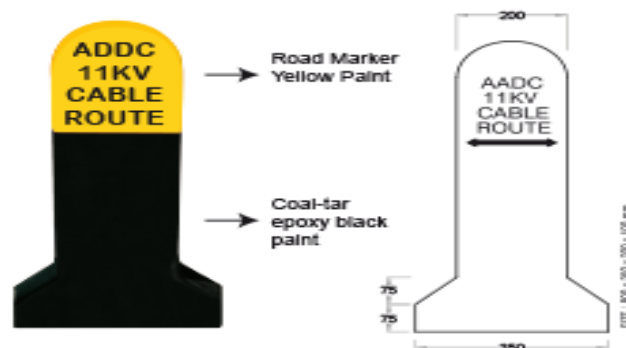
Further, if any of the items, that is required to rectified the fault, but not available with DPA, the same shall be brought by the contractor for which time relaxation of penalty will be given and the payment will be reimbursed on production of original invoice from the party, where from the materials has been purchased.

20. Latest Tools & Tackles, Man power & Material, elevated platform on hire etc. will be arranged by the Contractor to execute the work at 10-12-meter height. No facility will be provided by DPA and will not entertain any claim against it.  
The broad details of each item & Technical Specification of the work are shown in the Schedule "B" are indicative but not exhaustive and the payment shall be made as per actual qty. /work execution as per site requirement. However, while submission of offer; bidder should visit the site and cover everything to meet the site requirement all respect.
- 19 (a) The contractor shall inform well in advance in writing for taking power shut down as and when required for repair work/preventive / periodical maintenance in order to intimate concerned port officials to enable them to make necessary arrangements during power shutdown. The above permission letter record should be maintained by the contractor in proper manner. A format of Work Permit Form is placed at **Section-X**.
- (b) At the time of maintenance work when power is fed by 66 KV substation, Line clearance is required to be obtained from the concerned officials of invariably. A Line Clearance register is to be maintained in the format given at XI.
- 20 During the contract period, Consumables are to be provided by Contractor at his own and has to maintain in the register & the same is to be Deposit in DPA store and the same consumable will be issued on production of requisition by Contractor. The minimum quantity of consumables mentioned **Clause no 9** of the scope of work is to be maintained & shortfall consumable is to be coup up within 7 days of commencement of every month (monthly billing) during currency of Maintenance Contract and shall be verified by Engineer-in-Charge, if any shortage found penalty will be levied for per week per item if shortfall of same item is repeated next month than double the rate will be charged per item per week till the consumable not updated in DPA store.
- 21 The contractor should supply Tools & Tackles & measuring instrument as mentioned in **Clause no 8** of the scope of work and same should maintained throughout the ARC period.
- 22 The contractor should supply **tested & Calibrated measuring instruments** as mentioned in **Clause no 8** of the scope of work and maintain the register & documents of the calibrated measuring tools. the same should be calibrated before the start of 2<sup>nd</sup> year ARC period updated
- 23 **Tools and tackles** :-During the inspection if any instruments mentioned above Clause No. 21, which required to be kept by the contractor during the contract period as per the tender condition, are not available, penalty per instrument per day and per tool per day and part thereof the payment will be recovered from the contractor till the time the tools are brought back by the contractor
- 24 **Manpower** :- If manpower mentioned above Clause No. 4 of Scope of Work, shall not report of any day same shall be treated as non-deployment of staff on that days/day. In that case the penalty for Site Engineer, Site Supervisor, Electrician, Helper & Sweeper whosoever absent of that day will be imposed.
- 25 **Restoration in HT power supply**  
In case if the contractor fail to restore the HT power supply within maximum stipulated time period 2 hrs. after intimation (through mobile/text message/whatsapp/email or through any other mode of communication which will be subsequently recorded in site order book also) except for major breakdown like cable fault/ transformer fault, PGVCL incomer failure dashing & damage by outside (3th Party) the penalty per hour and part thereof will be levied for the period of first 24 hrs. after which double the amount will be charge uptill the restoration of power.

- 26** Restoration in LT power supply In case if the contractor fail to restore the LT power supply within stipulated time period 2 hrs. after intimation (through mobile/text message/whatsapp/email or through any other mode of communication which will be subsequently recorded in site order book also) except for major breakdown like cable fault/ transformer fault, PGCVCL incomer failure any damage made by 3th party the penalty per day uptill the restoration of power.
- 27** Time limit for cable fault:- The maximum time allowed for finding fault and fixing the same is 4 hrs for both H.T & L.T cable failing which penalty per fault per hour and part thereof will be levied till the power is no restored.
- 28** Non-availability / Non- working of Mobile set.  
The communication system (Mobile Phone) should be available 24x 7 in working condition, the contractor site-in-charge / Electrician should update the position of the Lighting of the entire 13KM stretch to the Engineer-in -charge / DPA in-charge in every shift and form a WhatsApp group. However, if for any reason the site office phone is out of order immediately it should be repaired or replaced by new phone at site if the phone is not available at site for more than 12hr's then penalty will be imposed till the availability of the phone at site.
- 29** Poor workmanship.  
If during Inspection if any work carried out is of temporary in nature and if the work done without following safety norms, then penalty per incident will be levied on the contractor. (work such as temporary Cable joint/ excavation not properly covered / Cleaning of vegetation around the street light pole/Light pole/Around 2 pole & 4 pole structure / tower / Distribution panel door damage or not closed / junction box open etc all this will come under poor workmanship).
- 30** The contractor should immediately arrange Manpower for any work entrusted of Part B of Schedule "B" along with Gate pass or permission letter for entry into restricted area with the necessary equipment & tools required at site.
- 31** The Cable Fault Locater Machine should be made available within 01 hr at site, Otherwise penalty will be imposed on hourly basis to the contractor. If the machine is under breakdown during that period the contractor should arrange alternate arrangement of bringing the m/c on rent and locate the fault.  
  
Normally all the faults should be attended within 04 hrs on getting intimation of fault through any media, failure for not attending on time for which penalty will be imposed on hourly basis for the delay on the contractor, provided if there is any firm reason of delay on reaching at site then the same will be decided by EIC / AE(E) on merit basis.  
  
In case if manual excavation is required, then the contractor shall arrange the labour. However, if excavation is to be done by excavator then Excavator along with driver should reach at site within 2 hrs. the case is same for the HDD machine & operator, for Non- availability of labour / any machine at site within 2 hrs. the penalty will be imposed on hourly basis. However, in case of traffic jam if the machine is unable to reach at time then no penalty will be imposed for delay on account. If any maintenance is to be carried out in the machine prior approval from EIC / AE (E) to be obtained. Also, in case of Breakdown of any of the machines, the contractor shall inform to the site in-charge for repairing of the same stating the approximate time required for it. For maintenance/breakdown takes more than 08 Hrs. then the contractor make alternative arrangement, otherwise, penalty per hour of delay will be imposed on the contractor.
- 32** If any cable, which cannot be buried, in that case, it shall be laid in DWC pipe of suitable size. Also, if any of the cables, while execution of the work, could not be put underground/in cable

trench/saddling and planned to attend afterwards or next day, in that case, the cable shall invariably be kept wound/coiled in safe place to avoid damage due to vehicular movement or otherwise. Alternatively, such cable may be left on the drum which shall be lowered from its jacks and firmly anchored.

- 33 Before and terminations are made, the I.R. value shall be measured to ensure the healthiness of the cable.
- 34 All the materials shall be supplied as per schedule, mentioned in the tender, failure of which, the penalty per week per material shall be imposed on the contractor. However, if delay happens due to unavoidable situation, which is not in anybody's control, then no penalty will be imposed.
- 35 If Firm fails to supply the items of Schedule – B as per time limit, LD @5% of the material cost per week will be recovered from the RA Bill of the contractor.
- Note :** All the penalties will be commenced from the date of issues of Work Order.
- 36 When the cable drums will be required to be shifted, proper care shall be taken as directed. While removing the cables from Cable Drum, the Drum shall be properly mounted on jacks or on a cable wheel or any suitable device, to ensure that the spindle, jack etc. are strong enough to take the weight of the cable drum.
- 37 While de-reeling/reeling of any cable, the cable drum shall be mounted properly on jacks or cable wheels.
- 38 Handling of Cable: While handling of any cable it shall be ensured that both ends of cable are properly sealed to prevent ingress/absorption of moisture.
- 39 While passing the cable through HDPE Pipe (HDD)/laying in the RCC Trench/in the Hard or Soft Soil, the cable shall not allowed to pull the cable by any type of vehicles.
- 40 If, while working in the site by the contractor, any old cable is found, then the same shall be removed and handed over/shifted to any location as directed.
- 41 The contractor shall provide PCC cable route marker at every 30 Meter intervals for HT cables and 40 Meter intervals for LT cable as shown below Route marker shall also provide at every bend of cable.



42 **Vehicle:**

Tata yodha / Mahindra Maxi Truck utility type vehicle to be procured by Contractor after getting LOI from DPA and the documentary evidence shall be produced with registration number to

Engineer-in-Charge. The vehicle shall be of model 2025. The vehicle shall be exclusively used for shifting of men & material inside cargo jetty, collection of Diesel for DG Sets from Gandhidham/Adipur.

Individual log book should be maintained for each vehicle the site supervisor of DPA shall be responsible and total control of the vehicle. The vehicle should not be used for transportation of manpower from their home to work site. However, for transportation of shift staff, loading & unloading the material for which contractor shall arranged the own arrangement of vehicle at their own cost. The vehicle should not be older than January 2024. Separate log book should be kept in each vehicle and properly maintained daily showing the Kilometre travelled with signature of the supervisor / Site in-charge using the vehicle. The vehicle driver should be provided with company uniform and vehicle should be stationed at Cargo Jetty Substation. Contractor should keep vehicle driver having heavy licences and copy of the licence of driver along with insurance copy of vehicle and copy RC book of individual vehicle should be submitted to site office within 1 week of issue of work order.

-- sd--  
Executive Engineer (E)  
Deendayal Port Authority.



## BILL OF QUANTITIES

### **SCHEDULE-B**

Sr. No.	Description	Qty.	Unit	Rate	Amount
<b>A.</b>	<b>PART-A ( Monitoring &amp; Trouble Shooting / Fault of OH Line)</b>				
<b>1.</b>	Attending & Monitoring of the Trouble shooting /fault of 11 KV Overhead lines. Work comprises of Labour, Material, Tools & Tackle, earth movers for shifting of material as & when required (on 24X7 basis) as directed by Engineer - in-Charge and as per the scope of work given above.  a) Manpower for Trouble shooting /fault finding of 11 KV Overhead lines of DC-1, DC-2 , SIPC & Agies Overhead line.( PART-1)  b) Manpower for Trouble shooting /fault finding of 11 KV Overhead lines of Oil jetty 1-4 , Oil jetty -7 & 8 & Over head Line for illumination along Pipe line (PART-2) .	<b>24</b>	<b>Month</b>		
<b>2.</b>	Providing Vehicle for transportation of material / execution of work & shifting manpower from one site to another site outside cargo jetty along with driver & fuel.  a) Tata Yodha / Mahindra Maxi truck Utility type vehicle of model 2024-25 inclusive fuel & driver round the clock for the ARC Shift Staff to attend & Monitor the 11KV Over Head Line Outside Cargo Jetty of DC-1 Ckt (7.5KM), DC-2(7.5Km), SIPC (5.5Km) & Agies(4.4KM) and miscellaneous works stationed at Port power house as indicated in the scope of work (PART-1).  b) Tata Yodha / Mahindra Maxi truck Utility type vehicle of model 2024-25 inclusive fuel & driver round the clock for the ARC Shift Staff to attend & Monitor the 11KV Over Head Line Outside Cargo Jetty of 7 <sup>th</sup> Oil jetty Ckt (6.5KM), 8 <sup>th</sup> Oil Jetty(15Km), 1 to 4 no Oil jetty (1.5Km) & 10KM pipe line illumination at K.K. Road and miscellaneous works stationed at Port power house as indicated in the scope of work (PART-2).	<b>24</b>	<b>Month</b>		
		<b><u>TOTAL OF PART "A"</u></b>			

Sr. No.	Description	Unit	Qty	A-Supply		Unit	Qty	B-Labour(Stringing /Erection / Installation, testing & commissioning)	
				Rate	Amount			Rate	Amount
<b>B.</b>	<b>PART-B ( Works)</b>								
1	Supply & stringing of overhead line of following sizes as per Technical Specification No.1.								
i)	ACSR Conductor of cross section area 100sq.mm. (Dog)	30	Km			30	Km		
ii)	ACSR Conductor of cross section area 55 sq.mm. (Rabbit)	0.5	Km			1	Km		
2	Supply & Laying of 3 Core HT armoured aluminium conductor XLPE cable of 11KV grade of the following type & size as per IS: 7098 (Part - II)1985 with up to date amendment & as per Technical Speci No. 2.								
<b>(A) Supply</b>									
i)	3 Core x 70 Sq.mm .	0.5.	KM						
ii)	3 Core x 150 Sq.mm.	2.0	KM						
iii)	3 Core x 300 Sq.mm.	4.0	KM						
<b>(B) Laying.</b>									
i)	In hard and Soft Soil.					1.0	KM		
ii)	<b>On wall /Truss / structure</b>					0.5	KM		
iii)	Through HDPE Pipe under Road / Rail crossing.					2.5	KM		
iv)	Through Half round RCC pipe.					1.5	KM		
v)	Existing RCC trench.					0.5	KM		
vi)	In GI Class B pipe.					0.5	KM		
3	Supply & laying of 4 Core LT armoured aluminium conductor XLPE cable of 1.1KV grade of the following type & size as per IS: 7098 (Part - I)1985 & as per Technical Speci No. 3.								
<b>(A) Supply</b>									
i)	4 Core x 50 Sq.mm.	2.0	KM						
ii)	4 Core x 70 Sq.mm.	1.0	KM						
iii)	4 Core x 95 Sq.mm.	1.5	KM						

iv)	4 Core x 120 Sq.mm.	1.0	KM						
v)	4 Core x 150 Sq.mm.	1.0	KM						
vi)	3 Core x 240 Sq.mm.	1.0	KM						
<b>(B)</b>	<b>Laying.</b>								
i)	In hard and Soft Soil					1.5	KM		
ii)	<b>On wall /Truss / structure.</b>					1.0	KM		
iii)	Through HDPE Pipe under Road / Rail crossing					2.0	KM		
iv)	Through Half round RCC pipe					1.5	KM		
v)	Existing RCC trench.					1.0	Mtr		
vi)	In GI Class B pipe					0.5	Mtr		
4	Providing and fixing of <b>Indoor / outdoor</b> end termination kit to HT / LT XLPE Cables of following sizes with heat shrink end termination kit as per Technical Specification No. 4.								
<b>A)</b>	<b>End Termination H.T Kit</b>								
i)	3 core x 185- 300 Sq.mm	40	No			40	No		
ii)	3 core x 120-150 Sq.mm	20	No			20	No		
iii)	3 Core x 70 - 95 Sq.mm.	10	No			10	No		
<b>B)</b>	<b>End Termination L.T Kit</b>								
i)	4 core x 185- 300 Sq.mm	30	No			30	No		
ii)	4 core x 120 -150 Sq.mm	15	No			15	No		
iii)	4Core x 70 -95 Sq. mm.	10	No			10	No		
5	Providing and fixing of <b>Straight through kit</b> to HT / LT XLPE Cables of following sizes with heat shrink end termination kit as per Technical Specification No. 5.								
<b>A)</b>	<b>Straight through H.T Joint Kit</b>								
i)	3 core x 185- 300 Sq.mm								
ii)	3 core x 120-150 Sq.mm	40	No			40	No		
iii)	3 Core x 70 - 95 Sq.mm.	25	No			25	No		
		15	No			15	No		
<b>B)</b>	<b>Straight through L.T Joint Kit</b>								
i)	4 core x 185- 300 Sq.mm	10	No			10	No		
ii)	4 core x 120 -150 Sq.mm	10	No			10	No		
iii)	4Core x 70 -95 Sq. mm	25	No			25	No		
iv)	4 Core x 35 -50 Sq. mm	50	No			50	No		

6	Supply & Stringing of HT/LT, XLPE insulated Aerial Bunched Cable of size 95 sq.mm as per the Technical Specification No. 6	10	KM			10	KM		
(a)	HT AB Cable of size 3 X 95 sq. mm+1X80 sq.mm								
(b)	LT AB Cable of size 3X 120 +1 X 50 + 1X16mm <sup>2</sup> .	1.0	KM			1.0	KM		
7	Supply of Accessories of Aerial bunched cables supplied at site as per the Technical Speci. No. 7.								
i)	Suspension clamp with eye hook Dead end fitting	200	No						
ii)	Insulation Piercing Connectors (IPC)	60	No						
iii)	Anchoring Assembly (AA)	60	No						
iv)	Suspension Assembly (SA) /	80	No						
v)	Service clamp (SC)	10 Each	No						
vi)	Nylon tie/Junction Sleeves	50 Each	20 Pack						
vii)	H.T & LT Lugs/ HT & LT connectors/ phase marker,	50 Each	10 Pack						
viii)	HV cable joint tray	30	No						
ix)	ABC Service Main Distribution Box	25	No						
8	Making of Horizontal Boring (4.5") underneath of Road / Rail Cross crossing with HDPE heavy duty pipe as per Technical Specification No. 8.	1.5	KM						
9	Supply & Fixing of HT Polymeric Pin Insulator with G.I. Hardware of following rating as per Technical Specification No. 9.								
i)	11KV Polymeric Pin insulator	150	No			150	No		
ii)	22 KV Polymeric Pin insulator	250	No			250	No		
10	Supply & Fixing of HT Polymeric Disc Insulator with G.I. Hardware of following rating as per Technical Specification No. 10.								
i)		10	No			75	No		

ii)	11KV Polymeric Disc insulator 22KV Polymeric Disc insulator	20	No			75	No		
11 (a)	Supply & erection of PSC pole of following size as per Technical Spec No.11. 8 Mtr. long PSC Pole.	50	No			200	No		
12 a)	Supply & erection of RSJ Girder pole of following size as per Technical Specification No. 12. 11 Mtr. long RSJ pole 100mm x110mm x 8mm thickness	10	No			25	No		
13	Supply & Fixing of Stay set as per Technical Specification No. 13.	75	Set			75	No		
14	Supply & Fixing of Lightening arrester complete with hardware as per Technical specification No.14.	05	No			25	No		
15	Supply & Fixing of 11KV Horn gap fuse unit complete with hardware as per Technical Specification No.15.	20	Set			20	Set		
16	Supply & Fixing of 11KV gang operated air break (GOAB) switch suitable for overhead mains as per Technical specification No.16.	20	Unit			30	Unit		
17 i) ii)	Supply & Fixing of Cross arm of following size as per Technical Specification No.17.  Pole top bracket made from 75 x 40mm ISMC Channel for one no. HT transmission line.  1.20mtr. length cross arm made from 75 x 40mm ISMC Channel for two nos. HT transmission lines.	150  150	No  No			200  200	No  No		
18	Providing and fixing guarding for overhead line conductors as per Technical Specification No.18.	3.0	Km			3.0	Km		

19	Supply & erection of following type of Structure as per Technical Specification No.19. i) Double Pole Structure	05	No			05	No		
20	Supply. Installation, testing & commissioning of Distribution Transformer 11/0.433 kV, copper winding outdoor type suitable for pole mounting PGVCL approved make of following ratings as per Technical Specification No. 20. i) 25KVA ii) 63KVA iii) 100KVA iv) 200KVA v) 250KVA	5 5 5 6 8	No No No No No			5 5 5 6 8	No No No No No		
21	Supply & fixing of 3 phase and neutral, 200 Amps. Pole mounted Distribution Panel consisting 200A porcelain cutouts and required Aluminum bus bars for outgoing LT Connections as per Technical Spec No.21.	1	No			10	No		
22	Supply, Installation, testing & commissioning of PGVCL / UGVCL / DGVCL/ MGVCL Approved make or vendor and NABL Lab. Tested 11KV combined C.T.P.T. Unit of following ratios as per Technical Specification No. 22. (a) 50/5 (b) 150/5 (c) 250/5 (d) 300/5	1 1 1 1	No No No No			3 6 6 3	No No No No		
23	Fabrication, supply and fixing of Chain link cage (Fencing) around DP & FP structure including civil work as per Technical Specification No. 23. i) Around DP Structure ii) Around FP Structure	5 5	Comp Job Comp Job			5 5	Comp Job Comp Job		
24	Supply, installation, testing & commissioning of AC 3 Phase								

	LT / CT Multifunction DLMS compliance Energy Meter as Per Technical Specification No. 24.	20	No			20	No		
25	Supply, installation, testing & commissioning of AC 3 Phase HT / CT Multifunction DLMS compliance Energy Meter as per Technical Specification No. 25.	20	No			20	No		
26	Muffing to pole & stay as per Technical Specification No. 26.	150	M <sup>3</sup>			400	M <sup>3</sup>		
27	Painting of pole with supply of paint as per Technical Specification No. 27.	350	No			350	No		
28	Providing & Fixing of Chemical Treated Gel Earthing as per Technical Specification No. 28.	50	No			50	No		
29	Providing & connecting following type of earth strip/wire for earth station to equipment as per requirement and as per Technical Spec No. 29.								
i)	8 SWG GI Earthing wire.	300	Mtr			300	Mtr		
ii)	50X6 mm Hot Dip GI Strip.	100	Mtr			600	Mtr		
30	Supply of MS powder coated dust and vermin proof pedestal type main distribution panel for providing power distribution to entire railway gate area as per Technical Specification no:-30.	10	No			10	No		
31	Hiring of following per shift of 4Hrs. basis as per Technical Specification No. 31.								
(a)	Hydra / Heavy Forklift	30	Shift						
(b)	Tractor with trolley	30	Shift						
(c)	Excavator / Pay-loader	20	Shift						

<b>Total Amount (Part-B): Rs.</b>		
<b>Total Amount of Part-A + Part-B: Rs</b>		

(Rupees \_\_\_\_\_)

**(NOTE:** The rates should be inclusive of all taxes, duties, fees, cess etc and all incidental charges; but exclusive of Goods & Service Tax).

**Signature & Seal  
of Contractor**

--Sd--  
**Executive Engineer (E)  
Deendayal Port Authority**



## TECHNICAL SPECIFICATIONS FOR PART -B (WORKS)

### **1. Technical specification No.: 1**

- (A) Supply:** This includes supply at site PGVCL/UGVCL/DGVCL/MGVCL approved vendor or make bare All Aluminum Alloy Dog Conductor (AAAC) 100 sq.mm as directed by Engineer-in-charge. The conductor shall be manufactured as per IS: 398(Part-IV). The approval of PGVCL/UGVCL/DGVCL/MGVCL and test certificates of Conductor to be submitted by Contractor at the time of supply of item. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.
- (B) Stringing, testing & commissioning:** This includes stringing of supplied and AAAC Dog Conductor of size 100 sq.mm on HT transmission /distribution overhead line. The conductor shall be tied rigidly with existing pin/disc/shackle insulators by providing binding wires at least of 12 SWG. The stringing of the conductor shall be done as per IS norms & maximum sag 3% of each span shall be maintained and joint between span shall not be done in any case. The work includes providing & binding of jumpers at shackle point to maintain continuity of the conductor. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.

### **2. Technical specification No.: 2**

- (A) Supply:** This includes supply at site 11/11KV grade, 3 core Aluminum conductor, XLPE insulated armoured cable confirming to IS: 7098 (Part-II) 1985 with up to date amendments and of approved make with ISI mark. The manufacturer shall produce TYPE TEST certificate with similar size of cable, which shall not be more than 3 years old. The cable shall have marking/embossing at the interval of every meter showing its progressive length. During the cable inspection, the manufacturer shall show the relevant ROUTINE TESTS to inspecting authority or otherwise the manufacturer shall produce the routine test certificate during supply of cable at site. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.

#### **Laying of Cable:**

- (i) In Hard/Soft Soil:** This includes laying of single length HT armoured aluminum Conductor XLPE Cable of 11KV Grade (excluding supply of cable) through excavation in soft/hard soil. The trench to be excavated 0.3 mtr. wide 1.0 mtr. deep. The bed of 50mm of river sand shall be provided in the bottom of the excavated trench. The cable shall be laid over the bed of riversand. This includes providing & laying of bricks on both sides of cable lengthwise i.e. parallel to the cable and the gaps shall be filled by fresh river sand. The cable shall be covered by keeping two bricks over the side bricks shown in the sketch. The filling of the trench shall be done with the excavated stuff & should be watered and rammed properly to its original position. The excess excavated stuff shall be disposed of from the Site of work or spread in low laying area as directed. Also, contractor has to place cable route marker at an interval of 20-meter length the route marker shall be of heavy duty HDPE plate width red radium colour. The contractor shall provide additional heat shrinkable straight through joint of relevant size of approved make if the laying of cable shall be more than standard drum length. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.
- (ii) The work consists of laying HT cables on wall surface, beam, cable tray, etc.** with suitable size of G.I. saddles/spacer of 2mm thick and shall be rigidly fixed on cemented wooden gutties / polymeric gutties also if necessary for laying the HT cable on beam or on

cable tray GI strip of made from 50 x 6 mm GI earth Patti & if necessary sit GI Nut bolt should be used for fixing GI tray at a distance of not more than 0.6 mtr interval. And wherever the cable is to be run on tray same shall be fixed with suitable size of clamp & hardware. This also includes termination at both end by required size of cable gland and with suitable size of lugs with all material and labour and as directed by Engineer-in-charge.

- (iii) Through HDPE Pipe under rail/road crossing:** This includes passing of HT cable through heavy duty HDPE already buried pipe. The pipe shall be sealing at the both end by suitable cap after the laying of cable in HDPE pipe. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.
- (iv) Laying through (½) half round RCC Pipe :-** The item includes laying of single length cable of all size of HT 11KV grade XLPE Cable in the ½ round RCC Pipe 6" I/D the half round pipe should be laid on the coarse sand. The cable shall be laid on the existing half round pipe as shown in the drawing after laying of cable the pipe should be filled with fine sand and covered with half round pipe.. At every approximately 15mtr length of there should be inspection chamber provided. The contractor has to places cable route marker at and interval of 20-meter length the route marker shall be of heavy duty HDPE plate width red radium colour The item includes required material and labour as directed by Engineer in charge.
- (v) Laying in existing RCC Cable Trench:** This includes laying of supplied HT armoured aluminum Conductor XLPE Cable of 11KV Grade in the existing RCC trench. The cable shall be laid after opening of RCC trench by removing the MS Cover plates & cable trench shall be cleaned properly including removal of garbage, dust, etc from the trench line without damaging the other cables laying in the trench. After laying of the cable, cable trench shall be properly covered with existing cover plates as per original. This work includes all labour, tools tackles, as directed by Engineer-in-Charge.
- (vi) Laying in G.I. Class-B G.I pipe:** This includes laying of cable of single length HT armoured aluminum Conductor XLPE Cable of 11KV Grade (excluding supply of cable) in class-B G.I. Pipe of size 100 mm. on existing DP/Four Pole Structure/steel Structure with G.I. Clamps made from G.I. flat 25 x 3 mm including G.I. Nut bolts of suitable size at 0.50 mtr. Intervals. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.

### 3. **Technical specification No.: 3**

#### **(A) Supply:**

This includes supply at site 1.1 KV grade, 4 core aluminum conductor, XLPE insulated armoured cable conforming to IS: 7098 (Part-I) 1985 with up to date amendments and of approved make with ISI mark. The manufacturer shall produce TYPE TEST certificate with similar size of cable, which shall not be more than 3 years old. The cable shall have marking/embossing at the interval of every meter showing its progressive length. During the cable inspection, the manufacturer shall show the relevant ROUTINE TESTS to inspecting authority or otherwise the Manufacturer shall produce the routine test certificate during supply of cable at site. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.

#### **(B) Laying of Cable:**

- (i) Laying in Hard/Soft Soil:** This includes laying of single length LT armoured aluminum Conductor XLPE Cable of 11KV Grade (excluding supply of cable) through excavation in soft/hard soil. The trench to be excavated 0.3 mtr. wide 1.0 mtr. deep. The bed of 50mm of river sand shall be provided in the bottom of the excavated trench. The cable shall be laid over the bed of riversand. This includes providing & laying of bricks on both sides of cable lengthwise i.e. parallel to the cable and the gaps shall be filled by fresh river sand. The cable shall be covered by keeping two bricks over the side bricks shown in the sketch. The filling of the trench shall be done with the excavated stuff & should be watered and rammed properly to its original position. The excess excavated stuff shall be disposed off from the Site of work and spreaded in low laying area as directed. the contractor has to places cable route marker at and interval of 20-meter length the route marker  
The contractor shall provide additional heat shrinkable straight through joint of relevant size of approved make if the laying of cable shall be more than standard drum length. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.
- (ii) laying of LT cables on wall surface, beam, cable tray, etc.:** The work consists of laying LT cables on wall surface, beam, cable tray, etc. with suitable size of G.I. saddles/spacer of 2mm thick and shall be rigidly fixed on cemented wooden gutties or polymeric gutties at a distance of not more than 0.6 mtr interval. And wherever the cable is to be run on tray same shall be fixed with suitable size of clamp & hardware. This also includes termination at both end by required size of cable gland and with suitable size of lugs with all material and labour and as directed by Engineer-in-charge.
- (iii) Laying through HDPE Pipe under rail/road crossing:** This includes passing of LT cable through heavy duty HDPE already buried pipe. The pipe shall be sealing at the both end by suitable cap after the laying of cable in HDPE pipe. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.
- (iv) Laying through (½) half round RCC Pipe :-** The item includes laying of single length cable of all size of LT 1.1KV grade XLPE Cable in the ½ round RCC hume Pipe 6" I/D the half round pipe should be laid on the coarse sand. The cable shall be laid on the existing half round pipe as shown in the drawing after laying of cable the pipe should be filled with fine sand and covered with half round pipe.. At every approximately 15mtr length of there should be inspection chamber provided. Also, contractor has to places cable route marker at and interval of 20-meter length the route marker shall be of heavy duty HDPE plate width red radium colour The item includes required material and labour as directed by Engineer in charge.
- (v) In RCC Cable Trench:** This includes laying of supplied LT armoured aluminum Conductor XLPE Cable of 11KV Grade in the existing RCC trench. The cable shall be laid after opening of RCC trench by removing the MS/RCC Cover plates & cable trench shall be cleaned properly including removal of garbage, dust, etc from the trench line without damaging the other cables laying in the trench. After laying of the cable, cable trench shall be properly covered with existing cover plates as per original. This work includes all labour, tools tackles, as directed by Engineer-in-Charge. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.
- (vi) In G.I. Class-B pipe:** This includes laying of cable of single length LT armoured aluminum

Conductor XLPE Cable of 11KV Grade (excluding supply of cable) in class-B G.I. Pipe of size 100 mm. on existing DP/Four Pole Structure/steel Structure with G.I. Clamps made from G.I. flat 25 x 3 mm including G.I. Nut bolts of suitable size at 0.50 mtr. Intervals. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.

4. **Technical specification No.: 4**

- (a) **H.T End Termination Kit: Supply & Fixing:** This includes providing and fixing of heat shrinkable outdoor end termination suitable for the sizes mentioned in Schedule-B including providing fixing of Aluminum Solder less lugs of suitable size with all required materials. The work includes all labour, tools tackles, heat shrinkable outdoor end termination kit of approved make and necessary fabrication work on Double Pole/Four Pole structure if required as directed by Engineer-in-Charge. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.
- (b) **L.T End Termination Kit: Supply & Fixing:** This includes providing and fixing of heat shrinkable outdoor end termination suitable for the sizes mentioned in Schedule-B including providing fixing of Aluminum Solder less lugs of suitable size with all required materials. The work includes all labour, tools tackles, heat shrinkable outdoor end termination kit of approved make and necessary fabrication work on LT Panel if required as directed by Engineer-in-Charge. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.

5. **Technical specification No.: 5**

- (a) **H.T Straight Through Kit: Supply & Fixing:** This includes providing and fixing of heat shrinkable Straight through joint suitable for the sizes mentioned in Schedule-B, including providing fixing of Aluminum Solder less ferrules of suitable size with all required materials. The work includes all labour, tools tackles, heat shrinkable straight through joint kit of approved make and necessary excavation in soft soil/removal for RCC trench cover and re-fixing of the same if required as directed by Engineer-in-Charge. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.
- (b) **L.T Straight Through Kit: Supply & Fixing:** This includes providing and fixing of heat shrinkable Straight through joint suitable for the sizes mentioned in Schedule-B, including providing fixing of Aluminum Solder less ferrules of suitable size with all required materials. The work includes all labour, tools tackles, heat shrinkable straight through joint kit of approved make and necessary excavation in soft soil/removal for RCC trench cover and re-fixing of the same if required as directed by Engineer-in-Charge. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.

6. **Technical specification No.: 6**

(A) **Supply:**

(i) **HT Arial Bunch Cable:**

This includes supply of HT 11 KV, XLPE insulated Arial Bunched Aluminium Cable of size 95 sq.mm. The composite cable shall comprise three single- core cables twisted around a bare aluminium alloy messenger wire (Neutral Conductor) of size 80 sq.mm, which will carry the weight of the cable. The cable shall be of round, stranded and compacted aluminium of nominal cross section area 95 sq.mm. The size of HT ABC cable is 3X95 +1X80 sq.mm. The applicable standard of AB Cable shall be as follows.

- IS: 7098 (Part-II)-1985:- Cross linked polyethylene insulated PVCsheathed cables.
- IS: 8030-1984:- Conductor for Insulated Cables.

- IS: 398 (Part-IV)-1979:- Aluminium Alloy Conductors.
- IEC-60502 (Part-II)-2005:- Polyethylene Outer Sheath.

Routine Test certificates to be produced with supply of AB Cable. The rate shall include all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.

**(ii) LT Aerial Bunched Cable:**

This includes supply of HT 1100V, XLPE insulated Aerial Bunched Aluminum Cable of size 70 sq.mm. The AB cable covered under this specification should be suitable for use on three phase, 4 wire earthed system for working voltage up to 1100 V. It should confirm the relevant standards.

The phase conductor should be 70 mm<sup>2</sup> XLPE insulated and the neutral conductor should be 50 mm<sup>2</sup> XLPE insulated whereas messenger conductor should be Bare heat treated aluminium silicon confirming to relative standard.

The applicable standard of LT AB Cable shall be as follows.

- IS: 14255/1995: - ABC Cables 1100 Volts.
- IS: 8130-1984:- Conductor for Insulated Cables.
- IS: 398 (Part-IV)-1994:- Aluminium Alloy Conductors.
- IS-10418/1982: - Drums for electric cable.

Routine Test certificates to be produce with supply of AB Cable. The rate shall include all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.

**(B) Stringing of Aerial Bunched Cable (ABC) Fixing of Suspension & Tension/ Dead end fittings to the Poles.**

The suspension clamp is to be hung on eye hook/ suspension hook, which is fixed to the pole at a minimum distance of 0.15 mt. from top end of the pole. The messenger wire of bunched cable resting on a pulley is separated from the cable by separating wedges and inserted in the conductor groove of the suspension clamp. The bolt is tightened to a torque of 20 N after which the pulley and wedges are to be removed. The cable is tied to the messenger wire with nylon tie on both sides of clamps. Pole clamps 50 x 8 mm flat shall be used. Eye hook of 20mm dia MS rod to be used as per the requirement. The pole clamp shall be made to suite the pole width. This shall be installed as per REC Construction Standard.

**7. Technical specification No.: 7**

Supply of Accessories of HT/LT XLPE Insulated Aerial Bunched Cables along with **Stringing, testing & commissioning:**

The work includes installation of supplied AB cables including handling, pulling, stringing & jointing of the cable and effecting service connection to consumers as per direction of the Engineer-in-charge.

**Supply of Fittings & Accessories**

The following hardware fittings and accessories shall be used to install, erect & join the aerial bunched cable.

- a) Suspension Clamp with Eye-Hook** – The Contractor shall install the suspension clamp with eye hook. This hook shall be used to attach the AB cable on the pole by means of a dead end clamp in terminal poles and for attaching a suspension clamp suitable for holding AB cables of size 35mm<sup>2</sup> to 95mm<sup>2</sup> in straight lines and angle up to 90 Deg.-

- b) Suspension fittings & the corresponding Eyehook** shall be as per REC Construction Standard. The eye hooks shall be made from minimum 20mm dia. MS rods with eye on one end and the other end being suitably flattened with two holes for M16 bolt & nut to fix with the back clamps made from minimum 50 x 8 mm flats. The eye hook, back clamp and bolts & nuts are to be hot dip galvanized.
- c) Dead End fittings** shall be bolted type as per REC Construction Standard & the corresponding eye hook shall be as specified above. The dead clamps are to be anchored with the pole with similar arrangement of eye hook & back clamp. In this case, the back clamp shall have two nos. of holes on both sides for M16 bolts. One side of the clamp shall be used for holding the eye hook with dead end clamp and the other side shall be used for anchoring the Stay.
- d) Insulation Piercing Connectors (IPC).**  
Insulation Piercing Connectors (IPC) are used for making Tee / Tap-off / Service connectors to an ABC/Bare Overhead Line.
- e) Anchoring Clamp ( 3 bolt & 2 bolt type):**  
The clamps should be designed to Anchor LT-AB cable with insulated messenger. The clamp should consists of an Aluminium alloy corrosion resistant castled body, bail of stainless steel and self-adjusting plastic wedges which shall anchor/hold the neutral messenger without damaging the insulation..
- f) Nylon cable Tie-** These ties shall be used for tying the conductors with the messenger wire to prevent the phase conductors from chatting against suspension clamp. The nylon tie is made of weather resistant black nylon. ( length 360mm width 15mm Locking Type : Locking Non-releasable
- g) Lugs** -The contractor shall supply Lug. These shall be used as non-tension aluminium to aluminium connections for conductor joints.
- h) Phase markers**  
Phase markers should be provided throughout the network. Phase Marker kit includes three separate color phase markers: red, yellow and blue.
- i) Bimetallic Connectors with Plastic Covers** - The bimetallic contractor shall install Plastic Covers for Connectors. These covers shall be used with bimetallic connectors to protect connectors against corrosion caused by climatic conditions.
- j) JUNCTION SLEEVES.**  
The sleeves should be Pre-Insulated for phases, neutral messengers and street lighting conductors.
- Sleeve should be made of Alluminium, insulated with an Anti-UV black.
  - thermoplastic tube hermetically sealed two ends with 2 flexible rings.  
Die reference, size and strip length are indicated on the sleeve itself.
- K) HV cable Joint Tray:-** As an accessory for MV ABC System and suitable designed to hold and support the 11kV AND 33kV ABC Straight Through Joints on 10M-19-5kN spun concrete poles capable of withstanding a minimum load of 100 kg.
- L) ABC SERVICE MAIN DISTRIBUTION BOXES.**

This Distribution Box should be Weather & Moisture Proof with spring loaded Bus Bar system & should be able to carry a current according to specified amp capacity. It can have 1 /3-phase input & provision for 4 or 9 nos. of 3- phase or 1-phase outputs. The box should have the provision for special key for locking & proper arrangement of sealing. The boxes should be assembled on the pole using Metal Tapes & Buckles or Bolts. No. of Boxes per pole may vary with supporting arrangement for more no. of service connections.

The contractor should supply the materials as given in schedule "B" if any other fittings required for string of Arial Bunch cable for the cable size mentioned in schedule B then the contractor has to make his own arrangement to complete the work for which no extra payment will be made from DPA.

**8. Technical specification No.: 8**

This includes making of **Horizontal Directional Drilling** by putting suitable diameter HDPE suitable for cable size to LT 4 Core X 300/400 sq.mm. HDPE pipe shall have strength of 10Kg/Sq.cm. Providing of HDPE pipe is also in the scope of contractor. Depth of horizontal boring shall be minimum 165 cm or according to construction of Road/Rail network or as per direction of Engineer-In-Charge. Laying of HDPE pipe coupled by HDPE socket only after standard length in excavated trench / tunnel and also sealing of HDPE pipe ends by suitable cap at both end. After completion of boring job back filling & dressing of excavated trench to be carried out as per the original. The contractor shall arrange JCB machine for excavation, water for drilling, de-watering pump, HDD equipment at their own cost. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.

**9. Technical specification No.: 9**

**(A) Supply:** This includes supply at site PGVCL/UGVCL/DGVCL/MGVCL approved vendor or make 11 KV & 22 KV **Polymeric Pin Insulator** with its hardware as directed by Engineer-in-charge. The 11 KV & 22 KV Pin insulator shall be supplied with hot dipped galvanized MS forged pin of suitable size. The pin shall have adequate mechanical strength. The approval of PGVCL/UGVCL/DGVCL/MGVCL and test certificates to be submitted by Contractor at the time of supply of item. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.

**(B) Fixing:** This includes fixing of supplied 11/22KV pin insulator on pole top bracket or cross arms or both of overhead lines. The insulator shall be fixed in such a way that the overhead conductor shall rest on it. The pin insulator shall be fixed on the cross arm by passing pin through the hole of cross arm and the pin shall be tighten using nut. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.

**10. Technical specification No.: 10.**

**(A) Supply:** This includes supply at site PGVCL/UGVCL/DGVCL/MGVCL approved vendor or make 11 KV & 22 KV **Polymeric Disc Insulator** with its hardware as directed by Engineer-in-charge. The 11 KV & 22 KV Disc insulator shall be supplied with hot dipped galvanized hardware of suitable size. The hardware shall have adequate mechanical strength. The approval of PGVCL/UGVCL/DGVCL/MGVCL and test certificates to be submitted by Contractor at the time of supply of item. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.

**(B) Fixing:** This includes fixing of supplied 11/22 KV disc insulator on cross arms of overhead lines.

The disc insulator shall be fixed on the cross arm by using proper G.I. hardware. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.

**11. Technical specification No.: 11.**

**(A) Supply:** This includes supply at site PGVCL/ UGVCL/ DGVCL/ MGVCL approved vendor or make window type **8 Mtr. long PSC pole** including all labour, loading and unloading as directed by Engineer-in-charge. The approval of PGVCL/UGVCL/ DGVCL/ MGVCL to be submitted by Contractor at the time of supply of item. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.

**(B) Erection:** The work includes fixing of supplied 8 Mtr. long PSC pole at site. The pole pit shall be excavated in all kind of soil of size 0.75mtr x 0.75mtr and 1.75mtr deep. One-sixth length of pole shall be planted inside the ground. 1:3:6 PCC base layer of thickness 150-mm shall be provided at the bottom of the pole pit. Balance portion of the pit shall be backfilled with mixture of c.c. ratio 1:3:6 using cement, sand and 6 to 20mm graded metal chips as coarse aggregate and to prepare cylindrical shape muffing 750mm above ground level duly plastered. The excavated stuff shall be spread in lower level area as directed. The rates shall be inclusive of cement concreting, plastering, other material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST. All types of cement mixtures shall be done by using sweet water only.

**12. Technical specification No.: 12.**

**(A) Supply:** This includes supply at site PGVCL/ UGVCL/ DGVCL/ MGVCL approved vendor or make **11 Mtr. long RSJ girder pole** of 100mm x 110mm x 8mm thickness with metal primer coat as directed by Engineer-in-charge. The approval of PGVCL/UGVCL/ DGVCL/ MGVCL to be submitted by Contractor at the time of supply of item. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.

**(B) Erection:** The work includes **fixing of supplied 11 Mtr. long RSJ pole** at site. The pole pit shall be excavated in all kind of soil of size 0.75mtr x 0.75mtr and 2.0 mtr deep. One-sixth length of pole shall be planted inside the ground. 1:3:6 PCC base layer of thickness 150-mm shall be provided at the bottom of the pole pit. Balance portion of the pit shall be backfilled with mixture of c.c. ratio 1:3:6 using cement, sand and 6 to 20mm graded metal chips as coarse aggregate and to prepare cylindrical shape muffing 750mm above ground level duly plastered. There after clean the pole remove rust or foreign material if any and apply one coat of metal primer & two coat of silver paint, the muffing shall be paint with lime whitewash. The excavated stuff shall be spread in lower level area as directed. The rates shall be inclusive of cement concreting, plastering, other material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.

**13 Technical specification No.: 13.**

**(A) Supply:** This includes supply at site complete stay set as directed by Engineer-in-charge. The stay set comprising of stay rod, turn buckle, thimble, anchor plate, **7/10 GI stay wire**, stay clamp and HT guy insulator etc. conforming to the following technical specification. M.S. stay rod of 20mm diameter 1800mm in length, one side formed an eye and welded with internal diameter 40mm with one thimble and the other side of the rod shall be threaded and fitted with 2nos. suitable hexagonal nuts with one round washer complete with MS anchor plate 250 x 250 x 6mm dimension with center hole. The entire rod, plate, nuts and washer should be hot dipped galvanized. Single bow turnbuckle made of 16mm diameter MS rod and center rod of 20mm dia. threaded. The base channel shall be with two hexagonal nuts. All the metal parts shall be galvanized. This includes all the labour, taxes loading, unloading at site as directed by



Engineer-in-Charge, but excluding GST.

- (B) Fixing:** The work fixing of supplied stay set includes preparation of stay pit of size (0.9mtr x 0.6mtr x 1.4mtr depth) shall be excavated in all kinds of soil. The stay rod with anchor plate shall be installed therein and the pit shall be filled in with 1:3:6 PCC using 40-mm HG metal. Proper curing of PCC shall be done to enable the concrete to acquire strength. The excavated stuff shall be spread in lower level area as directed. The stay insulator shall be provided at least at a height of 3mtr. from the ground level and fixed in such a way that the wires would not fall on ground in case of the failure of the insulator. Angle of stay set provided shall be an angle of about 45 degree from the ground level. The stay set shall be fixed in opposite direction of line conductors to reduce stress on pole. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.

**14 Technical specification No.: 14.**

- a. **Supply:** This includes supply at site PGVCL/ UGVCL/ DGVCL/ MGVCL approved vendor or make **lightning arrester**. The lightning arrester shall be suitable for 11KV overhead line. The exposed surface of the lightning arrester shall be glazed, brown in colour and shall be supplied with all hardware required for fixing. The approval of PGVCL/UGVCL/ DGVCL/ MGVCL and test certificate of L.A. to be submitted by Contractor at the time of supply of item. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.
- b. **Fixing:** The work includes fixing of supplied lightning arrester on pole/structure. The arrester shall be fixed rigidly on the top of pole using necessary clamps, nut-bolts and shall be electrically connected with HT line. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.

**15 Technical specification No.: 15.**

- a. **Supply:** The work includes supply at site PGVCL/ UGVCL/ DGVCL/ MGVCL approved vendor or make **11KV Horn gap fuse unit**. The Horn Gap fuse unit (one set comprises with three units) confirming to latest IS. The approval of PGVCL/UGVCL/ DGVCL/ MGVCL and test certificate of horn gap fuse unit to be submitted by Contractor at the time of supply of item. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.
- b. **Fixing:** This includes fixing of supplied 11kV Horn Gap Fuse on pole/structure. The unit shall be fixed as per I.E. rules. Each unit having 2nos. of 11KV insulators shall fixed on ISMC base channel of size 75mm x 40mm x 7.3mm. All hardware, such as clamps, nut-bolts shall be used of G.I. The rates shall be inclusive with all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST

**16 Technical specification No.: 16**

- a. **Supply:** The supply at site PGVCL/ UGVCL/ DGVCL/ MGVCL approved vendor or make **gang operated outdoor type air break switch** having 11 KV System Voltage Current carrying capacity 400 Amps. The GOAB Switch shall be suitable for 11KV system voltage. The system on which the isolators will be installed will be 11KV, 3Phase, 50 Hz  $\pm 3\%$ . The AB switches shall confirm to IS: 9921 (Part I to IV). The GOAB switch shall be supplied with arcing horns and operating mechanism. The approval of PGVCL/UGVCL/ DGVCL/ MGVCL and test certificate of horn gap fuse unit to be submitted by Contractor at the time of supply of item. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.

- b. **Fixing:** This includes fixing of supplied 11kV G.O.A.B. switch on pole/structure. The switch shall be fixed as per I.E. rules. Fixed and moving contact assembly shall be fixed on ISMC base channel of size 75mm x 40mm x 7.3mm. All hardware such as clamps, nut-bolts shall be used of G.I. Alignment of the switch shall be such that the switch can be operated easily. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.

**17 Technical specification No.: 17**

**a. Supply:**

- i. This includes supply at site **Pole top bracket** as directed by Engineer-in-charge. The pole top bracket shall be made from ISMC channel of size 75mm x 40mm and 25cm long. Necessary G.I. hardware such as clamp, nut-bolts shall be supplied with the cross arm. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.
- ii. This includes supply at site **1.2mtr long cross arm** as directed by Engineer-in-charge. The cross arm shall be made from galvanized ISMC channel of size 75mm x 40mm x 7.3mm. The cross arm shall be fabricated to carry two nos. HT conductors. Necessary G.I. hardware such as clamp, nut-bolts shall be supplied with the cross arm. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.

**b. Fixing:**

- i. This includes fixing of supplied Pole top bracket on pole. The pole top bracket shall be fixed rigidly on pole using G.I. clamps, G.I. nut-bolts as directed by engineer in charge. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.
- ii. This includes fixing of supplied 1.2mtr long HT cross arm on pole. The cross arm shall be fixed rigidly on pole using G.I. clamps, G.I. nut-bolts as directed by engineer in charge. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.

**18 Technical specification No.: 18.**

- a. **Providing & Fixing:** This includes providing and fixing **guarding under 11KV** overhead line. The guarding shall be made of two nos. string of G.I.8SWG wire. Intermediate cradles at every one-meter distance shall be provided of G.I.10 SWG wire to form a cage. The guard wire shall run under bare live conductor and minimum clearance between bare conductor and guard wire shall be maintain 30cm. The guard wire shall be bonded with earth wire. The work includes all required hardware, nut-bolts, clamps, guarding cross arms etc. and labour charges. The guard wire shall be provided at road crossings or anywhere as directed by engineer in charge. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.

**19 Technical specification No.: 19.**

**For Double Pole Structure:**

- a. **Supply:** The work supply and erection of Double pole structure for 11KV HT overhead line includes supply of following material with mentioned specifications: -
- (i) This includes supply at site PGVCL/ UGVCL/ DGVCL/ MGVCL approved vendor or make 2

nos. 11mtr long RSJ pole of 100mmx110mmx8mm thickness as directed by Engineer-in-charge.

(ii) 2.2mtr long ISMC channel 2 nos. of size 75mm x 40mm x 7.3mm with G.I. Hardware such as nut-bolts, clamps etc

(iii) 2.2mtr long M.S. angle cross arm 6 nos. of size 50mm x 50mm x10mm with G.I. hardware. This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.

- b. **Erection of Poles:** The pit of each pole shall be excavated in all kind of soil of size 0.75mtr x 0.75mtr and 2.0 mtr deep. One-sixth length of pole shall be planted inside the ground. 1:3:6 PCC base layer of thickness 150-mm shall be provided at the bottom of the pole pit. Balance portion of the pit shall be backfilled with mixture of c.c. ratio 1:3:6 using cement, sand and 6 to 20mm graded metal chips as coarse aggregate and to prepare cylindrical shape muffing 750mm above ground level duly plastered. The excavated stuff shall be spread in lower level area as directed. The contractor has to arrange all required raw material cement, sand, metal, water, labours, tools tackles, crane etc. at his own cost. After erection of pole potable water curing shall be done for bonding of cement. The rates shall be inclusive with all material, required tools tackles and labour and as directed by Engineer-In-charge.

The complete layout drawing of DP Structure including earthing arrangement shall be prepared as per IS by the Contractor and shall got approved from Engineer-in- Charge before commencement of work. The DP structure shall be erected as per approved drawing. The work includes all labour & material as directed by Engineer-in-Charge.

## **20 Technical specification No.: 20.**

- a. **Supply:** This includes supply of **3 Star BEE rating copper wound transformer** at site PGVCL/ UGVCL/ DGVCL/ MGVCL approved vendor or make of 25KVA, 63 KVA,100 KVA, 200KVA & 250 KVA 11/0.433KV, oil filled, outdoor type suitable for pole mounting TC as directed by Engineer-in-Charge.

The approval of PGVCL/UGVCL/ DGVCL/ MGVCL and test certificate of Distribution Transformer to be submitted by Contractor at the time of supply of item.

This includes all the labour, taxes loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.

- b. **Installation, Testing & Commissioning:** This includes installation of supplied transformer on prepared DP/FP with suitable locking arrangement of transformer with suitable size of angles both side of transformer and the angles shall be bolted with poles with suitable MS clamps. The work also includes body earthing of Transformer and neutral earthing of transformer. The necessary test for testing and commissioning to be carried out on after installation of transformer at site. The work includes all labour & material as directed by Engineer-in-Charge, but excluding GST.

## **21 Technical specification No.: 21.**

- (B) **Providing & Fixing:** This includes supply & fixing of **3 phase and neutral, 200 Amps. Pole mounted Distribution Panel** made from 2 mm powder coated CRCA sheet with clamps and necessary hardware for fixing underneath of pole. The Distribution box comprises 200 Amps. 3 nos.

extended terminal Kit Kat fuses to receive main from transformer, 400 Amps capacity Aluminum Busbars for outgoing LT connections and necessary wiring as per requirement as directed by Engineer-in-Charge. The work includes all labour & material as directed by Engineer-in-Charge, but excluding GST.

## **22 Technical specification No.: 22.**

- a. **Providing & Fixing:** This includes supply of **11KV COPPER WOUND MEASURING THREE PHASE THREE CTs AND ONE THREE PHASE STAR/STAR PT COMBINED C.T.P.T. UNIT** of the given ratings. This specification covers design, manufacture, testing at manufacture's works, supply and FIXING of oil filled conventional type outdoor type pole mounted combined 11 KV copper wound CTPT unit. The combined CTPT unit shall comprised of three single phase current transformers and one three phase voltage transformers having primary star point of primary winding shall not be EARTHED (i.e. floating Neutral and secondary star neutral points shall not to be EARTHED on LV side and shall be brought out in secondary terminal box.

The accuracy class of CT & PT shall be 0.5S and 0.5 respectively. Rated burden for CT & PT shall be 5 VA and 10VA/phase respectively at 0.8 P.F. (Lag). The winding material shall be of copper with class of Insulation A.

This includes fixing of combined C.T.P.T. on existing outdoor DP structure. The work includes all labour & material taxes, loading, unloading at site as directed by Engineer-in-Charge, but excluding GST.

## **23 Technical specification No.: 23.**

Technical Specifications for the work to be carried out of Double & Four Pole Fencing.

### **1. Quality / Standards of Material to be used.**

Basic material to be used for the fabrication of Chain Link Fencing which is to be supplied & provided is MS Pipe of Square Hollow Section (SHS), MS Angle, MS Flat & GI wire.

### **2. Size & Dimension of Material to be used.**

- (i) For Vertical Post: MS Pipe of Square Hollow Section (SHS) of 49.5mm x 49.5mm x 4.5mm
- (ii) For Main (outer) Frame; MS Pipe of Square Hollow Section (SHS) of 32mm x 32mm x 3.2mm.
- (iii) For Chain Link (inner) Frame: MS Angle of 25mm x 25 mm 3mm.
- (iv) For Chain Link Mesh: GI wire of 10 SWG with minimum 40 microns coating of Zink & fabrication of mesh of 2" x 2".
- (v) For Hinges: MS Flat of size suitable to MS pipe of 49.5mm with thickness of 5mm.
- (vi) Miscellaneous material like Hinges, Aldraft, Nut Bolt & other material of standard quality.

### **3. Dimensions for fabrication of Chain Link Fencing of standard size as per drawing**

The said drawing is for DP Structure Fencing. The dimension of fencing is 12ft Front & Back and 6 ft at both side. For four pole dimension of fencing is 12 ft at all four sides.

### **4. Installation i.e. fitting of Chain link Fencing at site:**

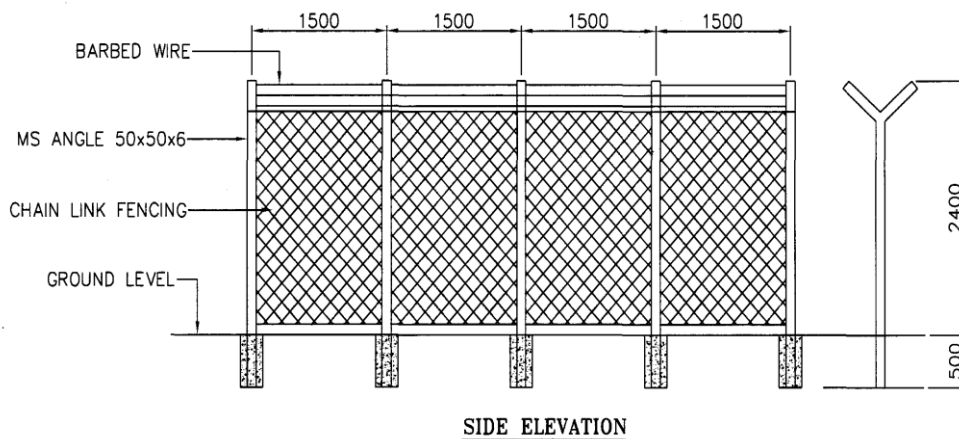
Supplier has to fabricate all the section of complete chain link fencing as per drawing, dimension specified as above as well as per instructions of Engineer- In-Charge.

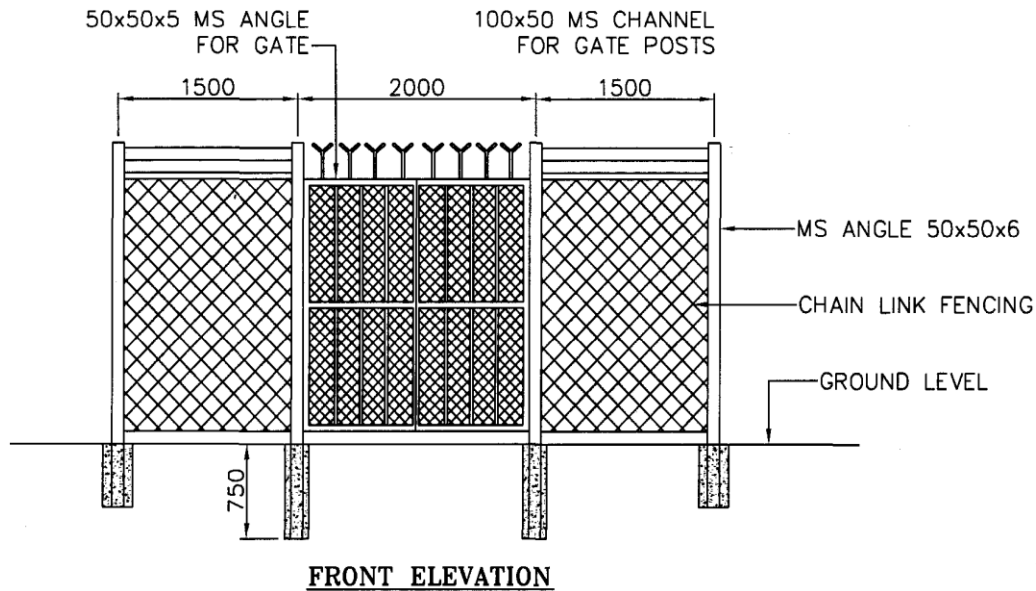
Prior to installation / fixing at site, all the MS parts should be applied two coats of red oxide. Main vertical posts should be grouted / fitted in the ground in such way that fencing frame should be remain 150mm above from ground level. Minimum 500mm length of vertical posts should remain in ground & it should be fixed up by foundation of standard CC mixture of ration 1:2:4 for the area of 300mm x 300mm & height of 500 mm. After installation / fixing at site, two coats standard paints

should be applied as per instruction of Engineer-In-Charge.

## **5. General Condition for Supply and Providing Chain Link Fencing**

- I. Zink coating of Chain Link mesh should not be less than 40 microns. For the same, supplier has to produce manufacture's certificate.
- II. Fixing of vertical post should be provided with foundation of standard CC mixture of ration 1:2:4 for the area of 300mm x 300mm & height of 500mm with sufficient curing.
- III. Fixing of fencing case should be such that over all height at all the place should not be lee than 2400mm from ground. Fencing panel height shouldnot be less than 1500mm.
- IV. Chain link mesh is to be fixed in the frame of 50 x 50 x 6mm MS Angle frame with good quality of welding. Fitting of this frame with MS Square Pipe should be done with welding using MS Angle.
- V. All the fabrication work should be done with good quality of welded & it should be free from sharp edges, concern & unevenness of surface. It should also with good finishing & decent look up to the satisfaction of Engineer in charge.
- VI. The drawing & dimension (except height) are for standard & normal location. However, it may vary as per site situation. Hence Contractor has to approach concern Engineer-In-Charge, joint visit for each location & record the dimensions according to site situation and accordingly. Has to fabricate, Supply & fixing the chain link fencing as per the instruction of Engineer in charge.
- VII. The drawing shall not absolve the contractor from his liability for insure appropriate dimensions & to supply & providing accordingly as per the site situation & instruction of Engineer in charge.
- VIII. MS aldraf should be provided with locking arrangement on front side as shown in drawing.
- IX. Fitting of complete chain link fencing panel with vertical post should be done with appropriate MS flat with thickness of 5mm and Nut Bolt of 2" x 3/4" size as per drawing. It should be in such that both side & rear side, with tight fitting by Nut-Bolts whereas front side, it should be slightly loose fitted so that it can work as hinges.
- X. Quality of material: As the major material is a steel item, the material like MS Square Pipe, MS Angle, MS Flat & GI wire must be as per relevant IS.
- XI. Drawing as below.





**24 Technical specification No.: 24.**

**(A) Supply & Fixing:** This includes supply of AC 3 Phase **LT/CT Multifunction DLMS compliance Energy Meter** of accuracy class 0.2S, 3 X 240 V, 50 Hz with optical & RS232 Port, backlit LCD display, measures & displays Trivector Energy, load survey, TOD, Tamper detection & logging, Power On/Off events, instantaneous parameters of rating -/5A with display in absence of power. This includes fixing & commissioning of supplied 1 energy meter rigidly in SMC Box or as directed. This includes necessary terminations, wiring, connections & earth linking from nearest source supply from MCB/Main switch/DB etc. The supply of Tamper proof, Shock proof and Rust proof SMC (Sheet Moulding Compound) meter box of suitable size is in the scope of Contractor. The work includes all labour & material as directed by Engineer-in-Charge, but excluding GST.

**25 Technical specification No.: 25.**

**(A) Supply & Fixing:** This includes Supply of **AC 3 Phase HT/CT Multifunction DLMS compliance Energy Meter of accuracy class 0.2S, 3 X 63.5 V, 50 Hz** with optical & RS 232 Port, Backlit LCD Display, Measures KWH, KVAH, V,I, KW, 6 months history of Energy, load survey, TOD, Tamper detection & logging, Power On/Off vents, instantaneous parameters of rating -/5A with display in absence of power. Default Ratio: 11KV/110V & CTR: 1.

This includes fixing & commissioning of supplied 1 energy meter rigidly in SMC Box or as directed. This includes necessary terminations, wiring, connections & earth linking from nearest source supply from MCB/Main switch/DB etc. The supply of Tamper proof, Shock proof and Rust proof SMC (Sheet Moulding Compound) meter box of suitable size is in the scope of Contractor. The work includes all labour & material as directed by Engineer-in-Charge, but excluding GST.

**26 Technical specification No.: 26.**

**(A) Supply & Fixing:** This includes making of **muffing around the pole** using cement concrete foundation of 1:2:3 (cement, sand, gravel). The dimension of muffing shall be as desired by EIC. This also includes dismantling of existing muffing wherever required and removal of debris from site. The muffing shall be painted with white Lime (chuna) paint. The work includes all labour & material as directed by Engineer-in-Charge, but excluding GST.

**27 Technical specification No.: 27.**

This includes **painting of poles** (Including supply of paint). The height of poles are up to 11 Mtr. The method of painting is to apply one coat of red oxide primer and two coats of

Aluminium paint. This also includes removal, wire brushing and cleaning of existing paint wherever needed. The work includes all labour & material as directed by Engineer-in-Charge, but excluding GST.

**28 Technical specification No.: 28.**

**(A) Providing & Fixing:** This includes providing & fixing **chemical treated back filled compound gel earthing station** in pipe for 2000 Amps (LT) capacity, complete with civil work. On the earthing pit, the required size chamber shall be made by bricks with cover and plastering including all masonry work. The work includes all labour & material as directed by Engineer-in-Charge, but excluding GST.

**29 Technical specification No.: 29.**

**(A) Providing & Fixing:** This includes providing & fixing of following size **earth strip / wire from earth station to equipment / pole / DB** or as per requirement. The complete work consists of necessary connection and earth linking at both ends. The work includes all labour & material as directed by Engineer-in-Charge, but excluding GST.

**30 Technical specification No.: 30.**

This includes Design, Supply at site, installation, testing and commissioning of Outdoor platform mounted type L.T distribution panel with top canopy, double shutter, handle with locking arrangement, dust, damp and vermin proof. The L.T distribution panel shall be fabricated from powder coated 3mm thick M. S sheet outer frame using suitable size of M.S angle and M.S Flat for the frame structure the inner sheet and the door should be made from 1.2 mm thick M.S sheet. The feeder pillar shall be powdered coated using simens grade paint. Before painting the panel, the surface treatment shall be carried out by 7-tank process. The panel shall be provided with metallic engraved/Radium film labels on front for identification of Incoming & Outgoing feeders as directed. The neoprene gaskets shall be provided on the periphery of the doors of all feeders. The sleeved electrolytic copper busbars with epoxy insulators with Bakelite support and separators shall be provided with colour code. The panel shall be complete in all respect with cable glands, lugs for incoming & outgoing cables and also shall be provided with 2 nos. of earthing terminals

The L.T Distribution panel shall be specious for easy maintenance and shall be specious to be provided with all the material mentioned below.

- |                                                                                                                                              |        |
|----------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1. 250A, 415 V 50 Hz volts Open Execution 4 pole change over Switch.                                                                         | 1No.   |
| 2. 200A TPN MCCB, x 415 volt 25/26 KA, 50 Hz                                                                                                 | 1No.   |
| 3. 125A, TPN MCCB x 415 volt 35 KA, 50 Hz                                                                                                    | 6No.   |
| 4. 63A, TPN MCCB x 415 volt 35 KA, 50 Hz                                                                                                     | 1No    |
| 5. Suitable size analog ammeter & Voltmeter for the above panel                                                                              | 1each  |
| 6. Selector switch unit complete with four portion for Voltmeter/Ammeter.                                                                    | 2 No   |
| 7. Indicating lamp Red, green and amber blue 230/240v AC, within built resistance                                                            | 1each. |
| 8. Multifunction Meter for above current capacity                                                                                            | 1No.   |
| 9. Surface mounted light sensor timer Switch                                                                                                 | 1 No.  |
| 10. 4 pole Contractor of 100A with NO & NC                                                                                                   | 1No.   |
| 11. Electrolytic grade copper bus bar for Phase & Neutral, PVC sleeved with colour code. Danger Board, tie belt, M.S Wall mounted stand etc. |        |

All these components shall be mounted in the panel by means of suitable cadmium passivated hardware. The panel shall be complete in all respects with cable glands, lugs for incoming and outgoing cables including interconnection with PVC insulated cable single core, standard copper conductor of 650/1100V grade.

The panel shall be erected on CC platform / Ground at suitable height by using proper M.S channel frame of Proper size. The M.S channel frame shall be grouted on the wall properly so that it shall withstand the load of the panel properly.

The panel shall be tested as per IS. The Panel shall be manufactured from type test holder having type test certificate of feeder panel of similar or above ratings. The panel shall be provided with 2 Nos. G.I terminals for earthing. Before placing the order for manufacturing the above panel drawing should be approved by inspection agencies / Engineer-in-charge showing the accommodation of the electrical components as mentioned in sr no 1 to 11 in the panel and should fulfill the needs IE rules. The work includes all labour and material as directed by Engineer-in-charge.

**31 Technical specification No.: 31.**

- (a) This includes providing of Hydra on hire basis as and when required. Advance intimation will be given by DPA official for the requirement. The hire charges will be for a shift of 4 Hrs. The hydra on hiring shall be provided with Diesel and Driver.
- (b) This includes providing of Tractor with trolley on hire basis as and when required. Advance intimation will be given by official for the requirement. The hire charges will be for a shift of 4 Hrs. The Tractor with trolley on hiring shall be provided with Diesel and Driver.
- (c) This includes providing of Excavator or Pay-loader on hire basis as and when required. Advance intimation will be given by official for the requirement. The hire charges will be for a shift of 4 Hrs. The Tractor with trolley on hiring shall be provided with Diesel and Driver. The work includes all labour & material as directed by Engineer-in-Charge, but excluding GST.

32 **(a)** The contractor shall inform well in advance in writing for taking power shut down as and when required for repair work/preventive / periodical maintenance in order to intimate concerned port officials to enable them to make necessary arrangements during power shutdown. The above permission letter record should be maintained by the contractor in proper manner. A format of Work Permit Form is placed at Section-X.

**(b)** At the time of maintenance work when power is fed by 66 KV substation, Line clearance is required to be obtained from the concerned officials of invariably. A Line Clearance register is to be maintained in the format given at XI.

33 During the contract period, the contractor is required to maintain minimum quantity of consumables, measuring instruments and tools & tackles as mentioned in Annexure-XII.



<b>Approved Make List for Electrical Items</b>		
<b>Sr. No.</b>	<b>Description</b>	<b>Recommended Makes</b>
1	HT XLPE CABLES	POLYCAB/TORRENT/RPG ASIAN/NICCO/GLOSTER/ UNISTAR/ UNIVERSAL/Havells/KEI
2	LT XLPE CABLES	POLYCAB/TORRENT/RPG ASIAN/ NICCO/ RALLISON/RAVIN-PRIMECAB/ HAVELLS/UNIVERSAL/ UNISTAR/AVOCAB/KEI
3	HT &LT Heat Shrinkable Cables Joints	Raychem/3M/Yamuna Denson/Mahindra
4	LUGS & CABLE GLANDS	DOWELLS / JAINSON / BRACO

**Signature & Seal  
of Contractor**

--Sd--  
**Executive Engineer (E)**  
**Deendayal Port Authority**