

EXPRESSION OF INTEREST (EOI)

FOR

- I) **Supply, Installation, Commissioning & Testing of 96F Optic Fiber Cable in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme on Percentage of Fiber sharing mode for a period of 10 Years.**

(and)

- II) **Operations & Maintenance of 96F Optic Fiber Cable for a period of 10 Years in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme.**

Eoi No:CGM/O&CS/APEPDCL/VSP/02/2024-25

**APEPDCL
CORPORATE OFFICE
TPT COLONY, SEETHAMMADHARA
NEAR GURUDWARA JUNCTION
VISAKHAPATNAM - 530 013**

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EoI Notice No: CGM/O&CS/APEPDCL/VSP/02/2024-25

1. GENERAL

Call for Expressions of Interest (EOI)

Expressions of Interest (EOI) is invited from reputed Telecom Service Providers (TSP)/ Telecom infrastructure providers (Fiber Leasing) having experience in Telecom network Installation & operations and a valid license from competent authority for **I) Supply, Installation, Commissioning & Testing of 96F Optic Fiber Cable in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme on Percentage of Fiber sharing mode for a period of 10 Years, II) Operations & Maintenance of 96F Optic Fiber Cable for a period of 10 Years in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme.**

EoI No:CGM/O&CS/APEPDCL/VSP/02/2024-25	
Description of item	Quantity required
I) Supply, Installation, Commissioning & Testing of 96F Optic Fiber Cable in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme on Percentage of Fiber sharing mode for a period of 10 Years,	907 Km
II) Operations & Maintenance of 96F Optic Fiber Cable for a period of 10 Years in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme	

Intent of EOI

APEPDCL wishes to engage a Firm / Joint venture I) Supply, Installation, Commissioning & Testing of 96F Optic Fiber Cable in Visakhapatnam City of APEPDCL where UG cable is laying under RDSS scheme on Percentage of Fiber sharing mode for a period of 10 Years, II) Operations & Maintenance of 96F Optic Fiber Cable for a period of 10 Years in Visakhapatnam City of APEPDCL according to the requirements, specifications and bill of quantities.

Summary of Scope

- I) Supply, Installation, Commissioning & Testing of 96F Optic Fiber Cable in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme on Percentage of Fiber sharing mode for a period of 10 Years

(and)
- II) Operations & Maintenance of 96F Optic Fiber Cable for a period of 10 Years in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme.

Proposed Scope of Work

1. APEPDCL wishes to utilize the services of an Implementation Agency (here after referred to as "Implementation Agency"/"IA"/"Selected Agency"/"Vendor"/"Bidder") for Supply, Installation, Commissioning, Testing, Operations & Maintenance for 10 Years of 48F / 96F Optic Fiber Cable in Visakhapatnam City of APEPDCL.
2. The Implementation Agency should complete the supply of 40mm PLB duct and laying of 96F Optic Fiber Cable within 03 days after laying of Power Cable by APEPDCL in coordination with UG Cable Contractor / APEPDCL wing by laying PLB duct before reinstatement of the trench and blowing of 96F Fiber Cable after completion of the particular Sub Station area and termination of the Fibers as per the requirement of the APEPDCL for leasing of the Fibers by the executed vendor / Firm and APEPDCL based on the percentage share finalized and Operation & Maintenance should be 10 Years from the date of completion of total work.
3. The all Fibers Testing should be completed and the necessary documents should be vetted competent Firm / Agency after completion of Sub Station cluster area.
4. Termination and End Point connectivity should be provided at RMUs, Sub Stations and other APEPDCL Offices as directed by Engineer In-Charge i.e. EE/Telecom/APEPDCL in coordination with EE/SCADA/APEPDCL. The approximate total RMUs are 1601Nos, total Sub Stations are around 100Nos and other offices are around 25Nos respectively.
5. Handing over the Physical Documents / Soft copy of Fiber Laying route offset with Depth measured &Coil / Joint location with GIS Mapping.
6. Handing over all Fiber testing documents duly tested and vetted by the authorized agency / PSU / Government agency with traces and optical power level measurements Sub-Station cluster area-wise with end-to-end test sheet as per the prevailing standard procedures.
7. Optical Fiber Termination and Splicing: Optical fiber cables as mentioned in the above locations & as prescribed by the APEPDCL authorities at designated locations installation of Fiber distribution management system (FDMS) & termination with SC pigtail and SC pigtail connected on the SC Fiber distribution panel available in FDMS line side. The contractor should provide rack/wall-mounted FDMS as per the site location Indoor/outdoor type with the concurrence of APEPDCL

General Information and Terms & Conditions

- 1) The proposed area along with a list of Sub Stations along with length in KMs& end stations and APEPDCL reserves the right to lease at its discretion for APEPDCL percentage of share Fibers.
- 2) Fibers shall be leased for a period of Ten (10) years based on the percentage share finalized by APEPDCL.

- 3) Bidder should be from reputed Telecom Service Providers (TSP) / Telecom infrastructure providers (Fiber Leasing) having experience in Telecom network Installation & operations and a valid license from competent authority.
- 4) A Proposal Bid Security (EMD), shall be required to be submitted along with the proposal, of an amount of **Rs.5,00,000/- (Five Lakhs only)** in the form of Demand Draft in favour of "Pay Officer/APEPDCL/ Corporate Office/Visakhapatnam (or) Bank Guarantee from any Nationalized Indian Bank issued in favour of the Chief General Manager/O&CS/Corporate Office/APEPDCL /Visakhapatnam and shall be valid for a period of 3 (three) months from the date of submission of bid document.
- 5) The Performance Security Deposit for an amount of **Rs.4,00,00,000/- (Rupees Four Crores only)** is to be paid to APEPDCL in the form of Demand Draft in favour of "Pay Officer/APEPDCL/ Corporate Office/Visakhapatnam (or) Bank Guarantee from any Nationalized Indian Bank issued in favour of the Chief General Manager/O&CS/Corporate Office/APEPDCL /Visakhapatnam and shall be valid for a period of 10 Years.
- 6) Routine/ Preventive maintenance of the leased Fibers will be the responsibility of the Successful Bidder.
- 7) The Successful Bidder will be responsible for maintaining >99% of monthly up time for the Fibers and shall be liable to pay a penalty in case of non-compliance.
- 8) The Successful Bidder shall have exclusive rights to market and further sub-lease the fibers to parties interested in using fiber as communication infrastructure. Lessee shall have the right to select channel partners & customers and implement relevant payment terms and conditions, billing, and collection process for its business operations.
- 9) There shall be restricted entry to the APEPDCL premises. Identity cards of the personnel of the Successful Bidder/ Operator shall be issued for the maintenance of their fibers. However, during the construction of the room and installation of their equipment, temporary passes shall be issued by the authorized person concerned with APEPDCL.
- 10) Successful Bidder shall obtain no dues certificate from APEPDCL on completion of the Lease period if sub sequent lease extension is not agreed mutually.
- 11) These terms are proposed by APEPDCL. However, intended bidders are free to suggest modifications / changes / proposals through EoI for the new terms which may be considered by APEPDCL before inviting bids.
- 12) The EoI document can be downloaded from APEDPCL's website – <https://www.apeasternpower.com/>
- 13) Conditional proposals in response to the EoI are liable to be rejected.

Sl. No.	Circle	Division	Sub Division	Section	Sub Station Name	No. Of Feeders
1	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-1	DONDAPARTHY	AKKAYYAPALEM	33/11KV HYBRID AIS CONTAINER SS	3
2	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-1	DONDAPARTHY	AKKAYYAPALEM	GJ HOSPITAL	8
3	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-1	DONDAPARTHY	AKKAYYAPALEM	PORT STADIUM	3
4	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-1	DONDAPARTHY	DONDAPARTHY	INDOOR DONDAPARTHY	4
5	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-1	DONDAPARTHY	THATICHELAPALEM	SRINIVASA NAGAR INDOOR	4
6	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-1	DONDAPARTHY	THATICHELAPALEM	SUBBALAXMI NAGAR INDOOR	4
7	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-1	DONDAPARTHY	THATICHELAPALEM	TATICHELAPALEM INDOOR	4
8	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-1	SEETHAMMADHARA	HB COLONY	HB COLONY	5
9	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-1	SEETHAMMADHARA	HB COLONY	MMTC (BALAYESU CHURCH)	5
10	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-1	SEETHAMMADHARA	HB COLONY	WATER WORKS SS	4
11	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-1	SEETHAMMADHARA	MADDILAPALEM	PRADHAMA SS	4
12	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-1	SEETHAMMADHARA	SEETHAMMADHARA	A.S.R.NAGAR	3
13	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-1	SEETHAMMADHARA	SEETHAMMADHARA	NAKKAVANIPALEM	10
14	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	AUTONAGAR	AUTONAGAR	AUTONAGAR	7
15	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	AUTONAGAR	AUTONAGAR	KARNAVANIPALEM	3
16	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	AUTONAGAR	AUTONAGAR	TUNGALAM	3
17	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	AUTONAGAR	KURMANNAPALEM	AGANAMPUDI KBR	5
18	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	AUTONAGAR	KURMANNAPALEM	VSEZ	5
19	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	AUTONAGAR	VADLAPUDI	F BLOCK	4
20	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	AUTONAGAR	VADLAPUDI	VADLAPUDI	5
21	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	GAJUWAKA	CHINAGANTYADA	AUTONAGAR B-BLOCK	4
22	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	GAJUWAKA	CHINAGANTYADA	CELEST	4
23	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	GAJUWAKA	CHINAGANTYADA	CHINAGANTYADA	5
24	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	GAJUWAKA	CHINAGANTYADA	JUG CENTRE	5
25	VISAKHAPAT	VISAKHAPATN	GAJUWAKA	GAJUWAKA	BHANOJI THOTA	4

	NAM	AM ZONE-2				
26	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	GAJUWAKA	GAJUWAKA	GAJUWAKA	3
27	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	GAJUWAKA	MINDI	BHPV	8
28	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	GAJUWAKA	MINDI	MINDI INDOOR	4
29	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	GAJUWAKA	MINDI	SHEELANAGAR	4
30	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	KANCHARAPALE M	KANCHARAPALE M	COMMON POINT	6
31	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	KANCHARAPALE M	MARRIPALEM	APIIC	4
32	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	KANCHARAPALE M	MARRIPALEM	EPF OFFICE	4
33	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	KANCHARAPALE M	MARRIPALEM	INDUSTRIAL ESTATE	8
34	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	KANCHARAPALE M	MARRIPALEM	MARRIPALEM VUDA LAYOUT	3
35	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	KANCHARAPALE M	MURALINAGAR	MURALINAGAR	4
36	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	KANCHARAPALE M	MURALINAGAR	POLYTECHIC COLLEGE	5
37	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	KANCHARAPALE M	NSTL	MADHAVADHARA INDOOR	4
38	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	KANCHARAPALE M	NSTL	NAD	3
39	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	KANCHARAPALE M	NSTL	NSTL	6
40	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	MALKAPURAM	GANGAVARAM- VSKP	INDOOR AMTZ	2
41	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	MALKAPURAM	GANGAVARAM- VSKP	MADEENABAGH	4
42	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	MALKAPURAM	MALKAPURAM	JANATHA COLONY(RADAR)	3
43	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	MALKAPURAM	MALKAPURAM	MALKAPURAM	7
44	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	MALKAPURAM	PEDAGANTYAD A	PEDAGANTYADA	7
45	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	MALKAPURAM	PEDAGANTYAD A	VINAYAKANAGAR VUDACOLONY	3
46	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	MALKAPURAM	SRIHARIPURAM	MULAGADA INDOOR SS	4
47	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-2	MALKAPURAM	SRIHARIPURAM	SRIHARIPURAM	6
48	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	ANANDAPURA M	ANANDAPURA M	ANANDAPURAM	8
49	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	ANANDAPURA M	ANANDAPURA M	GIDIJALA	4
50	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	ANANDAPURA M	ANANDAPURA M	PARADESIPALEM	4

51	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	ANANDAPURA M	ANANDAPURA M	SONTYAM	4
52	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	ANANDAPURA M	ANANDAPURA M	VELLANKI	5
53	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	ANANDAPURA M	PADMANABHA M	BONI	5
54	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	ANANDAPURA M	PADMANABHA M	PADMANABHAM	6
55	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	ANANDAPURA M	PADMANABHA M	REVIDI	3
56	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	BHEEMILI	BHEEMILI	APIIC,KAPULUPPADA SS	3
57	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	BHEEMILI	BHEEMILI	BHEEMILI	5
58	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	BHEEMILI	BHEEMILI	CHEPALAUPPADA	4
59	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	BHEEMILI	BHEEMILI	INS KALINGA	2
60	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	BHEEMILI	BHEEMILI	KAPULUPPADA	2
61	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	BHEEMILI	CHITTIVALASA	CHITTIVALASA	8
62	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	BHEEMILI	CHITTIVALASA	THALLAVALASA	4
63	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	BHEEMILI	THATITURU	CHIPPADA	5
64	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	GOPALAPATNA M	ARILOVA	ARILOVA	5
65	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	GOPALAPATNA M	ARILOVA	PINEAPPLE COLONY	4
66	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	GOPALAPATNA M	GOPALAPATNA M	BUTCHIRAJUPALEM	4
67	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	GOPALAPATNA M	GOPALAPATNA M	KOTHAPALEM	4
68	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	GOPALAPATNA M	GOPALAPATNA M	R.R.V.PURAM	4
69	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	GOPALAPATNA M	SIMHACHALAM	APPANNAPELEM	4
70	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	GOPALAPATNA M	SIMHACHALAM	S.V.L.N.S (SRI VARAHALAKSHMINA RASIMHASWA	4
71	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	GOPALAPATNA M	SIMHACHALAM	SR PURAM	3
72	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	GOPALAPATNA M	SIMHACHALAM	VIRATNAGAR	7
73	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	KOMMADI	KOMMADI	4
74	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	KOMMADI	MARIKAVALASA	4
75	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	MADHURAWAD A	MADHURAWADA	7

76	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	PM PALEM	33/11KV AIRMID REAL ESTATE LTD	1
77	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	PM PALEM	33/11KV BAKKANNAPALEM	4
78	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	PM PALEM	33/11KV DR.YSR CRICKET STADIUM INDOOR	5
79	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	PM PALEM	33/11KV FINISHING TOUCH PROPERTIES	4
80	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	PM PALEM	PM PALEM	5
81	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	SAGARNAGAR	ADIBATLANAGAR	4
82	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	SAGARNAGAR	AIS CONTAINER SS OF APTDC LTD	2
83	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	SAGARNAGAR	RUSHIKONDA	3
84	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	SAGARNAGAR	SAGARNAGAR	4
85	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	SAGARNAGAR	SRI RAM PROPERTIES	4
86	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	SAGARNAGAR	VISALAKSHINAGAR	4
87	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	SAGARNAGAR	VUDA HARITHA	4
88	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	SAGARNAGAR	YENDADA	6
89	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	MADHURAWAD A	VSLNAGAR	VIMS	4
90	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	PENDURTHI	PENDURTHI	GURRAMPALEM	4
91	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	PENDURTHI	PENDURTHI	PENDURTHY	7
92	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	PENDURTHI	PENDURTHI	PULAGALAPALEM	3
93	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	PENDURTHI	SUJATHANAGAR	CHINNAMUSHIDIWA DA	3
94	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	PENDURTHI	SUJATHANAGAR	RAMPURAM	3
95	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	PENDURTHI	SUJATHANAGAR	SUJATHA NAGAR	3
96	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	PENDURTHI	VEPAGUNTA	CHEEMALAPALLI	4
97	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	PENDURTHI	VEPAGUNTA	NARAVA	3
98	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	PENDURTHI	VEPAGUNTA	PADMANABHAPURA M	3
99	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	PENDURTHI	VEPAGUNTA	PURUSHOTHAPURA M (Comfort homes)	3
100	VISAKHAPAT NAM	VISAKHAPATN AM ZONE-3	PENDURTHI	VEPAGUNTA	SATTIVANIPALEM	2

Total Trench Length in KM		
SI No	Name of the Division	Total Trench Length in KM
a)	APIIC(Industrial Areas)	61.435
b)	GVMC	654.276
c)	NHAI	58.82
d)	R&B	41.62
e)	VSP PORT	31.59
f)	VSEZ	9.428
g)	NAVY	13.743
h)	AMTZ	4.294
i)	VSP STEEL PLANT	10.844
k)	Private Properties	2.618
l)	Simhachalam Temple	5.436
m)	VIMS	0.793
n)	Panchayaths	12.284
	TOTAL	907.181

Special Note:

The following is the percentage of 96F Fiber sharing ratio of APEPDCL vs Vendor proposed to be included in Tender to be floated. The prospective bidders are requested to submit their views in EoI.

907 Km OFC Cable:

SI No	Operation Division	Proposed 96F OFC Cable length in Km	APEPDCL Percentage of Sharing	Implementation Agency (service Provider)Percentage of Sharing
1	Zone-I	107		
2	Zone-II	400		
3	Zone-III	400		
Total Km		907 Km		

(This quantity is tentative only)

Expression of Interest (EOI) process:

The EOI is the first stage of a multi-stage tender process. The objective of EOI process is to identify eligible / qualifying organizations that are interested in entering into the proposed contract and have suitable capacity, capability and experience.

The Evaluation Committee will take suggestions from the bidders through EOI and if required, further communication will be made with them either O-Line based on the necessity.

INFORMATION TO APPLICANTS

Place of submission of EOI with suggestions

For submission of the EOI the address is:

The Chief General Manager / O&CS
Corporate Office/ APEPDCL,
2nd Floor, TPT Colony, Near Gurudwara Junction
Seethammadhara, Visakhapatnam.
cgm_ocs@apeasternpower.com
Contact No: 9440814370, 9440812567

The application with all documents duly signed should be submitted in sealed envelope. The envelope should be addressed to

The Chief General Manager / O&CS
Corporate Office/ APEPDCL,
2nd Floor, TPT Colony, Near Gurudwara Junction
Seethammadhara, Visakhapatnam.

Envelopes should be super scribed **“EXPRESSON OF INTEREST for I) Supply, Installation, Commissioning & Testing of 96F Optic Fiber Cable in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme on Percentage of Fiber sharing mode for a period of 10 Years, II) Operations & Maintenance of 96F Optic Fiber Cable for a period of 10 Years in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme”** along with name of the applicant.

Notice Inviting for EOI Details	
Description	
Department Name	A.P.E.P.D.C.L.
Office	O&CS Wing, Corporate Office, APEPDCL, Visakhapatnam
Eoi Number	Eoi Notice No: CGM/O&CS/APEPDCL/VSP/01/2024-25
Eoi Subject	I) Supply, Installation, Commissioning & Testing of 96F Optic Fiber Cable in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme on Percentage of Fiber sharing mode for a period of 10 Years, II) Operations & Maintenance of 96F Optic Fiber Cable

	for a period of 10 Years in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme
Delivery Schedule	I) Supply, Installation, Commissioning, Testing of 96F Optic Fiber Cable where UG Cable is laying under RDSS scheme in Visakhapatnam City of APEPDCL should be completed within 03 days after laying of Power Cable by APEPDCL in coordination with UG Cable wing by laying 40mm PLB Duckt before reinstatement of the trench Sub Station cluster wise. II) Operations & Maintenance should be 10 Years from the date of completion of total work.
Eol Type	Open
Eol Category	96F Optic Fiber Cable on Percentage of Fiber sharing mode

Key dates for submission of EOI

End date for receiving application: 17.04.2025 (13.00Hrs)

Contact Person

Refer all requests for information about this EOI process to the following Contact Persons:

Designation:	Executive Engineer/ Telecom/APEPDCL/Visakhapatnam
Telephone number:	9440814370
e-mail address:	cgm_ocs@apeasternpower.com ee_tc@apeasternpower.com

Indicative Time table

An indicative time table for the EOI process is as follows:

Expressions of Interest close:	1 st Step
Evaluation completion:	2 nd Step
Notification for tender:	3 rd Step

Clarification on applicant's queries

In case applicant has any query to respond to Eoi, they can send an email with the inquiry to above mentioned authorities.

Disclaimer

APEPDCL is not committed contractually in any way to those applicants whose applications are accepted. The issue of this Request for EOI does not commit or otherwise oblige APEPDCL to proceed with any part or steps of the process.

Though the information contained in this Request for EOI has been formulated with all due care, APEPDCL does not warrant or represent that the information is free from errors or omissions. The information is made available on the understanding that APEPDCL and its respective employees and agents, shall have no liability (including liability by reason of negligence) for any loss, damage, cost or expense incurred or arising by reason of any person using or relying on the information and whether caused by reason of any error, omission or misrepresentation in the information or otherwise.

2) EVALUATION CRITERIA

Mandatory Evaluation Criteria

Applicants are required to complete the Application Forms (Format-1 to Format-5) given in Appendix. Applicants must demonstrate that they meet mandatory requirements in respect of the following evaluation criteria:

- Legal entity
- Financial capacity
- Technical expertise

The requirements for these mandatory criteria are set out below.

In case the Applicant is wholly owned subsidiary or a joint venture company or special purpose vehicle (SPV), the financial capabilities, technical capabilities and experience of its Parent/ Parent Subsidiaries or associate / Promoter Company/ affiliate shall be acceptable. The financial capabilities, technical capabilities and experience of a subsidiary/ Joint venture company shall be acceptable where the Bidder has a majority stake in the company. The bidder who doesn't fulfill the qualifying requirements stipulated under by him can also participate provided that the bidder should be a consortium consisting of two partners, such that they meet the Qualifying Requirements collectively as stipulated above.

In case of bidding by a Consortium, the partners shall necessarily identify a leader of the Consortium who will furnish the bid documents and Consortium Agreement. The Consortium leader and the partner shall execute a Deed of Joint Undertaking in which the leader and the partner are jointly and severally liable to APEPDCL for the successful performance of the contract. A partner in one consortium cannot be part of any other consortium. The consortium formed for the purpose of this Project shall be valid till completion of the contract period.

Legal Entity

A search may be undertaken to verify that an applicant is a bona-fide registered company or business.

Applicants may be required to provide evidence of the legal entity at the time of participating the tenders by providing a copy of an official document such as:

- Company registration with MoA
- Firm registration
- Any registration document viz. GST, Work license for execution of the works under the scope
- For JV, the registered JV agreement along with partner firm's registration

To respond to this criterion, submit the information in **Format-2 – General particulars of applicant.**

Financial Capacity

Pre qualification, Technical Criteria and Instructions to Bidders (ITB)

Technical Criteria

1.1. The Applicant should meet the following eligibility criteria :

(a) Compulsory criteria: The applicant should possess a telecom registration (IP-1) / telecom license (ISP, UL, NLD) from the Department of Telecom, Govt of India for providing telecom services.

Pre qualification criteria

The qualification criteria laid within this document shall be met by the bidder, as a Single Firm / Joint Venture. A bidder who submits more than one EoI shall be summarily disqualified. The 'Bidder', shall be primarily accountable for the supply, implementation, testing and maintenance of the entire scope of the project.

Sr No	Qualification Criteria	Documentary Evidence
1.	The bidder should be a company registered under Indian Companies Act, 1956 and 2013 or a Partnership Firm registered under Indian Partnership Act, 1932 or a Proprietorship firm or Limited Liability Partnership Firm under Limited Liability Partnership Firm Act 2008.	Copy of Certificate of Incorporation signed by Authorized Signatory of the Bidder/ certified deed of partnership
2.	The Bidder or its parent firm / Joint Venture should have cumulative annual turnover of at least INR 10 Crores in any one Year in the last five financial years (i.e.2019-20, 2020-21, 2021-22, 2022-23, 2023-2024)	Audited Profit & Loss Statements for last five financial years (i.e.2019-20, 2020-21, 2021-22, 2022-23, 2023-2024) from the certified chartered accountant clearly stating average turnover.

3.	Bidder should have positive net worth as on 31st March 2024.	Certificate from the Chartered Accountant clearly stating the net worth.
4.	<p>The Bidder should have executed or currently executing project/s of below mentioned value in OFC construction, operation and maintenance of cable laying and associated works in the last five financial years(i.e. i.e.2019-20, 2020-21, 2021-22, 2022-23, 2023-2024) in any Telecom service provider in India</p> <ol style="list-style-type: none"> 1. At least one project with a value of Rs. 2 Cr (OR) 2. At least two projects with a value of Rs. 1 Cr each (OR) 3. At least three projects with a value of Rs. 0.5 Cr each <p>(One project does not imply one PO. A Single project can have multiple POs)</p>	Copy of Work Completion and experience certificate of the project from respective client clearly stating the scope, current status (percentage completion) and the contact details of the authority.
5.	The sole bidder should not be insolvent, in receiver ship or bankrupt as on the date of bid submission.	Self-declaration to be submitted on bidders letter head.
6.	The Bidder should have valid documentary proof of GST registration number and PAN Card.	Copy of GST registration number and PAN card
7.	The Bidder should not have been blacklisted by any Central/State Government Organization or Department in India at the time of submission of the bid.	Declaration by the Bidder as per format given in the bid document

Submit the information required by **Format-3 Financial information**.

3) SUBMISSION OF EOI APPLICATIONS

Documents to be submitted

The EOI must be submitted in hard copy/e-mail, by the time and date stated on the cover of this Request for EOI or in the invitation, through the **Application Form** (Format-1) and all the information required by the following Schedules filled and signed by the authorized representative of the applicant:

- Applicant's Details (Use format-2)
- Applicant's Experience and Capability (Useformat-2)
- Financial Information (Use format-3)

All information must be current and the application should contain only the relevant information.

Late Applications

Application received after due date shall not be accepted in any circumstances.

C
APPENDICES

- a. Format-1: COVERING LETTER (ON THE APPLICANT'S LETTERHEAD).
- b. Format-2: GENERAL PARTICULARS OF APPLICANT
- c. Format-3: FINANCIAL SITUATION

- d. Format-4: DETAILS OF WORKS/CONTRACTS EXECUTED OF SIMILAR TYPE AND MAGNITUDE CARRIED OUT BY THE BIDDER/ PARTNER HAVING PHYSICAL EXPERIENCE IN CASE OF JV

- e. Format-5: DETAILS OF ONGOING WORKS UNDER EXECUTION IN India

Format-1

COVERING LETTER (ON THE APPLICANT'S LETTER HEAD)

To,

The Chief General Manager / O&CS
Corporate Office/ APEPDCL,
2nd Floor, TPT Colony, Near Gurudwara Junction
Seethammadhara, Visakhapatnam - 530013

Sub: EOI for I) Supply, Installation, Commissioning & Testing of 96F Optic Fiber Cable in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme on Percentage of Fiber sharing mode for a period of 10 Years, II) Operations & Maintenance of 96F Optic Fiber Cable for a period of 10 Years in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme.

Ref: 1. Notice Inviting EOI-
2. Request for EOI document-

Sir,

We hereby submit our "I) Supply, Installation, Commissioning & Testing of 96F Optic Fiber Cable in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme on Percentage of Fiber sharing mode for a period of 10 Years, II) Operations & Maintenance of 96F Optic Fiber Cable for a period of 10 Years in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme" in full compliance with terms and conditions of the above referred Expression of Interest document.

(Signature of Applicant with seal)

Format-2
GENERAL PARTICULARS OF APPLICANT

1.	Name of the firm	
2.	Full Address Telephone No. Fax No.	
3.	(a) Interested for I) Supply, Installation, Commissioning & Testing of 96F Optic Fiber Cable in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme on Percentage of Fiber sharing mode for a period of 10 Years, II) Operations & Maintenance of 96F Optic Fiber Cable for a period of 10 Years in Visakhapatnam City of APEPDCL where UG Cable is laying under RDSS scheme.	Yes/No
	(b) If not,	
	(e) GST no. submitted?	Yes/No
	(f) GST no.of APEPDCL	37AABCT0088P1ZU
4.	Copy of MoU and Articles of Association attached?	Yes/No
5.	Expressions of Interest (EOI) is invited from reputed Telecom Service Providers (TSP)/ Telecom infrastructure providers (Fiber Leasing) having experience in Telecom network Installation & operations and a valid license from competent authority	Yes/No
6.	Area/circle where telecom services is being currently provided by the party	
7.	Certificate in support of experience submitted	Yes/No
8.	Balance sheets for last five Financial years submitted	Yes/No

(Signature of Applicant with seal)

Format - 3
FINANCIAL SITUATION

Particulars	2019-20	2020-21	2021-22	2022-23	2023-24
Total Assets					
Total Liabilities					
Net Worth					
Annual turn over					

(Signature of Applicant with seal)

Format – 4

DETAILS OF WORKS/CONTRACTS EXECUTED OF SIMILAR TYPE AND MAGNITUDE CARRIED OUT BY THE BIDDER/ PARTNER HAVING PHYSICAL EXPERIENCE IN CASE OF JV.

Name of the Bidder/ Partner having physical experience in case of JV:

- a) References along with requisite contract/ Purchase Order (PO)/ Work Order (WO). The references should indicate client name, scope of work, Project start date);

In case Non-Disclosure agreement (NDA) is signed with the client, Bidder shall provide an undertaking for the NDA and shall also provide a client certification as proof of experience along with Client Name/ Email Address/ Contact no./ designation etc.

- b) Documentary evidence of completion of the Project or other documentary evidence indicating completion of supply (e.g. proof of payment received/ proof of asset capitalized in books of accounts (as applicable) and client certificate for supply of material or similar proofs) along with contact details of the client;

- c) Any other documentation for R&M Services

Indicative Table

Sl. No	Name of the work	Quantum	Order Value	Date of award of contract	Period of completion as per Agreement	Period in which actually completed	Reasons for delay	Date of actual completion & actual cost of work	Principle features
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Total

Note: Experience Certificates issued by the **an officer not below the rank of Executive Engineer or equivalent cadre of state power utility / Government organizations / PSU only** shall be furnished by the bidder in support of the above information in case of Govt works.

**Signature of the Bidder/
Lead Partner
(along with the seal)**

Format – 5
DETAILS OF ONGOING WORKS UNDER EXECUTION IN India
(as on the date of submission of the bid)

Name of the Bidder/ Both the Partners in case of JV:

Sl. No.	Name of the work/ Description	Place & State	Works on Hand				Works bidden-for		
			Tendered cost in Rs.	Stipulated period of completion	Cost of remaining work	Anticipated date of completion	Estimated cost in Rs.	Date when decision is expected	Stipulated date of completion

I / We M/s..... here by declared that the information furnished in respect of works under execution in the above said schedule is true to the best of my / we knowledge and belief. I / We hereby undertake that in the event of any of the above information found to be false or incorrect at a later date the APEPDCL is entitled to reject the bid or terminate the contract agreement entered into besides black listing the bidder.

**Signature of the Bidder/
Lead Partner
(Along with the seal)**

**TECHNICAL
SPECIFICATIONS
FOR
OPTIC FIBRE
CABLE**

96 F OPTIC FIBRE CABLE

1. Scope

The specification covers the design, manufacturing, testing, packing, supply and delivery in proper packed at site. 96F optical fiber cables, single-mode fiber is designed especially for optical systems steel tape, armoured dry core design suitable for underground application with HDPE duct for communication as per relevant standard G.652.D with latest version.

The G.652D fiber complies with or exceeds the ITU-T Recommendation G.652.D and the IEC 60793-2-50 type B1.3 Optical Fibre Specification.

The cable should be dry core design & easy to install, stain free fibre, water protection enabled by water blocking compound in tube and core, easy mid span access. Steel tape armouring should provide protection against crush and impact. Fiber Optic Cable should be suitable for Underground with Termite Protection.

Cable Configuration:

S. No	Item Description	Fiber Count	Cable Diameter (approx.)	Cable Weight (approx.)
1	Fibre Optic Cable	96F	14.2 mm	210 Kg/ Km

2. Applicable Standards

The optical fibre cables shall be designed, manufactured and tested in accordance with the relevant parts of the following Standards and all amendments issued from time to time except where varied by this specification.

STANDARD TITLE	TITLE
AS/ACIF S008:2006	Requirements for Customer Cabling Products.
ITU Recommendation G.652.D	Characteristics of a Single-Mode Optical Fibre Cable
ANSI TIA-598C	Optical Fiber Colour Coding
AS 1049	Telecommunications Cable – Insulation, Sheath & Jacket.
AS 2857 – 1986	Timber drums for insulated electric cables and bare conductors
AS 3983	Metal drums for insulated electric cables and bare Conductors
ISO 9002	Quality systems - Model for quality assurance in production, installation and servicing

3. Environment

Underground optical fibre cables will be exposed to the following environmental conditions:

DESCRIPTION	CONDITION
Installation	Installed directly buried in fine grain bedding material, or, in PVC conduits at a nominal depth of up to 1000 mm, with cable ends rising up concrete or timber poles and exposed to direct sunlight
Ambient Air Temperatures	Not exceeding 45oC as determined by a shaded thermometer (Summer day time) Minimum -5°C (Winter night time)
Ambient Ground Temperatures	Not exceeding 30oC
Altitude	100 M to 1000M
Humidity	98%

4. Design and Construction

Standard product range

It is preferred that the cables be part of or become part of the standard product range produced by the manufacturer.

ITU-T Recommendation

The optical fibre cable as specified shall have single mode optical fibres in accordance with ITU-T Recommendation G.652 D.

Optical Fibre Requirements

A) Fibre Type

The optical fibres will be **single mode** fibres with the following characteristics.

B) Fibre Characteristics

Single Mode:

The characteristics of each single mode optical fibre in 96F the optical fibre cable will adhere to the ITU-T's recommendation G.652D and as follows:

Transmission wavelength	1310 nm and suitable for 1550 nm
Mode Field Diameter	9.2+/-0.4µm at a transmission wavelength of 1310 nm
Attenuation	Not greater than 0.40 dB/km at an optical wavelength of 1310 nm and 0.30 dB/km at 1550 nm.
Point Discontinuity	Not greater than 0.1 db at 1310 and 1550 nm.
Cable Cut-off Wavelength	< 1260 nm
Zero dispersion	1312 +/- 10nm
Dispersion Slope at Zero dispersion wavelength	≤0.093ps/(nm ² -km)
Optical cladding diameter	125 m 1.0 m
Life span	Greater than 35 years

Identification of Individual Fiber

The colours of individual fibres and tubes as well as other cable components shall allow for the unique identification of individual fibres within the cable and shall be in accordance with AS/ACIF S008:2006.

Factory Joints

The fibres shall not be jointed within any un-installed cable length without prior approval by the Purchaser. Where such approval is given, there shall be a maximum of one (1) joint allowed in any continuous length. This joint shall have a two way average splice loss of less than 0.2 dB at 1310 nm and 1550 nm.

Point Loss in Un-Installed Cable

For the un-installed optical fibre cable there shall be no point loss (of any cause) in any single fibre, whose average two way attenuation exceeds 0.01 dB at 1310 nm and 1550nm.

5. Cable Requirements

Moisture Exclusion

As the cable may be subjected to total water immersion, the cable shall comply with the requirements for water penetration specified in Clause 25, Method –F5B of IEC60794-1-2 to prevent the ingress of moisture and other impurities to the optical fibres. Dry core water blocking techniques shall be used for all cables.

Cable Configuration

The configuration of the cable shall be such that it is arranged in tubes of twelve (12) fibres. Filler tubes will be used as required.

Cable Sheathing

- The cable sheath shall consist of material compatible with the hauling of cable through ducts and shall be resistant to insect and termite attack.
- The cable sheath shall be resilient to ageing and embrittlement from heat and ultraviolet radiation such that the life expectancy of the cable is a minimum of 35 years.
- The entire cable shall consist of electrically insulating material.
- Distance markings shall be provided on the cable (in metres) in order to assist possible fault location in the future.
- The markings are to be legible and indelible and shall not reduce the effectiveness of the cable in resisting insect and termite attack.

Cable Design

The optical fibres shall not be constrained firmly against other fibres, strength members, moisture barrier compound or any other cable components in order that the fibre strain is decoupled from the strain in other components when the cable is under tension.

Cable Mechanical Requirements

The cable must be able to withstand a directly applied long term crush loads of 1 KN per 100 mm without increase in optical attenuation for any fibre or any decrease in the integrity of the optical fibre cable over its designated lifetime. Test method as per IEC 60794-1.

Fibre Characteristics

➤ **Geometrical Characteristics**

- ┆ Core Material : Doped Silica
- ┆ Core Diameter : $9 \pm 1\mu\text{m}$
- ┆ Cladding Material : Doped Silica
- ┆ Cladding Diameter : $125\mu\text{m} \pm 2.5\mu\text{m}$
- ┆ Cladding non-circularity : Less than 2%
- ┆ Primary coating material : UV curable Acrylate
- ┆ Primary coating diameter : $250\mu\text{m} \pm 15\mu\text{m}$
- ┆ Secondary Coating Material : Nylon/ Polybutyl terephthalat
- ┆ Secondary Coating Diameter : $1.8 \pm 0.2\text{ nm}$

➤ **Optical Characteristics**

- ┆ Nominal Wavelength of operation : 1310nm (1270 to 1325nm)
- ┆ Mode field diameter : $9.2\mu\text{m} \pm 0.4\mu\text{m}$
- ┆ Mode field non-circularity : Less than 2%

- ┆ Cut-off wave length : 1120 - 1310 nm
- ┆ Attenuation : Less than 0.4dB/km at 1310 nm
- ┆ Chromatic dispersion : Less than 3.5 ps / nm.km
- ┆ Mode field Concentricity error: 1.0 micrometer

Cable Characteristics

- Loose Tube with Colour Coding
- Strength Member
- Dummy Filler
- Binding Material
- Inner PE Sheath
- Anti-Termite Protective Layer
- Armouring of Cable
- Outer PE Sheath
- Marking on Cable
- Overall Diameter of Cable
- Weight / km of Cable

Cable Construction

- General Requirement
 - Primary coated fibres to be covered by a secondary coated loose tube
 - The in between space to be filled with a suitable water blocking jelly compound.
 - The loose tubes to be wrapped with suitable material
 - The cable core shall not have any metallic component and shall have splice free optical fibre.
- Cable Strength member
 - A solid non metallic member (preferably of FRP) in the centre core of the cable for strength and flexibility
- Cable Core Covering - Moisture Barrier
 - The cable core to be covered with a continuous layer of a non hygroscopic dielectric material applied longitudinally or helically with an overlap
- Inner PE Sheath
 - Over the core covering, a PE sheath free from pinholes, joints, mended places or other defects and made of tough weather resistant and high molecular weight polyethylene compound shall be provided
 - ┆ Its thickness shall be 1.5 mm minimum.
 - ┆ A sheathing of Nylon – 12 shall be applied over the inner P.E. sheath for protection against termite
 - The thickness of the Nylon-12 tube should be ≥ 0.5 mm

- Armouring of Cable
 - CSTA is done transversely for lateral strength and bending flexibility
 - To make the cable rodent & termite proof.
 - CSTA types –
 - Zetabon - made up of low carbon polychrome steel and hence susceptible to corrosion in saline subsoil water
 - Stainless Steel - anticorrosive and a better choice where subsoil salinity is high.
 - Thickness of stainless steel alloy 0.15 mm
- Outer HDPE Sheath
 - An outer jacket of HDPE of a minimum thickness of 1.8 mm shall be provided
 - The outer jacket to be doped with suitable anti-termite material
 - The overall outer jacket shall withstand 10KV AC RMS Spark
- Marking on Cable
 - length marking
 - manufacturers identity mark
 - cable drum code at an interval of 1 meter
- Overall Diameter
 - 14.3 mm (Armoured UG OF Cable)
- Fibre Identification
 - └ The loose tubes and individual fibres should be distinctly colour coded
- Life of Cable
 - └ The minimum expected life shall not be less than 25 years
- Cable Ends
 - └ Running end shall be provided with a Pulling Eye
 - └ Other end shall be sealed with Thermal Shrink Cap
- Length of Cable Drum
 - └ Standard Factory Length = 2 km +/- 10%
- Special Requirement
 - └ Additional two layers of Steel Tape Sheathing with an additional outer HDPE Jacketing
 - └ ARAMID YARN can be provided in between inner LDPE and outer HDPE jacket for Aerial Optic Fibre Cable, as per the requirement of the user

Drawings

Bidder shall provide detailed drawings of the cross-section of the items offered.

6. Tests

Testing is carried out in three stages:

- Type Test
- Acceptance Test
- Site Test

Type Test

- Test for Optical Fibre
 - └ Diameter of Primary Coating

- ┆ Cut off Wavelength
- ┆ Core (Mode Field)
- ┆ Attenuation
- ┆ Chromatic Dispersion
- Test for Secondary Coating(for loose tube construction only)
 - ┆ Outer diameter
 - ┆ Melting point of nylon
 - ┆ Tensile properties of Polybutylene compound
- Tests for Inner PE sheath
 - ┆ Thickness
 - ┆ Tensile strength and elongation at break
 - ┆ Brittle temperature of PE
- Tests for Armouring:
 - ┆ Tensile strength
 - ┆ Elongation Test
 - ┆ Thickness of armouring
 - ┆ Extent of overlapping of the armouring
- Test for HDPE Outer Jacket
 - ┆ Items of test are same as inner PE sheath
- ┆ Test for Nylon-12 Tube
 - ┆ Thickness measurement
- Test on Completed Cable
 - ┆ Cut off Wavelength
 - ┆ Attenuation
 - ┆ Chromatic Dispersion
 - ┆ Tensile Strength
 - ┆ Compressive Strength
 - ┆ Flexibility
 - ┆ Impact
 - ┆ Torsion

- ┘ Environmental Tests
- ┘ Water Penetration Tests
- ┘ Drip Point Test for Jelly
- ┘ Overall Diameter
- ┘ Length of Cable Drum
- Visual Inspection
 - ┘ Cable layup and fibre identification by colour coding
 - ┘ Marking on outer jacket
- Termite Test for Outdoor Cable
 - ┘ For this, 10 Nos. sample will be tested and in not more than one sample the outer HDPE jacket is to be damaged
- Acceptance Test
- Optic Fibre
 - ┘ Primary coating diameter with travelling microscope.
 - Secondary Coating (loose tube)
 - ┘ diameter
 - Inner PE Sheath
 - ┘ Thickness
 - CSTA
 - ┘ Thickness and extent of overlapping
 - Outer HDPE Jacket
 - ┘ Thickness
- Overall Diameter of the Cable
- Optical Test on Cable :-
 - ┘ Cut off Wavelength
 - ┘ Attenuation
 - ┘ Chromatic Dispersion
- Mechanical Test on Cable
 - ┘ Tensile Strength
 - ┘ Compressive Stress
 - ┘ Flexibility
 - ┘ Water Penetration Test

- ┘ Drip Point Test for Jelly
- Visual Inspection
 - ┘ Cable layup and colour code
 - ┘ Identification marking
 - ┘ Outer appearance, packing, stenciling etc. of the drum.
 - ┘ Pulling eye and thermo shrink cap at the ends.
 - ┘ Length of cable drums by length marking.

Mechanical Performance

- Tensile Strength
 - ┘ Capable to withstand a load of value $9.8 \times W$ (Weight of 1 km cable in kg) x 2.0 Newton for 10 min.
 - ┘ Not to produce elongation exceeding 0.25%
 - ┘ Not to cause permanent damage
 - ┘ Attenuation should not be more than 0.05 dB/km
- Compressive Strength
 - ┘ Capable to withstand a compressive load of 1600N applied between two plates of dimensions 50mm x 50mm for 60 seconds without suffering damages
 - ┘ Attenuation should not be more than 0.05 dB/km
- Flexibility
 - ┘ Capable of withstanding repeated wrapping and unwrapping for 4 complete turnaround a mandrel of 12 mm diameter
 - ┘ Attenuation shall not be more than 0.05 dB/Km
- Impact
 - ┘ Method : IEC 794 – 1 – E4
 - ┘ Should not show any cracks or break
 - ┘ Attenuation should not be more than 0.05 dB/km
 - ┘ During the test the cable is exposed to 3 impacts each of having an energy of 50 Newton meter with impacting radius of 300 mm
- Torsion
 - ┘ Method : IEC 794 – 1 – E7
 - ┘ Number of rotations : 20 (180^0 with the speed of not less than 30 per minute)
 - ┘ Distance between fixed and rotating clamp is 250 mm.

- ┘ Axial Load : 20 Newton
- ┘ Requirements: No breakage in fiber and its constituent parts.
- Bending Radius
 - Minimum bending radius will be 20 x D mm
- General
 - ┘ The UG OF cable shall be immunized to corrosive element found naturally in the ground.

Other Tests

- Environment Test
 - ┘ Test sample length should be at least 1 Km.
 - ┘ To be exposed to minimum two temperature cycles
 - ┘ Attenuation must not vary 0.05 dB/Km between two temperature extremity
- Drip Point Test
 - ┘ Specimen length should be 30 cm. & cut from a complete cable
 - ┘ Approx. 5 cm. of the cable should be stripped off & jelly should be flared out at 45 degree angle
 - ┘ It should be suspended in an air oven with a glass disc placed directly below the flared end of the cable
 - ┘ The oven temperature should remain at around 65⁰C for 24 hours
 - ┘ There should be no dripping at the end of the test

Factory Acceptance Test

The following tests / measurements are carried out in the factory for monomode armoured O.F. cable:

Sl. No.	Parameter	Specification
1	Core Diameter	9 + 1 μ m
2	Cladding Diameter	125 + 2.5 μ m
3	Primary Coating Diameter	250 + 2.5 μ m
4	Loose Tube Diameter	1.8 + 0.2 μ m
5	Central St. Member dia.	3.5 + 0.1 μ m
6	Thickness of inner PE sheath	1.5 mm
7	Thickness of Nylon-12	0.5 mm
8	Thickness of CSTA	0.25 + 0.01 mm
9	Armouring overlap	10%
10	Thickness of outer PE sheath	1.5 mm

Site Test

- End to End Fibre Attenuation (By optical power source & meter)
- Fault Location (By O.T.D.R.)
- Continuity of Fibre

Standards

Cables shall be tested in accordance with the requirements of the relevant Indian /International Standards as applicable.

Routine Test

Attenuation

- ┆ Signifies reduction of signal strength or light power over the light-carrying medium
- ┆ Measured in decibels per kilometer (dB/km)
- ┆ Varies as a function of wavelength
- ┆ Caused primarily by –
- ┆ scattering due to molecular level irregularities in the glass structure
- ┆ Absorption due to residual materials like imperfections, impurities etc.

The attenuation of the fibre shall be tested using a 1310 nm & 1550 nm light source at one end of the fibre and an optical level meter at the other end.

Continuity

Continuity shall be tested at 1310 nm & 1550 nm by measuring backscattered light using an Optical Time Domain Reflectometer (OTDR), which is adjusted to see the whole length of the fibre. This measurement shall be done from both ends of each fibre.

Recording

The overall attenuation and the OTDR traces shall be recorded and shall form part of the test certificates.

All Dielectric Self Supporting Optical Fibre Cable

Type Tests

Graph

Bidder shall provide a graph of cable strain versus fibre strain.

Results of Type Testing

Results of type testing previously carried out on the same optical fibre cable offered shall be provided at time of bidding.

Breaking Load Test

Following completion of the stress/strain test, the tension shall be increased until breakage load and the load at which the ADSS or fitting began to yield under tension shall be recorded.

Crushing Force Test

A sample of the optical fibre core shall be subjected to a lateral crushing force, which shall be slowly increased from zero. The transmission characteristics of the optical fibres shall be continuously monitored. A graphical plot of transmission loss versus lateral force shall be prepared. The lateral force shall be increased until the change in transmission loss of the

optical fibres exceeds 0.1dB, test method as per IEC60794-1.

Routine Tests

The optical fibre attenuation and continuity for each fibre of each cable drum length shall be measured and recorded prior to shipment from the manufacturing plant. The test results shall include date of test, drum number, and drum length and names of test personnel.

6.4 Underground Optical Fibre Cable

6.4.1 Type Tests

Results of Type Testing

Results of type testing previously carried out on the same underground type cable offered shall be provided at time of bidding.

Breaking Load Test

Following completion of the stress/strain test, the tension shall be increased until breakage load and the load at which the underground cable began to yield under tension shall be recorded.

Crushing Force Test

A sample of the optical fibre core shall be subjected to a lateral crushing force, which shall be slowly increased from zero. The transmission characteristics of the optical fibres shall be continuously monitored. A graphical plot of transmission loss versus lateral force shall be prepared. The lateral force shall be increased until the change in transmission loss of the optical fibres exceeds 0.1dB, test method as per IEC60794-1.

6.4.2 Routine Tests

The optical fibre attenuation and continuity for each fibre of each cable drum length shall be measured and recorded prior to shipment from the manufacturing plant. The test results shall include date of test, drum number, and drum length and names of test personnel.

Tests after Delivery

The cables may be subject to tests after delivery at APEPDCL's expense. APEPDCL Energy reserves the right to reject all cables not in conformance with this Specification or the successful Bidder's guaranteed parameters. All rejected cables shall be replaced by the successful Tenderer at the successful Bidder's expense.

Test Certificates

Type Test Certificates

All type tests shall be completed and certificates submitted as part of the bid response.

Routine Test Certificates

Routine test certificates shall be submitted prior to the dispatch of the cable from the manufacturing plant.

Documentary Evidence

Documentary evidence shall be provided concerning the level of quality system certification associated with the Bidder and/or Manufacturer. Manufacturer's authorization later for supply should be furnished in the Bid.

Damage Free

It is the Bidder's responsibility to ensure that the fibre optic cable is delivered on site damage free. Storage, packaging, delivery to site and all other aspects of cable protection are the responsibility of the bidder.

Drum standards

Optical fibre cables may be supplied on either timber drums or steel drums complying with the requirements of AS: 3983.

Standard for Timber Drums

Operational difficulties are anticipated with the use of cable drums manufactured in accordance with AS 2857-1996. Hence this specification is based on cable supplied on timber drums manufactured in accordance with the requirements of superseded standard AS 2857-1986.

Drum sizes & length

Optical fibre cables shall be supplied on drum sizes and in the lengths of 2 km per drum.

Winding

The cable shall be wound in such a way as to preclude the possibility of chafing or damage to the cable during winding and transport. The winding tension shall be as low as possible, being only as high as that required to minimize movement of cable between adjacent layers.

Lagging

The cable shall be protected by external lagging to ensure that it is delivered undamaged giving due consideration to the methods and distance of transportation and handling. Sheet form wrapping alone is **NOT** acceptable.

Drum Durability

All drums must be of suitable quality and robustness to withstand a minimum of months twenty-four (24) exposure to all types of weather conditions during outdoor storage without deterioration.

Drum Surface Treatment

Drum surface treatment to protect against weather, the environment, galvanic action, and corrosion is required.

Suppliers shall state the type of surface treatment applicable to drums for each item.

Marking of Drums

Standard

The marking of information on the cable drum shall be in accordance with Clause 16.3 of AS / NZS 5000.1. In addition, the following information shall be provided indelibly and legibly marked directly on the flanges:

- a) The name APEPDCL and the relevant stores stock code.
- b) Contract number.
- c) Order release authority or purchasing order number.

- d) Manufacturer's traceability number – derived from Manufacturer's first letter, hyphen, batch number, hyphen, drum number for this batch.

Size and location

Marking at least 25 mm high shall be located on both outside flange surfaces near the spindle.

Direction of rolling

Drums shall be marked with the preferred direction of rolling.

Fixing of Cable End

The inner end of the cable shall be secured to the drum to ensure that the end will not flick off the drum barrel when the cable is being run out.

Quarantine Requirements

Should the items offered be supplied from overseas manufacturers, then it is mandatory that all conditions and inspections required by the National / International Quarantine Act be met and that all these costs to be included in the tendered price. In particular, timber crates must be fumigated with methyl bromide with a concentration of 48 grams per cubic meter for 24 hours at 21 C. The supplier shall ensure that the procedure does not produce any deleterious effects to the cable or the drums.

8.0 Service Performance

Bidder shall state:

- (a) the period of service achieved by the items offered within Assam service conditions;
- (b) Indian electricity supply authorities who have a service history of the items offered; AND
- (c) Contact names and phone numbers of relevant employees of those supply authorities who can verify the service performance claimed.

Reliability

Service Life

Suppliers are required to comment on the reliability of the cables and the performance of the materials offered for a service life of 35 years under the specified system and environmental conditions.

Evidence in Support of Reliability

Such comments shall include evidence in support of the reliability and performance claimed including information on Failure Mode and Effect Analysis.

10.0 Documentation:

Documents for the material in the form of drawings, instructions and/or audio visuals may be required to be provided for the items accepted under the offer.

Bidder/ manufacturers shall state the availability of training materials which should

include but is not limited to the following topics:

- Handling
- Storage
- Application
- Installation
- Maintenance
- Environmental performance Electrical performance Mechanical performance Disposal

11.0 Environmental Considerations

Suppliers are required to comment on the environmental soundness of the design and the materials used in the manufacture of the items offered. In particular, comments should address such issues as recyclability and disposability at the end of service life

Technical specifications for 24 F Fibre Optic Approach

Cables

For purpose of this specification, a fibre optic approach cable is defined as the Armoured underground fibre optic cable required to connect overhead Fibre Optic Cable (OPGW) between the final in line splice enclosure on the gantry/tower forming the termination of the fibre cable on the power line and the Fibre Optic Distribution Panel (FODP) installed within the building. The estimate fibre optic approach cabling length requirements are indicated in the appendices. However, the Contractor shall supply & install the optical fibre approach cable as required based on detailed site survey to be carried out by the contractor during the project execution and the contract price shall be adjusted accordingly.

Basic Construction:

The cable shall be suitable for direct burial, laying in trenches & PVC/Hume ducts, laying under false flooring and on indoor or outdoor cable raceways.

Jacket Construction & Material:

The approach cable shall be a UV resistant, rodent proof, armoured cable with metallic type of armouring. The outer cable jacket for approach cable shall consist of carbon black polyethylene resin to prevent damage from exposure to ultra-violet light, weathering and high level of pollution. The jacket shall conform to ASTM D1248 for density.

Optical, Electrical and Mechanical Requirements:

Approach cable shall contain fibres with identical optical/physical characteristics those in the OPGW cables. The cable core shall comprise of tensile strength member(s), fibre support/bedding structure, core wrap/bedding, and an overall impervious jacket.

Installation of Approach cable:

The existing cable trenches/cable raceways proposed to be used shall be identified in the survey report. The contractor shall make its best effort to route the cable through the existing available cable trenches. Where suitable existing cable trenches are not available, suitable alternatives shall be provided after Employer approval. However, the approach cable shall be laid in the HDPE pipe in all condition.

Suitable provisions shall be made by the contractor to ensure adequate safety earthing and insulated protection for the approach cable.

All required fittings, supports, accessories, ducts, inner ducts, conduits, risers and any item not specially mentioned but required for laying and installation of approach cables shall be supplied and installed by the contractor.

Optical Fibre Termination and Splicing:

Optical fibre terminations shall be installed in Fibre Optical Distribution Panel (FODP) designed to provide protection for fibre splicing of preconnectorized pigtailed cables and to accommodate connectorized termination and coupling of the fibre cables. The contractor shall provide rack/wall mounted fibre optic distribution panels (FODPs) sized as indicated in the appendices and shall terminate the fibre optic cabling up to the FODPs. The location of FODP rack shall be fixed by the contractor, with the Employer's approval.