



NEPAL ELECTRICITY AUTHORITY
Project Management Directorate
Hetauda Parwanipur Pokharia 132 KV Transmission Line Project
ADB Loan No: 3943-NEP: Power Transmission and Distribution System Strengthening Project
OCB No. : PMD/PTDSSP/HPP/2079/80-02:Piluwa - Parwanipur 132 KV Transmission Line Upgradation Work



S. No.	Reference	Existing Statement	Amended as
1	<p>Volume II, Chapter 04, "GTR" Clause 4 "BEAR Equivalent HTLS Conductor", b) Requirements of HTLS Conductor:</p>	<p>Note: In case of re-conductoring work, the idea is not to maintain the existing tension only, but to maintain the individual factor of safety and stress on the new conductor as well. Sag-Tension calculations for conductor shall be carried by using PLSCAD. Following values should be considered for the purpose of sag-tension calculation:</p> <p>i) Final values of modulus of elasticity of Aluminium/ composite core, Coefficient of Linear Expansion of Aluminium/ composite core, Stress-Strain coefficients & Creep coefficients of aluminium/ composite core in the cable data (.wir file) should be used for calculation of sag in PLSCAD shall be based on either of the following: - a) Existing standard files on Power Line website b) A file derived from existing standard file on PLS website for conductor of equivalent/near equivalent stranding and size. However, value of Final values of modulus of elasticity of Aluminium Alloy/ Core strands, Coefficient of Linear Expansion of Aluminium Alloy/ Core strands shall be within the limits. c) In each of the above cases, proper justification in the form of test reports/ calculations/ print out of 'wir' file as available on PLS website, etc. shall be required to be submitted by the bidder along with the bid.</p>	<p>Note: In case of re-conductoring work, the idea is not to maintain the existing tension only, but to maintain the individual factor of safety and stress on the new conductor as well. Sag-Tension calculations for conductor shall be carried by using PLSCAD. Following values should be considered for the purpose of sag-tension calculation:</p> <p>i) Final values of modulus of elasticity of Aluminium/ composite core, Coefficient of Linear Expansion of Aluminium/ Composite Core, Stress-Strain coefficients & Creep coefficients of aluminium/ composite core in the cable data (.wir file) used for calculation of sag in PLSCAD shall be based on either of the following: - a) Existing standard files on Power Line website. b) A file derived from existing standard file for conductor of equivalent/ near equivalent stranding. Final values of modulus of elasticity of Aluminium Alloy/ Core, Coefficient of Linear Expansion of Aluminium Alloy/ Core shall be within the limits. c) A file derived from type test conducted on conductor of same stranding.</p> <p>In each of the above cases, proper justification in the form of test reports/ calculations/ print out of 'wir' file as available on PLS website, etc. shall be required to be submitted by the bidder along with the bid.</p>

S. No.	Reference	Existing Statement	Amended as
2	<p>Volume II, Chapter 04, "GTR" Clause 4 "BEAR Equivalent HTLS Conductor", b)</p> <p>Requirements of HTLS Conductor:</p>	<p>ii) PLSCAD Sagging criteria/conditions shall be based on the sag tension limits specified above and should be carried out in a manner that the abovementioned sag-tension limits are met in "After Creep" as well as in "After Load" condition. The newly designed conductor without standard published .wir file will not be accepted. For Proposed Design of HTLS Conductor wir file must be available on Power Line Systems website to do sag tension working using PLS CADD software.</p> <p>Various conductor parameters (viz. modulus of elasticity, coefficient of linear expansion, stress-strain and creep, etc.) considered above in the sag tension calculation should be verified during detailed engineering based on type tests conducted.</p> <p>The sag & tensions under no wind for various temperatures starting from 0 deg. C to designed maximum temperature in steps of 5 deg. C should be furnished.</p> <p>Besides above, during detailed engineering details the creep characteristics in respect of the offered type of HTLS conductor based on laboratory investigations/ experimentation (creep test as per IEE1138 or IEC 61395) conducted on similar type of conductor should be furnished and should indicate creep strain values corresponding to 1 month, 6 month, 1 year, 10 year & 20 year creep at everyday tension & designed maximum temperature as well as at room temperature.</p>	<p>ii) PLSCAD Sagging criteria/conditions shall be based on the sag tension limits specified above and should be carried out in a manner that the abovementioned sag-tension limits are met in "After Creep" as well as in "After Load" condition. For Proposed Design of HTLS Conductor wir file must be available on Power Line Systems website or should be provided on a hard drive storage to do sag tension working using PLS CADD software.</p> <p>Various conductor parameters (viz. modulus of elasticity, coefficient of linear expansion, stress-strain and creep, etc.) considered above in the sag tension calculation should be verified during detailed engineering based on type tests conducted.</p> <p>The sag & tensions under no wind for various temperatures starting from 0 deg. C to designed maximum temperature in steps of 5 deg. C should be furnished.</p> <p>Besides above, during detailed engineering details the creep characteristics in respect of the offered type of HTLS conductor based on laboratory investigations/ experimentation (creep test as per IEE1138 or IEC 61395) conducted on similar type of conductor should be furnished and should indicate creep strain values corresponding to 1 month, 6 month, 1 year, 10 year & 20 year creep at everyday tension & designed maximum temperature as well as at room temperature.</p>
3	<p>Volume II, Chapter 04, "GTR" Clause 10.2</p> <p>Type Tests: 10.2.1</p> <p>Type Tests on Stranded Conductor/ Stranded wire</p>	<p>The following tests shall be conducted once on sample/samples of conductor from each manufacturing facility:</p>	<p>Add at the last of the table the following: n) Salt Spray Test (applicable for composite core conductor not conforming to ASTM B987)</p>
4	<p>Volume II, Chapter 04, "GTR" Clause 10.1</p>	<p>Design validation test on composite core</p>	<p>Add at the end of the Clause 10.1, "Galvanic Protection Barrier Layer Thickness Test" is applicable for composite core conductor conforming to ASTM B987.</p>
5	<p>Volume II, Chapter 04, "GTR" Annexure-A</p>		<p>Add at the end the following: Salt Spray Test: The test shall be performed as per ASTM B117 on 3 samples of conductor, each 1 m in length. The three samples shall be simultaneously subjected to salt spray exposure in an environmental chamber for 1000 hours. After this test, the individual strands and composite core shall be subjected to visual examination and tensile strength test as per ASTM B-987. There shall be no pitting, corrosion or deterioration on any component of the conductor after 1000 hours of salt-spray exposure. The individual strands of aluminum/ aluminum alloy and the composite core shall retain 95% of the strength guaranteed in GTP.</p>

