



निविदा / Enquiry

भारत हेवी इलेक्ट्रिकल्स लिमिटेड / BHARAT HEAVY
ELECTRICALS LIMITED
पारेषण व्यापार समूह / Transmission Business Group
सामग्री प्रबंधन / Materials Management

Project : TSGENCO YADADRI TPS

Enquiry No	Enquiry Date	Rev No	Rev Date	PI No	Enquiry Type	Inspection by	Due Dt	Commercial Comments	Technical Comments	Signing Authority
20Q2200097	11-Oct-21	0		20I2200020	Package		26-Oct-21	As per NIT. Floated through NIC portal.	Technical Requirement as per enclosed Revised Specification No. TB-387-316-012 Rev-01.	Shipra Gupta

Equipment Detail

SN	Material Code	Equipment	HSN Code	Phy Unit	Qty	Plan Dt	Comments
1	TB9200005395	SUPPLY- ILLUMINATION EQUIPMENT : DC DISTRIBUTION PANEL COMPRISING OF 240V BUS, TWO(2) NO. 63A MCCB AS INCOMER, ONE (1) NO. BUS COUPLER AND 8 NOS 32A TWO POLE MCCB AS OUTGOING FEEDERS	0	NO	13.0000		REFER TS & BOQ ITEM NO. 54
2	TB9200003353	SUPPLY- ILLUMINATION EQUIPMENT : OUTDOOR POWER RECEPTACLE FOR OIL FILTRATION UNIT (250A)	0	NO	2.0000		REFER TS & BOQ ITEM NO. 55
3	TB9200003474	SUPPLY- ILLUMINATION EQUIPMENT : 30M HIGH LIGHTING HIGH MAST WITH LANTERN CARRIAGE (WINCH TYPE) FOR SWITCHYARD LIGHTING ALONG WITH FEEDER PILLAR & JUNCTION BOX (JB-M)	0	NO	4.0000		REFER TS & BOQ ITEM NO. 40
4	TB9200005596	SUPPLY- ILLUMINATION EQUIPMENT : SINGLE ARM SWAGED AND WELDED STEEL POLE WITH JUNCTION BOX AND ALL ACCESSORIES (11M HIGH LIGHTING POLE WITH 1.8M OVER-HANG PROJECTION FOR STREET-LIGHTING)	0	NO	156.0000		REFER TS & BOQ ITEM NO. 41
5	TB9200001721	SUPPLY- ILLUMINATION EQUIPMENT : 4.5M HIGH LIGHTING POLE FOR POST-TOP LANTERN	0	NO	15.0000		REFER TS & BOQ ITEM NO. 42
6	TB9200005306	SUPPLY- ILLUMINATION EQUIPMENT : CEILING FANS 1400MM SWEEP WITH ELECTRONIC REGULATOR, FAN HOOK, SUSPENSION ROD ETC.	0	NO	22.0000		REFER TS & BOQ ITEM NO. 16
7	TB9200002821	SUPPLY- ILLUMINATION EQUIPMENT : 400MM SWEEP WALL MOUNTED FAN	0	NO	20.0000		REFER TS & BOQ ITEM NO. 17
8	TB9200003425	SUPPLY- ILLUMINATION EQUIPMENT : EXHAUST FANS - 1000 CMH 7MM WC EXHAUST FANS WITH METAL SHEET CRAWL & BIRD SCREEN FOR PANTRY	0	NO	3.0000		REFER TS & BOQ ITEM NO. 18
9	TB9200003435	SUPPLY- ILLUMINATION EQUIPMENT : EXHAUST FANS - 1500 CMH 7MM WC EXHAUST FANS WITH METAL SHEET CRAWL & BIRD SCREEN FOR PANTRY	0	NO	2.0000		REFER TS & BOQ ITEM NO. 19
10	TB9200003446	SUPPLY- ILLUMINATION EQUIPMENT : EXHAUST FANS - 2000 CMH 7MM WC EXHAUST FANS WITH METAL SHEET CRAWL & BIRD SCREEN FOR PANTRY	0	NO	1.0000		REFER TS & BOQ ITEM NO. 20
11	TB9200003411	SUPPLY- ILLUMINATION EQUIPMENT : EXHAUST FANS - 600 CMH 7MM WC EXHAUST FANS WITH METAL SHEET CRAWL & BIRD SCREEN FOR TOILETS	0	NO	1.0000		REFER TS & BOQ ITEM NO. 21
12	TB9200004475	SUPPLY- ILLUMINATION EQUIPMENT : ADJUSTABLE FREE-STANDING ALUMINIUM LADDER	0	NO	1.0000		REFER TS & BOQ ITEM NO. 23
13	TB9200002641	SUPPLY- ILLUMINATION EQUIPMENT : PORTABLE EMERGENCY LIGHTS	0	NO	4.0000		REFER TS & BOQ ITEM NO. 24
14	TB9200005313	SUPPLY- ILLUMINATION EQUIPMENT : AIR CONDITIONING SUPPLY PANEL WITH 125A TPN MCCB INCOMMER & 8 NOS 32A TP MCB OUTGOING FEEDERS	0	NO	6.0000		REFER TS & BOQ ITEM NO. 26
15	TB9200005326	SUPPLY- ILLUMINATION EQUIPMENT : 32A RECEPTACLES WITH TP MCB FOR AC UNIT	0	NO	15.0000		REFER TS & BOQ ITEM NO. 27

SN	Material Code	Equipment	HSN Code	Phy Unit	Qty	Plan Dt	Comments
16	TB9200004481	SUPPLY- ILLUMINATION EQUIPMENT : MAIN LIGHTING DISTRIBUTION BOARD (MLDB) COMPRISING 415V, 400A, 3-PH, 4-WIRE BUS AND TWO (2) NO. LIGHTING TRANSFORMER: 250KVA WITH TWO (2) NO. INCOMER 400A TPN MCCB, ONE (1) NO. BUS COUPLER, OUTGOING FEEDERS 6 NO. 100A TPN MCCB ON EACH BUS SECTION (INCLUSIVE OF CT, VOLTMETER, AMMETER, CONTACTOR WITH TIMER, INDICATING LAMPS ETC)	0	NO	2.0000		REFER TS & BOQ ITEM NO. 1
17	TB9200004496	SUPPLY- ILLUMINATION EQUIPMENT : EMERGENCY LIGHTING DISTRIBUTION BOARD (ELDB) COMPRISING 415V, 150A, 3-PH, 4-WIRE BUS AND ONE (1) NO. LIGHTING TRANSFORMER: 100KVA WITH ONE (1) NO. INCOMER 150A TPN MCCB, OUTGOING FEEDERS 6 NO. 63A TPN MCCB (INCLUSIVE OF CT, VOLTMETER, AMMETER, CONTACTOR WITH TIMER, INDICATING LAMPS ETC)	0	NO	1.0000		REFER TS & BOQ ITEM NO. 2
18	TB9200004503	SUPPLY- ILLUMINATION EQUIPMENT : 415 V A.C. INDOOR TYPE LIGHTING PANEL (NORMAL) (TYPE LP-2)	0	NO	2.0000		REFER TS & BOQ ITEM NO. 3
19	TB9200004511	SUPPLY- ILLUMINATION EQUIPMENT : 415 V A.C. INDOOR LIGHTING PANEL (EMERGENCY) (TYPE LP-3)	0	NO	1.0000		REFER TS & BOQ ITEM NO. 4
20	TB9200004441	SUPPLY- ILLUMINATION EQUIPMENT : DC EMERGENCY LIGHTING PANEL INDOOR	0	NO	1.0000		REFER TS & BOQ ITEM NO. 5
21	TB9200004523	SUPPLY- ILLUMINATION EQUIPMENT : SWITCHBOARD (TYPE S-1)	0	NO	38.0000		REFER TS & BOQ ITEM NO. 6
22	TB9200004536	SUPPLY- ILLUMINATION EQUIPMENT : SWITCHBOARD (TYPE S-2)	0	NO	28.0000		REFER TS & BOQ ITEM NO. 7
23	TB9200005331	SUPPLY- ILLUMINATION EQUIPMENT : 20A RECEPTACLES WITH MCB FOR VENTILATION FANS	0	NO	20.0000		REFER TS & BOQ ITEM NO. 28
24	TB9200000543	SUPPLY- ILLUMINATION EQUIPMENT : EMERGENCY OUTDOOR LIGHTING PANEL	0	NO	4.0000		REFER TS & BOQ ITEM NO. 30
25	TB9200000565	SUPPLY- ILLUMINATION EQUIPMENT : STREET LIGHTING PANEL	0	NO	3.0000		REFER TS & BOQ ITEM NO. 31
26	TB9200005345	SUPPLY- ILLUMINATION EQUIPMENT : OUTDOOR, LOCKABLE TYPE ISOLATING SWITCH (TYPE FLP)	0	NO	1.0000		REFER TS & BOQ ITEM NO. 32
27	TB9200005353	SUPPLY- ILLUMINATION EQUIPMENT : DB WITH TRANSFORMER (FOR WELDING RECEPTACLES)	0	NO	1.0000		REFER TS & BOQ ITEM NO. 33
28	TB9200005363	SUPPLY- ILLUMINATION EQUIPMENT : OUTDOOR JUNCTION BOXES WITH 4-WAY TERMINALS SUITABLE FOR LOOP-IN LOOP-OUT UPTO 4CX16 SQ. MM. AL CONDUCTOR AND TAP OFF OF TWO NOS 10 SQMM WIRE (JB SHALL BE SUITABLE FOR CONDUIT SI E OF UPTO 50MM)	0	NO	65.0000		REFER TS & BOQ ITEM NO. 34
29	TB9200003182	SUPPLY- ILLUMINATION EQUIPMENT : RECEPTACLE - 63A, 415V 3-PHASE, 4-PIN INTERLOCKED INDUSTRIAL GRADE ROTATRY SWITCH SOCKET, OUTDOOR RECEPTACLE - RC TYPE (NECESSARY ARRANGEMENT FOR LOOPING INCOMING SUPPLY CABLES SHALL BE PROVIDED)	0	NO	31.0000		REFER TS & BOQ ITEM NO. 35
30	TB9200001194	SUPPLY- ILLUMINATION EQUIPMENT : CARTWHEEL MOUNTED ALUMINIUM LADDER AS PER TECHNICAL SPECIFICATION	0	NO	1.0000		REFER TS & BOQ ITEM NO. 22
31	TB9200004404	SUPPLY- ILLUMINATION EQUIPMENT : GALVANI ED STEEL RIGID CONDUIT OF 25MM SI E	0	MTR	1600.0000		REFER TS & BOQ ITEM NO. 44 (WITH ACCESSORIES)
32	TB9200004372	SUPPLY- ILLUMINATION EQUIPMENT : EARTHING MATERIAL - GS WIRE FOR EARTHING OF SI E 16 SWG	0	MTR	6000.0000		REFER TS & BOQ ITEM NO. 52
33	TB9200003525	SUPPLY- ILLUMINATION EQUIPMENT : GALVANI ED RIGID CONDUIT OF 20MM SI E WITH ACCESSORIES	0	MTR	6500.0000		REFER TS & BOQ ITEM NO. 43
34	TB9200003545	SUPPLY- ILLUMINATION EQUIPMENT : GALVANI ED HEAVY DUTY STEEL CONDUIT OF 25MM SI E WITH ACCESSORIES WITH ADDITIONAL EPOXY COATING FOR CORROSIVE AREAS	0	MTR	50.0000		REFER TS & BOQ ITEM NO. 56

SN	Material Code	Equipment	HSN Code	Phy Unit	Qty	Plan Dt	Comments
35	TB9200003552	SUPPLY- ILLUMINATION EQUIPMENT : GALVANI ED RIGID CONDUIT OF 40MM SI E WITH ACCESSORIES	0	MTR	100.0000		REFER TS & BOQ ITEM NO. 45
36	TB9200003581	SUPPLY- ILLUMINATION EQUIPMENT : 1C, 2.5 SQMM PVC INSULATED STRANDED CU. WIRE RED/YELLOW/BLUE/BLACK/GREY (ISI MARKED WITH VALID CML NUMBER). COLOUR CODED.	0	MTR	18000.0000		REFER TS & BOQ ITEM NO. 46
37	TB9200003591	SUPPLY- ILLUMINATION EQUIPMENT : 1C, 4 SQMM PVC INSULATED STRANDED CU. WIRE RED/YELLOW/BLUE/BLACK/GREY (ISI MARKED WITH VALID CML NUMBER). COLOUR CODED.	0	MTR	8000.0000		REFER TS & BOQ ITEM NO. 47
38	TB9200004462	SUPPLY- ILLUMINATION EQUIPMENT : 50 MM GI CONDUITS	0	MTR	100.0000		REFER TS & BOQ ITEM NO. 48
39	TB9200004454	SUPPLY- ILLUMINATION EQUIPMENT : 100 MM GI CONDUITS	0	MTR	100.0000		REFER TS & BOQ ITEM NO. 49
40	TB9200001753	SUPPLY- ILLUMINATION EQUIPMENT : 35X6 MM GI FLAT FOR EARTHING	0	MTR	200.0000		REFER TS & BOQ ITEM NO. 50
41	TB9200001766	SUPPLY- ILLUMINATION EQUIPMENT : 25X3 MM GI FLAT FOR EARTHING	0	MTR	200.0000		REFER TS & BOQ ITEM NO. 51
42	TB9200004443	SUPPLY- ILLUMINATION EQUIPMENT : EARTHING MATERIAL - GI WIRE FOR EARTHING OF SI E 12 SWG	0	MTR	1500.0000		REFER TS & BOQ ITEM NO. 53
43	TB9200004546	SUPPLY- ILLUMINATION EQUIPMENT : SWITCHBOARD (TYPE S-3)	0	NO	11.0000		REFER TS & BOQ ITEM NO. 8
44	TB9200005885	SUPPLY- ILLUMINATION EQUIPMENT : POST TOP LANTERN FIXTURE LED TYPE 45W	0	NO	15.0000		REFER TS & BOQ ITEM NO. 39
45	TB9200005995	SUPPLY- ILLUMINATION EQUIPMENT : JB FOR SUMP PUMP	0	NO	2.0000		REFER TS & BOQ ITEM NO. 58
46	TB9200005874	SUPPLY- ILLUMINATION EQUIPMENT : 1X150 WATTS LUMINARIE WITH HPSV LAMP AND CONTROL GEAR FOR BUILDING PERIPHERY AND STREET-LIGHTING (TYPE TA)STREET LIGHTING FIXTURES 100W LED	0	NO	156.0000		REFER TS & BOQ ITEM NO. 38
47	TB9200005774	SUPPLY- ILLUMINATION EQUIPMENT : INDOOR RECEPTACLE (TYPE RA)	0	NO	26.0000		REFER TS & BOQ ITEM NO. 9
48	TB9200005782	SUPPLY- ILLUMINATION EQUIPMENT : INDOOR RECEPTACLE (TYPE RB)	0	NO	18.0000		REFER TS & BOQ ITEM NO. 10
49	TB9200005792	SUPPLY- ILLUMINATION EQUIPMENT : INDOOR LIGHTING FIXTURES (TYPE DA)/INDUSTRIAL BATTEN 40W LED	0	NO	130.0000		REFER TS & BOQ ITEM NO. 11
50	TB9200005804	SUPPLY- ILLUMINATION EQUIPMENT : INDOOR LIGHTING FIXTURES (TYPE DD)/RECESS MOUNTED 600X600 MM 30W LED	0	NO	140.0000		REFER TS & BOQ ITEM NO. 12
51	TB9200005816	SUPPLY- ILLUMINATION EQUIPMENT : INDOOR LIGHTING FIXTURES (TYPE DE)/CORROSION & JET PROOF INDUSTRIAL BATTEN 40W LED	0	NO	27.0000		REFER TS & BOQ ITEM NO. 13
52	TB9200005821	SUPPLY- ILLUMINATION EQUIPMENT : EMERGENCY DC LIGHTING FIXTURES (TYPE CD)/DOWN LIGHT DC LED FIXTURES	0	NO	15.0000		REFER TS & BOQ ITEM NO. 14
53	TB9200005831	SUPPLY- ILLUMINATION EQUIPMENT : EMERGENCY DC LIGHTING FIXTURES (TYPE IA)/BULKHEAD DC LED FIXTURES	0	NO	30.0000		REFER TS & BOQ ITEM NO. 15
54	TB9200005856	SUPPLY- ILLUMINATION EQUIPMENT : 2X400W SWITCHYARD FLOOD-LIGHTING LUMINAIRE WITH HPSV LAMP AND CONTROL GEAR (TYPE PD)/FLOOD LIGHTING FIXTURES 400W LED	0	NO	590.0000		REFER TS & BOQ ITEM NO. 36

SN	Material Code	Equipment	HSN Code	Phy Unit	Qty	Plan Dt	Comments
55	TB9200005841	SUPPLY- ILLUMINATION EQUIPMENT : ESCAPE LIGHTING LUMINAIRE WITH EXIT SIGN FITTED (TYPE EX) LED TYPE	0	NO	20.0000		REFER TS & BOQ ITEM NO. 25
56	TB9200005863	SUPPLY- ILLUMINATION EQUIPMENT : 2X250W SWITCHYARD FLOOD-LIGHTING LUMINAIRE WITH HPSV LAMP AND CONTROL GEAR (TYPE PC)/FLOOD LIGHTING FIXTURES 200W LED	0	NO	1.0000		REFER TS & BOQ ITEM NO. 37
57	TB9200000535	SUPPLY- ILLUMINATION EQUIPMENT : OUTDOOR SUB-LIGHTING PANEL (TYPE SLP)	0	NO	8.0000		REFER TS & BOQ ITEM NO. 29

Instructions to Bidders

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In your own interest, you are advised to carefully read “the instructions to bidders”. Incomplete bids and/or bids not complying with tender conditions shall be treated as non-responsive and are likely to be ignored.

In case Tender Documents are not received within 7 days of this E-mail message, intimate BHEL accordingly. If no intimation is received, it will be considered that you have received tender enquiry and delay in submission offer due to late receipt of tender documents will not be entertained.

You are requested to submit your most competitive offer as stated in Terms & conditions.

BHEL reserves the right to opt for reverse auction for obtaining best prices.

Offers Through E-MAIL / FAX / E-Procurement Portal:WHOSOEVER DESIRES TO SEND OFFERS ON THEIR OWN RISK (COMPLETE IN ALL RESPECTS) VIA E-MAIL or FAX HAVE TO SEND THE OFFERS TO THE COMMON E-MAIL ADDRESS tenderbox@bhel.in or 0120-6748581 FAX or bhel.abc.procure.com as instructed.THE RECEIVED EMAIL OFFERS WILL BE PRINTED BY PURCHASE COORDINATOR AND PUT THEM INTO COVERS AS PER CONVENTIONAL METHOD FOR TENDER OPENING I.E., TECHNO COMMERCIAL & PRICE OFFER SHALL BE PUT INTO TWO SEPARATE COVERS AND BOTH THE COVERS ARE KEPT IN THIRD COVER DULY SUPER SCRIBING ENQY. NO. AND DUE DATE. OFFERS SENT TO ANY OTHER E-MAIL ID or FAX NO AND INCOMPLETE OFFERS SHALL NOT BE CONSIDERED FOR EVALUATION PURPOSE.The venders who has sent offers with password,the passwords are to be forwarded to email id:tenderbox@bhel.in

It is suggested that the bidders are advised to send the files with 'password protection'.

भारत हेवी इलेक्ट्रिकल्स लिमिटेड के लिए / for BHARAT HEAVY ELECTRICALS LTD

Please acknowledge the receipt of tender enquiry and e-mail/fax back this letter by ticking the appropriate item below.

We acknowledge the receipt of tender.

(a) The offer against subject enquiry shall be submitted by the scheduled date and time.

(b) We regret to quote. The item in reference is out of our manufacturing range.

(c) We regret because of our prior commitments.

(d) Any other reason.

To
Shipra Gupta
Bharat Heavy Electricals Limited
Transmission Business Group
Tower-A,5th Floor,
Advant Navis IT Business Park,
Plot No-7,Sector-142,Expressway Noida
Noida-201305
Distt. Gaut am BudhNagar,U.P
Ph: 0120-6748137

हस्ताक्षर और निविदाकार की सील / Signature and Seal of Tenderer

Enquiry No : 20Q2200097 **Enquiry Date:** 11-Oct-21



निविदा / Enquiry

भारत हेवी इलेक्ट्रिकल्स लिमिटेड / BHARAT HEAVY
ELECTRICALS LIMITED
पारेषण व्यापार समूह / Transmission Business Group
सामग्री प्रबंधन / Materials Management

Project : TSGENCO YADADRI TPS

Enquiry No	Enquiry Date	Rev No	Rev Date	PI No	Enquiry Type	Inspection by	Due Dt	Commercial Comments	Technical Comments	Signing Authority
20Q2200098	11-Oct-21	0		20I2200019	Package		26-Oct-21	As per NIT. Floated through NIC portal.	Technical Requirement as per enclosed Revised Specification No. TB-387-316-012 Rev-01.	Shipra Gupta

Equipment Detail

SN	Material Code	Equipment	HSN Code	Phy Unit	Qty	Plan Dt	Comments
1	TB8200005525	SPARES- ILLUMINATION EQUIPMENT : CLOCKSITCH TYPE TIME SWITCH	0	NO	10.0000		
2	TB8200005533	SPARES- ILLUMINATION EQUIPMENT : 1-POLE 20 AMPS MINIATURE CIRCUIT BREAKERS (M.C.BS)	0	NO	10.0000		
3	TB8200005571	SPARES- ILLUMINATION EQUIPMENT : 15AMP RECEPTACLES	0	NO	10.0000		
4	TB8200005582	SPARES- ILLUMINATION EQUIPMENT : 63AMP RECEPTACLES	0	NO	10.0000		
5	TB8200005544	SPARES- ILLUMINATION EQUIPMENT : 2-POLE 20 AMPS MINIATURE CIRCUIT BREAKERS (M.C.BS)	0	NO	10.0000		
6	TB8200005556	SPARES- ILLUMINATION EQUIPMENT : 2-POLE 16 AMPS MINIATURE CIRCUIT BREAKERS (M.C.BS)	0	NO	10.0000		
7	TB8200005565	SPARES- ILLUMINATION EQUIPMENT : 5AMP RECEPTACLES	0	NO	10.0000		
8	TB8200005965	SPARES- ILLUMINATION EQUIPMENT : DRIVER OF 1X150 WATTS LUMINARIE WITH HPSV LAMP AND CONTROL GEAR FOR BUILDING PERIPHERY AND STREET-LIGHTING (TYPE TA)/STREET LIGHTING FIXTURES 100W LED	0	NO	10.0000		
9	TB8200005956	SPARES- ILLUMINATION EQUIPMENT : DRIVER OF 2X250W SWITCHYARD FLOOD-LIGHTING LUMINAIRE WITH HPSV LAMP AND CONTROL GEAR (TYPE PC)/FLOOD LIGHTING FIXTURES 200W LED	0	NO	10.0000		
10	TB8200005945	SPARES- ILLUMINATION EQUIPMENT : DRIVER OF 2X400W SWITCHYARD FLOOD-LIGHTING LUMINAIRE WITH HPSV LAMP AND CONTROL GEAR (TYPE PD)/FLOOD LIGHTING FIXTURES 400W LED	0	NO	20.0000		
11	TB8200005925	SPARES- ILLUMINATION EQUIPMENT : DRIVER OF EMERGENCY DC LIGHTING FIXTURES (TYPE CD)/DOWN LIGHT DC LED FIXTURE	0	NO	10.0000		
12	TB8200005932	SPARES- ILLUMINATION EQUIPMENT : DRIVER OF EMERGENCY DC LIGHTING FIXTURES (TYPE IA)/BULKHEAD DC LED FIXTURE	0	NO	10.0000		
13	TB8200005892	SPARES- ILLUMINATION EQUIPMENT : DRIVER OF INDOOR LIGHTING FIXTURES (TYPE DA)/INDUSTRIAL BATTEN 40 W LED	0	NO	10.0000		
14	TB8200005905	SPARES- ILLUMINATION EQUIPMENT : DRIVER OF INDOOR LIGHTING FIXTURES (TYPE DD)/RECESS MOUNTED 600X600 MM 30 W LED	0	NO	10.0000		
15	TB8200005915	SPARES- ILLUMINATION EQUIPMENT : DRIVER OF INDOOR LIGHTING FIXTURES (TYPE DE)/CORROSION AND JET PROOF INDUSTRIAL BATTEN 40 W LED	0	NO	10.0000		
16	TB8200005974	SPARES- ILLUMINATION EQUIPMENT : DRIVER OF POST TOP LANTERN FIXTURE LED TYPE 45 W	0	NO	10.0000		
17	TB8200005985	SPARES- ILLUMINATION EQUIPMENT : LIGHTING FIXTURES LED EACH TYPE	0	NO	10.0000		

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To
Shipra Gupta
Bharat Heavy Electricals Limited
Transmission Business Group
Tower-A,5th Floor,
Advant Navis IT Business Park,
Plot No-7,Sector-142,Expressway Noida
Noida-201305
Distt. Gaut am BudhNagar,U.P
Ph: 0120-6748137

हस्ताक्षर और निविदाकार की सील / Signature and Seal of Tenderer

Enquiry No : 20Q2200098 **Enquiry Date:** 11-Oct-21

**BHARAT HEAVY ELECTRICALS LIMITED****Transmission Business Group, NOIDA**

Sub-Contracting Management

Tower-A, 5th Floor

Advant Navis IT Business Park

Plot No-7, Sector-142, Expressway Noida

Noida-201305

Distt. Gautam Budhnagar, UP.

Work Indent (EN2200192)

Work Indent Number : EN2200192

Project : TSGENCO YADADRI TPS

Work Indent Date : 22 Sep, 2021

TBG Sector : TBSS

Revision Number: 0

Type of Package : ETC

Revision Date :

Name of Package : REVISED ILLUMINATION ETC PACKAGE

Currency : INR

Remarks: AS PER TS TB-387-316-012 REV 01

Sr. No.	Description Of Item	SAC Code	Quantity	Unit	Unit Rate	AMOUNT
1	ETC of Main Lighting Distribution Board (MLDB) comprising 415V, 400A, 3-Ph, 4-wire bus and two (2) no. Lighting transformer: 250kVA with Two (2) No. Incomer 400A TPN MCCB, One (1) No. Bus Coupler, Outgoing feeders 6 No. 100A TPN MCCB on each Bus Section (Inclusive of CT, Voltmeter, Ammeter, Contactor with timer, indicating lamps etc)		2.00	Nos.	0.00	0.00
2	ETC of Emergency Lighting Distribution Board (ELDB) comprising 415V, 150A, 3-Ph, 4-wire bus and one (1) no. Lighting transformer: 100kVA with One (1) No. Incomer 150A TPN MCCB, Outgoing feeders 6 No. 63A TPN MCCB (Inclusive of CT, Voltmeter, Ammeter, Contactor with timer, indicating lamps etc)		1.00	Nos.	0.00	0.00
3	ETC of 415 V A.C. Indoor type Lighting Panel (Normal) (Type LP-2)		2.00	Nos.	0.00	0.00
4	ETC of 415 V A.C. Indoor Lighting panel (Emergency) (Type LP-3)		1.00	Nos.	0.00	0.00
5	ETC of Indoor type emergency lighting panel (DCLP) (Type DCLP)		1.00	Nos.	0.00	0.00
6	ETC of switchboard - Type S-1		38.00	Nos.	0.00	0.00
7	ETC of switchboard - Type S-2		28.00	Nos.	0.00	0.00
8	ETC of switchboard - Type S-3		11.00	Nos.	0.00	0.00
9	ETC of Indoor Receptacle (Type RA)		26.00	Nos.	0.00	0.00
10	ETC of Indoor Receptacle (Type RB)		18.00	Nos.	0.00	0.00
11	ETC of Indoor lighting fixtures (Type DA)/Industrial Batten 40W LED		130.00	Nos.	0.00	0.00
12	ETC of Indoor lighting fixtures (Type DD)/Recess mounted 600X600 mm 30W LED		140.00	Nos.	0.00	0.00
13	ETC of Indoor lighting fixtures (Type DE)/Corrosion & jet proof industrial batten 40W LED		27.00	Nos.	0.00	0.00
14	ETC of Emergency DC lighting fixtures (Type CD)/Down Light DC LED fixtures		15.00	Nos.	0.00	0.00
15	ETC of Emergency DC lighting fixtures (Type IA)/Bulkhead DC LED fixtures		30.00	Nos.	0.00	0.00
16	ETC of Ceiling fans 1400mm sweep with regulator, down rod and canopy (Type FB)		22.00	No.	0.00	0.00
17	ETC of Wall mounted fans 400mm sweep		20.00	No.	0.00	0.00
18	ETC of 1000CMH exhaust fan		3.00	No.	0.00	0.00
19	ETC of 1500CMH exhaust fan		2.00	No.	0.00	0.00
20	ETC of 2000CMH exhaust fan		1.00	No.	0.00	0.00
21	ETC of 600CMH exhaust fan		1.00	No.	0.00	0.00
22	ETC of Escape lighting luminaire with "EXIT" sign fitted (Type EX) LED type		20.00	Nos.	0.00	0.00
23	ETC of wall mounted panels for supply to Air Conditioner & Ventilation fans comprising of 415V, 125A, 3-Phase TPN MCCB Incomer & 8 No. 32A TPMCB as outgoing feeders		6.00	Nos.	0.00	0.00
24	ETC of 32A TPMCB with Receptacle for split AC unit		15.00	No.	0.00	0.00
25	ETC of 20A MCB with Receptacle for ventilation fans		20.00	Nos.	0.00	0.00
26	ETC of 415 V A.C. Outdoor type Lighting Panel (Normal) (Type SLP)		8.00	Nos.	0.00	0.00
27	ETC of 415 V A.C. Outdoor type Lighting Panel (Emergency) (Type SLP)		4.00	Nos.	0.00	0.00
28	ETC of 415 V A.C. Outdoor type Street Lighting Panel (Type SLP)		3.00	Nos.	0.00	0.00
29	ETC of 415 V A.C. Outdoor, lockable type Isolating switch (Type FLP)		1.00	Nos.	0.00	0.00
30	ETC of DB with Trasformer (for welding Receptacles)		1.00	Nos.	0.00	0.00

Includes

31	ETC of Outdoor Junction boxes with 4-way terminals suitable for loop-in loop-out upto 4Cx16 sq. mm. Al conductor and tap off of two nos 10 Sqmm wire (JB shall be suitable for conduit size of upto 50mm)	65.00	Nos.	0.00	0.00
32	ETC of Outdoor Receptacle (Type RC)	31.00	Nos.	0.00	0.00
33	ETC of 2x400W Switchyard Flood-lighting luminaire with HPSV lamp and control gear (Type PD)/Flood lighting fixtures 400W LED	590.00	Nos.	0.00	0.00
34	ETC of 2x250W Switchyard Flood-lighting luminaire with HPSV lamp and control gear (Type PC)/Flood lighting fixtures 200W LED	1.00	Nos.	0.00	0.00
35	ETC of 1x150 Watts luminarie with HPSV lamp and control gear for building periphery and street-lighting (Type TA)/Street lighting fixtures 100W LED	156.00	Nos.	0.00	0.00
36	Civil works & ETC of Post Top Lantern fixture LED type 45W	15.00	No.	0.00	0.00
37	Civil works & ETC of 30m high Lighting Tower/ Mast with Lantern Carriage (Double Drum Winch type) for Switchyard Lighting	4.00	No.	0.00	0.00
38	Civil works & ETC of Single arm swaged and welded steel pole with junction box and all accessories (11m high Lighting Pole with 1.8m over-hang projection for Street-Lighting)	156.00	Nos.	0.00	0.00
39	Civil works & ETC of 4.5m high Lighting Pole for Post-top Lantern	15.00	Nos.	0.00	0.00
40	ETC of Galvanized rigid steel conduit of 20mm size with accessories	6500.00	Mtr.	0.00	0.00
41	ETC of Galvanized rigid steel conduit of 25mm size with accessories	1600.00	Mtr.	0.00	0.00
42	ETC of Galvanized rigid steel conduit of 40mm size with accessories	100.00	Mtr.	0.00	0.00
43	ETC of 1C, 2.5 sqmm PVC insulated stranded Cu. Wire	18000.00	Mtr.	0.00	0.00
44	ETC of 1C, 4 sqmm PVC insulated stranded Cu. Wire	8000.00	Mtr.	0.00	0.00
45	ETC of 2C, 2.5 sqmm HRPVC insulated, Armoured Cu. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	22500.00	Mtr.	0.00	0.00
46	ETC of 4C, 16 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	15300.00	Mtr.	0.00	0.00
47	ETC of 4C, 35 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	1350.00	Mtr.	0.00	0.00
48	ETC of 4C, 70 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	5850.00	Mtr.	0.00	0.00
49	ETC of 3.5C, 95 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	5850.00	Mtr.	0.00	0.00
50	ETC of 3.5C, 300 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	450.00	Mtr.	0.00	0.00
51	ETC of 2C, 2.5 sqmm HRPVC insulated, Armoured Cu. Cable (supplied by BHEL) including buried cable laying & termination	2500.00	Mtr.	0.00	0.00
52	ETC of 4C, 16 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including buried cable laying & termination	1700.00	Mtr.	0.00	0.00
53	ETC of 4C, 35 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including buried cable laying & termination	150.00	Mtr.	0.00	0.00
54	ETC of 4C, 70 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including buried cable laying & termination	650.00	Mtr.	0.00	0.00
55	ETC of 3.5C, 95 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including buried cable laying & termination	650.00	Mtr.	0.00	0.00
56	ETC of 3.5C, 300 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including buried cable laying & termination	50.00	Mtr.	0.00	0.00
57	Laying of 50 mm GI conduits at a depth of 300 mm including excavation, backfilling, making & repairing of walls in trenches, cutting, threading, fixing of sockets/bends where required etc to complete. Also between pull pit boxes to JB/LP.	500.00	Mtr.	0.00	0.00
58	Laying of 100 mm GI conduits at a depth of 300 mm including excavation, backfilling, making & repairing of walls in trenches, cutting, threading, fixing of sockets/bends where required etc to complete. Also between pull pit boxes to JB/LP.	300.00	Mtr.	0.00	0.00
59	Construction of Pull Pit Boxes of sizes 400mmx400mmx400mm at the free ends and turning of GI pipes if pipe length exceeds 4M	30.00	Nos.	0.00	0.00
60	Earthing using 40 mm dia. MS Rod Electrodes (provided by BHEL)	50.00	Nos.	0.00	0.00
61	Earthing using 50x6mm GI Flat (provided by BHEL)	500.00	Mtr.	0.00	0.00
62	Earthing using 75x10mm GI Flat (provided by BHEL)	200.00	Mtr.	0.00	0.00
63	Earthing using 35x6 mm GI Flat for earthing.	200.00	Mtr.	0.00	0.00
64	Earthing using 25x3 mm GI Flat for earthing.	200.00	Mtr.	0.00	0.00
65	Earthing using 16 SWG GI Wire for Lighting fixtures, switches conduits etc.	6000.00	Mtr.	0.00	0.00
66	Earthing using 12 SWG GI Wire for Power receptacles Junction Boxes etc.	1500.00	Mtr.	0.00	0.00
67	ETC of Wall mounted DC Distribution panel (for distribution of DC Supply to switchyard equipment) comprising 240V bus, Two(2) No. 63A MCCB as incomer, One (1) No. Bus Coupler and 8 nos 32A two pole MCCB as outgoing feeders	13.00	Nos.	0.00	0.00
68	ETC of 250A receptacle outtdoor type for oil filtration unit	2.00	Nos.	0.00	0.00

Subtotal

69	ETC of GI heavy duty conduit of 25mm size with accessories with additional epoxy coating for corrosive area	50.00	Mtr.	0.00	0.00
70	ETC of JB FOR SUMP PUMP	2.00	Nos.	0.00	0.00
71	Lux measurement at site	1.00	Lot	0.00	0.00

Estimated Value = 0.00

Prepared By : Sanjeev Kumar Shrivastava S. Shrivastava
28.09.21

Checked By : Sanjeev Kumar Shrivastava Sanjeev
28.09.21

Approved By : ARUNA GULATI अरुणा गुलाटी 28/9/21

SUPPLY and ETC OF ILLUMINATION SYSTEM FOR TSGENCO YADADRI PROJECT

- **Bidder to submit offer directly through E-PROCUREMENT MODE ONLY.** Bidder may visit <https://eprocurebhel.co.in/nicgep/app>. No other mode for submission of tender is acceptable. This is two part bid and Techno-commercial bid will be opened as scheduled date and time.
- For any technical clarification, please contact Mr. Neeraj Kumar, DGM (TBEM); Contact No. 0120-674-8538; e-mail: neeraj.kumar@bhel.in
- For any commercial clarification, please contact Ms. Shipra Gupta (TBMM); Contact No.0120- 6748509; e-mail: shipra@bhel.in

Mentioned clauses of General Terms and Conditions are to be read as follows:

1. **Project Status:** Domestic
2. **Taxes and duties:** GST as applicable.
3. **Location of Plant:** Yadadri (Telangana, India).
4. **Clause-12 (Delivery Period) of GTC- shall be read as below- Delivery requirement: Proposed delivery plan is Dec'2021.** However, vendor has to quote their best delivery plan in activity schedule. In case, BHEL's delivery requirement is not met by vendor(s), then a chance may be given to all such vendors to review their quoted delivery schedule in line with BHEL's delivery requirement. However, if vendor fails to meet the requisite delivery plan, then BHEL reserves the right not to consider the offer of such vendor(s).
5. **Technical Requirement** as per enclosed Revised Specification No. TB-387-316-012 Rev-01.
6. **PQR-** It shall be as per PQR attachment in Tech Spec.
7. Deviations must be mentioned in deviation schedule(s) and deviation mentioned, if any, elsewhere shall not be considered.
8. Bidder's offer will be techno-commercially acceptable subject to final acceptance of vendor by ultimate customer as approved supplier. Price Bid will be opened only for those bidders in respect of which vendor approval is received from ULTIMATE CUSTOMER (TSGENCO). Necessary credentials/documents like Company Profile, Proof of supplies in previous TSGENCO projects, type test & performance certificates etc to be submitted for approval by Customer.
9. **Clause-5 (Guarantee clause) of GTC:** Defect Liability (Guarantee Specific Clause): The equipment / material supplied shall be guaranteed for 18 months from the date of last delivery or 12 months from the date of completion of COD of each unit i.e. COD of Unit-5 is May'2023, whichever is later.
The defective equipment / material / component shall be replaced free of cost at site.
Other terms as per General Terms and Condition (GTC - BHEL/TBG/GTC/2016 Rev-1).
10. **Clause-7 (PBG validity) of GTC:** Supplier shall arrange to submit Performance BG / Deposit on a non-judicial stamp paper of appropriate value along with first invoice or within 60 days from placement of Purchase Order (PO) whichever is earlier, **in line with one of the applicable options given in enclosed General Terms and Condition (GTC -**

SUPPLY and ETC OF ILLUMINATION SYSTEM FOR TSGENCO YADADRI PROJECT

BHEL/TBG/GTC/2016 Rev-1). **Option-B is applicable** in case not opt any option as per NIT condition.

PBG should valid till guarantee period with claim period of 3 months extra over and above guarantee period.

Bidder agrees to submit performance security required for execution of the contract within the time period mentioned. In case of delay in submission of performance security, enhanced performance security which would include interest (SBI rate + 6%) for the delayed period, shall be submitted by the bidder. Further, if performance security is not submitted till such time the first bill becomes due, the amount of performance security due shall be recovered as per terms defined in the NIT / contract, from the bills along with due interest.

11. **Liquidated Damage (Clause no. 13 of GTC):** In case of delay in execution of Purchase Order beyond the contractual delivery time, an amount of 0.5% of the total PO value for supply per week of delay or part thereof subject to a maximum of 10% of the total Purchase Order value for supply shall be deducted as Liquidated Damages (LD) along with applicable GST (if any) on LD. **PO value is defined as PO EX-WORKS & FREIGHT & INSURANCE CHARGES.** Other terms as per General Terms and Condition (GTC - BHEL/TBG/GTC/2016 Rev-1).
12. **GeM Seller ID-** GeM seller ID is mandatory for the bidders and must be mentioned in their offer. In case at the time of submission of offer GeM seller ID is not available with bidder, then successful tenderer should ensure to have GeM Seller ID prior to award of contract. Department of Expenditure (DOE) OM no. 6/9/2020-PPD dated 24.08.2020 may be referred in this regard.
13. **Terms of Payment:** Cl.No. 3.3 of GTC FOR SUPPLY AND Sr.No. 13 of GTC-ETC for ETC works.
14. **REVERSE AUCTION (Refer clause no: 15 of Addendum to GTC):** **Applicable as per enclosed RA Guidelines 2021.**
15. **Make in India (PPP-MII) (Refer clause no: 17 of Addendum to GTC):** This tender is not a global tender and **only class-I** suppliers as defined under the DPIIT order no. P-45021/2/2017-PP (BE-II) dated 04.06.2020 are eligible to bid in this tender. **Bids received from Class-II & Non-Local supplier shall be rejected.** Bidder to specify the percentage of local content as per the format of self-declaration for local content" as per **Annexure-V.** Note: Class-I supplier means Local content should be equal or greater than 50%.
16. **Compliance to GOI Order for restrictions under Rule 144 (xi) of General Financial Rules (GFRs), 2017 (Refer clause no: 18 of Addendum to GTC):** **Annexure-VI, VII or VIII** are applicable.
17. **MOP Circular (Refer clause no: 19 of Addendum to GTC, Annexure - IX & X):** **APPLICABLE.**

SUPPLY and ETC OF ILLUMINATION SYSTEM FOR TSGENCO YADADRI PROJECT

18. **INTEGRITY PACT (Annexure-XI):** NOT APPLICABLE.
19. **RISK AND COST (Annexure-XII):** APPLICABLE.
20. **PRICE BID FORMAT:** Bidder to quote each and every cell as per specified price format of NIT, otherwise their offer shall be liable to be rejected.

21. **IMPORTANT INSTRUCTION: -**

All boxes / Containers are to be distinctly marked with boldly written "TBG" mark on it.

In case any discrepancy between the requirements mentioned under special terms & conditions and general terms & conditions, special terms and conditions shall prevail.

PO/LOI shall be placed to L1 bidder separately for Main supply, spares and ETC works. However evaluation shall be done based on overall quantity as per NIT (Main supply, spares and ETC works).

- Bidder to mention their works address below from where material will be supplied to Site.

Works Address- -----

ALL OTHER TERMS AND CONDITIONS SHALL BE AS PER GTC Rev-1.

(Sign and seal of Bidder)

Enclosed:

1. Addendum to GTC.
2. Activity Schedule (Annexure-II), Annexure-III (Checklist for billing), Annexure-IV (Arbitration)
3. Annexure-V (Make in India),
4. General terms and condition (GTC) for Supply and ETC, Technical & Commercial deviation sheets.
5. Technical PQR AND Revised Specification No. TB-387-316-012 Rev-01 AND DRAWINGS.
6. Unpriced Bid Schedule
7. Revised RA Guidelines 2021

TENDER INVITING AUTHORITY :

BHEL TBG NOIDA

NAME OF WORK :

SUPPLY AND ETC OF ILLUMINATION SYSTEM FOR
TSGENCO YADADRI PROJECT

ENQUIRY / NIT NO. :

NAME OF THE BIDDER/ BIDDING FIRM / COMPANY:

UNPRICE BID SCHEDULE

SR. NO	ITEM DESCRIPTION	Item code / make	Qty.	UNIT	Unit Ex-work / ETC PRICES	GST RATE ON EX WORKS / ETC PRICES (%)	GST AMOUNT ON TOTAL EX WORKS/ETC PRICES (INR)	UNIT FREIGHT & INSURANCE CHARGES (INR)	GST ON FREIGHT & INSURANCE CHARGES (%)	GST AMOUNT ON FREIGHT & INSURANCE CHARGES (INR)	HSN Code	Total Ex-work / ETC + F & I amount excluding GST	Total Ex-work / ETC+ F & I amount including GST
1	Supply of Main Lighting Distribution Board (MLDB) comprising 415V, 400A, 3-Ph, 4-wire bus and two (2) no. Lighting transformer: 250kVA with Two (2) No. Incomer 400A TPN MCCB, One (1) No. Bus Coupler, Outgoing feeders 6 No. 100A TPN MCCB on each Bus Section (Inclusive of CT, Voltmeter, Ammeter, Contactor with timer, indicating lamps etc)	item1	2	Nos.									
2	Supply of Emergency Lighting Distribution Board (ELDB) comprising 415V, 150A, 3-Ph, 4-wire bus and one (1) no. Lighting transformer: 100kVA with One (1) No. Incomer 150A TPN MCCB, Outgoing feeders 6 No. 63A TPN MCCB (Inclusive of CT, Voltmeter, Ammeter, Contactor with timer, indicating lamps etc)	item2	1	Nos.									
3	Supply of 415 V A.C. Indoor type Lighting Panel (Normal) (Type LP-2)	item3	2	Nos.									
4	Supply of 415 V A.C. Indoor Lighting panel (Emergency) (Type LP-3)	item4	1	Nos.									
5	Supply of Indoor type emergency lighting panel (DCLP) (Type DCLP)	item5	1	Nos.									
6	Supply of switchboard - Type S-1	item6	38	Nos.									
7	Supply of switchboard - Type S-2	item7	28	Nos.									
8	Supply of switchboard - Type S-3	item8	11	Nos.									
9	Supply of Indoor Receptacle (Type RA)	item9	26	Nos.									
10	Supply of Indoor Receptacle (Type RB)	item10	18	Nos.									
11	Supply of Indoor lighting fixtures (Type DA)/Industrial Batten 40W LED	item11	130	Nos.									
12	Supply of Indoor lighting fixtures (Type DD)/Recess mounted 600X600 mm 30W LED	item12	140	Nos.									
13	Supply of Indoor lighting fixtures (Type DE)/Corrosion & jet proof industrial batten 40W LED	item13	27	Nos.									
14	Supply of Emergency DC lighting fixtures (Type CD)/Down Light DC LED fixtures	item14	15	Nos.									
15	Supply of Emergency DC lighting fixtures (Type IA)/Bulkhead DC LED fixtures	item15	30	Nos.									
16	Supply of Ceiling fans 1400mm sweep with regulator, down rod and canopy (Type FB)	item16	22	No.									
17	Supply of Wall mounted fans 400mm sweep	item17	20	No.									
18	Supply of 1000CMH exhaust fan	item18	3	No.									
19	Supply of 1500CMH exhaust fan	item19	2	No.									
20	Supply of 2000CMH exhaust fan	item20	1	No.									
21	Supply of 600CMH exhaust fan	item21	1	No.									
22	Supply of wheel mounted adjustable aluminium ladder for the maintenance of street lights	item22	1	No.									
23	Supply of adjustable free-standing aluminium ladder	item23	1	No.									
24	Supply of Portable Emergency Light (Type M3)	item24	4	No.									
25	Supply of Escape lighting luminaire with "EXIT" sign fitted (Type EX) LED type	item25	20	Nos.									
26	Supply of wall mounted panels for supply to Air Conditioner & Ventilation fans comprising of	item26	6	Nos.									
27	Supply of 32A TPMCB with Receptacle for split AC unit	item27	15	No.									
28	Supply of 20A MCB with Receptacle for ventilation fans	item28	20	Nos.									
29	Supply of 415 V A.C. Outdoor type Lighting Panel (Normal) (Type SLP)	item29	8	Nos.									
30	Supply of 415 V A.C. Outdoor type Lighting Panel (Emergency) (Type SLP)	item30	4	Nos.									
31	Supply of 415 V A.C. Outdoor type Street Lighting Panel (Type SLP)	item31	3	Nos.									
32	Supply of 415 V A.C. Outdoor, lockable type Isolating switch (Type FLP)	item32	1	Nos.									
33	Supply of DB with Trasformer (for welding Receptacles)	item33	1	Nos.									
34	Supply of Outdoor Junction boxes with 4-way terminals suitable for loop-in loop-out upto 4Cx16 sq. mm. Al conductor and tap off of two nos 10 Sqmm wire (JB shall be suitable for conduit size of upto 50mm)	item34	65	Nos.									
35	Supply of Outdoor Receptacle (Type RC)	item35	31	Nos.									
36	Supply of 2x400W Switchyard Flood-lighting luminaire with HPSV lamp and control gear (Type PD)/Flood lighting fixtures 400W LED	item36	590	Nos.									

FORMAT ONLY - NOT FOR FILLING

[illegible]

SR. NO	ITEM DESCRIPTION	Item code / make	Qty.	UNIT	Unit Ex-work / ETC PRICES	GST RATE ON EX WORKS / ETC PRICES (%)	GST AMOUNT ON TOTAL EX WORKS/ETC PRICES (INR)	UNIT FREIGHT & INSURANCE CHARGES (INR)	GST ON FREIGHT & INSURANCE CHARGES (%)	GST AMOUNT ON FREIGHT & INSURANCE CHARGES (INR)	HSN Code	Total Ex-work / ETC + F & I amount excluding GST	Total Ex-work / ETC+ F & I amount including GST
74	Spares: 63Amp Receptacles	item74	10	Nos.									
75	ETC of Main Lighting Distribution Board (MLDB) comprising 415V, 400A, 3-Ph, 4-wire bus and two (2) no. Lighting transformer: 250kVA with Two (2) No. Incomer 400A TPN MCCB, One (1) No. Bus Coupler, Ongoing feeders 6 No. 100A TPN MCCB on each Bus Section (Inclusive of CT, Voltmeter, Ammeter, Contactor with timer, indicating lamps etc)	etc1	2	Nos.				NA	NA	NA			
76	ETC of Emergency Lighting Distribution Board (ELDB) comprising 415V, 150A, 3-Ph, 4-wire bus and one (1) no. Lighting transformer: 100kVA with One (1) No. Incomer 150A TPN MCCB, Outgoing feeders 6 No. 63A TPN MCCB (Inclusive of CT, Voltmeter, Ammeter, Contactor with timer, indicating lamps etc)	etc2	1	Nos.				NA	NA	NA			
77	ETC of 415 V A.C. Indoor type Lighting Panel (Normal) (Type LP-2)	etc3	2	Nos.				NA	NA	NA			
78	ETC of 415 V A.C. Indoor Lighting panel (Emergency) (Type LP-3)	etc4	1	Nos.				NA	NA	NA			
79	ETC of Indoor type emergency lighting panel (DCLP) (Type DCLP)	etc5	1	Nos.				NA	NA	NA			
80	ETC of switchboard - Type S-1	etc6	38	Nos.				NA	NA	NA			
81	ETC of switchboard - Type S-2	etc7	28	Nos.				NA	NA	NA			
82	ETC of switchboard - Type S-3	etc8	11	Nos.				NA	NA	NA			
83	ETC of Indoor Receptacle (Type RA)	etc9	26	Nos.				NA	NA	NA			
84	ETC of Indoor Receptacle (Type RB)	etc10	18	Nos.				NA	NA	NA			
85	ETC of Indoor lighting fixtures (Type DA)/Industrial Batten 40W LED	etc11	130	Nos.				NA	NA	NA			
86	ETC of Indoor lighting fixtures (Type DD)/Recess mounted 600X600 mm 30W LED	etc12	140	Nos.				NA	NA	NA			
87	ETC of Indoor lighting fixtures (Type DE)/Corrosion & jet proof industrial batten 40W LED	etc13	27	Nos.				NA	NA	NA			
88	ETC of Emergency DC lighting fixtures (Type CD)/Down Light DC LED fixtures	etc14	15	Nos.				NA	NA	NA			
89	ETC of Emergency DC lighting fixtures (Type IA)/Bulkhead DC LED fixtures	etc15	30	Nos.				NA	NA	NA			
90	ETC of Ceiling fans 1400mm sweep with regulator, down rod and canopy (Type FB)	etc16	22	No.				NA	NA	NA			
91	ETC of Wall mounted fans 400mm sweep	etc17	20	No.				NA	NA	NA			
92	ETC of 1000CMH exhaust fan	etc18	3	No.				NA	NA	NA			
93	ETC of 1500CMH exhaust fan	etc19	2	No.				NA	NA	NA			
94	ETC of 2000CMH exhaust fan	etc20	1	No.				NA	NA	NA			
95	ETC of 600CMH exhaust fan	etc21	1	No.				NA	NA	NA			
96	ETC of Escape lighting luminaire with "EXIT" sign fitted (Type EX) LED type	etc22	20	Nos.				NA	NA	NA			
97	ETC of wall mounted panels for supply to Air Conditioner & Ventilation fans comprising of 415V, 125A, 3-Phase TPN MCCB Incomer & 8 No. 32A TPMCB as outgoing feeders	etc23	6	Nos.				NA	NA	NA			
98	ETC of 32A TPMCB with Receptacle for split AC unit	etc24	15	No.				NA	NA	NA			
99	ETC of 20A MCB with Receptacle for ventilation fans	etc25	20	Nos.				NA	NA	NA			
100	ETC of 415 V A.C. Outdoor type Lighting Panel (Normal) (Type SLP)	etc26	8	Nos.				NA	NA	NA			
101	ETC of 415 V A.C. Outdoor type Lighting Panel (Emergency) (Type SLP)	etc27	4	Nos.				NA	NA	NA			
102	ETC of 415 V A.C. Outdoor type Street Lighting Panel (Type SLP)	etc28	3	Nos.				NA	NA	NA			
103	ETC of 415 V A.C. Outdoor, lockable type Isolating switch (Type FLP)	etc29	1	Nos.				NA	NA	NA			
104	ETC of DB with Trasformer (for welding Receptacles)	etc30	1	Nos.				NA	NA	NA			
105	ETC of Outdoor Junction boxes with 4-way terminals suitable for loop-in loop-out upto 4Cx16 sq. mm. Al conductor and tap off of two nos 10 Sqmm wire (JB shall be suitable for conduit size of upto 50mm)	etc31	65	Nos.				NA	NA	NA			
106	ETC of Outdoor Receptacle (Type RC)	etc32	31	Nos.				NA	NA	NA			
107	ETC of 2x400W Switchyard Flood-lighting luminaire with HPSV lamp and control gear (Type PD)/Flood lighting fixtures 400W LED	etc33	590	Nos.				NA	NA	NA			
108	ETC of 2x250W Switchyard Flood-lighting luminaire with HPSV lamp and control gear (Type PC)/Flood lighting fixtures 200W LED	etc34	1	Nos.				NA	NA	NA			
109	ETC of 1x150 Watts luminarie with HPSV lamp and control gear for building periphery and street-lighting (Type TA)/Street lighting fixtures 100W LED	etc35	156	Nos.				NA	NA	NA			
110	Civil works & ETC of Post Top Lantern fixture LED type 45W	etc36	15	No.				NA	NA	NA			
111	Civil works & ETC of 30m high Lighting Tower/ Mast with Lantern Carriage (Double Drum Winch type) for Switchyard Lighting	etc37	4	No.				NA	NA	NA			
112	Civil works & ETC of Single arm swaged and welded steel pole with junction box and all accessories (11m high Lighting Pole with 1.8m over-hang projection for Street-Lighting)	etc38	156	Nos.				NA	NA	NA			
113	Civil works & ETC of 4.5m high Lighting Pole for Post-top Lantern	etc39	15	Nos.				NA	NA	NA			
114	ETC of Galvanized rigid steel conduit of 20mm size with accessories	etc40	6500	Mtr.				NA	NA	NA			
115	ETC of Galvanized rigid steel conduit of 25mm size with accessories	etc41	1600	Mtr.				NA	NA	NA			
116	ETC of Galvanized rigid steel conduit of 40mm size with accessories	etc42	100	Mtr.				NA	NA	NA			
117	ETC of 1C, 2.5 sqmm PVC insulated stranded Cu. Wire	etc43	18000	Mtr.				NA	NA	NA			
118	ETC of 1C, 4 sqmm PVC insulated stranded Cu. Wire	etc44	8000	Mtr.				NA	NA	NA			
119	ETC of 2C, 2.5 sqmm HRPVC insulated, Armoured Cu. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	etc45	22500	Mtr.				NA	NA	NA			

SR. NO	ITEM DESCRIPTION	Item code / make	Qty.	UNIT	Unit Ex-work / ETC PRICES	GST RATE ON EX WORKS / ETC PRICES (%)	GST AMOUNT ON TOTAL EX WORKS/ETC PRICES (INR)	UNIT FREIGHT & INSURANCE CHARGES (INR)	GST ON FREIGHT & INSURANCE CHARGES (%)	GST AMOUNT ON FREIGHT & INSURANCE CHARGES (INR)	HSN Code	Total Ex-work / ETC + F & I amount excluding GST	Total Ex-work / ETC+ F & I amount including GST
120	ETC of 4C, 16 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	etc46	15300	Mtr.				NA	NA	NA			
121	ETC of 4C, 35 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	etc47	1350	Mtr.				NA	NA	NA			
122	ETC of 4C, 70 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	etc48	5850	Mtr.				NA	NA	NA			
123	ETC of 3.5C, 95 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	etc49	5850	Mtr.				NA	NA	NA			
124	ETC of 3.5C, 300 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	etc50	450	Mtr.				NA	NA	NA			
125	ETC of 2C, 2.5 sqmm HRPVC insulated, Armoured Cu. Cable (supplied by BHEL) including buried cable laying & termination	etc51	2500	Mtr.				NA	NA	NA			
126	ETC of 4C, 16 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including buried cable laying & termination	etc52	1700	Mtr.				NA	NA	NA			
127	ETC of 4C, 35 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including buried cable laying & termination	etc53	150	Mtr.				NA	NA	NA			
128	ETC of 4C, 70 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including buried cable laying & termination	etc54	650	Mtr.				NA	NA	NA			
129	ETC of 3.5C, 95 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including buried cable laying & termination	etc55	650	Mtr.				NA	NA	NA			
130	ETC of 3.5C, 300 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including buried cable laying & termination	etc56	50	Mtr.				NA	NA	NA			
131	Laying of 50 mm GI conduits at a depth of 300 mm including excavation, backfilling, making & repairing of walls in trenches, cutting, threading, fixing of sockets/bends where required etc to complete. Also between pull pit boxes to JB/LP.	etc57	500	Mtr.				NA	NA	NA			
132	Laying of 100 mm GI conduits at a depth of 300 mm including excavation, backfilling, making & repairing of walls in trenches, cutting, threading, fixing of sockets/bends where required etc to complete. Also between pull pit boxes to JB/LP.	etc58	300	Mtr.				NA	NA	NA			
133	Construction of Pull Pit Boxes of sizes 400mmx400mmx400mm at the free ends and turning of GI pipes if pipe length exceeds 4M	etc59	30	Nos.				NA	NA	NA			
134	Earthing using 40 mm dia. MS Rod Electrodes (provided by BHEL)	etc60	50	Nos.				NA	NA	NA			
135	Earthing using 50x6mm GI Flat (provided by BHEL)	etc61	500	Mtr.				NA	NA	NA			
136	Earthing using 75x10mm GI Flat (provided by BHEL)	etc62	200	Mtr.				NA	NA	NA			
137	Earthing using 35x6 mm GI Flat for earthing.	etc63	200	Mtr.				NA	NA	NA			
138	Earthing using 25x3 mm GI Flat for earthing.	etc64	200	Mtr.				NA	NA	NA			
139	Earthing using 16 SWG GI Wire for Lighting fixtures, switches conduits etc.	etc65	6000	Mtr.				NA	NA	NA			
140	Earthing using 12 SWG GI Wire for Power receptacles Junction Boxes etc.	etc66	1500	Mtr.				NA	NA	NA			
141	ETC of Wall mounted DC Distribution panel (for distribution of DC Supply to switchgear and equipment) comprising 240V bus, Two(2) No. 63A MCCB as incomer, one (1) No. 63A Coupler and 8 nos 32A two pole MCCB as outgoing feeders	etc67	13	Nos.				NA	NA	NA			
142	ETC of 250A receptacle outdoor type for oil filtration unit	etc68	2	Nos.				NA	NA	NA			
143	ETC of GI heavy duty conduit of 25mm size with accessories with additional epoxy coating for corrosive area	etc69	50	Mtr.				NA	NA	NA			
144	ETC of JB FOR SUMP PUMP	etc70	2	Nos.				NA	NA	NA			
145	Lux measurement at site	etc71	1	Lot				NA	NA	NA			
	GRAND TOTAL												

NOTE:

1. PLEASE NOTE THAT UNPRICED COPY OF PRICE BID (i.e. WITH ALL PRICES BLANKED) SHALL BE FURNISHED ALONG WITH TECHNO-COMMERCIAL BID.
2. REQUIRED COPIES OF FORMAT BE MADE & DETAILS MAY BE ANNEXED.
3. THE PRICES MUST BE QUOTED IN THE PRESCRIBED FORMAT IN PORTAL ONLY.

SIGNATURE & SEAL OF TENDERER

Technical Qualifying Requirements & Experience
for
Illumination System for TSGENCO Yadadri Switchyard

The bidder should have experience of design, supply and erection, testing & commissioning (ETC) of Illumination System for at least one (1) project of state electricity boards/ central utilities/ state or central transmission utilities/ industrial installations.

Requisite documents

The following Documents are to be submitted for compliance of above requirements,

a. Proof of design

Approved design documents and drawings of indoor & outdoor areas, duly approved by customer/ consultant.

b. Proof of Supply

Purchase Order copy defining the scope & value with material receipt certificate/ dispatch note documents

c. Proof of ETC

Handing over report/ completion certificate/ other document indicating completion of ETC work

Signature
23.07.2021

3825011
23.07.21

Addendum to General Terms and Conditions (GTC)

1	Offer Submission/ Opening Time	Offer Submission Time: 14:00 Hrs IST Offer Opening Time: 14:30 Hrs IST
2	Instruction to Bidder(s)	I. For Supply where Supervision of Erection, Testing & Commissioning (ETC) at Site is in the scope of the supplier or Supply where Testing & Commissioning (T&C) at Site is in scope of the supplier, minimum 10% of total ex-works value shall be quoted under supervision of ETC/T&C. In case bidder quotes less than 10%, then 10% of Total PO value excluding GST and F&I shall be allocated to the supervision of ETC/T&C scope. Service charges shall be back calculated to keep 10% of total cost to BHEL (without GST). This price adjustment shall be done from supply Ex works prices only on prorata basis for all supply line items. II. For Supply where Erection, Testing & Commissioning (ETC) at Site is in the scope of the supplier, minimum 20% of total ex-works value shall be quoted under ETC. In case bidder quotes less than 20%, then 20% of Total PO value excluding GST and F&I shall be allocated to the ETC scope. Service charges shall be back calculated to keep 20% of total cost to BHEL (without GST). This price adjustment shall be done from supply Ex works prices only on prorata basis for all supply line items. III. Endorsed LR is not required in GST Regime. IV. Bidder's offer will be technically acceptable subject to final acceptance of vendor by ultimate customer as approved supplier. Price Bid will be opened only for those bidders in respect of which vendor approval is received from CUSTOMER. Necessary credentials/documents to be submitted for approval by Customer.
3	Offer Submission Mode	Clause No. 1.3 of GTC – Tender is invited through e-Procurement System only. The bidder shall submit their bid through e-Procurement platform at https://bhel.abcpocure.com Vendors participating through e-procurement portal for this tender should have Class-III Digital Signature Certificate (DSC) for Signing & Encryption of bids issued by any of the valid Certifying Authorities (approved by Controller of Certifying Authorities) in India.
4	Validity of Purchase Order	Purchase order shall be valid for two (02) years from date of Purchase Order.
5	Work Address	Bidder to mention their works address below from where material will be supplied Works Address: ----- ----- -----
6	Pre- Qualification Requirement(PQR)	As per Annexure-I . The bidder must ensure that they confirm the PQR (Technical)
7	Deviation	<u>Technical Deviation</u>: No Technical Deviation is envisaged. <u>Commercial Deviation</u>: No Commercial Deviation envisaged except defined in GTC.
8	Project Status	Domestic/Export. GST shall be payable as applicable.
9	Delivery Plan	As per Activity Schedule (Annexure-II).
11	Terms of Payment	As per clause 3.1 to 3.7 of GTC (as applicable) . Supplier to submit bills alongwith billing checklist as per Annexure-III
12	Performance Bank Guarantee (PBG)	Clause No. 7 of GTC, If no option is specified by the bidder, by default option – B for Bank Guarantee shall be considered. Separate BG for Spares shall be submitted alongwith BG for main supply items. Note: BG should be submitted on non-judicial stamp paper of appropriate value by the supplier alongwith first submission of bill to BHEL.
13	Liquidated Damage	Clause no. 13 of GTC - In case of delay in execution of Purchase Order beyond the contractual delivery time, an amount of 0.5% of delayed lot value (Ex Works and F&I charges) for supply per week of delay or part thereof subject to a maximum of 10% of delayed lot value (Ex Works and F&I charges) shall be deducted as Liquidated Damages (LD) along with applicable GST (if any) on LD. LD will calculated for lotwise and Manufacturing Clearance (MFC) date will be the last date of inputs for that particular lot Lot-1: items for which MFC is issued from 1-15 days of calendar month Lot-2: items for which MFC is issued from 16-30/31 days of calendar month Lot-3: items for which MFC is issued from 1-15 days of next calendar month, Lot-4: items for which MFC is issued from 16-30/31 days of next calendar month and so on...
14	Arbitration	As per Annexure-IV

Addendum to General Terms and Conditions (GTC)

15	Reverse Auction	"BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on www.bhel.com) for this tender. RA shall be conducted among all the techno-commercially qualified bidders. Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered as initial bids of bidders in RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking." Abridged Version of "Guidelines for Reverse Auction-2020" may also be seen at BHEL website (www.bhel.com) on "Supplier Registration" Page.
16	Splitting of Contract	Splitting of Contract not applicable for this tender.
17	Make In India (PPP-MII)	For this procurement, the local content to categorize a supplier as class-I local supplier / class-II local supplier / Non-Local supplier and purchase preference to class-I local supplier, is as defined in Public Procurement (Preference to Make in India), Order 2017 dated 04.06.2020, issued by DPIIT. In case of subsequent orders issued by the nodal ministry, changing the definition of local content for the items of the NIT, the same shall be applicable even if issued after issue of this NIT but before opening of part-II bids against this NIT. "Bidder to specify the percentage of local content as per the format of self-declaration for local content" as per Annexure-V." "This tender is not a global tender and only class-I and Class II suppliers as defined under the DPIIT order no. P-45021/2/2017-PP (BE-II) dated 04.06.2020 are eligible to bid in this tender. Bids received from Class-II & Non-Local supplier shall be rejected."
18	Compliance to GOI Order for restrictions under Rule 144 (xi) of General Financial Rules (GFRs), 2017	Refer Clause at Annexure-VI and Certification at Annexure-VII / Annexure-VIII (whichever is applicable) regarding restrictions under Rule 144 (xi) of General Financial Rules (GFRs), 2017. Bidder to comply the clause and submit the certification. Non-compliance/ Non-submission of certification will lead to rejection of Offer.
19	MOP Circular	Bidder to comply the MOP circular dated 02-07-2020 (Annexure-IX) and its subsequent amendment, if any, in prescribed format (Annexure-X). Non-compliance/ Non-submission will lead to rejection of Offer [Not Applicable for cases where local content is 100%]. Vendor to quote as per specified price format of NIT, otherwise their offer shall be liable to be rejected. Following confirmation to be provided by vendor: "We confirm that we have quoted as per specified price format provided along with this tender".
20	Integrity Pact	As per Annexure-XI.
21	Risk and Cost	As per Annexure-XII
22	Prevention for cartel formation	The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines.
23	Docuemts Required for Customer approval	Bidders to submit below documents alongwith their offer but not limited to: (a) PAN, GST, Certificate of Incorporation (b) Factory Registration Certificate (c) Overall organization Chart with Manpower Details (Design/Manufacturing/Quality etc.) (d) List of Plant and Machinery (e) List of Testing and Measuring equipment (f) Third party approval, if any (viz. ISO, BIS) (g) Pollution clearance wherever applicable (h) Energy conservation & Efficiency Report(Applicable to industries having contact load more than 100KVA) (i) Manufacturing Quality Plan (MQP) (j) List of past supplies references along with copy of major PO (k) Performance certificate from end user (l) Photographs of factory, plant and machinery & testing facilities
24	BHEL Supplier Registration Portal	The link for Online Supplier registration Portal is https://supplier.bhel.in/ The link for Online Supplier Registration Portal may also be seen at BHEL website (www.bhel.com) on "Supplier Registration" Page.
25	Start-up India	Start-up vendors to submit applicable documents alongwith their offers for availing the benefits as per GOI guidelines.

The Notice Inviting Tender (NIT)/ the tender requirement of BHEL will not be henceforth published in newspapers. All the concerned are hereby notified that tender enquiries of BHEL will be published on BHEL tender website (www.bhel.com) and Government's Central Public Procurement Portal (<https://eprocure.gov.in/>)

(Sign and seal of Bidder)

SCHEDULE OF COMMERCIAL DEVIATION

This Format is to be submitted in original duly signed by bidder.
The following are the deviations/variations/exceptions from the Terms and Conditions :-

S N	CLAUSE NO. OF TERMS AND CONDITIONS	STATEMENT OF DEVIATION

In case, this schedule is not submitted, it will be presumed that the equipment /material to be supplied under this contract is deemed to be in compliance with the Terms and Conditions.

If there is NIL deviation,even then the format to be filled as NIL DEVIATION.

Note : Continuation Sheets of like size and format may be used as per the Bidder's Requirement and shall be annexed to this schedule.

Place :
Date :

Signature of the authorised representative of

Bidder's name :.....
Designation:.....
Company Seal:.....

SCHEDULE OF TECHNICAL DEVIATION

This Format is to be submitted in original duly signed by bidder.
The following are the deviations/variations/exceptions from the Terms and Conditions :-

S N	CLAUSE NO. OF TERMS AND CONDITIONS	STATEMENT OF DEVIATION

In case, this schedule is not submitted, it will be presumed that the equipment /material to be supplied under this contract is deemed to be in compliance with the Terms and Conditions.

If there is NIL deviation,even then the format to be filled as NIL DEVIATION.

Note : Continuation Sheets of like size and format may be used as per the Bidder's Requirement and shall be annexed to this schedule.

Place :
Date :

Signature of the authorised representative of

Bidder's name :.....
Designation:.....
Company Seal:.....

**ACTIVITY SCHEDULE (ANNEXURE-II)****ENQUIRY NO. -****PROJECT -****BIDDER NAME -****(SEPARATE ACTIVITY SCHEDULE TO BE FILLED-UP FOR EACH PROJECT BY THE SUPPLIER)**

Name of Bidder:-		Please fill here	
Sl. NO.	ACTIVITY	ACTIVITY TIME IN WEEKS	REMARKS IF ANY
1	Inputs to vendor by BHEL. Last inputs date will consider		BHEL Activity
2	Submission of Documents necessary for getting manufacturing clearance like Drawings, Date sheet etc.		Vendor to fill ensuring Delivery completion date mentioned by BHEL in the NIT
3	Approval of documents/ Manufacturing Clearance from BHEL / Customer *	4	BHEL Time to issue Manufacturing Clearance
4	Manufacturing time		Vendor to fill ensuring Delivery completion date mentioned by BHEL in the NIT
5	Inspection call		Vendor to fill ensuring Delivery completion date mentioned by BHEL in the NIT
6	Customer Inspection & Dispatch Clearance	2	BHEL Time to issue MICC
7	Dispatch		Vendor to fill ensuring Delivery completion date mentioned by BHEL in the NIT
8	ETC site		Vendor to fill ensuring Delivery completion date mentioned by BHEL in the NIT
Note: 1) * Supplier must ensure the completeness and correctness of the requisite documents before submission for approval. Delay in approval on account of incomplete/inadequate information shall be the responsibility of supplier.			
2) Inspection call should be given in the prescribed format only. Inspection calls not in the prescribed format shall not be entertained.			
3) Qty. to be offered for Inspection should be in accordance within Delivery- schedule - lot BHEL reserves the right not to entertain multiple inspection calls for a Delivery- lot and delay on this account shall be the responsibility of Supplier.			

DATE
PLACE
SIGN AND STAMP OF BIDDER

Check List for Supply bills (ANNEXURE III)

Name Of the Project							
Package Description							
Invoice No. & Date							
PO No. & date							
Sr. No	Documents Required	Copies	Check Points	Page no.	Vendor Remarks (Y/N/NA)	Verification by MM (Y/N/NA)	Verification by Fin (Y/N/NA)
1	Original for Buyer Invoice - GST compliant invoice	1 Original+2 Copy	1. Please ensure GST complaint invoice in original 2. Consignee address : BHEL C/o followed by site address 3. Item description and unit of quantity are matched with PO 4. Buyer address and GSTN No as required (TBG Noida or Nodal 5. PO No and date, LR No and date, Vehicle No and Project name are 6. Invoiced quantity are not more than th PO quantity and MICC 7. Ex works unit rate , Taxes and F&I rates are same as per PO 8. Signed and stamped by vendor				
2	Receipted LR (signed & stamped)/ confirmation from site regarding receipt of packages/ Boxes	1Original+2 Copy	1. Consignee address : BHEL C/o followed by Site address 2. In case of material purchased from sub vendor , Consignee address Vendor's name C/o BHEL C/o Site address 3. Vendor's Invoice no and Vehicle No are mentioned 4. No of boxes/No of packages are same as per Packing list 5. In case of and adverse remark on LR (Like shortages/damages/broken etc) , clarification from site/TBMM/TBCM is needed 6. LR is readable 7. In case of photo copy, LR is verified by TBMM 8. LR date is after the date of MICC/(MDCC if issued) or same date				
3	Packing List - showing number of packages, and gross weight/net Weight (if applicable)	1Original+2 Copy	1. PO No and date, LR No and date, Invoice No and date, Site Name and address, Consignor and consignee address are mentioned 2. Item description and quantity are matched with Invoice and PO 3. Signed and stamped by vendor 4. No of packages/ Item descriptions are matched with MRC and LR				
4	MICC from BHEL	1Original+2C opy	1. BHEL MICC has been issued prior to the date of dispatch or on same date 2. In case where MICC date is after the date of dispatch then MDCC date is same or prior to the date of dispatch 3. Project Name, PO,Po Date, Vendor's name and address is correct 4. Item description, Quantity and unit of quantity are same as per PO 5. All hold point in MICC , if any, have been resolved before submission of bill 6. Signed and stamped by BHEL Executive 7. MICC and MDCC quantity are not less than Invoice quantity and cover all invoiced items.				
5	Guarantee Certificate	1 Original+2 Copy	1. Project Name, PO No., Invoice No , LR No and date are mentioned 2. Guarantee Certificate is strictly matched with PO T&C 3. Signed and stamped by vendor				
6	Bank Guarantee	1 Copy	1. Ensure submission of BG directly from Bank before supply of material so that BG confirmation may be arranged before processing 2. Bill can be processed only after receipt of BG confirmation directly from bank 3. It should be in the name of BHEL , TBG Noida with registered office address Siri Fort, New Delhi 4. It should be in prescribed format. 5. BG value and validity plus claim period should be minimum as specified in PO / RC. Please check before supply , If BG extension is required please arrange the same 6. Vendor's name address should be same as per PO 7. Po No / RC No and date should be correct				
7	Insurance Certificate	1 Original+2 Copy	1. Invoice No and date, Vendor's Name,Place from Consignor to Consignee are mentioned 2. It has not been issued later than the LR date 3. Insured value is not less than the Invoice value 4. Signed and stamped by Insurance Company 5. In case of Open Insurance Policy, declaration has been submitted to Insurance Company as per declaration clause of Open policy and 6. In case of any discrepancy , consent of TBCM is required for processing the bill and amount will be deducted for invalid Insurance				
8	PVC (If applicable) Invoice is submitted along with the Despatch Invoice	1Original+2C opy	PVC (If applicable) Invoice is submitted along with the Despatch Invoice 1. PVC invoice is attched along with supply Invoice 2. Calculation sheet and applicable PVC indices are also enclosed 3. If delay in delivery, then PVC indicies are as per PO conditions.				
9	Material receipt Certificate		1. LR No and date, Invoice No and date, Vehicle No and date , Site Name an address are mentioned 2. Date of receipt of material 3. Item description and quantity are same as per Invoice / Packing List 4. It is signed and stamped by Site executive 5. In case of any shortages / damages / adverse remark , clarification is needed				
10	Other Documents		To be seen as per specific requirement of PO.				

Check List for Supply bills

Name Of the Project							
Package Description							
Invoice No. & Date							
PO No. & date							
Sr. No	Documents Required	Copies	Check Points	Page no.	Vendor Remarks	Verification by MM	Verification by Fin
					(Y/N/NA)	(Y/N/NA)	(Y/N/NA)
1	Original for Buyer Invoice - GST compliant invoice	1 Original+2 Copy	1. Please ensure GST complaint invoice in original 2. Consignee address : BHEL C/o followed by site address 3. Item description and unit of quantity are matched with PO 4. Buyer address and GSTN No as required (TBG Noida or Nodal 5. PO No and date, LR No and date, Vehicle No and Project name 6. Invoiced quantity are not more than th PO quantity and MICC 7. Ex works unit rate , Taxes and F&I rates are same as per PO 8. Signed and stamped by vendor				
2	Receipted LR (signed & stamped)/ confirmation from site regarding receipt of packages/ Boxes	1Original+2 Copy	1. Consignee address : BHEL C/o followed by Site address 2. In case of material purchased from sub vendor , Consignee address Vendor's name C/o BHEL C/o Site address 3. Vendor's Invoice no and Vehicle No are mentioned 4. No of boxes/No of packages are same as per Packing list 5. In case of and adverse remark on LR (Like shortages/damages/broken etc) , clarification from site/TBMM/TBCM is nedded 6. LR is readable 7. In case of photo copy, LR is verified by TBMM 8. LR date is after the date of MICC/(MDCC if issued) or same date				
3	Packing List - showing number of packages, and gross weight/net Weight (if applicable)	1Original+2 Copy	1. PO No and date, LR No and date, Invoice No and date, Site Name and address, Consignor and consignee address are mentioned 2. Item description and quantity are matched with Invoice and PO 3. Signed and stamped by vendor 4. No of packages/ Item descriptions are matched with MRC and LR				
4	MICC from BHEL	1Original+2C opy	1. BHEL MICC has been issued prior to the date of dispatch or on same date 2. In case where MICC date is after the date of dispatch then MDCC date is same or prior to the date of dispatch 3. Project Name, PO,Po Date, Vendor's name and address is correct 4. Item description, Quantity and unit of quantity are same as per PO 5. All hold point in MICC , if any, have been resolved before submission of bill 6. Signed and stamped by BHEL Executive 7. MICC and MDCC quantity are not less than Invoice quantity and cover all invoiced items.				
5	Guarantee Certificate	1 Original+2 Copy	1. Project Name, PO No., Invoice No , LR No and date are mentioned 2. Guarantee Certificate is strictly matched with PO T&C 3. Signed and stamped by vendor				
6	Bank Guarantee	1 Copy	1. Ensure submission of BG directly from Bank before supply of material so that BG confirmation may be arranged before processing 2. Bill can be processed only after receipt of BG confirmation directly from bank 3. It should be in the name of BHEL , TBG Noida with registered office address Siri Fort, New Delhi 4. It should be in prescribed format. 5. BG value and valdity plus claim period should be minimum as specified in PO / RC. Please check before supply , If BG extension is required please arrange the same 6. Vendor's name address should be same as per PO 7. Po No / RC No and date should be correct				
7	Insurance Certficate	1 Original+2 Copy	1. Invoice No and date, Vendor's Name,Place from Consignor to Consignee are mentioned 2. It has not been issued later than the LR date 3. Insured value is not less than the Invoice value 4. Signed and stamped by Insurance Company 5. In case of Open Insurance Policy, declaration has been submitted to Insurance Company as per declaration clause of Open policy and 6. In case of any discrepancy , consent of TBCM is required for processing the bill and amount will be deducted for invalid Insurance				
8	PVC (If applicable) Invoice is submitted along with the Despatch Invoice	1Original+2C opy	PVC (If applicable) Invoice is submitted along with the Despatch Invoice 1. PVC invoice is atatched along with supply Invoice 2. Calculation sheet and applicable PVC indices are also enclosed 3. If delay in delivery, then PVC indices are as per PO conditions.				
9			1. LR No and date, Invoice No and date, Vehicle No and date , Site Name an address are mentioned 2. Date of receipt of material				

Check List for Supply bills

Name Of the Project							
Package Description							
Invoice No. & Date							
PO No. & date							
Sr. No	Documents Required	Copies	Check Points	Page no.	Vendor Remarks (Y/N/NA)	Verification by MM (Y/N/NA)	Verification by Fin (Y/N/NA)
	Material receipt Certificate		3. Item description and quantity are same as per Invoice / Packing List				
			4. It is signed and stamped by Site executive				
			5. In case of any shortages / damages / adverse remark , clarification is needed				
10	Other Documents		To be seen as per specific requirement of PO.				
To be filled by BHEL (MM) only							
10	Date Of Submission of Last Billing Document		Date to be mentioned		Not to be filled by vendor		
11	LD Calculation, if applicable, as per PO.		Calculation Sheet of LD due to delay in delivery is attached				
12	Receipted LR (signed & stamped)/ confirmation from site regarding receipt of packages/ Boxes	1 Copy	Damages if any mentioned in the Receipted LR have been accounted for. Withhel amount if any _____				
13	Packing List - showing number of packages and gross weight & net Weight (If applicable)	1 Original	If Packing list does not match with Purchase order (with ref to sl 4 above), Engg/MM acceptance as to the completeness is enclosed.				
14	PO copy	1 Copy	PO copy with original seal and signature is attached along with amendment if any				
15	Dan	1 copy	Relevant DANs are attached duly signed by TBMM representative.				
Note*	Every Field to be ticked. If some document is not applicable, same should be mentioned, All Pages to be numbered upward from the bottom Page						
	Invoice control No				Vendor Signature	MM Signature	Finance Signature
					Date:	Date:	Date:

		Check List for Freight(Exclusive as per Transportation contract)					
Name Of the Project							
Package Description							
Invoice No. & Date							
PO No. & date							
Sr. No	Documents Required	Copies	Check Points	Page no.	Vendor Remarks (Y/N/NA)	Verification by MM (Y/N/NA)	Verification by Fin (Y/N/NA)
1	Invoice	1 Original	Freight Invoice Invoice for the Main Supply submitted				
2	Receipted LR (signed & stamped)/ confirmation from site regarding receipt of packages/ Boxes	1 Copy	1. Consignee address : BHEL C/o followed by Site address 2. In case of material purchased from sub vendor , Consignee address Vendor's name C/o BHEL C/o Site address 3. Vendor's Invoice no and Vehicle No are mentioned 4. No of boxes/No of packages are same as per Packing list 5. In case of and adverse remark on LR (Like shortages/damages/broken etc) , clarification from site/TBMM/TBCM is needed 6. LR is readable 7. In case of photo copy, LR is verified by TBMM 8. LR date is after the date of MICC/(MDCC if issued) or same date				
3	Transporter's document indicating the freight amount. Original money receipt to be submitted if required as per SCC	1 Original	As per Rate Contract (if any)/ WO.				
4	PVC (If applicable) Invoice is submitted along with the Despatch Invoice		1. PVC invoice is attached along with supply Invoice 2. Calculation sheet and applicable PVC indices are also enclosed 3. If delay in delivery, then PVC indices are as per PO conditions.				
5	LD Calculation, if applicable		Calculation Sheet of LD due to delay in delivery is attached				
6	MRC		1. LR No and date, Invoice No and date, Vehicle No and date , Site Name an address are mentioned				
			2. Date of receipt of material				
			3. Item description and quantity are same as per Invoice / Packing List of supply				
			4. It is signed and stamped by Site executive				
			5. In case of any shortages / damages / adverse remark , clarification is needed				
	Invoice control No				Vendor Signature	MM Signature	Finance Signature
					Date:	Date:	Date:

			Applicable check list for MRC Bills:					
Name Of the Project								
Package Description								
Invoice No. & Date								
PO No. & date								
Sr. No	Documents Required	Copies	Check Points	Page no.	Vendor Remarks	Verification by MM	Verification by Fin	
					(Y/N/NA)	(Y/N/NA)	(Y/N/NA)	
1	Invoice	1 Original	MRC Bill enclosed					
2	Material Receipt Certificate	1 Copy	1. LR No and date, Invoice No and date, Vehicle No and date , Site Name an address are mentioned					
			2. Date of receipt of material					
			3. Item description and quantity are same as per Invoice / Packing List of supply					
			4. It is signed and stamped by Site executive					
			5. In case of any shortages / damages / adverse remark , clarification from site/MM/CM is needed					
3	Submission of all final documents for the packages as detailed in Anx-10 of GCC rev 00, duly certified by Engg. Deptt. of purchaser or As per PO	1 Copy	Certificate as per PO requirement is attached					
Note*	Every Field to be ticked. If some documents is not applicable, same should be mentioned, All Pages to be numbered starting from the Last Page.							
	Invoice control No				Vendor Signature	MM Signature	Finance Signature	
					Date:	Date:	Date:	

(A) CONCILIATION (MODEL CONCILIATION CLAUSE FOR CONDUCTING CONCILIATION PROCEEDINGS UNDER THE BHEL CONCILIATION SCHEME, 2018)

The Parties agree that if at any time (whether before, during or after the arbitral or judicial proceedings), any Disputes (which term shall mean and include any dispute, difference, question or disagreement arising in connection with construction, meaning, operation, effect, interpretation or breach of the agreement, contract or the Memorandum of Understanding (whichever is inapplicable), which the Parties are unable to settle mutually), arise inter-se the Parties, the same may, be referred by either party to Conciliation to be conducted through Independent Experts Committee to be appointed by competent authority of BHEL from the BHEL Panel of Conciliators.

Notes:

1. No serving or a retired employee of BHEL/Administrative Ministry of BHEL shall be included in the BHEL Panel of Conciliators.
2. Any other person(s) can be appointed as Conciliator(s) who is/are mutually agreeable to both the parties from outside the BHEL Panel of Conciliators.

The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof and as provided in **Annexure-A to this GCC (Enclosed)**.

The Annexure-A together with its appendices will be treated as if the same is part and parcel hereof and shall be as effectual as if set out herein in these GCC.”

(B) ARBITRATION (WITH SOLE ARBITRATOR)

- 1.1. Except as provided elsewhere in this Contract, in case amicable settlement is not reached between the Parties, in respect of any dispute or difference; arising out of the formation, breach, termination, validity or execution of the Contract; or, the respective rights and liabilities of the Parties; or, in relation to interpretation of any provision of the Contract; or, in any manner touching upon the Contract, then, either Party may, by a notice in writing to the other Party refer such dispute or difference to the Sole Arbitrator and such Arbitrator appointed by Head of the BHEL Unit/Region/Division issuing the Contract.
- 1.2. The Arbitrator shall pass a reasoned award and the award of the Arbitrator shall be final and binding upon the Parties.
- 1.3. Subject as aforesaid, the provisions of Arbitration and Conciliation Act 1996 (India) and amended in 2015 and further amendment passed in 2019 or statutory modifications or re-enactments thereof and the rules made thereunder and for the time being in force shall apply to the arbitration proceedings under this clause. The seat of arbitration shall

be New Delhi. The language of arbitration shall be English and the documents shall be submitted in English.

- 1.4. The cost of arbitration shall initially be borne equally by the Parties subject to the final apportionment of the cost of the arbitration in the award of the Arbitrator.
- 1.5. Notwithstanding the existence or any dispute or differences and/or reference for the arbitration, the Contractor shall proceed with and continue without hindrance the performance of its obligations under this Contract with due diligence and expedition in a professional manner except where the Contract has been terminated by either Party in terms of this Contract.

1.6. **SETTLEMENT OF COMMERCIAL DISPUTES BETWEEN CPSES INTER SE AND CPSE(S) AND GOVERNMENT DEPARTMENT(S)/ ORGANISATION(S) – ADMINISTRATIVE MECHANISM FOR RESOLUTION OF CPSES DISPUTES (AMRCD) – REGARDING**

Vide Dept. of Public Enterprises OM No. F. No. 4(1)/2013-DPE(GM)/FTS-1835 dated 22.05.2018 it has been conveyed that *"To make the mechanism more effective and binding on the disputing parties, a new mechanism namely Administrative Mechanism for resolution of CPSEs Disputes (AMRCD) having two level (tier) structure has been evolved in consultation with various stakeholders to replace the existing PMA mechanism which stands wound up from the date of issue of this OM."* Accordingly, the existing Permanent Machinery of Arbitration (PMA) stands wound up with effect from 22.05.2018 and cases relating to disputes or differences relating to the interpretation and application of the provisions of commercial contract(s) between CPSEs / Port Trust / Central or State Government Department / Organisations (excluding disputes concerning Railways, Income Tax, Customs and Excise Departments) shall be taken up by either party for its resolution through Administrative Mechanism for Resolution of CPSEs Disputes (AMRCD).

(C) JURISDICTION AND GOVERNING LAWS

The Courts at New Delhi shall have exclusive jurisdiction over any matter arising out of or in connection with this Contract. This Contract shall be construed as per and be governed by the Laws of India.

**ANNEXURE TO MODEL CONCILIATION CLAUSE FOR CONDUCT OF
CONCILIATION UNDER THE BHEL CONCILIATION SCHEME, 2018**

BRIEF PROCEDURE FOR CONDUCT OF CONCILIATION PROCEEDINGS

1. The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof and as provided herein:
2. The party desirous of resorting to Conciliation shall send an invitation/notice in writing to the other party to conciliate specifying all points of Disputes with details of the amount claimed. The party concerned shall not raise any new issue thereafter. Parties shall also not claim any interest on claims/counter-claims from the date of notice invoking Conciliation till the conclusion of the Conciliation proceedings.
3. The party receiving the invitation/notice for Conciliation shall within 30 days of receipt of the notice of Conciliation intimate its consent for Conciliation along with its counter-claims, if any.
4. The Conciliation in a matter involving claim or counter-claim (whichever is higher) up to Rs 5 crores shall be carried out by sole Conciliator nominated by BHEL while in a matter involving claim or counter-claim (whichever is higher) of more than Rs 5 crores Conciliation shall be carried out by 3 Conciliators nominated by BHEL.
5. The Parties shall be represented by only their duly authorized in-house executives/officers and neither Party shall be represented by a Lawyer.
6. The first meeting of the IEC shall be convened by the IEC by sending appropriate communication/notice to both the parties as soon as possible but not later than 30 days from the date of his/their appointment. The hearings in the Conciliation proceeding shall ordinarily be concluded within two (2) months and, in exceptional cases where parties have expressed willingness to settle the matter or there exists possibility of settlement in the matter, the proceedings may be extended by the IEC by a maximum of further 2 months with the consent of the Parties subject to cogent reasons being recorded in writing.
7. The IEC shall thereafter formulate recommendations for settlement of the Disputes supported by reasons at the earliest but in any case within

15 days from the date of conclusion of the last hearing. The recommendations so formulated along with the reasons shall be furnished by the IEC to both the Parties at the earliest but in any case within 1 month from the date of conclusion of the last hearing.

8. Response/modifications/suggestions of the Parties on the recommendations of the IEC are to be submitted to the IEC within time limit stipulated by the IEC but not more than 15 days from the date of receipt of the recommendations from the IEC.
9. In the event, upon consideration, further review of the recommendations is considered necessary, whether by BHEL or by the other Party, then, the matter can be remitted back to the IEC with request to reconsider the same in light of the issues projected by either/both the Parties and to submit its recommendations thereon within the following 15 days from the date of remitting of the case by either of the Parties.
10. Upon the recommendations by the Parties, with or without modifications, as considered necessary, the IEC shall be called upon to draw up the Draft Settlement Agreement in terms of the recommendations.
11. When a consensus can be arrived at between the parties only in regard to any one or some of the issues referred for Conciliation the draft Settlement Agreement shall be accordingly formulated in regard to the said Issue(s), and the said Settlement Agreement, if signed, by the parties, shall be valid only for the said issues. As regards the balance issues not settled, the parties may seek to resolve them further as per terms and conditions provided in the contract.
12. In case no settlement can be reached between the parties, the IEC shall by a written declaration, pronounce that the Conciliation between the parties has failed and is accordingly terminated.
13. Unless the Conciliation proceedings are terminated in terms of para 22 (b), (c) & (d) herein below, the IEC shall forward his/its recommendations as to possible terms of settlement within one (1) month from the date of last hearing. The date of first hearing of Conciliation shall be the starting date for calculating the period of 2 months.

14. In case of 3 members IEC, 2 members of IEC present will constitute a valid quorum for IEC and meeting can take place to proceed in the matter after seeking consent from the member who is not available. If necessary, videoconferencing may be arranged for facilitating participation of the members. However, the IEC recommendations will be signed by all members. Where there is more than one (1) Conciliator, as a general rule they shall act jointly. In the event of differences between the Members of IEC, the decision/recommendations of the majority of the Members of IEC shall prevail and be construed as the recommendation of the IEC.
15. The Draft Settlement Agreement prepared by the IEC in terms of the consensus arrived at during the Conciliation proceedings between the Parties shall be given by the IEC to both the parties for putting up for approval of their respective Competent Authority.
16. Before submitting the draft settlement agreement to BHEL's Competent Authority viz. the Board Level Committee on Alternative Dispute Resolution (BLCADR) for approval, concurrence of the other party's Competent Authority to the draft settlement agreement shall be obtained by the other party and informed to BHEL within 15 days of receipt of the final draft settlement agreement by it. Upon approval by the Competent Authority, the Settlement Agreement would thereafter be signed by the authorized representatives of both the Parties and authenticated by the members of the IEC.
17. In case the Draft Settlement Agreement is rejected by the Competent Authority of BHEL or the other Party, the Conciliation proceedings would stand terminated.
18. A Settlement Agreement shall contain a statement to the effect that each of the person(s) signing thereto (i) is fully authorized by the respective Party(ies) he/she represents, (ii) has fully understood the contents of the same and (iii) is signing on the same out of complete freewill and consent, without any pressure, undue influence.
19. The Settlement Agreement shall thereafter have the same legal status and effect as an arbitration award on agreed terms on the substance of the dispute rendered by an arbitral tribunal passed under section 30 of the Arbitration and Conciliation Act, 1996.
20. Acceptance of the Draft Settlement Agreement/recommendations of the Conciliator and/or signing of the Settlement Agreement by BHEL shall

however, be subject to withdrawal/closure of any arbitral and/or judicial proceedings initiated by the concerned Party in regard to such settled issues.

21. Unless otherwise provided for in the agreement, contract or the Memorandum of Understanding, as the case may be, in the event of likelihood of prolonged absence of the Conciliator or any member of IEC, for any reason/incapacity, the Competent Authority/Head of Unit/Division/Region/Business Group of BHEL may substitute the Conciliator or such member at any stage of the proceedings. Upon appointment of the substitute Conciliator(s), such reconstituted IEC may, with the consent of the Parties, proceed with further Conciliation into the matter either de-novo or from the stage already reached by the previous IEC before the substitution.
22. The proceedings of Conciliation under this Scheme may be terminated as follows:
- On the date of signing of the Settlement agreement by the Parties; or,
 - By a written declaration of the IEC, after consultation with the parties, to the effect that further efforts at conciliation are no longer justified, on the date of the declaration; or,
 - By a written declaration of the Parties addressed to the IEC to the effect that the Conciliation proceedings are terminated, on the date of the declaration; or,
 - By a written declaration of a Party to the other Party and the IEC, if appointed, to the effect that the Conciliation proceedings are terminated, on the date of the declaration.
 - On rejection of the Draft Settlement Agreement by the Competent Authority of BHEL or the other Party.
23. The Conciliator(s) shall be entitled to following fees and facilities:

Sl No	Particulars	Amount
1	Sitting fees	Each Member shall be paid a Lump Sum fee of Rs 75,000/- for the whole case payable in terms of paragraph No. 27 herein below.
2	Towards drafting of settlement agreement	In cases involving claim and/or counter-claim of up to Rs 5crores. Rs 50,000/- (Sole Conciliator)

Sl No	Particulars	Amount
		In cases involving claim and/or counter-claim of exceeding Rs 5 crores but less than Rs 10 crores. Rs 75,000 (per Conciliator) In cases involving claim and/or counter-claim of more than Rs 10 crores. Rs 1,00,000/- (per Conciliator) Note: The aforesaid fees for the drafting of the Settlement Agreement shall be paid on Signing of the Settlement Agreement after approval of the Competent Authority or Rejection of the proposed Settlement Agreement by the Competent Authority of BHEL.
3	Secretarial expenses	Rs 10,000/- (one time) for the whole case for Conciliation by a Sole Member IEC. Where Conciliation is by multi member Conciliators –Rs 30,000/- (one time)- to be paid to the IEC
4	Travel and transportation and stay at outstation i) Retired Senior Officials of other Public Sector Undertakings (pay scale wise equivalent to or more than E-8 level of BHEL)	As per entitlement of the equivalent officer (pay scale wise) in BHEL.
	Others	As per the extant entitlement of whole time Functional Directors in BHEL.

Sl No	Particulars	Amount
		Ordinarily, the IEC Member(s) would be entitled to travel by air Economy Class.
5	Venue for meeting	Unless otherwise agreed in the agreement, contract or the Memorandum of Understanding, as the case may be, the venue/seat of proceedings shall be the location of the concerned Unit / Division / Region / Business Group of BHEL. Without prejudice to the seat/venue of the Conciliation being at the location of concerned BHEL Unit / Division / Region / Business Group, the IEC after consulting the Parties may decide to hold the proceedings at any other place/venue to facilitate the proceedings. Unless, Parties agree to conduct Conciliation at BHEL premises, the venue is to be arranged by either Party alternately.

24. The parties will bear their own costs including cost of presenting their cases/evidence/witness(es)/expert(s) on their behalf. The parties agree to rely upon documentary evidence in support of their claims and not to bring any oral evidence in IEC proceedings.
25. If any witness(es) or expert(s) is/are, with the consent of the parties, called upon to appear at the instance of the IEC in connection with the matter, then, the costs towards such witness(es)/expert(s) shall be determined by the IEC with the consent of the Parties and the cost so determined shall be borne equally by the Parties.
26. The other expenditures/costs in connection with the Conciliation proceedings as well as the IEC's fees and expenses shall be shared by the Parties equally.
27. Out of the lump sum fees of Rs 75,000/- for Sitting Fees, 50% shall be payable after the first meeting of the IEC and the remaining 50% of the Sitting Fees shall be payable only after termination of the conciliation proceedings in terms of para 22 hereinabove.

28. The travelling, transportation and stay at outstation shall be arranged by concerned Unit as per entitlements as per Serial No. 3 of the Table at para 23 above, and in case such arrangements are not made by the BHEL Unit, the same shall be reimbursed to the IEC on actuals limited to their entitlement as per Serial No. 4 of the Table at Para 23 above against supporting documents. The IEC Member(s) shall submit necessary invoice for claiming the fees/reimbursements.
29. The Parties shall keep confidential all matters relating to the conciliation proceedings. Confidentiality shall extend also to the settlement agreement, except where its disclosure is necessary for purposes of its implementation and enforcement or as required by or under a law or as per directions of a Court/Governmental authority/regulatory body, as the case may be.
30. The Parties shall not rely upon or introduce as evidence in any further arbitral or judicial proceedings, whether or not such proceedings relate to the Disputes that is the subject of the Conciliation proceedings:
- a. Views expressed or suggestions made by the other party in respect of a possible settlement of the Disputes;
 - b. admissions made by the other party in the course of the Conciliator proceedings;
 - c. proposals made by the Conciliator;
 - d. The fact that the other Party had indicated his willingness to accept a proposal for settlement made by the Conciliator.
31. The Parties shall not present the Conciliator(s) as witness in any Alternative Dispute Resolution or Judicial proceedings in respect of a Disputes that is/was the subject of that particular Conciliation proceeding.
32. None of the Conciliators shall act as an arbitrator or as a representative or counsel of a Party in any arbitral or judicial proceeding in respect of a Disputes that is/was the subject of that particular Conciliation proceeding.
33. The Parties shall not initiate, during the Conciliation proceedings, any arbitral or judicial proceedings in respect of a Disputes that is the subject matter of the Conciliation proceedings except that a Party may initiate arbitral or judicial proceedings where, in his opinion, such proceedings are necessary for preserving his rights including for preventing expiry of period of limitation. Unless terminated as per the provisions of this Scheme, the Conciliation proceedings shall continue

notwithstanding the commencement of the arbitral or judicial proceedings and the arbitral or judicial proceedings shall be primarily for the purpose of preserving rights including preventing expiry of period of limitation.

34. The official language of Conciliation proceedings under this Scheme shall be English unless the Parties agree to some other language.

Format 2 to BHEL Conciliation Scheme, 2018

**FORMAT FOR SEEKING CONSENT FOR REFERRING THE DISPUTES TO
CONCILIATION THROUGH IEC**

To,

M/s. (Stakeholder's name)

Sub: Resolution of the Disputes through conciliation by Independent Expert Committee (IEC).

Ref: Contract No/MoU/Agreement/LOI/LOA& date _____.

Sir,

With reference to above referred Contract/MoU/Agreement/LOI/LOA, you have raised certain Disputes/claims. Vide your letter dated_____ you have requested BHEL to refer the Disputes/claims to IEC for Conciliation.

We are enclosing herewith Format (3) for giving consent and the terms and conditions of BHEL Conciliation Scheme, 2018 governing conciliation through IEC. You are requested to give your unconditional consent to the said terms and conditions of the Scheme by returning the same duly sealed and signed on each page. On receipt of your consent, matter will be put to the Competent Authority for consideration and decision.

Please note that BHEL has also certain claims against you (if applicable). BHEL reserves its right to agree or not to agree conciliation of the said disputes through BHEL and this letter is being issued without prejudice to BHEL's rights and contentions available under the contract and law.

Yours faithfully,

Representative of BHEL

Format 3 to BHEL Conciliation Scheme, 2018
FORMAT FOR GIVING CONSENT BY
CONTRACTOR/VENDOR/CUSTOMER/COLLABORATOR/CONSORTIUM PARTNERS FOR REFERRING THE DISPUTES TO CONCILIATION THROUGH IEC

To,

BHEL

.....

Sub: Resolution of Disputes through Conciliation by Independent Expert Committee (IEC).

Ref: Contract/MoU/Agreement/LOI/LOA No & date ____

With reference to above referred contract, our following bills/invoices/claims submitted to BHEL are still unpaid giving rise to Disputes:

SL. no.	Claim Description	Bill submitted to BHEL (no. and date)	Amount of the bill/claim	Amount received from BHEL	Outstanding Amount

Accordingly we request you to kindly refer the Disputes in respect of above claims to IEC for Conciliation.

We hereby agree and give our unconditional consent to the terms and conditions of BHEL Conciliation Scheme, 2018 governing conciliation through IEC. We have signed the same on each page and enclosed it for your consideration.

Yours faithfully,

(Signature with stamp)

Authorized Representative of Contractor

Name, with designation

Date

Format 5 to BHEL Conciliation Scheme, 2018
STATEMENT OF CLAIMS/COUNTER CLAIMS TO BE SUBMITTED TO
THE IEC BY BOTH THE PARTIES

1. Chronology of the Disputes
2. Brief of the Contract/MoU/Agreement/LOI/LOA
3. Brief history of the Disputes:
4. Issues:
5. Details of Claim(s)/Counter Claim(s):

Sl. No.	Description of claim(s)/Counter Claim	Amount (in INR)Or currency applicable in the contract	Relevant contract clause

6. Basis/Ground of claim(s)/counter claim(s) (along with relevant clause of contract)

Note– *The Statement of Claims/Counter Claims may ideally be restricted to maximum limit of 20 pages. Relevant documents may be compiled and submitted along with the statement of Claims/Counter Claims. The statement of Claims/Counter Claims is to be submitted to all IEC members and to the other party by post as well as by email.*

Item/Package Name :	
Enquiry No.:	
Project:	
Type of project	
Percentage of Local Content	<i>(Bidder to enter the applicable % of local content)</i>

Self-certification to be submitted in INR 100/- non judicial stamp paper

Format of Self certification regarding Local Content in line with PPP-MII order, 2017 & its revision dated 04.06.2020.

Date:.....

I _____ S/o, D/o, W/o, _____ Resident of _____ hereby solemnly affirm and declare as under:

That I will agree to abide by the terms and conditions of the Public Procurement (Preference to Make in India) Order, 2017 (*hereinafter PPP-MII order*) of Government of India issued vide Notification No: P-45021/2/2017-BE-II dated 15/06/2017, its revision dated 04/06/2020 and any subsequent modifications/ Amendments, if any.

That the information furnished hereinafter is correct to the best of my knowledge and belief and I undertake to produce relevant records before the procuring entity/ BHEL or any other Government authority for the purpose of assessing the local content of goods/services/works supplied by me for *(Enter the name of the Equipment/Item for Project)*.

That the local content for all inputs which constitute the said goods/services/works has been verified by me and I am responsible for the correctness of the claims made therein.

That the goods/services/works supplied by me for *(Enter the name of the Equipment/Item for Project)* **contains.....%** *(mention the Local content in %age)* Local Content.

That the value addition for the purpose of meeting the 'Minimum Local Content' has been made by me at *(Enter the details of the location(s) at which value addition is made)*.

That in the event of the local content of the goods/services/works mentioned herein is found to be incorrect and not meeting the prescribed supplier class categorization criteria as per said order, based on the assessment of procuring agency (ies)/ BHEL/ Government Authorities for the purpose of assessing the local content, action shall be taken against me in line with the PPP-MII order and provisions of the Integrity pact/ Bidding Documents.

I agree to maintain the following information in the Company's record for a period of 8 years and shall make this available for verification to any statutory authority.

i Name and details of the Local Supplier
(Registered Office, Manufacturing unit location, nature of legal entity)

ii. Date on which this certificate is issued

Item/Package Name :	
Enquiry No.:	
Project:	
Type of project	
Percentage of Local Content	<i>(Bidder to enter the applicable % of local content)</i>

Self-certification to be submitted in INR 100/- non judicial stamp paper

- iii. Goods/services/works for which the certificate is produced
- iv. Procuring entity to whom the certificate is furnished
- v. Percentage of local content claimed and whether it meets the Minimum Local Content prescribed
- vi. Name and contact details of the unit of the Local Supplier (s)
- vii. Sale Price of the product
- viii. Ex-Factory Price of the product
- ix. Freight, insurance and handling
- x. Total Bill of Material
- xi. List and total cost value of input used to manufacture the Goods/to provide services/in construction of works
- xii. List and total cost of input which are domestically sourced. Value addition certificates from suppliers, if the input is not in-house to be attached
- xiii. List and cost of inputs which are imported, directly or indirectly

For and on behalf of..... (Name of firm/entity)

Authorized signatory (To be duly authorized by the Board of Directors)

<Insert Name, Designation and Contact No.>

Clause regarding regarding restrictions under Rule 144 (XI) of the General Financial Rules (GFRs), 2017 as per Government of India order OM No.6/18/2019-PPD dated 23.07.2020

- I. Any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority.
- II. "Bidder" (including the term 'tenderer', 'consultant' or 'service provider' in certain contexts) means any person or firm or company including any member of a consortium or joint venture (that is an association of several persons, or firms or companies), every artificial juridical person not failing in any of the descriptions of bidders stated hereinbefore, including any agency branch or office controlled by such person, participating in a procurement process.
- III. "Bidder from a country which shares a land border with India" for the purpose of this Order means:
 - a. An entity Incorporated, established or registered in such a country; or
 - b. A subsidiary of an entity Incorporated, established or registered in such a country; or
 - c. An entity substantially controlled through entitles incorporated, established or registered in such a country; or
 - d. An entity whose *beneficial owner* is situated in such a country, or
 - e. An Indian (or other) agent of such an entity; or
 - f. A natural person who is a citizen of such a country; or
 - g. A consortium or joint venture where any member of the consortium or joint venture falls under any of the above
- IV. The *beneficial owner* for the purpose of (iii) above will be as under:
 1. In case of a company or Limited Liability Partnership, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has a controlling ownership interest or who exercises control through other means.
Explanation-
 - a. "Controlling ownership interest" means ownership of or entitlement to more than twenty-five per cent. of shares or capital or profits of the company;
 - b. "Control" shall include the right to appoint majority of the directors or to control the management or policy decisions including by virtue of their shareholding or management rights or shareholder's agreements or voting agreements;
 2. In case of a partnership firm, the beneficial owner is the natural person(s) who, whether acting alone or together, or through one or more juridical person, has ownership of entitlement to more than fifteen percent of capital or profits of the partnership;
 3. In case of an unincorporated association or body of individuals, the beneficial owner is the natural person(s), who, whether acting alone or together, or through one or more juridical person, has ownership of or entitlement to more than fifteen percent of the property or capital or profits of such association or body of Individuals;
 4. Where no natural person is Identified under (1) or (2) or (3) above the beneficial owner is the relevant natural person who holds the position of senior managing official;
 5. In case of a trust, the identification of beneficial owner(s) shall include identification of the author of the trust, the trustee, the beneficiaries with fifteen percent or more interest in the trust and any other natural person exercising ultimate effective control over the trust through a chain of control or ownership.
- V. An Agent is a person employed to do any act for another or to represent another in dealings with third person.

Clause regarding restrictions under Rule 144 (XI) of the General Financial Rules (GFRs), 2017 as per Government of India order OM No.6/18/2019-PPD dated 23.07.2020

VI. The successful bidder shall not be allowed to sub-contract works to any contractor from a country which shares a land border with India unless such contractor is registered with the Competent Authority.

** The above clause is not applicable to the bidders from those countries (even if sharing a land border with India) to which the GoI has extended lines of credit or in which the GoI is engaged in development projects.*

* List of countries to which lines of credit have been extended or in which development projects are undertaken are available on the Ministry of External affairs website (<https://www.mea.gov.in/>)

Compliance to be submitted in INR 100/- non judicial stamp paper

Sub: Compliance to Government of India order OM No.6/18/2019-PPD dated 23.07.2020 regarding restrictions under Rule 144 (XI) of the General Financial Rules (GFRs), 2017

Sl No.	Description	Bidder's confirmation
<i>1</i>	<i>We, M/s_____ have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; We hereby certify that we are not from such a country.</i>	<i>Agreed</i>

(Note: Non-compliance of above said GoI Order and its subsequent amendment, (if any), by any bidder(s) shall lead for commercial rejection of their bids by BHEL)

Bidder's authorized signatory with stamp & seal

Compliance to be submitted in INR 100/- non judicial stamp paper

Sub: Compliance to Government of India order OM No.6/18/2019-PPD dated 23.07.2020 regarding restrictions under Rule 144 (XI) of the General Financial Rules (GFRs), 2017

SI No.	Description	Bidder's confirmation
1	<i>We, M/s_____have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India. We are from such a country which shares a land border with India & have been registered with the Competent Authority as specified in above said order. We hereby certify that we fulfil all requirements in this regard and are eligible to be considered.</i> <i>Evidence of valid registration by the Competent Authority is attached.</i>	<i>Agreed</i>

(Note: Non-compliance of above said GoI Order and its subsequent amendment, (if any), by any bidder(s) shall lead for commercial rejection of their bids by BHEL)

Bidder's authorized signatory with stamp & seal

No.25-111612018-PG
Government of India
Ministry of Power
Shram Shakti Bhawan, Rafi Marg, New Delhi • — 110001
Tele Fax: 011-23730264

Dated 02/07/2020

ORDER

Power Supply System is a sensitive and critical infrastructure that supports not only our national defence, vital emergency services including health, disaster response, critical national infrastructure including classified data & communication services, defence installations and manufacturing establishments, logistics services but also the entire economy and the day-to-day life of the citizens of the country. Any danger or threat to Power Supply System can have catastrophic effects and has the potential to cripple the entire country. Therefore, the Power Sector is a strategic and critical sector.

The vulnerabilities in the Power Supply System & Network mainly arise out of the possibilities of cyber attacks through malware / Trojans etc. embedded in imported equipment. Hence, to protect the security, integrity and reliability of the strategically important and critical Power Supply System & Network in the country, the following directions are hereby issued:-

1. All equipment, components, and parts imported for use in the Power Supply System and Network shall be tested in the country to check for any kind of embedded malware/trojans/cyber threat and for adherence to Indian Standards.
2. All such testings shall be done in certified laboratories that will be designated by the Ministry of Power (MOP).
3. Any import of equipment/components/parts from "prior reference" countries as specified or by persons owned by, controlled by, or subject to the jurisdiction or the directions of these "prior reference" countries will require prior permission of the Government of India
4. Where the equipment/components/parts are imported from "prior reference" countries, with special permission, the protocol for testing in certified and designated laboratories shall be approved by the Ministry of Power (MOP).

This order shall apply to any item imported for end use or to be used as a component, or as a part in manufacturing, assembling of any equipment or to be used in power supply system or any activity directly or indirectly related to power supply system.

This issues with the approval of Hon'ble Minister of State for Power and New & Renewable Energy (Independent Charge).



(Goutam Ghosh)

Director Tel: 011-23716674 To:

1. All Ministries/Departments of Government of India (As per list)
2. Secretary (Coordination), Cabinet Secretariat
3. Vice Chairman, NITI Aayog

सेवा भवन, आर. के. पुरम-I, नई दिल्ली-110066 टेली: 011-26732257 ईमेल: ce-rndcea@nic.in वेबसाइट:
www.cea.nic.in

Sewa Bhawan, R.K Puram-I, New Delhi-110066 Tele: 011-26732257 Email: ce-rndcea@nic.in Website: www.cea.nic.in

Vendor Compliance format in bidder letter head

In view of by order No. 25-111612018-PG, Dated 02.07.2020 of Ministry of Power, GOI

Enquiry No/ PO No & Date :
Project :
Name of items/Package :

This is to certify that all equipment, components, and parts imported for use in the Power Supply System and Network are in strict compliance to directions issued by Ministry of Power, Govt. of India vide order No. 25-111612018-PG dated 02.07.2020. The imported component(s), part or assembly item(s) does not carry any malware/Trojan etc.

Note: Non-compliance of MoP Order and its subsequent amendment(s), (if any), by vendor shall lead to rejection of their offer or cancellation of contract, which is awarded by BHEL.

Bidder's authorized signatory
with stamp & seal

Annexure-XI

INTEGRITY PACT:

Bidders shall have to enter into Integrity Pact with BHEL, duly signed with seal in original, if specified in NIT / RFQ failing which bidder's offer shall be liable for rejection.

(a) IP is a tool to ensure that activities and transactions between the company and its bidders/contractors are handled in a fair, transparent and corruption free manner. Following Independent External Monitor (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

Details of IEM for this tender is furnished below

Name: Shri Arun Chandra Verma, IPS (Retd.)

Email: acverma1@gmail.com

Name: Shri Virendra Bahadur Singh, IPS (Retd.)

E-mail: ybsinghips@gmail.com

(b) The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-1, in case of Two/three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this pact would be a preliminary qualification.

(c) Please refer section -8 of the IP for Role and responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to any of the above IEM(s). All correspondence with the IEM shall be done through e-mail only.

Note: No routine correspondence shall be addressed to the IEM (Phone/post/email) regarding the clarification, time extensions or any other administrative queries, etc. on the tender issued. All such clarification/issues shall be addressed directly to the tender issuing (procurement) department's officials as mentioned on Point 2 & 3.

INTEGRITY PACT**Between**

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi - 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

_____, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for _____

_____. The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

Section 1- Commitments of the Principal

1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-

1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.

1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.

1.1.3 The Principal will exclude from the process all known prejudiced persons.

1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions:

Section 2 - Commitments of the Bidder(s)/ Contractor(s)

- 2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
- 2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
- 2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
- 2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Indian Penal Code (IPC) and Prevention of Corruption Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- 2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- 2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- 2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and will await their decision in the matter.

Section 3 - Disqualification from tender process and exclusion from future contracts

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

Section 4 - Compensation for Damages

- 4.1 If the Principal has disqualified the Bidder from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent Earnest Money Deposit/ Bid Security.
- 4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to

demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee, whichever is higher.

Section 5 - Previous Transgression

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
- 5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

Section 6 - Equal treatment of all Bidders/ Contractors / Sub-contractors

- 6.1 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors. In case of sub-contracting, the Principal contractor shall be responsible for the adoption of IP by his sub-contractors and shall continue to remain responsible for any default by his sub-contractors.
- 6.2 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

Section 8 - Independent External Monitor(s)

- 8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.
- 8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.
- 8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality in line with Non- disclosure agreement.
- 8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

- 8.5 The role of IEMs is advisory, would not be legally binding and it is restricted to resolving issues raised by an intending bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.
- 8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process, the matter should be examined by the full panel of IEMs jointly as far as possible, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.
- 8.7 The IEMs would examine all complaints received by them and give their recommendations/ views to CMD, BHEL, at the earliest. They may also send their report directly to the CVO and the Commission, in case of suspicion of serious irregularities requiring legal/ administrative action. IEMs will tender their advice on the complaints within 10 days as far as possible.
- 8.8 The CMD, BHEL shall decide the compensation to be paid to the Monitor and its terms and conditions.
- 8.9 IEM should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the organization should be looked into by the CVO of the concerned organisation.
- 8.10 If the Monitor has reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code/ Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
- 8.11 The number of Independent External Monitor(s) shall be decided by the CMD, BHEL.
- 8.12 The word 'Monitor' would include both singular and plural.

Section 9 - Pact Duration

- 9.1 This Pact shall be operative from the date IP is signed by both the parties till the final completion of contract for successful bidder and for all other bidders 6 months after the contract has been awarded. Issues like warranty / guarantee etc. should be outside the purview of IEMs.
- 9.2 If any claim is made/ lodged during currency of IP, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged/ determined by the CMD, BHEL.

Section 10 - Other Provisions

- 10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. New Delhi.

- 10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.
- 10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
- 10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- 10.5 Only those bidders / contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

For & On behalf of the Principal

(Office Seal)

Place-----

Date-----

Witness:_____

(Name & Address) _____

For & On behalf of the Bidder/
Contractor

(Office Seal)

Witness:_____

(Name & Address) _____

RISK PURCHASE

1.1. In case the Supplier / Contractor fails to supply or fails to comply with terms & conditions of the Purchase Order / Contract or delivers equipment / material not of the contracted quality or fails to adhere to the contract specifications or fails to perform as per the activity schedule and there are sufficient reasons even before expiry of the delivery / completion period to justify that supplies shall be inordinately delayed beyond contractual delivery / completion period, BHEL reserve the right to cancel the Purchase Order / Contract either in whole or in part thereof without compensation to Supplier / Contractor and if BHEL so desires, may procure such equipment / material / items not delivered or others of similar description where equipment / material / items exactly complying with particulars are not readily procurable in the opinion of BHEL which is final and in such manner as deemed appropriate, at the risk and cost of the Supplier / Contractor and the Supplier / Contractor shall be liable to BHEL for any excess cost to BHEL. However, the Supplier / Contractor shall continue execution of the Purchase Order / Contract to the extent not cancelled under the provisions of this clause.

1.2. Risk & Cost Clause, in line with Conditions of Contract may be invoked in any of the following cases:

- i) Contractor/ supplier's poor progress of the work vis-à-vis execution timeline as stipulated in the Contract, backlog attributable to contractor/ supplier including unexecuted portion of work/ supply does not appear to be executable within balance available period considering its performance of execution.
- ii) Withdrawal from or abandonment of the work by contractor/supplier before completion as per contract.
- iii) Non completion of work/ Non-supply by the Contractor/ supplier within scheduled completion/delivery period as per Contract or as extended from time to time, for the reasons attributable to the contractor/ supplier.
- iv) Termination of Contract on account of any other reason(s) attributable to Contractor/ Supplier.
- v) Assignment, transfer, subletting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.
- vi) Non-compliance to any contractual condition or any other default attributable to Contractor/ Supplier.

1.3. Risk and Cost amount against Balance Work :

In case Risk & Cost is invoked, the amount of Risk & Cost against balance work shall be calculated as under:

Risk & Cost Amount (A-B) (A H/100)

Where,

A= Value of Balance scope of Work/ Supply (*) as per rates of new contract

B= Value of Balance scope of Works/ Supply (*) as per rates of old contract being paid to the contractor/ supplier at the time of termination of contract i.e. inclusive of PVC & ORC, if any.

H = Overhead Factor to be taken as 5 (five)

In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).

(Balance scope of work / supply)

Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Work / Supply for calculating risk & cost amount.

Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities.

Items for which total quantities to be executed have exceeded the Contract Quantities based on drawings issued to contractor from time to time till issue of Termination letter, then for these items total Quantities as per issued drawings would be deemed to be contract quantities.

Substitute/ extra items whose rates have already been approved would form part of contract quantities for this purpose. Substitute/ extra items which have been executed but rates have not been approved, would also form part of contract quantities for this purpose and rates of such items shall be determined in line with contractual provisions.

However, increase in quantities on account of additional scope in new tender shall not be considered for this purpose.

NOTE: In case portion of work is being withdrawn, contract quantities pertaining to portion of work withdrawn shall be considered as 'Balance scope of work/supply' for calculating Risk & Cost amount.

1.4. LD against delay in executed work /supply in case of Termination of Contract

LD against delay in executed Work /Supply shall be calculated in line with LD clause of the contract for the delay attributable to contractor/ supplier. For this purpose, contract value shall be taken as Executed Value of work/supply for the purpose of limiting maximum LD value.

Method for calculation of “LD against delay in executed Work/ supply” is given below:

- i) Let the time period from scheduled date of start of work till termination of contract excluding the period of Hold (if any) not attributable to contractor/ supplier= T1
- ii) Let the value of executed work/ supply till the time of termination of contract= X
- iii) Let the Total Executable Value of work/ supply for which inputs/fronts were made available to contractor/ supplier and were planned for execution till termination of contract = Y
- iv) Delay in executed work/ supply attributable to contractor/supplier i.e. $T2 = (1 - \frac{X}{Y}) \times T1$
- v) LD shall be calculated in line with LD clause of the Contract for the delay attributable to contractor/ supplier taking “X” as Contract Value and “T2” as delay attributable to contractor/ supplier.

Note: In case portion of service/ supply is withdrawn, no LD shall be applicable for portion of service/ supply withdrawn.

1.5. Recovery from Supplier

Recoveries from contractor/ supplier on whom risk & cost has been invoked shall be as per Clause No. 23 of GTC.

**ACTIVITY SCHEDULE (ANNEXURE-II)****ENQUIRY NO. -****PROJECT -****BIDDER NAME -****(SEPARATE ACTIVITY SCHEDULE TO BE FILLED-UP FOR EACH PROJECT BY THE SUPPLIER)**

Name of Bidder:-		Please fill here	
Sl. NO.	ACTIVITY	ACTIVITY TIME IN WEEKS	REMARKS IF ANY
1	Inputs to vendor by BHEL. Last inputs date will consider		BHEL Activity
2	Submission of Documents necessary for getting manufacturing clearance like Drawings, Date sheet etc.		Vendor to fill ensuring Delivery completion date mentioned by BHEL in the NIT
3	Approval of documents/ Manufacturing Clearance from BHEL / Customer *	4	BHEL Time to issue Manufacturing Clearance
4	Manufacturing time		Vendor to fill ensuring Delivery completion date mentioned by BHEL in the NIT
5	Inspection call		Vendor to fill ensuring Delivery completion date mentioned by BHEL in the NIT
6	Customer Inspection & Dispatch Clearance	2	BHEL Time to issue MICC
7	Dispatch		Vendor to fill ensuring Delivery completion date mentioned by BHEL in the NIT
8	ETC site		Vendor to fill ensuring Delivery completion date mentioned by BHEL in the NIT
Note: 1) * Supplier must ensure the completeness and correctness of the requisite documents before submission for approval. Delay in approval on account of incomplete/inadequate information shall be the responsibility of supplier.			
2) Inspection call should be given in the prescribed format only. Inspection calls not in the prescribed format shall not be entertained.			
3) Qty. to be offered for Inspection should be in accordance within Delivery- schedule - lot BHEL reserves the right not to entertain multiple inspection calls for a Delivery- lot and delay on this account shall be the responsibility of Supplier.			

DATE
PLACE
SIGN AND STAMP OF BIDDER

RISK PURCHASE

1.1. In case the Supplier / Contractor fails to supply or fails to comply with terms & conditions of the Purchase Order / Contract or delivers equipment / material not of the contracted quality or fails to adhere to the contract specifications or fails to perform as per the activity schedule and there are sufficient reasons even before expiry of the delivery / completion period to justify that supplies shall be inordinately delayed beyond contractual delivery / completion period, BHEL reserve the right to cancel the Purchase Order / Contract either in whole or in part thereof without compensation to Supplier / Contractor and if BHEL so desires, may procure such equipment / material / items not delivered or others of similar description where equipment / material / items exactly complying with particulars are not readily procurable in the opinion of BHEL which is final and in such manner as deemed appropriate, at the risk and cost of the Supplier / Contractor and the Supplier / Contractor shall be liable to BHEL for any excess cost to BHEL. However, the Supplier / Contractor shall continue execution of the Purchase Order / Contract to the extent not cancelled under the provisions of this clause.

1.2. Risk & Cost Clause, in line with Conditions of Contract may be invoked in any of the following cases:

- i) Contractor/ supplier's poor progress of the work vis-à-vis execution timeline as stipulated in the Contract, backlog attributable to contractor/ supplier including unexecuted portion of work/ supply does not appear to be executable within balance available period considering its performance of execution.
- ii) Withdrawal from or abandonment of the work by contractor/supplier before completion as per contract.
- iii) Non completion of work/ Non-supply by the Contractor/ supplier within scheduled completion/delivery period as per Contract or as extended from time to time, for the reasons attributable to the contractor/ supplier.
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- v) Assignment, transfer, subletting of Contract without BHEL's written permission resulting in termination of Contract or part thereof by BHEL.
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Risk & Cost Amount (A-B) (A H/100)

Where,

A= Value of Balance scope of Work/ Supply (*) as per rates of new contract

B= Value of Balance scope of Works/ Supply (*) as per rates of old contract being paid to the contractor/ supplier at the time of termination of contract i.e. inclusive of PVC & ORC, if any.

H = Overhead Factor to be taken as 5 (five)

In case (A-B) is less than 0 (zero), value of (A-B) shall be taken as 0 (zero).

(Balance scope of work / supply)

Difference of Contract Quantities and Executed Quantities as on the date of issue of Letter for 'Termination of Contract', shall be taken as balance scope of Work / Supply for calculating risk & cost amount.

Contract quantities are the quantities as per original contract. If, Contract has been amended, quantities as per amended Contract shall be considered as Contract Quantities.

Items for which total quantities to be executed have exceeded the Contract Quantities based on drawings issued to contractor from time to time till issue of Termination letter, then for these items total Quantities as per issued drawings would be deemed to be contract quantities.

Substitute/ extra items whose rates have already been approved would form part of contract quantities for this purpose. Substitute/ extra items which have been executed but rates have not been approved, would also form part of contract quantities for this purpose and rates of such items shall be determined in line with contractual provisions.

However, increase in quantities on account of additional scope in new tender shall not be considered for this purpose.

NOTE: In case portion of work is being withdrawn, contract quantities pertaining to portion of work withdrawn shall be considered as 'Balance scope of work/supply' for calculating Risk & Cost amount.

1.4. LD against delay in executed work /supply in case of Termination of Contract

LD against delay in executed Work /Supply shall be calculated in line with LD clause of the contract for the delay attributable to contractor/ supplier. For this purpose, contract value shall be taken as Executed Value of work/supply for the purpose of limiting maximum LD value.

Method for calculation of “LD against delay in executed Work/ supply” is given below:

- i) Let the time period from scheduled date of start of work till termination of contract excluding the period of Hold (if any) not attributable to contractor/ supplier= T1
- ii) Let the value of executed work/ supply till the time of termination of contract= X
- iii) Let the Total Executable Value of work/ supply for which inputs/fronts were made available to contractor/ supplier and were planned for execution till termination of contract = Y
- iv) Delay in executed work/ supply attributable to contractor/supplier i.e. $T2 = (1 - \frac{X}{Y}) \times T1$
- v) LD shall be calculated in line with LD clause of the Contract for the delay attributable to contractor/ supplier taking “X” as Contract Value and “T2” as delay attributable to contractor/ supplier.

Note: In case portion of service/ supply is withdrawn, no LD shall be applicable for portion of service/ supply withdrawn.

1.5. Recovery from Supplier

Recoveries from contractor/ supplier on whom risk & cost has been invoked shall be as per Clause No. 23 of GTC.

**SOURCING STRATEGY & POLICY
CORPORATE OPERATIONS MANAGEMENT
BHEL – NEW DELHI**

AA:SSP:RA:05:amdt01

Dated: 10.03.2021

(Circular No. 45 of 2020-21)

Sub: Guidelines for Reverse Auction - 2021

Pursuant to the issue of Circular no. 44 of 2020-21 dated 08.03.2021 on Guidelines for Reverse Auction - 2021, following is to be noted with respect to clause 10.1:

1. In case of two or three techno-commercially qualified bidders, there shall be no elimination of H1 bidder (whose quote is highest in sealed envelope price bid).
2. In case of four qualified bidders, H1 bidder to be eliminated whereas in case of five qualified bidders, H1 and H2 bidders are to be eliminated.

Accordingly, Clause 10.1 of Guidelines for Reverse Auction - 2021 has been amended and the document is enclosed.

Based on above, Units/ Regions may issue/ modify necessary work instructions/ departmental procedures etc.

This issues with the approval of Competent Authority.



(C. Venkat Rao)
GM/ SS&P

Distribution:

- All Heads of Units/ Regions
- All Heads of MM of Units/ Regions
- SS&P page on Corporate Office intranet - <http://intranet.bhel.in>
- CVO - for kind info please
- SA to Director (Fin)/(E, R&D)/(HR)/(IS&P)/(Power) - for kind info of Director
- SA to CMD - for kind info of CMD

**SOURCING STRATEGY & POLICY
CORPORATE OPERATIONS MANAGEMENT
BHEL – NEW DELHI**

AA:SSP:RA:05
Dated: 08.03.2021

(Circular No. 44 of 2020-21)

Sub: Guidelines for Reverse Auction – 2021

Guidelines for Reverse Auction (RA) were last revised in March 2020. Based on implementation feedback from Units/ Regions and deliberation with various agencies, the revised RA guidelines are attached herewith.

Following are the major changes:

1. Start price for RA to be L1 of e-bid/ sealed envelope price bids.
2. Minimum two techno-commercially qualified bidders are required to conduct RA.
3. Wherever six or more techno-commercially qualified bidders are available, RA would be conducted amongst first 50% of the bidders arranged in the order of prices from lowest to highest. Number of bidders eligible for participating in RA would be rounded off to next higher integer value if number of techno-commercially qualified bidders is odd (e.g. if 7 bids are technically qualified, then RA will be conducted amongst lowest four bidders). However, there will be no elimination of bidders who are MSE or qualifying under PPP-MII Order, 2017.

These revised guidelines shall be applicable for:

- (a) all NITs issued on or after 15 days from the date of issue of the circular,
- (b) NITs already issued with upfront declaration of RA and where techno-commercial bids (Part-I) are yet to be opened by issuing suitable corrigendum, if required

All other ongoing cases would be dealt as per existing guidelines.

OKg
08/03/21

Based on above, Units/ Regions may issue/ modify necessary work instructions/ departmental procedures etc.

This issues with the approval of Competent Authority.



(C. Venkat Rao)
GM/ SS&P

Distribution:

- All Heads of Units/ Regions
- All Heads of MM of Units/ Regions
- SS&P page on Corporate Office intranet - <http://intranet.bhel.in>
- CVO - for kind info please
- SA to Director (Fin)/(E, R&D)/(HR)/(IS&P)/(Power) - for kind info of Director
- SA to CMD - for kind info of CMD



GUIDELINES FOR REVERSE AUCTION - 2021

(AA:SSP:RA:05 dated 08.03.2021)

Amendment No.	Date of issue	Remarks
01	10.03.2021	Clause 10.1 modified

**SOURCING STRATEGY & POLICY
CORPORATE OPERATIONS MANAGEMENT
BHEL, New Delhi**

Guidelines for Reverse Auction – 2021

Doc. No. AA:SSP:RA:05
Dated: 08.03.2021

1.0 Scope

This document describes the guidelines to be followed by each Unit/ Division/ Region for conducting Reverse Auction (RA) for procurement of material/ works/ services. These guidelines will be applicable for all purchases/ contracts to be awarded under Purchase/ Works policy and the RA shall follow the philosophy of English Reverse (No ties). Based on these guidelines, Units/ Divisions/ Regions (hereinafter referred as 'units') may issue their own Departmental Procedures without changing the intent and spirit of the guidelines contained in this document. These guidelines will supersede earlier guidelines issued vide AA:SSP:RA:04 dated 04.03.2020.

English Reverse (No ties) is a type of auction where the starting price and bid decrement are announced before start of online reverse auction. The interested bidders can thereupon start bidding in an iterative process wherein the lowest bidder at any given moment can be displaced by an even lower bid of a competing bidder, within a given time frame. The bidding is with reference to the current lowest bid in the reverse auction. All bidders will see the current lowest quoted price and their rank. The term 'No ties' is used since more than one bidder cannot give an identical price, at a given instant, during the reverse auction. In other words, there shall never be a tie in the bids.

2.0 Intent of Reverse Auction

To derive maximum benefit in cost savings through competitive bidding.

3.0 Upfront declaration in NIT

Wherever it is felt that procurement may be done through Reverse Auction, the bids shall be invited in two parts/ three parts or single part bid (Price Bid) where Techno-Commercial MoU already exists. Wherever, the evaluation is done for individual line item, separate sealed envelope price bid for each line item shall be taken.

Decision to go for RA would be taken before floating of the tender. In case it is decided to go for RA, same shall be declared upfront in NIT by inserting the following **clause**:

"BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on www.bhel.com) for this tender. RA shall be conducted among the techno-

Guidelines for Reverse Auction – 2021

Doc. No. AA:SSP:RA:05
Dated: 08.03.2021

commercially qualified bidders.

Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered for RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking."

4.0 Aspects to be considered for RA

Following aspects may be considered by the competent authority (empowered to approve the ordering) to decide before floating of the tender if RA is to be conducted for that particular tender:

- a) Number of techno-commercially qualified bidders in previous tender for same/ similar class of item
- b) Price volatility of the item(s) under consideration
- c) Past purchase experience of similar item(s)
- d) Tender Value of the item(s) under procurement
- e) Any other aspect which may be specific to tender

Note: Decision to go for RA or not will be on case to case basis with recorded reasons.

5.0 RA Committee

Purchase/ Tender committee, if already in place, shall also act as RA committee. Purchase representative will be the convener. In case Purchase/ Tender committee has not been formed, the Product Manager/ MM Head/ Department Head, shall constitute RA committee consisting of representatives (*rank as per DoP of tender/ negotiation committee*) from departments of Engineering/ Indenter/ User, Purchase and Finance. This committee will work for a specific tender. The role of RA committee shall be as below:

- To vet the comparative statement comprising sealed envelope price bids received, MSE status, qualification against Public Procurement (Preference to Make in India), Order 2017 (PPP-MII, Order 2017) of all techno-commercially qualified bidders, loading etc. before sending it to the service provider for RA.
- To decide and record the 'Start-Price' and 'Bid Decrement'.
- To observe the RA process and declare RA as successful.

Guidelines for Reverse Auction – 2021

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6.0 Business rules for RA

Model Business rules (annexure I) and other annexures II to VI are attached. MM shall prepare and fill in the required details in the annexures at appropriate places like:

- Enquiry/ Request for Quotation (RFQ) number
- Name and Addresses of the bidders
- Items description, quantities/ weight, Specification
- Date and time of opening and closing of RA
- Extension conditions
- Loading Criteria/ Formulae
- Foreign Exchange (FE) rates for evaluation
- Taxes & Duties
- Freight & Insurance
- Bidders' training, if required, etc.

The calculation sheet e.g. excel sheet (which will help to arrive at 'Total Cost to BHEL') which is communicated to respective bidders of RA, will be prepared by MM and vetted by Finance. This calculation sheet will be finalized based on the evaluation criteria specified in the NIT and will be same based on which sealed envelope price bids have been evaluated.

MM shall issue a mandate (annexure II) to the service provider covering business rules etc. and inform about event, calculation sheet etc. to all techno-commercially accepted bidders.

7.0 Role of Service Provider

- Acknowledge the receipt of mandate from BHEL.
- Contact the bidders, provide business rules and train them, as required.
- Get the process compliance form (annexure III) signed by all the participating bidders before RA event.
- Conduct the event as per the contract and business rules.
- Submit the Login Reports, Results, History sheet and authorized final bid from the bidders.
- To obtain price breakup from successful bidder and submit the same to BHEL.

8.0 Start price for RA shall be lowest of sealed envelope price bid.

Note: Wherever more than one lowest sealed envelope price bids are identical, RA committee shall declare the start price by reducing the lowest sealed envelope price bid by maximum of one decrement.

Guidelines for Reverse Auction – 2021

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amdt01 dated 10.03.2021

9.0 Witnessing Auction

Access to witness the RA shall be available to the concerned officials of BHEL (Indenter/ Finance Officials/ Purchase Officials), nominated by Head MM/ Purchase/ Contracts.

10.0 Reverse Auction Process

- 10.1 Reverse Auction will be conducted if two or more bidders are techno-commercially qualified. *In case of two or three qualified bidders, there shall be no elimination of H1 bidder (whose quote is highest in sealed envelope price bid). In case of four qualified bidders, the H1 bidder shall be eliminated whereas in case of five qualified bidders, H1 & H2 bidders shall be eliminated.* However, in case of six or more qualified bidders are available, RA would be conducted amongst first 50% of the bidders arranged in the order of prices from lowest to highest. Number of bidders eligible for participating in RA would be rounded off to next higher integer value if number of qualified bidders is odd (e.g. if 7 bids are qualified, then RA will be conducted amongst lowest four bidders). However, there will be no elimination of qualified bidders who are MSE or qualifying under PPP-MII, Order 2017, *irrespective of the number of bidders qualifying techno-commercially.*

In case of multiple H1 bidders, all H1 bidders (excluding MSEs and bidders qualifying under PPP-MII, Order 2017) shall be removed provided minimum two bidders remain in fray, else no H1 removal.

- 10.2 The lowest bidder in sealed envelope price bid shall be shown as current L1 automatically by the system. System shall have the provision to indicate this bid as current L1 for further bidding. This price can be displaced by an even lower bid of a competing bidder.

If the start price is lower than the lowest sealed envelope price bid (in line with clause 8.0), on acceptance of such start price by any bidder this bid would be indicated as current L1 for further bidding. However, if no bidder accepts the start price, RA shall be treated as cancelled for the respective line item(s) and the tender shall be processed accordingly.

In case of no further bidding, RA will be deemed to have been successful with current L1 bidder. During RA, all bidders will see their rank and current L1 price on the screen. Once the RA is done, the ranking status would be based on the last quoted price of the bidder(s) irrespective of the quote received in RA or sealed envelope price bid.

Guidelines for Reverse Auction – 2021

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- 10.3 No bidder shall be allowed to lower its bid below the current L1 by more than 5 decrements at one go.

11.0 Processing of case after RA

- 11.1 Wherever the evaluation is done on total cost basis, after Reverse Auction, prices of individual line items shall be reduced on pro-rata basis.
- 11.2 In case of splitting requirement, bidders who were removed from participation in RA may also be considered for counter offer if the pre-stated (NIT) numbers of suppliers do not accept the counter offer. However, principle of splitting to N-1 bidder shall be maintained in line with extant Purchase Policy/ Work Policy.
- 11.3 Reasonability of rates received through RA to be ascertained as per extant Policy provisions.

12.0 Payment to the Service Provider

Payment shall be made as per the agreed terms of the Framework Agreement with the service provider based on the mandate issued and service provider's invoice certified by the respective MM. If the RA event is conducted as per the mandate given by BHEL and agreed procedure, payment shall be made to the service provider irrespective of the auction outcome.

13.0 Others

- 13.1 If RA is being conducted for multiple line items and L1 is to be decided for individual items, number of items in single screen be restricted to 10 (ten) to avoid scrolling by the bidders.
- 13.2 In case of enquiry through e-Procurement, the sealed electronic price bid (e-bid) is to be treated as sealed envelope price bid.
- 13.3 BHEL will inform bidders the details of service provider who will provide business rules, all necessary training and assistance before commencement of online bidding.
- 13.4 Bidders will be advised to read the 'Business Rules' indicating details of RA event carefully, before reverse auction event.
- 13.5 Model annexures are enclosed. However, to suit specific requirement of the Units changes in the annexures may be done with the approval of respective MM Head of Unit. Such changes shall specifically be communicated to the service provider before the RA event.

---XXX---

Guidelines for Reverse Auction – 2021

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Business Rules for Reverse Auction

Annexure – I

This has reference to tender no **{tender number....date...}**. BHEL shall finalise the Rates for the supply of **{item name}** through Reverse Auction mode. BHEL has made arrangement with M/s. **{Service provider}**, who shall be BHEL's authorized service provider for the same. Bidders should go through the instructions given below and submit acceptance of the same.

The technical & commercial terms are as per (a) BHEL Tender Enq. No. {...} dated {...}, (b) Bidders' technical & commercial bid (in case of two part bid) and (c) subsequent correspondences between BHEL and the bidders, if any.

1. Procedure of Reverse Auctioning

- i. Price bids of all techno-commercially qualified bidders shall be opened.
- ii. **Reverse Auction:** The 'bid decrement' will be decided by BHEL.
- iii. The lowest bidder in sealed envelope price bid shall be shown as current L1 automatically by the system and no acceptance of that price is required. System shall have the provision to indicate this bid as current L1.
- iv. Bidders by offering a minimum bid decrement or the multiples thereof can displace a standing lowest bid and become "L1" and this continues as an iterative process. However, no bidder shall be allowed to lower its bid below the current L1 by more than 5 decrements at one go.
- v. After the completion of the reverse auction, the Closing Price shall be available for further processing.
- vi. Wherever the evaluation is done on total cost basis, after Reverse Auction, prices of individual line items shall be reduced on pro-rata basis.

2. Schedule for reverse auction: The Reverse Auction is tentatively scheduled on {date}: ;{start time}: ;{Close Time: }.

3. Auction extension time: If a bidder places a bid in the last {...} minutes of closing of the Reverse Auction and if that bid gets accepted, then the auction's duration shall get extended automatically for another {...} minutes,

Guidelines for Reverse Auction – 2021

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Business Rules for Reverse Auction

Annexure – I

for the entire auction (i.e. for all the items in the auction), from the time that bid comes in. Please note that the auto-extension will take place only if a bid comes in those last {...} minutes and if that bid gets accepted as the lowest bid. If the bid does not get accepted as the lowest bid, the auto-extension will not take place even if that bid might have come in the last {...} minutes. In case, there is no bid in the last {...} minutes of closing of Reverse Auction, the auction shall get closed automatically without any extension. However, bidders are advised not to wait till the last minute or last few seconds to enter their bid during the auto-extension period to avoid complications related with internet connectivity, network problems, system crash down, power failure, etc.

The above process will continue till completion of Reverse Auction.

Complaints/ Grievances, if any, regarding denial of service or any related issue should be given in writing thru e-mail/ fax to M/s. {Service provider} with a copy to BHEL within 15 minutes prior to initial closing time of Reverse Auction.

4. **Bid price:** The Bidder has to quote the {...} Price inclusive of Packing & Forwarding charges, all the routine & type tests as per tender scope, taxes, duties, freight and insurance as specified in tender document, including loading (if indicated by BHEL due to deviations in technical/ commercial terms) for the Items specified. Details are as shown in Excel Sheet for calculation of total cost to BHEL (To be specified by Unit as per NIT conditions).
5. **Bidding currency and unit of measurement:** Bidding will be conducted in *Indian Rupees per Unit* of the material as per the specifications {...}

In case of foreign currency bids, exchange rate (TT selling rate of State Bank of India) as on scheduled date of tender opening (Part-I bid) shall be considered for conversion in Indian Rupees. If the relevant day happens to be a Bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken.

6. **Validity of bids:** Price shall be valid for {... days} from the date of reverse auction. These shall not be subjected to any change whatsoever.

Guidelines for Reverse Auction – 2021

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Business Rules for Reverse Auction

Annexure – I

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7. **Lowest bid of a bidder:** In case the bidder submits more than one bid, the lowest bid at the end of Reverse Auction will be considered as the bidder's final offer to execute the work.
 8. Unique user IDs shall be used by bidders during bidding process. All bids made from the Login ID given to the bidders will be deemed to have been made by the bidders/ bidders' company.
 9. **Post auction procedure:** BHEL will proceed with the Lowest Bid in the Reverse Auction for further processing.
 10. Any commercial/ technical loading shall be separately intimated to respective bidders prior to RA. The excel sheet provided in this regard shall cover all these aspects. Commercial/ technical loading if any, shall be added by the respective bidder in its price during Reverse Auction. Modalities of loading & de-loading shall be separately intimated to the bidders. The responsibility for correctness of total cost to BHEL shall lie with the bidders.
 11. Reverse auction shall be conducted by BHEL (through M/s {Service Provider}), on pre-specified date, while the bidders shall be quoting from their own offices/ place of their choice. Internet connectivity shall have to be ensured by bidders themselves.

During the RA process if a bidder is not able to bid and requests for extension of time by FAX/ email/ phone then time extension of additional 15 minutes will be given by the service provider provided such requests come before 5 minutes of auction closing time. However, only one such request per bidder can be entertained.

In order to ward-off contingent situation of connectivity failure bidders are requested to make all the necessary arrangements/ alternatives whatever required so that they are able to circumvent such situation and still be able to participate in the reverse auction successfully. Failure of power or loss of connectivity at the premises of bidders during the Reverse auction cannot be the cause for not participating in the reverse auction. On account of this, the time for the auction cannot be extended and neither BHEL nor M/s. {Service provider} is responsible for such eventualities.

Guidelines for Reverse Auction – 2021

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Business Rules for Reverse Auction

Annexure – I

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12. Proxy bids: Proxy bidding feature is a pro-bidder feature to safe guard the bidder's interest of any internet failure or to avoid last minute rush. The proxy feature allows bidders to place an automated bid in the system directly in an auction and bid without having to enter a new amount each time a competing bidder submits a new offer. The bid amount that a bidder enters is the minimum that the bidder is willing to offer. Here the software bids on behalf of the bidder. This obviates the need for the bidder participating in the bidding process until the proxy bid amount is decrementally reached by other bidders. When proxy bid amount is reached, the bidder (who has submitted the proxy bid) has an option to start participating in the bidding process.

The proxy amount is the minimum amount that the bidder is willing to offer. During the course of bidding, the bidder cannot delete or change the amount of a proxy bid.

Bids are submitted in decrements (decreasing bid amounts). The application automates proxy bidding by processing proxy bids automatically, according to the decrement that the auction originator originally established when creating the auction, submitting offers to the next bid decrement each time a competing bidder bids, regardless of the fact whether the competing bids are submitted as proxy or standard bids. However, it may please be noted that if a manual bid and proxy bid are submitted at the same instant manual bid will be recognized as the L1 at that instant.

In case of more than one proxy bid, the system shall bid till it crosses the threshold value of 'each lowest proxy bid' and thereafter allow the competition to decide the final L1 price.

Proxy bids are fed into the system directly by the respective bidders. As such this information is privy only to the respective bidder(s).

13. Bidders are advised to get fully trained and clear all their doubts such as refreshing of Screen, quantity being auctioned, tender value being auctioned etc from M/s {Service provider}.
14. M/s. {Service provider}, shall arrange to demonstrate/ train the bidder or bidder's nominated person(s), without any cost to bidders. M/s. {Service provider}, shall also explain the bidders, all the business rules related to the
-

Guidelines for Reverse Auction – 2021

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Business Rules for Reverse Auction

Annexure – I

Reverse Auction. Bidders are required to submit their acceptance to the terms/ conditions/ modalities before participating in the Reverse Auction in the process compliance form as enclosed. Without this, the bidder will not be eligible to participate in the event.

15. Successful bidder shall be required to submit the final prices (L1) in prescribed format (Annexure – VI) for price breakup, quoted during the Reverse Auction, duly signed and stamped as token of acceptance without any new condition (other than those already agreed to before start of auction), after the completion of auction to M/s. {Service provider} besides BHEL within two working days of Auction without fail.
16. Any variation between the final bid value and that in the confirmatory signed price breakup document will be considered as tampering the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings (as available on www.bhel.com).
17. Bidders' bid will be taken as an offer to execute the work/ supplies the item as per enquiry no. {...} dt. {...}. Bids once made by the bidder, cannot be cancelled/ withdrawn and bidder shall be bound to execute the work as mentioned above at bidder's final bid price. Should bidder back out and not execute the contract as per the rates quoted, BHEL shall take action as per extant guidelines for suspension of business dealings (as available on www.bhel.com).
18. Bidders shall be able to view the following on their screen along with the necessary fields during Reverse Auction:
 - a. Leading (Running Lowest) Bid in the Auction (only total price of package)
 - b. Bid Placed by the bidder
 - c. Start Price
 - d. Decrement value
 - e. Rank of their own bid during bidding as well as at the close of auction.
19. BHEL's decision on award of contract shall be final and binding on all the Bidders.
20. BHEL reserves the right to extend, reschedule or cancel the Reverse Auction process at any time, before ordering, without assigning any reason, with

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Business Rules for Reverse Auction

Annexure – I

intimation to bidders.

21. BHEL shall not have any liability to bidders for any interruption or delay in access to the site irrespective of the cause. In such cases, the decision of BHEL shall be binding on the bidders.
22. Other terms and conditions shall be as per bidder's techno-commercial offers and other correspondences, if any, till date.
23. If there is any clash between this business document and the FAQ available, if any, in the website of M/s. {Service provider}, the terms & conditions given in this business document will supersede the information contained in the FAQs. Any changes made by BHEL/ service provider (due to unforeseen contingencies) after the first posting shall be deemed to have been accepted if the bidder continues to access the portal after that time.
24. Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action as per extant BHEL guidelines for suspension of business dealings (as available on www.bhel.com), shall be initiated by BHEL.

Guidelines for Reverse Auction – 2021

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Mandate to Service Provider

Annexure – II

Ref :

Date :

To,

M/s. {Service provider}

Sub: Providing of Services for Reverse Auction.

Ref: No {...} date {...}

Dear Sir,

Please conduct Reverse Auction as per the following details:

- **Scope:** Auction event management with training of BHEL and its bidders.
- Seek process compliance form from all the bidders provided by BHEL before start of RA event. In case of postponement of event to some other date, ensure acknowledgement from each bidder.
- Price: Rs. {.....}/- . No other duties, Taxes, levies etc. except service tax @ {.....}% shall be payable for conducting reverse auction. This price is firm.
- Payment Terms: 100% payment after successful completion of Auction.
- Start Price: L1 as per the CST (Comparative statement) of the envelope sealed bid shall be marked as L1 automatically by the system at the start of the auction, provided the L1 bidder participates in the RA by submitting the process compliance form. In case the Process Compliance form is not submitted by the L1 bidder, still its price has to be mapped as start price of RA for further bidding in RA.
Wherever there are more than one L1 in CST, the start price shall be the L1 price reduced by one decrement and the same shall be accepted by the interested bidder(s) for start of RA process.
- Completion of Auction Process: The auction process shall be deemed to have been successfully completed on receipt and acceptance of final report including hard copy/ email of the final bid with price break up, duly signed by the successful bidder who has participated in the reverse auction. The bill shall be submitted along with the completion report to the undersigned.
- Business Rules of the Reverse Auction are as per Annexure – I.
- The list of bidders with their contact details is given in Annexure – IV. and the details of the item (s) to be Reverse Auctioned are as per Annexure – V.
- Please acknowledge receipt of this letter order and also confirm that final report (duly signed and stamped by M/s. {Service provider}) including hard copy/ email of the final bid with breakup of prices duly signed by the successful bidder (duly endorsed by M/s. {Service provider}) shall be submitted within **four** working days of conclusion of auction.

Yours sincerely,

(for and on behalf of BHEL)

Guidelines for Reverse Auction – 2021

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Mandate to Service Provider

Annexure – II

Note:

If the event has been conducted as per mandate, you shall be paid irrespective of RA outcome.

Buyer Name	- Name of BHEL Unit - Full postal address - Fax: - Phone: - Email: - Contact person name: - Phone: -
Auction to be conducted by	- Name of Service provider - Full postal address - Fax: - Phone: - Email: - Contact person name: - Phone: -
Date of Auction	- Date of Auction - Reverse auction time: - Auction website: -
Documents Attached: (To be sent to the bidders)	1) Business rules for Reverse Auction (<u>Annexure-I</u>) 2) Process Compliance Form (<u>Annexure-III</u>) 3) Details of item (s) to be Reverse Auctioned (<u>Annexure-V</u>) 4) Post RA Price confirmation by bidder (<u>Annexure-VI</u>)

Guidelines for Reverse Auction – 2021

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Process Compliance Form

Annexure – III

(The bidders are required to print this on their company's letterhead and sign, stamp before RA)

To

- M/s. {Service provider}
- Postal address}

Sub: Agreement to the Process related Terms and Conditions

Dear Sir,

This has reference to the Terms & Conditions for the Reverse Auction mentioned in the RFQ document for {Items} against BHEL enquiry/ RFQ no.{.....} dt. {.....} This letter is to confirm that:

- 1) The undersigned is authorized official/ representative of the company to participate in RA and to sign the related documents.
- 2) We have studied the Reverse Auction guidelines (as available on www.bhel.com), and the Business rules governing the Reverse Auction as mentioned in your letter and confirm our agreement to them.
- 3) We also confirm that we have taken the training on the auction tool and have understood the functionality of the same thoroughly.
- 4) We also confirm that, in case we become L1 bidder, we will FAX/ email the price confirmation & break up of our quoted price as per Annexure - VI within **two** working days (of BHEL) after completion of RA event, besides sending the same by registered post/ courier both to M/s. BHEL and M/s. {Service provider.}

We, hereby confirm that we will honor the Bids placed by us during the auction process.

With regards

Signature with company seal

Name –

Company / Organization

Designation within Company / Organization

Address of Company / Organization

- **Sign this document and FAX/ email it to M/s {Service provider} at {.....} prior to start of the Event.**

Guidelines for Reverse Auction – 2021

Doc. No. AA:SSP:RA:05

Dated: 08.03.2021

List of bidders and their address/ contact person details

Annexure – IV

Sl. No.	Address	Contact Person
1	- Name of bidder - Full postal address - Fax: - Phone: - Email:	- Contact person name: - Phone: - Email:
2		
3		
..		
..		

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Details of item (s) for Reverse Auction

Annexure – V

1. *{Details of items including quantity, specification, Enquiry no. & date*

1.

2.

..

..

..

}

Guidelines for Reverse Auction – 2021

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RA price confirmation and breakup

(To be submitted by L1 bidder after completion of RA)

Annexure – VI

To

- M/s. Service provider
- Postal address

CC: M/s BHEL

{Unit-
Address-}

Sub: **Final price quoted during Reverse Auction and price breakup**

Dear Sir,

We confirm that we have quoted.

**Rs.{___ in value & in words___} for item(s) covered under tender enquiry
No. {...} dt.{...}**

Total price of the items covered under above cited enquiries is inclusive of {Packing & forwarding, GST, E.D., C.S.T., freight and insurance charges up to {.....} District,{.....} State and Type Test Charges etc., (exclusive of service tax), other as per NIT}

as our final landed prices as quoted during the Reverse Auction conducted today {date} which will be valid for a period of {___ in nos. & in words ___} days.

The price break-up is as given below.

Total

=====

- Rs. in value & in words

=====

Yours sincerely,

For _____

Name:

Company:

Date:

Seal:

**BHARAT HEAVY ELECTRICALS LTD.
(TRANSMISSION BUSINESS GROUP)**

GENERAL TERMS AND CONDITIONS FOR TENDER ENQUIRY / CONTRACT

This is to be submitted duly signed by bidder in original. Clause-wise deviations and / or additional conditions / clarifications, if any, are to be brought out clearly in “Schedule of Commercial Deviation”. Deviations and / or additional conditions / clarifications, if any, mentioned elsewhere in the bid / offer, shall not be considered.

Sr. No.	
1.	INSTRUCTION TO BIDDERS : 1.1 Sealed bids are invited for the items mentioned in the tender enquiry conforming to the NIT including Technical Specifications. Bids should be typed and free from overwriting and erasures. Corrections or additions / deletions, if any, must be clearly written and attested, otherwise offer may be rejected. 1.2 Bidder must ensure that their bid is submitted / dropped in the tender box on or before 14-00 Hrs. IST on the due date of opening, unless otherwise specified in the NIT, at the address as follows :- Tender Box, Materials Management, Transmission Business Group, Bharat Heavy Electricals Limited, 5th Floor, Tower-A, Advant Navis IT Business Park, Plot-7, Sector-142, Noida Expressway, Noida, Dist. G. B. Nagar, U. P. 201305 1.3 In case tender enquiry is floated through the e-procurement system, offer / bid has to be submitted through the e-procurement system ONLY as per instructions given in the e-procurement portal (https://bheleps.buyjunction.in). 1.4 The bids shall be opened at 14-30 Hrs. IST on the due date of opening, in the presence of participating bidders who may like to be present, unless otherwise specified in the NIT. Bids received late are liable for rejection. Bidders sending bids by courier or post will have to ensure that it is timely delivered at the above address. 1.5 Bids are to be submitted duly signed with seal in two parts :- a) Techno-commercial Bid (Part-I) To be submitted in 2 sets (original + copy). A copy of Price Bid (Part-II) clearly mentioning all the necessary information as per format without rices Un-Priced Bid is also to be enclosed in Part-I Bid. b) Price Bid (Part-II) To be submitted only in one set in a separate sealed envelope. This should not contain any Technical and / or Commercial Terms and Conditions. The rates should be quoted both in figures and words. 1.6 The Part-I and Part-II Bids are to be sealed in separate envelopes and marked

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	as Techno-commercial Bid (Part-I) and Price Bid (Part-II) respectively. Both the envelopes are to be kept in another common envelope and marked as BID. Each envelope should be sealed and super scribed with tender enquiry no., item / package name, project name and due date of opening. Bidder's name and address shall also be mentioned on each envelope. 1.7 For any technical clarification, please contact official mentioned in the tender enquiry / NIT. 1.8 For any commercial clarification please contact official issuing tender enquiry / NIT. 1.9 Price bid (Part-II) should not contain any additional information / description other than given in Un-Priced Bid submitted with Techno-commercial Bid (Part-I) except prices, otherwise bid is liable for rejection. 1.10 Price Bid submitted along with the bid shall remain valid up to validity of offer. Any discount / revised offer submitted by the bidder on its own shall be accepted provided it is received before the due date and time of offer submission (i.e. Part-I Bid). The discount shall be applied on pro-rata basis to all items including optional items, if any, unless specified otherwise by the bidder. Discount offered shall be valid for full duration of validity of the offer including extension of validity, if any. Unsolicited Supplementary / Revised Price Bid submitted after the due date and time of offer submission (i.e. Part-I Bid), during validity period of offer, unless asked by BHEL, shall not be considered. Withdrawal of quotation by the bidder, at any stage after its opening, may entail suitable action against such bidder by BHEL. 1.11 The consultants / firm (and any of its affiliates) shall not be eligible to participate against tender enquiry for the related goods or works or services for the same project, if they were engaged by BHEL-TBG for the consultancy services. 1.12 In case any Foreign OEM / Foreign Principal insists on engaging the services of an agent, such agent shall not be allowed to represent more than one manufacturer / supplier in the same tender. Moreover, either the agent could bid on behalf of the manufacturer / supplier or the manufacturer / supplier could bid directly but not both. In case bids are received from the manufacturer / supplier and the agent, bid received from the agent shall be ignored. 1.13 Non-conformities / errors / discrepancies in quoted prices in price bids shall be dealt as follows :- a) If, in the price structure quoted for the required goods / services / works, there is discrepancy between the unit price and the total price (which is obtained by multiplying the unit price by the quantity), the unit price shall prevail and the total price corrected accordingly, unless in the opinion of BHEL there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price corrected accordingly. b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected. c) If there is a discrepancy between words and figures, the amount in

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	words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above. d) If there is such discrepancy in an offer as mentioned in (a), (b) & (c) above, the same shall be conveyed to the bidder with target date upto which the bidder has to send his acceptance on the above lines and if the bidder does not agree to the decision of the BHEL, the bid is liable to be ignored. 1.14 In case the scope of the successful bidder / supplier against this tender enquiry includes Erection, Testing and Commissioning (ETC) of the equipment / material at site in addition to Supply, Purchase Order shall be placed for Supply Portion and Contract shall be separately awarded for ETC at Site Portion. General Terms and Conditions for Tender Enquiry / Contract mentioned herein shall be applicable for both Supply & ETC at Site. Additional Terms and Conditions for Tender Enquiry / Contract for Erection, Testing and Commissioning at Site BHEL/TBG/GTC-ETC/2016 Rev. 01 shall be applicable for ETC at Site only which is to be read in conjunction with General Terms and Conditions for Tender Enquiry / Contract mentioned herein. However, any breach of either the Purchase Order or the Contract shall be deemed to be breach of the other. 1.15 Taxes and Duties payable extra as per Clause No. 2.3 in NIT, if not specified/quoted clearly as extra shall be considered as included in Ex-works Price and therefore shall not be reimbursed. Taxes and duties not payable extra as per NIT shall be deemed to be included in Ex-works Price. 1.16 If the rates for taxes and duties in respect of the quoted materials and / or services assumed by the Supplier are less than the tariff prevailing at the time of tendering, Supplier will be responsible for such under quotations. However if the rates assumed are higher than the correct rates prevailing at the time tendering, the difference will be to the credit of BHEL. Note : Representative / official deputed by the bidder to witness tender opening must produce authorization letter for the same.
2.	PRICES : 2.1 Unless specifically indicated in the NIT, all prices shall be FIRM. No enhancement of rate for whatsoever reasons unless and until asked by BHEL shall be allowed. 2.2 Unless specifically indicated in the NIT, the prices shall be on INR basis. 2.3 Unless specifically indicated in the NIT, the prices are to be quoted on FOR (Site / Destination) basis excluding GST. The break-up of prices shall be as under :- a) Ex-works Price: Ex-works price including packing & forwarding charges. b) Freight: Freight for door delivery up to destination / site / store are to be quoted separately. c) Insurance: Insurance for door delivery up to destination / site / store are to be quoted separately.

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	d) Typ e Test Charges: If asked in the technical specification, it is to be quoted separately for each test. e) Charges for Su ervision of Erection, Testing & Commissioning (ETC) at Site: To be quoted separately if specified in NIT/Price Schedule. f) Charges for Testing & Commissioning at Site: To be quoted separately if specified in NIT/Price Schedule. g) Charges for Erection, Testing & Commissioning at Site: To be quoted separately if specified in NIT/Price Schedule. h) Training Charges: To be quoted separately if specified in NIT/Price Schedule. 2.4 GST rates along with HSN/SAC code as applicable on Sr No (a) to (h) above is to be mentioned separately in percentage in both un-priced bid and price bid. Note : i) Unless otherwise specified in the NIT, the purchase order shall be placed on Ex-works basis for Indian bidders. ii) Prices quoted by Indian bidders shall be in Indian Rupees only. iii) In case Supervision of Erection, Testing & Commissioning (ETC) at Site or Testing & Commissioning at Site or Erection, Testing & Commissioning at Site is also in scope of the bidder along with supply, bidder has to ensure that prices quoted for such services also are in line with special terms & conditions of the NIT, if any. iv) Unless otherwise specified in the NIT, Unloading at Site / Destination shall not be in the scope of the supplier. v) Prices in respect of Sr No (a) to Sr No (h) of Clause 2.3 above are to be quoted inclusive of all taxes & Duties, charges. Levies, royalty etc. if any, excluding GST.
3.	TERMS OF PAYMENT : 3.1 For Su lly only in sco e of the su llier 100% of payment within 60 days from the date of receipt of complete invoice along with documents in 3 sets (original + 2 copies) as follows : · LR / GR duly endorsed by BHEL Site Official. · Material Receipt Certificate issued by BHEL Site Official. · GST Compliant Tax Invoice · Packing List (Case-wise) · Copy of Transit Insurance Certificate from underwriters. · Material Inspection Clearance Certificate (MICC) issued by BHEL Quality Management · Guarantee Certificate · Copy of Performance Bank Guarantee (PBG) · Certificate of acceptance of Type Test Reports issued by BHEL Engineering Management wherever specifically mentioned in the Purchase Order. 3.2 For Su lly where Su ervision of Erection, Testing & Commissioning (ETC) at Site is in sco e of the su llier or Su lly where Testing & Commissioning at Site is in sco e of the su llier

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	a) 95% of payment within 60 days from the date of receipt of complete invoice along with documents in 3 sets (original + 2 copies) as follows : · LR / GR duly endorsed by BHEL Site Official. · Material Receipt Certificate issued by BHEL Site Official. · GST Compliant Tax Invoice · Packing List (Case-wise) · Copy of Transit Insurance Certificate from underwriters. · Material Inspection Clearance Certificate (MICC) issued by BHEL Quality Management · Guarantee Certificate · Copy of Performance Bank Guarantee (PBG) · Certificate of acceptance of Type Test Reports issued by BHEL Engineering Management wherever specifically mentioned in the Purchase Order. b) 5% of payment within 60 days from the date of receipt of complete invoice along with documents in 3 sets (original + 2 copies) as follows : · Certificate of successful completion of Supervision of Erection, Testing & Commissioning at Site if it is in the scope of the supplier or Certificate of successful completion of Testing & Commissioning at Site if it is in the scope of the supplier. · Certificate of completion of final documentation as per Purchase Order / Technical Specification issued by BHEL Engineering Management 3.3 For Supplier where Erection, Testing & Commissioning (ETC) at Site is in scope of the supplier a) 90% of payment within 60 days from the date of receipt of complete invoice along with documents in 3 sets (original + 2 copies) as follows : · LR / GR duly endorsed by BHEL Site Official. · Material Receipt Certificate issued by BHEL Site Official. · GST Compliant Tax Invoice · Packing List (Case-wise) · Copy of Transit Insurance Certificate from underwriters. · Material Inspection Clearance Certificate (MICC) issued by BHEL Quality Management · Guarantee Certificate · Copy of Performance Bank Guarantee (PBG) · Certificate of acceptance of Type Test Reports issued by BHEL Engineering Management wherever specifically mentioned in the Purchase Order b) 10% of payment within 60 days from the date of receipt of complete invoice along with documents in 3 sets (original + 2 copies) as follows : · Certificate of successful completion of Erection, Testing & Commissioning at Site issued by BHEL Site Official / Construction Management · Certificate of completion of final documentation as per Purchase Order / Technical Specification issued by BHEL Engineering Management 3.4 For Type Test Charges 100% payment along with applicable GST within 60 days from the date of receipt of complete GST compliant Tax invoice along with copy of Certificate of acceptance of Type Test Reports issued by BHEL Engineering Management in 3 sets (original + 2 copies) on completion of delivery (at site, if F&I is in scope of

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	supplier) of main supplies (excluding spares) for which Type Tests are applicable. List of main supplies (excluding spares) for which Type Tests are applicable shall be certified by BHEL Engineering Management. 3.5 For Charges for Supervision of Erection, Testing & Commissioning at Site 100% payment along with applicable GST within 60 days from the date of receipt of complete GST compliant Tax invoice along with certificate of successful completion of Supervision of Erection, Testing & Commissioning at Site issued by BHEL Site Official / Construction Management in 3 sets (Original + 2 copies). 3.6 For Charges for Testing & Commissioning at Site 100% payment along with applicable GST within 60 days from the date of receipt of complete GST compliant Tax invoice along with certificate of successful completion of Testing & Commissioning at Site issued by BHEL Site Official / Construction Management in 3 sets (Original + 2 copies). 3.7 For Training Charges 100% payment along with applicable GST within 60 days from the date of receipt of complete GST compliant Tax invoice along with certificate of completion of training issued by BHEL Engineering Management in 3 sets (original + 2 copies). Note : i) Supplier has to submit invoice(s) as per PO or approved billing break-up of prices (if applicable as per NIT). ii) In case of supplies for overseas project, Material Receipt Certificate issued by BHEL Authorized Representative shall also be acceptable. iii) In case of Transit Insurance under Open Insurance Policy, Intimation / Declaration of Transit Insurance as per terms of the relevant Open Insurance Policy along with copy of Open Insurance Policy from underwriters shall also be acceptable. iv) Supplier has to ensure commencement of transit insurance from the date not later than LR / GR date. v) Supplier has to submit Tax Invoice(s). Supplier should ensure that Tax Invoice should comply all statutory requirements under GST Law to enable BHEL to avail input credit vi) MSMED Act, 2006 and the rules made thereunder as amended from time to time shall be applicable for release of payment to suppliers qualified & registered as Micro & Small Enterprises based on documents mentioned in the NIT for MSME. vii) Supplier has to submit PBG (as per BHEL format) & Guarantee Certificate as per PO terms. viii) In case any shortages and / or damages in supplies, an amount calculated

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	based on comments against Material Receipt Certificate issued by the BHEL Site Official shall be withheld from the supply payment against 3.1(a) or 3.2(a) above to be deemed fit by BHEL subject to a minimum of 10% of the total ex-works value of the invoice corresponding to the LR / GR against which any shortages and / or damages are reported. The withheld amount shall be released after the shortages and / or damages in supplies are supplied / replenished against Certification by BHEL Site Official. ix) Payment of GST component shall be made only if vendor has deposited the Tax and credit for the same is reflected in GSTN (GST Network). In case credit of the same is not reflected in GSTN , vendor may alternatively furnish BG of GST Amount for a period valid for not less than 1 month .In case of disallowance of credit /non reflection of credit in GSTN , amount will be recovered from supplier along with applicable Interest , penalty etc from any of his dues. x) If GST is payable by BHEL on reverse Charge Mechanism basis, vendor should ensure the submission of GST compliant Tax invoice immediately on dispatch/ performance of service. In case of non-compliance any additional charges towards interest, penalty etc, will be to vendors account. xi) TDS under GST Act, if applicable, shall be deducted unless Exemption Certificate If applicable, from the appropriate authority is furnished to BHEL along with Invoice.
4.	INTEREST LIABILITY : In case of any delay in payment due to any reason, BHEL shall not pay any interest on delayed payment. Also, no interest shall be payable by BHEL on the bank guarantee / deposit amount or balance payment or any other money which may become due owing to difference or misunderstanding or any dispute before any quasi judicial authority between BHEL and the Supplier / Contractor.
5.	GUARANTEE : The equipment / material supplied and services rendered (if applicable) shall be guaranteed to be free from all defects and faults in design & engineering, material, workmanship & manufacture and in full conformity with the Purchase Order / Contract, Technical Specifications & approved drawings / data sheets, if any, for 18 months from the date of last delivery or 12 months from the date of commissioning, whichever is earlier. Wherever Erection, Testing & Commissioning at Site are also in the scope of the Supplier, the guarantee period shall be 18 months from the date of last delivery or 12 months from the date of commissioning, whichever is later. The defective equipment / material / component shall be replaced free of cost at site. Freight & Insurance during transit shall also be in the scope of the supplier / contractor. Any expenditure for dismantling and re-erection of the replaced equipment / material / component shall be to supplier's / contractor's account. All replacements during the guarantee period shall be delivered at site promptly and satisfactorily within a period not more than 45 days from the date of reporting the defect / rejection etc. In the event of the supplier / contractor failing to replace the defective equipment / material / component within the time period mentioned above, BHEL may proceed to undertake the replacement of such defective equipment / material / component at the risk and cost of the supplier / contractor without prejudice to any other rights under the contract and recover the same from PBG / other dues of this Purchase

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	Order / Contract or any other Purchase Order / Contract executed by the supplier / contractor. Note : i) In case of Illumination System, items viz. Lamps, Tubes, Ballast, Starters, Capacitors & Fuses will not be under Guarantee after commissioning. ii) In addition to the above guarantee period, Extended Guarantee / Warranty, if any, shall be as per NIT / Technical Specifications. iii) In case offer of agent of Foreign OEM / Foreign Principal is considered, as per Clause No. 1.12 above, Guarantee as mentioned above has to be provided by the Foreign OEM / Foreign Principal also.
6.	LATENT DEFECT : Liability for latent defects shall be for defects inherently lying within material or arising out of design deficiency which does not manifest itself during guarantee period but later and shall be limited to five years from the expiry of the guarantee period.
7.	PERFORMANCE BANK GUARANTEE (PBG) : Supplier shall arrange to submit Performance BG / Deposit on a non-judicial stamp paper of appropriate value along with first invoice or within 60 days from placement of Purchase Order (PO) whichever is earlier, in line with one of the applicable options as follows :- <u>Option A</u> A single rolling PBG for Rs. 50 Lakhs initially valid for 18 months with claim period of 3 months extra over and above 18 months for all the Purchase Orders being executed for Transmission Business Group, BHEL. However, validity of the PBG shall be extended till 18 months from the date of last delivery with 3 months claim period extra over and above 18 months. Single Rolling PBG option shall not be applicable in case Ex-works value of the PO at the time of placement of PO exceeds Rs. One Crore. <u>Option B</u> PBG for 10% of the total Ex-works PO value, valid for 18 months from the date of last delivery with claim period of 3 months extra over and above 18 months. Ex-works PO value at the time of placement of PO shall be considered for calculation of the PBG amount. <u>Option C</u> In case the total Ex-works PO value at the time of placement of PO does not exceed Rs. Ten Lakhs, interest free Deposit of 10% of the total Ex-works PO value at the time of placement of PO in form of Demand Draft favouring Bharat Heavy Electricals Limited and payable at New Delhi / Delhi / Noida shall also be acceptable to BHEL in lieu of PBG, which shall be released after expiry of 21 months from the date of last delivery after deduction, if any, within 60 days from receipt of invoice in 3 sets (original + 2 copies) to be submitted by the supplier. Note : i) The Bank Guarantee shall be from any bank as per Annexure for List of Banks (32 Nos.). The original PBG should be sent by issuing Bank directly to AGM (Finance), TBG, BHEL, Noida. ii) Extension of validity of the PBG in original, as per above clause, should be sent by issuing Bank directly to AGM (Finance), TBG, BHEL, Noida at least 45 days before expiry of validity of the PBG. iii) Unless otherwise specified in the NIT, deviation taken for non-submission of PBG / Deposit, as applicable, shall not be accepted.

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	iv) Supplier has to confirm one of the applicable options for submission of PBG / Deposit before placement of PO. v) In case of non submission PBG / Deposit, as applicable, BHEL reserve the right for Risk Purchase as per terms of the NIT and impose Suspension of Business Dealings with the Supplier / Contractor. vi) BHEL reserve the right to encash the Bank Guarantee and forfeit the amount in the event of any default, failure or neglect on part of the Supplier in fulfilment of performance of the Purchase Order. vii) Value of the Bank Guarantee (at the time of submission) shall remain unchanged for any subsequent variations in Purchase Order value up to $\pm 20\%$. Beyond this variation of $\pm 20\%$, the Supplier shall arrange to enhance or may reduce the value of the Bank Guarantee accordingly for the total variation promptly. viii) Vendor to ensure submission of Certificate of Final Documentation /Confirmation regarding Non applicability of Final Documentation, as the case may be, as referred in clause No 9 regarding Final Documentation. BG shall be released only after submission of the same to BHEL TBMM.
8.	SUBMISSION OF DRAWINGS / DOCUMENTS FOR APPROVAL : Supplier shall submit the master document list within 7 days from date of Purchase Order / Contract, unless otherwise specified in the NIT, with planned dates for submission which shall be in line with activity schedule as per Purchase Order / Contract and shall be finalized with BHEL Engineering Management. Date of first submission of drawings / documents shall be certified by BHEL Engineering Management after the receipt of applicable drawings / documents (e.g. project specific cover sheet, GTP, OGA drawings, schemes, type test reports etc.) by BHEL. During detailed engineering stage, necessary hard copies of the engineering drawings / documents shall also be submitted by the supplier as per the Purchase Order / Contract requirement. The supplier shall also submit the packing drawings as per technical specifications. In case item(s) offered require any interface details of other item (not in the scope of supplier & required for operating the equipment), the supplier has to submit interfaces schedule along with submission of engineering drawings / documents. It shall be responsibility of the supplier to get the details of the interfaced item from BHEL before manufacturing to avoid any mismatch at site.
9.	FINAL DOCUMENTATION : Final documentation as called in the Technical /contract specification is to be submitted within 3 months from the date of first delivery of respective equipment, item/material. After submission of Final Documentation, BHEL Engineering Management (TBEM) will issue a Certificate of Completion of Final Documentation. Wherever Final Documentation is not applicable, BHEL Engineering Management (TBEM) will issue confirmation regarding the same, Vendor to submit the Certificate of Final Documentation /Confirmation regarding Non applicability of Final Documentation, as the case may be, to BHEL TBMM. In case of Non Submission of Certificate of Final Documentation /Confirmation regarding Non applicability of Final Documentation, BG will be liable for encashment.
10.	INSPECTION : BHEL / customer / third party shall inspect equipment / material before despatch. Stage inspection during manufacturing may also be carried out. Material to be despatched only after getting Material Despatch Clearance Certificate (MDCC) / MICC issued by BHEL. Supplier shall send inspection call on prescribed format / web site only, with an advance notice of 15 days. Supplier to ensure submission of all routine / acceptance test reports, inspection

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	reports and all other documents related to inspection, immediately to BHEL. BHEL representative is authorised to carry out audits along with Third Party Inspection Agency at vendor's / supplier's works before clearing the items for despatch.
11.	DESPATCH DOCUMENTS : Despatch documents to be immediately sent to BHEL on despatch are as follows :- • Copy of Invoice • Copy of LR / GR in case of Indian suppliers or BL / AWB in case of foreign suppliers • Copy of Packing List (Case-wise) • Copy of Transit Insurance Certificate from underwriters • Copy of Guarantee Certificate
12.	DELIVERY PERIOD : Delivery / Completion requirement shall be mentioned in the NIT. Bidder to specify best delivery / completion period possible in weeks from the date of LOI / PO as per activity schedule for consideration by BHEL. Time required for type test, if applicable, is to be separately indicated. Note : LR / GR date or invoice date (whichever is later) for indigenous supplies and BL / AWB date for FOB / CIF (if applicable) contracts shall be considered as delivery date.
13.	LIQUIDATED DAMAGES FOR DELAYED DELIVERY: In case of delay in execution of Purchase Order beyond the contractual delivery time, an amount of 0.5% of the total Purchase Order value for supply (incl. taxes and duties, freight & insurance as applicable) per week of delay or part thereof subject to a maximum of 10% of the total Purchase Order value for supply (incl. taxes and duties, freight & insurance as applicable) shall be deducted as Liquidated Damages (LD) along with applicable GST (if any) on LD. However, in case of staggered (lot-wise) contractual delivery schedule, an amount of 0.5% of the total Purchase Order value for supply (incl. taxes, duties, freight & insurance as applicable) of delayed lot per week of delay or part thereof subject to maximum of 10% of the total Purchase Order value. (Incl taxes, duties, Freight & Insurance as applicable) shall be deducted as Liquidated Damages (LD) along with applicable GST (if any) on LD. Note : i) In case of any amendment / revision in PO /WO, the LD shall be linked to the amended / revised Purchase Order / Contract value and delivery / completion time / schedule, if applicable. ii) LR / GR date or invoice date (whichever is later) for indigenous supplies and BL / AWB date for FOB / CIF (if applicable) for imported supplies shall be treated as the date of dispatch for levying LD as above. iii) However, for indigenous supply, if time period between date of receipt of material at site / destination by Site Official & the date of LR / GR or invoice (whichever is later) is more than 30 days, where distance from place of despatch as per LR / GR is upto 1000 Kms or if time period between date of receipt of material at site / destination by Site Official & the date of LR / GR or invoice (whichever is later) is more than 45 days, where distance from place of despatch as per LR / GR is more than 1000 Kms, such excess period shall also be considered for LD purpose. iv) If, as per supplier, delay is not attributable to the supplier, delay analysis with documentary evidence may be submitted by the supplier at the earliest but not

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	later than six months from the end of the financial year in which the payment is withheld. Based on the above details / documents submitted by the supplier, BHEL shall take final decision and if considered appropriate by BHEL, withheld amount (full or part as the case may be) shall be released, otherwise, full or balance withheld amount shall be treated as deduction of Liquidated Damages (LD) towards delayed delivery.
14.	VALIDITY OF OFFER : The offer shall be valid for 120 days from the due date of opening of tender (i.e. techno-commercial bid unless otherwise specified in the NIT). Prices of Spares, wherever they optional items, shall be valid till two years from the date of placement of PO.
15.	ACCEPTANCE / RE ECTION OF TENDER : BHEL reserve the right to reject in full or part, any or all tender without assigning any reason thereof. BHEL also reserve right to vary the quantities as mentioned in the NIT. Acceptance of offer is subject to vendor approval by customer before opening of price bid. BHEL shall not be bound by any power of attorney granted by tenderer or by changes in composition of the firm made subsequent to award of order / contract. BHEL may however recognize such power of attorney and changes after obtaining proper legal advice, cost of which will be chargeable to the seller / contractor concerned. If the tenderer deliberately gives wrong information, BHEL reserves the right to reject such an offer at any stage or cancel the order / contract, if awarded, and forfeit the security deposit and bank guarantee.
16.	DEVIATION : The bids having deviation(s) w.r.t. tender are liable for rejection. However, BHEL, at its discretion, may load the prices for evaluation of offer with prior intimation to bidder.
17.	TENDER EVALUATION : Comparative statement shall be prepared and evaluated on total cost basis at destination/site (as per terms of NIT) considering overall quantity indicated in NIT unless contrary to same is specifically mentioned in the tender enquiry / NIT. Total cost for this purpose shall include cost of scope of work as mentioned in NIT along with applicable taxes & duties, and other services etc. (if applicable). GST input credit available to BHEL shall be reduced from prices while determining L1 status. In case all bidders are foreign & Port of Import (destination port) is same for all the bidders, evaluation of offers shall be done on CIF (Port of Import) basis. Otherwise, evaluation of offers shall be done on the basis of delivered cost at site /destination to BHEL. Further, in case of foreign bidders, marine freight & insurance are to be quoted separately & the purchase order may be placed on FOB basis with an option for delivery on CIF / CFR basis, if required, later. In case of foreign bidders, Exchange Rate (TT selling rate of State Bank of India) as on date of tender opening (Part-I Bid in case of two part bid) shall be considered. If the relevant day happens to be a bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken for tender evaluation.
18.	LOADING CRITERIA : List of permissible deviations & loading criteria thereof are as follows :- a) Payment Terms Base rate of SBI (as applicable on the date of bid opening / techno-commercial bid opening in case of two part bids) + 6% shall be considered for loading for the period of relaxation sought by bidder(s) against terms of payment in the NIT. b) Liquidated Damages (LD) for Delayed Delivery

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	Loading on LD clause shall be to the extent to which it is not agreed to by the bidder (at offered value). c) In case of foreign bidders, if the quoted prices is on CIF basis only, it shall be loaded to arrive at total FOR (Site / Destination) price, as applicable, by factors as follows :- i) Port handling / clearing charges: @ 1% of CIF value to arrive at Customs Assessable Value. ii) Custom Duty (including CVD & SAD) as per NIT prevailing on date of price bid opening. iii) Inland Freight & Transit Insurance: @ 5% of CIF value where distance between site / destination and Port of Discharge is upto 1000 Kms or @ 7% of CIF value where distance between site / destination and Port of Discharge is more than 1000 Kms. Note : Additional deviations (if considered acceptable by BHEL) & the loading criteria shall be communicated to all the qualified bidders before price bid opening.
19.	ARBITRATION : In the event of any dispute emanating from and relating to this contract, the matter shall be referred to the sole arbitration of the person appointed by the competent authority of BHEL. Subject to aforesaid, the provisions of The Arbitration and Conciliation Act, 1996 and the rules made thereunder as amended from time to time in India shall apply to the arbitration proceedings. The venue of arbitration shall be in New Delhi. Further there shall be no claim for any pre-reference or pendente-lite interest on the claims and any claim for such interest made shall be void. However, in case of contract with Public Sector Enterprise / Undertaking (PSE/PSU) or Govt. Dept., the extant guidelines of Govt. of India shall be followed.
20.	LEGAL SETTLEMENT : Indian Courts at New Delhi / Delhi shall have exclusive jurisdiction to decide the dispute, if any, arising out of or in respect of the contract(s) to which these conditions are applicable. Contract, including all matters connected with contract, shall be governed by the Indian Law, both substantive and procedural, for the time being in force including modification thereto.
21.	SUB-CONTRACTING : In case further subcontracting of BHEL Purchase Order / Contract or part thereof is envisaged by supplier, the same can be done after written permission is obtained from BHEL. However it shall not absolve the Supplier / Contractor of the responsibility of fulfilling BHEL Purchase Order / Contract requirements. In case of subcontracting of Purchase Order / Contract awarded by BHEL or part thereof without such permission, BHEL reserve the right to cancel the Purchase Order / Contract and source such material / component / equipment / system from any other agency at the risk and cost of the Supplier / Contractor. If Supplier / Contractor is an individual or proprietary concern and the individual or the proprietor dies or the partnership is dissolved or substantially affected, then unless BHEL is satisfied that legal representative of individual Supplier / Contractor or proprietor of proprietary concern and surviving partners of partnership firm are capable of carrying out and completing the Purchase Order / Contract, BHEL shall be entitled to cancel the Purchase Order / Contract as to its incomplete portion and without being in any way liable to payment of any compensation to legal representative of Supplier / Contractor and / or to surviving partners of Supplier's / Contractor's firm on account of cancellation of the Purchase Order / Contract. Decision of BHEL that legal representatives of deceased Supplier / Contractor or

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	surviving partners of the Supplier's / Contractor's firm cannot carry out and complete the Purchase Order / Contract shall be final and binding on the parties hereto. Terms and Conditions shall not get affected in case of de-merger / amalgamation / taking-over / re-constitution etc.
22.	RISK PURCHASE : In case the Supplier / Contractor fails to supply or fails to comply with terms & conditions of the Purchase Order / Contract or delivers equipment / material not of the contracted quality or fails to adhere to the contract specifications or fails to perform as per the activity schedule and there are sufficient reasons even before expiry of the delivery / completion period to justify that supplies shall be inordinately delayed beyond contractual delivery / completion period, BHEL reserve the right to cancel the Purchase Order / Contract either in whole or in part thereof without compensation to Supplier / Contractor and if BHEL so desires, may procure such equipment / material / items not delivered or others of similar description where equipment / material / items exactly complying with particulars are not readily procurable in the opinion of BHEL which is final and in such manner as deemed appropriate, at the risk and cost of the Supplier / Contractor and the Supplier / Contractor shall be liable to BHEL for any excess cost to BHEL. However, the Supplier / Contractor shall continue execution of the Purchase Order / Contract to the extent not cancelled under the provisions of this clause. Recovery amount on account of purchases made by BHEL at the risk and cost of Supplier / Contractor shall be the difference of total value of new Purchase Order (PO) value and total value of old Purchase Order for applicable items, where the total value of new PO is more than total value of old PO for applicable items, plus additional 15% of the total ex-works value of new PO as overheads. The Supplier / Contractor shall on no account be entitled to any gain on such risk & cost purchase. In case the purchase order (PO) value of the new PO is less than the PO value of the old PO, 15% of the total ex-works value of the new PO shall be recovered as overheads and the difference between the PO value of the old PO and the new PO shall not be considered for calculation of the recovery amount.
23.	ADJUSTMENT OF RECOVERY : Any amount payable by the Supplier / Contractor under any of the condition of this contract shall be liable to be adjusted against any amount payable to the Supplier / Contractor under any other Purchase Order / Contract awarded to him by any BHEL unit. This is without prejudice to any other action, as may be deemed fit, by BHEL.
24.	FORCE MAJEURE CONDITION : If by reason of war, civil commotion, act of god, Government restrictions, strike, lockout which are not in control of Supplier / Contractor the deliveries / services are delayed, Supplier / Contractor shall not be held responsible. If at any time during the continuance of the Purchase Order / Contract, the performance in whole or in part by either party of any obligations under the Purchase Order / Contract is prevented or delayed by reason of any war hostilities, acts of the public enemy, restrictions by Govt. of India, civil commotion, sabotage, fires, floods, explosion, epidemics, quarantine restrictions, strike, lock-outs or acts of God (hereinafter referred to as event), which are not in control of Supplier / Contractor or BHEL, then provided notice of the happening of such event is given by either party to the other within fifteen (15) days from the date of occurrence thereof, neither party shall by reason of such event be entitled to terminate the Purchase Order / Contract nor shall have any claim for damages against each other in respect of such non-performance and delay in performance. Performance under the Purchase Order / Contract shall be resumed immediately after such event has come to an end or

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	ceased to exist and decision of BHEL as to whether the deliveries have to be resumed or not shall be final, conclusive and binding on the parties hereto. In the event of the parties hereto not able to agree that a force majeure event has occurred, the parties shall submit the disputes for resolution pursuant to the provisions hereunder, provided that the burden of proof as to whether a force majeure event has occurred shall be upon the party claiming such an event. Notwithstanding above provisions, BHEL shall reserve the right to cancel the Purchase Order / Contract, wholly or partly, in order to meet the overall project schedule and make alternative arrangements for completion of delivery and other schedules.
25.	MANUFACTURING QUALITY PLAN (MQP) : Supplier to submit approved MQP in line with requirement of BHEL/customer.
26.	SUPPLIER PERFORMANCE MONITORING AND RATING SYSTEM : BHEL reserve the right for evaluation of Supplier Performance Rating as per Supplier Performance Monitoring and Rating System of BHEL for necessary action. Details are available at BHEL Website www.bhel.com for reference.
27.	DEALING WITH BANNED SUPPLIERS / CONTRACTORS IN BHEL : Offers of the bidders, who are on the banned list, as also the offers of the bidders who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL website www.bhel.com for reference.
28.	ORDER OF PRECEDENCE : The order of precedence shall be as follows :- - Special Terms & Conditions (STC) for Tender Enquiry / Contract, if any - General Terms & Conditions (GTC) for Tender Enquiry / Contract & Additional General Terms & Conditions (GTC) for Tender Enquiry / Contract for Erection Testing & Commissioning (ETC) at Site, if applicable Provisions in (a) above shall prevail over (b). In case of conflict, between Technical Specifications and STC / GTC, bidder to seek necessary clarifications from BHEL concerned official as specified in NIT.
29.	PACKING : Packing shall be in conformity with specifications and shall be such as to ensure prevention of damages, corrosion, deterioration, shortages, pilferage and loss in transit or storage. In case of shipment by sea or air, the packing shall be sea-worthy or air-worthy respectively and of international standards. Different types of spares i.e. start-up / commissioning spares and initial spares (mandatory spares and recommended O&M spares) are to be packed separately. Packing List shall be submitted as per standard format along with advance set of documents for claiming payment which shall also indicate :- - Case / Packing size (as applicable). - Gross weight and net weight of each package. - Detailed contents of the package with quantity of each item separately. Project, Item / Package Description, BHEL's PO No. with date & Case / Packing Mark should also be clearly mentioned on the Case / Packing and Packing List for identification. Also, Packing List must be duly signed & should include respective Invoice No. & LR No. Note : Foreign suppliers to furnish details to arrange inland transportation by BHEL, if applicable, as follows :- - No. of Packages - Size with Weight (Gross & Net) of each Package - No. of Containers with type & size required for inland transportation

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	iv) Type of Cargo (Break Bulk / LCL / FCL) v) Customs Tariff No.
30.	COLOUR CODING : Aluminium stickers are required to be attached to large components but plastic sheet tags should be tied with small components, giving details like purchase order, description of the component, quantity etc. Tags should be of the colour as follows :- a) Main equipment : Yellow or White tag b) Start-up / Commissioning spares : Blue tag c) Mandatory spares : Pink or Red tag d) Recommended / O&M spares : Green tag
31.	MICRO, SMALL & MEDIUM ENTERPRISES (MSME) : MSMED Act 2006 as amended from time to time & extant regulations of Govt. of India for MSME will be applicable. Micro & Small Enterprises (MSE) can avail the intended benefits only if they submit along with the offer / bid, attested copies of either Acknowledgement of Entrepreneur Memorandum Part-II (EM-II certificate) having deemed validity (five years from the date of issue of acknowledgement in EM-II) or valid NSIC certificate or EM-II certificate along with attested copy of a CA certificate (As per BHEL format where deemed validity of EM-II certificate of five years have expired) applicable for the relevant financial year (latest audited). Date to be reckoned for determining the deemed validity will be the date of opening (for Techno-commercial Bid : Part-I in case of two part bid). Non-submission of such documents will lead to consideration of their bid at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or arrested (in original) by a Gazetted officer. Copy of Udyog Aadhaar Memorandum with Acknowledgement of Ministry of Micro, Small & Medium Enterprises should also be furnished.
32.	BUSINESS ETHICS / SUSPENSION OF BUSINESS DEALINGS WITH SUPPLIERS / CONTRACTORS : If any bidder / supplier / contractor during pre-tendering / tendering / post tendering / award / execution / post-execution, indulges in malpractices cheating, bribery, fraud or other misconduct or formation of cartel so as to influence the bidding process or influences the price or fails to perform or is in default without any reasonable cause etc or performs any act considered objectionable as per extant guidelines, action may be taken against such bidders/supplier/contractor as per extant Guidelines for Suspension of Business Dealings with Suppliers/Contractors . Abridged version of same is available at BHEL website (www.bhel.com) on Supplier Registration Page.
33.	REVERSE AUCTION : BHEL reserve the right to go for Reverse Auction (RA) instead of opening the sealed envelope price bid, submitted by the bidder or price bid submitted by the bidder through e-procurement system. This will be decided after techno-commercial evaluation. All bidders to give their acceptance for participation in RA. Non-acceptance to participate in RA may result in non-consideration of their bids, in case BHEL decides to go for RA. In case BHEL decides to go for Reverse Auction, only those bidders who have given their unconditional acceptance to participate in RA will be allowed to participate in the Reverse Auction. Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit online sealed bid in the Reverse Auction. Non-submission of online sealed bid by the bidder will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue. General Terms and Conditions of RA are available at Annexure. Business Rules for

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	RA shall be sent to the bidders before conducting RA. Abridged Version of Common Guidelines for Conducting Reverse Auction may also be seen at BHEL website (www.bhel.com) on Supplier Registration Page & Tender Notifications Page.
34.	INTEGRITY PACT : Bidders shall have to enter into Integrity Pact with BHEL, duly signed with seal in original, if specified in NIT / RFQ failing which bidder's offer shall be liable for rejection.
35.	TERMINATION OF CONTRACT : BHEL shall have the right to cancel the Purchase Order / Contract without any financial implication to BHEL if vendor approval by end user / customer is withdrawn or in case of Suspension of Business Dealings with the Suppliers / Contractors by BHEL. BHEL shall have the right to cancel Purchase Order / Contract, wholly or in part, in case they are obliged to do so on account of any decline, diminution, curtailment or stoppage of their business and in that event, the Supplier's / Contractor' compensation claim shall be settled mutually. In case of cancellation of Purchase Order / Contract for main supply, all other associated Purchase Orders / Contracts like those for Mandatory Spares / Recommended Spares / Erection, Testing & Commissioning (ETC) / Supervision of ETC, if any, would also get cancelled.
36.	SHELF LIFE : Supplier has to inform the list of the items / sub-items which have limited shelf life like consumables or those required for the first fill and shall indicate the corresponding shelf life period in the offer. Such items / sub-items shall be manufactured / despatched only after getting formal clearance from BHEL.
37.	LIMITATION OF LIABILITY : Notwithstanding any other provisions, except in cases of wilful misconduct and / or criminal negligence / acts, a) Neither the Supplier / Contractor nor BHEL shall be liable to the other, whether in Purchase Order / Contract, tort, or otherwise, for any consequential loss or damage, loss of use, loss of production or loss of profits or interest costs, provided however that this exclusion shall not apply to any obligation of the Supplier / Contractor to pay Liquidated Damages to the BHEL and b) Notwithstanding any other provisions incorporated elsewhere in the contract, the aggregate liability of the Contractor in respect of this contract, whether under the Contract, in tort or otherwise, shall not exceed total Contract Price, provided however that this limitation shall not apply to any obligation of the Vendor to indemnify BHEL with respect to Patent Infringement or Intellectual Property Rights.
38.	SHORTAGES / DAMAGES : a) Against Supply only or Supply where Supervision of Erection, Testing & Commissioning (ETC) at Site or Supply where Testing & Commissioning at Site is in scope of the supplier : Any shortages and / or damages in supplies shall be supplied / replenished free of cost by the supplier as early as possible but not later than 30 days from the date of intimation by BHEL to the supplier. b) Against Supply where Erection, Testing & Commissioning (ETC) at Site is in scope of the supplier :

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	Any shortages and / or damages in supplies and during handling / storage, erection, testing and commissioning at site shall be supplied / replenished free of cost by the Supplier / Contractor, as early as possible, to meet the contractual completion time / schedule. Note: There shall not be any extension in the contractual delivery time / schedule due to any shortages and / or damages in supplies.
39.	VARIATION OF CONTRACT VALUE / QUANTITY VARIATION : BHEL shall have the right to variation in quantities of items within $\pm 30\%$ of the total Purchase Order / Contract value at the time of placement of PO or award of Contract on overall basis for all amendments together within two years from the date of original Purchase Order / Contract or completion of execution of the Purchase Order / Contract whichever is earlier but quantities of individual items may vary to any extent or may get deleted unless otherwise specified in the technical specifications. No compensation is payable due to variation in the quantities and the Supplier / Contractor shall be bound to accept the same the contracted prices / rates without any escalation. However, if the Purchase Order / Contract is on Lumpsum basis, no variation of Purchase Order / Contract value shall be admissible to the Supplier / Contractor within the scope of Purchase Order / Contract, as long as the inputs remain unchanged.
40.	STATUTORY VARIATION : GST rates prevailing at the time of dispatch of goods / completion of services shall be payable by BHEL. All other taxes, duties, charges, royalty, cess, other levies shall be deemed to be included in the Ex Works Prices / Charges quoted by bidders and no variations shall be payable in respect thereof. No other variations such as on customs duty, exchange rate, minimum wages, prices of controlled commodities, any other input etc. shall be payable by the BHEL. Notwithstanding anything above, where the actual completion of the supply / services occurs beyond the period stipulated in the Purchase Order / Contract or any extension thereof, variations referred to above, will be limited to the rates prevailing on the dates of such agreed completion periods only. For variations after the agreed completion periods, the Supplier / Contractor alone shall bear the impact for the upward revisions and for downward revisions BHEL shall be given the benefit of reduction in applicable taxes /GST. This will be without prejudice to the levy of liquidated damages for delay in delivery / completion. If new tax is introduced by Central/ State Govt / Municipality becomes directly applicable on items specified in Bill of Quantities/Purchase Order/Contract, full reimbursements shall be made provided it becomes applicable on items specified in Bill of Quantities. However, any additional tax implication due to delay in delivery, beyond the Contractual Delivery, attributable to supplier shall be borne by supplier.
41.	MODE OF PAYMENT : Payment shall be made directly to the Supplier / Contractor by BHEL through NEFT / RTGS.
42.	CONFIDENTIALITY : Supplier / Contractor shall, at all times, undertake to maintain complete confidentiality of all data, information, software, drawings & documents etc. belonging to BHEL and also of systems, procedures, reports, input documents, manuals, results and any other BHEL documents discussed and / or finalized during the course of execution of Purchase Order / Contract.
43.	INDEMNIFICATION : The Supplier / Contractor shall indemnify and keep indemnified and hold harmless BHEL and its employees and officers from and against any and all claims, suits, actions or administrative proceedings, demands, losses, damages, costs and

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	expenses and any other claim of whatsoever nature in respect of the death or injury of any person or loss of or damage to any property arising during the course and out of the execution of the Purchase Order / Contract.
44.	TITLE OF GOODS : a) Ownership of the equipment / material procured in India, shall be transferred to BHEL upon loading on to the mode of transport to be used for transportation of the said equipment / material from the works to the site / destination and upon endorsement of the dispatch documents in favour of BHEL. b) Ownership of the equipment / material to be imported into the country where the site is located, if not procured in India, shall be transferred to BHEL upon loading on the mode of transport to be used for transportation of the equipment / material from the country of origin to that country / destination and upon endorsement of despatch document in favour of BHEL. c) Notwithstanding the transfer of ownership of the equipment / material, the responsibility for care and safe custody thereof together with the risk of loss or damage thereto for whatsoever reason shall remain with the Supplier.
45.	COMPLIANCE OF STATUTORY REQUIREMENTS : The vendor shall comply with all State and Central Laws / Acts, Statutory Rules, Regulations etc., as may be enacted by the Government during the tenure of the Purchase Order / Contract and having in force and applicable to the Purchase Order / Contract and nothing shall be done by the Supplier / Contractor in contravention of any Law / Act and / or Rules / Regulations, thereunder or any amendment thereof. The Supplier / Contractor shall pay all taxes, fees, licence charges / deposits, duties, tolls, royalty, commissions or other charges which may be levied on account of any of his operations connected with the Purchase Order / Contract. In case BHEL is constrained to make any of such payments, BHEL shall recover the same from the Supplier / Contractor either from moneys due to him or otherwise as deemed fit.
46.	ACCEPTANCE OF ORDER : Supplier should acknowledge and accept the Letter of Award / Purchase Order issued by BHEL within 7 days of the issue of Letter of Award / Purchase Order. In case of any discrepancy / typographical error in issue of Purchase Order / Contract, the agreed terms & conditions, scope of work, rates / prices for placement of PO / award of contract shall be applicable and BHEL reserves the right to issue amendment(s) to PO / Contract for correction of discrepancies / typographical errors in the PO / Contract at a later date.
47.	FRAUD PREVENTION POLICY : The Bidder along with its associate / collaborators / sub-contractors / sub-vendors / consultants / service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website http://www.bhel.com and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice.

Signature of Bidder (Authorized Signatory) with Date & Seal

Certificate by Chartered Accountant on letter head

This is to Certify that M/S
(hereinafter referred to as 'company') having its registered office at
is registered under MSMED Act 2006, (Entrepreneur
Memorandum No (Part-II) dtd:.....,
Category: (Micro/Small)). (Copy enclosed).

Further verified from the Books of Accounts that the investment of the company as per the latest audited financial year as per MSMED Act 2006 is as follows:

1. **For Manufacturing Enterprises:** Investment in plant and machinery (i.e. original cost excluding land and building and the items specified by the Ministry of Small Scale Industries vide its notification No.S.O.1722(E) dated October 5, 2006 :
Rs.....Lacs
2. **For Service Enterprises:** Investment in equipment (original cost excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006:
Rs.....Lacs

(Strike off whichever is not applicable)

The above investment of Rs.....Lacs is within permissible limit of Rs.....Lacs forMicro / Small (Strike off which is not applicable) Category under MSMED Act 2006.

Or

The company has been graduated from its original category (Micro/ Small) (Strike off which is not applicable) and the date of graduation of such enterprise from its original category is (dd/mm/yyyy) which is within the period of 3 years from the date of graduation of such enterprise from its original category as notified vide S.O. No. 3322(E) dated 01.11.2013 published in the gazette notification dated 04.11.2013 by Ministry of MSME.

Date:



(Signature)

Name -

Membership number -

Seal of Chartered Accountant

Annexure for List of Banks (32 Nos.)

Sr. No.	Name of Bank
1	Allahabad Bank
2	Andhra Bank
3	Bank of Baroda
4	Canara Bank
5	Corporation Bank
6	Central Bank
7	Indian Bank
8	Indian Overseas Bank
9	Oriental Bank of Commerce
10	Punjab National Bank
11	Punjab & Sindh Bank
12	State Bank of India
13	State Bank of Hyderabad
14	Syndicate Bank
15	State Bank of Travancore
16	UCO Bank
17	Union Bank of India
18	United Bank of India
19	Vijaya Bank
20	IDBI
21	CITI Bank N. A.
22	Deutsche Bank AG
23	The Hongkong and Shanghai Banking Corporation Limited
24	Standard Chartered Bank
25	J P Morgan
26	Axis Bank
27	The Federal Bank Limited
28	HDFC
29	Kotak Mahindra Bank
30	ICICI
31	Indusind Bank
32	Yes Bank

**BHARAT HEAVY ELECTRICALS LTD.
(TRANSMISSION BUSINESS GROUP)**

ADDITIONAL GENERAL TERMS AND CONDITIONS

**FOR
TENDER ENQUIRY / CONTRACT
FOR
ERECTION, TESTING & COMMISSIONING (ETC) AT SITE**

This is to be read in conjunction with General Terms and Conditions for Tender Enquiry / Contract “BHEL/TBG/GTC/2016” & submitted duly signed by bidder in original. Clause-wise deviations and / or additional conditions / clarifications, if any, are to be brought out clearly in “Schedule of Commercial Deviation”. Deviations and / or additional conditions / clarifications, if any, mentioned elsewhere in the bid / offer, shall not be considered.

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1.	SCOPE OF WORK : The scope of work of the successful bidder / contractor shall comprise but not limited to the following :- 1.1 Receipt of equipment / material at site, unloading, handling, transportation to storage area. 1.2 Inspection / verification of equipment / material received for any shortage / damage after opening the packing / cases and intimating the same to BHEL / Owner and underwriters within the time period specified by BHEL / Underwriters and to strictly follow the procedures specified. Storage of equipment in open / indoor store to be provided by BHEL in line with the instructions of BHEL. 1.3 Conservation / maintenance / up-keeping of the equipment / item in the store. 1.4 Temporary lighting in stores and construction area wherever required for their work. 1.5 Safety / Security of equipment / material. 1.6 Transportation of equipment / material from store to erection site, erection of equipment / material in line with the drawings / instructions to be furnished by BHEL, testing, commissioning including PG test (if applicable) and handing over. 1.7 Maintenance of associated equipment till handing over & any other activity necessary for completion of the job but not specifically mentioned in this specification. 1.8 Unloading, transportation to storage area, storing, up-keeping and handing over of spare items / equipment. 1.9 Safety, watch & ward of material at site which shall be sole responsibility of the Contractor. Note : In case unloading / watch & ward of material at site is not executed by the Contractor, BHEL reserve the right to get it executed with the available resources at the risk & cost of the Contractor.

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2.	PRICES : Prices shall be firm for the total contract period and no price variation shall be applicable. Prices shall be inclusive of all taxes and duties, except GST. GST shall be payable extra only if quoted separately.
3.	TESTING AND COMMISSIONING : 2.1 All the electrical / mechanical test of the equipment & material and shall be arranged by the contractor as per standard specification / Field Quality Plan / Erection Manual / Directives of the Site Official / Owner. The contractor shall fill the check list for storage, erection, testing and commissioning of all their equipment as per BHEL systems to ensure proper quality of work. 2.2 All the testing equipment required to carry out the site test for all their equipment or the erected equipment shall be arranged by the contractor at his own cost. However, necessary instructions and guidelines will be given by BHEL / Owner. 2.3 The contractor shall be entirely responsible for the satisfactory erection and providing test equipment & skilled manpower for testing & commissioning of all equipment. 2.4 Before charging, the system shall have to be approved by Statutory Govt. Authorities like Electrical Inspector other concerned agency and the contractor has to arrange approval for the same.
4.	CONSUMABLES : The contractor shall maintain adequate inventory of necessary consumables at site prior to erection so that timely completion of the works under the contract is not held-up due to non-availability of consumables / spares.
5.	COMMENCEMENT OF WORK : Start / Zero date for the work shall be date of Contract / letter of intent or as specified in the Contract / activity schedule.
6.	COMPLETION SCHEDULE : The entire work under this tender enquiry is required to be completed as specified in NIT / Tender Enquiry.
7.	OVER RUN CHARGES : No over run charges are payable.
8.	IDLE LABOUR CHARGES : No idle labour charges will be admissible in the event of any stoppage of work resulting in the contractor's workmen being rendered idle due to any reason at any time.
9.	SECURITY-CUM-PERFORMANCE BANK GUARANTEE : The Contractor shall arrange to submit Security-cum-Performance BG for 10% of total Contract value for ETC at Site excluding taxes & duties along with first invoice or within 60 days from award of Contract whichever is earlier valid till guarantee period on a non-judicial stamp paper of appropriate value. • The Bank Guarantee shall be from any bank as per Annexure for List of Banks (32 Nos.). The original BG should be sent by issuing Bank directly to BHEL/TBG Sector Head, unless otherwise specified in the NIT. • Extension of validity of the BG in original, as per above clause, should be sent by issuing Bank directly to BHEL/TBG Sector Head, unless otherwise specified in the NIT, at least 45 days before expiry of validity of the BG. • Unless otherwise specified in the NIT, deviation taken for non-submission of BG, as applicable, shall not be accepted. • In case of non submission BG / Deposit, as applicable, BHEL reserve the right for Risk Purchase as per terms of the NIT and impose Suspension of Business

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	Dealings with the Supplier / Contractor. • BHEL reserves the right to encash the Bank Guarantee and forfeit the amount in the event of any default, failure or neglect on part of the Contractor in fulfilment of performance of the Contract. • Value of the Bank Guarantee (at the time of submission) shall remain unchanged for any subsequent variations in Contract value up to $\pm 20\%$. Beyond this variation of $\pm 20\%$, the Contractor shall arrange to enhance or may reduce the value of the Bank Guarantee accordingly.
10.	INSURANCE : The Contractor shall take insurance to cover his Tools and Plants, assets, workmen's compensation and third party liabilities. The contractor shall make available the original insurance certificates to the Site Official for necessary verification before commencement of work.
11.	VARIATION OF CONTRACT VALUE / QUANTITY VARIATION : BHEL shall have the right to variation in quantities of items within $\pm 30\%$ of the total Contract value at the time of award of Contract on overall basis for all amendments together within two years from the date of original Contract or completion of execution of the Contract whichever is earlier but quantities of individual items may vary to any extent or may get deleted unless otherwise specified in the technical specifications. No compensation is payable due to variation in the quantities and the Contractor shall be bound to accept the same the contracted prices / rates without any escalation. However, if the Contract is on Lumpsum basis, no variation of Contract value shall be admissible to the Contractor within the scope of Contract, as long as the inputs remain unchanged.
12.	GUARANTEE : The equipment / material supplied and services rendered (if applicable) shall be guaranteed to be free from all defects and faults in design & engineering, material, workmanship & manufacture and in full conformity with the Contract, Technical Specifications & approved drawings / data sheets, if any, for 18 months from the date of last delivery or 12 months from the date of commissioning, whichever is later. The defective equipment / material / component shall be replaced free of cost at site. Any expenditure for dismantling and re-erection of the replaced equipment / material / component shall be to supplier's / contractor's account. All replacements during the guarantee period shall be delivered at site promptly and satisfactorily within a period not more than 45 days from the date of reporting the defect / rejection etc. In the event of the contractor failing to replace the defective equipment / material / component within the time period mentioned above, BHEL may proceed to undertake the replacement of such defective equipment / material / component at the risk and cost of the contractor without prejudice to any other rights under the contract and recover the same from BG / other dues of this Contract or any other Purchase Order / Contract executed by the contractor. Note : • In case of Illumination System, items viz. Lamps, Tubes, Ballast, Starters, and Capacitors & Fuses will not be under Guarantee after commissioning. • In addition to the above guarantee period, Extended Guarantee / Warranty, if any, shall be as per NIT / Technical Specifications. • In case offer of agent of Foreign OEM / Foreign Principal is considered, Guarantee as mentioned above has to be provided by the Foreign OEM / Foreign Principal also.

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13.	TERMS OF PAYMENT : For Erection, Testing & Commissioning (ETC) at Site a) 70% of the Contract value against monthly progressive bills on pro-rata basis for unloading, storage and completion of erection as certified by BHEL Site Official with 60 days from the date of receipt of GST Compliant Tax Invoice (Original +2 Copies) b) 20% of the Contract value against monthly progressive bills on pro-rata basis for testing & successful commissioning as certified by BHEL Site Official within 60 days from the date of receipt of GST Compliant Tax invoice in 3 sets (original + 2 copies) c) 10% of the Contract value after Acceptance Test, Re-test (if any), PG Test (if any) and Handing Over as certified by BHEL Site Official within 60 days from the date of receipt of GST Compliant Tax invoice in 3 sets (original + 2 copies) Note: a. It should be ensured that Tax Invoice complies with statutory Requirements under GST law to enable BHEL to avail Input Tax Credit. b. Payment of GST component shall be made only if vendor has deposited the Tax and credit for the same is reflected in GSTN (GST Network) c. Copy of GST Registration Certificate(s) shall be also be attached with Tax Invoice
14.	PRICE VARIATION / ESCALATION : Prices shall be firm for total contract period and extended period, if any, and no price escalation / price variation will be applicable.
15.	LIQUIDATED DAMAGES FOR DELAY IN ERECTION, TESTING & COMMISSIONING (ETC) AT SITE: In case of delay in execution of Contract beyond the contractual completion time for Erection, Testing & Commissioning at Site, an amount of 0.5% of the total Contract value for ETC at Site per week of delay or part thereof subject to a maximum of 10% of the total Contract value for ETC at Site shall be deducted as Liquidated Damages (LD) along with applicable GST (if any) on LD. However, in case of staggered (lot-wise) contractual completion schedule, an amount of 0.5% of the total Contract value for ETC at Site of delayed lot per week of delay or part thereof shall be deducted as liquidated damages , subject to maximum of 10% of the total Contract value for ETC at Site along with applicable GST(if any) on LD. Note : i) In case of any amendment / revision, the LD shall be linked to the amended / revised Contract value and completion time / schedule for ETC at Site, if applicable. ii) If, as per contractor, delay is not attributable to the contractor, delay analysis with documentary evidence may be submitted by the contractor at the earliest but not later than six months from the end of the financial year in which the payment is withheld. Based on the above details / documents submitted by the contractor, BHEL shall take final decision and if considered appropriate by BHEL, withheld amount (full or part as the case may be) shall be released, otherwise, full or balance withheld amount shall be treated as deduction of Liquidated Damages (LD) towards delay in Erection, Testing & Commissioning at Site..
16.	FACILITIES TO BE PROVIDED AT SITE BY THE CONTRACTOR : Watch and ward for the store and safe custody of the equipment / material in the scope of Contractor shall be his responsibility. It is the responsibility of the contractor to dismantle and take away all the material of

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	his office accommodation as soon as the work is handed over to BHEL / Owner and clean the area of debris.
17.	ADDITIONAL EXPENDITURE : In case any additional expenditure is incurred in the works arising out of the faulty execution of the works by the contractor, such additional expenditure shall be borne by the contractor.
18.	REGULATION OF LOCAL AUTHORITIES & COMPLIANCE OF STATUTORY REQUIREMENTS : The contractor shall give to the local Governing Body, Police and other concerned Authorities all such notice as may be required under law. The contractor, as required, will obtain independent licence under The Contract Labour (Regulation and Abolition) Act, 1970 from the concerned authorities based on the certificate (Form-V) issued by the Principal Employer / Customer. In case Contractor is not registered with GST authorities of state where project is located , vendor shall have to obtain registration with GST Authorities of state .The vendor shall comply with all State and Central Laws / Acts, Statutory Rules, Regulations etc., as may be enacted by the Government during the tenure of the Contract and having in force and applicable to the Contract and nothing shall be done by the Contractor in contravention of any Law / Act and / or Rules / Regulations, thereunder or any amendment thereof. Provisions of The Building & Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and The Building & Other Construction Workers Welfare Cess Act, 1996 shall also be applicable. The Contractor shall pay all taxes, fees, licence charges / deposits, duties, tolls, royalty, commissions or other charges which may be levied on account of any of his operations connected with the Contract. In case BHEL is constrained to make any of such payments, BHEL shall recover the same from the Contractor either from moneys due to him or otherwise as deemed fit.
19.	DISCIPLINE OF WORKMEN : The contractor shall adhere to the disciplinary procedure set by the BHEL / owner in respect of his employees and workmen at site.
20.	ELECTRICITY & WATER : Construction water and electricity shall be available at one point each. The contractor shall have to make his own arrangements for distribution to various locations for their works including proper switches / fuse units, distribution boards, cables, poles etc. to ensure safety of employees, workmen and equipment. If required the contractor shall employ DG Set operated equipment in addition to electrically operated ones to ensure timely completion of work. Unless otherwise stated in NIT, the contractor shall make his own adequate arrangement for clear water to be used for various work.
21.	ARBITRATION : In the event of any dispute emanating from and relating to this contract, the matter shall be referred to the sole arbitration of the person appointed by the competent authority of BHEL. Subject to aforesaid, the provisions of The Arbitration and Conciliation Act, 1996 and the rules made thereunder as amended from time to time in India shall apply to the arbitration proceedings. The venue of arbitration shall be in New Delhi. Further there shall be no claim for any pre-reference or pendente-lite interest on the claims and any claim for such interest made shall be void. However, in case of contract with Public Sector Enterprise / Undertaking (PSE/PSU) or Govt. Dept., the extant guidelines of Govt. of India shall be followed.

Signature of Bidder (Authorized Signatory) with Date & Seal



BHARAT HEAVY ELECTRICALS LIMITED

TRANSMISSION PROJECTS ENGINEERING MANAGEMENT

DOCUMENT No.	TB-387-316-012	Rev. No.	01		Prepared	Checked	Approved
TYPE OF DOC.	TECHNICAL SPECIFICATION			NAME	NK	SKS	AG
TITLE ILLUMINATION SYSTEM				SIGN	Xelanga	Santor	36/09/21
				DATE	14.09.21	14.09.21	18/9/21
				GROUP	TBEM		
CUSTOMER	TELANGANA STATE POWER GENERATION CORPORATION LTD						
PROJECTS	400 kV Switchyard at 5X800MW Yadadri TPS						

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Section-2.	GENERAL TECHNICAL REQUIREMENTS	35+43
Section-3.	PROJECT DETAILS AND GENERAL SPECIFICATION	13
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	ANNEXURE – C (Technical Deviation)	1

01	14.09.21	NK	SKS	AG	LED luminaries included			
Rev No.	Date	Altered	Checked	Approved	REVISION DETAILS			
				Distribution	TBMM	TBQM	TBCM	TBTS
				Copies	2	-	-	-

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SECTION 1

SCOPE, SPECIFIC TECHNICAL REQUIREMENTS AND QUANTITIES

- 1.0.1 This technical specification covers the requirements of design, manufacture, testing at works, packing, dispatch, storage, erection, testing & commissioning of complete Illumination and associated electrical auxiliary system, complete with accessories. No deviation from the requirements specified in various clauses of this specification shall be allowed. A certificate to this effect shall have to be furnished along with the offer as per attached Annexure-C.
- 1.0.2 **The Contract shall be on Bill of Quantity basis for the package. In case of change in scope after award of the contract, the additions/ deletions to the scope shall be as per the breakup unit rates for all the equipment and services furnished by the bidder in his offer.** Bidder shall indicate and quote during tender stage if any other item is required as per specification for completion of job. The bidder shall also provide total electrical load requirement for complete illumination system as per specification in his offer. **The Contractor shall be responsible for the design and verification of the Illumination system, demonstration of lux levels and other criteria at site.**
- 1.0.3 **After placement of order, the bidder has to design the system as per relevant standard/codes to the satisfaction of BHEL/TSGENCO.**
- 1.0.4 It is not the intent to specify herein all the details of design and manufacturing. The equipment and the system shall conform in all respects to high standards of design, engineering and workmanship and shall be capable of performing the required duties in a manner acceptable to Purchaser/Owner, who will interpret the meaning of drawings and specifications and shall be entitled to reject material, which in his judgment is not in full accordance herewith.
- 1.0.5 The Bidder shall have deemed to have understood completely all the Tender drawings and documents and quoted accordingly.
- 1.0.6 The term "Owner" appearing in this specification shall refer to ultimate customer, the term "Purchaser" shall refer to BHEL and the term "Contractor/bidder" shall refer to the successful Bidder.
- 1.0.7 It is the responsibility of the successful Bidder to obtain necessary approval/clearance from statutory organizations wherever applicable for the equipment/systems under the scope specified.

Name of the Customer : Telangana State Power Generation Corp. Ltd.
Name of the Project1 : 400 kV Switchyard at 5X800MW Yadadri TPS
Consultant : Tata Consulting Engineers (TCE) Bangalore

Refer Section-3 for Project Details and General Specifications.

1.1 ILLUMINATION & SMALL POWER SYSTEM REQUIREMENT FOR VARIOUS AREAS

The Illumination system shall be provided for the following areas:

- ☐ Switchyard Area
- ☐ Switchyard Control Room Building
- ☐ Street lighting

The roads & the area of the outdoor switchyard to be illuminated are as per enclosed drawings. Only the fenced area of the switchyard is to be taken for illumination design and supply. Other relevant drawings are also enclosed with this specification.

1.2 DESIGN CRITERIA

The illumination System for outdoor Switchyard shall comprise of:

- ☐ Normal AC lighting
- ☐ Emergency AC Lighting

The illumination System for Control room building shall comprise of:

- ☐ Normal AC Lighting
- ☐ Emergency AC Lighting
- ☐ Emergency DC Lighting

20% of lighting fixtures shall be connected on AC emergency lighting.

In an area, the lighting fixtures shall be arranged in different phase / LPs such that even in case one lighting panel is faulty complete lighting is not affected. In case of any location the lighting shall be arranged from all three phases for normal as well as normal/emergency supply.

Detailed lighting design calculations considering the number of fittings as per BOQ shall be submitted by contractor for approval of BHEL / ultimate customer.

The detailed drawings showing lighting layout, disposition and location of lighting fixtures, receptacles, switchboards, ceiling fan points etc, wiring scheme, wiring & conduit layout, fixing details, OGAs of all equipment, Cable schedule for switchyard etc shall be submitted for approval.

All lighting panels, junction boxes, receptacles fixtures, conduits etc. shall be grounded in compliance with the provision of Customer Specification/I.E. rules.

The vendor to provide the total lighting load of indoor area and outdoor switchyard including street lighting.

1.3 SCOPE OF SUPPLIES & SERVICES

1.3.1 SCOPE OF SUPPLY MATERIAL & ERECTION MATERIAL

- a) The main items to be furnished for Substation under this contract are detailed in Bill of Quantity and shall be read in conjunction with other clauses of this specification.
- b) Both conventional and LED lighting luminaries are mentioned in the specification. However, as conventional luminaries are not available in the market, LED luminaries shall be applicable. Conventional fixtures are mentioned in specification for selection of equivalent LED luminaries and fixtures by bidder. The technical parameter and technical data of LED luminaries are provided in clause 2.3.5 & 2.3.6 of section-2 of specification. Bidder shall comply the same.
- c) All associated items, though not specifically mentioned but required to meet specification and for safe and satisfactory operation of equipment/ system will also be treated as included and the same shall be supplied at NO EXTRA COST to Purchaser. All material and consumables required for erection work shall be in Contractor's scope. All cable glands, lugs and ferrules require for cabling/ wiring and any other material required for erection shall deemed to be in Contractor's scope. The prices of the same shall be deemed to be included in main item provided in BOQ.
- d) Further, in case any type of luminaries/ panels etc not included in BOQ but are required to meet the technical specification shall be specifically brought out in the offer/shall be supplied.
- e) 415V ACDB & 220V DCDB boards are being supplied and erected by the owner. Illumination contractor will terminate the MLDB/ EDLB cables in these panels. Bidder shall supply MLDB & ELDB as per attached SLD of LT AC & DC system. However, rating and quantities of outdoor feeder may vary during detailed engineering stage after placement of PO as per requirement and vendor design. Bidder to take care of the same in his offer. No price implication shall be acceptable for any change in outgoing feeders.
- f) Supply of necessary cable for consumption within the street light/lighting pole assembly, such as pole mounted JB to respective light fittings, battery etc shall be in Contractor's Scope.
- g) LIGHTING JUNCTION BOX - The Contractor shall supply and install junction boxes complete with terminals as required. The brackets, bolts, nuts, screws etc required for erection are also included in the scope of the Contractor.
- h) Where cables are to be laid in GI Pipe, excavation, filling etc. deemed to be included in erection cost quoted.
- i) Buried cable trench can be used in outdoor area. Contractor shall construct the cable trenches required for directly buried cables. The scope of work shall include excavation, preparation of sand bedding, soil cover, supply and installation of brick or concrete protective covers, back filling and ramming, supply and installation of route markers and joint markers.
- j) Bidder shall provide the exhaust fan as per table below.

Exhaust fans to be provided:		
S.No.	AREA DESCRIPTION	FANS TO BE PROVIDED, Nos. x Capacity in CMH, (Static Head mmWg)
1	Record room	1x1000,(10.0) sweep 300 mm
2	Repair Bay room	2x1500,(10.0) sweep 300 mm
3	Store room	1x2000,(10.0) sweep 300 mm
4	Gents Toilet (GF)	1x1000,(10.0) sweep 300 mm
4	Gents Toilet (FF)	1x1000,(10.0) sweep 300 mm
5	Ladies Toilet (GF)	1 x 600,(10.0) sweep 300 mm
5	Ladies Toilet (FF)	1 x 600,(10.0) sweep 300 mm
6	Pantry	1x3000,(10.0) sweep 380 mm

Rain protection cowl, bird screen and mounting arrangement shall be provided for each of the exhaust fans.

k) Commissioning Spares :

Contractor shall take commissioning spares required to site to commission the system without delay. The Contractor shall finalize the list with BHEL during detailed engineering stage.

l) ETC work

The site is located in hard rock area. Controlled blasting will be required for cable trench & foundation work. Contractor shall take care of the same during ETC work.

1.3.2 FREE ISSUE ITEMS FROM PURCHASER

Power Cables: Following are the various cable sizes that may be used for project execution. Bidder shall estimate the cables required for successful completion of the full scope of works and furnish the break up of quantity as an annexure to the un-priced schedule. The quantity of the cables shall be free issued to the successful bidder as per this annexure. The laying and termination of the estimated quantities of cables shall be in the scope of the bidder. No variation shall be admissible to the contractor so far the input remains unchanged.

- 1) 2 core x 2.5 sq.mm HRPVC insulated, Armoured Cu. cable
- 2) 4 core x 16 sq.mm XLPE insulated, Armoured Al. cable
- 3) 4 core x 35 sq.mm XLPE insulated, Armoured Al. cable
- 4) 3.5 core x 70 sq.mm XLPE insulated, Armoured Al. cable
- 5) 3.5 core x 95 sq.mm XLPE insulated, Armoured Al. cable
- 6) 3.5 core x 300 sq.mm XLPE insulated, Armoured Al. cable

40mm Dia. MS Rod & Earthing Flats: Galvanised Earthing Flat shall be available with the purchaser. Bidder shall estimate the GI Flats for successful completion of the full scope of works and furnish the quantity as an annexure to the un-priced schedule. The

quantity of the GI Flat shall be free issued to the successful bidder as per this annexure. The installation of the estimated quantities of GI flats shall be in the scope of the bidder. No variation shall be admissible to the Contractor so far the input remains unchanged. Sizes available are 75x10mm and 50x6mm GI Flats.

Erection, testing and commissioning of these cables, MS Rod & GI Flat will be in bidder's scope. Supply of all other items such as cables, wires, steel wire, lugs, Cable glands, earthing material etc required to complete the works are in bidder's scope.

1.3.3 SCOPE OF SERVICES

The bidder shall quote for ETC, civil works, cabling including termination & earthing against each item as applicable. The list is attached as Annexure-I (BOQ).

1.3.3.1 Erection, Testing & Commissioning

- a) The Contractor shall give the offer for Erection, Testing and Commissioning of the Illumination Equipment at Site.
- b) The scope of ETC shall include receipt of material at site, safe storage of material, handling of equipment/ material at site, erection of equipment / material at site including fabrication, equipment and system testing, commissioning of the entire system.
- c) Conducting lux level measurement as per approved designs to the satisfaction of Owner/ purchaser.
- d) Laying and termination of power and control cables from ACDB/DCDB to MLDB/ELDB, MLDB/ELDB to Lighting Panels, Lighting Panels to JB and JB to fittings etc for the equipment under the scope of this specification.
- e) All material and consumables required for erection work shall be in Contractor's scope. Erection material shall cover, but not be limited to, Clamps etc for Luminaries, Connections between Junction Boxes and Luminaries in outdoor area, All cable glands, lugs and ferrules require for cabling/ wiring and any other material required for erection shall deemed to be in Contractor's scope. Holes shall not be drilled on the Galvanised substation gantry and LM structures.
- f) Earthing of all electrical equipment as per requirement is in Contractor's scope.
- g) Contractor shall arrange all machinery tools & tackles, instruments and consumables required for erection, testing and commissioning of the system.
- h) Contractor shall ensure that sufficient quantity of commissioning spares is made available for timely completion of commissioning of the system. The Contractor shall finalize the list with BHEL during detailed engineering stage. The unused commissioning spares shall be returnable to the Bidder.
- i) Contractor shall hand over mandatory spares to the owner.

1.3.3.2 Civil Works

- a. Civil works such as foundation for Street Lighting Poles, 30m Lighting Mast, Lighting Panels etc. shall be done by the bidder. The rates for these civil works shall be deemed included in the erection rates of respective items.
- b. Wherever cable is laid in buried trench, the excavation and filling shall be done by bidder free of cost.
- c. All final adjustment of foundation levels, chipping and dressing of foundation surfaces, setting and grounding of anchor bolts, sills, inserts and fastening devices shall be carried out by the contractor including minor modification of civil works as may be required for erection.
- d. Any cutting of masonry / concrete work, which is necessary shall be done by the contractor at his own cost and shall be made good to match the original work.
- e. Wall openings at suitable locations for ventilation fans shall be made by the contractor. Civil works such as grouting, filling up of crevices/ cut outs etc during installation of equipment shall also be in contractor's scope. Any other damage caused to civil works during ETC work of the equipment/ system shall be made good to the original finish by the Contractor at no extra cost to the Purchaser.
- f. The site is located in hard rock area. Controlled blasting will be required for cable trench & foundation work. Contractor shall take care of the same during ETC work.

1.3.4 Scope of work for power supply of Air Conditioning & Ventilation System and Fire-fighting in Control room (to be done by Illumination contractor)

Bidder shall supply and lay conduits and lay cables/wires for power supply in Control Room Building for fire alarm panel, Air conditioning & Ventilation units.

It shall be bidders' responsibility to supply and provide wiring & single supply points for AC units. Typical power supply distribution has been shown in Single Line Diagram for LT AC & DC System (Refer Annexure-3). Provisional AC Power supply point requirement are as follows:

Sl. No.	Room with Cassette AC	Power supply points (3 ph, 4 wire)
1	Conference room	3 x 32 A (with TPMCB)
2	Electrical Lab	1 x 32 A (with TPMCB)
3	Staff room	1 x 32 A (with TPMCB)
4	Office Room (DE)	1 x 32 A (with TPMCB)
5	Office Room (ADE)	1 x 32 A (with TPMCB)

There shall be single supply point required for each 3TR/ 4TR cassette AC inside control building. Power supply points to AC units through TPMCB (32A) shall be provided in individual rooms as per the above distribution. Further, for Ventilation

System, it shall be the responsibility of bidder to provide power supply points in each of the rooms to feed exhaust fans in these rooms. Ampere rating of power supply points to ventilation fans to be ensured is listed as below:

Sl. No.	Rooms	Power supply requirement
1	Record room	1 no, 20A 1-ph. MCB with receptacle
2	Repair Bay room	2 no, 20A 1-ph. MCB with receptacle
3	Store room	1 no, 20A 1-ph. MCB with receptacle
4	Gents Toilet (GF)	1 no. 20A, 1-ph. MCB with receptacle
4	Gents Toilet (FF)	1 no. 20A, 1-ph. MCB with receptacle
5	Ladies Toilet (GF)	1 no. 20A, 1-ph. MCB with receptacle
5	Ladies Toilet (FF)	2 no, 20A 1-ph. MCB with receptacle
6	Pantry	1 no, 32A 1-ph. MCB with receptacle

Supply and installation of small size ventilation fans for Store, Pantry & Toilet rooms & repair bay rooms shall be considered under Illumination package.

Cassette AC distribution layout, AC ducting layout and fire detector layout will have to be superimposed with Lighting layout for Control building to avoid fouling.

1.3.5 Scope of work for DC Panels in Switchyard AC Kiosk (to be done by Illumination contractor)

Bidder shall supply and erect wall mounted DC distribution Panels in Switchyard AC Kiosks for distribution of DC Supply to Switchyard equipment. However, Cabling from Control Room to DC Panel in Kiosk shall be done by BHEL.

1.3.6 Scope of work for Welding Distribution Board and Receptacles (to be done by Illumination contractor)

Bidder shall supply and erect Welding Distribution Board as per attached SLD of LT AC & DC system in Switchyard control room building LT switchgear room for distribution of AC Supply to each diameter in outdoor Switchyard. The supply, erection, cable laying and termination of 63A receptacles in each diameter shall be done by bidder.

1.3.7 Junction box for Sump Pump

Bidder shall supply and erect junction box/switch board near bus reactor for sump pump. Junction box shall have one incomer of 63A and 2 nos. outgoing feeders of 32A & 2 nos. outgoing feeders of 6A.

1.4 TYPE TESTS

Bidder shall submit valid type test reports (as per relevant IEC/IS standard) for the tests carried out after 17.10.2012. The reports should have been conducted on identical or similar equipment/ components to those offered. In case type test reports are earlier than 17.10.2012 or the reports of type tests are found to be technically unacceptable by

TSGENCO, the type test shall be conducted by the vendor without cost and delivery implication to BHEL.

1.5 QUALITY PLAN

The bidder to follow BHEL/ TSGENCO approved quality plan at contract stage. Bought out items should be as per specification & of reputed make and make of items is subject to customer approval.

1.6 HANDING & TAKING OVER

It is the responsibility of the Contractor to run and maintain the system supplied by them for a period of 3 months and subsequently hand over the same to BHEL/owner. Contractor shall assist BHEL to hand over the system supplied by them to owner.

1.7 TITLE BLOCK

The drawings / documents submitted shall be project and product specific and shall incorporate following details:

- a) Project Name : 400 kV Switchyard at 5X800MW Yadadri TPS
- b) Customer Name : Telangana State Power Generation Corp. Ltd.
- c) Consultant Name : TCE, Bangalore
- d) Contractor : BHEL
- e) Customer LOA no. : ED/TPC/SE-III/YADADRI TPS(5X800MW)/D.No. 102/17, Dated: 17/10/2017

1.8 LIST OF DRAWINGS ENCLOSED (Refer Annexure-3)

Sl No	Drwg. No.	Description
1	TB-0-387-510-002 (2 Sheets)	400kV Switchyard Layout Plan & Sectional Elevation
2	TB-0-387-316-005	Cable Trench layout for 400kV Switchyard
3	TB-0-387-510-007	Single Line Diagram for LT AC & DC System
4	TB-3-387-316-008 (3 Sheets)	Conceptual 400kV Switchyard Control Room Building Layout

1.9 DRAWINGS & ENGINEERING DOCUMENTS

The successful bidder shall have to extend all possible support like timely submission/resubmission of drawings, visit to end customer to facilitate documents approval without any commercial implications to BHEL. Acceptance of bidder's documents shall be subject to end customer approval. Date of Submission of first lot of drawings will be counted only from the date of submission of reasonably correct drawings.

Following documents are required for issuing manufacturing clearance to bidder
-Illumination design, Lux level calculation, Illumination layout, BOQ & OGA/GTP/catalogue.

- - x x - -

SR. NO	ITEM DESCRIPTION	UNIT	Qty.
1	Supply of Main Lighting Distribution Board (MLDB) comprising 415V, 400A, 3-Ph, 4-wire bus and two (2) no. Lighting transformer: 250kVA with Two (2) No. Incomer 400A TPN MCCB, One (1) No. Bus Coupler, Outgoing feeders 6 No. 100A TPN MCCB on each Bus Section (Inclusive of CT, Voltmeter, Ammeter, Contactor with timer, indicating lamps etc)	Nos.	2
2	Supply of Emergency Lighting Distribution Board (ELDB) comprising 415V, 150A, 3-Ph, 4-wire bus and one (1) no. Lighting transformer: 100kVA with One (1) No. Incomer 150A TPN MCCB, Outgoing feeders 6 No. 63A TPN MCCB (Inclusive of CT, Voltmeter, Ammeter, Contactor with timer, indicating lamps etc)	Nos.	1
3	Supply of 415 V A.C. Indoor type Lighting Panel (Normal) (Type LP-2)	Nos.	2
4	Supply of 415 V A.C. Indoor Lighting panel (Emergency) (Type LP-3)	Nos.	1
5	Supply of Indoor type emergency lighting panel (DCLP) (Type DCLP)	Nos.	1
6	Supply of switchboard - Type S-1	Nos.	38
7	Supply of switchboard - Type S-2	Nos.	28
8	Supply of switchboard - Type S-3	Nos.	11
9	Supply of Indoor Receptacle (Type RA)	Nos.	26
10	Supply of Indoor Receptacle (Type RB)	Nos.	18
11	Supply of Indoor lighting fixtures (Type DA)/Industrial Batten 40W LED	Nos.	130
12	Supply of Indoor lighting fixtures (Type DD)/Recess mounted 600X600 mm 30W LED	Nos.	140
13	Supply of Indoor lighting fixtures (Type DE)/Corrosion & jet proof industrial batten 40W LED	Nos.	27
14	Supply of Emergency DC lighting fixtures (Type CD)/Down Light DC LED fixtures	Nos.	15
15	Supply of Emergency DC lighting fixtures (Type IA)/Bulkhead DC LED fixtures	Nos.	30
16	Supply of Ceiling fans 1400mm sweep with regulator, down rod and canopy (Type FB)	No.	22
17	Supply of Wall mounted fans 400mm sweep	No.	20
18	Supply of 1000CMH exhaust fan	No.	3
19	Supply of 1500CMH exhaust fan	No.	2
20	Supply of 2000CMH exhaust fan	No.	1
21	Supply of 600CMH exhaust fan	No.	1
22	Supply of wheel mounted adjustable aluminium ladder for the maintenance of street lights	No.	1
23	Supply of adjustable free-standing aluminium ladder	No.	1
24	Supply of Portable Emergency Light (Type M3)	No.	4
25	Supply of Escape lighting luminaire with "EXIT" sign fitted (Type EX) LED type	Nos.	20
26	Supply of wall mounted panels for supply to Air Conditioner & Ventilation fans comprising of 415V, 125A, 3-Phase TPN MCCB Incomer & 8 No. 32A TPMCB as outgoing feeders	Nos.	6
27	Supply of 32A TPMCB with Receptacle for split AC unit	No.	15
28	Supply of 20A MCB with Receptacle for ventilation fans	Nos.	20
29	Supply of 415 V A.C. Outdoor type Lighting Panel (Normal) (Type SLP)	Nos.	8
30	Supply of 415 V A.C. Outdoor type Lighting Panel (Emergency) (Type SLP)	Nos.	4
31	Supply of 415 V A.C. Outdoor type Street Lighting Panel (Type SLP)	Nos.	3
32	Supply of 415 V A.C. Outdoor, lockable type Isolating switch (Type FLP)	Nos.	1
33	Supply of DB with Transformer (for welding Receptacles)	Nos.	1
34	Supply of Outdoor Junction boxes with 4-way terminals suitable for loop-in loop-out upto 4Cx16 sq. mm. Al conductor and tap off of two nos 10 Sqmm wire (JB shall be suitable for conduit size of upto 50mm)	Nos.	65
35	Supply of Outdoor Receptacle (Type RC)	Nos.	31
36	Supply of 2x400W Switchyard Flood-lighting luminaire with HPSV lamp and control gear (Type PD)/Flood lighting fixtures 400W LED	Nos.	590
37	Supply of 2x250W Switchyard Flood-lighting luminaire with HPSV lamp and control gear (Type PC)/Flood lighting fixtures 200W LED	Nos.	1
38	Supply of 1x150 Watts luminarie with HPSV lamp and control gear for building periphery and street-lighting (Type TA)/Street lighting fixtures 100W LED	Nos.	156
39	Supply of Post Top Lantern fixture LED type 45W	No.	15
40	Supply of 30m high Lighting Tower/ Mast with Lantern Carriage (Double Drum Winch type) for Switchyard Lighting	No.	4

41	Supply of Single arm swaged and welded steel pole with junction box and all accessories (11m high Lighting Pole with 1.8m over-hang projection for Street-Lighting)	Nos.	156
42	Supply of 4.5m high Lighting Pole for Post-top Lantern	Nos.	15
43	Supply of Galvanized rigid steel conduit of 20mm size with accessories	Mtr.	6500
44	Supply of Galvanized rigid steel conduit of 25mm size with accessories	Mtr.	1600
45	Supply of Galvanized rigid steel conduit of 40mm size with accessories	Mtr.	100
46	Supply of 1C, 2.5 sqmm PVC insulated stranded Cu. Wire	Mtr.	18000
47	Supply of 1C, 4 sqmm PVC insulated stranded Cu. Wire	Mtr.	8000
48	Supply of 50 mm GI conduits	Mtr.	1000
49	Supply of 100 mm GI conduits	Mtr.	1000
50	Supply of 35x6 mm GI Flat for earthing.	Mtr.	200
51	Supply of 25x3 mm GI Flat for earthing.	Mtr.	200
52	Supply of 16 SWG GI Wire (For earthing of Lighting fixtures, switches conduits etc.)	Mtr.	6000
53	Supply of 12 SWG GI Wire (For earthing of Power receptacles Junction Boxes etc.)	Mtr.	1500
54	Supply of wall mounted DC Distribution panel (for distribution of DC Supply to switchyard equipment) comprising 240V bus, Two(2) No. 63A MCCB as incomer, One (1) No. Bus Coupler and 8 nos 32A two pole MCCB as outgoing feeders	Nos.	13
55	Supply of Receptacle - 250A receptacle outdoor type for oil filtration unit	Nos.	2
56	SUPPLY- ILLUMINATION EQUIPMENT : GALVANIZED HEAVY DUTY STEEL CONDUIT OF 25MM SIZE WITH ACCESSORIES WITH ADDITIONAL EPOXY COATING FOR CORROSIVE AREAS	Mtr.	50
57	SUPPLY- ILLUMINATION EQUIPMENT : JB FOR SUMP PUMP	Nos.	2
58	Spares: Driver of indoor lighting fixtures (Type DA)/Industrial batten 40 W LED	Nos.	10
59	Spares: Driver of indoor lighting fixtures (Type DD)/Recess mounted 600X600 mm 30 W LED	Nos.	10
60	Spares: Driver of indoor lighting fixtures (Type DE)/Corrosion and jet proof industrial batten 40 W LED	Nos.	10
61	Spares: Driver of emergency DC lighting fixtures (Type CD)/Down light DC LED fixture	Nos.	10
62	Spares: Driver of emergency DC lighting fixtures (Type IA)/Bulkhead DC LED fixture	Nos.	10
63	Spares: Driver of 2x400W Switchyard Flood-lighting luminaire with HPSV lamp and control gear (Type PD)/Flood lighting fixtures 400W LED	Nos.	20
64	Spares: Driver of 2x250W Switchyard Flood-lighting luminaire with HPSV lamp and control gear (Type PC)/Flood lighting fixtures 200W LED	Nos.	10
65	Spares: Driver of 1x150 Watts luminarie with HPSV lamp and control gear for building periphery and street-lighting (Type TA)/Street lighting fixtures 100W LED	Nos.	10
66	Spares: Driver of Post Top Lantern fixture LED type 45 W	Nos.	10
67	Spares: Lighting fixtures LED each type	Nos.	10
68	Spares: Clockswitch type Time Switch	Nos.	10
69	Spares: 1-Pole 20 Amps Miniature Circuit Breakers (M.C.Bs)	Nos.	10
70	Spares: 2-Pole 20 Amps Miniature Circuit Breakers (M.C.Bs)	Nos.	10
71	Spares: 2-Pole 16 Amps Miniature Circuit Breakers (M.C.Bs)	Nos.	10
72	Spares: 5Amp Receptacles	Nos.	10
73	Spares: 15Amp Receptacles	Nos.	10
74	Spares: 63Amp Receptacles	Nos.	10
75	ETC of Main Lighting Distribution Board (MLDB) comprising 415V, 400A, 3-Ph, 4-wire bus and two (2) no. Lighting transformer: 250kVA with Two (2) No. Incomer 400A TPN MCCB, One (1) No. Bus Coupler, Ongoing feeders 6 No. 100A TPN MCCB on each Bus Section (Inclusive of CT, Voltmeter, Ammeter, Contactor with timer, indicating lamps etc)	Nos.	2
76	ETC of Emergency Lighting Distribution Board (ELDB) comprising 415V, 150A, 3-Ph, 4-wire bus and one (1) no. Lighting transformer: 100kVA with One (1) No. Incomer 150A TPN MCCB, Outgoing feeders 6 No. 63A TPN MCCB (Inclusive of CT, Voltmeter, Ammeter, Contactor with timer, indicating lamps etc)	Nos.	1
77	ETC of 415 V A.C. Indoor type Lighting Panel (Normal) (Type LP-2)	Nos.	2
78	ETC of 415 V A.C. Indoor Lighting panel (Emergency) (Type LP-3)	Nos.	1
79	ETC of Indoor type emergency lighting panel (DCLP) (Type DCLP)	Nos.	1

80	ETC of switchboard - Type S-1	Nos.	38
81	ETC of switchboard - Type S-2	Nos.	28
82	ETC of switchboard - Type S-3	Nos.	11
83	ETC of Indoor Receptacle (Type RA)	Nos.	26
84	ETC of Indoor Receptacle (Type RB)	Nos.	18
85	ETC of Indoor lighting fixtures (Type DA)/Industrial Batten 40W LED	Nos.	130
86	ETC of Indoor lighting fixtures (Type DD)/Recess mounted 600X600 mm 30W LED	Nos.	140
87	ETC of Indoor lighting fixtures (Type DE)/Corrosion & jet proof industrial batten 40W LED	Nos.	27
88	ETC of Emergency DC lighting fixtures (Type CD)/Down Light DC LED fixtures	Nos.	15
89	ETC of Emergency DC lighting fixtures (Type IA)/Bulkhead DC LED fixtures	Nos.	30
90	ETC of Ceiling fans 1400mm sweep with regulator, down rod and canopy (Type FB)	No.	22
91	ETC of Wall mounted fans 400mm sweep	No.	20
92	ETC of 1000CMH exhaust fan	No.	3
93	ETC of 1500CMH exhaust fan	No.	2
94	ETC of 2000CMH exhaust fan	No.	1
95	ETC of 600CMH exhaust fan	No.	1
96	ETC of Escape lighting luminaire with "EXIT" sign fitted (Type EX) LED type	Nos.	20
97	ETC of wall mounted panels for supply to Air Conditioner & Ventilation fans comprising of 415V, 125A, 3-Phase TPN MCCB Incomer & 8 No. 32A TPMCB as outgoing feeders	Nos.	6
98	ETC of 32A TPMCB with Receptacle for split AC unit	No.	15
99	ETC of 20A MCB with Receptacle for ventilation fans	Nos.	20
100	ETC of 415 V A.C. Outdoor type Lighting Panel (Normal) (Type SLP)	Nos.	8
101	ETC of 415 V A.C. Outdoor type Lighting Panel (Emergency) (Type SLP)	Nos.	4
102	ETC of 415 V A.C. Outdoor type Street Lighting Panel (Type SLP)	Nos.	3
103	ETC of 415 V A.C. Outdoor, lockable type Isolating switch (Type FLP)	Nos.	1
104	ETC of DB with Trasformer (for welding Receptacles)	Nos.	1
105	ETC of Outdoor Junction boxes with 4-way terminals suitable for loop-in loop-out upto 4Cx16 sq. mm. Al conductor and tap off of two nos 10 Sqmm wire (JB shall be suitable for conduit size of upto 50mm)	Nos.	65
106	ETC of Outdoor Receptacle (Type RC)	Nos.	31
107	ETC of 2x400W Switchyard Flood-lighting luminaire with HPSV lamp and control gear (Type PD)/Flood lighting fixtures 400W LED	Nos.	590
108	ETC of 2x250W Switchyard Flood-lighting luminaire with HPSV lamp and control gear (Type PC)/Flood lighting fixtures 200W LED	Nos.	1
109	ETC of 1x150 Watts luminarie with HPSV lamp and control gear for building periphery and street-lighting (Type TA)/Street lighting fixtures 100W LED	Nos.	156
110	Civil works & ETC of Post Top Lantern fixture LED type 45W	No.	15
111	Civil works & ETC of 30m high Lighting Tower/ Mast with Lantern Carriage (Double Drum Winch type) for Switchyard Lighting	No.	4
112	Civil works & ETC of Single arm swaged and welded steel pole with junction box and all accessories (11m high Lighting Pole with 1.8m over-hang projection for Street-Lighting)	Nos.	156
113	Civil works & ETC of 4.5m high Lighting Pole for Post-top Lantern	Nos.	15
114	ETC of Galvanized rigid steel conduit of 20mm size with accessories	Mtr.	6500
115	ETC of Galvanized rigid steel conduit of 25mm size with accessories	Mtr.	1600
116	ETC of Galvanized rigid steel conduit of 40mm size with accessories	Mtr.	100

117	ETC of 1C, 2.5 sqmm PVC insulated stranded Cu. Wire	Mtr.	18000
118	ETC of 1C, 4 sqmm PVC insulated stranded Cu. Wire	Mtr.	8000
119	ETC of 2C, 2.5 sqmm HRPVC insulated, Armoured Cu. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	Mtr.	22500
120	ETC of 4C, 16 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	Mtr.	15300
121	ETC of 4C, 35 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	Mtr.	1350
122	ETC of 4C, 70 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	Mtr.	5850
123	ETC of 3.5C, 95 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	Mtr.	5850
124	ETC of 3.5C, 300 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including laying in trench/GI/PVC conduit & termination	Mtr.	450
125	ETC of 2C, 2.5 sqmm HRPVC insulated, Armoured Cu. Cable (supplied by BHEL) including buried cable laying & termination	Mtr.	2500
126	ETC of 4C, 16 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including buried cable laying & termination	Mtr.	1700
127	ETC of 4C, 35 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including buried cable laying & termination	Mtr.	150
128	ETC of 4C, 70 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including buried cable laying & termination	Mtr.	650
129	ETC of 3.5C, 95 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including buried cable laying & termination	Mtr.	650
130	ETC of 3.5C, 300 sqmm XLPE insulated, Armoured Al. Cable (supplied by BHEL) including buried cable laying & termination	Mtr.	50
131	Laying of 50 mm GI conduits at a depth of 300 mm including excavation, backfilling, making & repairing of walls in trenches, cutting, threading, fixing of sockets/bends where required etc to complete. Also between pull pit boxes to JB/LP.	Mtr.	500
132	Laying of 100 mm GI conduits at a depth of 300 mm including excavation, backfilling, making & repairing of walls in trenches, cutting, threading, fixing of sockets/bends where required etc to complete. Also between pull pit boxes to JB/LP.	Mtr.	300
133	Construction of Pull Pit Boxes of sizes 400mmx400mmx400mm at the free ends and turning of GI pipes if pipe length exceeds 4M	Nos.	30
134	Earthing using 40 mm dia. MS Rod Electrodes (provided by BHEL)	Nos.	50
135	Earthing using 50x6mm GI Flat (provided by BHEL)	Mtr.	500
136	Earthing using 75x10mm GI Flat (provided by BHEL)	Mtr.	200
137	Earthing using 35x6 mm GI Flat for earthing.	Mtr.	200
138	Earthing using 25x3 mm GI Flat for earthing.	Mtr.	200
139	Earthing using 16 SWG GI Wire for Lighting fixtures, switches conduits etc.	Mtr.	6000
140	Earthing using 12 SWG GI Wire for Power receptacles Junction Boxes etc.	Mtr.	1500
141	ETC of Wall mounted DC Distribution panel (for distribution of DC Supply to switchyard equipment) comprising 240V bus, Two(2) No. 63A MCCB as incomer, One (1) No. Bus Coupler and 8 nos 32A two pole MCCB as outgoing feeders	Nos.	13
142	ETC of 250A receptacle outdoor type for oil filtration unit	Nos.	2
143	ETC of GI heavy duty conduit of 25mm size with accessories with additional epoxy coating for corrosive area	Mtr.	50
144	ETC of JB FOR SUMP PUMP	Nos.	2
145	Lux measurement at site	Lot	1

SECTION –2

2.1 SCOPE OF WORK

This scope of work shall cover the design, manufacture, assembly, testing at manufacturer's works, supply & delivery, properly packed for transport, complete with all materials and accessories for efficient and trouble-free operation.

The scope of work shall also include complete installation, testing, commissioning and putting into successful commercial operation of the Lighting System of 400kV switchyard and control room building and also facilities included under this Contract inclusive of supply of all labour, tools, implements and supplies.

2.1.1 SCOPE OF SUPPLY

The equipment and materials within the scope of supply shall include but not limited to:

- a) Lighting / Welding Transformer.
- b) Lighting fixtures with lamps and accessories.
- c) Main lighting distribution boards, Lighting panels/boards, Emergency lighting boards, emergency DC lighting panels, street lighting panels etc. All panels shall be provided with energy saving system.
- d) Street light poles, flood lighting tower/poles/high masts.
- e) Ceiling fans, receptacles, switches, switchboards, portable emergency lights, portable 24V supply module including handset maintenance equipment etc.
- f) Separate DB for 1ph, 240 V power supply is required to be indicated suitably for miscellaneous services supplies.
- g) Separate DB with transformers is required to be considered for welding receptacles as per Aux SLD.
- h) Cables, wires, splicing/termination/connection accessories.
- i) Conduit and accessories, junction and pull boxes, terminal blocks.
- j) Grounding materials and connections.
- k) All fittings, supports, brackets, anchors, clamps and connections.
- m) Steel for field fabrication of supports and brackets.

Data sheets and technical leaflets on each piece of equipments / devices

2.1.2 SCOPE OF SERVICE

- 1) Carrying out of detail engineering including detail design calculations by Dialux software, preparation of lighting layouts showing location of fixtures, cable wires and conduit routing, preparation of cable schedule, and other related drawings as detailed in subsequent clauses and also consider the energy saving system.
- 2) Furnishing of all labour, skilled and unskilled, supervisory personnel, erection tools and tackles, testing equipment, implements, supplies, consumables & hardware, and transport for timely and efficient execution of the contract work.
- 3) Preparation of AS-BUILT drawings showing field modifications, if any.

2.2 GENERAL REQUIREMENTS

The lighting System design shall comply with acceptable norms and the best engineering practices. The lighting shall be designed to provide uniform illumination with minimum glare. The lighting system shall meet all the statutory requirements, local rules etc.

Feeders required for lighting shall be given from Main LVAC /DC boards. Further distribution using lighting DB's panels for Illumination shall be in Illumination contractor scope .Laying & termination of cables from LVAC /DC boards onwards shall be in illumination contractor scope.

APPLICABLE CODES AND STANDARDS

All material / work shall conform to the following standards & codes unless otherwise stated. All standards and codes of practice referred to herein shall be the latest edition including all applicable official amendments & revisions as on date of bid opening. In case of conflict between this specification and those (codes, standards etc) referred to herein, the former shall prevail.

(i)	IS:1913	General and safety requirements for electric light fittings
(ii)	IS:418	Tungsten filament lamp for domestic and similar general lighting purposes
(iii)	IS:10322	Luminaires
(iv)	IS:10276	Edison Screw lamp holders
(v)	IS:2418	Tubular fluorescent lamps
(vi)	IS:9974	High pressure sodium Vapour lamps
(vii)	IS:9900	High Pressure mercury vapour lamps.
(viii)	IS:6616	Ballasts for high pressure mercury Vapour lamps
(ix)	IS:1258	Specification for bayonet lamp holders
(x)	IS:3323	Bi-pin lamp holders for tubular fluorescent lamps
(xi)	IS:13021	AC Supplied electronic ballasts for tubular fluorescent lamps
(xii)	IS:1534	Ballasts for use in fluorescent lighting fittings
(xiii)	IS:1569	Capacitors for use in tubular fluorescent high pressure mercury vapour and low pressure sodium Vapour discharge lamp circuit.
(xiv)	IS:2215	Starters for fluorescent lamps
(xv)	IS:3324	Holders for starters for tubular fluorescent lamps
(xvi)	IS:418	GLS lamps
(xvii)	IS:13021	AC supplied electronic ballasts for tubular fluorescent lamps
(xviii)	IS:2713	Tubular steel poles
(xix)	IS:280	MS Wire for general Engg. Purpose.

2.0.4.1 Conduits, Pipes and Accessories

(i)	IS:9537	Rigid Steel conduit for electrical wiring
(ii)	IS:3480	Flexible steel conduits for electrical wiring
(iii)	IS:2667	Fitting for rigid steel conduits for electrical wiring
(iv)	IS:3837	Accessories for rigid steel conduits for electrical wiring.
(v)	IS:4649	Adaptors for flexible steel conduits

2.0.4.2 Lighting panels, Switch boxes, receptacles and junction boxes.

(i)	IS:13947	Specification for LV switchgear and control gear (Parts 1 to 5)
(ii)	IS:8828	Circuit breakers for over current protection for house hold and similar installations.

(iii)	IS:5	Colours for ready mixed paints and enamels
(iv)	IS:2551	Danger notice plates
(v)	IS:5133	Steel and cast iron boxes
(vi)	IS:2629	Recommend practice for hot dip galvanizing of iron & steel.
(vii)	IS:3854	Switches for domestic and similar purposes
(viii)	IS:6875	Control switches (Switching devices for Control and auxiliary Circuits including contactor relays) for Voltages upto and including 1000V AC and 1200V DC.
(ix)	IS:13703	Low voltage fuses for voltages not exceeding 1000V AC or 1500V DC
(x)	IS:9224	HRC Cartridge fuse links for voltage above 650V(Part2)
(xi)	IS:5082	Wrought aluminum and Al. alloys, bars, rods, tubes and section for electrical purposes.
(xii)	IS:8623	Factory built assemblies of switchgear and control gear for voltages upto and including 1000 V AC and 1200V DC.
(xiii)	IS:1248	Direct acting electrical indicating instruments .
(xiv)	IS:1293	Plugs & socket outlets of rated voltage upto and including 250 Volts & rated current upto and including 16 amps

2.0.4.3 Lighting Wires / Cables

(i)	IS:694	PVC Insulated cables for working voltages upto and including 1100V.
(ii)	IS:3961	Recommended current ratings for cables (PVC Insulated and PVC sheathed heavy duty cables and light duty cables)
(iii)	IS:8130	Conductors for insulated electric cables and flexible cords.
(iv)	IS:10810	Methods of tests for Cables

2.0.4.4 Electrical Installation & Miscellaneous :

(i)	IS:2062	Steel for general structural purposes.
(ii)	IS:6665	Code of practice for industrial lighting.
(iii)	IS:374	Electric ceiling fans & regulators
(iv)	IS:5216	Recommendations on safety procedures and practices in electrical work.
(v)	IS:732	Code of practice for electrical wiring installation (System voltage not exceeding 650 Volts)
(vi)	IS:1255	Code of practice for installation and maintenance of power cables upto and including 33kV rating.
(vii)	IS:3043	Code of practice for earthing.
(viii)	IS:3646	Code of practice of Interior Illumination.
(ix)	IS:1944	Code of practice for lighting of public through fares.
(x)	IS:5571	Guide for selection of electrical equipment for hazardous areas.
(xi)	IS:800	Code of practice for use of structural steel in general building construction
(xii)	IS:2633	Methods of testing uniformity of coating on Zinc coated articles.
(xiii)	IS:6005	Code of Practice for phosphating iron and steel.
(xiv)	IS:371	Ceiling roses
(xv)	BS:6121	Mechanical cable glands
(xvi)	IS:6631	Specification for Steel pipes
(xvii)		INDIAN ELECTRICITY ACT
(xviii)		INDIAN ELECTRICITY RULES

(xix)	NATIONAL ELECTRICAL CODE
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Major standards, which shall be followed, are listed below. Other applicable Indian standards even if not covered in the listed standard shall be followed.

- | | |
|-------------|-------------|
| a) IS-1913 | b) IS-1977 |
| c) IS-10322 | d) IS-8623 |
| e) IS-6064 | f) IS-8828 |
| g) IEC-598 | h) IS-13703 |
| i) IS-13947 | j) IS-1248 |
| k) IS-2705 | l) IS-4160 |
| m) IS-2713 | n) IS-800 |
| o) IS-2026 | p) IS-2099 |
| q) IS-694 | r) IS-1554 |
| s) IS-9537 | t) IS-14772 |
| u) IS-5133 | |

2.3 DESIGN CRITERIA

2.3.1 Design basis

- 1) The system provides lighting and electric power supply to 400kV switchyard, peripheral roads inside boundary etc. under the scope of this contract. In addition, it also provides lighting to selected areas during plant emergency conditions.
- 2) The system will be installed in an adverse industrial environment. Equipment in some areas will be subject to vibration, coal-dust, fly-ash, oil/water vapours as prevalent in a thermal generating plant.
- 3) The design shall be such as to provide minimum lighting levels as specified for different areas. The Bidder shall carefully consider these lighting levels and layouts.
- 4) The systems shall be suitable for operation on available power supply having characteristics as given in the annexure.
- 5) All fittings of control room / office shall be energy efficient type.
- 6) The switchyard shall generally be provided with:
 - a) Main lighting system for full illumination under normal power supply conditions and shall operate from 415V/240V AC power supply tapped from respective MLDB/lighting panels.
 - b) Emergency lighting system for reduced illumination operated by DG supply feeders during failure of main power supply. It shall cover 20% of fixtures in the building and associated area.
 - c) Minimum emergency lighting system for reduced illumination during failure of main power supply with the help of 220V DC batteries/supply feeders.
- 7) Various lighting panel shall be fed directly from nearest Main Lighting Distribution Board and these MLDB s shall be subsequently fed from respective 415V switchgear through 1:1 transformers to reduce fault level. If the fault level can be contained within 9 kA by virtue of cable impedances, use of 1:1 transformer can be dispensed with.

2.3.2 SYSTEM CONCEPT

The lighting system shall comprise following sub-systems:

1) Normal A.C. Lighting

This will be provided by A.C. lighting fixtures. These lights will be ON as long as the station A.C. supply is available. A.C. lighting fixtures will be fed from respective area lighting panels, which in turn will be connected to main lighting distribution board. The main lighting distribution boards (MLDB) shall have 2x100% incomers and bus-coupler and be fed through 2x100% lighting transformers, which forms a part of the MLDB. Normal A.C. supply thus made available by the MLDB is 415V-3ph-4W-50HZ effectively grounded. Both the MLDB & the lighting panels shall be provided with at least 20% spare outlets.

Arrangement shall be made for automatic light control in switchyard area as required during day time.

2) Normal cum Emergency A.C. Lighting

a) On failure of normal A.C. Supply, emergency A.C. lighting will be provided in selected areas for general visibility, safe movements and operation of important auxiliaries.

b) The emergency MLDBs (EMLDB) are similar to the MLDB except that lighting transformers in this case are fed from station A.C. Emergency bus having D.G. System backup. Thus power for A.C. emergency lighting is 415V-3ph-4W, 50HZ, effectively grounded. These lights will be kept "ON" from normal power supply source and upon its failure will be fed from DG.

c) A.C. emergency lighting fixture will account for 20% of the total lighting fixtures provided in the above mentioned area.

3) Emergency D.C. Lighting

a) This will be provided by emergency D.C. lighting fixtures located strategically in critical operating areas and emergency exits to enable safe movement of operating personnel access to important control points when both the normal AC and Emergency lighting system fails. These lighting fixtures will be fed from DC lighting panels which in turn will be fed from 220V DC LDB. The supply to DC lighting panels will be automatically switched ON in case of loss of plant normal & emergency AC supply. The DC lights will be switched OFF after about 3 minutes following restoration of normal AC or emergency AC supply.

4) Street/Area Lighting

Time switch and photocell will be used for controlling area lights with provision for manual override and also have the provision of latest Energy Saving Systems.

5) Remote Emergency Lighting

This will be provided in auxiliary/off-site buildings where D.C. supply is not available by self-contained battery / automatic charger/inverter/flood light units. These portable emergency light units will be energized automatically on loss of normal A.C. supply.

2.3.3 RATINGS & REQUIREMENTS

- 1) All equipment and accessories shall be designed for continuous operation under site conditions without exceeding permissible temperature rise as stipulated in relevant standards.
- 2) Switch, fuses, MCCB, miniature circuit breakers (MCB), busbar shall be fully rated for short circuit level at the point of application. MCB shall have back-up HRC fuse if its rating is less than the available short circuit current.
- 3) All equipment and accessories shall have proper enclosure to suit the site conditions. Hazardous areas shall have flame-proof enclosure.
- 4) All wiring from lighting panels to fixtures and receptacles shall be carried out by PVC wires in G.I. Conduits.
- 5) Heavy duty XLPE FRLS cables will be used for connections:
 - a) From main lighting board to area lighting panels
 - b) From street/area lighting panel to street light poles.
 - c) From Welding DBs to receptacles of 63A and above
- 6) The lighting system will be supplied from 415V/415V $\pm$ 5%, indoor, dry type lighting transformers. However it shall be so chosen to limit the fault level within 9kA.
- 7) Suitable number of Flood Lighting Towers / Lighting Masts with adequate HPSV Flood Light will be provided for necessary outdoor areas as required.
- 8) Lighting of all main streets, approach roads to various buildings shall be included.
- 9) Each lighting panel shall be provided with adequate number of outgoing miniature circuit breaker for controlling fixtures. 5A, 5 Pin sockets shall be fed from the lighting panel through separate circuits.
- 10) All A.C. Normal and Emergency A.C. lighting shall be provided with Energy Saving System.

2.3.4 METHOD OF CALCULATION

- 1) Standard Lumen method shall be adopted for interior & exterior lighting in order to determine the number of lighting fixtures for obtaining the desired average level of illumination. DIALux software to be used for illumination design.
- 2) The coefficient of utilization shall be considered to take care of Lumen loss due to :
 - a) effect of room dimensions.
 - b) absorption of light in luminaires.
 - c) absorption of light at various room surfaces, i.e ceiling wall etc.
 - d) floor cavity, ceiling cavity.
 - e) mounting height.
- 3) Moreover a maintenance factor shall also be considered to account for the fall of illumination due to aging, pollution like dust deposit etc. Maintenance factors to be considered for various areas shall be as follows :

Area	Maintenance factor
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Control Room	0.75
Switchgear Room	0.65
General indoor area	0.60
Dusty Area	0.55

Light loss Factor

It is recommended that in interiors with fairly clean atmosphere, for example, offices, air conditioned control rooms etc, a light loss factor of 0.8, in interiors which are prone to accumulate dust faster, for example, most in industrial interior an LLF of 0.7 and in high dirt prone interiors an LLF of 0.6 may be adopted for calculating the no. of luminaires to be installed for a particular service illuminance.

- 4) To achieve the recommended luminance relationship, it is necessary to select the reflectance of all finishes of the room surfaces. The recommended reflectance values for industrial interiors and equipment are given below for bidder's guide lines:

Surface	Reflectance Percentage
Ceiling	80-90
Wall	40-60
Desk and Bench tops, machines And equipment	25-45
Floor	not less than 20

- 5) Lux level to be considered for various areas are given below.
- 6) Voltage drop at the fixture from the MLDB bus shall not exceed 3%.
- 7) Circuit loading of each lighting Panel shall be done in such a way that almost balanced loading in all the phases i.e. R, Y & B is achieved.
- 8) At least two sub circuits shall be used for illumination of a particular area.
- 9) Sub circuit loading of each lighting panel shall be restricted to 2000 Watts.

ILLUMINATION LEVEL & AREA WISE LIGHT DISTRIBUTION

Conventional lighting fixtures are mentioned in below table. As conventional light fixtures are not available in the market, bidder to refer the same for required lux level design and equivalent LED fixtures.

Area/Structure	Average Illumination Level in Lux.	Type of Fixture / Luminaire	Type of Lamp
Indoor Lighting:			
Control Room	400	Decorative recessed mounted with mirror optics aluminum anodized reflector	2 x 28W FTL
Switchgear/Electrical Equipment room	200	Industrial type fluorescent lamp with vitreous enamel reflectors up to mounting height of 3.5 M or Industrial medium bay	fluorescent tube (T5) with electronic ballast

		integral luminaire for mounting heights between 3.5 to 8 M.	
Battery Room	200	Industrial Corrosion proof luminaire	2 x 28W FTL.
Main Office /Staff Room	300	Decorative recess mounted mirror optics aluminum anodized reflector	2 x 28W FTL
Non-Office /Service Areas	300	Decorative recess / surface mounted/ Suspended type mirror optics	Fluorescent tube (T5) with electronic ballast.
Corridors, Walkways, Staircase, Lockers etc.	70	Industrial type fluorescent lamp with vitreous enamel reflectors	Fluorescent tube (T5) with electronic ballast.
Toilets, Wash Rooms, etc.	70	Commercial channel mounted box type	Fluorescent tube (T5) with electronic ballast.
Cable Spreader Room	70	Industrial type fluorescent lamp with vitreous enamel reflectors	Fluorescent tube (T5) with electronic ballast.
Laboratory General	100	Decorative recess / surface mounted/ Suspended type mirror optics	Fluorescent tube (T5) with electronic ballast.
Laboratory Analysis Area	300	Industrial Corrosion proof luminaire	2 x 28W FTL.
Outdoor Switchyard, Road & Yard Lighting:			
Outdoor Operating Area	50	General purpose flood light	250 W/400 W HPSV lamp
General Outdoor Area	20	General purpose flood light	250 W/400 W HPSV lamp
Main Roads	20	Integral type street Lighting luminaire with aluminium reflector	150 /250W HPSV lamp
Secondary Roads	10	-do-	-do-
Perimeter (Compound) Lighting	10	-do-	-do-

* Medium bay fixtures shall be used where the room height is 8 M. Otherwise high bay fixtures are to be used.

Lux level for A.C. Emergency lighting in control room shall be 50 and for other areas 20 lux. Lux level for main road lighting shall be 20 and for secondary road shall be 10 lux.

Area Wise Distribution of Lighting System

Sl.No.	Area	Normal AC	Emergency AC	Emergency DC	Portable DC
1	Switchyard Control Room	80%	20%	Yes	Yes
2	Battery Room	80%	20%	Yes	
3	Cable Spreader	80%	20%	Yes	

4	Switchyard, Area/Street lighting	80%	20%		
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2.3.5 TECHNICAL PARAMETERS OF LED FIXTURES

- 1) In false ceiling area, LED luminaires shall be recessed mounting type & in non- false ceiling area, the LED luminaires shall be surface mounting type.
- 2) The individual lamp wattage for LED shall be up to 3 watt.
- 3) The LED chip efficacy shall be min 120 Lm/W. The luminaire efficacy shall be not less than 90 Lm/W.
- 4) The LED used in the luminaires shall have colour rendering index (CRI) of Min 65. Colour designation of LED shall be "cool day light" (min 5700K) type.
- 5) The LED luminaire shall have minimum life of 25,000 burning hours with 80% of lumen maintenance at the end of the life.
- 6) The max. junction temperature of LED shall be 85 deg C, further the lumen maintenance at this temperature shall be min 90%.
- 7) 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.
- 8) The marking on luminaire & safety requirements of luminaire shall be as per IS standards.
- 9) 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 manufacturer.
LED Drivers may have following control & protections:
 - a. Suitable precision current control of LED.
 - B. Open Circuit Protection
 - c. Short Circuit Protection
 - d. Over Temperature Protection
 - e. Overload Protection
- 10) Suitable heat sink with proper thermal management shall be designed & provided in the luminaire.
- 11) Surge Protection shall be provided in each LED type fixtures
 - a. For Indoor: Min 2KV
 - b. For Outdoor: Min 4 KV for Internal and 10 KV for External

2.3.6 TECHNICAL DATA OF LED FIXTURES

Type of Luminaire	Description	Total Luminous Flux (Lumen) of Luminaire– Min. Value	Measured Electrical Input Power (Watt) of Luminaire – Max. Value	Efficacy = Lumen/watt	Housing	IP	THD
	Industrial type LED fixture suitable for conduit/ surface/ suspended mounting with integral driver aesthetically designed for Switchgear/ Equipment room/ stair case/ corridors.						

2.4 SPECIFIC REQUIREMENTS - SUPPLY

2.4.1 EQUIPMENT AND MATERIAL

- 1) Equipment and material shall comply with description, rating, type and size as detailed in this specification, drawings and annexures.
- 2) Equipment and materials furnished shall be complete and operative in all details.
- 3) All accessories, control devices, internal wiring, fittings, supports, hangers, anchor bolts etc. which form part of the equipment or which are necessary for safe and satisfactory installation and operation of the equipment shall be furnished.
- 4) All parts shall be made accurately to standard gauges so as to facilitate replacement and repair. All corresponding parts of similar equipment shall be interchangeable.

2.4.2 Lighting/Welding Transformers & Lighting Fixtures

- 1) Each AC Lighting Distribution Board (MLDB) / Welding DB shall be fed from a transformer. The transformers shall be cast resin dry type, indoor type dusty vermin proof having 415V / 415V $\pm$ 2 x 2.5% with off load tap-changer on primary side. The vector-group shall be Dyn11. (The secondary side shall be solidly grounded through an additional neutral bushing exclusively used for grounding.) The casing of the transformer shall be grounded at least at two (2) points. The transformer may be located inside the lighting / welding DB itself or by the side of respective DB. Impedance of the transformer shall be so selected such that fault level of lighting/welding system is reduced to 3-5 kA.

RATINGS AND REQUIREMENTS OF LIGHTING / WELDING TRANSFORMER

Type :	Cast Resin Dry Type
KVA rating :	to be finalized during detail engineering
Voltage rating :	415 V/415 V
Cooling :	AN
P.U. Impedance :	0.045 + 10%

Voltage control :	Off load tap switch/link with change of + 5% in step of 2.5% tapping full capacity.
Vector Group :	Dyn11
Class of Insulation :	F (155 deg. C)
Maximum Temperature rise over 50 deg. C. ambient in winding by resistance :	90 deg. C
Neutral :	Solidly grounded.

The secondary neutral of the transformer shall be brought out for getting a grounded 4wire supply. Each transformer shall be routine tested and one transformer shall be type tested in accordance with relevant standard.

The transformer shall be liable for rejection if the tolerance on the quoted values of losses, impedance, temperature rise, etc. exceeds the specified values of relevant standard.

The transformer shall be mounted inside sheet steel enclosure, which shall be an integral part of Lighting Distribution Board.

FITTINGS AND ACCESSORIES OF LIGHTING / WELDING TRANSFORMER

Each transformer shall be equipped with fittings and accessories as listed below :

1. 150 mm dia. winding temperature indicator with maximum reading pointer and electrically separate sets of contacts for trip and alarm
2. Handling and lifting lugs both for enclosure and core-coil assembly.
3. Jacking pad for core-coil assembly.
4. Inspection cover for cable and box.
5. Door handle operated safety limit switch with 1NO + 1NC contact.
6. Ground bus.
7. IP-55 junction box.
8. Rating and terminal marking plates.

All indication, alarm, trip contacts provided shall be rated for 2.0A at 220 V D.C. and 5A at 240 V A.C.

- 2) If necessary, apart from the main lighting transformers, separate small additional lighting transformers may be used at distance lighting points.
- 3) Lighting fixtures shall be designed for minimum glare. The surface finish shall be smooth, unobtrusive and scratch resistant.

- 4) Reflector shall be of sheet steel or aluminium, minimum 20 SWG thick, securely fixed by fastening device of captive type.
- 5) Fixture shall be suitable for 20 mm conduit entry and 16 SWG G.I. earth wire connection.
- 6) High bay fixtures shall have provision for vibration damper to ensure rated lamp life. Cost of each damper shall be separately indicated.
- 7) Fixture shall be furnished complete with lamps and integrally/non integrally or separately mounted control gear & accessories as applicable for different types of fixtures. These shall include holders, ballast, capacitor, starter, ignitors, etc.
- 8) Fixtures shall be fully wired up to respective terminal blocks, suitable for loop in and loop out connection of PVC wires of following sizes :
 - a) Lighting fixture : 2.5 mm² Copper
 - b) Flood Light fixture : 2x2.5 mm² Copper

2.4.3 Lamps

- 1) General lighting service (GLS) lamps shall be with clear glass and screwed caps.
- 2) All fluorescent lamp shall be bi-pin rotary type. Lamp holder shall be spring loaded, low contact resistance type and shall have resistance to wear. CFL and T5 fluorescent tube with electronic ballast or tri-phosphorous tube

Fluorescent lamp will be used in indoor application having low height like 3 to 5 metres requiring good colour rendering. All control rooms, electrical panel room, auxiliary building, laboratories, office area, etc. will be provided with fluorescent lamp fixtures. The fluorescent lamp will be tubular, cool daylight type of 28W as per annexure.

- 3) Mercury/Sodium vapour lamp shall be colour corrected type with screwed cap.

HPSV lamp has the advantage of very high efficiency (lumens/watt) and hence recommended for all outdoor application such as area lighting, roads, boundary wall, etc. Flameproof fixtures will be used for hazardous areas with HPMV lamps. The HPSV/HPMV lamps will be elliptical of rating 70W/150W/250W/400W as required depending on application.

- 4) Lamps shall be suitable for use in position and capable of withstanding small vibrations.

2.4.4 Ballast/Electronic Ballast

- 1) Ballasts shall be heavy duty, low loss, polyester-filled type with copper winding. Ballast shall be free from hum.
- 2) Ballast for Mercury/Sodium vapour lamp shall be provided with suitable tapping to set the voltage within range specified.
- 3) In multi-lamp fixture, each lamp shall be provided with individual ballast.
- 4) Ballast windings shall have maximum operating temperature of 120 deg. C without rated temperature rise marking.

- 5) Electronic Ballast shall be suitable for 220 V DC and also 240 V AC.
- 6) Electronic Ballast shall be compact, lightweight, high frequency electronic standard ballast for fluorescent lamps.
- 7) It shall be Flicker-free warm start, ideal for areas with high switching frequency.
- 8) Electronic Ballast shall be of such design that minimum 25% reduction in energy consumption at constant luminous flux compared with conventional gear.
- 9) Electronic Ballast shall not cause high harmonic distortion.
- 10) Electronic Ballast shall provide constant light independent of mains voltage fluctuation.

2.4.5 Lighting Panel/Distribution Boards

- 1) Lighting Distribution Boards/panels shall be metal-enclosed, cabinet type, fabricated from CRCA sheet steel minimum 2 mm thick, suitable for either wall/column mounting on brackets or floor mounting on channel sills.
- 2) Indoor Lighting Distribution Boards & Lighting Panels shall be dust and vermin-proof, IP-52 or better; outdoor panels shall be weather-proof with canopy, IPW-55 or better. The cubicle-housing transformer shall be minimum IP-42.
- 3) Lighting Distribution Boards and Lighting Panels shall be so constructed as to permit free access to the terminal connections and easy replacement of parts. Front access doors shall have padlocking arrangements.
- 4) Lighting Distribution Boards shall have provision of cable entry from bottom and, panels shall have provision of cable entry from top and bottom, as required, with removable gland plates. Necessary double compression type brass cable glands, tinned copper/Aluminium cable lugs are to be furnished.
- 5) Two ground pads with M10 G.I. bolts and nuts shall be provided on each Lighting Distribution Board and Lighting Panel for connection to ground conductor.
- 6) Each Lighting Distribution Board shall be complete with designation and caution notice plates fixed on front cover and a directory plate fixed on inside of the front cover. This directory plate shall contain details of the Lighting Panels being fed from the Distribution Board including their designation, location, loading etc.

Each Lighting Panel shall be complete with designation and caution notice plates fixed on front cover and a circuit directory plate fixed on inside of the front cover. Circuit directory plate shall contain details of the points to be controlled by each circuit including the location of the point controlled, rating of the protective units and loading of each circuit.

The plates shall be of anodized aluminium with inscriptions indelibly etched on it.

- 7) Bus bar shall be electrolytic grade hard drawn aluminium, colour coded for easy identification and designed for a maximum temperature of 85°C. Minimum size shall be 25 x 6 mm.

- 8) Incoming and outgoing circuits shall be terminated in suitable terminal blocks.

2.4.6 Board/Panel Equipment

- 1) Each Distribution Board shall consist of one cast resin dry type transformer housed in the cubicle, voltmeter with selector switch, C.T. operated ammeter and incoming triple pole MCCB. Outgoing feeder from the Lighting Distribution Board shall have MCCB. Proper discrimination between outgoing MCCB of Lighting Distribution Board and downstream MCCB of Lighting Panel should be ensured.
- 2) Each lighting panel shall have an incoming triple pole MCCB with neutral link and ELCB and a number of outgoing miniature circuit breakers (MCB) as per annexure.
- 3) Board/Panel access door shall be interlocked with incoming MCCB such that the door can be opened only when the MCCB is in OFF position. Means shall be provided to defeat this interlock.
- 4) All MCCB shall be single throw, air break, heavy duty type having quick-make quick-break contacts. Fuses shall be HRC link type. Contactors shall be air break electromagnetic type. Push buttons shall be push to actuate type.
- 5) MCB shall be suitable for manual closing and opening and also automatic trip on overload and short circuit.
- 6) Time switch in street lighting panels shall be clock switch type with ON-OFF time setting facility, which shall ensure respective ON-OFF operation in every 24 Hours cycle. Voltmeter/Ammeter shall be of accuracy class 1.0 or better as per IS: 1248. Voltmeter /Ammeter selector switch shall be of reputed make.

LIGHTING PANEL

LP-1	415 V A.C. Indoor type Lighting Panel with 415 V, 100A, 3 ph, 4 wire bus, one (1) no. 100A TP & N switch/MCCB as incomer along with ELCB, 24 nos. 20A, 240 V, 1 pole MCBs as outgoing feeders.
LP-2	415 V A.C. Indoor type Lighting Panel with 415 V, 100A, 3 ph, 4 wire bus, one (1) no. 100A TP & N switch/MCCB as incomer along with ELCB, 18 nos. 20A, 240 V, 1 pole MCBs as outgoing feeders.
LP-3	415 V A.C. Indoor Lighting panel with 415 V, 3ph, 4W bus & one 63A TP & N Switch/MCCB as incomer with ELCB and 12 nos 20A , 240V 1 pole MCBs as outgoing feeder.
LP-4	415V A.C. Indoor type Lighting Panel with 415V, 63A, 3 ph, 4 wire bus, one (1) no. 32 A TP & N switch/MCCB as incomer with ELCB, 6 nos. 20A, 240V, 1 pole MCBs as outgoing feeders.
SLP	415 V A.C. Outdoor type Panel with 415 V, 100A, 3 ph, 4 wire bus, one 100A TP & N switch/MCCB as incomer, 18

	nos. 20A, 240V, 1 pole MCBs as outgoing feeders. The lighting panel shall be provided with 63A contactor, frequency compensated timer switch, photo-cell switch push- buttons for automatic control of street/area lighting with provision for manual override.
DCLP	Indoor type emergency lighting panel with 240V bus, one no Fuse switch as incomer and 6 nos 16A two pole MCB as outgoing feeders.
FLP	Outdoor, lockable type Isolating switch of 415V, 63A, 3 ph, 4 wire TP & N. with 2 mm sheet steel/cast iron cubicle

2.4.7 Receptacles

- 1) Receptacles shall be heavy duty, complete with individual plug and switch as detailed in the annexure.
- 2) The conduit box of the receptacle shall be provided with earthing screws with washer and nuts welded on the surface for grounding with 16 SWG G.I. wire. Arrangement shall be provided inside the conduit box for grounding of third pin.
- 3) Shrouded type plug shall be provided with corresponding matching arrangement at sockets to prevent accidental contact with finger during plug insertion.

RECEPTACLE

RA	6A, 240 V, 2 pole, 3 pin with third pin earthed, suitable for flush mounting in office areas and control room. The switch shall be also flush mounted piano type.
RB	16A, 240V, 2 pole, 3 pin with third pin earthed, wall/ column mounted, metal clad gasketed construction, 20mm conduit entry, screwed metal cover tied to it by a metal chain, weatherproof suitable for indoor/outdoor installation.
RC	63A, 415 V, 3 phase, 4 pin interlocked plug and switch with earthing contact, wall/column mounted, metal clad gasketed construction, weatherproof, suitable for loop-in/loop-out connection of 4/C-35 Sq.mm XLPE cable. These shall be fed from Welding DB.
RD	125 A, 415 V, 3 phase 5 pin interlocked plug & switch with fifth pin earthed, wall/column mounted metal clad gasketed construction, weatherproof, suitable for loop in and loop out connection of 3-1/2C -95 Sq.mm XLPE cable. These shall be fed from A.C-Distribution Board/Station MCC.

2.4.8 Fans & Regulators

- 1) The fans shall have three well balanced blades, and shall be reasonably free from noise. Pedestal fans shall also be provided as per requirement.
- 2) Fan motor shall be totally enclosed type with copper winding and class E insulation.
- 3) Regulator shall have minimum five steps. Electronic regulator with smooth control is to be provided.

CEILING FANS

FA	1200 mm sweep ceiling fan with regulator, down rod and canopy.
FB	1400 mm sweep ceiling fan with regulator, down rod and canopy.

2.4.9 Switch & Switch Board

- 1) All switch boards/boxes shall be of bent steel construction, fabricated of 14 SWG M.S. sheet with 6 mm thick bakelite cover with brass fixing screws.
- 2) Switch boards/boxes located in control room and office areas shall be flush mounted type on brick wall with only the switch knob projecting outside.
- 3) Switch boards/boxes shall have conduit knock outs on the sides. Adequate provision shall be made for ventilation of these boxes.
- 4) Flush type receptacles where provided shall be so located that only the plug projects outside.
- 5) Switches shall have quick-make and quick-break mechanism operated by a suitable external handle complete with position indicator.

SWITCHBOARD

S-1	Switch board with 1-6A switch.
S-2	Switch board with 3-6A switch and 1-6A receptacle.
S-3	Switch board with 6-6A switch and 1-6A receptacle.

2.4.10 Lighting Poles & Flood Light Tower

1) Street Light Poles

- a) Street light poles shall be swaged and welded steel pole, complete with fixing brackets, weather-proof junction box and all other accessories.
- b) The pole shall be coated with bituminous preservative paint on inside as well as embedded outside surface. Exposed surface shall be coated with two coats of metal primer (comprising of red oxide and zinc chromate in synthetic medium).

LIGHTING POLES

TA/TB	Single arm/double arm swaged and welded steel pole with junction box and all accessories.
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2) Flood Light Tower

- a) Flood light tower shall be a lattice structure with maintenance platform and approach ladder. All structural members and hardware shall be hot-dip galvanized.
- b) Structures shall be designed for an additional load of 1500kg for maintenance crew. Deflection under maximum wind pressure shall not exceed 1 in 360. Structural design shall be as per IS-800.

3) Lighting High Masts

Applicable standards:

The following shall be Reference Standards for loading of the High Mast:

- IS-875 (Part-III) 1987 - Code and practice for design loads for Structures.
- BSEN 10025/DIN 17100 - Grade of M.S. Plates.
- BS-5135/AWS - Welding
- BS.ISO 1461 - Galvanizing
- TR. No. 7200 of ILE - UK Specification for Mast and foundation.

Structure:

Lighting High Mast shall be of continuously tapered polygonal cross section, at least 20 sided, hot dip galvanized and presenting a good and pleasing appearance and shall be based on proven In-Tension design confirming to the standards referred to above, to give an assured performance, and reliable service. The structure shall be suitable for wind loading as per IS-875 Part-III, 1987. The masts dimensions shall be as per standards.

The Mast shall be of 30M height with lantern carriage to enable raising/lowering for ease of maintenance, including the Head Frame, Double Drum Winch, continuous stainless steel wire rope, in built power tool, luminaries, suitable aviation warning light, lightning along with necessary power cables within the mast. The mast shall be delivered only in three sections & shall be joined together by slip stressed fit method at site. No site welding or bolted joints shall be done on the mast.

High mast shall be complete with feeder pillar panel for power distribution to lighting fixtures and winch motor. Feeder pillar panel shall be outdoor type stand mounting with dust and vermin proof, IP 55 and constructed of 14 swg sheet steel.

2.5 Maintenance Equipment

The Contractor shall supply one (1) no. of wheel mounted adjustable aluminium ladder for the maintenance of street lights.

For maintenance of lighting fixtures, the bidder shall supply one (1) no. free standing adjustable aluminium ladder, adjustable from 5 to 10 m atleast.

M1 10 m high car wheel mounted aluminium ladder.

M2	Adjustable free-standing aluminium ladder height adjustable from 5 m to 10 m.+
M3	Portable Emergency light set complete with one 20W tube light, battery, battery charger and all other accessories.
M4	24 Volt Supply Module with all accessories.

2.6 Special Requirement

- 1) All outdoor illumination fixtures, unless it is fed from photo cell/time switch controlled lighting panel, has to be provided with outdoor type local switches.
- 2) In all the air filtration units and air handling units, one marine type lamp (of 100 Watt approx.) shall be supplied.

2.11 Lighting Cables & Wires

- 1) Lighting Cable shall be heavy duty, 1100 Volt grade, multi-core stranded aluminium conductor, XLPE insulated, extruded PVC inner sheath, single round G.I. wire armoured and overall PVC sheathed with FRLS conforming to IS 1554.
- 2) Lighting wires shall be 1100 Volt grade, fire resistance PVC insulated, stranded conductor, single core cable conforming to IS 694, colour coded as below :

RED for R-Phase	BLACK for Neutral
YELLOW for Y-Phase	WHITE for +Ve D.C.
BLUE for B-Phase	GREY for -Ve D.C.

- 3) Wire size shall be as follows :

For point wiring beyond lighting panel: i.e from lighting Panel to junction box (main run)	10 Sq.mm. Aluminium. Stranded conductor
From Junction box to lighting fixture :	2.5 Sq.mm. Copper Stranded conductor

2.12 Conduits and Accessories

- 1) Conduits shall be rigid steel, hot-dip galvanised, furnished in standard length of 3 metres, threaded at both ends.
- 2) Thickness of conduits up to and including 25 mm dia shall be of 16 SWG and conduits above 25 mm shall be of 14 SWG. Minimum size of conduits shall be 20 mm.
- 3) Each piece of conduit shall be straight, free from blister and other defects and covered with capped bushings at both ends.
- 4) Flexible conduits shall be made with bright, cold rolled annealed and electro-galvanised mild steel strips and coated with PVC.

2.13 Junction Box

- 1) Junction boxes shall be of 16 SWG sheet steel hot-dip galvanised, dust and damp proof, generally conforming to IP-55.
- 2) Junction boxes shall be complete with gasketed inspection cover, conduit knock out/threaded hub and terminal blocks.
- 3) Junction boxes for outdoor use shall be weatherproof IPW-55 and those for hazardous location shall be flame-proof type.
- 4) Junction boxes shall have following indelible markings:

Circuit nos. on top
Circuit nos. with ferrules (inside) as per drawing
DANGER sign in case of 415V circuit

2.14 Terminals

- 1) Multi way terminal blocks of approved type, complete with screws, nuts, washers and marking strips shall be furnished for connection of incoming/outgoing wires.
- 2) Each terminal shall be suitable for connection up to 2 nos. 10 Sq.mm stranded aluminium conductors without any damage to the conductor or looseness of connectors.

2.15 Portable Emergency Lighting Unit

The portable emergency lighting unit shall be complete with 6 volt storage battery (rechargeable), inverter, automatic charger, twin 6 watts fluorescents tube lamp and test switch. Contractor shall furnish make, type and catalogue during contract stage.

2.16 Moulded Case Circuit Breaker (MCCB)

- 1) MCCB shall be heavy duty, triple pole, load break-fault-make type conform to the duty as required. MCCB shall be provided with a common trip bar, so as to ensure opening of all phases even when fault occurs in only one phase.
- 2) MCCB shall have positive indication in ON and OFF position with indication on each Module.
- 3) The MCCB should be housed in a heat resistant moulded insulated housing Overload and Magnetic release of MCCB shall be suitable for setting at site. The Short Circuit release shall be of minimum of 12x In.

2.17 Nameplate

Nameplates shall be furnished for identification of devices and circuits. All switches, controls and indications shall be permanently and legibly marked in English as to clearly indicate their functions.

All lighting fixtures, receptacles, fans, junction boxes etc. shall be properly marked up indelibly with corresponding circuit numbers.

2.18 Samples

Owner reserves the right to call for samples if considered necessary and the same shall be submitted by the Bidder free and without any obligation.

2.19 SPECIFIC REQUIREMENTS - SERVICES

2.19.1 Consumables and Hardware

- 1) The Contractor shall furnish all erection materials, hardware and consumables required for the complete installation.
- 2) The materials shall include but shall not be limited to the following :
 - a) Consumables : Welding rods & gas, oil and grease, cleaning fluids, paints, electrical tape, soldering materials etc.
 - b) Hardware : Bolts, nuts, washers, screws, brackets, supports, clamps, hangers, saddles, cleats, sills, shims etc.
 - c) Materials : Junction boxes, terminal blocks, connectors, ferrules, lugs, brass glands, rigid/flexible conduits, cables, ground wires etc.
- 3) Supply of cement, sand, stone etc. required for the execution of the contract shall be the responsibility of the Contractor.

2.19.2 Testing Equipment

The Contractor will provide such checking and testing equipment as test lamp, buzzer, 500-volt meggar, earth meggar, lux-meter etc. and also other testing equipment as required.

2.19.3 Installation - General

Installation work shall be carried out in accordance with good engineering practices and also manufacturer's instructions/ recommendations where the same are available.

Equipment shall be installed in a neat workmanlike manner so that it is level, plumb, square and properly aligned and oriented.

2.19.4 Lighting Fixtures

- 1) Continuous rows of fluorescent tubes shall be mounted on a continuous M.S. angle for each row of lights.
- 2) Floodlights shall be mounted on steel base facing the tentative direction shown on drawings. Fixing holes shall be provided with slot to turn the fixture about 5 Deg on both sides. Bolts shall be finally tightened with spring washer.

The Contractor shall supply and install the steel base for fixing the flood light on the flood light towers.

Terminal connection to the floodlight shall be made through PVC coated flexible metallic conduits.

- 3) Fixtures shall be mounted on sub-station structures with suitable clamps. No cutting or drilling of sub-station structures is permitted.
- 4) The fixtures after erection shall be marked up indelibly with corresponding circuit number for easy identification of lamp circuit.

2.19.5 Receptacles

Receptacles shall be installed at locations shown in approved drawings. As a minimum the following shall be provided –

Atleast one 6/16A, 240V AC universal socket outlet with switch shall be provided in office, cabins, etc.

63A, 3 phase, 4 wire, 5 pin Receptacle shall be provided at the following locations as a minimum

- a) One (1) each in switchgear rooms
- b) One (1) no. in each Battery room.

Each circuit of welding DB shall feed a maximum of two (2) nos. welding receptacles.

2.19.6 MLDB, EMLDB DCELDB and Lighting Panel

MLDB, EMLDB DCELDB and Lighting panels shall be erected at the locations indicated in approved drawings.

2.19.7 Street Lighting Poles

Erection of Street Lighting poles together with all its accessories including civil foundation work, installing lighting fixture, wiring and cabling work are included within scope of contractor.

2.19.8 Conduit System

- 1) In case of unarmoured cable, all conduits shall originate from the respective lighting panel and terminate in lighting fixtures, receptacles etc.
- 2) Exposed conduits shall be run in straight lines parallel to building columns, beams and walls as far as practicable. Unnecessary bends and crossings shall be avoided to present a neat appearance.
- 3) Conduit supports shall be provided at an interval of 750 mm for horizontal runs and 1000 mm for vertical runs.
- 4) Conduits shall be clamped on to approved type spacer plates or brackets by saddles or U-bolts. The spacer plates or brackets in turn, shall be fixed to the building steel by welding and to concrete or brick work by grouting as shown on drawings.

Wooden plug inserted in the masonry or concrete for conduit support is not acceptable.

- 5) Embedded conduits shall be securely fixed in position to preclude any movement. In fixing embedded conduit, if welding or brazing is used, extreme care should be taken to avoid any injury to the inner surface of the conduit.
- 6) Spacing of embedded conduits shall be such as to permit flow of concrete between them and in no case shall be less than 40 mm.
- 7) Where conduits are run on cable trays they shall be clamped to supporting steel at an interval of 600 mm.
- 8) For directly embedding in soil, the conduits shall be coated with an asphalt - base compound. Concrete pier or anchor shall be provided where necessary to support the conduit rigidly and to hold it in place.
- 9) Conduits shall be installed in such a way as to ensure against trouble from trapped condensation.
- 10) Running threads shall be avoided as far as practicable. Where it is unavoidable, check nuts shall be used.
- 11) Conduits shall be kept, wherever possible, at least 300 mm away from hot pipes, heating device etc. when it is evident that such proximity may impair the service life of cables.
- 12) Slip joints shall be provided when conduits cross structural expansion joints or where long run of exposed conduits are installed, so that temperature change will cause no distortion due to expansion or contraction of conduit run.
- 13) For long run, junction/pull boxes shall be provided at suitable intervals to facilitate wiring.
- 14) Conduits shall be securely fastened to junction box or cabinets, each with a locknut and insulated bushing inside the box and locknut outside.
- 15) Conduit lengths shall be joined by screwed couplers. Couplers shall be clearly cut.
- 16) Conduit joints and connections shall be made thoroughly water-tight and rust-proof by application of a thread compound which will not insulate the joints.

White lead is suitable for application on embedded conduit and red lead for exposed conduit.

- 17) The Battery Room installation shall be made with acid fume proof conduits.
- 18) Field bends shall have a minimum radius of four (4) times the conduit diameter. All bends shall be free of kinks, indentations or flattened surfaces. Heat shall not be applied in making any conduit bend.
- 19) The entire metallic conduit system, whether embedded or exposed, shall be electrically continuous and thoroughly grounded.
- 20) Lighting fixture shall not be suspended directly from junction box in the main conduit run.

- 21) Conduits and fittings shall be properly protected during construction period against mechanical injury. Conduits ends shall be plugged or capped to prevent entry of foreign material.
- 22) After installation the conduits shall be thoroughly cleaned by compressed air before pulling in the wire.
- 23) In control rooms and office areas provided with false ceiling conduct run shall be concealed type, embedded in the walls.

2.19.9 Wiring

- 1) Wiring shall be generally carried out by PVC wires in conduits. All wires in a conduit shall be drawn simultaneously. No subsequent drawing is permissible.
- 2) Wire shall not be pulled through more than two equivalent 90° bends in a single conduit run.
- 3) Wiring shall be spliced only at junction boxes with approved type connections or terminal strips. Maximum two wires can be connected to each way of the terminal block. Splicing of only one phase shall be done in a junction box.
- 4) For lighting fixtures, connection shall be teed off through suitable round conduit or junction box, so that the connection can be attended without taking down the fixture.
- 5) For vertical run of wires in conduit, wires shall be suitably supported by means of wooden/hard rubber plugs at each pull/ junction box.
- 6) A.C. and D.C. circuits shall not be run in the same conduit and junction boxes. Circuits fed from different transformers shall be run through different conduits and Junction boxes.
- 7) Receptacle circuits shall be kept separate and distinct from lighting and fan circuits.
- 8) Separate neutral wire shall be provided for each circuit. Wiring throughout the installation shall be such that there is no break in the neutral wire in form of switch or fuse.

2.19.10 Cabling

- 1) In outdoor areas, main runs from lighting panels shall be by means of XLPE cables, directly buried in ground or laid in trenches for the underground portion and through conduit for the over ground portion.
- 2) Buried cables shall be laid and covered with sand/ riddled earth, and protected from damage by bricks at sides and pre cast concrete slab at top. Buried cables shall have cable markers at 50M interval and projecting 150 mm above ground. At cable bends and joints markers shall be provided.
- 3) When buried cables cross road/railway track, additional protection to be provided in form of hume / G.I. pipe.

2.19.11 Grounding

- 1) All lighting panels, junction boxes, receptacles, fixtures, conduit etc. shall be grounded in compliance with the provision of I.E. Rules.
- 2) Ground connections shall be made from nearest available station ground grid. All connections to ground grid shall be done by arc welding.
- 3) Panels/Boards shall be directly connected to ground grid by two nos. 35 x 6 mm G.I. flats (for panels) / two nos. 50x6 mm G.I. flats (for distribution boards).
- 4) All junction boxes, receptacles, lighting fixtures etc. shall be grounded with 16 SWG G.I. wire.
- 5) Each street lighting Pole shall be grounded at two points by two nos. 50x6 mm G.I flat risers from two (2) nos. earthing spike 40 mm dia & 3m long directly driven into ground at a depth of 1m from ground level. The junction box at each lighting pole is grounded at two (2) points from two (2) nos. earthing terminals by 16 SWG GI wire. One 16 SWG G.I wire shall be taken up to the junction box from lighting fixtures and connected to grounding point.

2.19.12 Foundation & Civil Works

Equipment foundations, panel foundations and all other civil work will be provided by the Contractor.

2.19.13 Excavation and Back Filling

- 1) The Contractor shall perform all excavation and backfilling as required for buried cable and ground connections.
- 2) Excavation shall be performed up to the required depth. Such sheeting and shoring shall be done as may be necessary for protection of the work.
- 3) The Contractor shall make use of his own arrangements for pumping out any water that may be accumulated in the excavation.
- 4) All excavation shall be backfilled to the original level with good consolidation.

2.19.14 Steel Fabrication

- 1) All supports, hangers & brackets shall be fabricated by the Contractor. Necessary steel shall be supplied by the Contractor.
- 2) Steel for fabrication shall be straightened and cleaned of rust and grease. All fabrication shall be free of sharp edge.
- 3) Every effort shall be made to minimize the wastage of steel as far as practicable during fabrication. The wastage in no case shall exceed 3% of the total quantity of steel fabricated.

2.19.15 Painting

- 1) Street light poles shall be given two coats of aluminium paints after installation.

- 2) All steel fabrication shall be given two coats of red oxide primer. Finish paint shall be as mentioned in Section-3.
- 3) All equipment shall be given touch-up paint as required after installation.

2.19.16 Inspection & Testing

- 1) On completion of erection works, the Contractor shall request the Engineer for inspection and tests with minimum fourteen (14) days advance notice.
- 2) The Engineer shall arrange for joint inspection of the installation for completeness and correctness of the work. Any defect pointed out during such inspection shall be promptly rectified by the Contractor.
- 3) The installation shall be then tested and commissioned in presence of the Engineer and put on trial run for stipulated contract period.
- 4) All rectification, repair or adjustment work found necessary during inspection, testing, commissioning and trial run shall be carried out by the Contractor without any extra cost.

2.20 TESTS

All equipments to be supplied shall be of type tested quality. The Contractor shall submit for Owner's approval the reports of all the type tests as listed in this specification and carried out within last five years from 17.10.2017. These reports should be for the tests conducted on the equipment similar to those proposed to be supplied under this contract and the test(s) should have been either conducted at an independent laboratory or should have been witnessed by a client.

In case the Contractor is not able to submit report of the type test (s) conducted within last five year from the date of bid opening, or in case the type test report(s) are not found to be meeting the specification requirements, the Contractor shall conduct all such tests under this contract free of cost to the BHEL / Owner and submit the reports for approval.

All acceptance and routine tests as per the specification and relevant standards shall be carried out. Charges for these shall be deemed to be included in the equipment price.

Selection of samples for type test, acceptance test & routine test and acceptance criteria for all the items shall be as per relevant I.S.

Type test reports of the following items as per relevant standards shall be submitted for approval.

SI.NO.	DESCRIPTION
i.	Lighting fixtures of each type.
ii.	Lamps of each type and rating (life cycle and rating test only)
iii.	Lighting panel of each type (Degree of Protection)
iv.	Junction Box of each type (Degree of protection)
v.	Receptacles of each rating.
vi.	M.C.B. of each rating.
vii.	Lighting transformer

viii. Ballasts

2.20.1 Acceptance Test and Routine Test :

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

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

2.20.2 Galvanizing Tests :

The quality of galvanizing shall be smooth, continuous, free from flux, stains and shall be inspected visually.

In addition following test shall be conducted as acceptance tests.

(a) Uniformity of coating – The coating of any article shall withstand four 1 minute dips in standard copper sulphate solution without the formation of an adherent red spot of metallic copper upon the basic metal.

(b) The quality of cadmium/ Zinc plating on items with screw threads shall be free from visible defects such as unplated areas, blisters and modules and shall be inspected visually.

(c) In addition the plating thickness shall be determined microscopically / chemically or electronically.

2.20.3 COMMISSIONING CHECKS :

On completion of Installation work the Contractor shall request the Project manager for inspection and test with minimum of fourteen (14) days advance notice.

The Project Manager shall arrange for joint inspection of the installation for completeness and correctness of the work. Any defect pointed out during such inspection shall be promptly rectified by the Contractor.

The installation shall be then tested and commissioned in presence of the Project Manager.

The contractor shall provide all, men material and equipment required to carry out the tests.

All rectifications, repair or adjustment work found necessary during inspection, testing and commissioning shall be carried out by the Contractor without any extra cost.

The testing shall be done in accordance with the applicable Indian Standards and codes of practices. The following tests shall be specifically carried out for all lighting installation.

- (a) Insulation Resistance

- (b) Testing of earth continuity path.
- (c) Polarity Test of single phase switches
- (d) Functional checks

The lighting circuits shall be tested in the following manner :

- (a) All switches ON and consuming devices in circuit, both poles connected together to obtain resistance to earth.
- (b) Insulation resistance between poles with lamps and other consuming devices removed and switches ON.

Contractor shall thoroughly test and megger all cables, wires and equipment to prove that the same are free from ground and short circuit. If any ground or short circuit is found, the fault shall be rectified or the cable and/or equipment replaced. All equipment shall be demonstrated to operate in accordance with the requirements of this specification. Illumination in different areas are as per designed lux level should be established. Erection agency shall provide testing equipment as test lamp, buzzer, 500-volt meggar, earth meggar, luxmeter etc. as per requirement.

Lux level measurement to prove guaranteed Illumination levels. The contractor shall submit a document on methodology of measurement for approval of BHEL / ultimate customer . This will become basis for measurements .

2.21 QUALITY PLAN :

Bidder shall submit immediately after award of Contract Manufacturing Quality plan & field Quality plan in prescribed format for approval of BHEL & customer. These approved Quality plans shall be followed for manufacture and ETC. Where standard quality plans of BHEL or customer are available , these shall be followed after written consent of BHEL/ Customer.

2.22 HANDING & TAKINGOVER :

It is the responsibility of bidder to handover the complete system to BHEL/ ultimate customer. Bidder shall assist BHEL to handover the system supplied by them to ultimate customer.

2.23 DOCUMENTATION :

2.4.1. Information / documents to be submitted by the bidder at tender stage shall be as follows :

- (a) Check list
- (b) Technical offer with equipment details & the makes, detailed unpriced schedule of equipment / material & spares .
- (b) Guaranteed technical particulars.
- (c) Activity Schedule.
- (d) Catalogues & technical details of equipment / material offered.

2.4.2. Information / documents to be submitted by the Contractor at contract stage shall be as follows :

- (a) Type test reports
- (b) Manufacturing Quality plan. Where standard Quality plan of BHEL / Customer is available, this shall be followed.
- (c) Field Quality plan for receipt, storage, installation, testing & commissioning with details of tests to be conducted and acceptance values .
- (d) Outline and general assembly drawings of equipment, lighting layout conduit layout, wiring scheme, Catalogues of equipment, fixing details etc.
- (e) Detailed photometric data of luminaires .
- (f) All relevant drawings and data pertaining to the lighting system like GTP, GA drawing, BOM, lighting layout drawings showing disposition of fixtures, panels, conduit/wire routing, schematic drawing, QAP, etc. shall be submitted by the Bidder for the approval of Owner/Owner's consultant.
- (g) AS-BUILT lighting layout and erection drawings, properly incorporating the changes/ alterations/field modifications, if any, as carried out at field along with circuit distribution schemes of all lighting panels, conduit and cable routing and as acceptable to the Owner.
- (f) Operation & maintenance manuals
- (h) End documentation.

For approval 4 copies to be submitted and after approval 10 copies to be submitted unless otherwise specified else where.

ANNEXURE-A
AVAILABLE POWER SUPPLY

1.0 System Voltage

Lighting equipment and accessories shall be designed for satisfactory operation from the following power supply sources:

- | | | |
|-----|---------------|--|
| 1.1 | A.C. Supply : | 415 Volt, 3 phase, 50 Hz, 4 wire effectively grounded system.
Fault Level 50 KA r.m.s. symmetrical. |
| 1.2 | D.C. Supply : | 220 V, 2 wire, ungrounded system.
Fault Level 25 * KA |

2.0 Permissible Variation

Equipment and accessories shall be suitable for operation over the entire range of voltage/frequency variations as listed below:

- | | | |
|-----|---------------|--|
| 2.1 | A.C. Supply : | Voltage + 10%
Frequency +3% to -5%
Combined Voltage + Frequency 10% (absolute sum) |
| | D.C. Supply : | Voltage 187 to 242 Volt. |

ANNEXURE-B TYPES OF LIGHTING EQUIPMENT

1.0 LIGHTING FIXTURES & LAMPS

Each lighting fixture shall be furnished complete with associated lamp, holder and control gear fully wired up. Control should include copper ballast, electronic choke, capacitor starter, electronic-igniter (separate type), fuse connector block etc. Well glass fittings for HPSV lamps higher wattage (250/400 W) floodlight luminaire, the control gear will be separate/non-integral type whereas for high bay, streetlight and mini flood light fixture, the control gear shall be integral type.

BIDDER SHALL REFER THE BELOW TABLE FOR EQUIVALENT LED FIXTURES.

SL.NO.	FIXTURE TYPE	REFERENCE	DESCRIPTION	AREA OF USE
1.1	SA	GE GET CI 1X28 C/S HF + Reflector 1X28 (ALM) / eqv	Surface / pendant mounted with Al reflector commercial / decorative type luminaire suitable for 1 x 28W T5 FL	Swgr room / MCC room / Workshop / Maint. Shop / Office / Toilet / Corridor / Pantry / Stores
1.2	SB	GE GET CI 1X28 C/S HF / eqv.	Surface / pendant mounted without reflector commercial / decorative type luminaire suitable for 1 x 28W T5 FL	Swgr room / MCC room / Workshop / Maint. Shop / Office / Toilet / Corridor / Stairs / Pantry / Stores
1.3	DA	GE GET CI 2X28 C/S HF + Reflector 2X28 (ALM) / eqv.	Surface / pendant mounted with Al reflector commercial / decorative type luminaire suitable for 2 x 28W T5 FL	Swgr room / MCC room / Workshop / Maint. Shop / Office / Toilet / Corridor / Pantry / Stores
1.4	DB	GE GET CI 2X28 C/S HF / eqv.	Surface / pendant mounted without reflector commercial / decorative type luminaire suitable for 2 x 28W T5 FL	Swgr room / MCC room / Workshop / Maint. Shop / Office / Toilet / Corridor / Stairs / Pantry / Stores
1.5	DC	Philips TCS 150 2XTL5-28W MIEBT 228 / eqv	Decorative, surface / pendant mounted mirror optics luminaire housing made up of CRCA sheet steel, powder coated white, accommodating all electrical accessories pre-wired up to a terminal block suitable for 2 x 28W TL5.	Office rooms / Corridor / Conference Room / Engineer's Room
1.6	DD	Philips TMS 669 M 2XTL5-28W HF D6 / eqv.	Decorative, recess mounted mirror optics luminaire, housing made up of CRCA sheet steel, powder coated white, accommodating all	False Ceiling areas (Control Room / Electronic Eqpt. Room / Office / Conference room / Engineer's Room /

			electrical accessories pre-wired up to a terminal block suitable for 2 x 28W TL5.	Corridor)
1.7	DE	GE MAR228FTL HF / eqv.	Indoor, industrial, corrosion resistant, with diffuser and reflector for lamp, ceiling or suspension mounting luminaire suitable for 2 x 28W T5 FTL.	Battery Room / Chemical Plant / Area with corrosive atmosphere
1.8	MA	Philips HPK250 1XSON250W E / eqv.	Medium and High bay non integral luminaire with aluminium anodized reflector and toughened glass cover suitable for 1 x 250W HPSV lamp	General Indoor equipment area / Pump House / Workshop
1.9	MB	Philips HPK225 1XSON150W E / eqv	Medium and High bay integral luminaire with aluminium anodized reflector and toughened glass cover suitable for 1 x 150W HPSV lamp	General Indoor equipment area / Pump House / Workshop
1.10	MC / MD	Philips HPK225 1XSON250W /400W E / eqv	Medium and High bay integral luminaire with aluminium anodized reflector and toughened glass cover suitable for 1 x 250W/400W HPSV lamp	General Indoor equipment area / TG Hall / Pump House
1.11	LA / LB	Philips HPK 150 1XSON-I 70W / eqv.	Integral, higher ingress protection, pressure diecast Aluminium housing, well glass, luminaire with built in control gear suitable for 1 x 70W HPSV lamp	Boiler Platform / ESP Platform / Dust & Vapour laden areas
1.12	JA/JB	Bajaj BJFW-125MV / eqv.	Flameproof, weatherproof, nonintegral wellglass luminaire for indoor / outdoor applications suitable for 1 x 125W MV lamp	Fuel Oil Pump House / Area with explosive atmosphere
1.13	IA	Philips NXC101 1xA60-60W-CL B22 GR/ eqv.	Weatherproof bulkhead luminaire suitable for 1 x 60W GLS lamp.	DC emergency lighting / staircase / exit point
1.14	NA	Philips TRC033 2XTL-D36W IC / eqv.	Road lighting luminaire, Aluminium steel housing, gear tray cum reflector made of CRCA sheet, with acrylic cover suitable for 2X36W TLD	Building exterior lighting / Outdoor area lighting /Outdoor eqpt. Area
1.15	TA	Philips SGP 325	Street light luminaire with	Street lighting /

		1XSON-T 150W FG / eqv.	pressure die cast aluminium housing, POT optics reflector and heat resistant toughened flat glass cover (IP 65) with 1 x 150W HPSV lamp - pole mounted	boundary lighting
1.16	TB	Philips SGP 325 1XSON-T 250W FG / eqv.	Street light luminaire with pressure die cast aluminium housing, POT optics reflector and heat resistant toughened flat glass cover (IP 65) with 1 x 250W HPSV lamp - pole mounted	Street lighting / boundary lighting
1.17	CA	Bajaj BJC-111 / eqv.	Surface mounting decorative luminaire with 1 x 11W CFL	Toilet / Wash basin / staircase
1.18	CB	Philips FCS 100 1XPL-C/2P 18W I 240V / eqv.	Surface mounting decorative downlight luminaire, electrochemical brightened reflector with 1 x 18W PL-C	Lobby / Staircase
1.19	CC	Philips FBH 145 M 1XPL-C/2P 18W / 220V / eqv.	Recess, decorative vertical mounting downlighter, high efficiency optics and option of multiple attachment suitable for 1X 13W/18W PL-C	Control Room / Electronic Eqpt. Room for DC emergency light
1.20	CD	Philips FBH 145 M 2XPL-C/4P 18W HF 240V LH / eqv.	Recess, decorative vertical mounting downlighter, high efficiency optics and option of multiple attachment suitable for 2X 18W PL-C	Control Room / Electronic Eqpt. Room / Conference room / Office / Engineer's Room as UPS emergency ligh
1.21	PA	Philips SWF231 1XSON-T 150W A / eqv.	Compact, sturdy, general purpose with integral gear floodlight luminaire suitable for with 1 x 150W HPSV lamp	Area lighting / Yard lighting / Floodlighting purpose
1.22	PB	Philips SWF331 1XSON-T 250W A / eqv.	Compact, sturdy, general purpose with integral gear floodlight luminaire suitable for with 1 x 250W HPSV lamp	Area lighting / Yard Lighting Floodlighting purpose
1.23	PC	Philips RVP302 2XSON-T 250W / eqv	Compact, sturdy non integral, corrosion resistant with pre anodized aluminium reflector, floodlight	Area lighting / Yard lighting / Floodlighting purpose

			luminaire suitable for with 2 x 250W HPSV lamp	
1.24	PD	Philips RVP302 2XSON-T 400W / eqv.	Compact, sturdy non integral, corrosion resistant with pre anodized aluminium reflector, floodlight luminaire suitable for with 2 x 400W HPSV lamp	Area lighting / Yard lighting / Floodlighting purpose
1.25	BA	Philips SWF231 1XMHN-TD 150W A / eqv	Compact, sturdy, general purpose with integral gear floodlight luminaire suitable for with 1 x 150W metal halide lamp	Area lighting / Yard lighting / Floodlighting purpose
1.26	BB	Philips SWF331 1XMHN-TD 250W A / eqv	Compact, sturdy, general purpose with integral gear floodlight luminaire suitable for with 1 x 250W metal halide lamp	Area lighting / Yard lighting / Floodlighting purpose
1.27	BC	Philips RVP302 2XMHN-TD 250W / eqv.	Compact, sturdy non integral, corrosion resistant with pre anodized aluminium reflector, floodlight luminaire suitable for with 2 x 250W metal halide lamp	Area lighting / Yard lighting / Floodlighting purpose
1.28	BD	Philips RVP302 2XMHN-TD 400W / eqv.	Compact, sturdy non integral, corrosion resistant with pre anodized aluminium reflector, floodlight luminaire suitable for with 2 x 400W metal halide lamp	Area lighting / Yard lighting / Floodlighting purpose
1.29	EX	Philips (Exit Lamp) / eqv	Escape lighting luminaire with "EXIT" sign fitted with 1x20 FLT. Each luminaire shall be self contained 6 volt battery, battery charger unit. Normally the luminaire shall be ON continuously through 240V AC supply. When AC supply goes OFF the in built battery & inverter system automatically takes on to ignite luminaire for duration of two & half (2½) hours. The battery shall be maintenance	Control Room / Electronic Eqpt. Room / Conference room / Office / Engineer's Room as UPS

			free and shall be trickle charged when 240 V AC mains supply is available.	
1.30	FA	GE Evolve™ LED Outdoor Family IBERIA / eqv..	Die-cast aluminium housing, decorative luminaire using LED technology with symmetric and asymmetric light distribution, IP 65 rated for optical assembly with high brightness LEDpole mounted	Street lighting / boundary lighting

Note

1: The supply also includes associated junction boxes, brackets, supports, hangers, and wires wherever applicable.

2: The bidder to provide price of the fixture from above list in his offer for information and record, if the same is required for successful operation as per specification as per design.

ILLUMINATION SYSTEM NOTES & DETAILS



					 ANDHRA PRADESH POWER GENERATION CORPORATION LIMITED HYDERABAD-A.P. INDIA	
					 DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA, MUMBAI, CHENNAI, NEW DELHI	
TITLE: ILLUMINATION SYSTEM NOTES & DETAILS					JOB NO. 13A06 SCALE : NIL	
PROJECT: KOTHAGUDEM THERMAL POWER STATION STAGE-VII, UNIT # 12 (1X800MW) KOTHAGUDEM, ANDHRA PRADESH, INDIA					DWG. NO. 13A06-DWG-E-D800 REV.	
NO.	DS	AD	NIL	28.08.13	SHT.-COVER NIL	
APPVD.	REVMD.	CHKD.	REV.	DATE		

REFERENCES:

- IS-732: Code of practice for Electrical Wiring Installation.
- IS13408: Code of practice for the Selection, Installation and Maintenance of Electrical Apparatus for use in Potentially Explosive Atmospheres (other than Mining Applications or Explosives Processing and Manufacture).
- National Building Code (NBC).
- National Electrical Code (NEC).
- Indian Electricity Rules.

NOTES & DETAILS:

1. The electrical installation work shall meet the requirements of Indian Electricity Rules, relevant IS codes of practice and safety codes, as amended upto date. In addition, other rules or regulations as applicable to the work shall be followed.
2. These lighting notes and details shall be read and construed in conjunction with the Illumination Layout and drawings.
3. Except specifically approved by site office, installation of exposed conduits, mounting of lighting fixtures etc. shall be taken up only after all other services such as Piping, Air Ducting, Cable Tray/Busduct Hanger, Structural Bracings etc. in a particular area have been installed.
4. Unless otherwise shown, the mounting heights of lighting fixtures and accessories shall be generally as follows :

- a) I) Low-Bay Lighting Fixtures
In general indoor Areas
of Industrial plants. : 3500 mm from bottom
to finished floor.
- II) Medium Bay Type Fixtures. : 3500 to less than
8000 mm from bottom
to finished floor.
- III) High Bay Type Fixtures : 8000 mm and above
from Bottom to finished floor.
- IV) General indoor lighting for
residential, commercial area : 2700 mm from Bottom
to finished floor.
- b) Lights over door Openings : 300 mm bottom of
fixture above top of opening.
- c) In Boiler Platform/
Platform around reactor column,
reformer, cracker etc. : Pendant below Boiler platforms
or with brackets from handrail
2000mm above platform.

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CONSULTING ENGINEERS
KOLKATA . MUMBAI . CHENNAI . NEW DELHI

DS	DS	AD	A	24.08.14	
APPVD.	REVMD.	CHKD.	REV.	DATE	

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (11200MW)
KOTHAGUDEM, TELANGANA, INDIA

JOB NO. 13A06

SCALE : NIL

DWG. NO. 13A06-DWG-E-0800

SHT. 01

REV.

A

d) Receptacles -

- i) In control room/office : 450 mm from finished floor to centre
 ii) Elsewhere : 900 mm from finished floor to centre
 e) Local Switches : 1500 mm from finished floor to centre
 f) Lighting Panels : 1800 mm from finished floor to top
 g) Ceiling Fans : 200 mm above lighting fixtures

5. Unless otherwise noted, all lighting fixtures shall be fed from respective lighting panels. Normal AC lighting panels will be fed from Main lighting distribution boards (MLDB). Emergency AC lighting panels will be fed from Emergency Main lighting distribution boards (EMLDB). DC Emergency lighting distribution boards (DCEMLDB) will be fed from MLDB and Main DC distribution boards.
6. All outdoor lighting poles/towers shall be provided with fuse/MCBs at their base while receiving incoming cable.
7. Separate neutral wire shall be provided for each circuit. Wiring throughout the installation shall be such that there is no break in the neutral wire in the form of switch or fuse.
8. All exposed conduit runs in battery room, chemical feed station area, water treatment building etc. shall be suitably painted with electrolytic/chemical proof paints.
9. The entire metallic conduit system whether embedded or exposed, shall be electrically continuous and thoroughly grounded.
10. Lighting fixtures shall not be suspended directly from junction box in the main conduit run.
11. Separate conduit shall be used for wiring lighting circuits of different lighting distribution system such as normal AC lighting/emergency AC lighting/emergency DC lighting/low voltage lighting.
12. A.C. and D.C. circuits shall not be run in the same conduit and junction boxes. Circuits fed from different transformers and different batteries (D.C. Source) shall not be run through same conduit and junction boxes.
13. Receptacle circuits shall be kept separate and distinct from lighting and fan circuits.
14. Wires/cable shall be spliced only at junction boxes with ring-tongue lugs or approved equal.

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JOB NO. 13A06	SCALE : NIL
DWG. NO. 13A06-DWG-E-0800	REV. A
SHT. 02	

TITLE: ILLUMINATION SYSTEM NOTES & DETAILS				
PROJECT: KOTHAGUDEM THERMAL POWER STATION STAGE-VII UNIT # 12 (11KV/0.4KV) KOTHAGUDEM, TELANGANA, INDIA				
DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

15. For cable/wire numbering, PVC sleeve with cable/wire Tag number of different colour code shall be used.
16. For roads/outdoor areas, main runs from street/area lighting panels shall be by means of AYWY/AYFY/A2XFY cables, directly buried in ground with proper protection as per details shown or through duct bank.
17. When buried cables cross road/railway track, additional protection to be provided in form of Hume/G.I. Pipe/HDPE pipes. GI pipes/Hume pipes shall not be used for single core cable run.
18. All wiring in hazardous areas shall be carried out either with armoured cables or cables drawn in screwed solid or seamless conduit.
19. For classified hazardous area (other than mines) having flammable gases and vapors only, all the items and accessories of illumination system shall have enclosure as provided for the hazardous area classification (Zone 0, Zone 1 and Zone 2) as per code of standard IS-5571 and 5572.

Lamps containing free metallic sodium (e.g. low pressure sodium vapour lamps) are not permitted for use in hazardous areas.
20. In underground mines, the lighting system shall have a mid or neutral point connected with earth and the voltage shall not exceed 125 volts between phases.

On the surface of a mine or in an open cast mine, the voltage may be raised to 250 volts, if the neutral to mid point of the system is connected with earth and voltage between the phases does not exceed 250 volts.

Where portable hand-lamps are used in under ground working of mine, the voltage shall not be exceed 30 volts.
21. Number of receptacles in an area shall be decided based on utility of this area. However, unless otherwise noted, number of receptacles shall generally be selected based on following guidelines:
 - a) For Residential Building, 6A and 16/6A single-phase receptacles shall be considered as per NBC.
 - b) For general area (e.g. Electrical room, Pump room, Control room) of Plant Building, 16/6A receptacle shall be considered.
 - c) One (1) number 63A three-phase receptacle shall be provided at each generator busduct area, at each generator-transformer area, station-transformer area, transformer area at switchyard, boiler area, major pump rooms.

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					 DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA . MUMBAI . CHENNAI . NEW DELHI	
TITLE: ILLUMINATION SYSTEM NOTES & DETAILS					JOB NO. 13A06 SCALE : NIL	
PROJECT: KOTHAGUDEM THERMAL POWER STATION STAGE-VB, UNIT # 12 (138000kW) KOTHAGUDEM, TELANGANA, INDIA					DWG. NO. 13A06-DWG-E-0800 REV. A	
DS	DS	AD	A	24.06.14	SHT. 03	
APPVD.	REVVD.	CHKD.	REV.	DATE		

- d) 63A three phase receptacle shall be provided at each turbine bay, at each boiler area, etc. for use of welding machine.
- e) In industrial plants, 63A three-phase receptacles shall be decided based on the application requirement.
- f) 24v single-phase receptacle shall be used in boiler platform area and vessels platforms (e.g. reactor, reformers etc.) hazardous classified area. The number shall be decided based on application and area.

22. Unless otherwise noted, the minimum size of cables, wires, conduits, junction boxes shall be as below :

A) CABLES

- i) From main lighting distribution Boards to 400 V normal AC lighting panels : 1x3-1/2C, 95 Sq.mm AL PVC/XLPE
- ii) From Emergency main lighting distribution Boards (EMLDB) to 400v Emergency AC lighting panels. : 1x3-1/2C, 95 Sq.mm AL PVC/XLPE
- iii) From Main Lighting Distribution Boards (MLDB) to 400V AC/220V DC Emergency Lighting Distribution Boards (DCELDDB) : 1x3-1/2C, 95 Sq.mm AL PVC/XLPE
- iv) From Main Lighting Distribution Boards (MLDB) to 400V AC/220V DC Emergency Lighting Distribution Boards (DCELDDB) : 1x3-1/2C, 95 Sq.mm AL PVC/XLPE
- v) From PMCC/MCC/DB to 100A 3 phase receptacles : 1x3-1/2C, 95 Sq.mm AL PVC/XLPE
- vi) From PMCC/MCC/DB to 63A 3 phase receptacles : 1x4C, 35 Sq.mm AL PVC/XLPE
- vii) From SLP (Street Lighting Panel) to tower junction box : 1x4C, 16 Sq.mm AL PVC/XLPE
- viii) From SLP to light pole junction box (for single phase) : 1x2C, 16 Sq.mm AL PVC/XLPE
- ix) From SLP to light pole junction box (for three phase) : 1x4C, 16 Sq.mm AL PVC/XLPE

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DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA, MUMBAI, CHENNAI, NEW DELHI

					TITLE: ILLUMINATION SYSTEM NOTES & DETAILS	JOB NO. 13A06	SCALE : ML
DS	DS	AD	A	24.02.14	PROJECT: KOTHAGUDEM THERMAL POWER STATION STAGE-VII, UNIT # 12 (11000MW) KOTHAGUDEM, TELANGANA, INDIA	DWG. NO. 13A06-DWG-E-0800	REV. SHT. 04 A
APPVD.	REVMD.	CHKD.	REV.	DATE			

B. WIRES

Wires shall generally be PVC Insulated 650V grade. Each wire shall be of following sizes:

- i) From lighting panels (LPs) to Junction Boxes : 10sqmm AL (stranded) or 6 sqmm Cu (stranded)
- ii) From junction boxes (JBs) to lighting fixtures : 2.5sqmm Cu
- iii) From junction boxes to flood light fixtures : 2.5sqmm Cu
- iv) From lighting panels to 24V AC supply modules (complete with 230/24V built-in transformer & 24V receptacle) : 10sqmm AL (stranded) or 6 sqmm Cu (stranded)
- v) Point wiring of light/ceiling fan/exhaust fan/call bell : 1.5sqmm Cu (stranded)
- vi) 230V, 6A receptacle : 1.5sqmm Cu (stranded)
- vii) From LP to 230V, 16/6A 1st receptacles : 4sqmm Cu (stranded)
- viii) From 230V, 16/6A 1st receptacle to 230V 16/6A second receptacle : 2.5sqmm Cu (stranded)
- ix) From LP to 230V, 20/6A receptacles : 4sqmm Cu (stranded)
- x) 230V window/split AC starter unit upto 2 Ton capacity : 4sqmm Cu (stranded)
- xi) Circuit wiring from LP to switchboard : 2.5sqmm Cu (stranded)
- xii) From street light panel to lighting pole JB (If conduit used) : 16sqmm AL (stranded) or 6 sqmm Cu (stranded)
- xiii) From street light pole junction box to street light fixture : 2.5sqmm Cu (stranded)

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					 DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA . MUMBAI . CHENNAI . NEW DELHI	
TITLE: ILLUMINATION SYSTEM NOTES & DETAILS					JOB NO. 13A06 SCALE : ML	
PROJECT: KOTHAGUDEM THERMAL POWER STATION STAGE-VII, UNIT # 12 (1X800MW) KOTHAGUDEM, TELANGANA, INDIA					DWG. NO. 13A06-DWG-E-0800	
DS	DS	AD	A	24.08.14	REV. A	
APPVD.	REVWD.	CHKD.	REV.	DATE	SHT. 05	

C. CONDUITS

- a) Unless otherwise noted, in residential and commercial building, PVC conduit shall generally be used for concealed conduiting purpose both in masonry wall as well as in concrete portion. Two numbers 18 SWG GI fish wire shall be drawn inside each conduit while embedding in concrete portion. At both ends of each conduit a minimum 400mm length of fish wires shall be kept by coaling, for pulling of wires. All exposed conduits above false ceiling shall be Galvanized Iron (GI) or Enameled Iron (EI).
- b) In plant area GI conduit shall be used at surface. Unless otherwise noted, in Non-Plant building rigid PVC conduit shall be used at surface.
- c) Conduits shall generally be Galvanized Iron (GI)/ Enameled Iron (EI)/PVC of following minimum sizes:

Wire Size	Conduit. Size					
	20MM	25MM	32MM	40MM	50MM	
i) 10 Sq.mm AL	-	2	5	7	8	Maximum no. of wires admissible for conduit
ii) 6 Sq.mm Cu	2	3	7	-	-	
iii) 4 Sq.mm Cu	3	5	10	-	-	
iv) 2.5 Sq.mm CU	4	6	10	-	-	
v) 2.5 Sq.mm CU	4	6	10	-	-	

D. JUNCTION BOXES

Conduit Size (MM)	Junction Box Size (MM)			
	4-WAY	3-WAY	STRAIGHT THROUGH	90°
i) 20 / 25	150x150x100	150x100x100	88 #	88 #
ii) 32 / 40	254x200x127	254x200x127	150x150x100	-
iii) 50	254x200x127	254x200x127	254x200x127	-



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HYDERABAD - TELANGANA - INDIA

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TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (11KV/0.4KV)
KOTHAGUDEM, TELANGANA, INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA, MUMBAI, CHENNAI, NEW DELHI

JOB NO. 13A06 SCALE: ML
DWG. NO. 13A06-DWG-E-0800 REV. A
SHT. 05

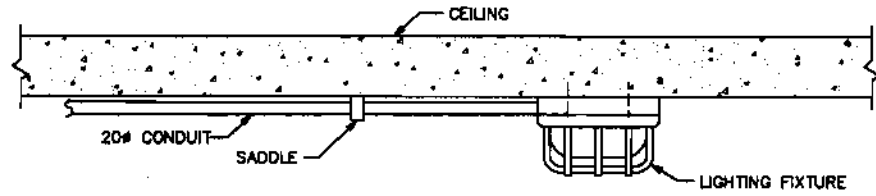
23. All lighting panels/distribution boards, junction boxes, receptacles fixtures, conduits, etc. shall be grounded in compliance with the provision of I.E. rules and as detailed below :

i)	Lighting Panels	:	35 x 6 mm G.S. Flat
ii)	Distribution Boards	:	50 x 6 mm G.S. Flat
iii)	Power receptacles Junction Boxes etc.	:	12 SWG G.I. Wire
iv)	Lighting fixtures, switches conduits, etc.	:	16 SWG G.I. Wire
v)	Street Light Poles and Towers for floodlighting	:	25 x 3 mm G.S. Flat

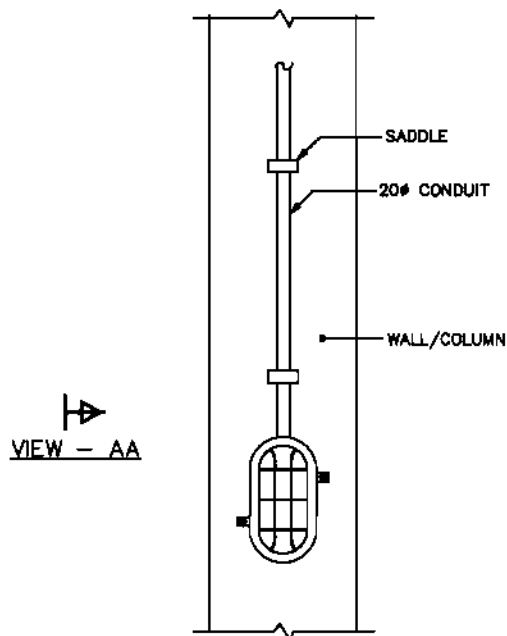
24. A continuous ground conductor of 16 SWG G.I. wire shall run along each exposed metallic conduit run and bonded to it every 600mm.
25. For a run of conduit partly or wholly embedded, PVC Insulated stranded copper conductor wire, as ground conductor shall run through the conduit.
26. Typical details of lighting fixtures, other lighting system components and their mounting arrangement as shown herein are for general guidance only. The type no. of some make has been referred in the various drawings only to indicate desired appearance and construction features of the fixture. The contractor has to design the same fulfilling the requirement of the specification.

FOR TENDERING ONLY

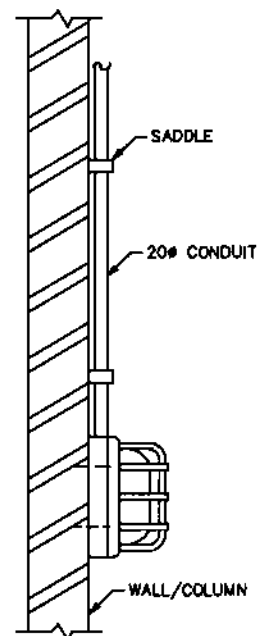
					 TELANGANA STATE POWER GENERATION CORPORATION LIMITED HYDERABAD - TELANGANA - INDIA	
					 DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA, MUMBAI, CHENNAI, NEW DELHI	
TITLE: ILLUMINATION SYSTEM NOTES & DETAILS					JOB NO. 13A06 SCALE : NIL	
PROJECT: KOTHAGUDEM THERMAL POWER STATION STAGE-VII, UNIT # 12 (1X200MW) KOTHAGUDEM, TELANGANA, INDIA					DWG. NO. 13A06-DWG-E-0800 REV. A SHEET 07	
DS	DS	AD	A	24.08.14		
APPVD.	REVVD.	CHKD.	REV.	DATE		



CEILING MOUNTING



WALL/COLUMN MOUNTING



BULKHEAD LUMINAIRE

BULKHEAD LUMINAIRE WITH 100W/80W GLS OR 9W CFL
 [EQ. PHILIPS TYPE NXC 101(1xGLS 80W)/FXC 101(1xPL-S 9W)]
 [EQ. BAJAJ TYPE 8JDB100(1xGLS 100W)/BJBE10(9W GLF)]

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 HYDERABAD - TELANGANA - INDIA



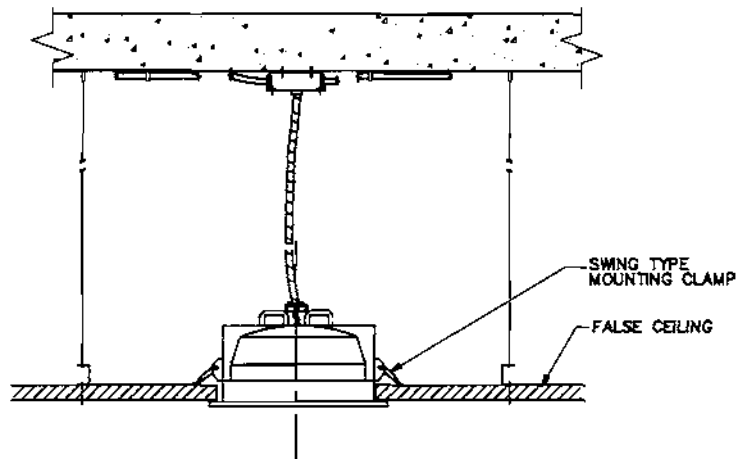
DEVELOPMENT CONSULTANTS PVT. LTD.
 CONSULTING ENGINEERS
 KOLKATA . MUMBAI . CHENNAI . NEW DELHI

DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
 NOTES & DETAILS

PROJECT:
 KOTHAGUDEM THERMAL POWER STATION
 STAGE-VII, UNIT # 12 (1X800MW)
 KOTHAGUDEM, TELANGANA, INDIA

JOB NO. 13A06	SCALE : NIL
DWG. NO. 13A06-DWG-E-0800	REV. A
SHT. 08	



RECESS MOUNTED DOWNLIGHT

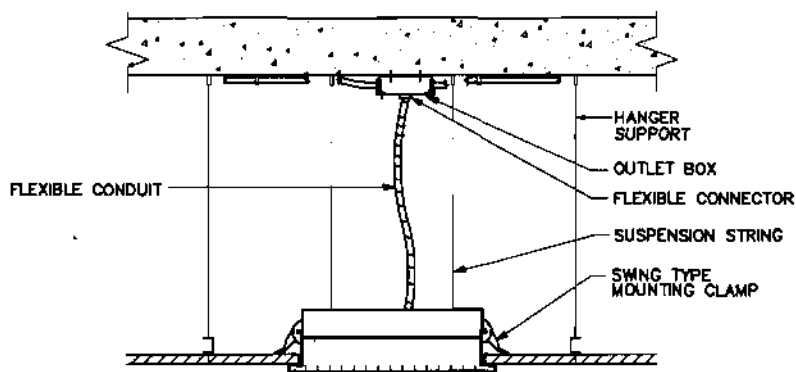
NOTE:-

RECESSED, DECORATIVE, SINGLE/TWIN LAMP HORIZONTAL MOUNTING CFL DOWN LIGHT

[EQ. BAJAJ TYPE BJD110(CFL 1x10W), BJD113(CFL 1x13W), BJD118(CFL 1x18W), BJD29(CFL 2x9W)]

[EQ. BAJAJ TYPE BJD210LH(CFL 2x10W), BJD213LH(CFL 2x13W), BJD218LH(CFL 2x18W)]

[EQ. PHILIPS TYPE FBH120(PL-C 1X10W), FBH150/145(PL-C 1X13W, 1X18W, 2X13W, 2X18W)]



RECESS MOUNTED MIRROR OPTICS LUMINAIRE

RECESSED, DECORATIVE, MIRROR OPTICS LUMINAIRE
SUITABLE FOR 2X9W, 2X11W, 2X18W, 2X36W
& 3X36W PL-L/CFL-L LAMPS AND WITH
HIGH FREQUENCY ELECTRONIC GEAR.

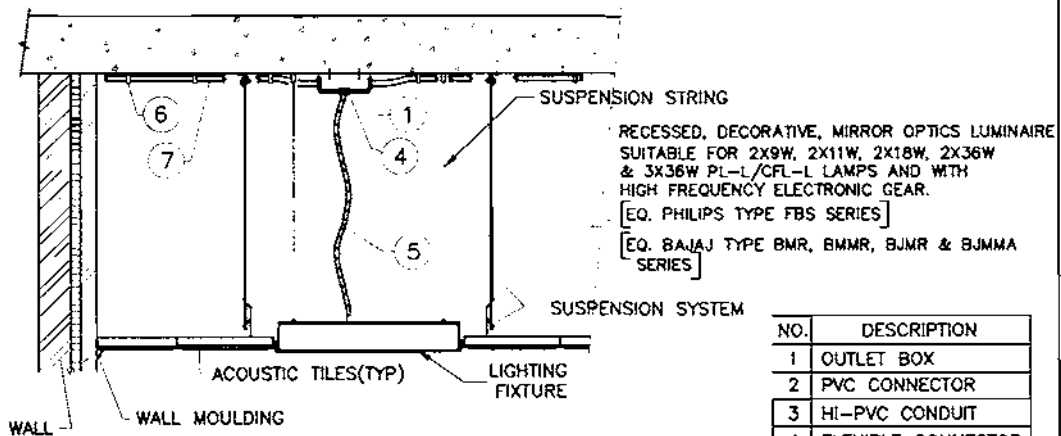
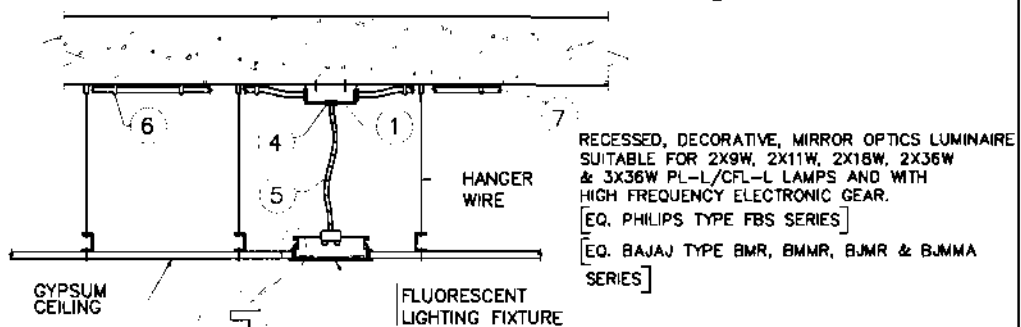
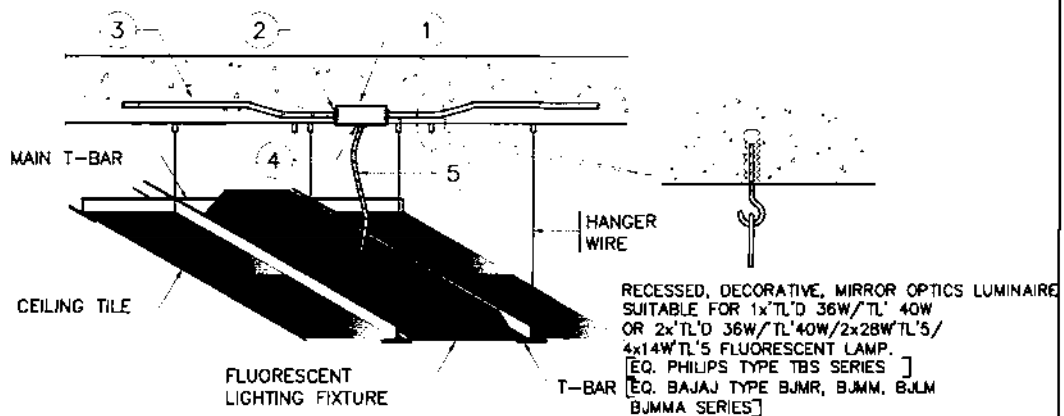
[EQ. PHILIPS TYPE FBS SERIES]

[EQ. BAJAJ TYPE BMMR, BJMR & BJMA SERIES]

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JOB NO. 13A06	SCALE : ML
DWG. NO. 13A06-DWG-E-0800	REV. A
SHT. 08	

TITLE: ILLUMINATION SYSTEM NOTES & DETAILS				
PROJECT: KOTHAGUDEM THERMAL POWER STATION STAGE-VII, UNIT # 12 (132000W) KOTHAGUDEM, TELANGANA, INDIA				
DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE



RECESS MOUNTED LUMINAIRES

NO.	DESCRIPTION
1	OUTLET BOX
2	PVC CONNECTOR
3	HI-PVC CONDUIT
4	FLEXIBLE CONNECTOR
5	FLEXIBLE CONDUIT
6	SADDLE
7	ELECTRICAL METALIC CONDUCTOR

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DS	DS	AD	A	24.09.14
APPVD.	REVMD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM NOTES & DETAILS

PROJECT: KOTHAGUDEM THERMAL POWER STATION STAGE-VII, UNIT # 12 (1X300MW) KOTHAGUDEM, TELANGANA, INDIA



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HYDERABAD - TELANGANA - INDIA



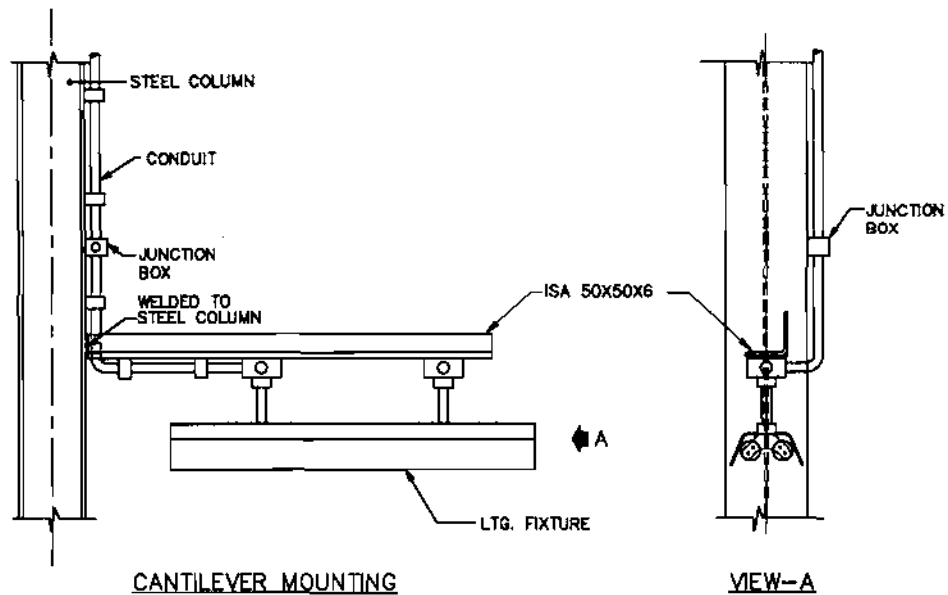
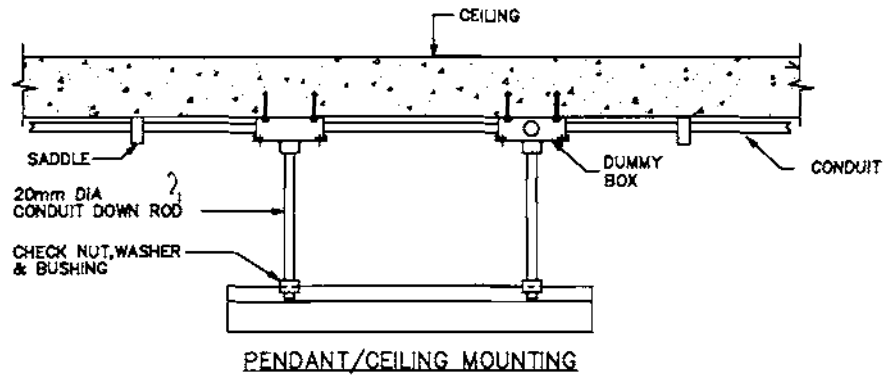
DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA - MUMBAI - CHENNAI - NEW DELHI

JOB NO. 13A06

SCALE : ML

DWG. NO. 13A06-DWG-E-0800

REV. A
SHT. 10



INDUSTRIAL REFLECTOR LUMINAIRE SUITABLE
FOR 1x'TL'D 38W/'TL' 40W, 2x'TL'D 38W/'TL' 40W,
1x'TL'5 28W OR 2x'TL'5 28W FLUORESCENT LAMP.
[EQ. PHILIPS TYPE TKC24/TMS122]
[EQ. BAJAJ TYPE BJV/B11A]

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HYDERABAD - TELANGANA - INDIA



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DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (11800MW)
KOTHAGUDEM, TELANGANA, INDIA

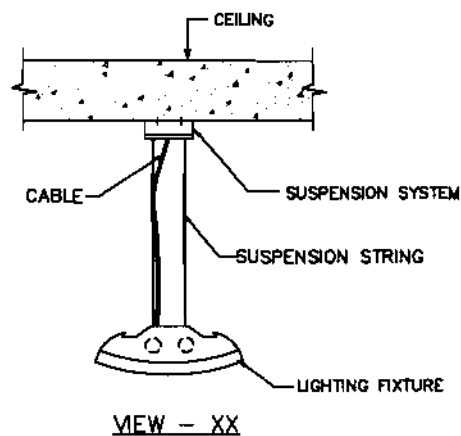
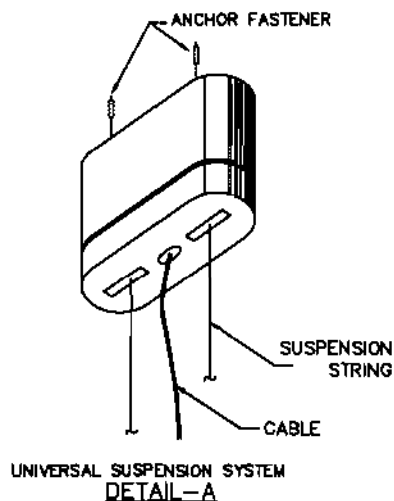
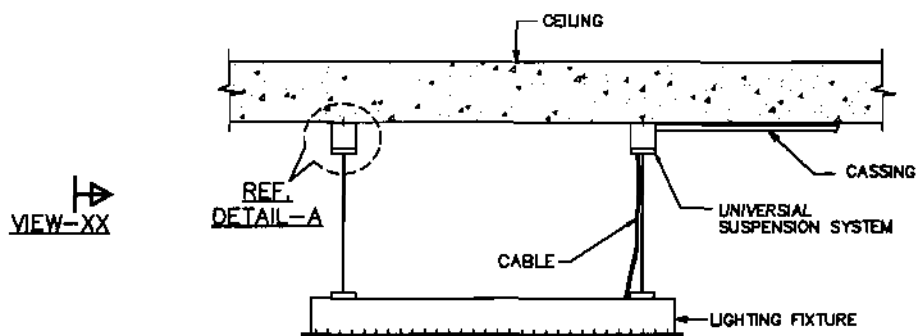
JOB NO. 13A06

SCALE: ML

DWG. NO. 13A06-DWG-E-0800

SHT. 11

REV. A



SUSPENDED LUMINAIRES

SUSPENDED MOUNTED FUNCTIONAL AND DECORATIVE MIRROR OPTICS LUMINAIRES
WITH 'TL'D/'TL'-5' FLOURESCENT LAMP WITH 1X36W 'TL'D/2X36W 'TL'D OR 1X18W 'TL'-5/2X36W 'TL'-5
[EQ. PHILIPS TYPE TPS 498]

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HYDERABAD - TELANGANA - INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA, MUMBAI, CHENNAI, NEW DELHI

DS	DS	AD	A	24.08.14
APPVD.	REVWD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (1X300MW)
KOTHAGUDEM, TELANGANA, INDIA

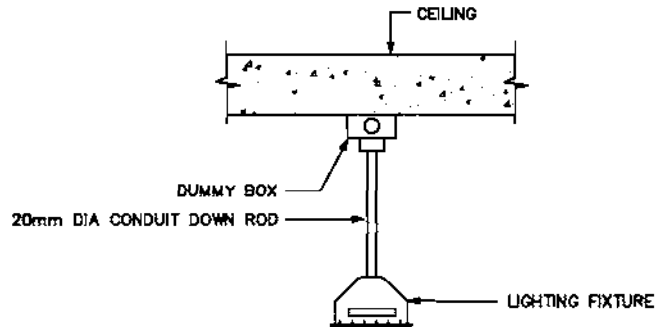
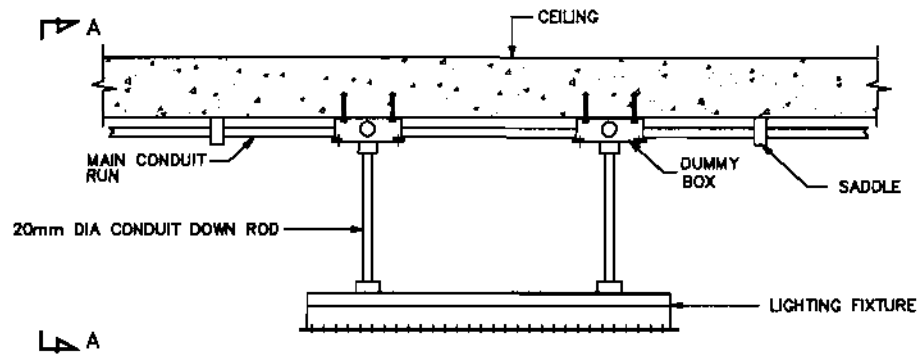
JOB NO. 13A06

SCALE : NIL

DWG. NO. 13A06-DWG-E-0800

SHT. 12

REV.
A



VIEW - A-A
PENDANT/CEILING MOUNTING

WIDESPREAD MIRROR OPTICS LUMINAIRES WITH 'TL'D/'TL'
FLOURESCENT LAMP WITH 1X38W 'TL'D/2X38W 'TL'D
[EQ. PHILIPS TYPE TCS 306]
[EQ. BAJAJ TYPE BTSM218/236 WEB2]

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HYDERABAD - TELANGANA - INDIA



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CONSULTING ENGINEERS
KOLKATA . MUMBAI . CHENNAI . NEW DELHI

DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

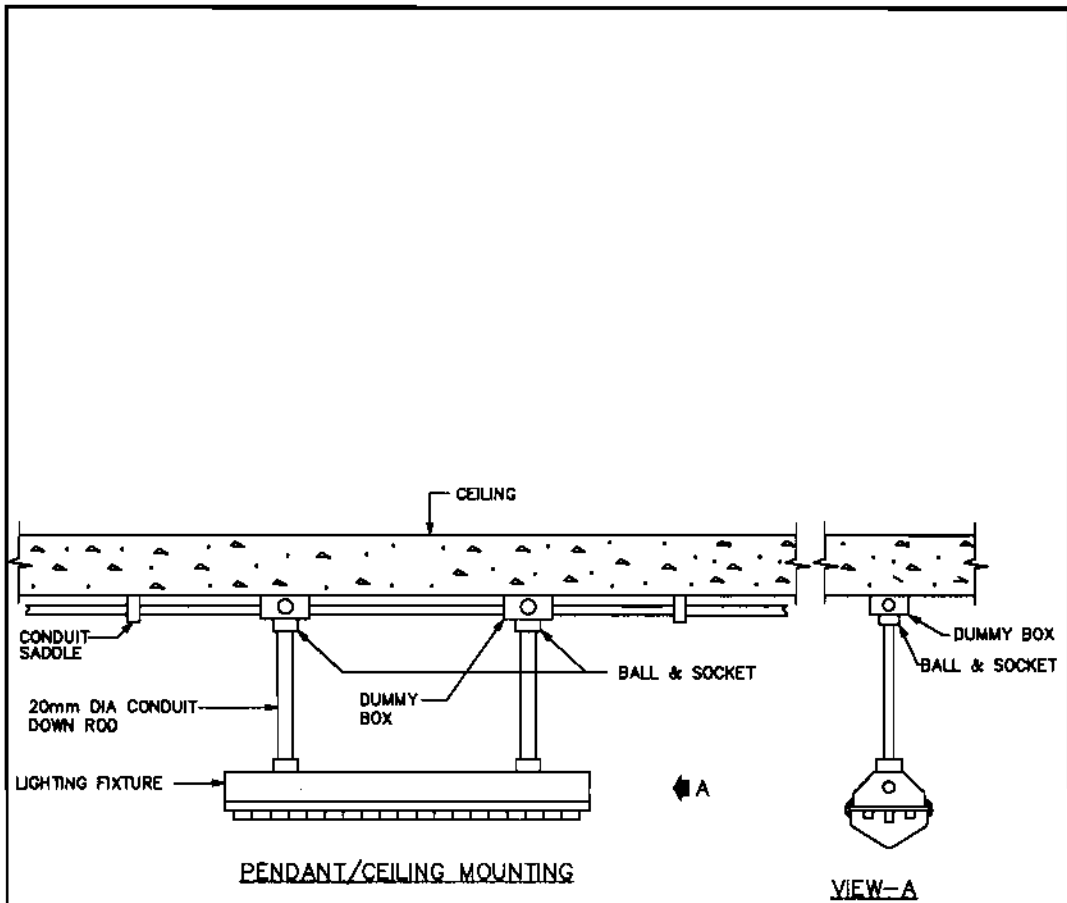
PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (1X800MW)
KOTHAGUDEM, TELANGANA, INDIA

JOB NO. 13A08

SCALE : NIL

DWG. NO. 13A06-DWG-E-0800

SHT. 13 REV. A



DUST AND JET WATER RESISTANT
 FOR SINGLE AND TWIN TL-D AND T-5 WITH
 1X36W 'TL'D/1X18W 'TL'D/2X36W 'TL'D/2X18W 'TL'D/
 1X28W 'TL'S/2X28W 'TL'S
 [EQ. PHILIPS TYPE TCW 097]
 [EQ. BAJAJ TYPE BJ236/240DP]

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 HYDERABAD - TELANGANA - INDIA



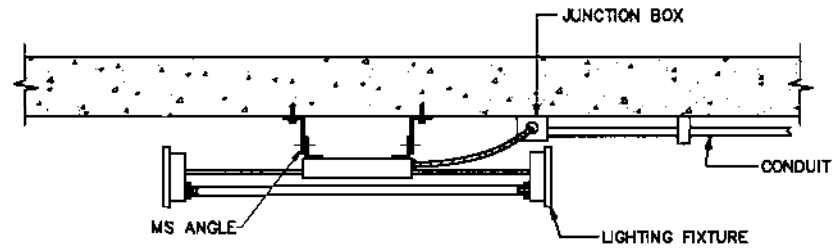
DEVELOPMENT CONSULTANTS PVT. LTD.
 CONSULTING ENGINEERS
 KOLKATA . MUMBAI . CHENNAI . NEW DELHI

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APPVD.	REVMD.	CHKD.	REV.	DATE

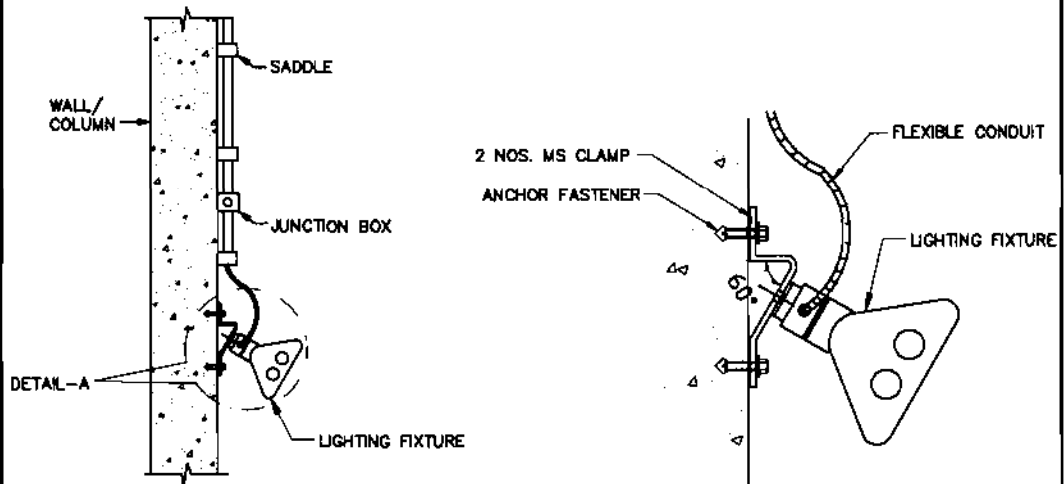
TITLE: ILLUMINATION SYSTEM
 NOTES & DETAILS

PROJECT:
 KOTHAGUDEM THERMAL POWER STATION
 STAGE-VII, UNIT # 12 (1X300MW)
 KOTHAGUDEM, TELANGANA, INDIA

JOB NO.	13A06	SCALE :	NIL
DWG. NO.	13A06-DWG-E-0800	REV.	A
		SHT. 14	



CEILING MOUNTING



WALL/COLUMN MOUNTING

CORROSION-RESISTANT INDUSTRIAL BATTEN FOR 'TL'/TL'D
FLOURESCENT LAMP WITH 2X36W 'TL'D/2X40W 'TL'
[EQ. PHILIPS TYPE TMX 95]
[EQ. BAJAJ TYPE BJ240VP]

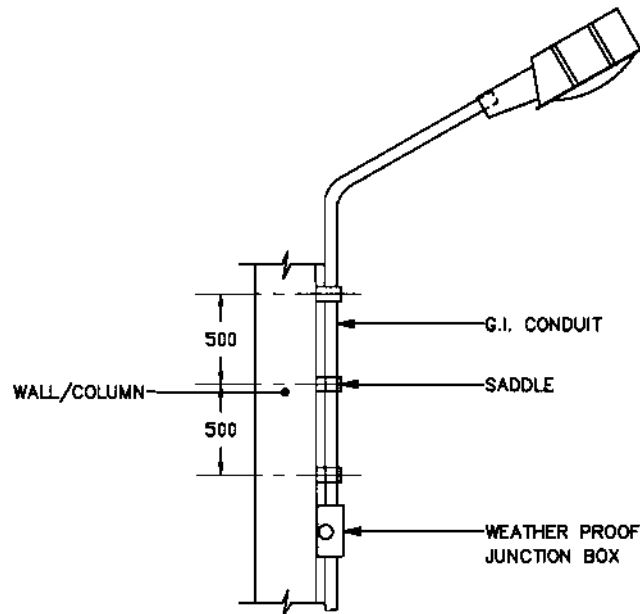
FOR TENDERING ONLY

DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

PROJECT:
KOTHASUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (1X800MW)
KOTHASUDEM, TELANGANA, INDIA

TELANGANA STATE POWER GENERATION CORPORATION LIMITED HYDERABAD - TELANGANA - INDIA	
DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA . MUMBAI . CHENNAI . NEW DELHI	
JOB NO. 13A06	SCALE : NIL
DWG. NO. 13A06-DWG-E-0800	REV. A
SHT. 15	



MOUNTED IN BUILDING WALL/COLUMN

ROAD LIGHTING LUMINAIRE WITH
18/36W TLD, 28/54 TLD,
SON 70/150/250/400W,
HPL-N 125/250W LAMP

[PHILIPS TYPE SRP/TRC/HGS/
HRP/SRX/SGP SERIES OR EQUAL]
[BAJAJ TYPE BJMP SERIES OR EQUAL]

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HYDERABAD - TELANGANA - INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
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DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

TITLE:
ILLUMINATION SYSTEM
NOTES & DETAILS

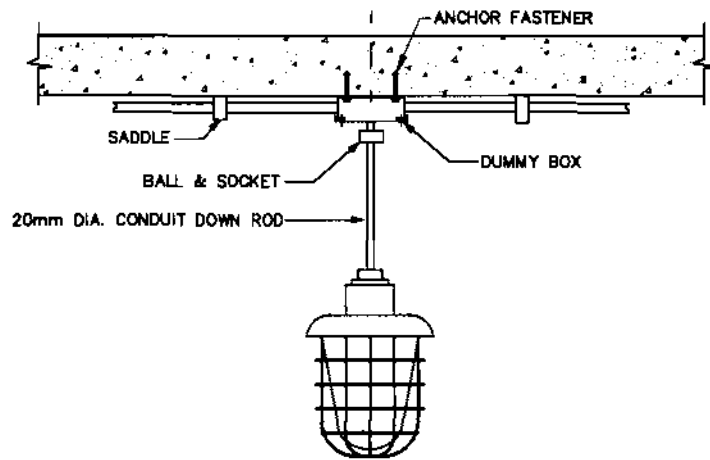
PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VI, UNIT # 12 (1X200MW)
KOTHAGUDEM, TELANGANA, INDIA

JOB NO. 13A06

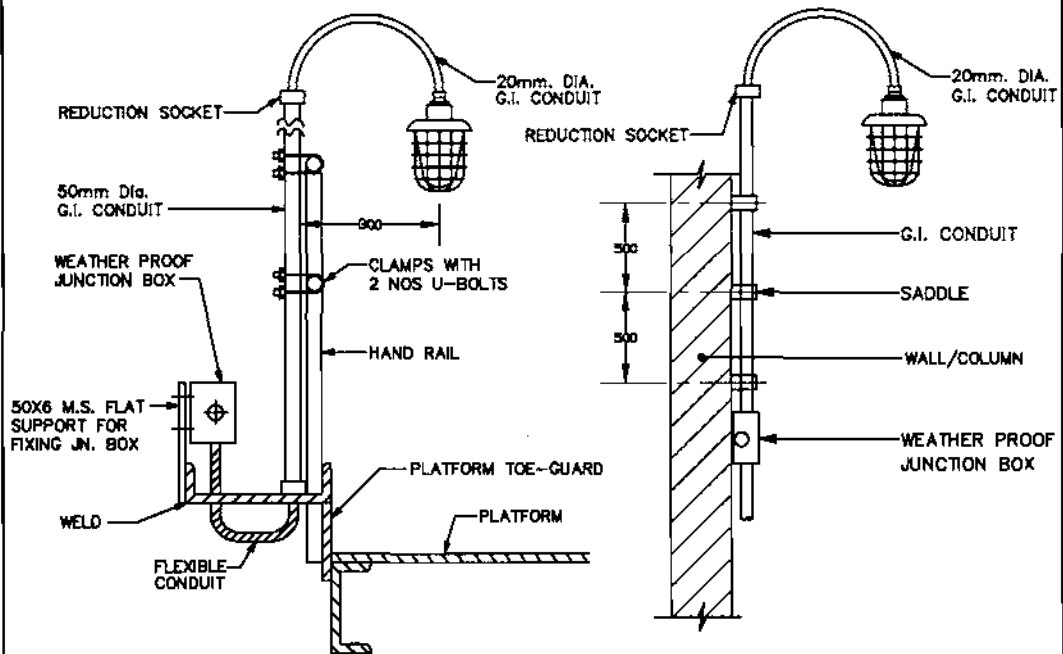
SCALE : NIL

DWG. NO. 13A06-DWG-E-0800

REV.
SHT. 18 A



PENDANT/CEILING MOUNTING



PLATFORM MOUNTED

MOUNTED IN BUILDING
WALL/COLUMN

INDOOR WELL GLASS INDUSTRIAL LUMINAIRE WITH NON INTEGRAL CG BOX

[EQ. PHILIPS TYPE NDC 21(1XGLS 500W, 1XHPL-N 250W, 1XSON 150W OR 250W)]

[EQ. PHILIPS TYPE NDC 203(1XGLS 200W, 1XHPL-N 80W OR 125W, 1XSON 70(I) OR 70W(E), ML-N 180W)]

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TELANGANA STATE POWER GENERATION CORPORATION LIMITED
HYDERABAD - TELANGANA - INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA, MUMBAI, CHENNAI, NEW DELHI

DS	DS	AD	A	24.08.14
APPVD.	REVWD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

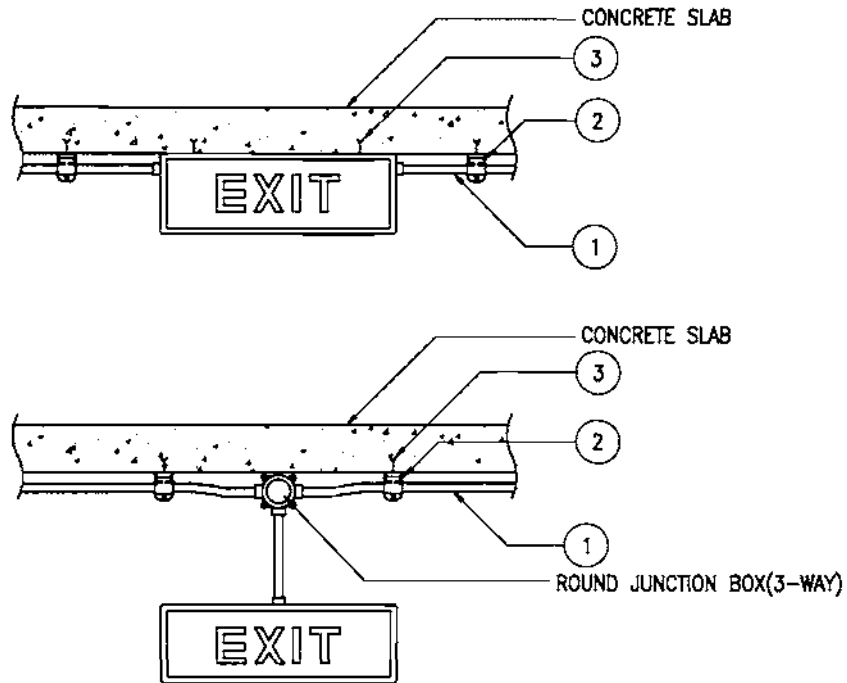
PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (1X800MW)
KOTHAGUDEM, TELANGANA, INDIA

JOB NO. 13A06

SCALE : ML

DWG. NO. 13A06-DWG-E-0800

REV.
SHT. 17 A

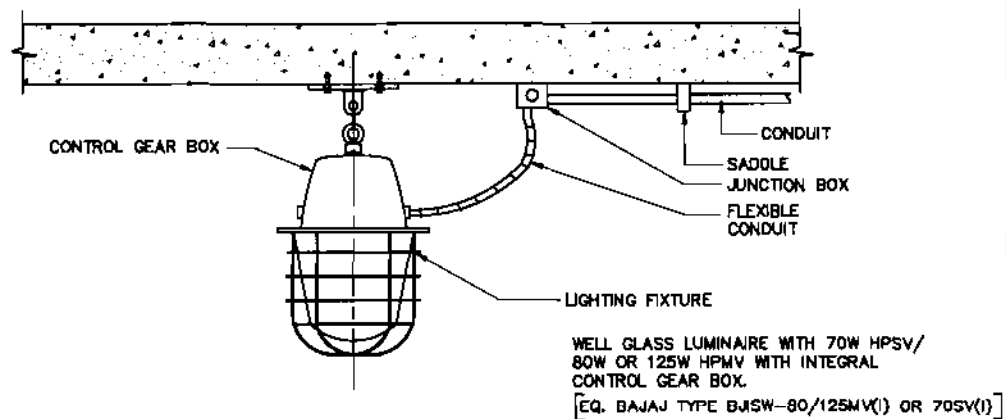
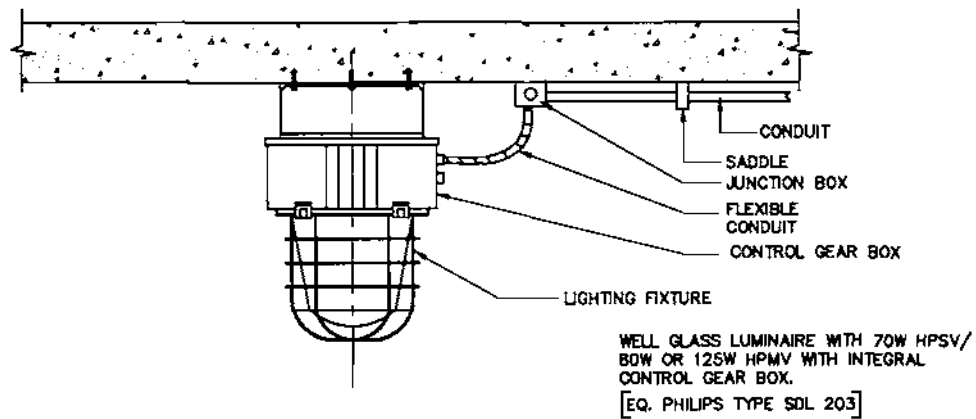
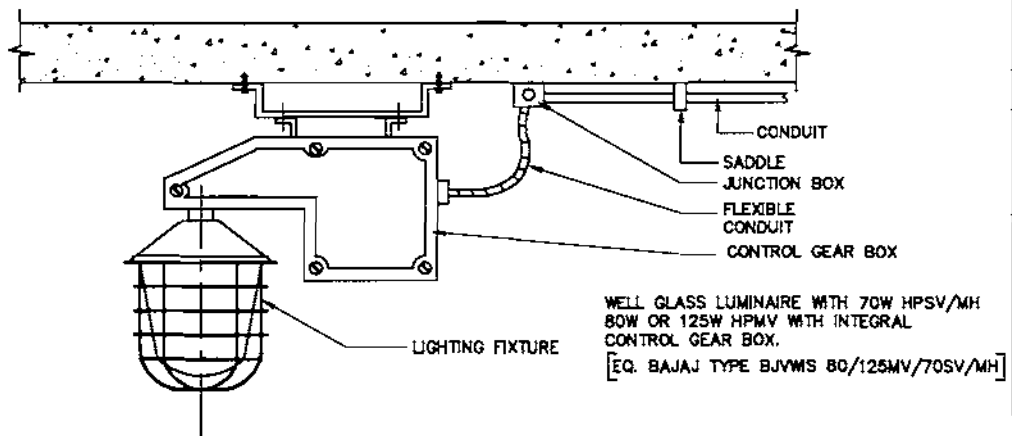


NO.	DESCRIPTION
1	H.D.G STEEL CONDUIT
2	UNISTRUT CHANNEL W/PIPE CLAMP
3	CON'C EXPANSION ANCHOR

EXIT LIGHT MOUNTING DETAIL

FOR TENDERING ONLY

					 TELANGANA STATE POWER GENERATION CORPORATION LIMITED HYDERABAD - TELANGANA - INDIA	
					 DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA - MUMBAI - CHENNAI - NEW DELHI	
TITLE: ILLUMINATION SYSTEM NOTES & DETAILS					JOB NO. 13A06 SCALE : NIL	
PROJECT: KOTHAGUDEM THERMAL POWER STATION STAGE-VII, UNIT # 12 (1X800MW) KOTHAGUDEM, TELANGANA, INDIA					DWG. NO. 13A06-DWG-E-0800 REV. SHT. 18 A	
DS	DS	AD	A	24.08.14		
APPVD.	REVMD.	CHKD.	REV.	DATE		



INDUSTRIAL WELL GLASS CEILING MOUNTED LUMINAIRES

FOR TENDERING ONLY



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HYDERABAD - TELANGANA - INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA . MUMBAI . CHENNAI . NEW DELHI

DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

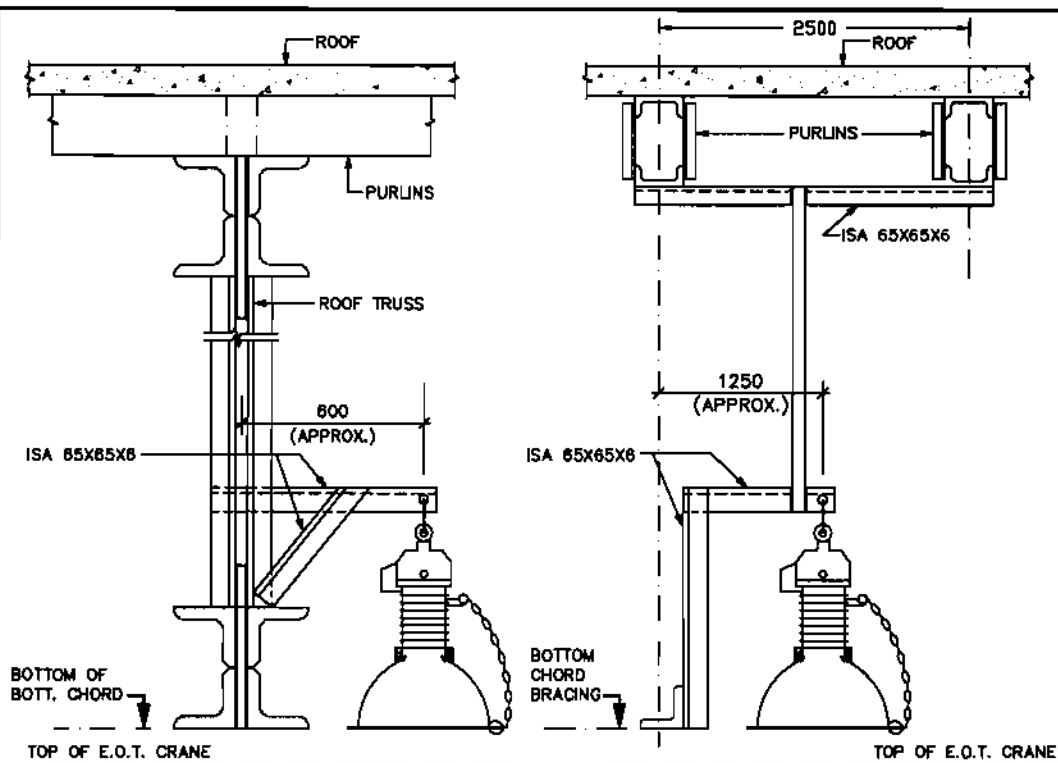
TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (1X200MW)
KOTHAGUDEM, TELANGANA, INDIA

JOB NO. 13A06
DWG. NO. 13A06-DWG-E-0800

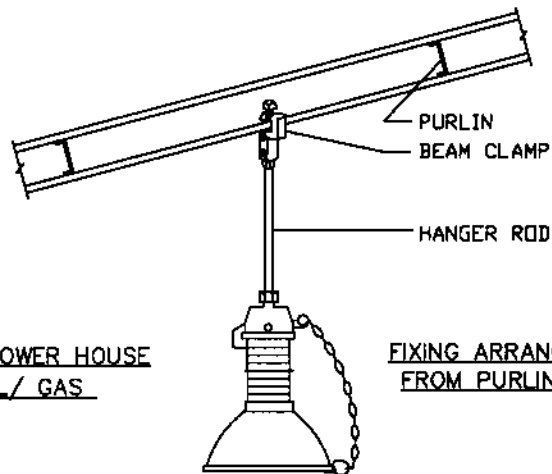
SCALE : NIL
REV. A

SHT. 18



FIXING ARRANGEMENT
FROM ROOF TRUSS

FIXING ARRANGEMENT FROM
BOTTOM CHORD BRACING



TYP. FIXING ARRGT. IN POWER HOUSE
FROM ROOF OF T.G. HALL/ GAS
COMPRESSOR HALL

FIXING ARRANGEMENT
FROM PURLIN

HIGH PERFORMANCE HIGH BAY AND MEDIUM BAY LUMINAIRE
WITH HPSV LAMPS (150 TO 400W), HIGH PRESSURE MERCURY VAPOUR
AND METAL HALIDE LAMPS (250 TO 400W).
[EQ. PHILIPS TYPE HPK 225/HPK 205]
[EQ. BAJAJ TYPE BGEHB]

FOR TENDERING ONLY



TELANGANA STATE POWER GENERATION CORPORATION LIMITED
HYDERABAD - TELANGANA - INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA . MUMBAI . CHENNAI . NEW DELHI

DS	DS	AD	A	24.08.14	
APPVD.	REVMD.	CHKD.	REV.	DATE	

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (1X800MW)
KOTHAGUDEM, TELANGANA, INDIA

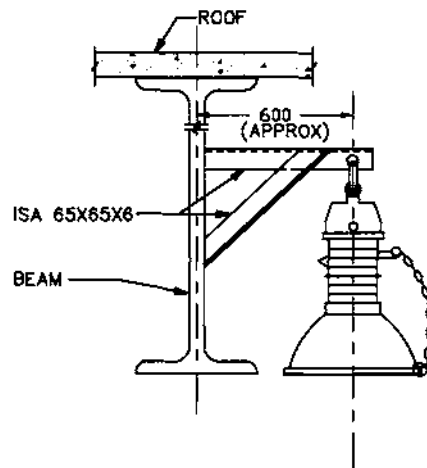
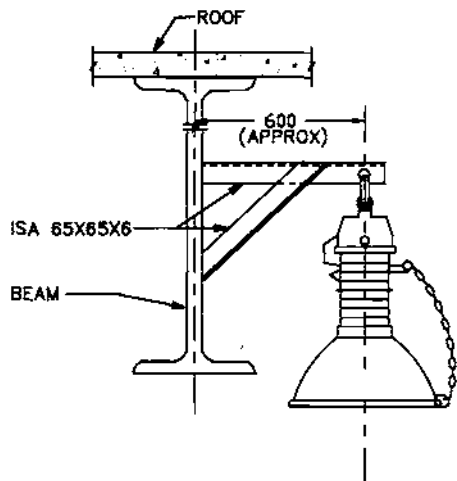
JOB NO. 13A06

SCALE : NIL

DWG. NO. 13A06-DWG-E-0800

SHT. 20

REV.
A



TYPICAL FIXING ARRGT. FROM BEAM

(IN AREA OTHER THAN POWER HOUSE T.G. HALL)

HIGH PERFORMANCE HIGH BAY AND MEDIUM BAY LUMINAIRE
WITH HPSV LAMPS (150 TO 400W), HIGH PRESSURE MERCURY VAPOUR
AND METAL HALIDE LAMPS (250 TO 400W).

[EQ. PHILIPS TYPE HPK 225/HPK-205]

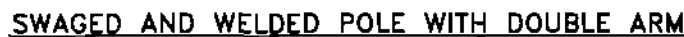
[EQ. BAJAJ TYPE BGEHB]

NOTE:

BOTTOM OF FIXTURE ELEVATION SHALL BE FLUSH WITH OR BELOW BOTTOM
OF BEAM ELEVATION DEPENDING ON THE BOTTOM OF FIXTURE ELEVATION AND
THE ASSOCIATED BEAM SIZE, IN ANY CASE BOTTOM OF FIXTURE ELEVATION
SHALL NOT BE ABOVE THE ASSOCIATED BOTTOM OF BEAM ELEVATION.

FOR TENDERING ONLY

					 TELANGANA STATE POWER GENERATION CORPORATION LIMITED HYDERABAD - TELANGANA - INDIA	
					 DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA . MUMBAI . CHENNAI . NEW DELHI	
TITLE: ILLUMINATION SYSTEM NOTES & DETAILS					JOB NO. 13A06	SCALE : NIL
PROJECT: KOTHAGUDEM THERMAL POWER STATION STAGE-VII, UNIT # 12 (1X300MW) KOTHAGUDEM, TELANGANA, INDIA					DWG. NO. 13A06-DWG-E-0800	REV. A
DS	DS	AD	A	24.08.14	APPVD. REVMD. CHKD. REV. DATE	

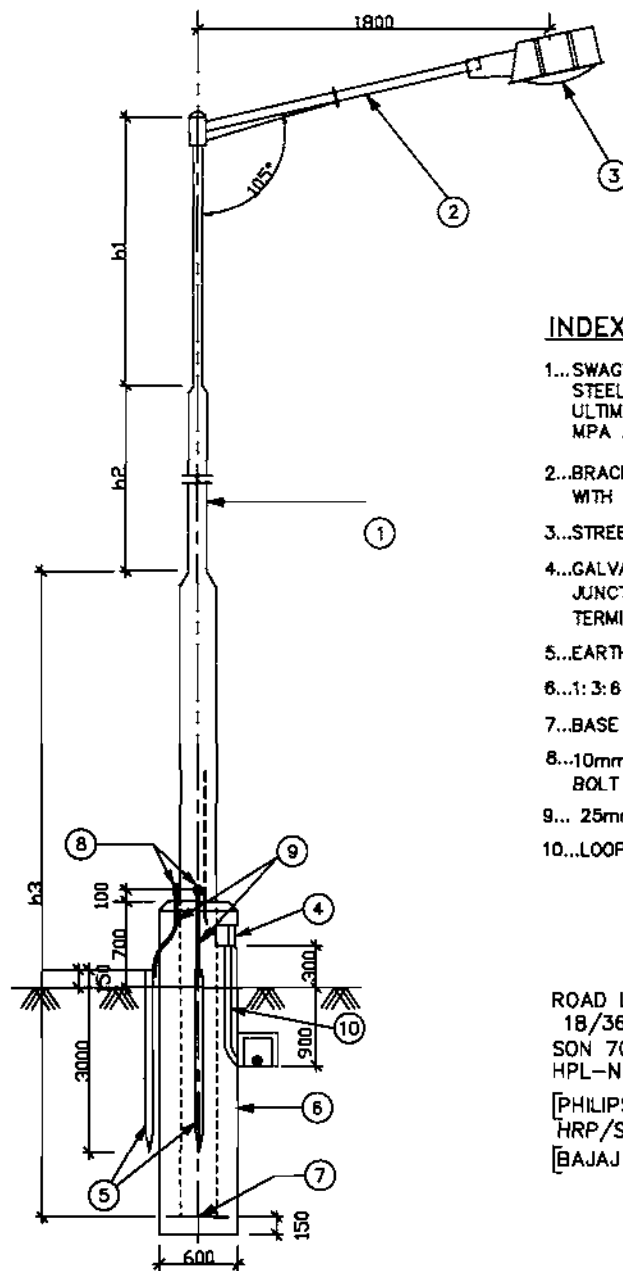


1...SWAGED AND WELDED GALVANISED
STEEL POLE MADE FROM STEEL OF
ULTIMATE TENSILE STRENGTH 540
MPA AS PER IS 2713 PART-III.

- ROAD LIGHTING LUMINAIRE WITH
18/36W TLD, 28/54 TLS,
SON 70/150/250/400W,
HPL-N 125/250W LAMP
[PHILIPS TYPE SRP/TRC/HGS/
HRP/SRX/SGP SERIES OR EQUAL]
[BAJAJ TYPE BJMIP SERIES OR EQUAL]

 TELANGANA STATE POWER GENERATION CORPORATION LIMITED HYDERABAD - TELANGANA - INDIA		
 DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA - MUMBAI - CHENNAI - NEW DELHI		
JOB NO.	13A06	SCALE : NIL
DWG. NO.	13A06-DWG-E-0800	SHT. 22 REV. A

						TITLE: ILLUMINATION SYSTEM NOTES & DETAILS
DS	DS	AD	A	24.08.14		PROJECT: KOTHAGUDEM THERMAL POWER STATION STAGE-VII, UNIT # 12 (1X200MW) KOTHAGUDEM, TELANGANA, INDIA
APPVD.	REVMD.	CHKD.	REV.	DATE		



INDEX

- 1...SWAGED AND WELDED GALVANISED STEEL POLE MADE FROM STEEL OF ULTIMATE TENSILE STRENGTH 540 MPA AS PER IS 2713 PART-III.
- 2...BRACKET ARM OF 50MM. DIA. PIPE WITH 3.65MM. WALL THICKNESS.
- 3...STREET LIGHTING FIXTURE.
- 4...GALVANISED LOOP-IN LOOP-OUT JUNCTION BOX WITH SP MCB, TERMINAL BLOCK.
- 5...EARTH ELECTRODE.
- 6...1:3:6 CEMENT CONCRETE SQ. FOOTING.
- 7...BASE PLATE.
- 8...10mm DIA. GALVANISED M.S. EARTHING BOLT WITH WASHER.
- 9... 25mm X 3mm G.S. FLAT.
- 10...LOOP-IN LOOP-OUT GI PIPES.

ROAD LIGHTING LUMINAIRE WITH
18/36W TLD, 28/54 TL5,
SON 70/150/250/400W,
HPL-N 125/250W LAMP

[PHILIPS TYPE SRP/TRC/HGS/
HRP/SRX/SGP SERIES OR EQUAL]
[BAJAJ TYPE BJMP SERIES OR EQUAL]

SWAGED AND WELDED POLE WITH SINGLE ARM

FOR TENDERING ONLY



TELANGANA STATE POWER GENERATION CORPORATION LIMITED
HYDERABAD - TELANGANA - INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA . MUMBAI . CHENNAI . NEW DELHI

DS	DS	AD	A	24.08.14
APPVD.	REVWD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

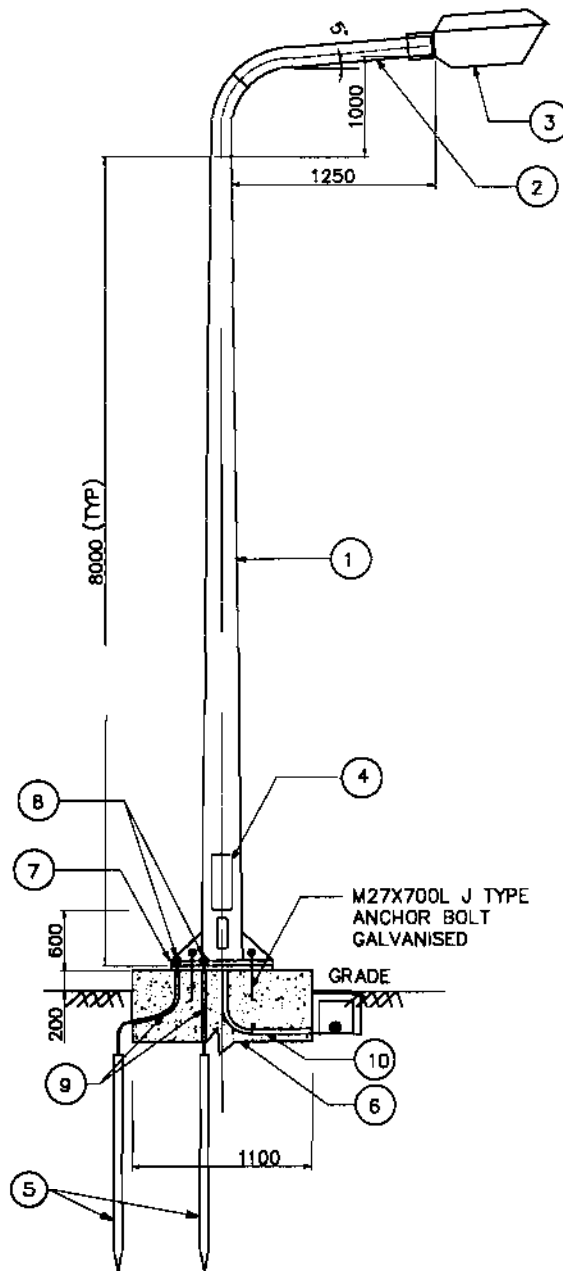
PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VIII, UNIT # 12 (13200MW)
KOTHAGUDEM, TELANGANA, INDIA

JOB NO. 13A06

SCALE : NIL

DWG. NO. 13A06-DWG-E-0800

REV. A



POLYGONAL SINGLE PIECE POLE

INDEX

- 1... SINGLE PIECE MS GALVANISED STRUCTURE CONTINUOUSLY TAPERED POLYGONAL CROSS SECTION LIGHT POLE AS PER BS 5649.
- 2... BRACKET ARM OF 50MM. DIA. PIPE WITH 3.85MM. WALL THICKNESS.
- 3... STREET LIGHTING FIXTURE.
- 4... 550 X 200 HINGED DOOR OPENING FOR SP MCB, TERMINAL BLOCK.
- 5... EARTH SPIKE.
- 6... 1:3:6 CEMENT CONCRETE SQ. FOOTING.
- 7... 450 X 450 BASE PLATE.
- 8... 10mm DIA. GALVANISED M.S. EARTHING BOLT WITH WASHER.
- 9... 6 SWG GI WIRE THROUGH 25# GI CONDUIT.
- 10... LOOP-IN LOOP-OUT GI PIPES.

ROAD LIGHTING LUMINAIRE WITH
 18/36W TLD, 28/54 TLD,
 SON 70/150/250/400W,
 HPL-N 125/250W LAMP
 [PHILIPS TYPE SRP/TRC/HGS/
 HRP/SRX/SGP SERIES OR EQUAL]
 [BAJAJ TYPE BJMP SERIES OR EQUAL]

FOR TENDERING ONLY



TELANGANA STATE POWER GENERATION CORPORATION LIMITED
 HYDERABAD - TELANGANA - INDIA



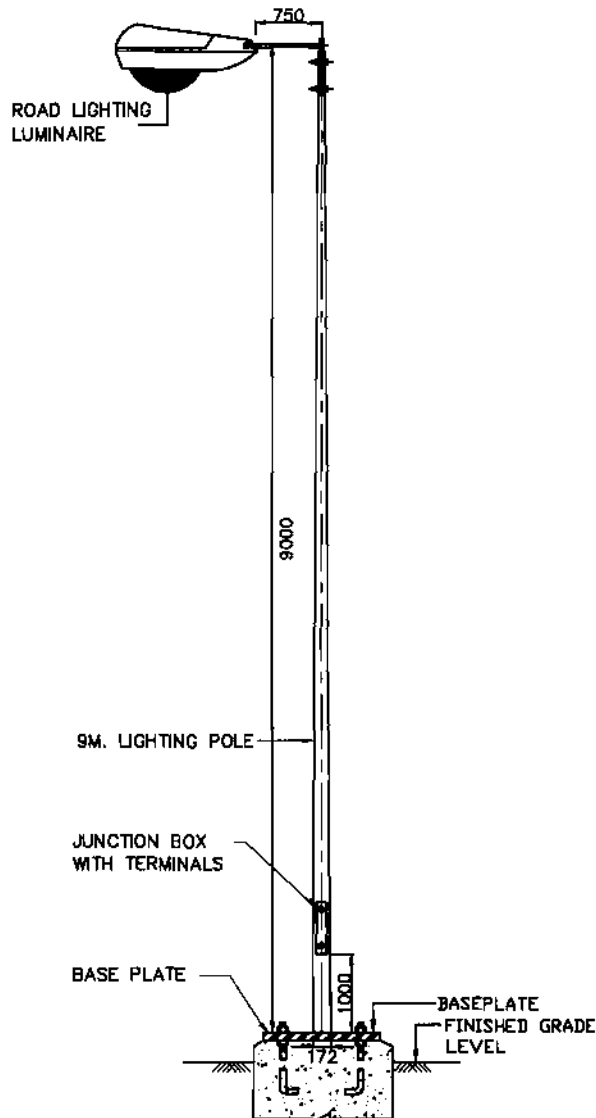
DEVELOPMENT CONSULTANTS PVT. LTD.
 CONSULTING ENGINEERS
 KOLKATA, MUMBAI, CHENNAI, NEW DELHI

DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
 NOTES & DETAILS

PROJECT: KOTHAGUDEM THERMAL POWER STATION
 STAGE-VIII, UNIT # 12 (1X800MW)
 KOTHAGUDEM, TELANGANA, INDIA

JOB NO. 13A06 SCALE: NIL
 DWG. NO. 13A06-DWG-E-0800 REV. A
 SHT.24



ROAD LIGHTING POLE

(POLE GROUNDING ARRANGEMENT SHALL BE IN LINE WITH SHEET NO 22)

ROAD LIGHTING LUMINAIRE WITH 18/36W TLD, 28/54 TL5,
SON 70/150/250/400W, HPL-N 125/250W LAMP
OR CFL 11W/18W/36W..

[PHILIPS TYPE SRP/TRC/HGS/FGS/HRP/FRP/SRX/SGP SERIES OR EQUAL]

[BAJAJ TYPE BJSJA/BJMIP SERIES OR EQUAL]

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TELANGANA STATE POWER GENERATION CORPORATION LIMITED
HYDERABAD - TELANGANA - INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA . MUMBAI . CHENNAI . NEW DELHI

DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

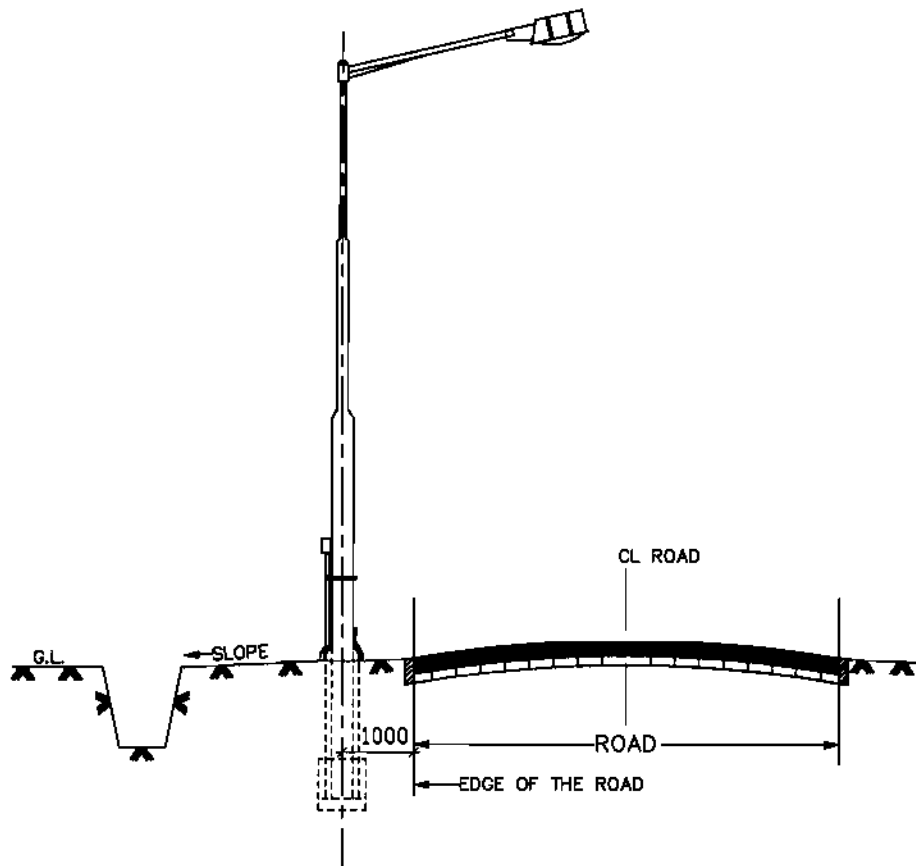
PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (1X300MW)
KOTHAGUDEM, TELANGANA, INDIA

JOB NO. 13A06

SCALE : NIL

DWG. NO. 13A06-DWG-E-0800

SHT. 25
REV. A



TYPICAL ARRANGEMENT OF ROAD LIGHT POLE

FOR TENDERING ONLY



TELANGANA STATE POWER GENERATION CORPORATION LIMITED
HYDERABAD - TELANGANA - INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA . MUMBAI . CHENNAI . NEW DELHI

DS	DS	AD	A	24.08.14
APPVD.	REVNO.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (1X800MW)
KOTHAGUDEM, TELANGANA, INDIA

JOB NO. 13A06

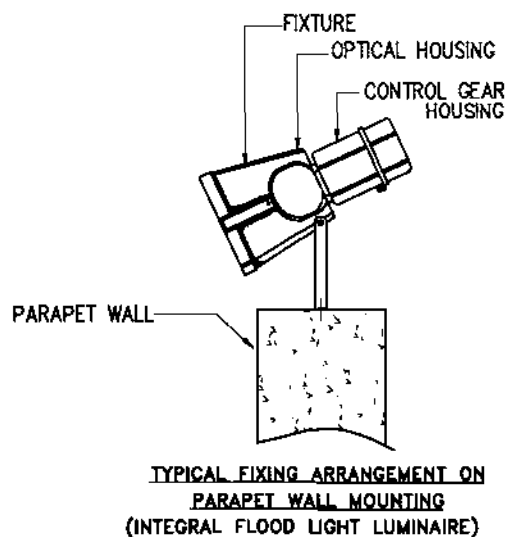
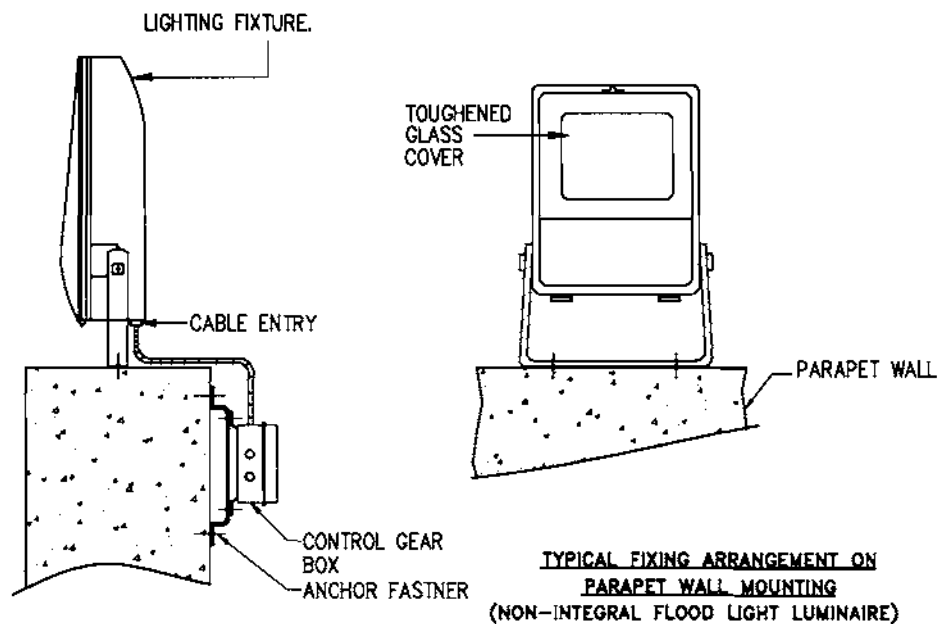
SCALE : NIL

DWG. NO. 13A06-DWG-E-0800

SHT. 28

REV.
A

A4_DD (9-96) [210x297]



FLOOD LIGHT LUMINAIRE WITH HPSV 150/250W/400W/1000W
OR HIGH PRESSURE METAL HALIDE 250W/400W/1000W,
OR TUNGSTEN HALOGEN 500W/1000W LAMP.

[EQ. PHILIPS TYPE SWF/MWF/SNF/SLF/RVP]

[EQ. BAJAJ TYPE BJQF/BJHF/BJEQF/BJEF/BJENF/BJHM/BGEMF/BGEMFS]

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TELANGANA STATE POWER GENERATION CORPORATION LIMITED
HYDERABAD - TELANGANA - INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA, MUMBAI, CHENNAI, NEW DELHI

DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (1X800MW)
KOTHAGUDEM, TELANGANA, INDIA

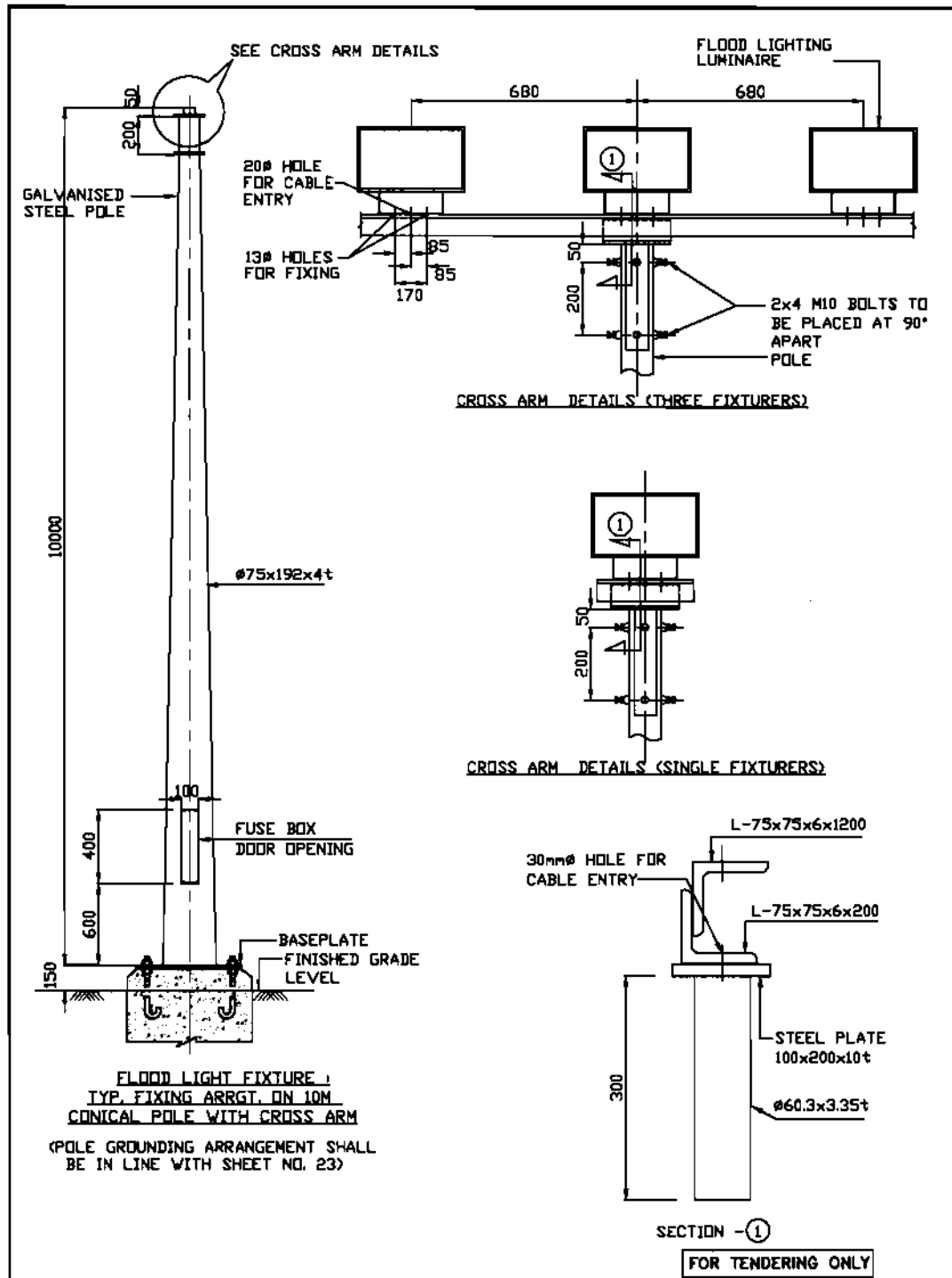
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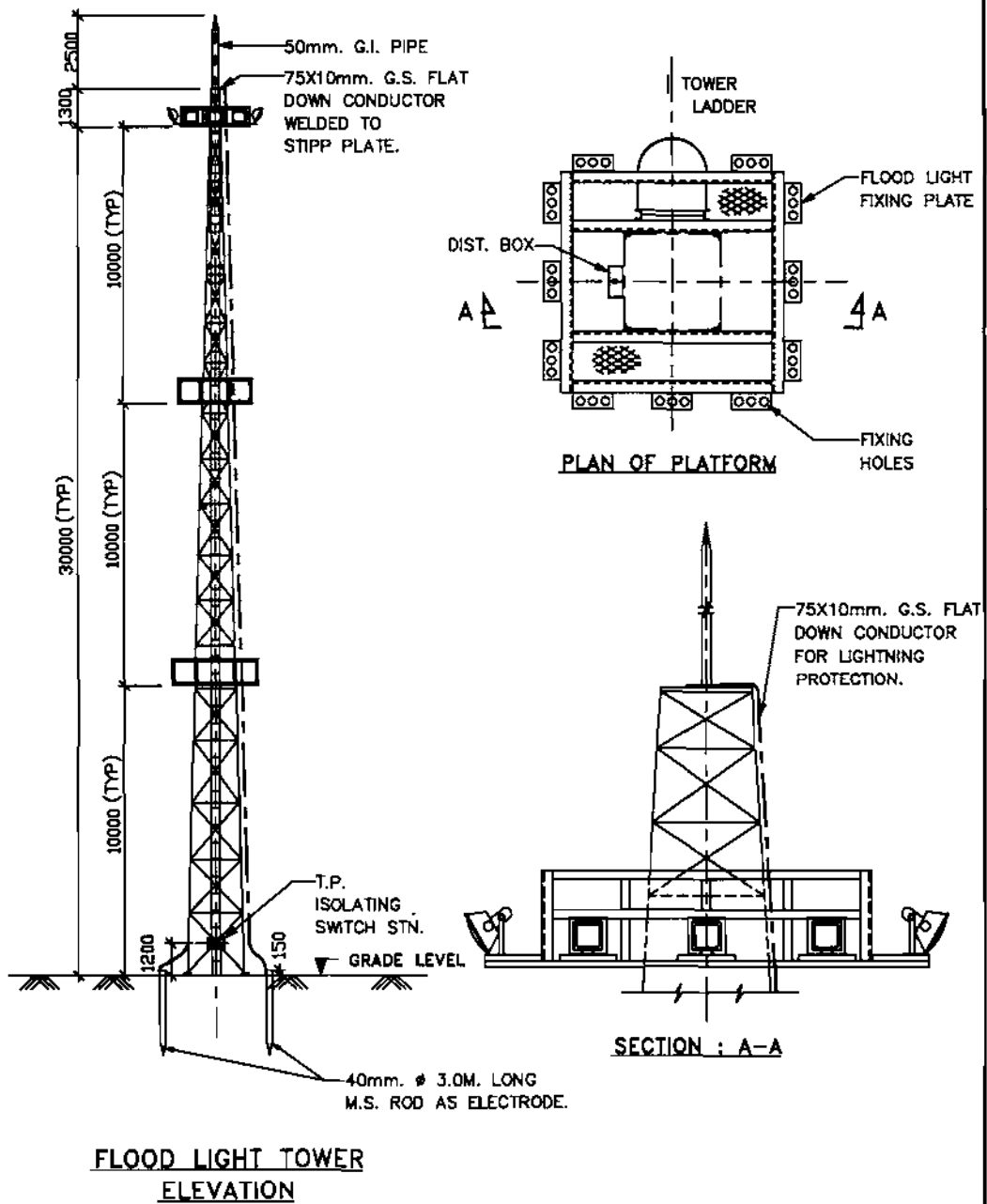
DWG. NO. 13A06-DWG-E-0800

SHT. 27

REV.
A



					 TELANGANA STATE POWER GENERATION CORPORATION LIMITED HYDERABAD - TELANGANA - INDIA	
					 DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA, MUMBAI, CHENNAI, NEW DELHI	
TITLE: ILLUMINATION SYSTEM NOTES & DETAILS					JOB NO. 13A06	SCALE : NIL
PROJECT: KOTHAGUDEM THERMAL POWER STATION STAGE-VII, UNIT # 12 (1X800MW) KOTHAGUDEM, TELANGANA, INDIA						
DS	DS	AD	A	24.08.14	DWG. NO. 13A06-DWG-E-0800	REV. SHT. 28 A
APPVD.	REVMD.	CHKD.	REV.	DATE		



NOTE :

Anticlimbing features shall be provided with the stair up to 1500mm above ground level.

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TELANGANA STATE POWER GENERATION CORPORATION LIMITED
HYDERABAD - TELANGANA - INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA - MUMBAI - CHENNAI - NEW DELHI

DS	DS	AD	A	24.08.14
APPVD.	REVND.	CHKD.	REV.	DATE

TITLE:
ILLUMINATION SYSTEM
NOTES & DETAILS

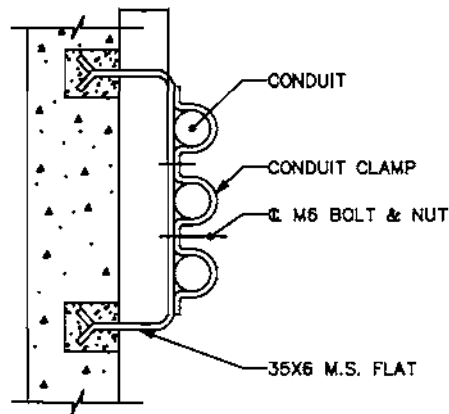
PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (11000MW)
KOTHAGUDEM, TELANGANA, INDIA

JOB NO. 13A06

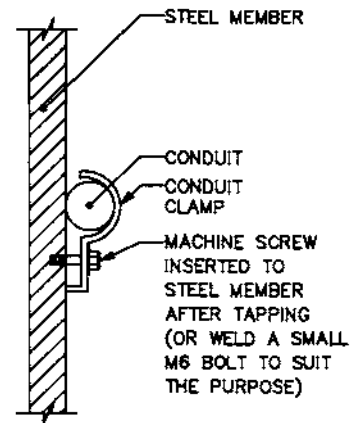
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DWG. NO. 13A06-DWG-E-0800

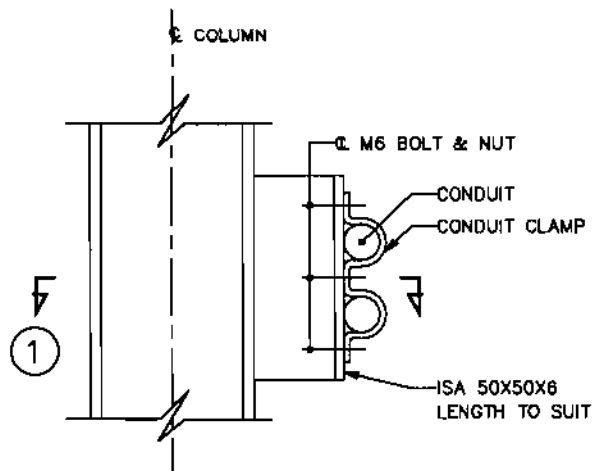
REV. A
SHT. 28



GROUP OF CONDUITS RUN
ON CONCRETE SURFACE

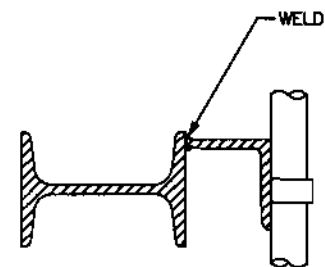


SINGLE CONDUIT RUN
ON STEEL MEMBER



ELEVATION

GROUP OF CONDUIT RUN ON
STEEL MEMBER ARRANGEMENT-A



SECTION-①

FOR TENDERING ONLY

DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

PROJECT: KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (1X800MW)
KOTHAGUDEM, TELANGANA, INDIA



TELANGANA STATE POWER GENERATION CORPORATION LIMITED
HYDERABAD - TELANGANA - INDIA



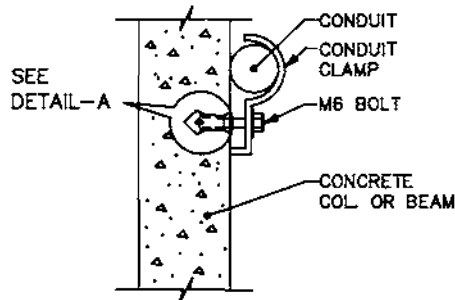
DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA, MUMBAI, CHENNAI, NEW DELHI

JOB NO. 13A06

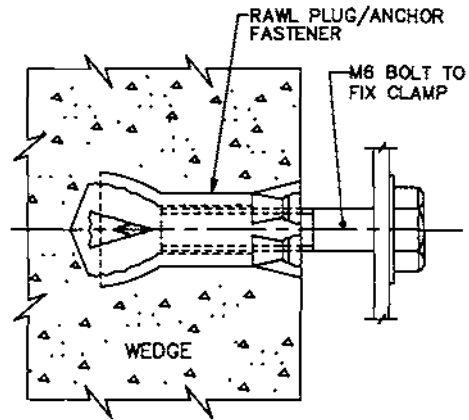
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DWG. NO. 13A06-DWG-E-0800

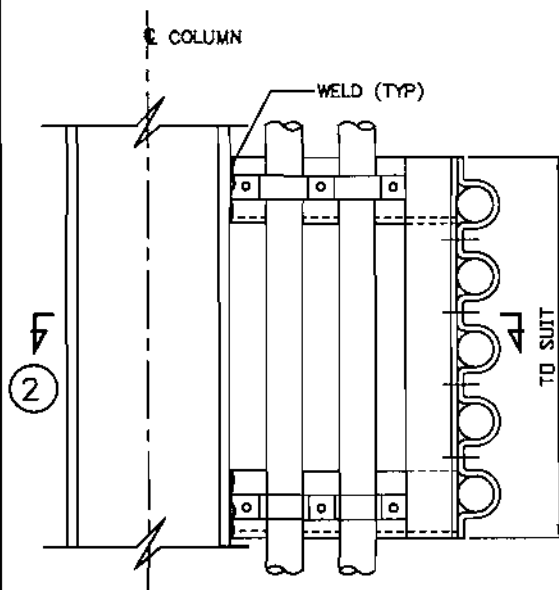
REV. A
SHT. 30



SINGLE CONDUIT RUN
ON CONCRETE SURFACE

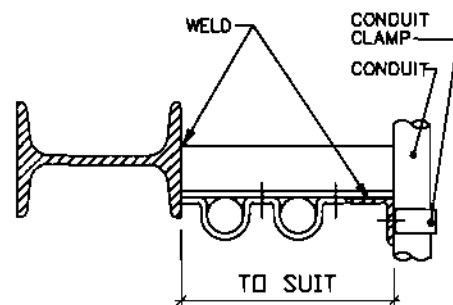


DETAIL-A



ELEVATION

GROUP OF CONDUIT RUN ON
STEEL MEMBER ARRANGEMENT-B



SECTION-2

FOR TENDERING ONLY

DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (1X800MW)
KOTHAGUDEM, TELANGANA, INDIA



TELANGANA STATE POWER GENERATION CORPORATION LIMITED
HYDERABAD - TELANGANA - INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA, MUMBAI, CHENNAI, NEW DELHI

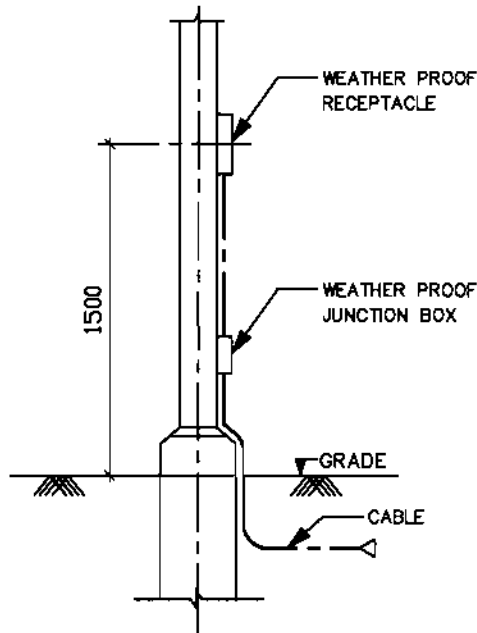
JOB NO. 13A06

SCALE : NIL

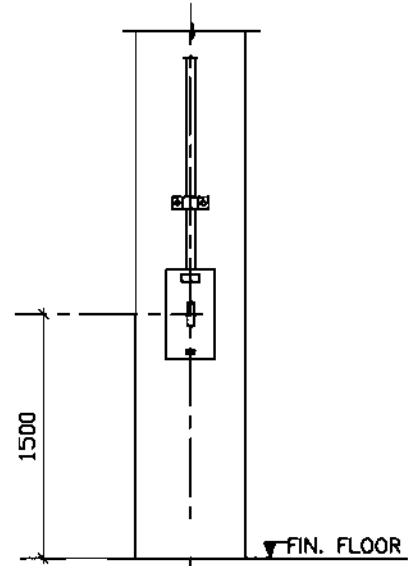
DWG. NO. 13A06-DWG-E-0800

SHT. 31

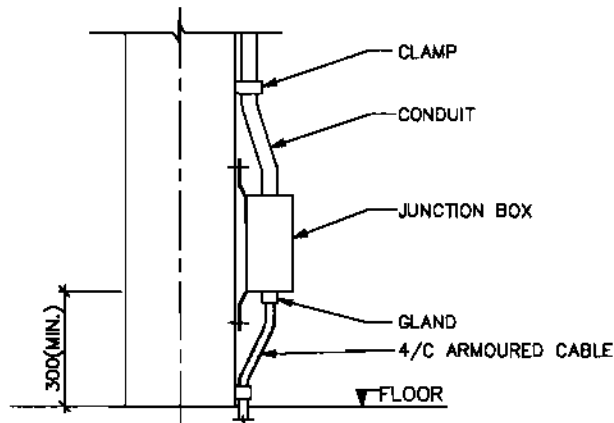
REV. A



OUTDOOR RECEPTACLE



SWITCH ON COLUMN



JUNCTION BOX
MOUNTING (TYP.)

FOR TENDERING ONLY



TELANGANA STATE POWER GENERATION CORPORATION LIMITED
HYDERABAD - TELANGANA - INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA . MUMBAI . CHENNAI . NEW DELHI

DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

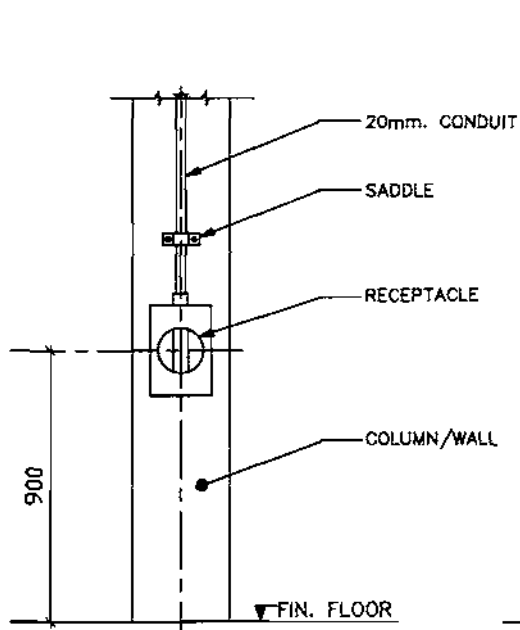
PROJECT: KOTHAGUDEM THERMAL POWER STATION
STAGE-VIII UNIT # 12 (1X800MW)
KOTHAGUDEM, TELANGANA, INDIA

JOB NO. 13A06

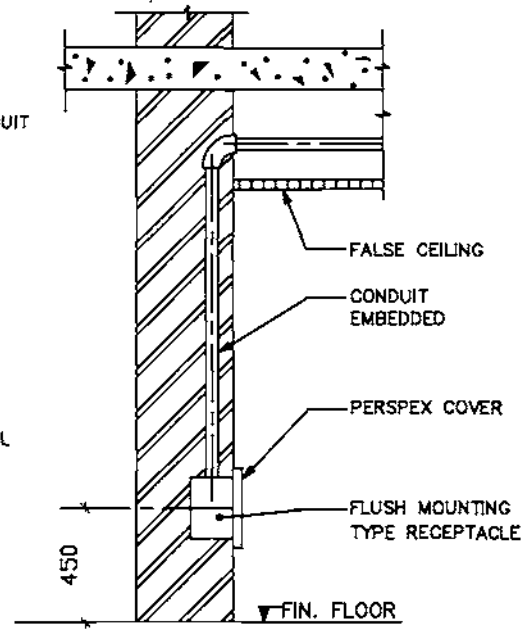
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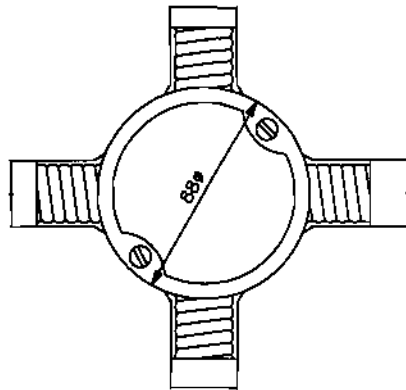
REV. A
SHT. 32



RECEPTACLE - TYPE 'Rb'
(STRUCTURE MOUNTING)



RECEPTACLE - TYPE 'Ra'
(WALL MOUNTING)



JUNCTION BOX ROUND (TYP.)

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TELANGANA STATE POWER GENERATION CORPORATION LIMITED
HYDERABAD - TELANGANA - INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA . MUMBAI . CHENNAI . NEW DELHI

DS	DS	AD	A	24.08.14	
APPVD.	REVMD.	CHKD.	REV.	DATE	

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (1300MW)
KOTHAGUDEM, TELANGANA, INDIA

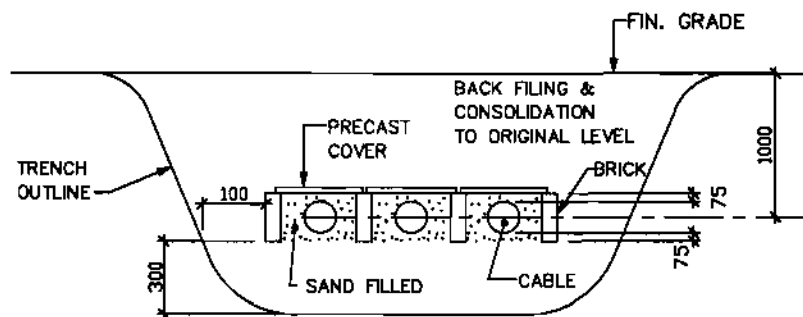
JOB NO. 13A06

SCALE : NIL

DWG. NO. 13A06-DWG-E-0800

SHT. 33

REV.
A



TYP. DETAIL FOR BURIED CABLE

FOR TENDERING ONLY



TELANGANA STATE POWER GENERATION CORPORATION LIMITED
HYDERABAD - TELANGANA - INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA . MUMBAI . CHENNAI . NEW DELHI

DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

TITLE:
ILLUMINATION SYSTEM
NOTES & DETAILS

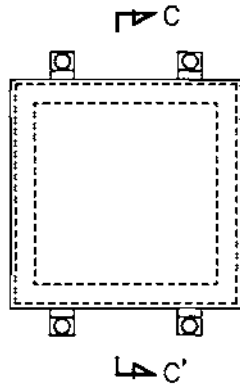
PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (1X800MW)
KOTHAGUDEM, TELANGANA, INDIA

JOB NO. 13A06

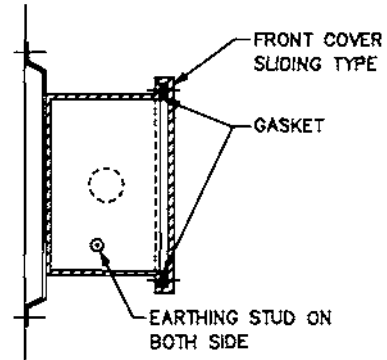
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DWG. NO. 13A06-DWG-E-0800

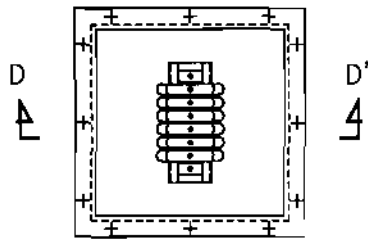
REV.
SHT. 34 A



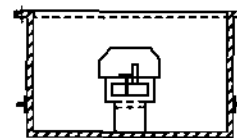
TYP. FIXING DETAIL
OF JUNCTION BOX



SECTION : C-C'



JUNCTION BOX (TYP.)
FRONT VIEW



SECTION : D-D'

FOR TENDERING ONLY



TELANGANA STATE POWER GENERATION CORPORATION LIMITED
HYDERABAD - TELANGANA - INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA . MUMBAI . CHENNAI . NEW DELHI

DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

PROJECT:
KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (1X800MW)
KOTHAGUDEM, TELANGANA, INDIA

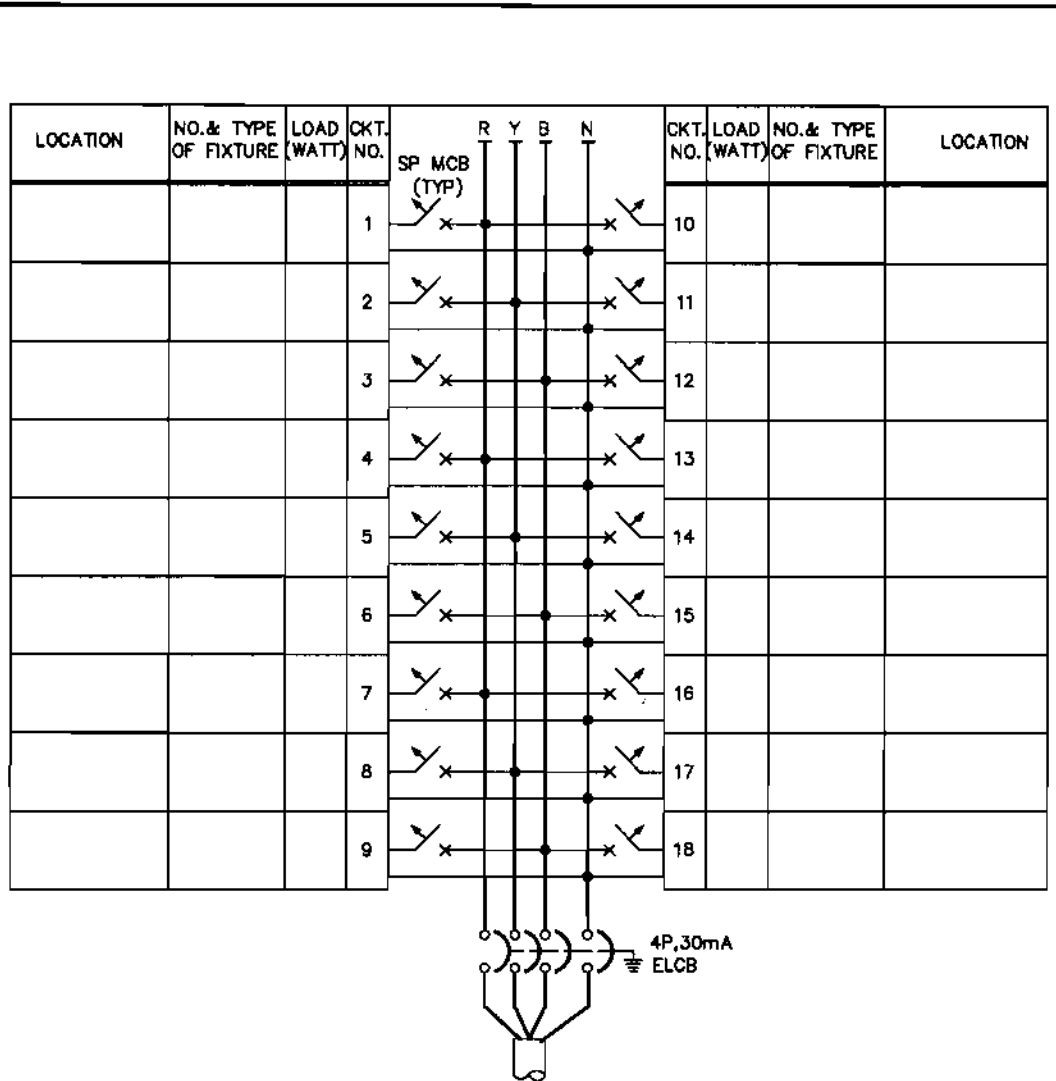
JOB NO. 13A06

SCALE : NIL

DWG. NO. 13A06-DWG-E-0800

SHT. 35

REV.
A



3-LINE DIAGRAM : LIGHTING PANEL

NOTES:

1. THE NUMBER OF OUTGOING FEEDERS SHALL BE DECIDED BASED ON REQUIREMENT.
2. THE MCB AND ELCB RATING SHALL BE SELECTED BASED ON APPLICATION.

FOR TENDERING ONLY



TELANGANA STATE POWER GENERATION CORPORATION LIMITED
HYDERABAD - TELANGANA - INDIA



DEVELOPMENT CONSULTANTS PVT. LTD.
CONSULTING ENGINEERS
KOLKATA, MUMBAI, CHENNAI, NEW DELHI

DS	DS	AD	A	24.08.14
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TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

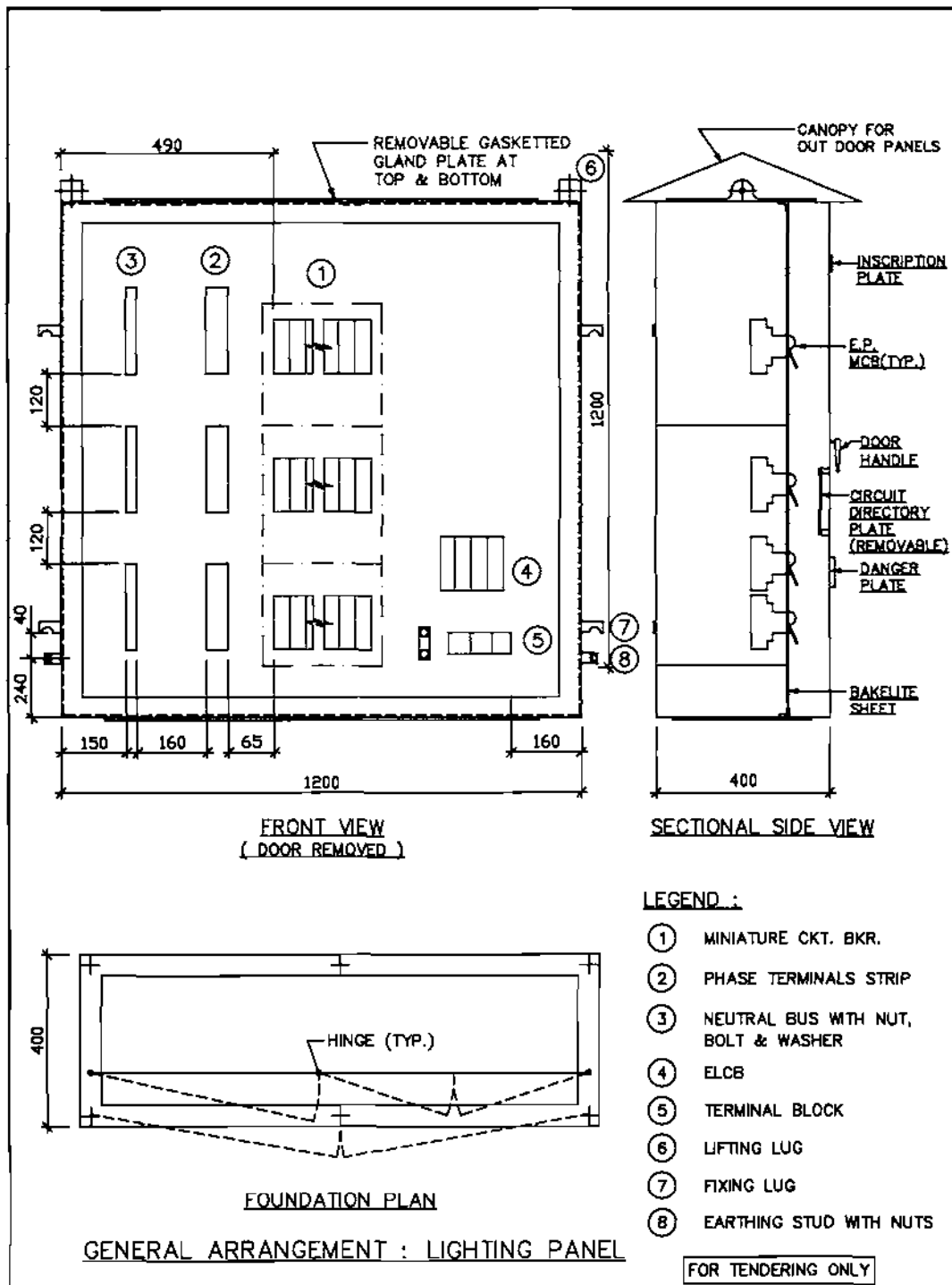
PROJECT: KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (1X800MW)
KOTHAGUDEM, TELANGANA, INDIA

JOB NO. 13A06

SCALE : NIL

DWG. NO. 13A06-DWG-E-0800

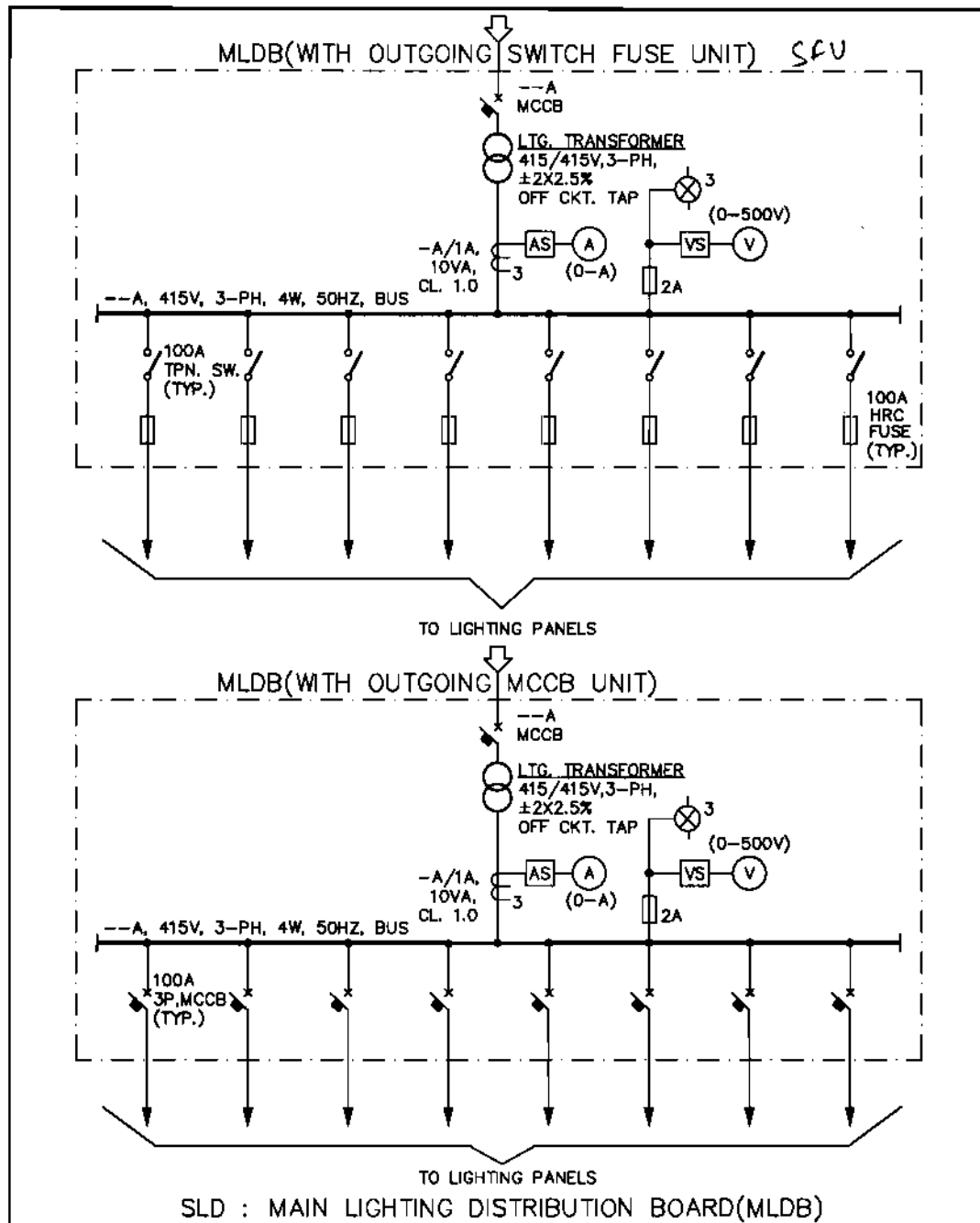
REV. A
SHT. 38



A4_DO (9-88) [210x297]



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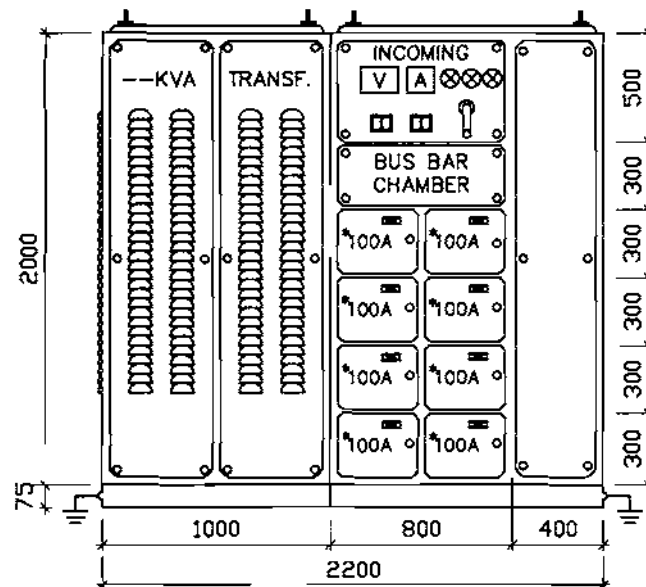


NOTE :-

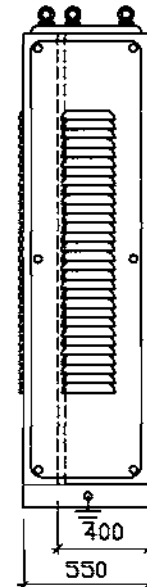
TRANSFORMER RATING AND %Z SHALL BE SO SELECTED THAT THE FAULT LEVEL SHALL BE WITHIN AVAILABLE MCB OF LIGHTING PANELS. THE BUSBAR CONTINUOUS CURRENT RATING, CT RATIO, AMMETER RANGE ETC SHALL BE SELECTED ACCORDINGLY

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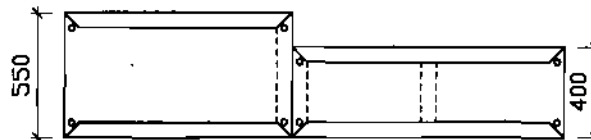
					 TELANGANA STATE POWER GENERATION CORPORATION LIMITED HYDERABAD - TELANGANA - INDIA	
					 DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA, MUMBAI, CHENNAI, NEW DELHI	
TITLE: ILLUMINATION SYSTEM NOTES & DETAILS					JOB NO. 13A06 SCALE : NIL	
PROJECT: KOTHAGUDEM THERMAL POWER STATION STAGE-VII, UNIT # 12 (1X800MW) KOTHAGUDEM, TELANGANA, INDIA					DWG. NO. 13A06-DWG-E-0800 REV. A	
DS	DS	AD	A	24.09.14	SHT. 38	
APPVD.	REVMD.	CHKD.	REV.	DATE		



FRONT VIEW



SIDE VIEW



FOUNDATION PLAN

*TPN SWITCH FUSE/TP MCCB.

GENERAL ARRANGEMENT : MAIN LIGHTING DISTRIBUTION BOARD (MLDB)

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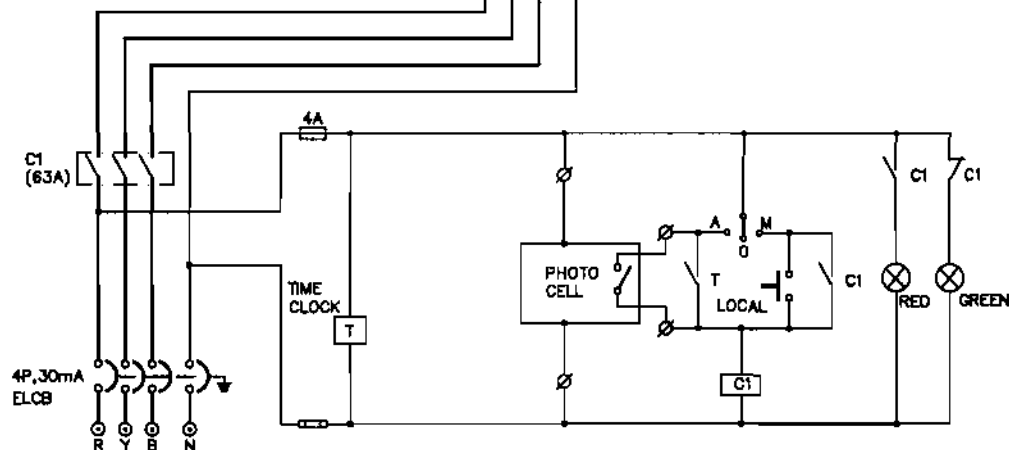
DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

PROJECT: KOTHAGUDEM THERMAL POWER STATION
STAGE-VIII, UNIT # 12 (1x200MW)
KOTHAGUDEM, TELANGANA, INDIA

JOB NO. 13A06	SCALE : ML
DWG. NO. 13A06-DWG-E-0800	REV. A
SIT. 38	

LOCATION	NO. & TYPE OF FIXTURE	LOAD (WATT)	CKT. NO.	20A MCB (TYP)	R	Y	B	N	CKT. NO.	LOAD (WATT)	NO. & TYPE OF FIXTURE	LOCATION
			1	X				X	10			
			2	X				X	11			
			3	X				X	12			
			4	X				X	13			
			5	X				X	14			
			6	X				X	15			
			7	X				X	16			
			8	X				X	17			
			9	X				X	18			



NOTES :

1. FIXTURES ON STREET LIGHTING POLES SHALL BE FED FROM THE SLPs.
2. FIXTURES ON FLOOD LIGHTING TOWERS SHALL ALSO BE FED FROM THE SLPs VIA ISOLATING SWITCH IN FLP MOUNTED AT THE BASE OF FLOOD LIGHTING TOWER.
3. SP AND 3P MCB SHALL BE USED FOR SINGLE PHASE AND 3-PHASE DISTRIBUTION RESPECTIVELY.

SCHEMATIC : STREET LIGHT PANELS (SLP)

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DEVELOPMENT CONSULTANTS PVT. LTD.
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KOLKATA, MUMBAI, CHENNAI, NEW DELHI

DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE

TITLE: ILLUMINATION SYSTEM
NOTES & DETAILS

PROJECT: KOTHAGUDEM THERMAL POWER STATION
STAGE-VII, UNIT # 12 (1X200MW)
KOTHAGUDEM, TELANGANA, INDIA

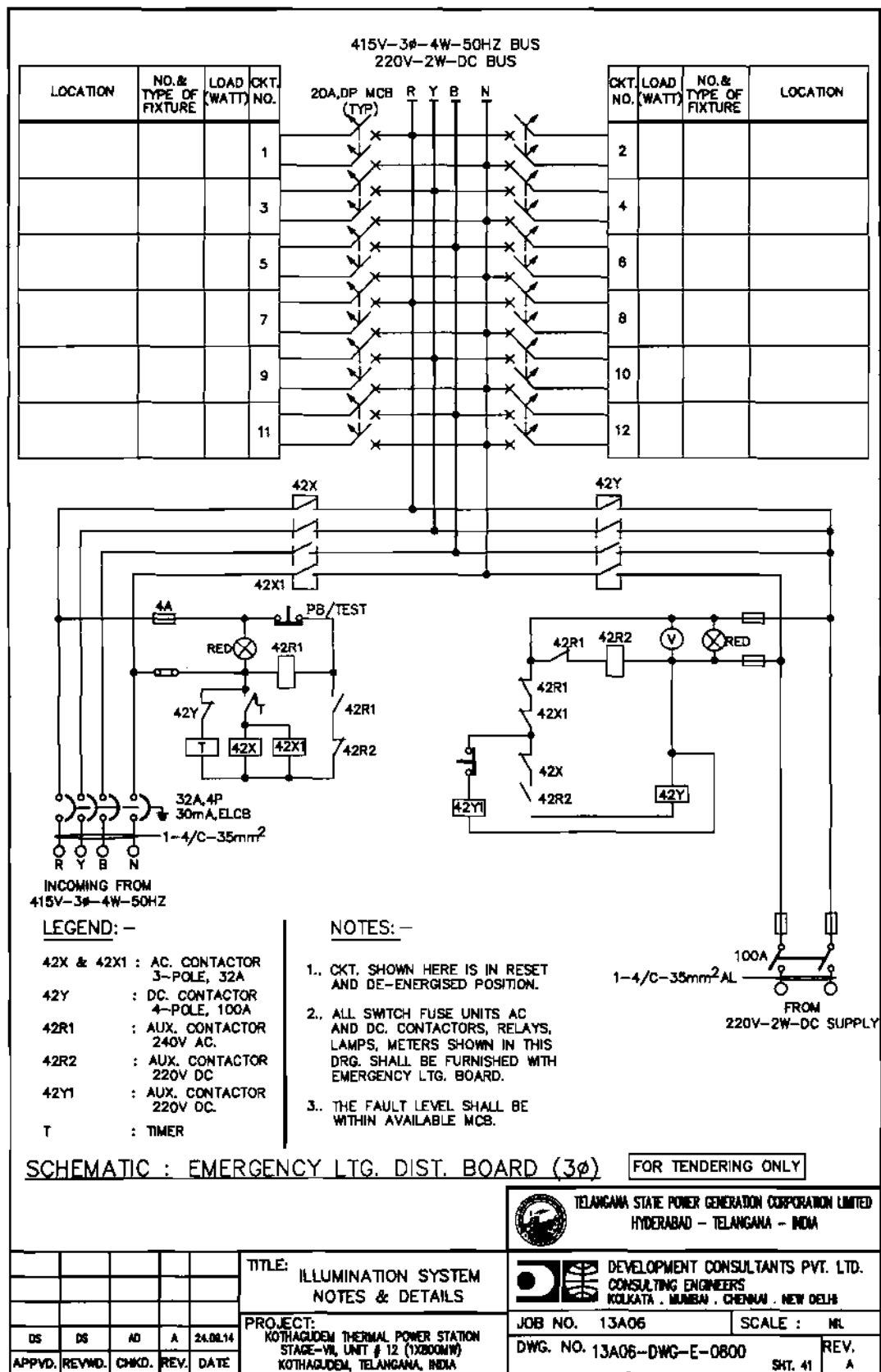
JOB NO. 13A06

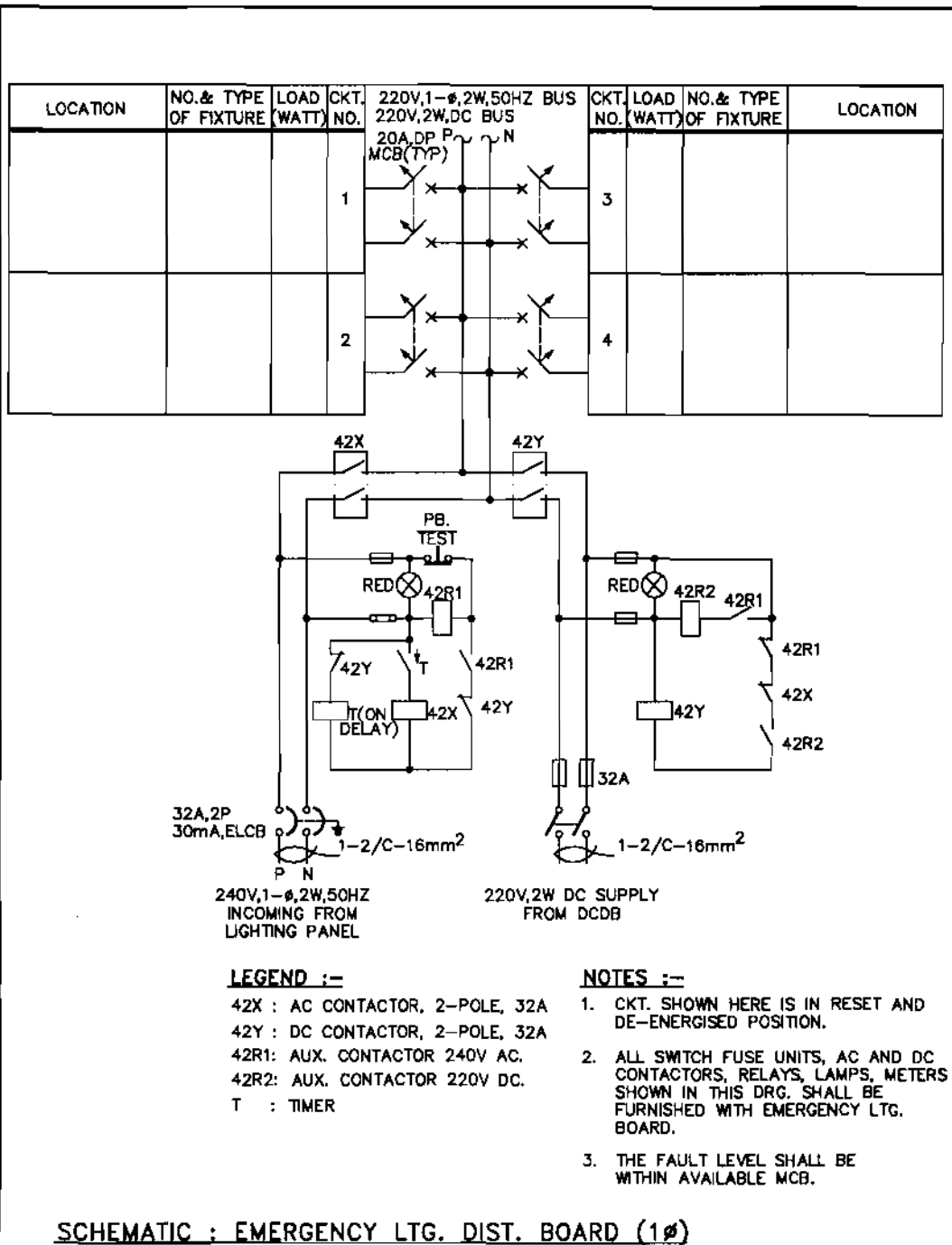
SCALE : ML

DWG. NO. 13A06-DWG-E-0800

REV. A

SHT. 40





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TELANGANA STATE POWER GENERATION CORPORATION LIMITED HYDERABAD - TELANGANA - INDIA				
DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA . MUMBAI . CHENNAI . NEW DELHI				
TITLE: ILLUMINATION SYSTEM NOTES & DETAILS		JOB NO. 13A06 SCALE : NIL		
PROJECT: KOTHAGUDEM THERMAL POWER STATION STAGE-VII, UNIT # 12 (1X800MW) KOTHAGUDEM, TELANGANA, INDIA		DWG. NO. 13A06-DWG-E-0800 REV. A		
DS	DS	AD	A	24.08.14
APPVD.	REVMD.	CHKD.	REV.	DATE



Project: 5x800 MW YADADRI THERMAL POWER STATION.
Customer: TELANGANA STATE POWER GENERATION CORPORATION LTD

Section-3: Project Details & General Specifications

Rev. No. 01

SECTION - 3

PROJECT DETAILS AND GENERAL SPECIFICATIONS

GENERAL TECHNICAL REQUIREMENTS

1.0 PROJECT DETAILS

1.1 SITE CONDITIONS (FOR DESIGN PURPOSES)

1.1.1 SITE CONDITIONS

1.1.2 DESIGN AMBIENT

1.1.3 RELATIVE HUMIDITY



Section-3: Project Details & General Specifications

Rev. No. 01

1.1.4 WIND PRESSURE (AS PER IS:875-1987)

1.1.5 SEISMIC FACTORS

- a). Horizontal Seismic Coefficient : As per latest IS : 1893
b). Vertical Seismic Coefficient : As per latest IS : 1893
- } **Zone - III**

1.1.6 ELECTRICAL DATA

1.						
2.						
3.						
4.						
5.			—	—		—
6.						
7.						

1.1.7 SYSTEM PARAMETERS

1.1.8 MINIMUM CLEARANCE (AS PER IS: 10118)



1.2 INSTRUCTION TO BIDDERS

The bidders shall submit the technical requirements, data and information as per the technical data sheets, provided in Section-4.

The bidders shall furnish catalogues, engineering data, technical information, design documents, drawings etc fully in conformity with the technical specification. It is recognised that the Manufacturer may have standardised on the use of certain components, materials, processes or procedures different than those specified herein. Alternate proposals offering similar equipment based on the manufacturer's standard practice will also be considered provided such proposals meet the specified designs, standard and performance requirements and are acceptable to the Purchaser. Unless brought out clearly, the Bidder shall be deemed to conform to this specification scrupulously.

1.3 STANDARDS

The works covered by the specification shall be designed, engineered, manufactured, built, tested and commissioned in accordance with the Acts, Rules, Laws and Regulations of India.

The equipment to be furnished under this specification shall conform to latest issue (with all amendments) of specified standards.

In addition to meeting the specific requirement called for in Sections 1 and 2 of the Technical Specification, the equipment shall also conform to the general requirement of the applicable standards, which shall form an integral part of the specification. The Bidder shall note that standards mentioned in the specification are not mutually exclusive or complete in themselves, but intended to complement each other. When the specific requirements stipulated in the specifications exceed or differ from those required by the applicable standards, the stipulation of the specification shall take precedence.

Other internationally accepted standards, which ensure equivalent or better performance than that specified in the standards referred, shall also be accepted. The bidder shall submit copies of such standards.

In case governing standard for the equipment is different from IS or IEC, the salient points of difference shall be clearly brought out in the offer along with English language version of standard or relevant extract of the same. The equipment conforming to standards other than IS/IEC shall be subject to Purchaser's / owner's approval. The bidder shall clearly indicate in his bid the specific standards in accordance with which the works will be carried out.



1.4 TYPE TESTING, INSPECTION, TESTING & INSPECTION CERTIFICATE

All equipment being supplied shall conform to type tests and shall be subject to routine and acceptance tests in accordance with requirements stipulated under respective sections. Purchaser reserves the right to witness any or all the tests. The Manufacturer shall intimate the Purchaser the detailed programme about the tests at least three (3) weeks in advance in case of domestic supplies & six (6) weeks in advance in case of foreign supplies. Purchaser reserves the option for getting any or all the type tests repeated on the equipment. The Manufacturer shall also submit type test procedure for approval of the Purchaser.

In the event of any discrepancy in the test reports i.e. any test report not acceptable due to any design/manufacturing changes (including substitution of components) or due to non-compliance with the requirement stipulated in the technical specification or any/all additional type tests not carried out without any additional cost implication to the Purchaser.

The price of conducting all tests and additional type tests is deemed to be included in Bid price. In case any bidder indicates that he shall not carry out a particular test, his offer shall be considered incomplete and shall be liable to be rejected.

The purchaser intends to repeat the type tests and additional type tests on cables for which test charges shall be payable as per provision of contract.

The Purchaser, his duly authorised representative and/or outside inspection agency acting on behalf of the Purchaser shall have at all reasonable times free access to the Contractors premises or Works and shall have the power, at all reasonable times to inspect and examine the materials and workmanship of the Works during its manufacture or erection if part of the Works is being manufactured or assembled at other premises or works, the Manufacturer shall obtain for the Engineer and for his duly authorized representative permission to inspect as if the works were manufactured or assembled on the Manufacturer's own premises or works. Inspection may be made at any stage of manufacture, dispatch or at site at the option of the Purchaser and the equipment if found unsatisfactory due to bad workmanship or quality, material is liable to be rejected.

The Manufacturer shall give the Purchaser/inspector thirty (30) days written notice of any material being ready for testing. Such tests shall be to the Manufacturer's account except for the expenses of the inspector. Unless witnessing of the tests is virtually waived, the Purchaser/ inspector will attend such tests within thirty (30) days of the date of which the equipment is notified as being ready for test/ inspection, failing which the Manufacturer may proceed with the test which shall be deemed to have been made in the Inspector's presence and the Manufacturer shall forthwith forward duly certified copies of test reports in triplicate to the Inspector.

The Purchaser or Inspector shall, within fifteen (15) days from the date of inspection as defined herein, give notice in writing to the Manufacturer, of any objection to any drawings and all or any equipment and workmanship which in his opinion is not in accordance with the Contract. The



Manufacturer shall give due consideration to such objections and shall either make the modifications that may be necessary to meet the said objections or shall confirm in writing to the Purchaser/ inspector giving reasons therein, that no modifications are necessary to comply with the Contract.

When the factory tests have been completed at the Manufacturer's works, the Purchaser/ inspector shall issue a certificate to this effect within fifteen (15) days after completion of tests but if the tests are not witnessed by the Purchaser/inspector, the certificate shall be issued within fifteen (15) days of receipt of the Manufacturer's Test certificate by the Engineer/ Inspector. Failure of the Purchaser/inspector to issue such a certificate shall not prevent the Manufacturer from proceeding with the Works. The completion of this test or the issue of the certificate shall not bind the Purchaser to accept the equipment should it, on further tests/ after erection, be found not to comply with the Contract. The equipment shall be dispatched to site only after approval of test reports and issuance of MICC by the Purchaser.

In all cases where the Contract provides for tests whether at the premises or at the works of the Manufacturer or of any Sub-Contractor, the Manufacturer except where otherwise specified shall provide free of charge such items as labour, materials, electricity, fuel, water, stores, apparatus and instruments as may be reasonably demanded by the Purchaser /Inspector or his authorised representative to carry out effectively such tests of the equipment in accordance with the Contract and shall give facilities to the Purchaser Inspector or to his authorised representative to accomplish testing.

The inspection by Purchaser and issue of Inspection Certificate thereon shall in no way limit the liabilities and responsibilities of the Manufacturer in respect of the agreed quality assurance programme forming a part of the Contract.

The Purchaser will have the right of having at his own expenses any other test(s) of reasonable nature carded out at Manufacturer's premises or at site or in any other place in addition of aforesaid type and routine tests, to satisfy that the material comply with the specification.

The Purchaser reserves the right for getting any field tests not specified in respective sections of the technical specification conducted on the completely assembled equipment at site. The testing equipment for these tests shall be provided by the Purchaser.

1.5 MATERIAL/WORKMANSHIP

1.5.1 GENERAL REQUIREMENT

Where the specification does not contain characteristics with reference to workmanship, equipment, materials and components of the covered Equipment it is understood that the same must be new, of highest grade of the best quality of their kind conforming to best engineering practice and suitable for the purposes for which they are intended.



The design of the Works shall be such that installation, future expansions, replacements and general maintenance may be undertaken with a minimum of time and expenses. Each component shall be designed to be consistent with its duty and suitable factors of safety, subject to mutual agreements and shall be used throughout the design. All joints and fastenings shall be devised, constructed and documented so that the component parts shall be accurately positioned and restrained to fulfil their required function. In general screw threads shall be standard metric threads. The use of other thread forms will only be permitted when prior approval has been obtained from purchaser.

Whenever possible, all similar part of the Works shall be made to gauge and shall also be made interchangeable with similar parts. All spare parts shall be interchangeable with, and shall be made of the same materials and workmanship as the corresponding parts of the Equipment supplied under the Specification. Where feasible, common component units shall be employed in different pieces of equipment in order to minimize spare parts stocking requirements. All equipment of the same type and rating shall be physically and electrically interchangeable.

All materials and equipment shall be installed in strict accordance with the manufacturer's recommendation(s). Only first-class work in accordance with the best modern practices will be accepted. Installation shall be construed as being the erection of equipment at its permanent location. This, unless otherwise specified, shall include unpacking, cleaning and lifting into position, grouting, levelling, aligning, coupling of or bolting down to previously installed equipment bases/foundations, performing the alignment check and final adjustment prior to initial operation, testing and commissioning in accordance with the manufacturer's tolerances /instructions and the Specification. All factory assembled rotating machinery shall be checked for alignment and adjustments made as necessary to re-establish the manufacture's limits. Suitable guards shall be provided for the protection of personal on all exposed rotating and / or moving machine parts and shall be designed for easy installation and removal for maintenance purpose. The spare equipment(s) shall be installed at designated locations and tested for healthiness.

The Contractor shall apply oil and grease of the proper specification to suit the machinery, as is necessary for the installation of the equipment. Lubricants used for installation purposes shall be drained out and the system flushed through where necessary for applying the lubricant required for operation. The Contractor shall apply all operational lubricants to the equipment installed by him.

All oil, grease and other consumables used in the Works/ Equipment shall be purchased in India unless the Contractor has any special requirement for the specific application of a type of oil or grease not available in India. If such is the case, he shall declare in the proposal where such oil or grease is available. He shall help purchaser in establishing equivalent Indian make and Indian Contractor. The same shall be applicable to other consumables too.

1.5.2 PROVISIONS FOR EXPOSURE TO HOT AND HUMID CLIMATE

Outdoor equipment supplied under the specification shall be suitable for service and storage under tropical conditions of high temperature, high humidity, heavy rainfall and environment favourable to



the growth of fungi and mildew. The indoor equipments located in non-air conditioned areas shall also be of same type.

1.6 COLOUR SCHEME AND CODES FOR PIPE SERVICE

The contractor shall propose a colour scheme for those equipment/Items for which the colour scheme has not been specified in the specification for the approval of purchaser. The decision of purchaser shall be final. The scheme shall include:

Finishing colour of Indoor equipment

Finishing colour of Outdoor equipment.

Finish colour of all cubicles.

Finishing colour of various auxiliary system equipment including piping

Finishing colour of various building items.

All steel structures, plates etc. shall be painted with non-corrosive paint on a suitable primer. It may be noted that normally all electrical equipment in switchyard are painted with shade 631 of IS-5. All The indoor cubicles shall be of same colour scheme and for other miscellaneous items, colour scheme will be approved by the purchaser.

1.7 PAINTING

- a) All sheet steel work shall be phosphated in accordance with the following procedure and in accordance with IS: 6005 "Code of practice for Phosphating Iron and Steel".
- b) Oil, grease, dirt and swerve shall be thoroughly removed from emulsion by cleaning.
- c) Rust and scale shall be removed by pickling with dilute acid followed by washing with running water, rinsing with slightly alkaline hot water and drying.
- d) After phosphating, thorough rinsing shall be carried out with clean water followed by final rinsing with dilute bichromate solution and over drying.
- e) The phosphate coating shall be sealed by the application of two coats of ready mixed, stoving type zinc chromate primer. The first coat may be "Flash dried" while the second coat shall be stoved.
- f) After application of the primer, two coats of finishing epoxy paint shall be applied, each coat followed by stoving. The panel shall have colour conforming to shade 631 of IS-5 for outside and inside of the panel with black colour for base frame.
- g) Each coat of primer and finishing paint shall be of a slightly different shade to enable inspection of the painting.



- h) Finished painted appearance of panel shall present an asthetically pleasing appearance free from dents and uneven surface.
- i) A small quantity of finishing paint shall be supplied for minor touching up required at site after the installation of the panels.

1.8 PROTECTION

- a) All coated surfaces shall be protected against abrasion, impact, discoloration and any other damages. All exposed threaded portions shall be suitably protected with either a metallic or a non-metallic protecting device. All ends of all valves, pipings and conduit equipment connections shall be properly sealed with suitable devices to protect them from damage.
- b) All equipment accessories and wiring shall have fungus protection, involving special treatment of insulation and metal against fungus, insects and corrosion.
- c) The parts which are likely to get rusted, due to exposure to weather should also be properly treated and protected in a suitable manner.
- d) Screens of corrosion resistant material shall be furnished on all ventilating louvers to prevent entry of insects.

1.9 FUNGISTATIC VARNISH

Besides the space heaters, special moisture and fungus resistant varnish shall be applied on the parts, which may be subjected or predisposed to the formation of fungi due to the presence or deposit of nutrient substances. The varnish shall not be applied to any surface of part where the treatment will interface with the operation or performance of the equipment. Such surfaces or parts shall be protected against the application to the varnish.

1.10 SURFACE FINISH

All interiors and exteriors of tanks, control cubicles and other metal parts shall be thoroughly cleaned to remove all rust, scales, corrosion, greases or other adhering foreign matter. All steel surfaces in contact with insulating oil as far as accessible shall be painted with not less than two coats of heat resistant, oil insoluble, insulating paints.

All metal surfaces exposed to atmosphere shall be given two primer coats of zinc chromate and two coats of epoxy paint with epoxy base thinner. All metal parts not accessible for painting shall be made of corrosion resisting material. All machine finished or bright surfaces shall be coated with a suitable preventive compound and suitably wrapped or other wise protected. All paints shall be carefully selected to withstand tropical heat and extremes of weather within the limit specified. The paint shall not scale off or wrinkle or be removed by abrasion due to normal handling.



1.11 GALVANIZING

All ferrous parts including all sizes of nuts, bolts, Plain and spring washers, support channels, structures, shall be hot dip galvanised conforming to latest version of IS:2629 or any other equivalent authoritative standard. However, hardware less than M12 size shall be electro-galvanized. Minimum weight of zinc coating shall be 610 gm/sq.mm and minimum thickness of coating shall be 85 microns for all items thicker than 6mm. For items lower than 6 mm thickness, requirement of coating shall be as per relevant ASTM.

1.12 AUXILIARY POWER SUPPLY

1.12.1 A.C power supply for auxiliaries will be available at 240 V, 50 C/s 1-phase, 2 wire and 415V, 50 C/s, 3-phase, 4 wire, neutral solidly earthed with variation in frequency of +/-5% and variation in voltage +/-10%

1.12.2 D.C. power supply at 220 V, 2-wire ungrounded will be available 187 V to 242 V.

1.13 INSPECTION AND TESTING

All tests and inspection of the equipment specified shall be performed to the extent and in the manner as stipulated in the relevant standards and in this specification. All type tests/routine tests/acceptance tests as specified shall be conducted in the presence of purchaser. Wherever equipment similar to the one being offered has already been type tested within 5 years from the date of opening the bid. Type tests done in an independent government laboratory or in the presence of representative of State Electricity Board or other reputed public undertakings, the type test reports of the same shall be submitted for scrutiny /approval. If these are found suitable and technically acceptable, conducting of type tests shall be waived off. Otherwise the subcontractor will have to carry out the type tests without any extra cost and without any delivery implications.

1.14 PACKAGING

Aluminium Tube shall be partially packed with Hessians cloths. Similar items shall be grouped and tied with steel wires/strip for convenient handling during transits.

MARKINGS

The following details are to be clearly indicated in the material forwarding documents:

- a) Name and address of the consignee.
- b) Purchase order number.
- c) Name of supplier/s.
- d) Description of equipment / material.



e) Tare weight.

f) Gross weight.

All the equipments shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at Site till the time of erection. On request of the purchaser, the Contractor shall also submit packing details/associated drawing for any equipment material under his scope of supply, to facilitate the purchaser to repack any equipment/material at a later date, in case the need arises, while packing all the materials, the limitation from the point of view of availability of Railway wagon sizes in India should be taken account of. The Contractor shall be responsible for any loss or damage during transportation, handling and storage due to improper packing. Any demurrage wagons and other such charges claimed by the transporters, railways etc. shall be to the account of the Contractor. Purchaser takes no responsibility of the availability of the wagons.

1.15 HANDLING, STORING AND INSTALLATION

In accordance with the specific installation instructions as shown on manufacturer's drawings or as directed by the purchaser or his representative, the Contractor shall unload, store, erect, install, wire, test and place into commercial use all the equipment included in the contract. Equipment shall be installed in a neat, workmanlike manner so that it is level, plumb, square and properly aligned and oriented. Commercial use of switchyard equipment means completion of all site tests specified and energisation at rated voltage.

Contractor may engage manufacturer's Engineers to supervise the unloading, transportation to site, storing, testing and commissioning of the various equipment being procured by them separately. Contractor shall unload, transport, store, erect, test and commission the equipment as per instructions of the manufacturer's supervisory Engineer(s) and shall extend full cooperation to them.

In case of any doubt/misunderstanding as to the correct interpretation of manufacturer's drawings or instructions, necessary clarifications shall be obtained from the purchaser.

Contractor shall be held responsible for any damage to the equipment consequent to not following manufacturer's drawings/instructions correctly.

Where assemblies are supplied in more than one section, contractor shall make all necessary mechanical and electrical connections between sections including the connection between buses. Contractor shall also do necessary adjustments/alignments necessary for proper operation of circuit breakers, isolators and their operating mechanisms. All components shall be protected against damage during unloading, transportation, storage, installation, testing and commissioning. Any equipment damaged due to negligence or carelessness or otherwise shall be replaced by the contractor at his own expenses.

Contractor shall be responsible for examining all the shipment immediately of any damage, shortage, discrepancy etc. for the purpose of Purchaser's information only. The Contractor shall submit to the



purchaser every week a report detailing all the receipts during the weeks. However, the Contractor shall be solely responsible for any shortages or damages in transit, handling and/or in storage and erection of the equipment at Site. Any demurrage, pilferage and other such charges claimed by the transporters, railways etc. shall be to the Contractor's account.

The Contractor shall be fully responsible, for the equipment/material until the same is handed over to the purchaser in an operating condition after commissioning. Contractor shall be responsible for the maintenance to the equipment/material while in storage as well as after erection until taken over by Purchaser, as well as protection of the same against theft, element of such nature, corrosion, damages etc.

The Contractor shall be responsible for making suitable indoor storage facilities, to store all equipments which require indoor storage.

The words erection and installation used in the specification are synonymous. Exposed live parts shall be placed high enough above ground to meet the requirements of electrical and other statutory safety codes.

The minimum phase to earth, phase to phase and section clearance along-with other technical parameters for the various switchyard voltage levels to be maintained shall be strictly as per the approved drawings.

The design and workmanship shall be in accordance with the best engineering practices to ensure satisfactory performance throughout the service life. If at any stage during the execution of the Contract, it is observed that the erected equipment(s) do not meet the above minimum clearances, the Contractor shall immediately proceed to correct the discrepancy at his risks and costs.

1.16 TOOLS AND TACKLES

The Contractor shall supply with the equipment one complete set of all special tools and tackles for the erection, assembly, dis-assembly and maintenance of the equipment. However, these tools and tackles shall be separately, packed and brought on to Site.

1.14 EQUIPMENT BASES

A cast iron or welded steel base-plate shall be provided for all rotating equipment, which is to be installed on a concrete base unless otherwise agreed to by the Purchaser. Each base-plate shall support the unit and its drive assembly, shall be of a neat design with pads for anchoring the units shall have a raised lip all around, and shall have threaded drain connections.

1.15 QUALITY

BHEL quality plan to be followed subject to TBEM / customer's approval.



1.16 DOCUMENTATION

1.16.1 DRAWINGS

All drawings shall be prepared in AutoCAD and ultimate documentation would include drawings/documents on CDs. All dimensions and data shall be in SI metric units.

All items of the equipment should be clearly identified by proper part nos. in the contract drawings. Such parts, which are to be dispatched to site from works in dispatchable units and are reassembled at site, should be marked by proper identification marks at works and indicated in the drawings and quantified. The shipping list should be sent along with the general arrangement drawings for engineer's approval. All the items of the shipping list should be identified in the drawing.

The drawing submitted by the supplier shall be reviewed by the purchaser as far as practicable within two weeks of receipt of drawings and shall be modified by the sub-contractor if any modifications and/or corrections are required by the purchaser. The sub-contractor shall incorporate such modifications and / or corrections and submit the final drawings for approval. Any delay arising out of failure of the subcontractor to rectify the drawings shall not alter the contract completion date.

Further work by the subcontractor shall be in strict accordance with these drawings and no deviation shall be allowed without the written approval of the purchaser.

All manufacturing and fabrication work in connection with the equipment prior to the approval of the drawings shall be at supplier's risk.

Approval of drawing or work by the purchaser/consultant shall not relieve the subcontractor of any of his responsibilities and liabilities under the contract.

In case of any modifications that may be necessary during erection or commissioning of the equipment, the subcontractor shall carry out modifications in the original drawing & submit 'As Built drawings' and required no. of prints thereof.

1.16.2 INSTRUCTION MANUALS

The supplier shall submit to the purchaser, draft instruction manuals for approval within 30 days of placement of order. The final instruction manuals complete in all respects shall be submitted 60 days before the first shipment of the equipment. The instruction manuals shall contain full details and drawings of all the equipment furnished, the erection procedures, testing, operation & maintenance procedures of the equipment.

If after the commissioning and initial operation of the plant, the instruction manuals require any modification/ addition / changes, the same shall be incorporated and the up- dated final instruction manuals shall be submitted as required.



1.16.3 TITLE BLOCK & DRAWING/ DOCUMENT NUMBERING SCHEME

Title block for drawing / document should be followed as per ANNEXURE-3

1.16.4 DOCUMENTATION SCHEDULE AT CONTRACT STAGE

A.	<u>For approval</u>	<u>No of Copies</u>
	Copies of all drawings with project details, dimension, shipping weights, No. of cases & dimensions, fixing details, tolerance etc.	10
	Copies of type test reports.	5
	Copies of works quality plan & field quality plan.	5
	Copies of installation, operation & maintenance manual.	5
	Copies of drawings on floppies/CDs	1 set
B.	<u>After approval and for information / distribution</u>	
	Copies of all drawings	15
	Copies of installation, operation & maintenance manual including Routine test reports	15
	Sets of RTF of drawings	2
	CDs of Drgs and O & M Manuals	4
C.	<u>As Built Drawings</u>	
	Hard copies of Drawings	15
	CDs	4

NOTE:

1. Any revision of drawings / documents shall be submitted in the same no. of copies submitted first time for approval
2. Final drawings / documents shall be submitted in bound volume with customer and project details etc. written on the top.

SECTION – 4

CHECK LIST FOR INFORMATION TO BE FURNISHED WITH OFFER RETURN THIS CHECKLIST AS PART OF THE OFFER DULY SIGNED

PLEASE NOTE:

a)The offer may not be considered if the following information and this Checklist are not enclosed with the Offer. Hence bidder shall ensure the completeness of their offer in this regard.

Please mark “YES” if the specified requirement is met or put a mark “NO” if the specified requirement is not met and give reason in column 5.

Sl.no	Parameter	Data	Bidder's conformation	Reason for non-compliance
(1)	(2)	(3)	(4)	(5)
1.	Provision of illumination for specified areas as per spec.		YES / NO	
2.	Guaranteeing the illumination levels specified as per spec.		YES / NO	
3.	Type of lighting luminaries included as per BOQ.		YES / NO	
4.	Technical parameters and data of LED luminaries as per clause 2.3.5 & 2.3.6 of section -2 of specification		YES / NO	
5.	BOQ of material to be supplied provided in the offer		YES / NO	
6.	Mandatory spares quoted in line with BOQ		YES / NO	
7.	MLDB, ELDB , Welding DB, Lighting DBs & LPs included as per spec.		YES / NO	
8.	Lighting transformer included as per specification requirements		YES / NO	
9.	Lighting poles included as per spec.		YES / NO	
10.	Sockets, Plugs & other items included as per spec.		YES / NO	
11.	ETC of Package included in the offer		YES / NO	
12.	Supply & ETC of all wires / Cables / earthing material required for the package other than the items supplied by BHEL included in the package.		YES / NO	
13.	ETC of BHEL supplied Cables included in the offer		YES / NO	
14.	ETC of BHEL supplied earthing flat included in the offer		YES / NO	
15.	Additional flood light luminaries in switchyard for maintenance of equipment specified in specification included in offer.		YES / NO	
16.	Whether any new item other than the BOQ given required to meet the		YES / NO	

	specification requirement.			
17.	If new item is required whether these are listed with quantities in the offer		YES / NO	
18.	Equipment included suitable for operation on voltage & frequency Variation limits specified in the specification without effecting their performance		YES / NO	
19.	Power factor of lamp circuit is as per specification		YES / NO	
20.	Auto change over arrangement for emergency AC/ emergency DC included in EAC & DC boards		YES / NO	
21.	Auto switching arrangement for outdoor flood lighting / street lighting through Timer / Photo call included		YES / NO	
22.	Spares included in the offer (a) Mandatory (b) Commissioning		YES / NO YES / NO	
23.	Type test reports	Type test reports furnished shall be in line with clause 1.4 (Section-1) & 2.20 of Section-2.	Yes	
24.	Type test	If type test reports are not acceptable to TSGENCO /BHEL then above tests shall be conducted by the bidder free of cost	Yes	
25.	Bidder to confirm that it will offer approved make of components & fitments at Contract stage. In case the offered make is not approved by the Customer, then alternate make shall be supplied without any commercial implication to BHEL.	Yes	Yes/No	
26.	Total lighting load provided in the offer.			

Bidder's

Sign :

Date :

Name :

Design :

ANNEXURE - C
SCHEDULE OF TECHNICAL DEVIATIONS

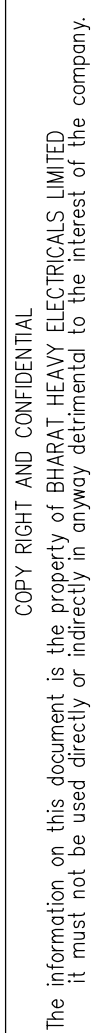
Bidder shall list below all technical deviation clause wise w.r.t. tender specifications:

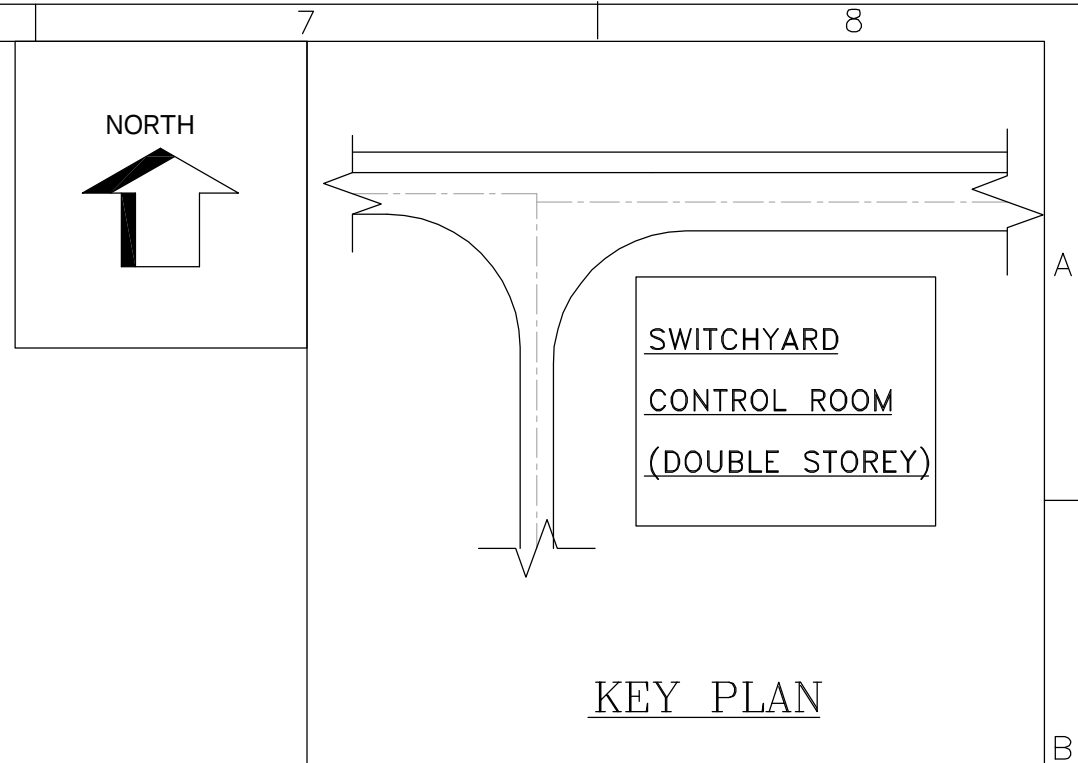
<u>S.No.</u>	<u>Page No.</u>	<u>Clause No.</u>	<u>Deviation</u>	<u>Reason / Justification</u>
--------------	-----------------	-------------------	------------------	-------------------------------

Any deviation not specifically brought out in this section shall not be admissible for any commercial implication at later stage. Except to the technical deviations listed in this schedule, bidder's offer shall be considered in full compliance to the tender specifications irrespective of any such deviation indicated / taken elsewhere in the submitted offer.

Date:

Tenderer's Stamp & Signature





1. ALL DIMENSIONS ARE IN MM. DIMENSIONS SPECIFIED FOR ROOMS ARE IN METRES.
2. -0.50M SHALL BE READ AS FGL OF SWITCHYARD.
3. 400KV SWITCHYARD CONTROL ROOM BUILDING IS A DOUBLE STOREY BUILDING WITH TRENCHES BELOW FLOOR LEVEL FOR CABLE LAYING.
4. CASSETTE TYPE AC WITH FALSE CEILING (AC+FC) SHALL BE PROVIDED IN STAFF ROOM & ELECTRONIC TEST LAB AT GROUND FLOOR AND OFFICE ROOM'S & CONFERENCE ROOM ON FIRST FLOOR. CONTROL ROOM ON THE FIRST FLOOR SHALL BE PACKAGED AIR-CONDITIONED WITH FALSE CEILING. OTHER PARTS OF BUILDING SHALL BE NON AIR-CONDITIONED & WITH NO FALSE CEILING. UNDER DECK INSULATION SHALL BE PROVIDED FOR AC AREAS.
5. DIMENSIONS AND ARRANGEMENT OF PANELS INSIDE CONTROL ROOM BUILDING ARE INDICATIVE AND SHALL BE FINALISED DURING DETAILED ENGINEERING.
6. LT SWITCHGEAR ROOM, BATTERY ROOM, PANTRY, TOILETS AND STORE ROOM SHALL BE PROVIDED WITH EXHAUST AIR FANS.
7. ALL ROOM EXCEPT AHU ROOM SHALL BE PROVIDED WITH WINDOW.
8. ALL THE DIMENSIONS OF THE ROOMS ARE WALL CENTRE TO CENTRE DIMENSIONS.
9. SEPARATE DRAWING SHALL BE SUBMITTED FOR DETAILED ARCHITECTURE AND TRENCH LAYOUT OF CONTROL ROOM BUILDING.
10. PROTECTION/BAY CONTROL PANELS WILL BE LOCATED IN OUTDOOR SWITCHYARD AC KIOSK.
11. ALUMINIUM GLAZED WINDOW SHALL BE PROVIDED IN CONTROL ROOM TO HAVE A CLEAR VIEW OF SWITCHYARD EQUIPMENTS.
12. PROTECTION GRILL SHALL BE PROVIDED FOR ALL THE GLASS WINDOWS FACING SWITCHYARD.
13. BATTERY ROOM AND SWITCHGEAR ROOM DOOR SHALL BE FIRE-PROOF TYPE.
14. ACID SPILL PROOF TYPE OF FLOORING SHALL BE PROVIDED IN BATTERY ROOM.

TATA CONSULTING ENGINEERS LIMITED
VENDOR DOCUMENT REVIEW STATUS

☐ Drawing/Document approved as submitted.
Proceed with fabrication/construction.

☐ Drawing/Document approved subjected to comment.
Proceed with fabrication/construction considering our comments.

☐ Our comments are noted on this marked up drawing.

☐ Our comments are noted in memo attached to the forwarding transmittal letter No. _____ Dated: _____

☐ Correct original of this drawing/document to reflect our comments and resubmit for approval.

☐ Correct original of this drawing/document to reflect our comments and resubmit for records.

☒ Drawings/Documents of this category are for information only and not for approval.
Information furnished on the drawing/document is noted.

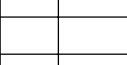
☐ Drawing/Document reviewed against our previous comments and other revisions highlighted and identified.

☐ Drawing/Document returned without review.

☐ Print not enclosed.

Approval conveyed herein neither relieves the Vendor/Contractor of his contractual obligations and his responsibilities for correctness of dimensions, materials, construction, weights, quantities, design details, assembly fits, performance requirements and conformity of the supplies with the Indian Standards (IS) nor absolves the Vendor/Contractor from its limit the purchaser's rights under the contract.

Reviewed by: RAJ _____ Date: _____ **(83 / 2020)**

प्राचर/परिवर्तन का नाम		TELANGANA STATE POWER GENERATION CORPORATION LTD.					
		NALGONDA, INDIA					
NAME OF CUSTOMER		5 x 800 MW YADADRI TPS, NALGONDA					
OWNER'S CONSULTANT:		TATA CONSULTING ENGINEERS LTD. BANGALORE					
 भारत हेवी इलेक्ट्रिकल्स लिमिटेड टांकाविभाग परिवर्तना विभाग BHARAT HEAVY ELECTRICALS LTD. TRANSMISSION PROJECTS DIVISION							
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शीटिंग/TITLE	CONCEPTUAL	400 KV SWITCHYARD	CONTROL ROOM BUILDING LAYOUT	डाटा प्रमाणित डेटा प्रमाणित डेटा प्रमाणित		मिति / पत्रिका दिनांक / पत्रिका दिनांक / पत्रिका	दिनांक / पत्रिका दिनांक / पत्रिका दिनांक / पत्रिका
				PK NK DM/RS		19/02/18 19/02/18 19/02/18	
शीटिंग/TITLE	CONCEPTUAL	400 KV SWITCHYARD	CONTROL ROOM BUILDING LAYOUT	उत्पादन / SCALE		उत्पादन / REV.	
		DEPT.	उत्पादन / SCALE	डाटा.क./DRAWING NO.			
		SIGN.		TB-3-387-316-008		05	
				पृष्ठ ०1 SHEET No. 01 उगता पृष्ठ / NEXT SHEET 02			
				SIZE-A3			

REV. 05	DATE 30.06.20	ALTERED CHECKED NK SKS AG	REV. 04	DATE 15.05.20	ALTERED CHECKED NK SKS AG	REV. 03	DATE 27.04.20	ALTERED CHECKED NK SKS AG	REV. 02	DATE 14.11.18	ALTERED CHECKED NK SKS AG	REV. 01	DATE 27.09.18	ALTERED CHECKED NK SKS AG	
ZONE	REVISED AS PER TCE/TSGENCO COMMENTS DATED 03.06.2020.			ZONE	REVISED AS PER TCE/TSGENCO COMMENTS DATED 05.05.2020.			ZONE	REVISED AS PER MOM DATED 17.12.18.			ZONE	REVISED AS PER TCE/TSGENCO COMMENTS DATED 26.10.18.		

8

FIRST FLOOR

CONTROL ROOM
(20x21)

ALUMINIUM GLAZED WINDOW

शीर्षक/TITLE		CONCEPTUAL 400 KV SWITCHYARD CONTROL ROOM BUILDING LAYOUT		
	DEPT.	उत्तुपात / SCALE	डाईग.नं./DRAWING NO.	प्रनं./REV.
SIGN.			TB-3-387-316-008	05
			पृष्ठ नं./SHEET No. 02	उगता पृष्ठ/NEXT SHEET 03

REV.	DATE	ALTERED	NK	REV.	DATE	ALTERED	NK	REV.	DATE	ALTERED	NK	REV.	DATE	ALTERED	NK	REV.	DATE	ALTERED	NK
05	30.06.20	CHECKED	SKS	04	15.05.20	CHECKED	SKS	03	27.04.20	CHECKED	SKS	02	14.11.18	CHECKED	SKS	01	27.09.18	CHECKED	SKS
		APPROVED	AG			APPROVED	AG			APPROVED	AG			APPROVED	DKM/AG			APPROVED	DKM
ZONE				ZONE				ZONE				ZONE				ZONE			
REVISED AS PER TCE/TSGENCO COMMENTS DATED 03.06.2020.				REVISED AS PER TCE/TSGENCO COMMENTS DATED 05.05.2020.				REVISED AS PER MOM DATED 17.12.18.				REVISED AS PER TCE/TSGENCO COMMENTS DATED 26.10.18.				REVISED AS PER TCE COMMENTS DATED 26.09.18.			

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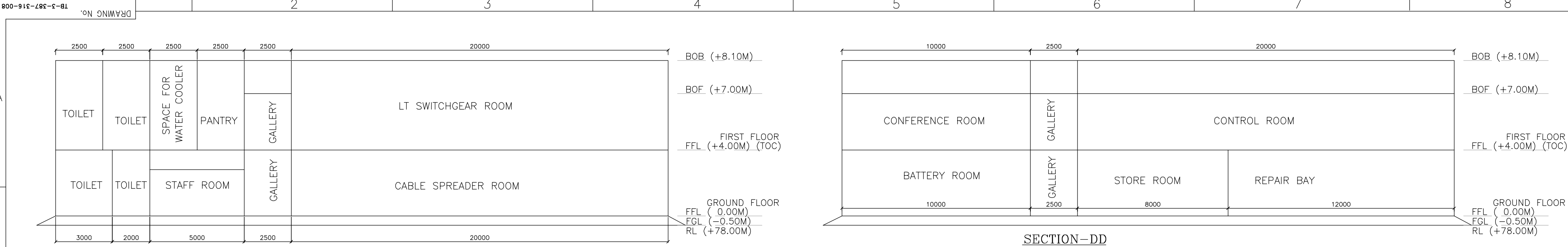
COMPUTER FILE NAME

REF. DRG. NO.

SIGN. AND DATE

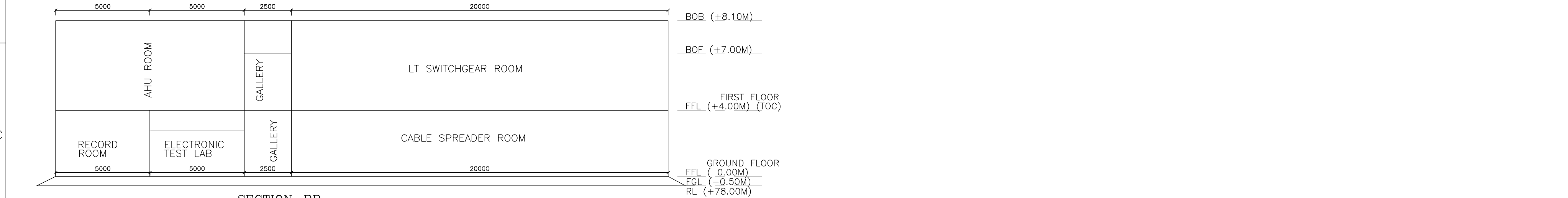
INVENTORY NO

FIRST ANGLE PROJECTION (ALL DIMENSIONS ARE IN MM.)

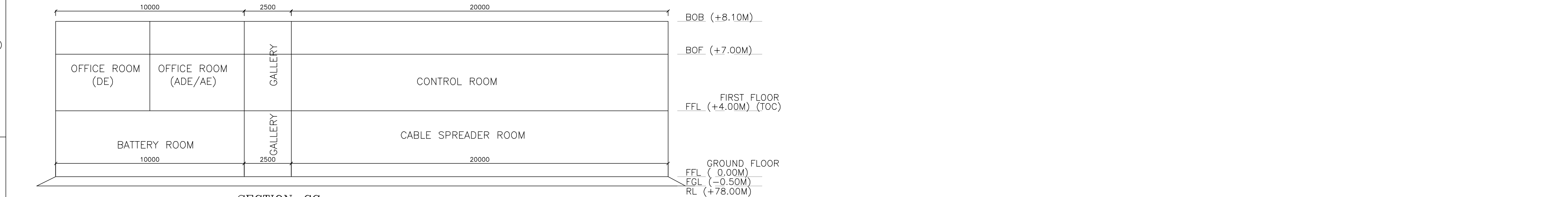


SECTION-AA

SECTION-DD



SECTION-BB



SECTION-CC

LEGEND
FGL: FINISHED GROUND LEVEL
FFL: FINISHED FLOOR LEVEL
TOC: TOP OF CONCRETE
BOF: BOTTOM OF FALSE CEILING
BOB: BOTTOM OF BEAM

NOTE: GROUND FLOOR LINTLE FOR WINDOWS SHALL BE AT 2.1M LEVEL.

REV. 05	DATE 30.06.20	ALTERED NK	CHECKED SKS	APPROVED AG	REV. 04	DATE 15.05.20	ALTERED NK	CHECKED SKS	APPROVED AG	REV. 03	DATE 27.04.20	ALTERED NK	CHECKED SKS	APPROVED AG	REV. 02	DATE 14.11.18	ALTERED NK	CHECKED SKS	APPROVED DKM/AG	REV. 01	DATE 27.09.18	ALTERED NK	CHECKED SKS	APPROVED DKM
ZONE	REVISED AS PER TCE/TSGENCO COMMENTS DATED 03.06.2020.				ZONE	REVISED AS PER TCE/TSGENCO COMMENTS DATED 05.05.2020.				ZONE	REVISED AS PER MOM DATED 17.12.18.				ZONE	REVISED AS PER TCE/TSGENCO COMMENTS DATED 26.10.18.				ZONE	REVISED AS PER TCE COMMENTS DATED 26.09.18.			

JOB NO.		
STATUS		
DISTRIBUTION		
REV. 01	DATE 27.09.18	ALTERED NK
CHECKED SKS	APPROVED DKM	

ग्राहक/परियोजना का नाम		TELANGANA STATE POWER GENERATION CORPORATION LTD. TELANGANA, INDIA	
NAME OF CUSTOMER		5 x 800 MW YADADRI TPS, NALGONDA	
OWNER'S CONSULTANT:		TATA CONSULTING ENGINEERS LTD. BANGALORE	
भारत हेवी इलेक्ट्रिकल्स लिमिटेड		भारत हेवी इलेक्ट्रिकल्स लिमिटेड ट्रांसमिशन परियोजना विभाग	
BHHL		BHARAT HEAVY ELECTRICALS LTD. TRANSMISSION PROJECTS DIVISION	
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ड्राईंग/कॉपी		ड्राईंग/कॉपी	ड्राईंग/कॉपी
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DEPT.		उत्तुपार / SCALE	
SIGN.		ड्राईंग/कॉपी/DRAWING NO.	
		TB-3-387-316-008	
		पृष्ठ/REV.	
		03/05	
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