TECHNICAL SPECIFICATION FOR
LV AERIAL BUNCHED CABLES.

(I) SCOPE
This specification covers design, engineering, manufacture, assembly, stage testing, inspection and testing before supply and delivery at site of LV Aerial Bunched cable.

(II) STANDARDS
The materials shall conform in all respect to the relevant Indian Standard Specifications with latest amendments thereto.

(III) TECHNICAL REQUIREMENTS

a. General: The insulated phase conductor shall be twisted round bare aluminium alloy messenger wire, which shall take all the mechanical stress. The messenger shall also serve as the earth-cum-neutral. The typical arrangement of the phase conductors and messenger wire shall be as per relevant standards. The typical arrangements of cables straight run, Angle & Dead end shall be as per relevant standards.

(IV) PHASE CONDUCTOR

The Phase conductor shall be of aluminum solid round, outer diameter shall be within the limits.

The phase conductor shall be insulated with black weather resistant XLPE suitable to 1100V insulation. The insulated conductors shall generally conform to the relevant standards.

Conductors: The properties of the aluminum wires (Tensile strength & Resistivity) before stranding shall be as per relevant standards.

(V) INSULATION

a. Material: The insulation shall be black weather resistant XLPE.

b. Messenger (neutral conductor): The messenger shall be an All Aluminum Alloy Conductor composed of 7 wires of appropriate size drawn from rod, which is manufactured in a continuous casting and rolling procedure. The properties for the individual wires before stranding shall be as per relevant standard.

No joints are allowed in the messenger except those made on the base rod or wire before first drawing within the standard length. The messenger shall be round, stranded and compacted to have smooth round surface.

The messenger takes all the mechanical stress and also serves as a neutral conductor.

(VI) TESTING

a. Type Tests: The material offered shall be fully type tested by the Bidder or his collaborator as per the relevant standards. The bidder shall furnish four sets of type test reports along with bid. The bids received without type test reports shall be treated as non-responsive.

Test for phase conductor
Tensile test (IS 8130)
Wrapping test (IS:8130)
Conductor resistance test
Test for thickness of insulation
Tensile strength and elongation at break of insulation
Physical tests for XLPE insulation
Ageing in air oven
Shrinkage test
Hot deformation
Loss of mass in air oven
Heat shock test
Thermal stability
Test for bleeding and blooming of pigment (IS:6474) + insulation resistance test :
High voltage test including water immersion test (IS:1596)
High voltage test at room temperature
Flammability test.

b. Test for messenger

Breaking load test (to be made on the finished conductors) (IS 398/Part IV)
Elongation test (IS:398/part IV) Resistance test (IS-398/part-IV)

Acceptance and Routine Tests: All the acceptance and routine test shall be conducted as per the relevant standards in the presence of purchaser’s representative. The values shall conform to guaranteed values. Immediately after finalization of the program of acceptance/routine testing, the manufacture shall give 15 days advance Intimation to the purchaser to enable him to depute his representative for witnessing the tests.

d. Bonding test on the complete cable : The test shall be performed on a sample of complete cable as per relevant standards.

(VII) PACKING & FORWARDING:

a. The AB cable shall be wound on non-returnable wooden drums conforming to IS-10418/1982 with latest amendments thereof. The ends of the cable shall be sealed by means of non-hygrosopic sealing material. The drum shall be marked with the following.

- Manufacturer’s name
- Trademark, if any
- Drum number or identification number
- Size of conductors
- Size of messenger
- Voltage grade
- Number and length of pieces of cable in each drum
- Gross mass including packing
- ISI mark if any
- Direction of rotation of the drum by marking an arrow

b. The drums shall be of such construction as to assure delivery of cable in the field free from displacement and damage and should be able to withstand stresses due to handling and the stringing operation so that cable surface is not dented, scratched or damaged in any way during transport and erection. The cable shall be properly logged on the drums.

c. The cable drum should be suitable for wheel mounting.

d. The minimum length of each cable shall be as per relevant standard while longer length shall be acceptable.
(VIII) MARKING OF CABLES:—

All the cable shall have the following marking embossed on the insulated phase conductor for identification WESCO (APDRP) in interval of not more than 1 meter.

a. The packing shall be done as per the manufacture’s standard practice. However, he should ensure the packing such that the material should not get damaged during transit by Rail / Road.

b. The marking on each package shall be as per the relevant IS.

(IX) GUARANTEED TECHNICAL PARTICULARS

The contractor / manufacturer shall furnish the guaranteed technical particulars and submit the same along with his tender.

**TECHNICAL PARTICULARS**
LT Aerial bunched Cable 1100volts (5 Core) with street Lighting Conductor

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Description</th>
<th>3 X 50</th>
<th>3 X 95</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>+</td>
<td>+</td>
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<tr>
<td>1</td>
<td>Power / Neutral Core:</td>
<td>1 X 16</td>
<td>1 X 16</td>
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<tr>
<td></td>
<td>Conductors</td>
<td>+</td>
<td>+</td>
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<tr>
<td>1.1</td>
<td>a) Non cross sectional area</td>
<td>1 X 35</td>
<td>1 X 70</td>
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<tr>
<td></td>
<td>1. Phase Conductor (mm²)</td>
<td>50</td>
<td>95</td>
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<td>2. Street Lighting conductor (mm²)</td>
<td>16</td>
<td>16</td>
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<tr>
<td></td>
<td>b) Max DC resistance conductor at 20º C</td>
<td>0.641</td>
<td>0.320</td>
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<tr>
<td></td>
<td>1. Phase Conductor (Ohm/Km)</td>
<td>1.910</td>
<td>1.910</td>
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<tr>
<td></td>
<td>2. Street Lighting (Ohm/Km.)</td>
<td>1.910</td>
<td>1.910</td>
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<td></td>
<td>c) Approx diameter of conductor</td>
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<tr>
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<td>1. Phase conductor (mm)</td>
<td>7.9</td>
<td>11.3</td>
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<td></td>
<td>2. Street Lighting Conductor (mm)</td>
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<td>1.2</td>
<td>Insulation:</td>
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<tr>
<td></td>
<td>Minimum thickness</td>
<td>1.2</td>
<td>1.4</td>
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<td>1. Phase conductor (mm)</td>
<td>1.0</td>
<td>1.0</td>
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<td></td>
<td>2. Street Lighting Conductor (mm)</td>
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<tr>
<td>2</td>
<td>Messenger Wire (Bare)</td>
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<tr>
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<td>1. Non Cross sectional area (S sq.mm.)</td>
<td>35</td>
<td>70</td>
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<td></td>
<td>2. Approx breaking load (KN)</td>
<td>10.3</td>
<td>20.6</td>
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<td>3</td>
<td>Current ratings</td>
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<td>Convinous current carrying capacity of cable</td>
<td>105</td>
<td>230</td>
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<td>1. Air at Ambient temp. 40º (AMP)</td>
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<td>4</td>
<td>Identification of the power core:</td>
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<td></td>
<td>2. Laying</td>
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<td></td>
<td>By providing suitable ridges on the insulation Three power cores and one neutral core shall be suitably twisted around bare AAAC messenger.</td>
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