

DEVELOPMENT OF PERMANENT CAMPUS (PHASE-I) FOR NALANDA UNIVERSITY

PACKAGE- 6A

TENDER FOR SUPPLY AND SAFE KEEPING OF LIGHT FIXTURE FOR VARIOUS BUILDINGS AT PROPOSED PERMANENT CAMPUS (PHASE I)

AT

NALANDA UNIVERSITY, AT RAJGIR, BIHAR.



TECHNICAL SPECIFICATIONS

(LIGHT FIXTURES)

MATERIAL SPECIFICATIONS

&

LIST OF APPROVED MAKES

DEVELOPMENT OF PERMANENT CAMPUS (PHASE-I) FOR NALANDA UNIVERSITY

EQUIPMENT & MATERIAL SPECIFICATION

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TECHNICAL GENERAL

The material lost shall be after confirmation of the Technical Particular, sampling of the products, submission of the Type Test Report, LM 79& 80, before conduct of PDI at factory works. The guidelines of the CPWD will be broadly followed.

ELECTRICAL MATERIAL SPECIFICATION

GENERAL :

Site Particulars:

System particulars

- a. Nominal system voltage – 230V & Tolerance as per IS
- b. Rated system voltage - 240V
- b. Frequency - 50Hz \pm 3%
- c. No. of phases – Single Phase & Neutral.
- d. System neutral - Solidly earthed

Tropical conditions

- a. Ambient temperature: 50 degree Celsius
- b. Relative humidity (avg.) : 60
- c. Isokeraunic level: 33
- d. Seismic Zone: Zone-4
- e. Climate type: hot and humid

The climatic conditions are prone to wide variations in ambient conditions and hence the equipment shall be of suitable design to work satisfactorily under these conditions.

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LIGHT FIXTURES

1.0 Scope:

The scope covers Supply & testing of different types of LED light fixtures.

2.0 Standards:

AS PER SCHEDULE OF LATEST INDIAN STANDARDS.

3.0 Type of fixtures: LED & Metal Halide (For 30m Mast)

4.0 General Requirement:

- All fixtures shall be complete with accessories necessary for installation whether so detailed under fixture description or not.
- Fixture housing, frame or canopy shall provide a suitable cover for the fixture outlet box or fixture opening.
- Fixtures and/or fixture outlet boxes shall be provided with hangers to adequately support the complete weight of the fixture. Design of hangers and method of fastening other than shown on the drawings or herein specified shall be submitted to the Architect/Consultant for approval.
- Pendant fixtures shall have adjustable height design for pendants / hanging system to match the finish level all through the area.
- Fixture shall be completely wired and constructed to comply with the regulations and standards for Electric Lighting Fixtures, unless otherwise specified. Fixtures shall bear manufacturer's name and the factory inspection label unless otherwise approved in writing.
- Adequate arrangement for Wiring within the fixture and for connection to the branch circuit wiring shall be provided for not less than 1.0/1.5 sq.mm. copper for 250volt application. Wire insulation shall suit the temperature conditions inside the fixture and wires bypassing the driver / heat sink shall be heat protected with a heat resistant sleeve.
- Metal used in lighting fixtures shall be not less than 22 SWG or heavier if so required to comply with the specification or standards. Sheet steel reflectors shall have a thickness of not less than 20 SWG. The metal parts of the fixtures shall be completely free from burrs and tool marks. Solder shall not be used as mechanical fastening device on any part of the fixture.
- Ferrous metal shall be bonderized and given a corrosion resistant phosphate treatment or other approved rust inhibiting prime coat to provide a rust-proof base before application of finish.

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- Non-reflecting surfaces such as fixture frames and trim shall be finished in baked enamel paint.
- Light reflecting surface shall be finished in baked white enamel having a reflection factor of not less than 80%. All parts of reflector shall be completely covered by finish and free from irregularities. Finish shall be capable of withstanding 72 hours exposure to an ultraviolet sun lamp placed 10 cm from the surface without discoloration, hardening or warping and retain the same reflection factor after exposure. Test results shall be furnished for each lot of fixtures.
- Fixture with visible frames shall have concealed hinged and catches. Pendant fixtures and lamp holders shall be provided with ball type Algiers or similar approved means. Recessed fixtures shall be constructed so as to fit into an acoustic tile ceiling or plaster ceiling without distorting either the fixture or the ceiling plaster rings/flanges shall be provided for plaster ceiling. Fixtures with hinged diffuser doors shall be provided with spring clips or other retaining device prevent the diffuser from moving.
- Detailed catalogue cuts for all fixtures, or, if so required by the Architect/Consultant sample fixtures shall be submitted for approval to the Architect/Consultant/Client before orders for the fixtures are placed. Shop drawings for non-regular/standard fixture types shall be submitted for approval to the Architect/Consultant/Client.
- The Fixtures should be Operational for 220-240 V Single Phase 50 HZ AC Supply and shall be protected with internal surge protection.
- The LED modules should be from Cree/Nichia/Philips Lumi Leds/ Osram Only with efficiency of a min 100 lm/watt and efficacy of fixtures should be greater than 80 lm/w for both indoor and outdoor fixtures, built with Integral driver.
- The Min degree of Protection for Indoor Fixtures should be IP20 and IP65 for Outdoor/ Semi Indoor Fixtures.
- The %THD of Fixtures shall be <10 % (except specified in the BOQ) and drivers shall be provided with miswiring/ overload and short circuit protections
- Life Span of the LEDs used in the Luminaire shall be 50,000 hours at 70% light output. Manufacture shall submit the Test Report for the same.
- For Indoor applications the housing should be made of die cast/ Metal Housing and diffusers should be polycarbonate / glass.
- Outdoor fixtures should be with die aluminium / extruded aluminium housing & shall confirm to the IEC 60598 / IS 10322.
- The Fixtures should be prewired up to the terminal block and easy to mount and Install and maintain if necessary.
- The fixture should comply LM79-08 certification criteria and also module should be backed with LM80-08 Certificate from the OEM.
- The fixtures should be warranted for a period of 5yrs from the date of Installation by the manufacturer.
- The manufactures shall submit the proof of procurement of LEDs from the LED Manufactures and also LM-80 test reports of specific LED used in Luminaire.

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SMART LIGHT CONTROL SYSTEM FOR EXTERNAL LIGHTING

1.0 Scope:

The scope covers Supply & testing of various devices & hardware, software for smart lighting control system for external lighting.

2.0 Standards:

AS PER SCHEDULE OF LATEST INDIAN STANDARDS & IEEE 802.15.4

3.0 Type of System: Wire Less Communication between field device & gateway – software.

4.0 General Requirement:

- Field Devices i.e. devices which are to be connected with fixture / ballast shall be mounted inside the pole junction.
- Field devices shall be robust since they will be fixed inside the pole, there shall be no effect to its lifespan due to this.
- Dedicated protocol & media shall be used & there shall not be any disturbance to any other communication lines due to this system.
- Pendant fixtures shall have adjustable height design for pendants / hanging system to match the finish level all through the area.
- No UPS or additional power requirement shall be required for field devices.
- Devices shall be suitable to Input Voltage 140 to 270 V
- Power Consumption not exceeding 2.5 W
- The System shall be able to measure Voltage, Current, Power Factor & Burning Hours of each fixture & generate a comprehensive report at regular interval as per programming
- The system shall be able to generate a pop-up alarm in case of any fault in any of the fixture
- Inbuilt Surge Protection shall be provided in addition to protection for Over load & short circuit
- Device shall be minimum IP 65
- E security over the communication shall be with 128 AES Encryption or similar strength
- All required license / subscriptions for at least 5 years shall be made available free of cost with the system.

DIGITAL ADDRESSABLE LIGHTING INTERFACE SYSTEM

1.0 Scope:

The scope covers Supply & Testing of various devices & hardware, software for DALI based lighting control system for Internal lighting.

2.0 Standards:

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AS PER SCHEDULE OF LATEST INDIAN STANDARDS.

3.0 Type of System: Wired DALI Communication between Day Light Sensing Sensors, other field device like key pads, gateways & controller – software.

4.0 General Requirement:

- System shall be able to sense the day light & presence of human & give inputs to the controller & accordingly lighting shall be dim or ON – Off automatically.
- Controller shall be DIN Rail Infusion type, Ethernet enabled, Plug-and-play design with RS-232 & OR RS-485 Ports as required, 120 low voltage stations, Clips on 35mm DIN rail. Built-in USB port, SD Memory Card, fast processor & shall runs on upgradeable internal software. Should have in built access over internet for trouble shooting, maintenance, firmware upgrades and updates.
- Power Supply shall be 36V-3amp or as required, DIN rail mount with Convection cooling (no fan).
- DMX Dali Gateway can be operated as a DMX transmitter and as a DMX receiver simultaneously. Suitable for clips on to a 35-mm DIN rail & maximum DMX addresses of 512 & Dali for 64 Ballast.
- Station bus cable shall be with two conductors, Free topology with no polarity & max 90pF/m and minimum diameter 1.3mm²

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LIST OF APPROVED MAKE / MANUFACTURER

01) Light Fixture	:	Wipro/ Bajaj/ Philips/ Schreder/ Trilux, / Disano / TransRail (Transrail for High mast only) (Note: Sample to be approved, rights of rejection of any fixture of any make will be with client)
02) High Mast Pole system	:	Crompton//Bajaj/ Disano / KLite / TransRAIL (Note: Sample to be approved, rights of rejection of any fixture of any make will be with client)
03) DALI System	:	Legrand – Vantage, Schneider, Hager - Berker
04) Smart External Lighting System	:	Bajaj, Wipro, Keselec Schreder, Trilux
05) LED Chip (Light Source)	:	Cree/Nichia/Philips Lumi Leds/ Osram

Special Notes:

- The successful tenderer will have to supply the makes from above in consultation with the Client/Architect/Consultant without any extra cost.
- The Tender, shall provide GTPs (including valid certified LM79, LM80, Photometry Curve, IES files in softcopy) for quoted light fixtures along with catalogues in a separate cover. However, the final decision for accepting the same would be of Client/Architect/Consultants.
- Pre-despatch inspection shall be conducted before supply.
- The successful tenderer will have to place order directly to the manufacturer & the specified replacement warranty & after sales support shall be from manufacturer (in writing) only.
- The Client/Architect/Consultants have right to check the challans of supplier.
- Make of components required to be used by contractor to complete the installation, if not mentioned anywhere, shall be required to GOT IT APPROVED by Client/Architect/Consultant before installation in writing manner.
- Contractor shall submit the samples for approval of the Client/Architect/Consultant as per milestone schedule given in NIT document.

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- Tenderer has to submit the lux design sheet as per below listed area OR as asked by Consultant / Architect /Client / PMC along with Lux level report for each area before supplying the Fixtures.

Sr. No.	Type of Buildings or Area of Usage or Nature occupancy	Recommended Lux Level as per IS/NBC
1	ENTRANCE LOBBY / PASSEGES	150
2	TOILETS & UTILIES AREA / SUPPORTING FACILITIES	100
3	KITCHEN	300
4	HOUSE KEEPING	100
5	LIFT/ STAIR AREA	50-100
6	ADMINISTRATIVE OFFICE	300
7	VERANDAH	100
8	RECEPTION / WAITING LOUNGE	200
9	LAUNDRY	300
10	CLASS ROOM /GREEN ROOM	300
11	MULTIPURPOSE HALL	300
12	CONFERENCE ROOM /DISCUSSION/ CABINS	300
13	BANK	300
14	WORKSHOP AREA	200
15	LAB AREA	300

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SCHEDULE OF QUANTITY FOR LIGHT FIXTURES FOR NALANDA UNIVERSITY							
S.No.	Type of Fixture (For ready reference only at present)	BOQ Line items	Quantity - Total Non-Residential		Milestone 1 (60 days from LOA)	Milestone 2 (six months from LOA)	Milestone 3 (Twelve months from LOA)
		-					
1	COB cyliner-15w	1	Each	2,462		1,256	1,256
2	COB cyliner-25w	2	Each	2,298		1,172	1,172
3	COB cyliner-40w	3	Each	2,189	2,010		
4	Surfaced downligh-18w	4	Each	615	627		
5	Surfaced downligh-24w	5	Each	1,441	156	657	657
6	Recessed donlight-12w	6	Each	930	351	299	299
7	recessed downlight 18w	7	Each	94	96		
8	9w T5	8	Each	257	83	90	90
9	Liner Led light-30w	9	Each	399	13	197	197
10	Surfaced IP protection-utility 36w	10	Each	402	47	182	182
11	Bulk head-10w	11	Each	73	52	11	11
12	Liner -sea through type fixtuer	12	Each	64	14	26	26
13	Ring 1000mm	13	Each	33	8	13	13
14	Ring 1500mm	13	Each	31	6	13	13
15	foot light 9w	14	Each	293	146	77	77
16	Bollards option 2	15	Each	164	56	56	56
17	Post top option 1	16	Each	1782	909	909	
18	Ground Burial Fixture	25	Each	48	16	16	16
19	Wall Washer	18,19	Each	48	16	16	16
20	Bracket Light Fixture-10W Fixture	23	Each	52	53		
21	Bracket Light Fixture-20W Fixture	24	Each	118	120		
22	Indoor Sports Midbay LED	17	Each	44			45
23	Street Light Fixtre with Single Pole	20	Each	942	384	289	289
24	High Mast 20m - 250W	22		6	6		
25	High Mast 30m - 2000W Cricket Pavallian	21		4		4	
				14,019.00	4,606.00	4,716.00	4,761.00

Note: The University may reschedule the milestone as per the project requirement.