SECTION-PROJECT

CONTENTS

CLAUSE NO.	PARTICULARS	PAGENO.
1.0	GENERAL	2
2.0	SCOPE	3
3.0	SPECIFIC EXCLUSION	4
4.0	PHYSICAL AND OTHER PARAMETERS	5
5.0	SCHEDULE OF QUANTITIES	5
6.0	REFERENCE DRAWINGS	5
7.0	DIFFERENT SECTIONS OF TECHNICALSPECIFICATION	5
8.0	SPECIFIC REQUIREMENT	6
ANNEXURE-I	SPECIFIC REQUIREMENT'S (Section- Project) C/ENGG/SPEC/SEC-PROJECT/SPECIFIC REQUIREMENT REV NO 08	

1 GENERAL

1.1 Power Grid Corporation of India Ltd. (POWERGRID), A Govt. of India Enterprise is responsible for Bulk Power Transmission of electrical energy from various central Govt. Power Projects to various utilities/ beneficiaries and interconnecting regional grids, operating and maintaining the National Electrical Grid of India. It is established with mission of "We will become a Global Transmission Company with Dominant Leadership in Emerging Power Markets with World Class Capabilities by:

- World Class: Setting superior standards in capital project management and operations for the industry and ourselves
- Global: Leveraging capabilities to consistently generate maximum value for all stakeholders in India and in emerging and growing economies.
- Inspiring, nurturing and empowering the next generation of professionals.
- Achieving continuous improvements through innovation and state of the art technology.
- Committing to highest standards in health, safety, security and environment." asits mission.

1.2 This specification covers Technical requirements for supply, erection & commissioning of 7x110MVAR , 765KV, 1-phase Reactor **under "Reactor Package- 7RT-04" for procurement of 765KV Reactors under " Bulk Procurement of 765kV & 400kV Class Transformer & Reactors of various capacities".**

1.3 **SPECIAL NOTE:**

Price Basis: Bids are being invited on Ex-works basis and Bidder shall be required to quote prices for Schedule-1 (Ex-Works prices including Type Test charges, if any) and Schedule-3 (Installation/Erection prices), for the present scope. Contract shall be initially placed for Ex-works and Installation portion only.

Prices for Schedule-2 (Local Transportation, In-transit insurance, loading and unloading charges, referred to as F&I charges), shall be finalized with the Contractor based on actual destination decided by Employer prior to scheduled dispatch of the equipment. The Guidelines for arriving at F&I charges, shall be indicated elsewhere in Bidding Documents.

1.4 **INTENT OF SPECIFICATION**

i) The specification includes design, engineering, manufacture, fabrication, testing at manufacturer's works, delivery, unloading at site, storage, erection, testing and commissioning at site.

ii) It is the intent of this specification to describe primary features, materials, and design & performance requirements and to establish minimum standards for the work.

iii) The specification is not intended to specify the complete details of various practicesof manufactures/ bidders, but to specify the requirements with regard to performance, durability and satisfactory operation under the specified site conditions.

2 SCOPE

The scope of this specification shall cover following:

2.1 The broad scope of this Reactor Package (7RT-04) shall cover following:

(i) 7 (Seven) nos. 110 MVAR ,765 kV, 1-Phase Reactor under Bulk procurement (Lot)

(ii) 1 (One) number of 145kV Air core NGR (Dry Type), along with support structure & terminal connectors, for a bank of 3-single phase units of Line Reactor.

(iii) 132kV Surge Arrestors for 765kV Class Line Reactors: as per BPS

Support structure including foundation bolts & terminal connectors shall be supplied & cost of the same shall be deemed to be included in the cost of 132kV Surge Arrestor.

2.2 The detailed scope is brought out in the subsequent clauses of this section.

a) Design, Engineering, Manufacture, testing at Manufacture's works, supply, transportation, unloading and delivery at site, insurance & Storage. erection, testing & commissioning at site for the Reactors, including insulating oil, all fittings, accessories including Online-Drying System (ODS), Individual Marshaling Box (IMB) for each Reactor unit, Common Marshalling Box (CMB) (for 3-Ph Bank) as required in line with Para 2.2 (d) below,, foundation bolts and cables as per Technical specification & BPS.

b) Bidders shall quote for Schedule-1 (Supply) and Schedule-3 (Installation)

c) Prices for Schedule-2 (Local Transportation, In-transit insurance, loading and unloading charges: Bidders are to refer to para 1.3 above.

d) Cables & Accessories:

(i) Cable of each 1-phase 765KV Reactor required for interconnection of IMB to CMB, shall be supplied as per BPS.

However, all cables (Power, Control, shielded twisted pair cable for 4-20mA signal & any special cable as required from individual Reactor unit to Individual Marshalling box (IMB) / any other cubicle (associated with 765KV Class Reactor as applicable) is deemed to be included & shall be treated as Part of each 1-phase 765KV class Reactor. This shall also include the following:

- FO cable: 300 m per 1-phase 765KV class Reactor unit
- One No. CMB shall be supplied for 2 x 1-Ph or 3 x 1-Ph 765KV Class Reactor unit at one location. LIU & associated Patch cords & One Ethernet switch , as part of each CMB, shall also be provided.
- Supply of CMB is not envisaged for delivery of only a single Unit of 765KV Class Reactor & No recovery shall be made against the same.

2.3 The contractor shall be fully responsible for providing all equipment, materials, system and services specified or otherwise which are required to complete the successful erection, testing and commissioning of the equipment in all respects.

2.4 Based on actual destination (as decided by Employer prior to scheduled dispatch of the Individual Reactor/Reactor Banks), the conditions of roads, capacity of bridges, culverts etc. in the route shall be assessed by the contractor. The scope of any necessary modification/ extension/ improvement to existingroad, bridges, culverts etc. shall be included under present scope. The contractor shall carry out the route survey along with the transporter and submit the detail proposal and methodology for transportation of Individual Reactor/Reactor Banks (as applicable), for approval of Purchaser within Three (03) months from the date of finalization of location, as intimated by POWERGRID.

3 SPECIFIC EXCLUSION

The following items of work are specifically excluded from the scope of this specification.

i) Foundation or Storage platform as applicable & associated civil works.

ii) Terminal connectors of 765 KV Class Reactors.

iii) High Velocity Water system (HVWS) Fire Protection System for Reactors

iv) Civil works for Road within the boundary walls of substations .

v) Cables, from control room / Bay control room of Owner / Employers, to Reactor CMB / any other cubicle (associated with 765KV Class Reactor as applicable).

vi) Online Dissolved Gas (Multi-gas) and Moisture Measuring Equipment and Nitrogen Injection type Fire Prevention & Extinguishing System.

However, Provisions of valves (for future use) for Online Dissolved Gas (Multi-gas) and Moisture Measuring Equipment and Nitrogen Injection type Fire Prevention & Extinguishing System shall be considered included in the scope & shall be deemed to be included in the price of each Reactor.

vii) Formation of common neutral for bank of 765kV Reactors.

viii) 765kV HV and 145kV Neutral, auxiliary buses for connecting spare unit of 765kV Reactor.

ix) Earthing of the Reactor. However, provision of earthing in line with technical specification shall be provided.

x) Integration of Online insulating oil drying system with Substation Automation System (SAS).

4 PHYSICAL AND OTHER DESIGN DATA

Meteorological data - For design purposes, meteorological data are as below:

Altitude	Less than 1000 meter above mean sea level (MSL)
Snow fall	NIL
Seismic Zone	As per IS 1893 (Part 1) – Seismic Zone upto Zone - IV
Wind Zone	NBC 2016- 47 m/S
Min./Max. Ambient Temperature	0 / 50 degree centigrade

5 SCHEDULE OF QUANTITIES

The bill of quantity is indicated in the Bid price Schedules. Bidder should indicate all such items in the bid proposal sheets which are not specifically mentioned but are essential for execution of the contract. Items which explicitly may not appear in various schedules and required for successful commissioning of the Reactors shall be included in the bid price and shall be provided at no extra cost to Employer.

Bids are being invited on Ex-works basis for Schedule-1 (Ex-Works prices including Type Test charges, if any) and Schedule-3 (Installation/Erection prices), for the present scope. Contract shall be initially placed for Ex-works and Installation portion only.

6 REFERENCE DRAWINGS

The reference drawings that form a part of the specifications are given in Section – 765kV Shunt Reactor , Neutral Grounding reactor and Surge Arrester (Rev-08)

In case of any discrepancy between the drawings and text of specification, the requirements of text shall prevail in general. However, the Bidder is advised to get these clarified from Employer.

7 DIFFERENT SECTIONS OF TECHNICAL SPECIFICATION

For the purpose of present scope of work, technical specification shall consist of following sections and they should be read in conjunction with each other.

a) Section – Project (Rev 00).
b) Section – 765kV Shunt Reactor , Neutral Grounding reactor and Surge Arrester (Rev-08)
c) Section-Power and Control Cable (Rev-06)
d) Section – General Technical Requirements (Rev 15)

In case of any discrepancy between Section - PROJECT and other sections, Section - PROJECT shall prevail over the other sections. In case of any discrepancy between Section - GTR & other sections, Other sections shall prevail.

8 SPECIFIC REQUIREMENT:

8.1 Relevant/applicable clauses of Specific Requirements as mentioned at C/ENGG/SPEC/SECPROJECT/SPECIFIC REQUIREMENT Rev. no. 08 (attached as Annexure-I) shall also be referred for specified scope of work.

8.2 Ohmic value of NGR shall be as mentioned below:

The value of NGR impedance is proposed to be in the range of 400-600 Ohm. The exact value of NGR impedance shall be finalized during detailed engineering. However, in case value of impedance of NGR is beyond the range specified (i.e.,400-600 Ohm), the necessary cost compensation shall be considered**.**

---------- x ----------