Millennium Challenge Account Nepal (MCA-Nepal)

Electricity Transmission Project (ETP)
Outreach Meeting
400kV D/C Transmission Line (297km)

30 September, 2024

SCOPE OF WORKS

- ✓ Design-Build contract in line with the FIDIC Yellow Book
- ✓ Design, Supply, Construction, Testing and Commissioning of Double Circuit 400kV Transmission Line

  - LOT-1:
    - A) Base: Ratmate Substation to Lapsiphedi Substation (59km)
    - B) Option: Ratmate Substation to New Hetauda Substation (58km)

  - LOT-2: Ratmate Substation to New Damauli Substation (90km)

  - LOT-3: New Damauli Substation to New Butwal Substation (90km)

DESIGN REQUIREMENTS (BINDING)

- ✓ IS-802, 2015 version shall be adopted as the main governing reference design standard for the structural loadings of the overhead transmission line.
- ✓ The tower foundation shall be accommodated within the land acquired by the Employer. (The area of land acquired is from 21mx21m to 41mx41m).
- ✓ The electrical clearance must be maintained as per the Employer's Requirements.
- ✓ Detailed and Check Survey to be carried out.
- ✓ Geo Technical Investigation at 10% of locations.
- ✓ Detailed Design and Proto-Type Testing.
- ✓ Engineering Software: PLS-CADD with SAPS module software license, PLS-TOWER, and also AutoCAD to be used for the development of the deliverables.

CHANGES IN DESIGN CRITERIA TO PREVIOUS DESIGN REQUIREMENT

S. N.	Parameter	Earlier Requirement	Current Requirement
1	Design wind pressure	1025 N/m2	879 N/m2
2	Shield Angle	5 degrees	20 degrees
3	Loading Conditions	As per IEC & IS Codes	As per IS 802, 2015
4	Ice Loading consideration	13mm ice (IEC extreme ice)	10mm ice considered only for the towers coming in snow bound area
5	Strength Reduction Factor for Foundation design only	As per IEC	As per IS
6	Clearance and Load related to Live Line Maintenance	Considered	Not considered
7	Load Factor	All angle/dead end tower - 1.05	Load factor as per IS 802 (Part-1,Section-1) is 1.02.

CHANGES IN DESIGN CRITERIA TO PREVIOUS DESIGN REQUIREMENT

S. N.	Parameter	Earlier Requirement	Current Requirement
8	Broken Wire Condition	All angle towers BWC - 100% Full wind pressure tension.	All angle towers BWC - 75% Full wind pressure tension as per IS-802 (Part-1, Section-1) 2015.
9	Maximum Sag	100deg temp	Temperature for maximum sag as per IS 802(Part-I)-Section -I is 85 deg C. The temperature shall be considered as per IS. This will reduce loading on tower and conductor length.
10	Limitation of access track	Construction of access track up to tower locations was limited to 1.5 m of width only	Field study has been conducted to allow the 3.5 m width of construction of access track up to tower locations.

CHANGES IN TRANSMISSION LINE MATERIAL SPECIFICATION

S. N.	Parameter	Earlier Requirement	Current Requirement
1	Grade of Steel for Tower Material	As per ASTM	As per IS (Grade A for towers in non-snow bound zone and Grade C, for towers in snow bound zone)
2	OPGW	48 fibers	24 fibers
3	Insulator	Glass with high kN value upto 539kN	Porcelain Long Rod with maximum kN value of 320kN
4	Fall Arrestor	At every 2 step bolt (at 700 mm) with a specific design of around 22 kN	It is recommended to use, standard step bolts as per prevailing practice of 2.2 kN.

CHANGES IN TRANSMISSION LINE MATERIAL SPECIFICATION

S. N.	Parameter	Earlier Requirement	Current Requirement
5	Earthing	Copper Earthing	Steel Earthing
6	Concrete Grade	M30	M20, however considering the geographical condition bidders may propose ready mixed concrete as well.

PROJECT TIMELINE (Transmission Line)

- **Estimated Timeline for 297km Transmission Line Contract Implementation: 42 months from the date of the commencement of the Contract.**
- **DNP and Contract closure are not included in 42 months timeline.**
- **Estimated date for bid launch: November 2024.**
- **Estimated date for commencement of Work: July 2025**
- **Estimated date for the completion of the work: Dec 2028**
- **DNP Period: Jan 2029 to Dec 2029**
- **Contract Closure: January 2030 to April 2030.**

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