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|-----------------------------------------------------------------------------------|-------------------------------------------------|------------------------------|
|  | <b>TECHNICAL DELIVERY CONDITION</b>             | <b>Project: Train B28</b>    |
| <b>Aggregate</b>                                                                  | <b>Aluminium Extrusions with powder coating</b> | <b>DOC No.: FPIIC/TD/074</b> |
| <b>BEML Enquiry/ RFQ Reference :</b>                                              |                                                 |                              |

| Sl. No. | Technical Delivery Conditions                                                                                                                                                                                   | COMPLIED                 | NOT COMPLIED             |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|
| 1       | Each of the aluminium extrusion shall confirm to the tender drawing requirements.                                                                                                                               | <input type="checkbox"/> | <input type="checkbox"/> |
| 2       | The firm shall submit material test certificate for chemical composition and mechanical properties as per EN 775-2/ ASTM B 221 along with each supplies.                                                        | <input type="checkbox"/> | <input type="checkbox"/> |
| 3       | Dimensional tolerance shall be as per EN 775-9 / ANSI H 35.2                                                                                                                                                    | <input type="checkbox"/> | <input type="checkbox"/> |
| 4       | Anodisation, if called in the drg., shall be as per IS 1868 to Grade AC 10.                                                                                                                                     | <input type="checkbox"/> | <input type="checkbox"/> |
| 5       | Shall be Powder Coated to DFT 70-90 microns and it shall comply to mechanical properties as per annexure-1                                                                                                      | <input type="checkbox"/> | <input type="checkbox"/> |
| 6       | Powder coated RAL shade should be as per drawing                                                                                                                                                                | <input type="checkbox"/> | <input type="checkbox"/> |
| 7       | Colour sample shall be submitted for approval, before mass production                                                                                                                                           | <input type="checkbox"/> | <input type="checkbox"/> |
| 8       | 100% quantity of the extrusions shall be subjected to visual, dimensional inspection and anodization/powder coated (if applicable) inspection. Inspection reports shall be submitted along with supplies.       | <input type="checkbox"/> | <input type="checkbox"/> |
| 9       | The extrusions shall be of smooth finish without burrs & sharp edges. Scratches on the anodized/powder coated surfaces (if applicable) are not acceptable.                                                      | <input type="checkbox"/> | <input type="checkbox"/> |
| 10      | The extrusions shall be packed to ensure that no damage will occur during transit & storing at BEML.                                                                                                            | <input type="checkbox"/> | <input type="checkbox"/> |
| 11      | Part number shall be marked on all extrusions. However, use of label for mentioning the part number is not acceptable. Care shall be taken such that marking part number shall not damage the anodised surface. | <input type="checkbox"/> | <input type="checkbox"/> |

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Signature of the Bidder with Seal  
(Name, Designation & Address)

**Annexure-1****Mechanical properties of Powder coated surface**

| Sl. No. | Test Description                          | Test Method                                                                                                                                                 | Requirements                                                                                                                                                      |
|---------|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | Adhesion (Cross cut test)                 | BS EN ISO 2409                                                                                                                                              | GT 0-1 < 250µm                                                                                                                                                    |
| 2       | Determination of scratch resistance       | BS EN ISO 1518 -1 (Constant-loading method - load of minimum 20N and scratch stylus-D)                                                                      | No penetration through the top coat layer                                                                                                                         |
| 3       | Bend test                                 | BS EN ISO 1519 (cylindrical mandrel 8mm diameter)                                                                                                           | No cracking or detaching from substrate                                                                                                                           |
| 4       | Falling weight test                       | BS EN ISO 6272-1 , (large area indenter 1000g / 1m height / 20mm diameter)                                                                                  | No suffer cracking, flacking or detachment from substrate                                                                                                         |
| 5       | Determination of resistance to abrasion   | BS EN ISO 7784-2 (Method with abrasive rubber wheels and rotating test specimen 500 cycles / C10 wheel)                                                     | < 30 mg                                                                                                                                                           |
| 6       | Determination of resistance to humidity   | BS EN ISO 6270-1 (Continuous condensation)                                                                                                                  | 480 hrs no softening, swelling, blistering or suffer from under-film corrosion GT 0-1                                                                             |
| 7       | Corrosion tests in artificial atmospheres | BS EN ISO 9227 (Salt spray tests 1000h / neutral salt spray (NSS) (only on metal substrates))                                                               | Free of defects, corrosion and blistering greater than 2mm from the cut                                                                                           |
| 8       | Exposure to laboratory light sources      | BS EN ISO 16474-1 and BS EN ISO 16474-3 (General guidance - methods of exposure to laboratory light sources, type 1A lamp (UVA-340) for 500 h for interior) | No cracking, no flaking, no blistering, no suffer loss of inter-coat adhesion or change in colour (dE) greater than 3 units, no gloss reduction greater than 10%. |
| 9       | Anti-Graffiti Properties                  | ASTM D 6578                                                                                                                                                 | Level-8, No exhibit staining, no ghosting, no colour loss, gloss reduction, no softening, no swelling no blistering                                               |
| 10      | Fire Safety                               | EN 45545-2                                                                                                                                                  | HL2, R1                                                                                                                                                           |