PARTICULAR SPECIFICATIONS

Name of Work: **Replacement of conventional flood lights into LED flood lights at Dr. Babasaheb Ambedkar International Airport, Nagpur.**

1. SCOPE OF WORK

Item No. 1) - Supply of 2 x 250W High power LED flood light fixture with 30^0 beam lens to achieve the lux level at apron area.

Item No. 2) - Supply of 2 x 250W High power LED flood light fixture with 60^0 beam lens to achieve the lux level at apron area.

2. DETAILED DESCRIPTION OF LUMINAIRIES

2.1 LED TYPE HIGH MAST FLOOD LIGHTS FITTINGS

i. The type of fittings shall be as specified in BOQ of tender documents.

ii. The contractors shall supply the specified model and make of the fittings. The standard constructional features of specified make and model as given in the tender document are acceptable.

2.2 LED TYPE FIXTURES

2.2.1 APPLICABLE STANDARDS

S.No.	Standards	Brief Description
1.	IS 16101:2012	Terminology
2.	IES LM-79-08	Light output, efficacy, colour for LED Products.
3.	IES LM-80-08	Light output over time, temperature for LED Packages.
4.	IES LM -82-12	Light output, efficacy, colour over temperature for light engines (IES files are available)
5.	IES TM-21-11	Extrapolating LM-80 test data to predict LED life.
6.	ANSI/UL 1574:2004 (Sec. 54) UL 8750	Clause No. 1.7; Light emitting diode (LED) Components and subassemblies integral to lighting track or a luminaire assembly covered by UL 1574, shall comply for use in lighting Products UL 8750 refer clause no 1.7.
7.	DIN EN 62031; DIN EN 62471-1; IEC PAS62717	LED Module
8.	DIN EN 60598-1; IEC PAS 62722-2-1; EN55015; EN 61547; EN 62493; LM 79; LM80; ANSI C78.377-2008	LED Fixtures
9.	BIS 16101	LEDs and LED modules; Terms and Definitions
10.	BIS 16103 (Part 1 & 2)	Led Modules for General Lighting Safety and performance requirements
11.	BIS 15885 ; BIS 16104	For Control gear
12.	BIS 16105	Based on IEC LM 80
13.	BIS 16106	Based on IEC LM 79
14.	BIS 16107 (part 1&2) (IEC PAS 62722-2-1)	Luminaires performance
15.	BIS 16108 / (IEC 62741)	Luminaires performance

3.0 SPECIFICATION FOR LED LIGHT LUMINAIRE

- Supply of LED light luminaries having LED Array as light source where individual LED source should be provided with multi-layer symmetric distribution lens, which should ensure that the uniform light distribution of the luminaries and suitable for outdoor lighting applications as applicable.
- Luminaries housing, optics, diffuser shall be as per SOQ.
- Heat dissipation should be managed through adequate heat sink with proper thermal management.
- The fixture should be impact resistant with suitable protection for driver and LED's.
- For safer operations the power driver unit should be provided with Surge protection, Short circuit & Overload protection.
- Guarantee: The manufacturing companies should provide **minimum THREE years** guarantee on LED Luminaries of the complete fitting including all accessories.
- Also records of all type tests and routine tests conducted as applicable standards at manufacturer's works/NABL approved labs etc shall be submitted along with the material with Guarantee Card during supply.
- Pressure die cast aluminum housing with IP 66 Protection Cradle with mounting angles for lighting arrangement.
- System efficacy should be Greater than 120 Lu/Watt system efficacy.
- Separate compartment required for LED and Driver helps in easy maintenance, Secondary Lens provided for each LED.
- Driver Upper limit Cut-off @300VAC.
- Driver can withstand high voltage up to 320V AC for 48 hrs & 350V AC for 2 hrs.
- Universal Electronic potted driver with 4 KV internal surge protector.
- Internal Surge protection in Driver 4 kV and Additional Potted SPD inbuilt with Luminaries having protection of 5KV with flash indicator as a standard product.
- Manufacturer shall submit Photo biological Safety report for the LED's as per IED -62471 and assessment of blue light as per IEC/TR 62778.
- BIS approved driver with R number certificate to be submitted.
- High power bright white LED's with wattage shall be greater than 1W and less than 3W. Manufacturer shall submit LM-80 test report of Tier1 LED used in the proposed luminaries.

- **THE SUCCESSFUL BIDDER SHALL FULFILL THE FITTING SPECIFICATIONS TABULATED BELOW FOR THE LED LIGHT FIXTURE TO BE SUPPLIED AGAINST THE SOQ ITEMS AND GET IT APPROVED BY THE ENGINEER –INCHARGE FOR SUPPLYING THE SAME.**

Schedule Item No. 1:-

S.No.	Description	Fitting Specification
1.	Model & Make of Fixture	As per SOQ
2.	Total Power Consumption	2 x 250 Watt ± 10%
3.	Efficiency of LED light fitting (efficacy)	120 Lumens / Watt
4.	System Lumen Output	Minimum 52000 Lumen
5.	Housing	Aluminium Die-Cast with well design thermal management system including company name or logo should be embossed on housing.
6.	Diffuser	Toughened Glass UV stabilized with distortion free, clear, heat resistant.
7.	Protector	Silicon Gasket
8.	Suitability	Outdoor high mast lighting
9.	Operating Voltage range	120V-320 V AC
10.	Minimum Colour Rendering Index (CRI)	70%
11.	Total Harmonic Distortion (THD)	≤ 10%
12.	IP category	IP 66
13.	Surge Protection	4KV with additional potted SPD inbuilt Protection of 5KV with flash indicator.
14.	Operating Frequency range	50 Hz. (± 3 Hz)
15.	Power factor	≥ 0.99 OR Unity
16.	Colour temperature (CCT)	5700K
17.	Lumen Depreciation	Depreciates 30% after life (50000 Hours)
18.	Life of LED fitting	50000 burning hours (min.) @L70
19.	Life of control driver of LED fitting	50000 hours
20.	Operating Temperature range	-10 Deg. C to + 50 Deg C.
21.	Make of LED	Nichia / Cree/ Osram/ Philips/ Sharp
22.	Secondary beam angle lens	60^0
23.	Test Reports / Certificates & Documents during execution in case of award.	Type Test Certificates from NABL accredited Labs only.
		LM 79 Test Report
		LM 80 Test Report
		Lumen depreciation Curve of LEDs used.
24.	Guarantee certificate from OEM	THREE Years from the actual date of completion of work on whole light fitting including Driver (Guarantee certificate from OEM to be submitted in case of award) & all accessories etc.
25.	Weight	≥ 13-15 kg.
26.	Shape	Crescent shaped

Schedule Item No. 2:-

S.No.	Description	Fitting Specification
1.	Model & Make of Fixture	As per SOQ
2.	Total Power Consumption	2 x 250 Watt $\pm$ 10%
3.	Efficiency of LED light fitting (efficacy)	120 Lumens / Watt
4.	System Lumen Output	Minimum 52000 Lumen
5.	Housing	Aluminium Die-Cast with well design thermal management system including company name or logo should be embossed on housing.
6.	Diffuser	Toughened Glass UV stabilized with distortion free, clear, heat resistant.
7.	Protector	Silicon Gasket
8.	Suitability	Outdoor high mast lighting
9.	Operating Voltage range	120V-320 V AC
10.	Minimum Colour Rendering Index (CRI)	70%
11.	Total Harmonic Distortion (THD)	$\leq$ 10%
12.	IP category	IP 66
13.	Surge Protection	4KV with additional potted SPD inbuilt Protection of 5KV with flash indicator.
14.	Operating Frequency range	50 Hz. ($\pm$ 3 Hz)
15.	Power factor	$\geq$ 0.99 OR Unity
16.	Colour temperature (CCT)	5700K
17.	Lumen Depreciation	Depreciates 30% after life (50000 Hours)
18.	Life of LED fitting	50000 burning hours (min.) @L70
19.	Life of control driver of LED fitting	50000 hours
20.	Operating Temperature range	-10 Deg. C to + 50 Deg C.
21.	Make of LED	Nichia / Cree/ Osram/ Philips/ Sharp
22.	Secondary beam angle lens	30^0
23.	Test Reports / Certificates & Documents during execution in case of award.	Type Test Certificates from NABL accredited Labs only.
		LM 79 Test Report
		LM 80 Test Report
		Lumen depreciation Curve of LEDs used.
24.	Guarantee certificate from OEM	THREE Years from the actual date of completion of work on whole light fitting including Driver (Guarantee certificate from OEM to be submitted in case of award) & all accessories etc.
25.	Weight	$\geq$ 13-15 kg.
26.	Shape	Crescent shaped

Note:

1. **MIL** reserves the right to call for samples of that make/model of LED lamp as offered by the tenderer during sample approval phase and test it, if required. However, the cost of the sample and the cost of testing shall be borne by the agency

2. The bidder shall quote their rates, in accordance with the technical specification.

5.0 Lux Level Measurement

Before taking up the work, the contractor shall furnish the typical lux level calculation sheets to be achieved from the proposed LED fixtures in the schedule of work supported from the approved LED light fixture manufactures for approval of the Engineer In charge.

The average illuminance of apron area lux level should be at least the following:-

a) Horizontal illuminanace :- 20 Lux with a uniformity ratio (average to minimum) of not more than 4 to 1 : and

b) Vertical illuminance :- 20 Lux at a height of 2 mtr above the apron in relevant directions.
(Please referred Annex 14 – ICAO Specifications)

On completion of work the contractor shall demonstrate & furnish the same as final lux level of typical areas and submitted for acceptance of Engineer In charge.

6.0 Pre Commissioning and Commissioning.

a) Check erection and alignment of bracket and fixtures.

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LIST OF APPROVED MAKES

SR. NO.	ITEM	APPROVED MAKE	CATEGORY OF TEST CERTIFICATE /INSPECTION
1.	LED FITTINGS	CROMPTON / GE INDIA/ HALONIX/ PHILIPS/ HAVELLS INDIA / INSTAPOWER / WIPRO/ KESLEC SCHREDER/ BAJAJ	CATEGORY -2

CATEGORY REQUIREMENT OF TEST CERTIFICATE / INSPECTION

CATEGORY -1:

a) Type test certificate for similar item done if not, one of the items offered to be type tested.
b) OEMs routine test certificate.
c) Acceptance test to be conducted in the presence of MIL representative at OEMs factory.

CATEGORY-2:

a) Type test certificate for similar item done if not, one of the items offered to be type tested.
b) OEMs routine test certificate.
c) Visual and functional check by MIL official at Nagpur Airport site.

CATEGORY -3:

a) OEM / Dealer/ Contractor routine test certificate.
b) Visual and functional check by MIL official at Nagpur Airport site.

CATEGORY -4:

a) Visual and functional check by MIL official at Nagpur Airport site.

NOTE:

a) The categorization is done keeping in mind big projects wherein the bought out item quantity may be large. In case the bought out item/ supplied items are of very less in quantity required category may be reviewed by Technical sanction Authority.

b) Technical sanction authority shall finalize the requirements of certificate at the time of call of tender.

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