

DEENDAYAL PORT AUTHORITY

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



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EXPRESSION OF INTEREST [EOI] for

"Upgradation of Tuna road from two lanes to four lanes providing Lighting & Electrification in the stretch of 10 kilometers"

Executive Engineer (Electrical), DPA invites Expression of Interest for the work of "Upgradation of tuna road from two lanes to four lanes Providing lighting & Electrification in the stretch of 10 kilometers". 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 budgetary offer for the said work in format enclosed at Section IV. The completed EOI (Expression of Interest) shall be submitted to the office of the undersigned on or before 08/01/2024.

Executive Engineer (E)
Deendayal Port Authority

Section B

Bill of Quantities

Name of Work: Upgradation of tuna road from two lanes to four lanes providing Lighting & Electrification in the stretch of 10 kilometers.

Sr. no.	Description	Qty	Unit	Rate	Amount
1	Supply at site 9 Meter long with detachable double Arm Octagonal type Pole as per Technical Specification No. 1	335	No.		
2	Erection of supplied 9 Meter long pole (as per Technical Specification No. 2	335	No.		
3	Supply of Energy Efficient 120W LED Street Light luminary as per Technical Specification No. 3	720	No.		
4	Fixing of 120W LED Street Light Luminary with all accessories as per Technical Specification No. 4	720	No.		
5	Supply at site 4 Core, LT armoured aluminium conductor XLPE cable of 1.1KV grade of the following type & size as per Technical Specification No. 5				
a	4 Core, 16 Sq. mm	12	km		
b	4 Core, 35 Sq. mm	2	km		
c	4 Core, 120 Sq. mm	2	km		
6	Laying of LT armoured aluminium conductor XLPE cable of 1.1kV grade of size up to 120 Sq.mm through Road crossing in Horizontal boring with suitable size of HDPE heavy duty pipe as per Technical Specification No. 6	2	Km		
7	Laying of LT armoured aluminium conductor XLPE cable of 1.1kV grade of size up to 120 Sq.mm through excavation in Hard/Soft Soil	10	km		

	as per Technical Specification No. 7				
8	Laying of 4 Core, 16 TO 35 Sq.mm LT armoured aluminium conductor XLPE cable of 1.1kV grade existing octagonal pole by inserting flexible pipe of hard PVC of size 50 mm two length from ground level to Termination Point fixing with heavy duty cable tie. as per Technical Specification No. 8	2	Km		
9	Supply & Laying of 3 Core, 6 Sq.mm LT flexible cable copper stranded to be layed between street light fixture to junction box complete with material and labour conductor XLPE cable of 1.1kV grade through excavation in Hard/Soft Soil in HDPE Heavy duty pipe as per Technical Specification No. 9	6000	m		
10	Supply, Installation, Testing and Commissioning of Street Light Feeder Pillar fabricated from Stainless Steel as per Technical Specification No. 10	10	No.		
11	Preparation of poles earthing system with GI pipe as per Technical Specification No. 11	350	No.		
12	Preparation of Feeder Pillor earthing system with GI earth plate including required accessories and civil work as per Technical Specification No. 12	10	No.		
13	Reclamation to low laying area at various locations as per site conditions. as per technical specification no.13	1500	M3		
14	Liasioning work with PGVCL authority for allotment for 3 phase LT Supply & Connection at various	10	LS		

	locations as per technical specification no.14				
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(In Words:Rupees _____)

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

**Signature & Seal
of Contractor**

**Executive Engineer (E)
Deendayal Port Trust**

SCOPE OF WORK

The Specification is intended to cover the Supply, Installation and Commissioning of all the equipments for tuna road two lanes to four lanes providing Lighting electrification work in the stretch of 10 kilometers. The work includes associates services like civil & structural work, handling at site, insurance, erection, testing and, commissioning of Roadway Lighting, liasioning work with PGVCL for allotment of 3phase connection at various location as per load and handing over the same to the Engineer in charge after successful completion of the work. The work shall be executed to the satisfaction of the Engineer in Charge. For installation of equipments, the contractor shall arrange all types of tool & tackles. The Contractor shall arrange temporary power for installation & testing at his own cost. The contractor shall submit layout drawing of complete Roadway lighting system in four set after completion of work.

Technical Specification No. 1

This includes supply at site double arm detachable type 9-Meter-long GI Octagonal Pole. The Octagonal pole shall be designed to withstand the maximum wind speed of 180 Km/hr. Maximum deflection of the pole shall meet the requirement of BS 5649: part 6 1982.

The pole shaft shall have Octagonal cross section and shall be continuously tapered with single longitudinal welding. There shall not be any circumferential welding. The Octagonal pole shaft shall be provided with the rigid Flange plate of 20mm or more side thickness with provision for fixing 4 bolts of size 1200mm long and of 20mm dia. or more side This base plate shall be fillet welded to the pole shaft at two locations i.e. from inside and outside.

The Octagonal pole shall have door of approximate 500mm length at the elevation of 2.5 to 3 meter from the Base plate. The door shall be flush with the exterior surface and shall have suitable locking arrangement. The door shall be vandal resistance and shall be dust proof to ensure safety of inside connections. The base compartment shall have provision to fix up the small Bakelite wooden board of suitable size to mount two nos. of SP MCB, terminal connector & service connections etc. The contractor shall supply the bakelite wooden board. There shall also be welded a cleat of size

40 x 40 x 4mm for the purpose of Earthing as per IS 3043. The pole shall be adequately strengthened at the location of the door to compensate for the loss in section.

The steel of Octagonal pole shall be confirming to St35 grade, base plate of the Octagonal pole shall be confirming to IS 226/IS2060 steel and foundation bolts as per IS.

The pole shall be hot dip galvanized as per IS 2629/IS 2633/IS 4759 standards with minimum coating thickness of 80 microns.

The dimensions of the pole are stated as under:

- | | | |
|-----------------------------|---|----------------------------|
| 1. Overall Length | : | 9 Meter |
| 2. Top diameter | : | 100 mm and thickness 3mm |
| 3. Bottom diameter | : | 200 mm and thickness 3mm |
| 4. Thickness of base plate | : | 20 mm |
| 5. PCD | : | 310 x 310 mm |
| 6. Size of foundation bolts | : | 1200 mm long with 20mm Dia |

The pole shall be provided on top with the detachable type canopy having double arm emerging from the canopy pipe at an angle of 105 degrees with respect to vertical top pipe. Apart from double arm, at some location there may be three arm or of four arm but same will be about 10 in numbers.

The side arm shall be of 1500 mm and made from approx. 75 mm OD with having 2.35 mm wall thickness. The octagonal canopy shall be suitable size with respect to top of pole. The overall height of canopy shall be 600 mm; 4 nos. of locking bolts shall be provided on the canopy to hold it in position when put on the top pipe of Octagonal pole. The side arm pipe shall project inside the canopy pipe by 30 mm and shall be suitable nipple for receiving 120 watt LED Road light luminary.

The pole manufacturing & galvanizing unit shall be preferably ISO 9001: 2000 & ISO 14001 certified to ensure consistent quality & environmental protection.

Technical Specification No. 2

The poles shall be bolted on a precast RCC foundation with a set of four foundation bolts for greater rigidity. This includes fixing & erection of 9-meter-long with detachable type double arm/three/four arm Octagonal pole on foundation to be prepared by excavation of pit of 600mm (W) x 1000mm (L) x 1300mm deep after carrying out necessary excavation. At the bottom of pit 10cm of sand layer shall be provided and over that 10cm CC of 1:4:8 mix shall be provided and then foundation bolt of size 1200mm long of 20mm dia shall be buried in the CC up to the length of 1165mm and thereafter pit shall be filled with 1:2:4 CC mix of cement sand and 6 to 20mm graded metal course aggregate concrete. However, if contractor is pre-cast the foundation at location side. the pre-cast foundation shall be size 600mm (W) x 1000mm (L) x 1300mm deep. The termination and connection through connector and MCB of junction box shall be done through cable brass glands of suitable size including earth linking to the pole and junction box with 8 SWG GI wire with all material and labour as directed by Engineer-in-charge.

Technical Specification No. 3

Supply at site energy efficient 120 watt LED street light fixture. The rate shall be firm and inclusive of all taxes, packing and forwarding, insurance, loading at supplier's depot, transportation and unloading at site work. The LED fixtures should be suitable for pole pipe bracket.

The contractor shall take prior approval from the Engineer in charge for make of LED Street Light fixture.

Technical Requirements for LED Street Light is as under:

Sr. No.	Parameter	Requirement
1.	Input Voltage AC	130 - 260 V
2.	Input Frequency	50 Hz +/-1 HZ
3.	Life	50,000 glow hrs.
4.	Luminary mounting arrangement	Adjustable mounting arrangement
5.	Total Harmonic Distortion	<15% maximum
6.	Working Temperature	-5°C to +60°C
7.	Working Humidity	10% to 90% RH
8.	Temperature	5000° K to 6500° K
9.	Wattage	<1.2 W per LED
10.	System Efficacy (Lumens / Watt)	≥100
11.	Finishing	Excellent with Powder Coating
12.	Power factor	≥0.90
13.	Warrantee	2 years
14.	Heat sink	Good thermal management System should be provided & LED must be mounted on heat Sink conductive aluminium bars with suitable large surface area by Means of fins to dissipate the heat to ambient air.
15.	Working Humidity	10% to 90% RH
16.	Color	White
17.	Rated wattage	120 Watt
18.	Color Rendering Index	≥70
19.	Ingress protection Level	IP 66 for lamp compartment and Driver unit
20.	Body of fitting	Die cast aluminium / aluminium Extrusion.
21.	Power efficiency	≥ 80%
22.	Beam Angle	60° for Luminary & 120° for bare LED
23.	Light Source	SMD LED array with lens
24.	Makes of LEDs	Cree/Nichia/Edison/Osram/Philips Lumiled SEOUL SEMICONDUCTOR /EPISTAR / Samsung/Citizen
25.	Certification preferred/essential	CE, ROHS, ERTL & ERDI

Technical Specification No. 4

This includes fixing & commissioning of supplied 120W LED Street Light luminary. The supplied fitting shall be fixed on GI pipe bracket or nipple on the Octagonal Pole. This includes supply of two

nos of 6-10 Amp SP MCB din rail mounting, terminal connector for 4 core, 16 Sq.mm size cable and 3 Core 2.5 Sq. mm flexible copper Cable of approved make for connection between the Street Light Luminary to the SP MCB. This also includes necessary wiring, connections & necessary earth linking connections with all material, labour, tools & tackles as directed by Engineer-In-charge.

Technical Specification No. 5

- (a) This includes supply at site 1.1 KV grade, 4 Core, 16 Sq. mm Aluminum conductor, XLPE insulated armored cable confirming to IS: 7098 (Part-I) 1985 with up to date amendments and of approved make with ISI mark. The cable shall have marking/embossing at the interval of every meter showing its progressive length. The contractor shall produce the routine test certificate during supply of cable at site. The rate shall inclusive of all taxes, duties, packing, forwarding, insurance, transportation and unloading at site of work etc.
- (b) This includes supply at site 1.1 KV grade, 4 Core, 35 Sq. mm Aluminum conductor, XLPE insulated armored cable confirming to IS: 7098 (Part-I) 1985 with up to date amendments and of approved make with ISI mark. The cable shall have marking/embossing at the interval of every meter showing its progressive length. The contractor shall produce the routine test certificate during supply of cable at site. The rate shall inclusive of all taxes, duties, packing, forwarding, insurance, transportation and unloading at site of work etc.
- (c) This includes supply at site 1.1 KV grade, 4 Core, 120 Sq. mm Aluminum conductor, XLPE insulated armored cable confirming to IS: 7098 (Part-I) 1985 with up to date amendments and of approved make with ISI mark. The cable shall have marking/embossing at the interval of every meter showing its progressive length. The contractor shall produce the routine test certificate during supply of cable at site. The rate shall inclusive of all taxes, duties, packing, forwarding, insurance, transportation and unloading at site of work etc.

Technical Specification No. 6

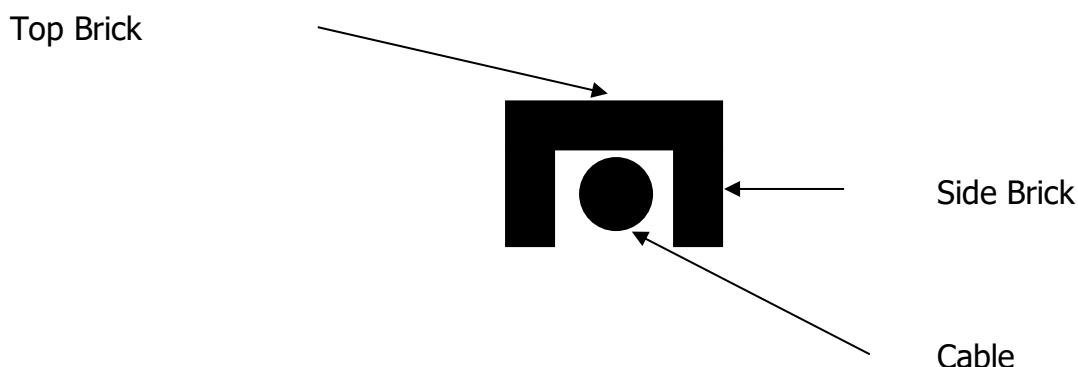
This includes laying of single length cable of size up to 4 core, 120 Sq. mm LT armoured aluminum Conductor XLPE Cable of 1.1KV. The contractor has to arrange horizontal boring machine and should bore minimum 2 meter below ground level this also, include insertion of HDPE Pipe of size 63 mm or more, pipe thickness 6.6 mm wall having coupler arrangement at one side or flexible pipe of same dia, 400-meter length may be used for above work. The work is to be executed at various locations and will be of different length After completion of boring and cable insertion, 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 work includes complete labour and materials and to entire satisfaction of Engineer-in-charge.

Technical Specification No. 7

This includes laying of single length cable of size up to 4 core, 120 Sq.mm LT armoured aluminum Conductor XLPE Cable of 1.1KV Grade through excavation in soft/hard soil. The trench to be excavated 300mm wide, 600mm 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 river sand. The cable shall be protected as per Sketch shown below by providing and laying bricks both the sides lengthwise parallel to the cable & the gaps shall be filled with 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. 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 work includes complete labour and

materials and to entire satisfaction of Engineer-in-charge.

Sketch



Technical Specification No. 8:

This includes laying/ Fixing of single length cable of size 4 core, 16 to 35 Sq. mm LT armoured aluminum Conductor XLPE Cable of 1.1KV Grade through existing octagonal pole by inserting flexible pipe of hard PVC of size 50 mm two length from ground level to junction box fixing with heavy duty cable tie. This also includes necessary cable termination at the Street Light Pole with required material as directed by Engineer in charge.

Technical Specification No. 9:

This includes laying of single length cable of size 3 core, 6 Sq. mm LT flexible stranded copper Conductor Cable with ISI mark. This also includes necessary cable termination at the Street Light Pole to terminal box with required material as directed by Engineer in charge.

Technical Specification No. 10:

This includes Design, Supply at site, installation, testing and commissioning of Outdoor platform mounted type L.T. Street Light Feeder Pillar with top canopy, double shutter, handle with locking arrangement (pad lock – 5 lever with keys), dust, damp and vermin proof. The Street Light Feeder Pillar shall be fabricated from Stainless Steel Sheet of 2mm thick, 316 grade SS Angle of size 25 x 25 X 6 mm thickness and S.S. flat of 25 x 4 mm thickness or of higher suitable size.

The Street Light Feeder Pillar shall be of suitable size; however, it shall be specious for easy maintenance.

1.	MCCB with fixed thermal & magnetic setting, 35kA breaking capacity, 4 Pole MCCB 80-100A	2 No.
2.	Indicating lamp Red, Green and Amber Blue 430/440V AC, with in built resistance with panel box	1 Set
3.	Surface mounted light sensor timer Switch (Auto/Manual)	2 No.
4.	3 phase Air Break Contactor of 80A (4Pole) Coil Voltage : 440V/AC	2 No.
5.	Elmax/ Connector 16-50 sq.mm (6 way) / 70-150 sq.mm (6 way) Aluminium	2 Set

All these components shall be mounted in the Feeder Pillar 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 Cement Concrete platform duly plastered with tapped collar of suitable size having height of 500mm above ground level including grouting of stainless steel legs of 316 Grade Feeder Pillar in reinforced foundation of suitable design.

The Feeder Pillar shall be tested as per IS 4237. All the components shall be panel mounted type and hardware cadmium passivated. The panel shall be provided with 2 Nos. GI terminals for earthing. Before placing the order for manufacturing the panel drawing should be approved by inspection agencies / Engineer-in-charge showing the accommodation of the electrical components and should fulfil the needs IE rules. The relevant test certificate in support of SS grade 316 shall be supplied along with drawing for approval. The Street Light Feeder Pillar shall be manufactured from type test certificate holder for Feeder Pillar of similar or above rating. This also includes the incoming and outgoing Cable termination. The work includes all labour and material as directed by Engineer-in-charge.

Technical Specification No. 11:

This includes preparation of Pole earthing with GI earth pipe 40mm internal dia, 3 mm pipe thickness (No minus tolerance allowed) and 1.5-meter-long of standard quality class – B. The pipe should be provided with 10mm holes in diagonally opposite directions throughout the length of the pipe at 150mm intervals centre to centre. The connection between the earthing stud inside pole and the earthing Pipe shall be done with two runs of 8 SWG GI wire with necessary clamps and nut bolts. The work includes all labour and material as directed by Engineer-in-charge.

Technical Specification No. 12:

This includes preparation of earth station with G.I. Earth plate 600mm x 600mm x 10mm thickness and shall be buried in such a way that its top edge is at a depth of not less than 1.5 Meter from the surface of ground. It shall have a G.I pipe (Class-B) for watering of size 20mm dia. buried vertically and adjacent to plate electrode and other end shall be provided with funnel. The two runs of G.I. flat of size 50mm x 6mm thick shall be clamped near funnel and to be taken from main earth plate. The value of earth pit shall be less than 5Ω.

A cement concrete (ratio 1:4:8) chamber of at least 30 cm x 30 cm shall be provided just below the surface of ground over the funnel for watering and having RCC/CI cover of suitable size as directed. The pit shall be filled with alternative layer of 15cm each of charcoal and salt. This also includes removal of extra-excavated earth from the site.

Two runs of G.I. flat strip of size 25mm x 3mm thick shall be connected from earth pit to Street Light Feeder Pillar as directed by Engineer-in-charge. This work includes all labour and material. The work shall be carried out to entire satisfaction of Engineer-in-charge.

Technical Specification No. 13

The contractor has to arrange reclamation materials as per govt norms, such as coarse graded material spreading and compacting with hand roller. Material shall be of grade one size 75mm to 0.075 mm having CBR value 30, for low laying area to maintain proper leveling before laying of cable/ fixing of pole. The work is to be executed at various locations and will be of different area. Thereafter cable

insertion, cable laying will be done, contractor has to place cable route marker at an interval of 20-meter length the route marker shall be of heavy duty HDPE plate with red radiium colour. The work includes complete labour and materials and to entire satisfaction of Engineer-in-charge.

Technical Specification No. 14:

The contractor has to execute liaison work with PGVCL for allotment of 3 phase CT operating meter or direct type as the case may be at nearby location where the power is available of PGVCL and for ease of connection. The required document will be handed over to contractor from DPA. However, required fees for 10 Number Electrical Connections of approx, 50KW each is to be arranged by the contractor. Hence, contractor is directed to evaluate the same, this includes all the required materials such as electrical meters MCB, ELCB, Cable, Earthing, Meter DB & its Installation Earthing etc.

Initial registration fee will be borne by the contractor, However, the remaining charges, whatever will be paid by DPA to PGVCL for 10 Nos. of New LT 3- Phase Connections. The work includes complete labour and materials and to entire satisfaction of Engineer-in-charge.

Signature & Seal of Contractor

**Executive Engineer (E)
Deendayal Port Trust**