1. **MECHANICAL CHECKS & VISUAL INSPECTION:**

As per TCS –P – 105, Rev – 01, Item no 3.29.1

|  |  |  |
| --- | --- | --- |
| Item | Description | Status |
| 1 | Inspect that the access roads and structure pads are as per spec |  |
| 2 | Check that sand stabilization has been done as per spec (if applicable) |  |
| 3 | Check the ROW (right of way) to ensure that there is no construction or agricultural encroachment  |  |
| 4 | Check that the ground profile allows water to run off away from the structures |  |
| 5 | Check that grounding connection is made properly with steel structure and protective coating is applied on the concrete cap. There shall be no cracks and the concrete cap shall slope away from the stub angle. |  |
| 6 | Check that crash barrier and/or flood protection are being done as per spec |  |
| 7 | For wooden pole structures, ensure the poles, types and size are correct as per spec and have been installed correctly .ensure that the depth indication tags are on each pole.  |  |
| 8 | For wooden pole structure ,check structure guy wire ,cross braces and other framing work are being done correctly |  |
| 9 | Check that all wood structures have been identified correctly and that the identification plates are to specifications.for double circuit structure ensures that each circuit is correctly identified. |  |
| 10 | For steel structure, ensure that type is as per spec/Drawings |  |
| 11 | Check galvanizing quality and thickness (rust is not acceptable)  |  |
| 12 | Check bolt types and tightness (torque wrench method) |  |
| 13 | Ensure anti - climbing guards are correctly installed (if applicable) |  |
| 14 | Check step bolt tightness |  |
| 15 | For porcelain insulators check insulators for chip, cracks etc. ensure correct number of insulators have been installed in each string .ensure that cotter keys have been properly installed. | **`** |
| 16 | For composite insulators, perform close elevated inspection on each structure to check that the insulator sheaths and sheds are not cracked, damaged, torn. The rod should not be exposed at any of its location. |  |
| 17 | Check that all line hardware (insulator, corona rings, vibration dampers, spacers, conductor clamps, warning spheres, warning lights, armor rod, counter weight, flag socket / keys etc) are installed correctly and in correct locations as per spec and drawings |  |
| 18 | Make sure that the insulators are clean and line is safe to be energized |  |
| 19 | Check that all splices are correct and installed in correct span locations |  |
| 20 | Check that all jumpers are installed correctly .make sure of correct clearance between jumper and structure as well as with other phases. |  |
| 21 | Check that overhead shield wire / OBGW and associated joint box are grounded to towers as specified |  |
| 22 | Ensure that sags for phase and overhead ground conductors are even and to spec. |  |
| 23 | Check that ground clearance is meeting company standards. |  |
| 24 | Check circuit / phase identification plates, structure number ,danger sign plate etc, have been correctly installed at each structure |  |
| 25 | Check line / phase correctly transposed at the specified locations (if applicable) |  |
| 26 | Check that washing platform and pumping system has been installed as per spec(if applicable) |  |
| 27 | Check solar unit for tower lighting with cable (if applicable) |  |
| 28 | For terminal compound check the following if available as per contract1. outdoor equipments such as surge arrester, CVT’s etc
2. equipment structure
3. foundation
4. bonding of equipment / structure
5. gravelling inside terminal compound
6. circuit identification
7. conductor dropper and connectors
8. fence and gate are complete and grounded
 |  |
| 29 | Ensure that the site has been properly cleaned up and all earthwork profiles are correct before acceptance  |  |
| 30 | Regarding to the spacer dampers and vibration on the 380 kV overhead transmission lines the following should be observed :-1. installed as per manufacture instructions
2. space damper locations are as per the approved “In – span position Table”
3. Alignment of space dampers are perpendicular to installed using manufacturer
4. Recommended tools
 |  |

1. **ELECTRICAL TEST:**

As per TCS –P – 105, Rev – 01, Item no 3.29.2

* 1. Phasing Test:

|  |  |  |
| --- | --- | --- |
| Phase | Checked | Remarks |
| R |  |  |
| Y |  |  |
| B |  |  |

Results:

* 1. **PHASE ROTATION TEST:**
* Connect 3-phase 220 V AC voltage supply (Generator) to the line.
* Connect phase sequence meter to both ends of the line
* Read the phase sequence of sending and receiving ends

.

 Results:

* 1. **CONDUCTIVITY / CONTINUITY TEST:**

|  |  |  |
| --- | --- | --- |
| Phase | Checked | Remarks |
| R – Y |  |  |
| Y – B  |  |  |
| B – R  |  |  |

Results:

* 1. **INSULATION TEST:**

 Applied voltage: 5000V Duration: 1min.

|  |  |  |
| --- | --- | --- |
| Connection | Measured insulation value  | Remarks |
| R-E |  |  |
| Y-E |  |  |
| B-E |  |  |
| R-Y |  |  |
| Y-B |  |  |
| B-R |  |  |

Criteria:

* 1. **IMPEDANCE TEST:**
		1. **Zero Sequence Impedance (Zo):**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Impedance results: | R [Ω] | X [Ω] | Z [Ω] | Phi (°) |
| zero sequence impedance Z0 |  |  |  |  |
| zero sequence impedance Z0/KM |  |  |  |  |

Results:

* + 1. **Positive Sequence Impedance Test (Z1):**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Impedance results: | R [Ω] | X [Ω] | Z [Ω] | Phi (°) |
| Positive sequence impedance Z1 |  |  |  |  |
| Positive sequence impedanceZ1/KM |  |  |  |  |

 Results:

* + 1. **Mutual Impedance (for Double circuit only):**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Impedance results: | R [Ω] | X [Ω] | Z [Ω] | Phi (°) |
| Positive sequence impedance Z1 |  |  |  |  |
| Zero sequence impedance Z0 |  |  |  |  |
| Mutual Coupling Impedance ZM |  |  |  |  |
| Mutual Coupling Zero Sequence Z0M |  |  |  |  |
| Mutual Coupling Impedance ZM/KM |  |  |  |  |
| Mutual Coupling Zero Sequence Z0M/KM |  |  |  |  |

Results:

* 1. **SUSCEPTANCE TEST:**
* Isolate the three phase from both ends.
* Connect 1- phase 220 V AC supply voltage source (generator) between R &Y phases now connect ammeter and voltmeter as shown in figure-6
* calculate phase-to phase susceptance as per the formula given below

X=2V/ I in Ω

B=1 / (- JX) in Moh

* Repeat for both phases Y-B and B-R
* Fill the result in the Table below

|  |  |  |  |
| --- | --- | --- | --- |
| .Phase | X (ohm) | B (mho) | Remarks |
| R - Y |  |  |  |
| Y - B |  |  |  |
| B-R |  |  |  |

 Results:

Note: - Separate check list for spacer damper installation to be done as per TCS –P – 105, Rev – 01, Item no 3.29.3