SECTION-I A

SCOPE

TECHNICAL SPECIFICATIONS

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Revision History

Revision No.	Date	Clause Ref	Description
Rev-0	June'2021		First Release
Rev-1	Sept'2021		First Revision
Rev-2	Oct'2021		Second Revision
Rev-3	Jan'2022		Third Revision
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Rev-5	July'2022		Fifth Revision
Rev-6	Feb'2023		Sixth Revision
Rev-7	Sept'2023	2.1.1.1	Seventh Revision
Rev-8	Dec'2023	3.4 (v)	Eighth Revision

TECHNICAL SPECIFICATIONS

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1.0 Scope

1.1 The following transmission line diversion works are covered under the present scope

Diversion work of 400kV S/C Indore-Asoj Ck-01 line for modification in railway track from Narrow to Broad Guage of Dabhoi-Samlaya Railway Section of Vadodara division under Western Railway.

Summary of diverted sections of 400kV S/C Indore-Asoj Ck-01 line is tabulated below:

S/No	Name of Transmission Line	Shifting between Tower Locations	Towers to be Dismantled	Destringing Length (in KM)	Proposed tower Qty	Proposed line length (in KM)
1	400kV S/C Indore-Asoj Ck-01 line	Location No-720 & Location No-724	SB=03 no (Total=03)	1.469	DD+0 (1 m RC)=02 DD+9 (1 m RC)=02 (Total=04)	1.474

1.2 This Specification covers the following scope of works:

(i) Detailed survey including route alignment, profiling, tower/ *pole structure spotting, optimization of tower/*pole structure locations, soil resistivity measurement & geotechnical investigation (including special foundation locations viz. pile/well foundation locations, whenever applicable & covered under BPS);

(ii) Check survey;

(iii) *Survey & profiling of existing line route using Total stations, verification of availability of statutory electrical clearances using PLS-CADD software (applicable only for Re-conductoring packages)

(iv) Classification of foundations for different type of towers and Casting of Foundations for tower/ *pole structure footings as per Employer's foundation design/ drawing;

(v) Installation of Tower structure Earthing.

(vi) For transmission lines, to promote mechanization and safe working conditions, use of crane is being promoted. Erection of towers/ *pole

structures by using crane (wherever feasible), tack welding of bolts and nuts including supply and application of zinc rich paint, fixing of insulator strings, stringing of conductors and earth wires/OPGW* along with all necessary line accessories. However, where usage of crane is not possible, erection of towers has to be carried out by conventional method i.e using Gin pole, Derrick, Centre mast etc. through usage of Power Operated Winch Machines. No tractor shall be allowed for tower/ *pole structure erection.;

(vii) Destringing & dismantling of existing765/400/220/132/66kV Transmission line. (whenever applicable & covered under BPS)

(viii) Stringing of Power line crossing section under Live Line Condition (where ever applicable & covered under BPS);

(ix) Painting of towers/ *pole structures & supply and erection of span markers, obstruction lights (wherever applicable) for aviation requirements (as required)

(x) Testing and commissioning of the erected transmission lines and

(xi) Other items not specifically mentioned in this Specification and/or BPS but are required for the successful commissioning of the transmission line, unless specifically excluded in the Specification.

(xii) The payment to be made for towers/foundations shall be worked out based on the unit rates and approved Bill of Materials (BOM) for towers and quantities/volumes as per approved tower foundation drawings. Payment to be made only on complete erection of respective tower in all aspects and completion of respective foundation in all respect.

(xiii) Contractor to strictly comply with latest Field Quality Plan of POWERGRID.

(xiv) Contractor shall take delivery of the Employer's supplied materials at the stores established by the contractor in consultation with the Employer and ensure their safe custody and shall install the same in the transmission lines as stipulated in this specification.

(xv) In case, part quantity of Tower/Tower Parts are supplied by the Employer or other Supplier, the contractor shall take delivery, carry out (unloading & stacking), ensure safe custody of materials at their stores including insurance cover as required & install the same in the transmission lines as stipulated in this specification.

(xvi) Stringing & Erection activities to be strictly done as per Section IVC of TS. The payment for erection & stringing shall be done as per the unit rates of erection & stringing respectively under the contract irrespective of the methodology adopted.

(xvii) All the supply materials required shall be provided by POWERGRID from nearest stores in WR#2 and the dismantled materials are required to be handed over to nearest stores in WR#2 where diversion works shall took

place. Bidders may note that temporary store to be established for storing the supply / Owner supply materials and insurance of the same shall be reimbursable, as per actual proof.

(xviii) Other items not specifically mentioned in this Specification and/or BPS but are required for the successful commissioning of the transmission line, unless specifically excluded in the Specification.

(xix) The various items of work are described very briefly in the appropriate Schedule of BPS. The various items of the BPS shall be read in conjunction with the corresponding sections in the Technical Specifications including amendments and, additions, if any. The Bidder's quoted rates shall be based on the description of activities in the BPS as well as other necessary operations required to complete the works detailed in these Technical Specifications.

(xx) The unit rate quoted shall be inclusive of all plant equipment, men, material skilled and unskilled labour etc. essential for satisfactory completion of various works.

(xxi) All measurements for payment shall be in S.I. units, lengths shall be measured in meters corrected to two decimal places. Areas shall be computed in square meters & volume in cubic meters, rounded off to two decimals.

(xxii) The Bidder shall submit his offer taking into consideration that the tower and foundation designs/drawings shall be developed/provided by Employer and design rights will be strictly reserved with Employer. Bidder shall quote the unit rates for various items of towers and foundations as per units mentioned in appropriate schedule of (BPS). Employer shall provide structural drawings, shop drawings & Bill of Materials of all type of standard transmission line towers and their extensions, river crossing towers/ special towers as required to the Contractor after placement of award, in sequence, suiting the project requirement. The drawings for all type of foundations for the towers shall also be provided by Employer to the Contractor.

(xxiii) During execution of the project, if any specific designs viz. +18/+25/+30M extensions, other equal/unequal leg extensions, cross-arm strengthening, auxiliary cross-arms, raised chimney foundations etc. are required as per site conditions, Single Line Diagram/Design Drawing shall be provided by the Employer. The contractor shall be required to develop the corresponding structural drawings, BOM & Shop drawings etc. without any financial implication to Employer.

(xxiv) OPGW on existing line shall be installed under live line conditions, i.e. with all the circuits of the transmission line charged to their rated voltage. The tentative bill of quantities for live-line OPGW cable system installations have been specified.

The OPGW cable shall be installed at the top of the tower by replacing the existing ground wire. The Contractor shall carry out re-tensioning of the existing earth wire wherever required to maintain the adequate clearances for live line stringing of fibre optic cables.

(xxv) The installation/stringing of OPGW cable along with associated fittings & accessories shall be carried out by the contractor. The scope of installation/stringing shall include splicing, termination, testing, demonstration for acceptance & commissioning as well as documentation. Splicing is preferred to be carried out at Tension towers locations. However, it shall be permitted at Suspension Tower locations also as required due to site conditions. The installation/stringing and splicing shall be carried out as per owner guidelines (provided as part of TS). The FODP & Approach cable shall also be installed by the Contractor (where ever applicable as per BPS).

1.3 Destringing/ Dismantling

1.3.1 The scope of works includes destringing of conductor, earthwire & OPGW, removal of hardware fittings, insulators, conductor, earthwire & OPGW accessories, etc. and dismantling of tower from some sections of existing 400kV/ 765 kV/ +/-500kV HVDC/ +/-800kV HVDC line and transporting of dismantled materials to designated POWERGRID stores. The Employer shall arrange shut down of charged sections of existing transmission lines, if required, before carrying out destringing & dismantling works as per program finalized in co-ordination with site. Appropriate safety measures along with necessary safety tools and equipments to carry out destringing and stringing operations under the above conditions including mechanical/ structural safety of the towers shall be the responsibility of the contractor. The entire quantity of dismantled line materials viz. tower parts, conductor, earthwire, OPGW, hardware fittings, insulators and conductor, earthwire & OPGW accessories removed from the existing line shall be transported to the designated POWERGRID stores by the contractor at his own cost. The Bidder shall submit his offer taking into consideration transportation cost of the dismantled material.

1.3.2 The contractor shall inspect the affected stretch of transmission lines and shall accordingly devise appropriate methodology/procedure of carrying out the destringing/restringing works during detailed engineering & execution stage in consultation with the site-in-charge.

1.4 Details of Transmission Line Routes and Terrain

The detailed survey shall be carried out using Total stations along the approved route alignment. As an alternative, the contractor may also use ALTM (Airborne Laser Terrain Modeling) techniques of equal or better accuracy for the detailed survey.

Quantity of detailed survey including route alignment, profiling, tower/ *pole structure spotting, optimization of tower/ *pole structure locations, soil resistivity measurement & geotechnical investigation etc. of lines have been indicated in the BPS.

1.4.1 Bidders may visit the line to acquaint themselves with terrain conditions and associated details of the proposed transmission lines. For this purpose they are requested to contact the following address:

Sr GM,
765/400/220kV GIS Substation,
Khandagam, The: Waghodiya, Vadodara
Gujarat (Pin-391760)

1.4.2 **Access to the Line and Right of Way**

Right of way and way leave clearance shall be arranged by the Employer in accordance with work schedules. Employer will secure way leave and Right of way in the Forest area.

1.4.3 **Contractor Execution Plan**

After award of the contract, the contractor shall submit a detailed plan for resources mobilization & execution of various activities under the project scope along with the L2 network (L2 network to be approved by PESM) to Site, PESM. The detail should also cover the locations and size of stores to be established by the contractor.

1.5 Location Details and Terminal Points

1.5.1 The transmission line shall be diverted from Tower 720 to 724 of 400kV S/C Indore-Asoj CK-I Line in the State of Gujarat.

The 400kv S/C Indore-Asoj CK-01 transmission line is passing through Plain area.

1.5.2 The Contractor shall have to construct the transmission line portions, covered under the tower package, completely up to suitable tower of the above-mentioned transmission lines being diverted as per approval of Engineer-In-Charge. Stringing shall also be carried out for a diverted portion of the above mentioned transmission line so as to make it ready in all aspect for power flow between the terminal stations.