

ADDENDUM-3

DATE: 20-12-2021

Illumination Package for CHP, AHP, LHP & GHP for Bhusawal T.P.S (1x660MW), Unit-6 Project

Tender Ref: 77/21/6058/TSK

"Extension of due date for submission of offer"

Due date for submission of Offer has been extended to 27.12.2021

Submission of offer by 2.00 PM on 27.12.2021

Opening of Techno commercial bid at 4.00 PM on 27.12.2021

Pre-Bid Clarifications dtd 20.12.2021 enclosed shall be a part of the tender documents.

Any further addendum such issued carry part of the bidding documents and this will be available at the web site from where the original documents have been received / downloaded by the bidder. Hence, bidders are requested to visit the web site on regular basis.

For Further Queries if any, Contact:

For Commercial :

Sh. D S Pradeep Kumar Sarma

Manager / MM

BHEL-ISG,

Prof.C.N.R.Rao Circle,

Bangalore-560 012

Off: 080 2218 4520,

e-mail: dsp@bhel.in

For Technical :

Sh. Murali Krishna N –

Dy. Manager / PE / Elec

BHEL-ISG,

Prof.C.N.R.Rao Circle,

Bangalore-560 012

Off: 080 2218 4589,

e-mail : murali254@bhel.in

PROJECT: 1X660 MW, Unit-6,Bhusawal TPS**ENQUIRY NO. : 77/21/6058/TSK****ITEM/ WORK: Illumination Package for CHP, AHP, LHP & GHP****PRE- BID CLARIFICATIONS****20.12.2021**

SI. NO.	CLAUSE NO.	DOCUMENT NO.	Bidder Queries	BHEL Reply
TECHNICAL				
1	SECTION IV TECH SPEC PAGE 7/19	IS-1-17-2003-128-011 REV00	NO. OF MLDB's & WDB's Please confirm that any increase in the quantities of these shall be supplied with additional cost	Bidder to note that this is lumpsum package and to supply all equipment as per the detailed engineering in the quoted price.
2	SECTION IV TECH SPEC PAGE 8/19 AND SCOPE MATRIX SI.NO 14	IS-1-17-2003-128-011 REV00 and SCOPE MATRIX	Earthing of lighting system: It is mentioned that the earthing shall be done by M/S BHEL , whereas in the scope of matrix it is indicated that the earthing of the lighting panel shall be carried out by the vendor, Please clarify.	Shall be considered as mentioned in scope Matrix.
3	Annexure-1, PAGE 8/9	DESIGN MEMORENDUM DOCUMENTS NO.: IS-4-DM-715-100-E112 REV 05.	Please arrange to provide the detailed specification for the LED type lighting fixtures.	Attached
4	SI.NO.18	SCOPE MATRIX	We understand that the supply of cable tray and its associated supports & accessories is arranged by M/S BHEL and as such the installation of the same shall also be arranged by M/S BHEL. Please confirm.	Bidder to follow scope Matrix.
5	-	ANNEX-D, HATCHED LOCATION FOR REFERENCE	In the hatched location of the drawing ,we understand that the marshaling yard is also under the scope of pricing of the illumination. Kindly refer the customer specification, wherein the Lux	Lightning for Marshalling Yard is not in the scope of Bidder
6	ANNEX-1, PAGE 8/9	DESIGN MEMORENDUM NO.: IS-4-DM-715-100-E112 REV -05	No CFL typr lamp & fixtures are available in the market. Please suggest alternate type in place of CFL type.	Consider LED Type instead of CFL Lamp for DC Lighting
7	CLAUSE NO 6.21 ENERGY SAVING SYSTEM	BID SPEC. NO.: DG/BSL-U-6/2011/T-1, R-0, VOLUME-IV-B	No energy saving system shall be considered	Shall be as per Lightning Design Memorandum

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SI. NO.	CLAUSE NO.	DOCUMENT NO.	Bidder Queries	BHEL Reply
COMMERCIAL				
1	CALUSE NO 12, PAGE 5/20 DELIVERY SCHEDULE	SPECIAL CONDITION OF CONTRACT (SCC) Enquiry No.:- 77/21/6058/TSK	As mentioned the delivery schedule of supply of material is 12 month from the date of LOI. Please note that duration for the supply of the material is very less and cannot be completed in this period , considereing the size & volume of the work. And as such you are requested to consider the delivery time. We understand that the delivery time shall be minimum 4 months for the date of manufacturing clarence to be given by M/S BHEL.	Shall be as per SCC
2	CLAUSE NO 16, PERFORMANCE BANK GUARANTEE (PBG) PAGE 6/20	SPECIAL CONDITION OF CONTRACT (SCC) Enquiry No.:- 77/21/6058/TSK	As per the govt. guideline the value of the performance bank guarantee shall be 3% whereas as per the GCC, it is mrntioned that the BG shall be 10% . We shall provide the PBG of 3% in place of 10% in the event of the PO is placed on us.	Shall be as per SCC
3	CLAUSE NO6.0, PAGE 1/9	NTT ENQUIRY NO- 77/21/6058/TSK DT.17/11/2021	Since the package is lumpsum basis and we need to work out to drive the items & quantities to quote for the total Package, and as such you are requested to extend the submission of the tender document upto 27/12/21	Noted.

TECHNICAL SPECIFICATION FOR LED LIGHTING

1.00.00

CODES AND STANDARDS FOR LED LUMINARIES

16101:2012	General Lighting. LEDs and LED modules Terms and definitions
16102(Part 1):2012	Self Ballasted LED Lamps for General Lighting Services. Part-1 Safety Requirements.
16102(Part 2):2012	Self Ballasted LED Lamps for General lighting Services. Part-2 Performance Requirements.
16103(Part I):2012	LED modules for General lighting Safety Requirements.
15885(Part 2/Sec. 13) :2012	Lamp control gear Part 2 particular Requirements Section 13 d.c. or a.c. Supplied Electronic control gear for LED modules
16104:2012	DC. or AC Supplied Electronic control gear For LED modules – Performance Requirements.
16105:2012	Method of Measurement of Lumen maintenance of Solid-state Light (LED) Sources.
16106:2012	Method of Electrical and photometric Measurements of Solid State Lighting (LED) Products
16107:2012	Luminaires Performance
16108:2012	Photobiological safety of Lamps and Lamp Systems
IS 513	Cold rolled low carbon steel sheets and strips
IS 12063	Classification of degree of protection provided by enclosures.
IS 14700	Electro magnetic compatibility (EMC) – Limits (Part 3/Sec. 2) for Harmonic current emission – THD < 15% (equipment, input current < 16 Amps. per phase.
IS 9000 (Part 6)	Environment testing: Test Z – AD: composite temperature/humidity cyclic test.
IS 15885	Lamp control gear: particular requirements for (Part 2/Sec. 13) DC or AC supplied electronic control gear IS 16004 – 1 and 2) for LED modules.
IS 4905	Method for random sampling

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2.00.00 ELECTRICAL INSTALLATION PRACTICES & MISCELLANEOUS

IS:1944	Code of practice for lighting of public thorough fare
IS:3646	Code of practice for interior illumination.
IS:5572	Classification of Hazardous areas (other than Mines) having flammable gases and Vapours for electrical installation
S:6665	Code of practice for industrial lighting.
.	National Electrical Code
-	Indian Electricity Rules.
-	Indian Electricity Act
IS:5	Colour for ready mixed paints & enamels.
IS:280	Mild steel wires for general engineering purposes.
IS:374	Electric ceiling type fans & regulators.
IS:732	Code of practice for electrical wiring installations.
IS:1255	Code of practice for installation and maintenance of power cables Upto and including 33KV rating.
IS:2062	Steel for general structural purposes
IS:2629	Recommended practice for hot-dip galvanizing of iron and steel.
IS:2633	Methods for testing uniformity of coating of zinc coated articles.
IS:2713	Tubular steel poles for overhead power lines.
IS:3043	Code of practice for earthing
IS:5216	Guide for safety procedures and practices in electrical work.
IS:5571	Guide for selection of electrical equipments for hazardous areas.
BS:6121	Mechanical cable glands

3.00.00 DESIGN CRITERIA FOR LED LUMINAIRES:

- LED Luminaires shall be used for the lighting of all the indoor & outdoor areas in bidder's scope. However for DC lighting, hazardous areas & aviation lighting etc. conventional type luminaires shall be used. However, aviation light in Lighting Mast shall be of LED type. In false ceiling area LED luminaires shall be recessed mounting type & in non-false ceiling area the LED luminaires shall be surface mounting type.

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- The individual lamp wattage for LED shall be upto 3 watt. Fractional wattage LEDs are also acceptable. The LED chip efficacy shall be min 120 Lm/W. The luminaire efficacy shall be not less than 80 Lm/W. Suitable heat sink shall be designed & provided in the luminaire. The LED used in the luminaires shall have colour rendering index (CRI) of Min 80. Colour designation of LED shall be “cool day light” (min 5700K) type for indoor areas. However for outdoor areas, the colour temperature of LED shall be min. 4000K, including rough & dust prone areas. LED shall conform to the LM 80 requirements.
- The max. junction temperature of LED shall be 85 deg C. Further the lumen maintenance at this temperature shall be min 90%. The THD of LED Luminaires shall be less than 10%. Further the EMC shall be as per IS 14700. The power factor of the luminaire shall not be less than 0.9. The marking on luminaire & safety requirements of luminaire shall be as per IS standards. Suitable heat sink with proper thermal management shall be designed & provided in the luminaire. The connecting wires used inside the system, shall be low smoke halogen free, fire retardant type and fuse protection shall be provided in input side specifically for LED luminaires.
- Care shall be taken in the design that there is no water stagnation anywhere in the housing of luminaire. The entire housing shall be dust and water proof protection as per IS 12063.

Driver Circuit

LED modules and drivers shall be compatible to each other. The LED module driver's ratings and makes shall be as recommended by corresponding LED chip manufacturer. LED Drivers shall have following control & protections:-

- Suitable precision current control of LED.
- Open Circuit Protection
- Short Circuit Protection
- Over Temperature Protection
- Overload Protection
- Surge Protection

TECHNICAL SPECIFICATION FOR LED LIGHTING

4.00.00 TESTS

4.01.00 For LED Fixture

- a) The contractor shall carry out the type tests as listed in this specification on the following types of LED fixtures to be supplied under this contract. The bidder shall indicate the charges for each of these type tests separately in the relevant price schedule of bid document and the same shall be considered for the evaluation of the bids.

LED fixtures (Type test shall be conducted on one rating each of following type of LED fixtures. Rating for test conduction shall be decided by the employer during detailed engineering)

- a) High bay fixture.
- b) Well glass fixture.
- c) Street light fixture
- d) Surface mounted type fixture.
- e) Recessed mounted type fixture.

The type tests charges shall be paid only for the test(s) actually conducted successfully under this contract and upon certification by the employer's engineer.

- b) The type tests shall be carried out in presence of the employer's representative, for which minimum 15 days notice shall be given by the contractor. The contractor shall obtain the employer's approval for the type test procedure before conducting the type test. The type test procedure shall clearly specify the test set-up, instruments to be used, procedure, acceptance norms, recording of different parameters, interval of recording, precautions to be taken etc. for the type test(s) to be carried out.
- c) In case the contractor has conducted such specified type test(s) within last five years as on the date of bid opening, he may submit during detailed engineering the type test reports to the owner for waiver of conductance of such type test(s). These reports should be for the tests conducted on the equipment similar to those proposed to be supplied under this contract and test(s) should have been either conducted at an independent laboratory or should have been witnessed by a client. The owner reserves the right to waive conducting of any or all the specified type test(s) under this contract. In case type tests are waived, the type test charges shall not be payable to the contractor.

Type test reports for LED as per standards for following shall be submitted for approval.

- 1. Visual and Dimension check
- 2. Proof of procurement of LEDs
- 3. Safety tests
 - a) Marking
 - b) Construction
 - c) Provision for Earthing

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- d) External and Internal wiring
- e) Protection against electrical shock
- f) Endurance and Thermal
- g) Insulation resistance & electrical strength
- h) Resistance to heat fire & tracking
- i) Resistance to Humidity

4. Fire Retardant test

5. Performance tests (electrical, Photometric color and Life)

6. Burn-in Test

7. Power Cycling

8. Temperature rise test

9. Emission Tests

- a) Radiated & conducted emission
- b) Harmonics & flickers

10. Immunity tests

In addition, following test reports to be submitted for LED chip/LED luminaire:

- a) LED parameters like Lumen per watt, CRI, Beam angle from manufacturer.
- b) LM 80/IS: 16105 report.
- c) LM 79/IS: 16106 report.

4.02.00 Acceptance Test and Routine Test

4.02.01 All lighting fixtures, lamps and other items shall be subjected to acceptance and routine test, as per relevant specified standards.

4.02.02 Junction boxes, switch boxes, receptacle enclosure etc. shall be subjected to physical and dimensional checks also.