

TENDER DOCUMENT

LAYING OF 11 KV UG CABLE FROM KOTTIYAM SUBSTATION TO DREAMS MALL PREMISES THROUGH NH AND PWD ROAD

The Bid documents and other details may be downloaded from the website: www.dreamscopmall.com

All Bid documents are to be submitted to the Office of the DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY at their Kottiyam office within the last date fixed for submission

PART I

TENDER CONDITIONS AND TECHNICAL SPECIFICATIONS

1 .INVITATION FOR TENDERS

Tender Notice No. : Dreams 02/2023

1.1 Invitation for Tender

M/s DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY invites Competitive tenders from experienced and reputed contractors for the work of “Laying of 11 kV UG cable from Kottiyam Substation to DREAMS mall premises through NH and PWD road” . The Scheme will be implemented by DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY and supervised by the KSEBL.

2.1 GENERAL INSTRUCTIONS

DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY hereinafter 'the Employer' will receive tenders in respect of materials and equipment to be furnished and erected as set forth in the accompanying specifications. All bids shall be prepared and submitted in accordance with these instructions.

2.2 SCOPE OF WORK

2.2.1 The DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY invites e-tenders for “Laying of 11 kV UG cable from Kottiyam Substation to DREAMS mall premises through NH and PWD road” which comes under Electrical Section Kottiyam, testing and commissioning of the laid UG cable up to the full satisfaction of the KSEBL as defined in the tender document as 'work'.

2.2.2 The rate quoted for “Laying of 11 kV UG cable from Kottiyam Substation to DREAMS mall premises through NH and PWD road” shall conform to Code of Practice in Indian Standards and REC Standards adopted for UG cable laying. All required materials, as specified, will be under the scope of contractor. The successful bidder shall follow the instructions of the Assistant Engineer/ Site-in-charge of the concerned Electrical Section and complete the works in all respects within 30 days from the date of work order. Site inspection, if required by the contractor, is to be carried out at his own cost, before submission of Tender.

2.2.3 Eligibility

- a) Bidders should have minimum 2 years of experience in carrying out similar nature of works preferably HDD UG cable laying method in power utilities preferably in KSEBL.
- b) The bidder shall possess a valid Electrical Contractor license issued by Govt. Or appoint Licensed Electrical Contractor. A copy of license shall be furnished along with the bid.
- c) Bidders should have the capacity to engage sufficient number of supervisor and labour gangs for achieving the target within the time schedule.
- d) Required traffic diversions / sanction from traffic police department shall be arranged by the Contractor, for which required letters will be provided from the DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY
- e) Advance schedule of the work shall be submitted to the Engineer in charge of the work of DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY
- f) Trial pit excavation shall be done and details shall be submitted to the Engineer in charge before the commencement of the trenching work.

2.2.4 Tenders not covering the entire scope of the project shall be treated as incomplete and hence, are liable to be rejected.

2.3 TENDERING DOCUMENTS

2.3.1 CONTENTS OF TENDERING DOCUMENT

The goods and services required, tendering procedures and contract terms are prescribed in the tendering document.

In addition to the invitation to tenders, the tendering document consists of:

1. Instruction to bidder
2. General conditions of contract
3. Technical Specifications
4. Price tender (BOQ)

2.4 COST OF TENDERING

The bidder shall bear all costs and expenses associated with the preparation and submission of the tender and DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the contract.

2.5 LOCAL CONDITIONS

2.5.1 It will be imperative on each bidder to fully inform himself of all local conditions and factors which may have any effect on the execution of the Contract covered under these documents and

Specifications. DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY shall not entertain any request for Clarifications from the bidder, regarding such local conditions.

2.5.2 It must be understood and agreed that such factors have properly been investigated and considered while submitting the proposals. No claim for financial adjustment to the Contract, awarded under these specifications and documents, will be entertained by DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY subsequently. Neither any change in the time schedule of the Contract nor any financial adjustments arising thereof shall be permitted by the Employer, which are based on the lack of such clear Information or its effect on the cost of the Works to the bidder.

2.6 PREPARATION OF TENDERS

2.6.1 The tenders shall submit the copy of valid license, experience certificate, PAN, GST registration certificate and other relevant documents along with the tender

2.6.2 The tender prepared by the bidder and all correspondences and documents relating to the tender, exchanged by the bidder and DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY shall be written in the English language.

2.6.3 Price quoted shall be firm and for site basis exclusive of CGST, SGST and IGST and other statutory levies and not subject to price variation during the subsistence of the Contract.

2.6.4 Discount offered, if any, shall be prominently indicated on the tender form.

2.6.5 As regards Income Tax, surcharge on Income Tax and any other Corporate Tax, Kerala Construction Workers Welfare Fund, KSEBL shall not bear any tax liability whatsoever irrespective of the mode of Contracting. The bidder shall be liable and responsible for payment of such taxes attracted under the provision of law. Tax will be deducted at source.

2.6.6 GST as per rules shall be applicable.

2.7 TENDER VALIDITY

2.7.1 Tender shall remain valid for a period of 60 days from the date of opening of price tender.

2.7.2 In exceptional circumstances, DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY may request the bidder/s to extend the period of validity for a specified additional period. The request and the bidder/s responses shall be made in writing or by e-mail.

2.8 PROCESS TO BE CONFIDENTIAL

Information relating to the examination, clarification, evaluation, comparison of tenders and recommendations for the award of Contract shall not be disclosed to bidder/s or any other persons not other than officers concerned with such process until the award to the successful has been announced. Any effort by a bidder to influence DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY in processing of tenders or award decision shall result in the rejection of tender.

2.9. CLARIFICATION OF TENDERS

2.9.1 To assist in the examination, evaluation and comparisons of bids, DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY may, at its discretion, ask any bidder for clarification of his including breakdown of the prices in the Price Schedule. Request for clarification and the response shall be in writing, no change in price or substance of the tender shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors noted by DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY in the evaluation of the tender

2.9.2 Price should be quoted in Indian Rupees only.

2.9.3 The payment will be made to the contractor for total value of work plus the applicable GST, subject to recovery of TDS, other recoveries, etc. The tender should submit the copy of GST registration certificate along with tender.

2.10 AWARD OF CONTRACT

2.10.1 AWARD CRITERIA: DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY will award the Contract to the bidder whose tender has been determined to be substantially responsive to the tendering documents and who has offered the Lowest Evaluated Price, provided that such bidder has been determined to be qualified in accordance with provisions of tender. Decision of tender inviting authorities in this regard will be final.

2.11 AGREEMENT

2.11.1 In the event of acceptance of particular bid for award of Contract, such successful bidder has to execute Contract Agreement as per the specified format of DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY

3.1. STANDARDS

3.1.1 The goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications, and, when no applicable standard is mentioned, to the authoritative standard appropriate to the goods and such standards shall be the latest issued by the concerned institution.

3.2 LANGUAGE AND MEASURES

3.2.1 All documents pertaining to the Contract including specifications, schedules, notices, correspondences, operating and maintenance instructions, drawings or any other writing shall be written in English language. The Metric System of measurement shall be used exclusively in the Contract.

3.3 MANNER OF EXECUTION OF CONTRACT

3.3.1 The Employer, after the issue of the Letter of Award to the Contractor, will send one copy of the final agreement to the Contractor for his scrutiny and approval. The Agreement, unless otherwise

agreed to, shall be signed within 7 days of the acceptance of the Letter of Award, at the office of the Employer on a date and time to be mutually agreed.

3.4 ENFORCEMENT OF TERMS

3.4.1 The failure of either party to enforce at any time any of the provisions of this Contract or any rights in respect thereto or to exercise any option therein provided, shall in no way be construed to be a waiver of such provisions, rights or options or in any way to affect the validity of the Contract. The exercise by either party of any of its rights herein shall not preclude or prejudice either party from exercising the same or any other right it may have under the Contract.

3.5 COMPLETION OF CONTRACT

3.5.1 The contractor can begin the works from the date of execution of agreement and shall complete the work as per the period of completion.

4. GUARANTEES & LIABILITIES

4.1 TIME – THE ESSENCE OF CONTRACT

4.1.1 The time and the date of completion of the Contract as stipulated in the Contract by the Employer without or with modifications, if any, and so incorporated in the Letter of Award, shall be deemed to be the essence of the Contract. The Contractor shall so organize his resources and perform his work as to complete it not later than the date agreed to.

4.2 LIQUIDATED DAMAGES

4.2.1 If the Contractor fails to successfully complete the commissioning within the time fixed under the Contract, the Contractor shall pay to the Employer as liquidated damages, and not as penalty, a sum specified for each specified period of delay.

4.2.2 Equipment and materials shall be deemed to have been delivered only when all its components, parts are also delivered. If certain components are not delivered in time the equipment and materials will be considered as delayed until such time the missing parts are also delivered. Also the work will be treated as completed only when it is ready for takeover by the employer

4.2.3 The contractor is to pay liquidated damages to the at the rate of 0.07% of the contract price per calendar day as stated in the Contract Data for every day that the work remains unfinished subject to a ceiling of 10% of the contract price. DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY may deduct the liquidated damages from payments due to the contractor. Payment of liquidated damages does not affect the Contractors liabilities.

5 GUARANTEE

5.1 The works, equipments, materials offered as per this tender shall be guaranteed for the satisfactory performance for a period of shall be 12 months from the date of commissioning or 18 months from the

date of completion and taking over by the DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY would be done after the work is completed and energized. Defects, if any, noticed during this period which are due to faulty design, workmanship or inferior raw materials shall be made good by way of replacement free of all costs to the Board. The contractor shall provide necessary man power and spares for repair/replacement. No separate payment will be given for this activity. No repairs or replacement shall normally be carried out by the DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY when the equipment is under the supervision of the Contractor's supervisory Engineer.

5.2 In the event of any emergency where in the judgment of the DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY, delay would cause serious loss or damages, repairs or adjustment may be made by the Engineer or a third party chosen by the Engineer without advance notice to the Contractor and the cost of such work shall be paid by the Contractor. In the event such action is taken by the Engineer, the Contractor will be notified promptly and he shall assist wherever possible in making necessary corrections. This shall not relieve the Contractor of his liabilities under the terms and conditions of the Contract.

5.3 If it becomes necessary for the Contractor to replace or renew any defective portions of the works the provision of this clause shall apply to portion of the works so replaced or renewed until the expiry of twelve (12) months from the date of such replacement or renewal. If any defects are not remedied within a reasonable time, the Engineer may proceed to do the work at the Contractor's risk and cost but without prejudice to any other rights, which the Employer may have against the Contractor in respect of such defects. The repaired or new parts will be furnished and erected free of cost by the Contractor. If any repair is carried out on his behalf at the site, the Contractor shall bear the cost of such repairs.

5.4 The cost of any special or general overhaul rendered necessary during the maintenance period due to defects in the equipment or defective work carried out by the Contractor, the same shall be borne by the Contractor.

5.5 The acceptance of the equipment by the Engineer shall in no way relieve the Contractor of his obligations under this clause. In the case of those defective parts, which are not repairable at site but are essential for the commercial operation of the equipment, the Contractor and the Engineer shall mutually agree to a programme of replacement or renewal, which will minimize interruption to the maximum extent in the operation of the equipment.

5.6 At the end of the guarantee period, the Contractor's liability ceases except for latent defects. For latent defects, the Contractor's liability as mentioned in Clauses above shall remain till the end of 5 years from the date of completion of guarantee period.

5.7 In respect of goods supplied by Sub-Contractors to the Contractor, where a longer guarantee (more than 12 months) is provided by such Sub-Contractor, the Employer shall be entitled to the benefits of such longer guarantee.

6 TAXES, PERMITS & LICENCES

6.1 The Contractor shall be liable and pay all non-Indian taxes, duties, levies lawfully assessed against the Employer or the Contractor in pursuance of the Contract. In addition the Contractor shall be responsible for payment of all Indian duties, levies and taxes lawfully assessed against the Contractor for his personal income & property only. The contractor should have enough experience to carry out this type of works.

7 REPLACEMENTS OF DEFECTIVE PARTS AND MATERIALS

7.1 If during the performance of the Contract, DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY shall decide and inform in writing to the Contractor that the Contractor has manufactured any equipment, material or part of equipment unsound and imperfect or has furnished any equipment inferior to the quality specified, the Contractor on receiving details of such defects or deficiencies shall at his own expense within seven (7) days of his receiving the notice, or otherwise, within such time as may be reasonably necessary for making it good, proceed to alter, reconstruct or remove such works and furnish fresh equipment/materials up to the standards of the specifications. In case, the Contractor fails to do so, the DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY may on giving the Contractor seven (7) days notice in advance of his intentions to do so, proceed to remove the portion of the works so complained of and at the cost of the Contractor perform all such Works or furnish all such equipment/ material provided that nothing in this clause shall be deemed to deprive the Employer of or affect any rights under the Contract which the Employer may otherwise have in respect of such defects and deficiencies. The Contractor's full and extreme liability under this clause shall be satisfied by the payment to the Employer of extra cost, of such replacement procured including erection as provided for in the Contract, such extra cost being the ascertained difference between the price paid by the Employer for such replacements and the Contract Price by portion for such defective equipment/ materials/works and repayments of any sum paid by the Employer to the Contractor in respect of such defective equipment/material. Should the Employer not so replace the defective equipment/materials the Contractor's extreme liability under this clause shall be limited to repayment of all sums paid by the Employer under the Contract for such defective equipment/ materials.

8 CO-OPERATIONS WITH OTHER CONTRACTORS AND CONSULTING ENGINEER

The contractor shall agree to cooperate with the Employers, other contractors and freely exchange with them such technical information as it is necessary to obtain the most efficient and economical design to avoid unnecessary duplication of efforts

9 TAKING OVER

Upon successful completion of all the tests to be performed at Site on equipment furnished and erected by the Contractor, the Engineer shall issue to the Contractor a Taking over Certificate as a proof of the final acceptance of the equipment. Such certificate shall not unreasonably be withheld nor will the Engineer delay the issuance thereof on account of minor omissions or defects, which do not affect the

commercial operation and/or cause any serious risk to the equipment. Such certificate shall not relieve the Contractor of any of his obligations which otherwise survive, by the terms and conditions of the Contract after issue of such certificate.

10. SAFETY REQUIREMENTS

10.1. WORK AND SAFETY:

10.1.1 Safety of Contractor's employees and the general public during the execution of contract work is the responsibility of the Contractor. The Contractor shall ensure safety of all the workmen, materials, plant and equipment belonging to him or to the others, working at the Site. The contractor shall comply with all the statutory rules and regulations prevailing in the state including those related to safety of equipment and human beings. The Contractor shall also provide for all safety notices and safety equipment required by the relevant legislations and deemed necessary by the DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY. In addition the Contractor shall ensure that its employees are adequately trained in safety matters.

10.1.2 All equipment used in the project shall meet Indian Standards and where such standards do not exist, the Contractor shall ensure these too be absolutely safe. All equipment shall be strictly operated and maintained by the Contractor in accordance with manufacturer's operation manual and safety instructions and as per any existing Guidelines/rules in this regard. The Contractor shall provide suitable safety equipment of prescribed standard to all employees and workmen according to the need and as may be directed by KSEBL who will also have the right to examine these safety equipment to determine their suitability, reliability, acceptability and adaptability. In case of any accident of any sort, the Contractor shall be responsible for:

1. Extend all medical assistance to the injured
2. Make compensation for any damages claimed in respect of the accident, in charging compensation for loss of property intimating the client and to all the authorities as per law. The Contractor, in addition, shall indemnify the client and cover the risk by insurance as required. The Contractor shall not continue if the work is being carried out in such a way as may cause accidents and endanger the safety of the persons and /or property.

10.1.3 The Contractor shall follow all the safety procedures stipulated by DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY after award of Contract which will form part of the Contract.

11 SITE SAFETIES

11.1 Adequate safety equipments shall be provided to all the workers, like hand gloves, head gear, etc. Meggers & testers shall be provided in sufficient quantity. Only persons having sufficient qualifications and experience shall be engaged to carry out all types of electrical works. In order to maintain safety, it is necessary to work to a framework of rules to suit the wide range of site situations. The effect of human factors, as well the physical environment in which work takes place should be considered in the

application of these rules. The bidder/Contractor shall have a documented electrical safety management policy. The policy shall contain information on:

12. SAFETY OFFICER

12.1 The Contractor shall appoint a person to supervise safety aspects of the equipment, workmen and workplace. He shall be nodal person in respect of safety. The name and address with his telephone nos., mobile nos, Fax nos. and E- Mail id for contact of such Safety Officer of the Contractor will be promptly informed in writing to the KSEBL before he starts work or immediately after any change of the incumbent is made during currency of the Contract

13 FIRE AND SAFETY & PROTECTION

13.1 The work procedures that are to be used during the erection shall be those which minimize fire hazards to the extent practicable. Combustible materials, combustible waste and rubbish shall be collected and removed from the site at least once each day. Fuels, oils and volatile or flammable materials shall be stored away from the construction site and equipment and material stores in safe containers. All the contractor's supervisory personnel and sufficient number of workers shall be trained for fire-fighting and shall be assigned specific fire protection duties. Enough of such trained personnel must be available at the site during the entire period of the contract. The contractor shall provide enough fire protection equipment of the requisite type and quantity for the ware house, office, temporary structures, labour colony area etc. Access to such fire protection equipment, shall be easy and kept open at all time.

SECTION – 14

TECHNICAL SPECIFICATIONS

HEAT SHRINKABLE TYPE INDOOR & OUTDOOR TERMINATIONS KIT FOR 11kV CABLE

14.1. Scope:

14.1.1 This Section of the Specification covers design, manufacturing, testing, packing, supply & commissioning of heat shrinkable type indoor and outdoor termination kit suitable for 11 kV XLPE cable.

14.1.2 The equipment offered shall be complete with all parts necessary for their effective and trouble-free operation. Such parts will be deemed to be within the scope of the supply irrespective of whether they are specifically indicated in the commercial order or not.

14.1.3 It is not the intent to specify herein complete details of design and construction. The equipment offered shall conform to the relevant standards and be of high quality, sturdy, robust and of good design and workmanship complete in all respects and capable to perform continuous and satisfactory operations in the actual service conditions at site and shall have sufficiently long life in service as per statutory requirements.

14.1.4 In these specifications, the design and constructional aspects, including materials and dimensions, will be subject to good engineering practice in conformity with the required quality of the product, and to such tolerances, allowances and requirements for clearances etc. as are necessary by virtue of various stipulations in that respect in the relevant IEC, IS standards and other statutory provisions.

14.1.5 Tolerances on all the dimensions shall be in accordance with provisions made in the relevant standards. Otherwise, the same will be governed by good engineering practice in conformity with required quality of the product.

14.2. Service Conditions:

Equipment to be supplied against this specification shall be suitable for satisfactory continuous operation under the following tropical conditions.

- a. Maximum ambient temperature of air: 50°C
- b. Maximum temperature of air in shade: 4°C
- c. Maximum daily average ambient temperature: 40°C
- d. Maximum yearly average ambient temperature: 30°C
- e. Relative Humidity: up to 95%
- f. Average number of thunder storm days per annum: 15
- g. Maximum annual Rainfall: 150cm
- h. Maximum Altitude above mean sea level: 1000Meter
- i. Maximum Wind Pressure: 150 Kg/cm² (As per IS 802 latest code)
- j. Maximum soil temperature at cable depth: 30°C
- k. Maximum soil thermal resistivity: 150°C cm/watt

14.3. Technical Parameters:

System details:

Sl. No	Description	Requirements
1	Voltage grade of Cable (kV)	6.35/11 kV
2	Number of cores	3
3	System Voltage	11 kV
4	Highest Voltage	12 kV
5	Earthing System	Effectively earthed
6	Frequency	50 Hz
7	Variation In supply voltage	+6% to -9%
8	Variation in supply frequency	±3%
9	A.C. Withstand Voltage (ph/ground) with time duration	35kV, 1min
10	Impulse Withstand, 1.2/50/Us	75kV
111	Thermal Withstand Short Circuit current 1Sec	As per IS 13573
12	Dynamic short circuit withstand	2.55 x As per IS 13573

14.4. Application Standards: -

Title	IS Standard	IEC Standard
Joints and Terminations of Polymeric Cables for Working Voltages from 66kV Up to and Including 33 kV - Performance Requirements and Type Test	IS 13573	
Power cables with extruded insulation and their accessories for rated voltages from 1 kV (Um = 1,2 kV) up to 30 kV (Um = 36 kV) - ALL PARTS	IS 7098 (Part-II) IS 13573,1992	IEC 60502
Heat shrinkable moulded shapes - Part 1: Definitions and general requirements		IEC 62329-1
Heat-shrinkable moulded shapes - Part 2: Methods of test		IEC 62329-2

14.5. General Technical Parameters:

14.5.1 The purpose of this specification is to specify the performance requirements of termination kits for the use on 50C/S phase system with earthed neutral for working voltage of 11kV. Earthing arrangement shall be as per relevant standard and details of earthing arrangement offered shall be submitted along with the tender.

14.5.2 The cable termination kit shall be suitable for termination of the cable on indoor switchgear or outdoor installation as per requirement. The type of cable will be XLPE insulated. The cable termination jointing kits shall be as per defined as per IS 13573-1992 with latest amendment no. 2 1998, IEEE 48-1990 and shall be Class-1, ESI-09-13 performance specification for high voltage cable accessories.

14.5.3 Proper stress control, stress grading and non-tracking arrangement in the termination shall be offered by means of proven methods, details of which shall be elaborated in the offer. Detailed sectional views of the assemblies shall be submitted along with the offer. In case of heat shrinkable cable accessories, stress control tubing, shall have volume resistivity of minimum 1, 00, 00,000 Ohms- meter for termination. Also relative permittivity shall be minimum 15.

14.5.4 Impedance of stress control tubing shall not change over a range of temperature from 0°C to 125°C. The impedance also remains constant in spite of the difference in stress, which will exist within the sleeve due to heating effect within the conductors and the temperature of the environment. Bidder must submit graph-showing effect on the impedance value of stress control tubing due to temperature variations and thermal ageing with his offer.

14.5.5 In all type of kits offered, the external leakage insulation between high voltage conductor and ground as specified in I.E.E.E. –48, 1975 amended up to date, shall be of non-tracking erosion resistant and weather resistant flexible sleeve.

14.5.6 The kit offered shall provide for total environmental sealing of the cable crutch and at the lug ends.

14.5.7 Termination system shall be suitable for use with standard aluminum conductor fittings [cable lugs and ferrules] of compressed crimping type.

14.5.8 The termination kit of heat shrinkable type kit, the joint shall include heat shrinkable dual wall tubing, which shall be insulating from inside and semiconductor from outside.

14.5.9 Material used for construction of a joint/termination shall perfectly match with the dielectric, chemical and physical characteristics of the associated cable. The material and design concepts shall incorporate a high degree of operating compatibility between the cable and the joints.

14.5.10 The tenderer shall indicate the required net dimensions of the indoor cable, joints for various cable sizes, in the form of Length X Breadth X Depth in mm.

14.6. Test & Inspection:

14.6.1 The termination kits offered shall be fully type tested as per the relevant standards and the test certificates are to be provided.

14.6.2 The supplier shall carry out all routine tests as stipulated in the relevant standards.

14.6.3 The termination kits offered shall be fully type tested at CPRI as per the relevant standards. The vendor shall furnish four sets of the type test reports along with the MQP for getting approval on material before placing purchase order to the manufacturer.

14.6.4 Type tests shall be carried out as per the test sequence given in IS:13573-1992 with latest amendment thereof at C.P.R.I. Laboratory as amended from time to time. The test report will have to be submitted for the test carried out.

14.5. Project Preliminaries

14.5.1 Approvals

14.5.1.1 For a Design and Construct contract, third party approvals are to be obtained by the Contractor.

14.5.1.2 No work is to begin on site preparation or HDD activities until all relevant permits and approvals have been gained and signed off by the relevant authority.

The following authorities may be required to authorize the works:

- Local Government;
- Other Service Providers;
- Private land owners.

14.5.1.3 The Contractor shall be required to adhere to any approval conditions that the Principal or asset owner specifies.

14.5.2 Design

14.5.2.1 The Contractor shall be responsible for the design and construction of all aspects of the HDD works including any temporary works and temporary supporting structures. All design assumptions regarding subsurface conditions, equipment requirements, groundwater and other factors are the responsibility of the Contractor and shall be fully documented.

14.5.2.2 Based on the alignment shown in the Principal Drawings, the Contractor shall design and size the excavated profile to accommodate all temporary and permanent works.

14.5.2.3 A design vertical and horizontal profile shall be submitted to the consultant for review prior to commencement of work.

14.5.2.4 The Contractor shall not proceed with any work until the Contractor's RPEQ certified design has been accepted by the consultant. Acceptance of the Contractor's design by the consultant in no way diminishes the responsibility of the Contractor for the design.

14.5.2.5 The HDD crossing shall be designed in accordance with this Specification and the referenced documents by a person suitably qualified and having experience with the design considerations required for this type of work. The profile design shall take into account the following:

- Temporary works associated with the HDD construction;
- Pipe/Drill rod bending radii;
- Steering capability of the proposed method/equipment;
- Drilling fluid performance;
- Tensile loads (expected and maximum allowable);
- Potential for hydro fracture;
- Pipeline materials properties (typically Steel, HDPE or PVC) & operations requirements (lifespan and loads);
- Location of existing services.

14.5.2.6 The Contractor shall be responsible for submitting a design document package for review and approval. The document package shall form part of the Contractors ITP as a hold point. The document package shall include but not limited to:

- Detailed profile design drawings;
- Temporary works design – Drill rig thrust restraints, shoring systems, pits etc.;
- Drilling Fluid Design and Management Program;
- Settlement.

14.5.2.7 The Principal Drawings shall be used as a guide to confirm that the crossing is possible to be delivered via HDD methods. The Contractor is not to rely on the Principal Drawings as being the built solution as it is the Contractor's responsibility for the final alignment and design, and any temporary works design required.

14.5.2.8 The Principal will be responsible for the operational design of the permanent pipeline, however, the Contractor is required to confirm the suitability of this pipe for installation via HDD methods.

14.5.2.9 All temporary works are to be designed by an RPEQ engineer considering the ground conditions. Any modifications to temporary works are to be approved by the RPEQ engineer prior to works being carried out.

14.5.4 Risk Assessment and Control

14.5.4.1 The Contractor is to prepare and implement an approved contingency plan dealing with the key HDD risks identified in the risk register. As a minimum the Contractor is to have defined plans complete with equipment and materials on standby to mitigate against the following HDD risks:

- Fluid loss.
- A hydrofracture event.
- Hydro-lock (loss of fluid circulation).
- Hole collapse.
- Fluid pit overflow.
- Hydrocarbon spill.
- Drill pipe or Bottom Hole Assembly failure.
- Serious workplace safety incidents in remote areas.

14.5.4.2 Contractor shall provide a detail procedure for fluid management to be followed and timely notification given to Unity water.

14.5.4.3 Risk assessment for project and controls shall be assessed per every drill program while ensuring that risks are effectively communicated to personnel performing the works.

14.5.5 Geotechnical Information and Risk

5.5.1 A Geotechnical Investigation will be carried out by the Principal for the project and the resulting information is to be provided to the Contractor in the form of a factual report (Geotechnical Data Report), or complete Geotechnical Baseline Report (GBR). The Report will cover a minimum set of requirements/criteria to aid and guide the Contractor to assess the project and specifically make informed decisions with regards to:

- Rig selection;
- Tooling and drill pipe selection;
- Penetration rates;
- Conductor casing;
- Casing pipe;
- Hydrofracture risk;
- Drilling fluid program;
- Time and Cost;
- Potential pullback loads;

- Carrier pipe selection.
- Temporary works design

14.5.5.2 The level of geotechnical investigation shall be determined by, but not limited to the following inputs:

- Proposed methodology;
- Local site geology;
- Local site hydrogeology;
- Project capital value.

14.5.5.3 The Contractor shall inform itself thoroughly and make its own deductions and conclusions as to the difficulty of maintaining required excavations and of doing other work affected by the geology and hydrogeology of the site. The Contractor shall supply a drilling fluids program relevant to the geotechnical information and associated risks relevant to the site conditions.

14.5.5.4 The Contractor shall include all relevant matters of geotechnical information in the relevant ITP for works included.

14.5.5.5 Where the Contractor considers it necessary that additional site or subsurface investigations/reports are required, the Contractor shall bring this to the attention of the consultant in a timely manner.

14.5.5.6 No warranty is expressed or implied that any information, opinions or conclusions, given in any factual or interpretive ground investigation report, supplied in good faith by the Principal, will present a complete or accurate picture of the Site.

14.6. Procurement

14.6.1 Materials

14.6.1.1 Permanent materials are to fully comply with this Specification and the documents referenced herein. The Contractor shall prepare and submit Suppliers Certificates for all permanent materials to be included in the works.

14.6.1.2 The Contractor is to ensure that chemicals and hydrocarbons are used according to Principal's accepted environmental practices complete with control measures to mitigate risk.

14.6.1.3 The Contractor is to ensure that the drilling fluids and chemicals that have the potential to come into contact with the ground are biodegradable, safe to water bodies and fire resistant.

14.6.2 Personnel

14.6.2.1 Appropriately trained and experienced personnel are required for the delivery of the works. Details of key personal experience shall be provided to the Consultant for approval before the works commence.

14.6.2.2 A HDD supervisor who is thoroughly knowledgeable of the equipment, drilling and HDD procedures is to be present at the job site during the entire installation and be available to address immediate concerns and health and safety issues.

14.6.3 Plant

14.6.3.1 All trenchless construction operations shall be performed using specialist equipment.

14.6.3.2 All plant must be of a good standard and the Clients Representative shall be permitted to visit the premises of the storage, manufacture or refurbishment of proposed specialist plant for the purpose of inspection. The key Principal's equipment assessment / inspection criterion is listed below:

- Plant is required to be in good safe working order;
- Plant is required to have a good service history;
- Plant is required to be fit for purpose.

14.6.3.3 The Contractor's management plans must detail a system for daily checking and resolving of issues with the supplied plant and equipment.

14.6.3.4 As a minimum the HDD Contractor is to supply the following plant:

- HDD drill rig;
- Drilling fluid pump;
- Excavator;
- Fit for purpose lifting machine for drill rod and pipes;
- A separation system (If required);
- Bentonite mixing plant;
- Power generator;
- Hot works plant;
- Storage tanks.

14.6.3.5 The HDD Contractor must have the appropriate contingencies in place to address any breakdowns so that the success of the drilling works is not compromised.

14.6.3.6 The HDD Contractor's management plans must detail a system for daily checking and resolving of issues with the supplied plant and equipment. The Contractor must supply key critical spares to ensure that the HDD drilling equipment achieves a 90% working availability target.

14.6.4 Drill Rig

14.6.4.1 The drill rig must be adequately sized (thrust, pullback and torque) to be able to drill a borehole of the appropriate size, in the ground conditions indicated and pull in the product pipe or casing pipe.

14.6.5 Mud Pump

6.8.1 The mud pump must be sized appropriately to adequately cope with the volumes of drilling fluid

required and to maintain adequate annular velocity in the borehole in ensure cuttings remain in suspension in the drilling fluid until the fluid exits the borehole.

14.6.6 Drilling Fluids Mixing and Separation System

14.6.6.1 To enable continuous drilling and reaming operations an appropriately sized drilling fluids mixing system shall be utilized to handle with the fluid volumes required.

14.6.6.2 If a separation (recycling) system is to be used it must be adequately sized to handle the through-put of the drilling fluid so continuous drilling and reaming operation can be maintained.

14.6.6.3 The separation system must be complete with screens and hydro - cyclones to separate the solids from liquid. If required, the Contractor is to provide a centrifuge to further separate the solids from liquids.

14.6.7 Lifting Plant

14.6.7.1 Lifting plant is to be appropriately employed by the Contractor. The Contractor is to ensure that experienced personnel with the required certificate of competency operate the lifting equipment always. All crane operation is to be in accordance to AS 2550 Cranes, hoists and winches Safe Use.

14.6.7.2 In the case where the Contractor chooses to use an excavator to lift plant and materials the hydraulic cylinders must be fitted with burst protection valves to Cranes, Hoists and Winches.

14.6.8. Project Execution

14.6.8.1 The Contractor shall maintain control of site operations at all times. The Contractor has ultimate responsibility for site safety, the environment, quality workmanship and the satisfactory completion of the work as authorized under the Contract.

14.6.9 Site Setup

14.6.9.1 The Contractor is to set the drill entry and exit sites up in accordance with the approved site layout drawings which as a minimum must cover the following key aspects:

- Temporary access;
- Perimeter fencing in the allowed location;
- Site topsoil stockpile complete with erosion and sediment control;
- Entry and exit points;
- Pedestrian walkways and appropriate exclusion zones around cranes or moving plant;
- Equipment locations and movement zones;
- Any underground or overhead power lines and the appropriate exclusion zone;
- Shaft / pit locations;
- Traffic guidance systems.

14.6.9.2 The Contractor shall follow the site layout submitted to the Principle. Any changes to site layout

are to be documented and approved by the Principle.

14.6.10 Existing Services

14.6.10.1 All existing services shall be located prior to works commencing in accordance with the requirements Services may require visual confirmation pending proximity to works.

14.6.10.2 Existing services location and pot holing shall be included and detailed in the relevant ITP withhold points. The contractor shall also produce a procedure for locating existing services.

14.7 Pipe Welding and Jointing - General

14.7.1 Butt welds are to be used for all pipe joints of all pipe materials that are pulled through the HDD alignment. Other methods of jointing including electrofusion, clamped or proprietary bell/spigot type joints are not permitted without written approval from the Superintendent's Representative.

14.7.2 Pipe specifications, weld procedures and welder qualifications are to be provided to the Clients Representative for approval prior to procurement of any materials or commencement of the works.

14.7.3 Pipe handling shall be only carried out by certified lifting plant and equipment. Care shall be taken with pipe rollers ensuring that they are fit for purpose, in good working order and positioned correctly for the intended task.

14.8 Pipe Welding and Jointing – HDPE Pipe

14.8.1 Jointing of HDPE pipes is to be conducted in accordance with relevant Specification

14.8.2 HDPE welding is to be conducted only by pre-qualified welders. HDPE butt welding quality checks are to be completed

15.1 TECHNICAL SPECIFICATIONS & TECHNICAL FIELD REQUIREMENT

15.1.1 SCOPE OF WORKS

15.1.1 The scope of works include execution of the work with complete system design, transportation, storage, erection, commissioning of all items & materials as elaborated below including all associated activities that though not exclusively specified here in but are required for the completion of the entire works. Work: "Laying of 11 kV UG cable from Kottiyam Substation to DREAMS mall premises through NH and PWD road"

15.1.2 DETAILED SCOPE

Work: "Laying of 11 kV UG cable from Kottiyam Substation to DREAMS mall premises through NH and PWD road". The following shall be done/ ensured

1. Consolidating/Compacting should be done using mechanical devices.
2. Warning tape, traffic cone, barricades, danger boards etc are to be provided in sufficient quantities at work site during the execution of work.

3. After completion, the contractor may arrange requisite HV testing as per standards in the presence of departmental officers, at his own cost.
4. After completion of the work, drawing of cable route with GPS co-ordinates of cable joints should be submitted by the contractor.

16 GENERAL CONSTRUCTIONAL PRACTICES

16.1 Construction Management

16.1.1 Time is the essence of the contract and the contractor shall be responsible for performance of his works in accordance with the specified construction schedule. If at any time, the contractor is falling behind the schedule for reasons attributable to him, he shall take necessary action to make good for such delays by increasing his work force or by working overtime or otherwise to accelerate the progress of the work and to comply with schedule and shall communicate such actions in writing to the DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY, satisfying that his action will compensate for the delay. The contractor shall not be allowed any extra compensation for such action.

16.1.2 The design and workmanship shall be in accordance with the best engineering practices to ensure satisfactory performance throughout the service life. If at any stage during the execution of the contract, it is observed that the erected equipment(s) do not meet the above minimum clearances as required under existing laws and statutes, the contractor shall immediately proceed to correct the discrepancy at his risks and cost.

16.1.3 The contractor shall take all necessary precautions to protect all the existing equipments, structures, facilities & buildings etc. from damage. In case any damage occurs due to the activities of the Contractor on account of negligence, ignorance, accidental or any other reason whatsoever, the damage shall be made good by the Contractor at his own cost to the satisfaction of the Engineer.

16.1.4 During the progress of work, the Engineer will exercise supervision of the work to ensure that the technical provisions of the contract are being followed and the work is being executed accurately and properly. However, such supervision shall in no way relieve the Contractor of the responsibility for executing the work in accordance with the specifications.

16.1.5 The Contractor shall do complete coordination with all local & statutory agencies for execution of complete works.

16.1.6 The Contractor shall obtain approvals & clearances and right of way from all agencies involved.

16.1.7 All lines shall generally be routed through public land / along the road.

16.1.8 The Contractor shall arrange at site all the equipment, instruments and auxiliaries required for testing and commissioning of equipment.

16.1.9 Contractor shall follow statutory regulations stipulated in Electricity Act 2003 with all amendments till date, CEA (Measures relating to Safety and Electric Supply) Regulations, 2010, CEA

(Safety Requirements for Construction, Operation and Maintenance of Electrical Plants and Electric Lines) Regulations, 2011 and also comply with all the statutory rules and regulations prevailing in the State of Kerala including those related to safety of equipment and human beings.

16.1.10 The Contractor shall be responsible for transportation to site of all the materials to be provided as well as proper storage and preservation of the same at his own cost, till such time the erected line is taken over by the client.

16.2 Clean up:

16.2.1 The Contractor shall ensure that all work sites shall be free of all manner of debris resulting from the construction activity.

16.2.2 All crating, conductor reels, packaging materials, conductor scraps, and other miscellaneous items are removed from the workplace. All holes resulting from removal of facilities shall be filled. If trees or brush have been cut or trimmed, all cuttings shall be removed. The worksites shall be left in clean natural conditions.

16.3 ADHERENCE TO INDIAN ELECTRICITY REGULATIONS:

16.3.1 The Contractor shall follow Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2010, Central Electricity Authority (Safety requirements for Construction, Operation and Maintenance of Electrical Plants and Electric Lines) Regulations, 2011 Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2010, and Other existing laws, rules and statutes with regard to construction, erection and Commissioning of electrical installations.

16.3.2 Pre-Commissioning Checks: Contractor shall perform any additional test based on specialties of the items as per the Field Quality Plan/ instructions of the equipments manufacturer or KSEBL without any extra cost to the DESINGANAD RAPID DEVELOPMENT & ASSISTANCE CO-OPERATIVE SOCIETY

16.3.3. Functional Performance Testing (FPT): The objective of Functional Performance Testing (FPT) is to demonstrate that each system operates according to the Contract Documents through all specified modes of operation.

16.4 Handing over of Asset:

After successful completion and charging of the line, the entire newly created network is to be handed over to the client. The handing over note, covering the details of all the total materials used and total work executed must be signed jointly by the Contractor and the Engineer in charge of the work. Copy of handing over note must be attached along with final bill.

Laying 11 KV UG Ar Cable Through HDD pipe from Kottiyam substation to dreams mall kottiyam

SL NO	Item	Qty	Rate	Amount	Amount in words
1	Charges for HDD including services of site information collection regarding underground utilities ,service of utility pit making ,pilot drilling pre remaining pulling 110 mm dia HDD pipe and uncoiling and laying of 11KV UG cable through installed HDD pipe during work at night hours including all charges for safety signboard lights ,permission from concern statutory departments etc	1550 mtr			
2	Supply of 3 core 11 KV grade XLPE insulated and PVC sheeted Armoured Aluminium conductor cable conforming to IS 7098 Part 2 as per specification	1550 mtr			
3	Supply and providing heat shrinkable type straight through joint suitable for 3C X300 sqmm XLPE insulated and PVC Sheathed cable /outdoor end termination	4 No's			
4	Supply and providing heat strinakabe type straight through joint suitable for 3C X 300 sqmm XLPE insulated and PVC sheathed cable indoor end termination	2 No's			
	GST @ 18%				
	TOTAL AMOUNT				