

CORRIGENDUM -4 FOR NIT NO: CMC/BR/25-26/FK/PR/KG/1310 for Supply, Laying, Testing, Commissioning & Handing over of 33kV 3Cx400 sqmm/66kv 3Cx300 sqmm XLPE Cables with required accessories for providing 33kV/66kV power sources from 220kV substations at Naraina, Dev Nagar & Najafgarh to Grid substations at Mayapuri, Metal Forging, Dlf Mall, Paschim Vihar & G-1 Dwarka on single point responsibility basis.

CORRIGENDUM DATE: 07-07-2026

Sl. No.	Section/Volume	Description	Status
1	Volume – II Financial BID	BOQ for Price Format	Revised BOQ attached as Annexure-1
2		Pre-Bid Queries	Replies Attached as Annexure-2
3	Volume-I Section I GCC Clause no. 45	Project Completion Timeline	1. Package-B1 Scheme no.1 220kV Najafgarh to G-1 Dwarka grid - 7 months 2. Package-B2 Scheme no.2 Naraina to Mayapuri & A-43 Mayapuri to Metal Forging - 7 Months 3. Package-B2 Scheme no.3 220/33KV DTL Dev Nagar substation to DLF mall & A-4 Paschim Vihar - 5 Months
4	Volume-I Annexure 2.07	Summary Of Commercial Terms and Conditions	Attached as Annexure-3
5	Volume-II Package B-1 Scheme- 1 Line-item no. 69	Truss Supply & Fabrication	Attached as Annexure-4
6	Volume-I ITB Clause no 1.05	Due Date for Bid submission	Due date for bid submission has been extended up to 13-07-2026 1530 Hrs

ANNEXURE-I
REVISED BOQ

VOLUME – II

FINANCIAL BID (PRICE FORMAT)

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SUMMARY OF THE QUOTED PRICE**PACKAGE B1**

SCHEME DESCRIPTION	Scheme no.	Location	Total price for supply F.O.R site incl all Taxes & freight (INR)	Total for Erection, Testing & Commissioning incl all Taxes (INR)	Grand Total (INR)
Supply, Laying, Testing & Commissioning Of 66kV 3Cx300 Sq.mm. Cables With Required Accessories on Turnkey Basis	1	220kV Najafgarh to G-1 Dwarka grid			
Total (incl. GST)					
In Words:					

We declare that the following are our quoted prices in INR for the entire project/schemes.

Date:

Bidder Name:

Place:

Bidders Address:

Name & Signature

Designation:

Common Seal:

SUMMARY OF THE QUOTED PRICE**PACKAGE B2**

SCHEME DESCRIPTION	Scheme no.	Location	Total price for supply F.O.R site inclusive all Taxes & freight (INR)	Total for Erection, Testing & Commissioning inclusive all Taxes (INR)	Grand Total (INR)
Supply, Laying, Testing & Commissioning Of 33kV 3Cx400 Sq.mm. Cables With Required Accessories on Single Point responsibility Basis at	2	Naraina to Mayapuri & A-43 Mayapuri to Metal Forging			
	3	220/33KV DTL Dev Nagar substation to DLF mall & A-4 Paschim Vihar substations			
Total (incl. GST)					
In Words:					

We declare that the following are our quoted prices in INR for the entire project/schemes.

Date:

Bidder Name:

Place:

Bidders Address:

Name & Signature

Designation:

Common Seal:

Note: Bidder has to submit Price Bids for all the schemes in the package compulsorily. Any Partial Price bid is liable for rejection.

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GRAND SUMMARY OF THE QUOTED PRICE

S. Nos.	PACKAGE DESCRIPTION	Grand Total (INR)
1	PACKAGE B1	
2	PACKAGE B2	
Total (incl. GST)		
Total in Words		

We declare that the following are our quoted prices in INR for the entire project/schemes.

Date:

Bidder Name:

Place:

Bidders Address:

Name & Signature

Designation:

Common Seal:

Note:

- 1) Bidder may quote either for Package B1 or Package B2 or both Packages. Bidder shall submit a single EMD based on the Packages quoted considering the EMD Value provided in Table 1.
- 2) All prices for the packages quoted are inclusive of taxes and duties, GST and freight etc. Bidder shall include & indicate any others taxes under the applicable law(s) for supply and services to be performed in the purchaser's country.
- 3) Bidder shall include & indicate any others taxes under the applicable law(s) for supply and services to be performed in the purchaser's country.
- 4) The bidder shall, at its own, handle all imported equipment's and handle all formalities for custom clearances, port charges, etc. if any
- 5) All prices for the packages quoted are against the scope of work under the contract shall be executed strictly as per the NIT conditions and the technical specification.
- 6) Quoted prices shall be as per the Bill of quantities (BOQ) as attached. However, any items/material/machinery, not specifically mentioned In BOQ as well as in the technical specifications but required for successful completeness, Erection, Testing and Commissioning of the package awarded shall be deemed to be in the scope of the bidder.
- 7) Insurance as per the clause defined in GCC/SCC and other contract conditions, is included in the quoted prices. However, Bidder shall indicate the value of the insurance taken, separately.
- 8) Site visit is advisable prior to submission of quotation.

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PRICE BID (SUPPLY, SERVICES, CIVIL)**Package No B1****66kV Cable Laying Works**

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Scheme no.1**Laying of 02 nos 66kV 3Cx300sq.mm. XLPE cable from 220KV Najafgarh Grid to G-1 Grid sector-16 Dwarka including 01 no Bay. (Route Length -6500M)****SUPPLY**

S. NO	DESCRIPTION	UO M	QTY	BASIC (RS)	FREIGHT (RS)	GST (RS)	UNIT LANDED (RS)	TOTAL LANDED COST (RS)
1	CBL,PWR,300MM2;3C;66KV;AL, OFC embedded	M	13000					
2	JNT KIT HS ST 66KV 3C 300MM2 XLPE, Compatible with OFC embedded cable	EA	43					
3	TERM KIT HS OD 66KV 3C 300MM2 XLPE, Compatible with OFC embedded cable	EA	2					
4	KIT,TERM,GIS;66KV;3CX300SQMM;DUMMY PLG, Compatible with OFC embedded cable	EA	2					
5	CKT BKR,SF6,OUTDOOR;66KV;2000A;3;31.5KA	EA	1					
6	TRAFO,CURR,1600-800A;1-1-1-1Amp;66KV	EA	3					
7	TRAFO,INST,CVT;V3/110V/V3/110V/V3;66KV	EA	3					
8	ARRESTOR, LIGHTNING, ZINC OXIDE,66KV,10KA	EA	3					
9	BAY MARSHALING BOX	EA	1					
10	CBL ELEC ARM 1.1KV PVC CU 6C 2.5MM2	M	2000					
11	CBL ELEC ARM 1.1KV PVC CU 10C 2.5MM2	M	2000					
12	PANEL,CNTRL,C&R F/LINE FEEDER 66KV	EA	1					
13	ISOLATOR,66KV,2000A,3P,W/O EARTH SWITCH	EA	3					
14	ISOLATOR,66KV,2000A,3P,W/EARTH SWITCH	EA	1					
15	FITTING,S/TENSION,BOLT,F/ACSR SNGL ZEBRA	EA	6					
16	FITTING,S/SUSPENSION,BOLTED,F/ACSR ZEBRA	EA	6					
17	CABLE INSUL DISC 11KV 120KN	EA	144					
18	SPACER,BUS BAR,F/ZEBRA CONDUCTOR	EA	40					
19	T-CONNECTOR,F/ZEBRA CONDUCTOR	EA	40					
20	CNDCTR,ACSR ZEBRA UNINSUL	M	350					
21	STRIP,MTLC,EARTHNG;50X6MM;MS GALVANIZED	KG	2500					
22	ANGL MTL EQ MS 75X75X6MM	MT	1.0					
23	ANGL MTL EQ MS 65X65X6MM	MT	1.5					
24	CHNL,STRCTL,ISMC100;100MM;50mm;7.7m	MT	2.5					
25	WIRE BARE GI STAY 7/9 SWG	KG	75					
26	CLAMP,TENSION,FOR 7/9SWG WIRE	EA	8					

27	MAT,INSLTNG;5M;1M;3MM;ELASTOMER	NO S	15					
28	FTG,DBL SUSPN BOLTED;TWIN ZEBRA	NO S	6					
29	FTG,DBL TENSION BOLTED;TWIN ZEBRA	NO S	6					
30	CNCTR,ELEC TE,CWDG AMPACT;ZEBRA TO ZEBRA	NO S	45					
31	RD,ERTH,40MM;3000MM;BEAR MS	MT	3					
32	Danger Plates	EA	8					
33	Number Plates	EA	8					
34	Phase Plates	EA	8					
35	Circuit Plates	EA	8					
36	TAG, SFTY, RCTNGL;AL;MTLC	NO S	1160					
37	Warning Tape per BSES Design specification (Width=150mm, Thickness=0.3u)	M	5300					
38	RCC Cable protection cover as per BRPL specification & drawing. (50 Thick 550 mm wide)	EA	5596					
39	Passive Ball Marker	EA	130					
40	Electronic Ball Marker at every at every joint - Active	EA	43					
41	HDPE Pipes, PN 6 class PE 80 - 225 mm dia.	M	7200					
42	Cable Route/ Joint Marker as per approved drawing. For 33/66 KV cables.	EA	152					
43	Galvanized Tower/Gantry structure including Tower and beam	KG	5000					
44	Galvanized Nut & Bolts	KG	250					
45	Rubber Mat 1000 mm wide (5 mtr. Length), 33kV grade	EA	15					
46	Optical Fiber Cable (48 F ,36 nos single mode,G657A1+12 nos multi mode OM2)	M	2000					
47	40 mm HDPE duct	M	1890					
48	Joint enclosure 48F Optic Fiber Cable (48 F ,36 nos single mode, G657A1+12 nos multi-mode OM2)	EA	4					
49	Coffin for Joint	EA	43					
50	Glands 10X2.5MM	EA	60					
51	Glands 5X 2.5MM	EA	60					
52	Scada Supply (Annexure- B, Part- A)	EA	1					

ANNEXURE -B PART A SCADA SUPPLY: - DTL NZF - SCADA BOQ FOR BAY ADDITION WORKS

DTL NZF - SCADA BOQ for BAY Addition Works				
S.No	BOQ	Approved Make	Unit	Qty
1	16 core, 1.5 mm ² , multi stranded copper cable, ARM FRLS 1.1KV HRPVC, Application: digital signal feedback. Multistranded Copper, Dielectric with stand 2.5 KV at 50 HZ for 5 Min.	KEI/POLYCAB	Mtrs	300
2	2 core, 2.5 mm ² , multi stranded copper cable, ARM FRLS 1.1KV HRPVC, Application: Auxiliary Supply	KEI, PARASHIELD & POLYCAB	Mtrs	50
3	Armored RS485, Twisted pair, 2 pair x 0.5 sqmm, Screened, 24 gauge Belden YJ70124 or equivalent.	BELDEN	Mtrs	100
4	Un-Armoured RS485, Twisted pair, 2 pair x 0.5 sqmm, Screened, 24-gauge Belden YJ70124 or equivalent.	BELDEN	Mtrs	50
5	Single compression Metal Glands 1 inch, Material : Brass/Stainless steel with nikel plating & Suitable for Industrial grade, Shall comply to IS 12943:1990/IEC 62444, shall withstand -60 deg to 200 deg, Heavy duty.	COMEX or Equivalent	Nos	10
6	Single compression Metal Glands 1/2 inch, Material : Brass/Stainless steel with nikel plating & Suitable for Industrial grade, Shall comply to IS 12943:1990/IEC 62444, shall withstand -60 deg to 200 deg, Heavy duty.	COMEX or Equivalent	Nos	10
7	Single Core - 10 Sqmm Cable for Panel Earthing	KEI, PARASHIELD & POLYCAB	Mtrs	50
8	Lug - 10 Sqmm - Ring Type	STD Make	No's	4
9	SW, ENET, 6 TX, 2 FX DUAL REDUNDANT	RUGGEDCOM/ HIRSCHMANN	NOS	2
10	Armored CAT-6 Cable	DLINK/BELDEN	Mtrs	305
11	CBL, FO, MULTIMODE; ARMD; WAVE LENGTH 1300NM	Finolex, preston or reputed make	Mtrs	100
12	CBL, FO, FO; MULTI MODE; LC-LC, LENGTH 3M	Finolex, preston or reputed make	Nos	6
13	BOX, ELEC, FIB LC MULTIMODE; 12PORT; LIU	Preston, Phoenix or reputed make	Nos	2
14	CRD, CPU, 2X ETH, 6X RS232-RS485SRL PORT	OEM-SYNERGY SYSTEM SOLUTIONS	NOS	1
15	Synergy Make Rack, 19IN 4U HIGH RACK	OEM-SYNERGY SYSTEM SOLUTIONS	NOS	1
16	CRD, CPU, SGL ENDED DIGTL I/P 48VDC input-E70-DIA-002	OEM-SYNERGY SYSTEM SOLUTIONS	NOS	1
17	Digital Output Cards	OEM-SYNERGY SYSTEM SOLUTIONS	NOS	1
18	CRD, CPU, PWR SPPLY MDL	OEM-SYNERGY SYSTEM SOLUTIONS	NOS	2
19	CRD, CPU, IO SCNR MDL	OEM-SYNERGY SYSTEM SOLUTIONS	NOS	1
20	Cables With Connector for DI, DO & AI Module	OEM-SYNERGY SYSTEM SOLUTIONS	NOS	2

21	DO Contactors/CMR with Internal Wirings	Paramount or Equivalent	No's	10
22	MFM - ACCORD MAKE MULTI FUNCTION TRANSDUCER TYPE : MFM02 PTR : 1KV-999.9KV/50-550V AC CTR : 1A-9999A/1A-5A AUX.SUP:20-60V DC CLASS:0.2S,1KWH = 36000PULSES SR.NO : 0620/2512	ACCORD	No's	9390

Materials Specs with Approved Makes		
B	Materials	Approved Makes with Specs
1	16 core, 1.5 mm ² , multi strained copper cable, ARM FRLS 1.1KV HRPVC ,Application: digital signal feed back Multistranded Copper,Dielectric with stand 2.5 KV at 50 HZ for 5 Min.	KEI & POLYCAB Voltage Grade :1100V, Standard Applicable IS1554 P-1, Conductor: Material : Annelated Bare Copper as per Class-2 of IS 8130, Nominal Cross Sectional Area : 1.5 Sqmm, Shape od Conductor : Stranded Non-Compacted Circular, Nominal Diameter : 1.6 mm, Max.DC Resistance at 20 deg - 12.10 Ohms/Km, Approx AC Resistance at MAX.operating Temp 15.25 Ohms/Km, Short Circuit Current for 1 sec - 0.16KA. Max Conductor Temp , Rated - 85 deg.C , During Short Circuit - 160 Deg.C, Insulation : Extruded HR PVC Type-C as per IS5831 & Thickness - 0.8mm, Core Identifications : All cores shall have same base color with number printing in contrast colour. Inner Sheath : Material - Extruded HR PVC Type ST-2 as per IS 5831, Thickness - 0.3 mm,Color-Black Armour: Material : Galvanised Steel Round Wire?Flat Strip as per IS 3975. Nominal Dimension of armour : 4 x 0.8,Type : Strip, Outer Sheath: Material : Extruded FR LSH PVC Type ST-2 as per IS 5831, Thickness - 1.40 mm,Color-Black Cable Data: Approximate Over all Dia of Cable 22.1 mm,Tolerance on Overall dia : +_2.0mm.
2	2 core, 2.5 mm ² , multi strained copper cable, ARM FRLS 1.1KV HRPVC ,Application:Auxiliary Supply	KEI,PARASHIELD & POLYCAB

3	Armored RS485, Twisted pair, 2 pairx 0.5 sqmm, Screened, 24 gauge Belden YJ70124 or equivalent.	Armored RS485, Twisted pair, 2 Pair, Screened, ,24 gauge Belden YJ70124 or equivalent. Material : Annealed Tin Copper. No of Diameter of strand in conductor : 7 No's/0.30 mm, Dia of Wire : 0.30 mm, Resistance at 20 deg : 70.3 Ohms/KM Material : High density Polyethylene. Thickness of Insulation : 0.6 mm/0.5 mm for Un Armored Elongation at Break : 150%(min) Pairing : Each Pair has different colors. HV Test at Room Temp : 2.0KV for 1 Minute. Material of Screen : Aluminium Mylar Type. Thickness of Tape : 30x40 Microns/30x50 Microns for Un Armored Copper Breeding : 90% ATC / 90% for Un Armored. Armouring : Gsivanised steel Wire. Outer Sheath : FRLS PVC Thickness of Sheath : 1.24 mm./1 mm for Un Armored.
4	Single compression Metal Glands 1 inch & 1/2 Inch	Approved Make : COMEX Gland I Inches Single Compression Gland, Material : Brass/Stainless steel with nikel plating & Suitable for Industrial grade, Shall comply to IS 12943:1990/IEC 62444, shall withstand -60 deg to 200 deg, Heavy duty. Make : Comex or Equivalent.
5	GI CABLE TRAY : Perforated GI Cable Trays CABLE TRAY – Length :2.5 Mtrs, Thickness-3mm, Depth :100MM, Width :300MM.	STD
6	SW, ENET, 6 Ports, 10/100BASE-TX RJ45, 2 FO Ports with LC-LC, Aux - PS1 48V DC & PS2 250 V DC DIN Rail Mounted. Operating Temp -40 deg to 80 Deg. Layer 2, Keema Certified.	RUGGEDCOM/HIRSCHMANN The Ethernet/Fiber optic switches Should be a managed switch and are intended to be installed in the control room and shall be complaint to IEC-61850 electrical substation networks and IEEE 1613 standards. Provisions for RSTP/PRP Protocols should be provided on the same switch. Switch design should withstand for power substation automation applications that operate in extremely harsh environments (High and medium voltage S/Stn environments) and it also withstands vibration, electrical surges, fast transients, electrostatic discharge, and extreme temperatures and humidity. Switch features and configuration should be easy to user interface and it must directly integrate with any other IEC-61850 devices. Shall be managed type and have KEMA certifications for IEC 61850. 2 Number FO Ports shall support Multimode fiber in 10/100 Mbps ports on an SFP (simple form factor pluggable), for ease of functionality and maintenance. Hot Standby/Dual PSU & Redundancy in power source. Link Failure contact alarm - Failure contact alarm shall be achieved by hardware contact that is activated when a link problem occurs. Logs and alarms with Time Stamp - Statistics about link status alarms are to be stored with the accurate timestamp duly tracing all events. Advanced security features - The switches shall support different user levels with different passwords, including the facility to work with different VLANs, following the 802.1Q standard, port security based on MAC addresses, possibility to disable unused ports, authentication protocols shall be provided. High Speed Implementation of RSTP protocol- The switches shall support STP, PRP, Star and RSTP protocols, and shall facilitate for

		recovery and the fault recovery times shall be within 5 -10msec per switch, always fulfilling the RST protocol. Time Synchronization to RTU/Server and Connected IED/BCU - The switch shall have an internal clock and shall be synchronized from a network SNTP/NTP server, so all time stamped events shall be with a reliable time reference. Tools with License - Diagnostics tool, other necessary tools with a multi user license to be provided along with the switch. Mounting Options - Switch should be DIN Rail Mountable & Suitable Rack with MCB, T.B, Gland Plate & Internal Wiring to be consider for wall fixing. Local USB port for emergency boot is Mandatory. Console Cable to be supplied along with Switch for Maintenance. Operating Temp -40 deg to 80 Deg. Network based distributed security by having a firewall on each port of the switch for all the standard Industrial protocol like IEC-61850 should be available. The switch shall have the facility of Port mirroring and the user shall configure one port to replicate traffic flows of different ports, so the system administrator can monitor the incoming, outgoing, or all kinds of traffic that is going through the ports under study. ITU-T G.8032 support for Ethernet Ring redundancy, ensuring fast failure detection is preferred. The switches shall sustain the stringent levels in temperature range and electromagnetic immunity defined in the 61850-3, but also the advanced functional requirements defined for operation with other IEC-61850 devices. The Switch should be certified on IEC-61850, functional & Environmental specifications by KEMA. The switches shall have advanced security features to be implemented to avoid unauthorized access to the system Such as RADIUS/TACACS & VPN gateway support with IP Sec & SSH.
7	FO Patch Cable 1300nm_LC-LC Multimode - Patch Cable Non Rugged	Approved Make : Preston Or Equivalent. Multimode, FO Patch Cable 1300nm, Core Size 62.5µm, Clad Size 125µm Duplex, Insertion loss <=0.2db, Ceramic Connectors Ferrules, Minimum 100 mating cycles, Operating Temp -40 to 80 deg C. Type of Material: Glass, Number of Fibers: 2(Rx)(Tx), Un armored Both End Connectors: LC-LC, outer Sheath Colour : Orange, Length - as per site requirements.
8	LIU 12 Ports MM LC Type Panel Mounted LIU BOX including LC Pigtaills with adapter panel .EIA/TIA/IEC Complaint, Insertion loss < 0.1dB(for adapters)	Make - Preston or Equivalents LIU 12 Ports MM LC Typ Panel Mounted LIU BOX including LC Pigtaills with adapter panel .EIA/TIA/IEC Complaint, Insertion loss < 0.1dB(for adapters), No Of Ports - 12, Fiber Optic Connectors - LC Type.
9	Tech.Specifications of CAT-6 Cable	
	Description	Technical Data
	Approved Make	DLINK/BELDEN
	Electrical	
	Characteristic Impedance	100 +/- 60hm,
	Conductor resistance	< 9.38 ohm / 100m,
	Operating Voltage	72 Vdc,
	Dielectric Strength	1.0kV dc or 0.75kV ac for 1 min,
	Insulation Resistance	100 MOhm
	Velocity of propagation (NVP)	69%
	Mechanical	
	Insulation thickness	0.2mm nominal
	Insulation type	High Density Polyethylene

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	Cable diameter	6.1 mm nominal
	Conductor type	23 AWG solid copper conductor for superior conductivity
	Jacket Material	FR-PVC
	Operating Temperature range	Range-20° to +70°C
	Color code	1-2 white-orange stripe and Orange 4-5 white-Blue stripe and Blue 3-6 White-Green stripe and Green 7-8 White-Brown stripe and Brown Issue: CAT6
		Meets TIA /EIA-568-C.2 requirements and comply with CAT-6 Compliant for 10/100/1000 Mbps bandwidth Performance specification up to 250 MHz UV resistance outer sheath Inner Sheath Flame Retardant (IEC60332-1) Suitable for Outdoor application,Fire resistant PVC jacket Rugged Double sheath construction RoHS Compliant ECCS Tape armoring provides Excellent Mechanical protection,
10	Tech.Specifications of FO MM Cable	
	Parameters	Technical Data
	Make	PRESTON or Equivalent
	Characteristics	
	Cable Type	6 Core Multi mode Cable
	Fiber Type	62.5/125 mm
	Armoured /Unarmoured	Armoured
	Attenuation	≤ 3.2 dB/km @850nm, ≤1.2 dB/km @1300nm
	Band Width	≥200 MHz.km @850nm, ≥500 MHz.km @1300nm
	Core Diameter	62.5 um ± 3
	Core Cladding Concentricity Error	≤ 1 μm
	Cladding Diameter	125 ± 1 μm
	Cladding Non-circularity	≤ 1 %
	Coating Diameter (Colored)	250 ± 15 μm
	Mechanical Characteristics	
	Tensile Strength	2670 N
	Crush Resistance	2000 Newton
	Impact	25 Nm
	Torsion	± 180 °
	Min. Bending Radius	80mm (temporary) 160mm (permanent)
	Temp.Performance	
	Operating/ Installation	Temp -30 to +70°C
	Cable Construction Details	
	Parameters	Dimensions
	No. of Fibres	6 Color Bl Or Gr Br Sl Nt
	Number of Loose Tubes	1 Color Nt
	Outer Cable Diameter	≥8.0 mm ± 0.5
	Colour of Fiber	BLUE, WHITE, ORANGE, GREEN, BROWN & SLATE
	Max. Installation Tension	1500 Newton
	Peripheral Strength	
	Member	1.0 ± 0.05 mm, FRP Rod
	Inner Sheath	1.8 mm (min),HDPE - Black
	Armoring	0.150 mm,
	Outer Sheath	1.5 mm (min.),HDPE - Black



BSES RAJDHANI POWER LIMITED

	Overall Cable Diameter	11.5 ± 0.5 mm
	Cable Weight	125.0 ± 15 kg/km
		Approved Make : Preston Or Equivalent.
	FO Patch Cable 1300nm_LC-LC	Multimode, FO Patch Cable 1300nm, Core Size 62.5µm, Clad Size 125µm Duplex,Insertaion loss<=0.2db,Ceramic Connectors Ferrules,Minimum 100 mating cycles,Operating Temp -40 to 80 deg C. Type of Material: Glass, Number of Fibers: 2(Rx)(Tx),Un armored Both End Connectors:LC-LC,outer Sheath Colour : Orange,Length - as per site requirements. Multimode - Patch Cable Rugged

ERECTION, TESTING & COMMISIONING (ETC)**SCHEME 1: LAYING OF 02 NOS 66KV 3CX300SQ.MM. XLPE CABLE FROM 220KV
NAJAFGARAH GRID TO G-1 GRID SECTOR-16 DWARKA INCLUDING 01 NOS BAY. (ROUTE
LENGTH -6500M)**

S. NO.	DESCRIPTION	UOM	QTY	BASIC (RS)	GST (RS)	UNIT LANDED (RS)	TOTAL LANDED COST (RS)
1	Digging of cable trench as per specification and drawings. Rate is inclusive of digging and backfilling. Measurement shall be as per actual depth excavated. For Dense Carpeted bituminous Road.	CUM	7050				
2	Digging of joint pit suitable for 33/66 KV cable joint box and covering the joint box with sand and providing protection as per BRPL design. For Dense carpeted bituminous road.	CUM	660				
3	Digging of test pits of required size (not less than 1/2 Mtr. Wide at site for identification of cable route). Relevant volume shall be deducted from quantities of same item of cable digging For Dense carpeted bituminous road/ CC Road	EA	217				
4	Grouting of cable mounting structure with cement concrete having ratio 1:3:6 including fixing with gantry structure. Badarpur, cement and stone ballast shall be supplied by contractor. Suitable for mounting 33/66 KV cable.	EA	2				
5	Removal of Malba including Loading/ Unloading on own vehicle. The payment shall be restricted to the quantity of sand laid.	CUM	2385				
6	Laying of underground cable in trench, covering with RCC cable cover, covering with sand ,Sand cushion will be min 75mm below and 75mm above the cable, fixing of cable identification tags (9" X 4") at every 30 Mtrs, Laying of warning tape above 250mm of the docket, refilling the trench and ramming the surface & removal of malba if any, including watch and ward till charging of cable (This activity includes only labour jobs) for 66 KV three core cable Running Mtr	M	13000				
7	Providing and Laying Sand cushioning for cable route as per BRPL specification and drawing.	CUM	1160				
8	Fixing of Danger plates	EA	8.00				
9	Fixing of Number plates	EA	8.00				
10	Fixing of Phase plates	EA	8.00				
11	Fixing of Circuit plates	EA	8.00				
12	Installation of TAG,SFTY,RCTNGL;AL;MTLC	NOS	1160				

13	fixing of Cable Route/ Joint Marker as per approved drawing. For 33/ 66 KV cables.	EA	152				
14	Watch & Ward Charges.	DAY	90				
15	Crossing of roads by trench-less technology by laying of HDPE pipe excluding supply of pipe. Laying by HDD Machine Moling. Drilling and laying. 225mm dia.	M	2400				
16	Crossing of roads by trench-less technology by laying of HDPE pipe excluding supply of pipe. Laying by Pneumatic Jack Hammer Road Cutting. Laying. 225mm dia.	M	1200				
17	Laying of HDPE pipe for crossing small Nallas in the cable route or in the existing trenches	M	3600				
18	Providing and laying in position specified grade of reinforced cement concrete excluding the cost of shuttering, centring, finishing and reinforcement-All work up to plinth level: 1:2:4 (1cement :2 coarse sand :4 graded stone agg.20mm nominal size.)	CUM	20				
19	Making of civil goomitties around GI earthpipe as per standard design of BSES. Supply of necessary bricks, cement, badarpur, sand, C1 cover of size 1'x1' and providing the same at the top of goomitties.	EA	15				
20	Charges for providing continuous steel barricade 1.2 mtr high including cost of all material plant consumables transport and labour for shifting placing painting and regular maintenance.40% qty for selected portion	M	6500				
21	Mounting of 66KV,3x300 sq.mm. XLPE cable with cable end box on the steel structure and fixing it with suitable wooden cleats (wooden cleats shall be supplied by contractor) i/c. its jumpering with the isolator as required.	EA	4				
22	Charges for carrying out Route survey and identification of underground utilities of various civic agencies before/ during execution of scheme involving cable laying work. Route length will be considered for payment. Route length will be specifically verified by DGM.	M	6500				
23	Survey and submission of Ground penetration report for entire Route.	M	6500				
24	Detail survey i/c. preparation of site plan & profile.	KM	6.5				
25	Erection of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and minor modification in support structure for fixing as required. For 66 kV LA's with or without surge counter	EA	3				
26	Stringing and sagging of main bus and cover bus bar with ACSR Zebra conductor and Jumpering of various electrical equipment by ACSR Zebra conductor in between equipment to equipment of any length required and from bus bar to equipment of	M	350.00				

	any length required with the help of PG clamps, T connectors and other clamps. For 66 kV /33KV Yard					
27	Excavation of trench below the ultimate good earth level in following type of soil including refilling after laying of earth mat riser, fixing of earth electrodes welding etc. For Soft soil	CUM	215.00			
28	Laying of MS flat in the excavated trench including risers, equipment earthing, overlapping of MS flat at the joints by twice of its width and welding of over lapping and cross joints including supply of electrodes, red oxide/bitumin compound , paint etc. and Laying of GI earth strip for equipment earthing, along the wall, trench, cable trays etc including fabrication of supports/cleats and fixing with wall bolts, welding works, painting of earth strip and riser with red oxide paint/bitumin compound and final. For 50X6 sqmm	M	892			
29	Installation of RCC Cable Cover	EA	5596			
30	Installation of Warning Tape as per the Specification of BRPL	M	5300			
31	Installation of single 66KV STRAIGHT THROUGH JOINTING KITS 3X300 SQMM XLPE with OFC kit	NOS	43			
32	Installation of single 66KV END TERMINATION KITS - OUTDOOR 3X300 SQMM XLPE, with OFC kit	NOS	2			
33	Installation of single 66KV END TERMINATION KITS - OUTDOOR 3X300 SQMM XLPE, with OFC kit (GIS KIT)	NOS	2			
34	Installation, testing and commissioning of RFID active Electronic ball markers (for 33kV and 66kV joint)	EA	43			
35	Installation, testing and commissioning of RFID passive Electronic ball markers (for 33kV and 66kV joint)	EA	130			
36	laying of optical fibre cable	M	2000			
37	Laying of 40mm dia HDPE Duct in open trench	M	1890			
38	Splicing of 48F Optic Fiber Cable	EA	4			
39	Installation of LIU (OFC) with wall	EA	4			
40	Splicing Termination 48F Optical Fiber Cable at LIU	EA	4			
41	installation of LDR	EA	2			
42	Digging of earth pit up to depth of 10 ft. in-rocky/ semi rocky as per feasibility at site of embedding 600 x600mm earth plate with M.S Flat 50 x8 mm running the same through 3/4 " dia G.I. grouting pipe. Earth Plate to be covered by charcoal 200kg. And 10	EA	15			
43	Fabrication of MS structure as well as galvanised for different equipment like isolator, C.T.'s, P.T.'s, CVT, LA's etc, cable supporting structure including supply of nuts and bolts, consumables, welding electrode,	MT	6.5			

	hacksaw blades etc. excluding supply of steel.						
44	Erection of MS as well as galvanised for different equipment like isolator, C.T.'s, P.T.'s, CVT, LA's etc, cable supporting structure including supply of nuts and bolts, consumables, welding electrode, hacksaw blades etc. excluding supply of steel.	MT	11.5				
45	Painting of any M.S. Structure with one coat of Red oxide and two coats of AL. Paint ISI marked including supply of paint by contractor.	Kg	6500				
46	Providing and laying in position specified grade of reinforced cement concrete excluding the cost of shuttering, centring, finishing and reinforcement-All work up to plinth level: 1:1.5:3 (1cement :1.5coarse sand :3graded stone agg.20mm nominal size.)	CUM	20				
47	Excavation of trench below the ultimate good earth level in following type of soil including refilling after laying of earth mat riser, fixing of earth electrodes welding etc. For Semi rocky/rocky soil with providing of good earth	CUM	240				
48	Laying, dressing, megger and continuity test of PVC, armoured control and auxiliary power cables in excavated trench/cable trays .For 10CX2.5 sqmm, Cu	M	2000				
49	Laying, dressing, megger and continuity test of PVC, armoured control and auxiliary power cables in excavated trench/cable trays .For 6/5CX2.5 sqmm, Cu	M	2000				
50	Erection of double compression gland including termination For 10CX2.5 sqmm, Cu	EA	60				
51	Erection of double compression gland including termination For 5CX2.5 sqmm, Cu	EA	60				
52	Erection testing and commissioning of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and minor modification in support structure for fixing as required. For 66 kV isolator without earth switch including testing and commissioning	EA	3				
53	Erection testing and commissioning of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and minor modification in support structure for fixing as required. For 66 kV isolator with one earth switch including testing and commissioning	EA	1				
54	Erection of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and minor modification in support structure for fixing as required. For 66 kV/33KV CVT	EA	3				

55	Erection testing and commissioning of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and minor modification in support structure for fixing as required. For Bay Terminal/Marshalling Kiosk	EA	1				
56	Erection testing and commissioning of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and minor modification in support structure for fixing as required. For Control and relay panel for Transformer line Bus coupler Erection testing and commissioning 66 kV C & R panel	EA	1				
57	Erection testing and commissioning of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and minor modification in support structure for fixing as required. For 66 kV SF6 circuit breaker with mechanism and structure including testing and commissioning	EA	1				
58	DELETED						
59	Stringing and sagging of screen wire 7/9 gauge including assembly and erection of hardware fitting and connecting earthing to the gantry structure by crimping of copper socket. For 66 kV/33 KV Yard	M	120				
60	Stringing of Double Tension String Insulator with double tension clamp for twin Zebra conductor	EA	6				
61	Stringing of Single Tension String Insulator with single tension clamp for single Zebra conductor	EA	6				
62	Stringing of Single Suspension String Insulator with double tension clamp for twin Zebra conductor	EA	6				
63	Stringing of Single Suspension String Insulator with single tension clamp for single Zebra conductor	EA	6				
64	Stringing of Bolted type 'T'/PG Connector suitable for single Zebra conductor	EA	40				
65	Stringing of Rigid Spacer Clamp with tee – off suitable for single Zebra conductor and double zebra to single zebra convertor.	EA	40				
66	Laying of MS flat in the excavated trench including risers, equipment earthing, overlapping of MS flat at the joints by twice of its width and welding of over lapping and cross joints including supply of electrodes, red oxide/ bitumin compound , paint etc. and Laying of GI earth strip for equipment earthing, along the wall, trench, cable trays etc including fabrication of supports/cleats and fixing with wall bolts, welding works, painting of earth strip and riser with red oxide paint/bitumin compound and final. For 40 mm dia MS Rod	M	300				

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67	Scada Erection (Annexure- B, Part- B)	EA	1				
68	Civil Charges (Annexure- C: Detailed BOQ Attached)	LS	1				
69	Making Truss on Najafgarh Nallah crossing) (Annexure -D)	LS	1				
70	VLF High Voltage test as per IEEE 400.2	LS	1				
71	VLF Tan Delta as per IEEE 400.2	LS	1				
72	VLF Partial Discharge as per IEEE 400.2	LS	1				
73	Sheath integrity test for each length of drum	LS	1				

BSES

ANNEXURE - B PART B SCADA ERECTION: - DTL NZF - SCADA BOQ FOR BAY ADDITION WORKS

S No	Services Description	Unit	Qty
1	Cable laying and tagging (16 core, 1.5 mm ²) & Termination with Petty Materials Such as connectors,Lugs,Jacks,White Sleeves,Ferrules,etc...	mtr	300
2	Cable laying and tagging (2 core, 2.5 mm ²) with Petty Materials Such as connectors,Lugs,Jacks,White Sleeves,Ferrules,etc...	mtr	50
3	Cable glanding and termination	Nos	20
4	Laying and termination of RS485 cable thru metal conduit/GI pipe with proper tagging, Glanding and dressing upto RTU panel)	Mtrs	100
5	Laying and termination of CAT-6 /FO Cables thru metal conduit/GI pipe with proper tagging, Glanding and dressing upto RTU/Switch panel)	Mtrs	411
6	Material transportation from Multiple Sites	Nos	2
7	Installation of Switch Panel's/Ethernet Switches & LIU in RTU/CRP	Panel's	4
8	Cable Crimping Work+Supply of Jack with Ferrules (Whit Sleeve with Black Printed Ferrules)	No's	40
9	Cable Terminations with Suitable Insulated Lugs	No's	100
10	Miscellaneous Work(Cable Tray,Civil)	Lot	1
11	Installation, commissioning and integration of cards to the existing system	No's	1
12	Splicing of Optical Fibers	No's	8

ANNEXURE - C: CIVIL CHARGES**Construction of new bay, power cable and ctrl cable trench at DTL NJF Grid including****1 LA Foundation 2 Set****2 ISO Foundation 2 Set****3 PT Foundation 1 Set****4 CB Foundation 1 No.****5 Tower Foundation 1 No.****6 Power Trench 30 Mtr****7 Ctrl cable Trench 20 Mtr****8 Yard development & Minor Miscellaneous work 1 Bay**

Detailed Estimate for above work is as below:

S.NO	SERVICE DESCRIPTION	UNIT	QTY
1	Demolishing cement concrete manually/ by mechanical means including disposal of material within 50 meters lead as per direction of Engineer - in - charge. Nominal concrete 1:4:8 or leaner mix (i/c equivalent design mix)	CUM	15.82
2	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift up to 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m - All kinds of soil.	CUM	41.68
3	Earth work in excavation by mechanical means hydraulic excavator/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead up to 50 m and lift up to 1.5 m, as directed by Engineer-in-charge. All kinds of soil	CUM	169.91
4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	CUM	63.48
5	P/L cement concrete - all works upto plinth level: 1:4:8 (1 Cement: 4 coarse sand: 8 graded stone aggregate 40 mm nominal size).	CUM	11.13
6	P/L R.C.C. up to plinth level: 1:1.5:3 (1 cement: 1.5 coarse sand: 3 graded stone aggregate 20 mm nominal size)	CUM	43.06
7	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. above plinth level up to floor five level, excluding cost of centering, shuttering, finishing and reinforcement: 1:1.5:3 (1 cement : 1.5 coarse sand(zone-III) : 3 graded stone aggregate 20 mm nominal size).	CUM	17.27
8	Centering and shuttering including strutting, propping etc. and removal of form for all heights: Foundations, footings, bases of columns, etc. for mass concrete	SQM	112.37
9	Centering and shuttering including strutting, propping etc. and removal of form for all heights: Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc. Sqm	SQM	193.00
10	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete up to plinth level. Cold twisted bars	KG	5687.88
11	6 mm cement plaster 1:3 (1 cement: 3 fine sand) finished with a floating coat of neat cement and thick coat of Lime wash on top of walls when dry for bearing of R.C.C. slabs and beams.	SQM	138.46
12	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade: Two or more coats on new work	SQM	44.59
13	Steel work in built up tubular (round, square or rectangular hollow tubes etc. trusses etc. including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer, including welding and bolted with special shaped washers etc complete: hot finished welded type tube	KG	19.83
14	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level: 1:2:4 (1 cement: 2 coarse sand (zone-III): 4 graded stone aggregate 20 mm nominal size)	KG	0.07
15	Painting with Aluminium paint of approved brand and manufacture to give an even shade. Two or more coats on new work	SQM	0.44
16	Painting with Aluminium paint of approved brand and manufacture to give an even shade: One or more coats on old work	SQM	2.00
17	Brick work with common burnt clay F.P.S. (non-modular) bricks of class designation 7.5 in foundation and plinth in: Cement mortar 1:4 (1 cement: 4 coarse sand)	CUM	5.21
18	12 mm cement plaster of mix: 1:4 (1 cement: 4 coarse sand)	SQM	56.55
19	15 mm cement plaster on rough side of single or half brick wall of mix: 1:4 (1 cement: 4 coarse sand)	SQM	7.50
20	Neat cement punning.	SQM	64.05
21	Cement concrete flooring 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate) finished with a floating coat of neat cement, including cement slurry, but excluding the	SQM	48.00

	cost of nosing of steps etc. complete. 40 mm thick with 20 mm nominal size stone aggregate		
22	Demolishing brick work manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 meters lead as per direction of Engineer-In-Charge - in cement mortar	CUM	3.60
23	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level: 1:5:10 (1 cement: 5 coarse sand (zone-III) derived from natural sources: 10 graded stone aggregate 40 mm nominal size derived from natural sources)	CUM	28.05
24	Disposal of building rubbish/ malba/ similar unserviceable, dismantled or waste materials by mechanical means, including loading, transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, beyond 50 m initial lead, for all leads including all lifts involved.	CUM	189.98
25	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	KG	3725.61
26	Flat brick flooring with over burnt bricks on bed of 10 mm thick cement 1:6 (1 cement: 6 coarse sand) & filling the joints with same cement mortar	SQM	280.46
27	Supplying and spreading uniformly in yard of grid s/stn. blue stone aggregate 20 mm single size of good quality i/c loading, unloading for all leads & lifts complete, as per direction of Engineer in charge.	CUM	28.05
28	Demolishing flat brick flooring in cement mortar including stacking the serviceable material and disposal of unserviceable material within 50 m lead	SQM	280.46

ANNEXURE - D: FABRICATION AND ERECTION OF TRUSS OVER DRAIN AT NEAR KAKRAULA VILLAGE BRIDGE, NAJAFAGARH INCLUDING FOUNDATION

S.NO	SERVICE DESCRIPTION	UNIT	QTY
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth, 1.5m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth, lead up to 50m and lift up to 1.5m, as directed by Engineer-in-Charge. All kinds of soil	CUM	208.15
2	Extra for every additional lift of 1.5 m or part thereof in excavation /banking excavated or stacked materials. All kinds of soil.	CUM	102.31
3	Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering - All work up to plinth level : 1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources : 8 graded stone aggregate 40 mm nominal size derived from natural sources).	CUM	6.53
4	Extra for laying concrete in or under foul positions.	CUM	6.53
5	Close timbering in case of shafts, wells, cesspits, manholes and the like including strutting, shoring and packing cavities (wherever required) etc. complete. (Measurements to be taken of the face area timbered). Depth not exceeding 1.5 m	SQM	151.20
6	Close timbering in case of shafts, wells, cesspits, manholes and the like including strutting, shoring and packing cavities (wherever required) etc. complete. (Measurements to be taken of the face area timbered). Depth exceeding 1.5 m but not exceeding 3 m	SQM	151.20
7	Close timbering in case of shafts, wells, cesspits, manholes and the like including strutting, shoring and packing cavities (wherever required) etc. complete. (Measurements to be taken of the face area timbered). Depth exceeding 3 m but not exceeding 4.5 m	SQM	151.20
8	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centring, shuttering, finishing and reinforcement - All work up to plinth level : 1:1.5:3 (1 cement : 1.5 coarse sand (zone-III) derived from natural sources : 3 graded stone aggregate 20 mm nominal size derived from natural sources)	CUM	43.20
9	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. above plinth level up to floor five level, excluding cost of centring, shuttering, finishing and reinforcement : 1:1.5:3 (1 cement : 1.5 coarse sand(zone-	CUM	20.16

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	III)derived from natural sources : 3 graded stone aggregate 20 mm nominal size derived from natural sources)		
10	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete up to plinth level. Cold twisted bars	KG	11,036.79
11	Centring and shuttering including strutting, propping etc. and removal of form for : Foundations, footings, bases of columns, etc. for mass concrete	SQM	98.28
12	Centring and shuttering including strutting, propping etc. and removal of form for : Columns, Pillars, Piers, Abutments, Posts and Struts	SQM	72.00
13	Centring and shuttering including strutting, propping etc. and removal of form for : Walls (any thickness) including attached pilasters, butteresses, plinth and string courses etc.	SQM	25.92
14	6 mm cement plaster of mix : 1:3 (1 cement: 3 fine sand)	SQM	206.64
15	Neat cement punning	SQM	206.64
16	Providing and fixing bolts including nuts and washers complete.	KG	400.00
17	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade: Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture.	SQM	1,183.16
18	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and for all lift.	CUM	41.63
19	Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering - All work up to plinth level : 1:2:4 (1 cement : 2 coarse sand(zone-III) derived from natural sources : 4 graded stone aggregate 20 mm nominal size derived from natural sources)	CUM	4.00
20	Brick work with common burnt clay modular bricks of class designation 7.5 in foundation and plinth in: Cement Mortar 1:6 (1 cement: 6 coarse sand).	CUM	4.27
21	Boring, providing and installation bored cast-in-situ reinforced cement concrete piles of grade M-25 of specified diameter and length below the pile cap, to carry a safe working load not less than specified, excluding the cost of steel reinforcement but including the cost of boring with bentonite solution and temporary casing of appropriate length for setting out and removal of same and the length of the pile to be embedded in the pile cap etc. by percussion drilling using Direct mud circulation (DMC) or Bailer and chisel technique by tripod and mechanical Winch Machine all complete, including removal of excavated earth with all its lifts and leads (length of pile for payment shall be measured up to bottom of pile cap). 450 mm dia piles .	M	180.00
22	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	KG	51,651.34
23	Steel work welded in built up sections/ framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required. In stringers, treads, landings etc. of stair cases, including use of chequered plate wherever required, all complete.	KG	10,411.96
24	Disposal of building rubbish/ malba/ similar unserviceable, dismantled or waste materials by mechanical means, including loading, transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, beyond 50 m initial lead, for all leads including all lifts involved.	CUM	166.52
25	Hiring charges for Hydra Crane for placing porta cabin	DAY	16.00
26	hiring charges for dewatering pump with operator with all required accessories	DAY	90.00
27	REVALID. & DESIGN CONSULTANCY	LS	1.00

PRICE BID (SUPPLY & SERVICES)**Package No B2 –****33 kV Cables Infeeds**

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SCHEME NO. 2

Providing 33kV source comprising 2x3Cx400mm² XLPE cable from 220kV Naraina to Mayapuri and Providing 33kV source comprising 2x3Cx400mm² XLPE cable from A-43 Mayapuri to Metal forging.

SUPPLY

S. NO.	DESCRIPTION	UOM	QTY	BASIC (RS)	FREIGHT (RS)	GST (RS)	UNIT LANDED (RS)	TOTAL LANDED COST (RS)
1	CBL, PWR,OFC EMBEDDED; 400MM ² ;3C;33KV; AL;XLPE	M	15000					
2	KIT, JOINTING,STGT THRO; 33KV; 3CX400MM ² ;OFC	EA	52					
3	KIT, JOINTING, TERM; 33KV; 3X400MM ² ; HS;OD; RY, OFC	EA	6					
4	CHNL, STRCTL,ISMC100;100MM;50mm;7.7mm	MT	2.5					
5	ANGLE, STRCTL,75MM;75MM;6MM; IS2062	MT	1					
6	ANGLE, STRCTL,65MM;65MM;6MM; MS	MT	1					
7	STRIP, MTLC, EARTHNG;50X6MM; MS GALVANIZED	KG	2500					
8	CKT BKR, VACM, OUTDOOR;36KV;1250A;3P	EA	1					
9	TRAFO, CURR, OUTDR;800/400/1/1/1/1A	EA	3					
10	TRAFO, POTENTIAL, OUTDR;33KV	NOS	3					
11	RD,ERTH,40MM;3000MM;BEAR MS	MT	1.5					
12	PANEL,CNTRL&RELAY,33KV,F/FEEDER LINE	EA	1					
13	ISOLATOR,ELEC,33KV;1250AMPS;3PH;W/ES (HORIZONTAL TYPE)	EA	1					
14	ISOLATOR,ELEC,33KV;1250A;3PH;W/O E SW (HORIZONTAL TYPE)	EA	3					
15	ARRSTR,ELEC,OUTDR ;33KV;10KA	EA	9					
16	CNDCTR,ACSR ZEBRA UNINSUL	M	350					
17	FTG,SGL SUSPN BOLTED;SGL ZEBRA	NOS	6					
18	FTG,SGL TENSION BOLTED;SGL ZEBRA	NOS	6					
19	SPCR,BUS BAR SPCR;FOR ACSR ZEBRA	EA	18					
20	INSUL DISC 11KV 120KN	EA	36					
21	P.G. CLAMP,F/ZEBRA CONDUCTOR	EA	48					
22	PNL,BAY MARSHALLING KIOSK	EA	1					
23	CBL,CNTRL,1.1KV;2.5MM ² ;CU;6;PVC	M	2000					
24	CBL,CNTRL,CNTRL;1.1KV;2.5MM ² ;CU;10;PVC	M	2000					
25	EXTNGSR,FIRE,CO ₂ ;22.5KG;CO ₂ GS;43.5 KG	NOS	2					
26	RLY,NUMERICAL,220VDC,DISTANCE,MIC OMP543	NOS	2					
27	Cable identification Tags , AL	EA	904					

28	RCC Cable protection cover as per BRPL specification & drawing. (50 Thick 550 mm wide)	EA	4361					
29	Warning Tape	M	4660					
30	HDPE Pipes, PN 6 class PE 80 - 180mm dia	M	10400					
31	RFID Electronic Passive Ball Marker 3M Make	EA	93					
32	RFID Electronic Active Ball Marker 3M Make	EA	52					
33	RCC Coffin for joint as per the specification of BRPL/BYPL	EA	52					
34	HDPE Duct-40mm	M	2000					
35	Optical Fiber Cable (48 F ,36 nos single mode, G657A1+12 nos multi-mode OM2)	M	2000					
36	Rubber Mat 1000 mm wide (5 mtr. Length), 33 kV grade	EA	15					
37	Joint enclosure 48F Optic Fiber Cable (48 F, 36 nos single mode, G657A1+12 nos multi-mode OM2)	EA	4					
38	LIU	EA	2					
39	Danger plates	EA	8					
40	Number plates	EA	8					
41	Phase Plates	EA	8					
42	Circuit plates	EA	8					
43	Galvanized Nut & Bolts	KG	250					
44	Galvanized Tower/ Gantry structure Including Beam	KG	550					
45	Cable Route/Joint Marker as per approved drawing. For 33/66 KV cables.	EA	175					
46	Double compression Glands 10X2.5MM	EA	60					
47	Double compression Glands 5X 2.5MM	EA	60					
48	Scada Material (Annexure-B, Part -A)	EA	1					
49	Protection (Annexure- A)	EA	1					

ANNEXURE A: PROTECTION

S.No.	DESCRIPTION	UNIT	QUANTITY
1	Line Differential Relay P543-31RC6M0H98M	NOS	1
2	REF615, Dir.OC-EF Relay 5CT&3PT input,16BO-8BI	NOS	1
3	REF615, Dir.OC-EF Relay 5CT&3PT input,16BO-8BI	NOS	1

ANNEXURE- B PART- A: SCADA SUPPLY

S. NO.	BOQ	APPROVED MAKE	UNIT	QTY
1	16 core, 1.5 mm ² , multi strained copper cable, ARM FRLS 1.1KV HRPVC ,Application: digital signal feed back. Multistranded Copper, Dielectric with stand 2.5 KV at 50 HZ for 5 Min.	KEI/POLYCAB	Mtrs	300
2	2 core, 2.5 mm ² , multi strained copper cable, ARM FRLS 1.1KV HRPVC ,Application:Auxiliary Supply	KEI,PARASHIELD & POLYCAB	Mtrs	50

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3	Armored RS485, Twisted pair, 2 pair x 0.5 sqmm, Screened, 24 gauge Belden YJ70124 or equivalent.	BELDEN	Mtrs	100
4	Un Armored RS485, Twisted pair, 2 pair x 0.5 sqmm, Screened, 24 gauge Belden YJ70124 or equivalent.	BELDEN	Mtrs	50
5	Single compression Metal Glands 1 inch, Material : Brass/Stainless steel with nikel plating & Suitable for Industrial grade, Shall comply to IS 12943:1990/IEC 62444, shall withstand -60 deg to 200 deg, Heavy duty.	COMEX or Equivalent	Nos	10
6	Single compression Metal Glands 1/2 inch, Material : Brass/Stainless steel with nikel plating & Suitable for Industrial grade, Shall comply to IS 12943:1990/IEC 62444, shall withstand -60 deg to 200 deg, Heavy duty.	COMEX or Equivalent	Nos	10
7	Single Core - 10 Sqmm Cable for Panel Earthing	KEI, PARASHIELD & POLICAB	Mtrs	50
8	Lug - 10 Sqmm - Ring Type	STD Make	No's	4
9	SW, ENET, 6 TX, 2 FX DUAL REDUNDANT Aux Supply PS1 : 220V DC / PS2 : 48 V DC Note - PSU of Switch will be decided during Technical Evaluation stage.	RUGGEDCOM/ HIRSCHMANN	NOS	2
10	Armored CAT-6 Cable	DLINK/BELDEN	Mtrs	305
11	CBL, FO, MULTIMODE; ARMD; WAVE LENGTH 1300NM	Finolex, preston or reputed make	Mtrs	75
12	CBL, FO, FO; MULTI MODE; LC-LC, LENGTH 3M	Finolex, preston or reputed make	Nos	6
13	BOX, ELEC, FIB LC MULTIMODE; 12PORT; LIU	Preston, Phoenix or reputed make	Nos	2
14	CRD, CPU, 2X ETH, 6X RS232-RS485SRL PORT	OEM-SYNERGY SYSTEM SOLUTIONS	NOS	1
15	Synergy Make Rack, 19IN 4U HIGH RACK	OEM-SYNERGY SYSTEM SOLUTIONS	NOS	1
16	CRD, CPU, SGL ENDED DIGTL I/P 48VDC input-E70-DIA-002	OEM-SYNERGY SYSTEM SOLUTIONS	NOS	1
17	Digital Output Cards	OEM-SYNERGY SYSTEM SOLUTIONS	NOS	1
18	CRD, CPU, PWR SPPLY MDL	OEM-SYNERGY SYSTEM SOLUTIONS	NOS	2
19	CRD, CPU, IO SCNR MDL	OEM-SYNERGY SYSTEM SOLUTIONS	NOS	1
20	Cables With Connector for DI, DO & AI Module	OEM-SYNERGY SYSTEM SOLUTIONS	NOS	2
21	DO Contactors/CMR with Internal Wirings	Paramount or Equivalent	No's	10
22	TIE, CABLE, LENGTH, 250MM; 4.2MM; PVC/NYLON	STD Make	PKT	1
23	TRAY, CBL, 300MM; 75MM; 2.5MM; GI With Covers	STD MAKE	Mtrs	20
24	MFM - ACCORD MAKE MULTI FUNCTION TRANSDUCER TYPE : MFM02 PTR : 1KV-999.9KV/50-550V AC CTR : 1A-9999A/1A-5A AUX.SUP: 20-60V DC CLASS: 0.2S, 1KWH = 36000PULSES SR.NO : 0620/2512	ACCORD	No's	9390

SCADA Materials Specs with Approved Makes

S No	Materials	Approved Makes with Specs
1	16 core, 1.5 mm ² , multi strained copper cable, ARM FRLS 1.1KV HRPVC, Application: digital signal feed back Multistranded Copper, Dielectric	KEI & POLYCAB Voltage Grade : 1100V, Standard Applicable IS1554 P-1, Conductor: Material : Annealed Bare Copper as per Class-2 of IS 8130,

	with stand 2.5 KV at 50 HZ for 5 Min.	Nominal Cross Sectional Area : 1.5 Sqmm, Shape od Conductor : Stranded Non-Compacted Circular, Nominal Diameter : 1.6 mm, Max.DC Resistance at 20 deg - 12.10 Ohms/Km, Approx AC Resistance at Max.operating Temp 15.25 Ohms/Km, Short Circuit Current for 1 sec - 0.16KA. Max Conductor Temp , Rated - 85 deg.C , During Short Circuit - 160 Deg.C, Insulation : Extruded HR PVC Type-C as per IS5831 & Thickness - 0.8mm, Core Identifications : All cores shall have same base color with number printing in contrast colour. Inner Sheath : Material - Extruded HR PVC Type ST-2 as per IS 5831, Thickness - 0.3 mm,Color-Black Armour: Material : Galvanised Steel Round Wire?Flat Strip as per IS 3975. Nominal Dimension of armour : 4 x 0.8,Type : Strip, Outer Sheath: Material : Extruded FR LSH PVC Type ST-2 as per IS 5831, Thickness - 1.40 mm,Color-Black Cable Data: Approximate Over all Dia of Cable 22.1 mm,Tolerance on Overall dia : +_2.0mm.
2	2 core, 2.5 mm2, multi strained copper cable, ARM FRLS 1.1KV HRPVC ,Application:Auxiliary Supply	KEI,PARASHIELD & POLICAB
3	Armored RS485,Twisted pair, 2 pairx 0.5 sqmm,Screened,24gauge Belden YJ70124 or equivalent.	Armored RS485,Twisted pair, 2 Pair, Screened, ,24gauge Belden YJ70124 or equivalent. Material : Annealed Tin Copper. No of Diameter of strand in conductor : 7 No's/0.30 mm, Dia of Wire : 0.30 mm, Resistance at 20 deg : 70.3 Ohms/KM Material : High density Polyethylene. Thickness of Insulation : 0.6 mm/0.5 mm for Un Armored Elongation at Break : 150%(min) Pairing : Each Pair has different colors. HV Test at Room Temp : 2.0KV for 1 Minute. Material of Screen : Aluminium Mylar Type. Thickness of Tape : 30x40 Microns/30x50 Microns for Un Armored Copper Bredding : 90% ATC / 90% for Un Armored. Armouring : Gslvanised steel Wire. Outer Sheath : FRLS PVC Thickness of Sheath : 1.24 mm./1 mm for Un Armored.
4	Single compression Metal Glands 1 inch & 1/2 Inch	Approved Make : COMEX Gland I Inches Single Compression Gland, Material : Brass/Stainless steel with nikel plating & Suitable for Industrial grade,Shall comply to IS 12943:1990/IEC 62444,shall withstand - 60 deg to 200 deg,Heavy duty. Make : Comex or Equivalent.
5	GI CABLE TRAY : Perforated GI Cable Trays CABLE TRAY – Length :2.5 Mtrs,Thickness-3mm,Depth :100MM,Width :300MM.	STD
6	SW,ENET,6 Ports,10/100BASE-TX RJ45,2 FO Ports with LC-LC ,Aux - PS1 48V DC & PS2 250 V DC DIN Rail Mounted. Opertaing Temp -40 deg to 80	RUGGEDCOM/HIRSCHMANN The Ethernet/Fiber optic switches Should be a managed switch and are intended to be installed in the control room and shall be complaint to IEC-61850 electrical substation networks and IEEE 1613 standards. Provisions for RSTP/PRP Protocols should be provided on the same switch.

Deg.
Layer 2, Keema Certified.

Switch design should withstand for power substation automation applications that operate in extremely harsh environments (High and medium voltage S/Stn environments) and it also withstands vibration, electrical surges, fast transients, electrostatic discharge, and extreme temperatures and humidity.

Switch features and configuration should be easy to user interface and it must directly integrate with any other IEC-61850 devices. Shall be managed type and have KEMA certifications for IEC 61850.

2Number FO Ports shall support Multimode fiber in 10/100 Mbps ports on an SFP (simple form factor pluggable), for ease of functionality and maintenance.

Hot Standby/Dual PSU & Redundancy in power source.

Link Failure contact alarm - Failure contact alarm shall be achieved by hardware contact that is activated when a link problem occurs.

Logs and alarms with Time Stamp - Statistics about link status alarms are to be stored with the accurate timestamp duly tracing all events.

Advanced security features - The switches shall support different user levels with different passwords, including the facility to work with different VLANs, following the 802.1Q standard, port security based on MAC addresses, possibility to disable unused ports, authentication protocols shall be provided.

High Speed Implementation of RSTP protocol- The switches shall support STP,PRP,Star and RSTP protocols, and shall facilitate for recovery and the fault recovery times shall be within 5 -10msec per switch, always fulfilling the RST protocol.

Time Synchronization to RTU/Server and Connected IED/BCU - The switch shall have an internal clock and shall be synchronized from a network SNTP/NTP server, so all time stamped events shall be with a reliable time reference.

Tools with License - Diagnostics tool, other necessary tools with a multi user license to be provided along with the switch. Mounting Options - Switch should be DIN Rail Mountable& Suitable Rack with MCB,T.B,Gland Plate & Internal Wiring to be consider for wall fixing.

Local USB port for emergency boot is Mandatory. Console Cable to be supplied along with Switch for Maintenance.

Operatg Temp -40 deg to 80 Deg.

Network based distributed security by having a firewall on each port of the switch for all the standard Industrial protocol like IEC-61850 should be available.

The switch shall have the facility of Port mirroring and the user shall configure one port to replicate traffic flows of different ports, so the system administrator can monitor the incoming, outgoing, or all kinds of traffic that is going through the ports under study.

ITU-T G.8032 support for Ethernet Ring redundancy, ensuring fast failure detection is preferred.

The switches shall sustain the stringent levels in temperature range and electromagnetic immunity defined in the 61850-3, but also the advanced functional requirements defined for operation with other IEC-61850 devices.

The Switch should be certified on IEC-61850, functional & Environmental specifications by KEMA.

The switches shall have advanced security features to be implemented to avoid unauthorized access to the system Such as RADIUS/TACACS & VPN gateway support with IP Sec & SSH.

7	FO Patch Cable 1300nm_LC-LC	Approved Make : Preston Or Equivalent. Multimode, FO Patch Cable 1300nm, Core Size 62.5µm, Clad Size 125µm Duplex,Insertaion loss<=0.2db,Ceramic Connectors
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	Multimode - Patch Cable Non Rugged	Ferrules, Minimum 100 mating cycles, Operating Temp -40 to 80 deg C. Type of Material: Glass, Number of Fibers: 2(Rx)(Tx), Un armored Both End Connectors: LC-LC, outer Sheath Colour : Orange, Length - as per site requirements.
8	LIU 12 Ports MM LC Type Panel Mounted LIU BOX including LC Pigtails with adapter panel .EIA/TIA/IEC Complaint, Insertion loss < 0.1dB(for adapters)	Make - Preston or Equivalents LIU 12 Ports MM LC Typ Panel Mounted LIU BOX including LC Pigtails with adapter panel .EIA/TIA/IEC Complaint, Insertion loss < 0.1dB(for adapters), No Of Ports - 12, Fiber Optic Connectors - LC Type.
9	Tech.Specifications of CAT-6 Cable	
	Description	Technical Data
	Approved Make	DLINK/BELDEN
	Electrical	
	Characteristic Impedance	100 +/- 60hm,
	Conductor resistance	< 9.38 ohm / 100m,
	Operating Voltage	72 Vdc,
	Dielectric Strength	1.0kV dc or 0.75kV ac for 1 min,
	Insulation Resistance	100 MOhm
	Velocity of propagation (NVP)	69%
	Mechanical	
	Insulation thickness	0.2mm nominal
	Insulation type	High Density Polyethylene
	Cable diameter	6.1 mm nominal
	Conductor type	23 AWG solid copper conductor for superior conductivity
	Jacket Material	FR-PVC
	Operating Temperature range	Range -20° to +70°C
	Color code	1-2 white-orange stripe and Orange 4-5 white-Blue stripe and Blue 3-6 White-Green stripe and Green 7-8 White-Brown stripe and Brown Issue: CAT6
		Meets TIA /EIA-568-C.2 requirements and comply with CAT-6 Compliant for 10/100/1000 Mbps bandwidth Performance specification up to 250 MHz UV resistance outer sheath Inner Sheath Flame Retardant (IEC60332-1) Suitable for Outdoor application, Fire resistant PVC jacket Rugged Double sheath construction RoHS Complaint ECCS Tape armoring provides Excellent Mechanical protection,
10	Tech.Specifications of FO MM Cable	
	Parameters	Technical Data
	Make	PRESTON or Equivalent
	Characteristics	
	Cable Type	6 Core Multi mode Cable
	Fiber Type	62.5/125 mm
	Armoured /Unarmoured	Armoured
	Attenuation	≤ 3.2 dB/km @850nm, ≤1.2 dB/km @1300nm
	Band Width	≥200 MHz.km @850nm, ≥500 MHz.km @1300nm
	Core Diameter	62.5 um ± 3
	Core Cladding Concentricity Error	≤ 1 μm
	Cladding Diameter	125 ± 1 μm
	Cladding Non-circularity	≤ 1 %
	Coating Diameter (Colored)	250 ± 15 μm
	Mechanical Characteristics	
	Tensile Strength	2670 N
	Crush Resistance	2000 Newton
	Impact	25 Nm
	Torsion	± 180 °
	Min. Bending Radius	80mm (temporary) 160mm (permanent)

**BSES RAJDHANI POWER LIMITED**

	Temp.Performance	
	Operating/ Installation	Temp -30 to +70°C
	Cable Construction Details	
	Parameters	Dimensions
	No. of Fibres	6 Color Bl Or Gr Br Sl Nt
	Number of Loose Tubes	1 Color Nt
	Outer Cable Diameter	$\geq 8.0 \text{ mm} \pm 0.5$
	Colour of Fiber	BLUE, WHITE, ORANGE, GREEN, BROWN & SLATE
	Max. Installation Tension	1500 Newton
	Peripheral Strength	$1.0 \pm 0.05 \text{ mm}$, FRP Rod
	Member	
	Inner Sheath	1.8 mm (min),HDPE - Black
	Armoring	0.150 mm,
	Outer Sheath	1.5 mm (min.),HDPE - Black
	Overall Cable Diameter	$11.5 \pm 0.5 \text{ mm}$
	Cable Weight	$125.0 \pm 15 \text{ kg/km}$
		Approved Make : Preston Or Equivalent.
	FO Patch Cable 1300nm_LC-LC	Multimode, FO Patch Cable 1300nm, Core Size $62.5\mu\text{m}$, Clad Size $125\mu\text{m}$ Duplex,Insertaion loss $\leq 0.2\text{db}$,Ceramic Connectors Ferrules,Minimum 100 mating cycles,Operating Temp -40 to 80 deg C. Type of Material: Glass, Number of Fibers: 2(Rx)(Tx),Un armored Both End Connectors:LC-LC,outer Sheath Colour : Orange,Length - as per site requirements. Multimode - Patch Cable Rugged

ERECTION, TESTING & COMMISSIONING

Scheme 2: Providing 33kV source comprising 2x3Cx400mm² XLPE cable from 220kV Naraina to Mayapuri and Providing 33kV source comprising 2x3Cx400mm² XLPE cable from A-43 Mayapuri to Metal forging.

S. NO.	DESCRIPTION	UOM	QTY	BASIC (RS)	GST (RS)	UNIT LANDED (RS)	TOTAL LANDED COST (RS)
1	Digging of cable trench as per specification and drawings. Rate is inclusive of digging and backfilling. Measurement shall be as per actual depth excavated. For Dense Carpeted bituminous Road.	CUM	4152				
2	Digging of joint pit suitable for 33/66 KV cable joint box and covering the joint box with sand and providing protection as per BYPL/BRPL design. Dense carpet	CUM	624				
3	Digging of test pits of required size (not less than 1/2 Mtr. Wide at site for identification of cable route). Relevant volume shall be deducted from quantities of same item of cable digging For Dense carpeted bituminous road / CC Road	EA	250				
4	Removal of Malba including Loading / Unloading on own vehicle. The payment shall be restricted to the quantity of sand laid.	CUM	949.2				
5	Laying of underground cable in trench, supply and fixing of cable identification tags (9" X 4") at every 30 Mtrs, refilling the trench and ramming the surface, including watch and ward till charging of cable (This activity includes only labour jobs) for 33 KV three core cable Running Mtr.	M	15000				
6	Fixing of Cable identification Tags	EA	904				
7	Providing and Laying Sand cushioning for cable route as per BRPL specification and drawing.	CUM	791				
8	DELETED						
9	Installation of RCC Cable Cover	EA	4361				
10	Installation of Warning Tape as per the Specification of BRPL	M	4660				
11	Crossing of roads by trench-less technology by laying of HDPE pipe excluding supply of pipe. Laying by HDD Machine Moling. Drilling and laying. 180mm dia.	M	5600				
12	Crossing of roads by trench-less technology by laying of HDPE pipe excluding supply of pipe. Laying by Pneumatic Jack Hammer Road Cutting. laying. 180mm dia.	M	2400				
13	Laying of HDPE pipe for crossing small Nallas in the cable route or in the existing trenches 180mm dia.	M	2400				

14	Installation, testing and commissioning of RFID active Electronic Ball Markers (for 33kV and 66kV joint)	EA	52				
15	Installation, testing and commissioning of RFID passive Electronic Ball Markers (for 33kV and 66kV joint)	EA	94				
16	laying of optical fibre cable	M	2000				
17	Laying of 40mm dia. HDPE Duct in open trench	M	1600				
18	Laying of 40mm dia, HDPE Duct through trenchless method using HDD machine	M	400				
19	Installation of LIU (48F) including Patch cord	EA	2				
20	Fixing of Danger plates	EA	8				
21	Fixing of number plates	EA	8				
22	Fixing of Phase plates	EA	8				
23	Fixing of circuit plates	EA	8				
24	Watch & Ward Charges.	DAY	180				
25	Making optical fibre end box (Splicing of 48F Optical Fiber Cable)	Nos	4				
26	33KV Joint.chrg St.Th.Joint 3C XLPE	EA	52				
27	Mkng O/D,I/D End Trmintn Kit 33KV 3CX400	EA	6				
28	Survey and submission of Ground penetration	M	7500				
29	fixing of Cable Route/Joint Marker as per approved drawing. For 33/66 KV cables.	EA	175				
30	Providing and laying in position specified grade of reinforced cement concrete excluding the cost of shuttering, centring, finishing and reinforcement-All work up to plinth level: 1:2:4 (1cement :2 coarse sand :4 graded stone agg.20mm nominal size.)	CUM	20				
31	Charges for providing continuous steel barricade 1.2 mtr. high including cost of all material plant consumables transport and labour for shifting placing painting and regular maintenance.40% qty for selected portion	M	7500				
32	Charges for carrying out Route survey and identification of underground utilities of various civic agencies before/ during execution of scheme involving cable laying work. Route length will be considered for payment. Route length will be specifically verified by DGM.	M	7500				
33	Fabrication MS structure for different equipment like isolator, C.T.'s, P.T.'s, CVT, LA's etc, cable supporting structure including supply of nuts and bolts, consumables, welding electrode, hacksaw blades etc. excluding supply of steel.	MT	6.5				
34	Erection of MS as well as galvanised structure for different equipment like isolator, C.T.'s, P.T.'s, CVT, LA's, ISO etc, cable supporting structure, 33kV/66 kV GI gantry structure, Tower Structure i/c	MT	6.5				

	consumables, welding electrode, tack welding & hacksaw blades etc.						
35	Painting of Fabrication MS Structure for diff.equip.	KG	6500				
36	Erection of ground earthing with 40 mm dia, 3 mtr long, MS rod electrode, fabrication and fixing of clamps and test links, including supply of sand and charcoal.	EA	10				
37	Erection of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and minor modification in support structure for fixing as required. For 33 kV SF6 circuit breaker with mechanism and structure	EA	1				
38	Erection of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and minor modification in support structure for fixing as required. For 33 kV isolator with one earth switch	EA	1				
39	Erection of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and minor modification in support structure for fixing as required. For 33 kV isolator without earth switch	EA	3				
40	Erection of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and minor modification in support structure for fixing as required. For 33 kV LA's with/without surge counter	EA	9				
41	Erection of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and minor modification in support structure for fixing as required. For Bay Terminal/Marshalling Kiosk	EA	1				
42	Erection of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and minor modification in support structure for fixing as required. For CT/PT Junction Box	EA	3				
43	Erection of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and minor modification in support structure for fixing as required. For Control and relay panel for Transformer, line, Bus coupler.- 33 kV, C & R panel	EA	1				
44	Erection of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and minor modification in support structure for fixing as required. For 66 kV /33KV CT, any ratio	EA	3				
45	Erection of electrical equipment Including supply of T & P, all consumable items such as welding rods, hacksaw blades etc and	EA	3				

	minor modification in support structure for fixing as required. For 66 kV/33KV PT						
46	Stringing of Single Suspension String Insulator with double tension clamp for twin Zebra conductor	EA	6				
47	Stringing and sagging of main bus and cover bus bar with ACSR Zebra conductor and Jumpering of various electrical equipment by ACSR Zebra conductor in between equipment to equipment of any length required and from bus bar to equipment of any length required with the help of PG clamps, T connectors and other clamps. For 66 kV /33KV Yard	M	350				
48	Stringing of Rigid Spacer Clamp with tee – off suitable for single Zebra conductor and double zebra to single zebra convertor.	EA	24				
49	Erection of MOM box for 33 and 66KV Insulator including welding, cutting etc.	EA	5				
50	Stringing of Bolted type 'T'/PG Connector suitable for single Zebra conductor	EA	40				
51	Laying, dressing, megger and continuity test of PVC, armoured control and auxiliary power cables in excavated trench/cable trays . For 10CX2.5 sqmm, Cu	M	2000				
52	Laying, dressing, megger and continuity test of PVC, armoured control and auxiliary power cables in excavated trench/cable trays . For 6/5CX2.5 sqmm, Cu	M	2000				
53	Erection of double compression gland including termination For 10CX2.5 sqmm, Cu	EA	60				
54	Erection of double compression gland including termination For 5CX2.5 sqmm, Cu	EA	60				
55	Laying of MS flat in the excavated trench including risers, equipment earthing, overlapping of MS flat at the joints by twice of its width and welding of overlapping and cross joints including supply of electrodes, red oxide/bitumin compound , paint etc. and Laying of GI earth strip for equipment earthing, along the wall, trench, cable trays etc including fabrication of supports/cleats and fixing with wall bolts, welding works, painting of earth strip and riser with red oxide paint/bitumin compound and final. For 50X6 sqmm	M	893				
56	Excavation of trench below the ultimate good earth level in following type of soil including refilling after laying of earth mat riser, fixing of earth electrodes welding etc. For Soft soil	CUM	90				
57	Digging of earth pit upto depth of 10 ft. in rocky/ semi rocky as per feasibility at site of embedding 600 x600mm earth plate with M.S Flat 50 x8 mm running the same through 3/4 " dia G.I. grouting pipe. Earth Plate to be covered by charcoal 200kg. And 100 Kg. Sodium chloride in the earth pit and refilling etc. NOTE: Charcoal, common	EA	15				

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	salt, earth plate, G.I. Pipe, MS flat, Badarpur, Cement and bricks to be supplied by the contractor						
58	Making of civil goomitties around GI earthpipe as per standard design of BSES. Supply of necessary bricks, cement, badarpur, sand, C1 cover of size 1'x1' and providing the same at the top of goomitties.	EA	15				
59	Grouting of cable mounting structure with cement concrete having ratio 1:3:6 including fixing with gantry structure. Badarpur, cement and stone ballast shall be supplied by contractor. Suitable for mounting 33/66 KV cable.	EA	3				
60	Mounting of 33KV, 3x400sq.mm. XLPE cable with cable end box on the steel structure and fixing it with suitable wooden cleats (wooden cleats shall be supplied by contractor) i/c.its jumpering with the isolator as required.	EA	6				
61	Splicing of 48F Optic Fiber Cable	EA	6				
62	Testing and Commissioning of LDR	EA	2				
63	ETC of Fire Extinguisher and mat	LOT	2				
64	Scada erection (Annexure- B, Part- B)	EA	1				
65	Civil Charges (Annexure- C: Detailed BOQ Attached)	LS	1				
66	VLF High Voltage test as per IEEE 400.2	LS	1				
67	VLF Tan Delta as per IEEE 400.2	LS	1				
68	VLF Partial Discharge as per IEEE 400.2	LS	1				
69	Sheath integrity test	LS	1				

ANNEXURE -B: SCADA**PART B: SERVICE**

S.NO	SERVICE DESCRIPTION	UNIT	QTY
1	Cable laying and tagging (16 core, 1.5 mm ²) & Termination with Petty Materials Such as connectors, Lugs, Jacks, White Sleeves, Ferrules, etc.	M	300
2	Cable laying and tagging (2 core, 2.5 mm ²) with Petty Materials Such as connectors, Lugs, Jacks, White Sleeves, Ferrules ,etc.	M	50
3	Cable glanding and termination	NOS	20
4	Laying and termination of RS485 cable thru metal conduit/GI pipe with proper tagging, Glanding and dressing up to RTU panel)	M	150
5	Laying and termination of CAT-6 / FO Cables thru metal conduit/GI pipe with proper tagging, Glanding and dressing up to RTU/ Switch panel)	M	431
6	Material transportation from Multiple Sites	NOS	2
7	Installation of Switch Panel's/ Ethernet Switches & LIU in RTU/CRP	Panel's	4
8	Cable Crimping Work+Supply of Jack with Ferrules (Whit Sleeve with Black Printed Ferrules)	NOS	40
9	Cable Terminations with Suitable Insulated Lugs	NOS	100
10	Miscellaneous Work (Cable Tray, Civil)	LOT	1
11	Installation, commissioning and integration of cards to the existing system	NOS	1
12	Splicing of Optical Fibers	NOS	8

**ANNEXURE- C CIVIL WORKS FOR CONSTRUCTION OF FOUNDATION FOR
BREAKER, CT, PT, ISOLATOR, LA, INCLUDING TRENCH YARD
DEVELOPMENT etc.**

S. NO.	DESCRIPTION	UOM	QTY
1	Demolishing cement concrete manually/ by mechanical means including disposal of material within 50 metres lead as per direction of Engineer-In-Charge. Nominal concrete 1:4:8 or leaner mix (i/c equivalent design mix)	CUM	53.45
2	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift up to 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m - All kinds of soil.	CUM	51.89
3	Earth work in excavation by mechanical means hydraulic excavator/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead up to 50 m and lift up to 1.5 m, as directed by Engineer-in-charge. All kinds of soil	CUM	116.87
4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	CUM	50.63
5	P/L cement concrete - all works up to plinth level: 1:4:8 (1 Cement: 4 coarse sand: 8 graded stone aggregate 40 mm nominal size).	CUM	8.18
6	P/L R.C.C. up to plinth level: 1:1.5:3 (1 cement: 1.5 coarse sand : 3 graded stone aggregate 20 mm nominal size)	CUM	29.81
7	Reinforced cement concrete work in walls (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. above plinth level up to floor five level, excluding cost of centring, shuttering, finishing and reinforcement : 1:1.5:3	CUM	9.62

	(1 cement : 1.5 coarse sand(zone-III) : 3 graded stone aggregate 20 mm nominal size).		
8	Centring and shuttering including strutting, propping etc. and removal of form for all heights: Foundations, footings, bases of columns, etc. for mass concrete	SQM	90.95
9	Centring and shuttering including strutting, propping etc. and removal of form for all heights : Walls (any thickness) including attached pilasters, buttersses, plinth and string courses etc. Sgm	SQM	127
10	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete up to plinth level. Cold twisted bars	KG	3750.48
11	6 mm cement plaster 1:3 (1 cement: 3 fine sand) finished with a floating coat of neat cement and thick coat of Lime wash on top of walls when dry for bearing of R.C.C. slabs and beams.	SQM	87.46
12	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade: Two or more coats on new work	SQM	30.74
13	Steel work in built up tubular (round, square or rectangular hollow tubes etc. trusses etc. including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer, including welding and bolted with special shaped washers etc complete: hot finished welded type tube	Kg	19.83
14	Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering - All work up to plinth level: 1:2:4 (1 cement: 2 coarse sand (zone-III) : 4 graded stone aggregate 20 mm nominal size)	Kg	0.07
15	Painting with aluminium paint of approved brand and manufacture to give an even shade. Two or more coats on new work	SQM	0.44
16	Painting with aluminium paint of approved brand and manufacture to give an even shade: One or more coats on old work	SQM	2
17	Brick work with common burnt clay F.P.S. (non-modular) bricks of class designation 7.5 in foundation and plinth in: Cement mortar 1:4 (1 cement: 4 coarse sand)	cum	16.25
18	12 mm cement plaster of mix: 1:4 (1 cement: 4 coarse sand)	SQM	101.75
19	15 mm cement plaster on rough side of single or half brick wall of mix: 1:4 (1 cement: 4 coarse sand)	SQM	7.5
20	Neat cement punning.	SQM	109.25
21	Cement concrete flooring 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate) finished with a floating coat of neat cement, including cement slurry, but excluding the cost of nosing of steps etc. complete.	SQM	30
22	40 mm thick with 20 mm nominal size stone aggregate		
23	Demolishing brick work manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-In-Charge - in cement mortar	cum	3.6
24	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level: 1:5:10 (1 cement: 5 coarse sand (zone-III) derived from natural sources: 10 graded stone aggregate 40 mm nominal size derived from natural sources)	Cum	68.4
25	Disposal of building rubbish/ malba/ similar unserviceable, dismantled or waste materials by mechanical means, including loading, transporting, unloading to approved municipal dumping ground or as approved by Engineer-In-Charge, beyond 50 m initial lead, for all leads including all lifts involved.	Cum	229.9
26	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	KG	2797.7
27	Flat brick flooring with over burnt bricks on bed of 10 mm thick cement 1:6 (1 cement: 6 coarse sand) & filling the joints with same cement mortar	SQM	683.96
28	Supplying and spreading uniformly in yard of grid s/stn. blue stone aggregate 20 mm single size of good quality i/c loading, unloading for all leads & lifts complete, as per direction of Engineer in charge.	cum	68.4

SCHEME NO 3:

Providing 2 nos. 33 KV circuits from upcoming 220/33KV DTL Dev Nagar substation to DLF mall & A-4 Paschim Vihar substations each by loop in loop out existing 33KV circuit.

SUPPLY

S. NO.	DESCRIPTION	UOM	QTY	BASIC (RS)	FREIGHT (RS)	GST (RS)	UNIT LANDED (RS)	TOTAL LANDED COST (RS)
1	CBL,PWR,400MM ² ;3C;33KV;AL;XLPE with Inbuilt Optical fiber cable	M	24000					
2	33KV STRAIGHT THROUGH JOINTING KITS;3cx400; compatible with OFC	EA	90					
3	KIT CBL TERN OUT 33KV 3CX400MM ² HS XLPE; compatible with OFC	EA	12					
4	KIT,TERM,INDR;33KV;3CX400MM ² ;GIS PLG IN, compatible with OFC	EA	4					
5	CHANNEL,MOC:MS,SIZE:150X75X6MM	MT	1					
6	CHNL,STRCTL,ISMC100;100MM;50mm;7.7mm	MT	1					
7	ANGLE,STRCTL,65MM;65MM;6MM;MS	MT	1					
8	FLAT,STRCTL,6MM;50MM;5500MM;MS	MT	0.5					
9	LINE DIFFERENTIAL RELAY P543 MAKE-SCHNEIDER.	NOS	2					
10	Box elect,33kv CBL, Junction box MS IP 56	EA	2					
11	RCC Cable protection cover as per BRPL specification & drawing. (50 Thick 550 mm wide)	EA	9000					
12	HDPE pipes as per IS 4984,PN 6 class PE 80 - 180mm dia	M	13200					
13	warning tape per BSES Design specification (Width=150mm, Thickness=0.3u)	M	5400					
14	Danger plates.	EA	4					
15	Electronic Ball marker at every 50 meter -passive	EA	120					
16	Electronic Ball marker at every at every joint - active	EA	90					
17	Coffin for Joint	EA	90					
18	LIU 48/96F fully loaded for OFC including Patch cord	EA	2					
19	Optical Fiber Cable (48 F ,36 nos single mode, G657A1+12 nos multi-mode OM2)	M	8000					
20	Route Marker	EA	120					
21	Joint Marker	EA	20					
22	Misc. Item like Glands, luges, Nut & Bolts etc.	LS	1					
23	HDPE Duct	M	8000					

ERECTION, TESTING & COMMISSIONING (ETC)**Scheme 3: Providing 2 nos. 33 KV circuits from upcoming 220/33KV DTL Dev Nagar substation to DLF mall & A-4 Paschim Vihar substations each by loop in loop out existing 33KV circuit.**

S. NO	DESCRIPTION	UOM	QTY	BASIC (RS)	GST (RS)	UNIT LANDED (RS)	TOTAL LANDED COST (RS)
1	Digging of cable trench as per specification and drawings. Rate is inclusive of digging and backfilling. Measurement shall be as per actual depth excavated. For Ordinary Bituminous/ C.C.Road.	CUM	4050				
2	Digging of test pits of required size (not less than 1/2 Mtr. Wide at site for identification of cable route). Relevant volume shall be deducted from quantities of same item of cable digging For Ordinary bituminous road	EA	200				
3	Removal of Malba including Loading / Unloading on own vehicle. The payment shall be restricted to the quantity of sand laid.	CUM	1822.5				
4	Providing and Laying Sand cushioning for cable route as per BRPL specification and drawing.	CUM	1134				
5	Laying of underground cable in trench, covering with RCC cable cover, covering with sand ,Sand cushion will be min 75mm below and 75mm above the cable, fixing of cable identification tags (9" X 4") at every 30 Mtrs, Laying of warning tape above 250mm of the docket, refilling the trench and ramming the surface & removal of malba if any, including watch and ward till charging of cable (This activity includes only labour jobs) for 33 KV cable Running Mtr.	M	24000				
6	Crossing of roads by trench-less technology by laying of HDPE pipe excluding supply of pipe. Laying by HDD Machine Moling. Drilling and laying. 180mm dia.	M	4000				
7	Laying of HDPE Pipe for crossing small Nallas in the cable route	M	5200				
8	Providing and laying in position specified grade of reinforced cement concrete excluding the cost of shuttering, centring, finishing and reinforcement-All work up to plinth level: 1:2:4 (1cement :2 coarse sand: 4 graded stone agg.20mm nominal size.)	CUM	95				
9	Fabrication of MS structure as well as galvanised for different equipment like isolator, C.T.'s, P.T.'s, CVT, LA's etc, cable supporting structure including supply of nuts and bolts, consumables, welding electrode, hacksaw blades etc. excluding supply of steel.	MT	3.5				
10	Erection of MS as well as galvanised structure for different equipment like isolator, C.T.'s, P.T.'s, CVT, LA's, ISO etc, cable supporting structure, 33kV/66 kV GI gantry structure, Tower Structure i/c consumables, welding electrode, tack welding & hacksaw blades etc.	MT	3.5				



BSES RAJDHANI POWER LIMITED

11	Painting of any M.S. Structure with one coat of Red oxide and two coats of AL. Paint ISI marked including supply of paint by contractor.	KG	3500				
12	Digging of earth pit up to depth of 10 ft. in-rocky/ semi rocky as per feasibility at site of embedding 600 x600mm earth plate with M.S Flat 50 x8 mm running the same through 3/4 " dia G.I. grouting pipe. Earth Plate to be covered by charcoal 200kg. And 100 Kg. Sodium chloride in the earth pit and refilling etc. NOTE: Charcoal, common salt, earth plate, G.I. Pipe, MS flat, Badarpur, Cement and bricks to be supplied by the contractor	EA	8				
13	Making of civil goomitties around GI earthpipe as per standard design of BSES. Supply of necessary bricks, cement, badarpur, sand, C1 cover of size 1'x1' and providing the same at the top of goomitties.	EA	8				
14	Charges for providing continuous steel barricade 1.2 mtr high including cost of all material plant consumables transport and labour for shifting placing painting and regular maintenance.40% qty for selected portion	M	5000				
15	Charges for carrying out Route survey and identification of underground utilities of various civic agencies before/ during execution of scheme involving cable laying work. Route length will be considered for payment. Route length will be specifically verified by DGM.(GPR)	M	6000				
16	Crossing of roads by trench-less technology by laying of HDPE pipe excluding supply of pipe. Laying by Pneumatic Jack Hammer Road Cutting. laying. 180mm dia.	M	4000				
17	Fixing of Danger plates.	EA	4				
18	Electronic Ball marker at every 50 meter -passive	EA	120				
19	Electronic Ball marker at every at every joint - active	EA	90				
20	Fixing of Coffin for Joint	EA	90				
21	Fixing of Route Marker	EA	120				
22	fixing of joint marker	EA	20				
23	ETC of Box elect,33kv CBL, Junction box MS IP 56	EA	2				
24	Installation of Outdoor type End Termination Kit Suitable for 33 kV 3X400 Sq.mm Cables including OFC termination/end seal (joint/ termination manufacturer will carry out this job)	EA	12				
25	Installation of straight through joints for 33kv cables including OFC Termination/end seal (Joint/ termination manufacturer will carry out this job)	EA	90				
26	laying of optical fibre cable	M	8000				
27	Laying of 40mm dia. HDPE Duct in open trench	M	8000				
28	Making optical fibre end box (Splicing of 48F Optical Fiber Cable)	Nos	2				
29	Installation of LIU (48F) including Patch cord	EA	2				
30	DELETED						
31	Civil Charges (Annexure- B: Detailed BOQ Attached)	LS	1				

32	VLF High Voltage test as per IEEE 400.2	LS	1				
33	VLF Tan Delta as per IEEE 400.2	LS	1				
34	VLF Partial Discharge as per IEEE 400.2	LS	1				
35	Sheath integrity test for each length of drum	LS	1				
36	Installation of GIS termination kit	EA	4				

ANNEXURE -B: CIVIL INSTALLATION OF 02 NOS JUNCTION BOXES AT 220KV DTL DEV NAGAR SUBSTATION POWER CABLE TRENCH (30 M) & JUNCTION BOX FOUNDATION (2 Nos)			
S.NO	SERVICE DESCRIPTION	UNIT	QTY
1	Demolishing cement concrete manually/ by mechanical means including disposal of material within 50 metres lead as per direction of engineer in charge. Nominal concrete: 1:3:6 or richer mix (i/c equivalent design mix)	CUM	2.60
2	Earth work in excavation by mechanical means (hydraulic excavator)/ manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5 m, including getting out	CUM	160.32
3	Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering - All work up to plinth level :1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal.	CUM	9.04
4	Providing and laying in position specified grade of reinforced cement concrete, excluding the cost of centring, shuttering, finishing and reinforcement - All work up to plinth level: 1:1.5:3 (1 cement: 1.5 coarse sand (zone-III) derived from natural so	CUM	45.87
5	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete up to plinth level. cold twisted bars	KG	5045.70
6	Centring and shuttering including strutting, propping etc. and removal of form work for : Foundations, footings, bases of columns.	SQM	24.32
7	Centring and shuttering including strutting, propping etc. and removal of form for Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	SQM	220.80
8	6mm cement plaster of mix: 1:3 (1 cement: 3 fine sand).	SQM	141.20
9	Neat cement punning	SQM	141.20
10	Cement concrete flooring 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate) finished with a floating coat of neat cement including cement slurry, but excluding the cost of nosing of steps etc. complete. 40 mm thick with 20 mm nominal size stone a	SQM	65.80
11	Structural steel work in single section fixed with or without connecting plate including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	KG	993.68
12	Welding by gas or electric plant including transportation of plant at site etc. complete	CUM	2724.00
13	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	KG	3598.20
14	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade. Two or more coats on new work.	SQM	145.06
15	Filling available excavated earth (excluding rock) in trenches plinth, sides of foundations etc. in layers not exceeding 20 cm in depth: consolidating Earth deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m	CUM	32.06
16	Disposal of surplus earth by mechanical transport loading, unloading and stacking etc complete for all leads and lifts,	CUM	128.26
17	Disposal of building rubbish/ malba/ similar unserviceable, dismantled or waste materials by mechanical means, including loading, transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, beyond 50 m initial lead	CUM	2.60

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ANNEXURE-II

PRE-BID QUERIES

Sr. No	Voltage level	Existing	BRPL Comment
1		JOB COMPLETION: job completion is defined 150 days. However, the delivery period for CRP and Circuit Breaker is around 6-8 months from the date of approved GTP and drawing, therefore we request to consider job completion 8-10 months from date of PO	G-1 Dwarka grid - 7 months 2. Naraina to Mayapuri & A-43 Mayapuri to Metal Forging - 7 Months 3. 220/33KV DTL Dev Nagar substation to DLF mall & A-4 Paschim Vihar - 5 Months Refer Pt.3 of Corrigendum-4
2		PRICE VARIATION FOR CABLES:- Due to prevailing global conflicts, raw material prices are highly volatile. Consequently, maintaining fixed prices for cables for an extended period of 360 days (180 days offer validity + 180 days job completion period) is not feasible. We kindly request you to accept price variation as per IEEMA guidelines.	No deviation allowed
	A) 33kV cable		
3		Please confirm whether 48F OFC is required to be inbuilt/embedded within the cable for both Scheme 2 and Scheme 3, as mentioned in the BOQ, or OFC is to be supplied separately.	OFC Embedded shall be provided with both 33 kV 3C x 400 sq.mm and 66 kV 3C x 300 sq.mm cables
4		Please confirm whether FRLS sheath is required or not.	Not required
5		Returnable Steel Drum has been marked as deleted in the amendment dated 12.05.2026; however, during the pre-bid meeting discussion, it was indicated as required. Kindly confirm the requirement once again.	All cable drum shall be on returnable basis at the risk and cost of the bidder. NO amount shall be deducted from Bidder's account for Cable drum. Please quote the price of cable excluding Drum cost.
	B) 66 kV Cable		
6		Please confirm whether 48F OFC is required to be inbuilt/embedded within the cable for Scheme 1, as mentioned in the BOQ, or OFC is to be supplied separately.	OFC Embedded shall be provided with both 33 kV 3C x 400 sq.mm and 66 kV 3C x 300 sq.mm cables.
7		As per Clause No. 3.14 of the Technical Specification, the OFC clause appears to have been deleted. Kindly confirm whether the OFC is to be inbuilt/embedded within the cable or supplied separately.	OFC Embedded shall be provided with both 33 kV 3C x 400 sq.mm and 66 kV 3C x 300 sq.mm cables
8		As per Clause No. 3.2, either Extruded Semiconductive Layer or Graphite Coating is specified. We prefer Graphite Coating, subject to suitability as per BSES requirements. Kindly confirm the same.	OK
9		As per Annexure-C (GTP), Clause No. 26(a), the details are incomplete. Kindly provide the complete details.	Clause removed
10		As per Annexure-C (GTP), Clause No. 26(b), the filler material should be PP instead of PE ST-7. Kindly confirm.	NO deviation
11		Returnable Steel Drum has been marked as deleted in the amendment dated 12.05.2026; however, during the pre-bid meeting discussion, it was indicated as required. Kindly confirm the requirement once again.	All cable drum shall be on returnable basis at the risk and cost of the bidder. NO amount shall be deducted from Bidder's account for Cable drum. Please quote the price of cable excluding Drum cost.

Pre-Bid Queries Against Tender No.: NIT NO: CMC/BR/26-27/FK/PR/KG/1355						
Sl No.	Bidding Documents			Existing Clause in Tender Documents	Bidder's Query	BRPL Reply
	Vol/Sec No	Page No	Cl. No			
1.0	NIT/Price Bid /Package B1/Erection Portion Sl. No - 69 /Pg No.- 19 of 43			Scheme 01/220kV Najafgarh to G-1 Dwarka grid/Making Truss on Najafgarh Nallah crossing (Annexure -D)	During the joint site survey conducted on 11.06.2025, it was observed that the proposed cable route is crossing the Najafgarh Nallah. As per the discussion with BRPL representative and our understanding, construction of a new bridge is not envisaged for the proposed cable crossing. The cable route shall be executed through the existing Najafgarh Nallah Bridge by providing suitable fabrication and installation of a cantilever-type support structure/Others on the existing bridge. In view of the above, we request you to kindly remove the erection portion item no. 69 – “ Making Truss on Najafgarh Nallah Crossing ” along with related Annexure-D from the tender scope for fair and competitive bid price for all bidders. Further, kindly issue the amended BOQ incorporating the above changes.	Permission for using the existing bridge for cable crossing is not feasible. For this tender, Bidders need to design, supply and erect New Truss Structure including foundation with Piling. No change in Scope. Refer Drawing attached as Annexure-4 of Corrigendum-4.
2.0	Joint site visit on dt. 11.06.26			Scheme 02/Naraina to Mayapuri & A- 43 Mayapuri to Metal Forging/ HDD	During the joint site survey conducted on 11.06.2025, it was observed that the proposed cable route is crossing the Railway Line. As per BRPL representative said that HDD including supply & Service including all respect under Client scope and only laying of cable under bidder scope. please confirm the same. if any other please clarify.	BSes will only bear all statutory expense for railway permission .As per the latest clarification received from the concerned team, no work falls under the Client's scope. All activities,
3.0	Joint site visit on dt. 11.06.26			Scheme 02/Naraina to Mayapuri & A- 43 Mayapuri to Metal Forging/GTP	During the joint site survey conducted on 11.06.2025, it was observed that near the Railway Line, the existing cable is required to be cut and jointed with the proposed cable. Kindly provide the existing cable make, technical details, and GTP drawing to assess compatibility and prepare a competitive bid.	Voltage level -33KV , Size of existing cable --3x400 mm2
4.0	Joint site visit on dt. 11.06.26			Scheme 03/220/33KV DTL Dev Nagar substation to DLF mall & A-4 Paschim Vihar substations	During the joint site survey conducted on 15.06.2025, it was observed that the proposed cable route is crossing near the Railway Line. As informed by the BRPL representative, the proposed cable shall be laid through the overbridge footpath by providing concrete encasement with HDPE pipe. please confirm the same. if any other please clarify.	Yes, The proposed cable route is crossing near the Railway Line and the proposed cable shall be laid through the overbridge footpath by providing concrete encasement with HDPE pipe by Bidder.
5.0	NIT/Price Bid /Package B2/Scheme No 03 /Supply Portion/Sl. No - 03 /Pg No.- 39 of 43			Scheme 03/220/33KV DTL Dev Nagar substation to DLF mall & A-4 Paschim Vihar substations/33KV Outdoor Termination	During the joint site survey conducted on 15.06.2025, it was noted that the quantity of outdoor termination has been considered as 12 Nos. Kindly clarify the scope of work and provide the termination arrangement/details with a reference diagram for better understanding.	Pls refer tender Documents
6.0	NIT/Price Bid /Package B2/Scheme No 03 /Supply Portion/Sl. No - 04 /Pg No.- 39 of 43			Scheme 03/220/33KV DTL Dev Nagar substation to DLF mall & A-4 Paschim Vihar substations/33KV GIS	As mentioned in the BOQ, "KIT, TERM, INDR; 33KV; 3CX400MM ² ; GIS Plug-in, compatible with OFC" has been considered under the supply portion; however, the same item is not considered under the erection portion. As per our understanding, this item is not required for the scope of work. Kindly confirm the same. If any please clarify.	Line item 36 added under ETC Portion of Scheme-3. Refer Attachment- 1 Revised BOQ in Corrigendum-4

Sr. No	Tender Clause No	Existing		BRPL Reply
1	SUMMARY OF COMMERCIAL TERMS AND CONDITIONS ANNEXURE – 2.07 Clause No 6	Project completion time is 5 Months for Cable laying and Bay Extension work. Kindly extend the completion time atleast 9 Months	Please confirm.	1. 220kV Najafgarh to G-1 Dwarka grid - 7 months 2. Naraina to Mayapuri & A-43 Mayapuri to Metal Forging - 7 Months 3. 220/33KV DTL Dev Nagar substation to DLF mall & A-4 Paschim Vihar - 5 Months Refer Corrigendum
2	Scheme no.1, Supply, BOQ line item 5 & 12	The lead time for the circuit breaker and CRP supply needs to be increased, or the items should be provided as free issue.	Please confirm.	Refer Corrigendum
3	Scheme no.1, Supply, BOQ line item 22 & 23	As per the BOQ, angles and channels are specified as MS. Kindly confirm whether the requirement is for MS or galvanized material.	Please confirm.	MS; For Bay structure GI
4	Scheme no.1, Supply, BOQ line item 22 & 23	The approved makes for Control and Instrumentation cables are M/s Polycab, KEI, and Parashield. Kindly include Havells in the approved list as well.	Please confirm.	confirm
5	Scheme no.1, Materials Specs with Approved Makes	Steel work in tubular sections (hollow pipes for trusses), including cutting, lifting, fixing, welding, bolting, and primer painting. Kindly confirm whether the equipment structure is tubular or lattice.	Please confirm.	Lattice
6	As per the amendment to the technical specification dated 12th May 2026	As per the amendment to the technical specification dated 12th May 2026, cable drums are returnable as per GTP. Accordingly, kindly include the scope of transportation of empty drums from site to store in BOQ. Further confirm that the drum cost shall not be adjusted against the final bill. Please confirm	Please confirm.	All cable drum shall be on returnable basis at the risk and cost of the bidder. NO amount shall be deducted from Bidder's account for Cable drum. Please quote the price of cable excluding Drum cost.
7	As per the amendment to the technical specification dated 12th May 2026	As per the amendment to the technical specification dated 12th May 2026, OFC cable jointing shall include tying with the joint to facilitate future temperature sensing by BRPL. Kindly provide the approve for process.	Please confirm.	Normal Binding with Cable Joint after OFC Joint
8	As per the amendment to the technical specification dated 12th May 2026	Scheme No 1 & 2 In Scada BOQ, MFM - ACCORD MAKE in BOQ required Qty in 9389.8 Nos, Kindly confirm the Qty.	Please confirm.	Consider it 9390. Refer Corrigendum for Revised BOQ
9	Scheme No 1 & 2 In Scada BOQ	As per Annexure-9, RCC cable cover is specified as M15 (1:2:4). Kindly confirm whether this specification is to be followed or requires upgradation	Please confirm.	RCC Cover shall be M-25 Grade (1:1:2)
10		Existing drawing required for Bay extension work	Please provide	Shall be provided after award
11		SBC test report, if existing drawing not available for further preparation of drawing.	Please provide	Shall be provided after award
12	Scheme no.1, Supply, BOQ line item 4	Existing drawing required for plug in GIS line bay of GIS termination.	Please provide	DTL Drawing will be provided after award

13	SUMMARY OF COMMERCIAL TERMS AND CONDITIONS ANNEXURE – 2.07 Clause No 10 & 11	10% (Ten percent) of the Total contract price (Incl. GST) shall be submitted within 15 days of award of contract with the validity till completion of the contract period	BG clause may kindly be revised to allow submission of one combined Bank Guarantee (CPBG-cum-PBG) instead of two separate Bank Guarantees. The proposed combined BG may: Be submitted at the start of the project Cover both contractual performance and defect liability obligations. Remain valid till Defect Liability Period plus applicable claim period This change will help streamline the process, reduce financial burden on contractors, and ensure smoother project execution without impacting the interests of BSES.	No deviation allowed for this Tender. Under consideration for Future Tenders
		10% (Ten percent) of the Total contract price (Incl. GST) valid till completion of defect liability plus 3 months		C&M
14	ERECTION, TESTING & COMMISSIONING (ETC) BOQ Sr. No 69	As per Annexure-D, After site survey, it is observed that the quantities for reinforcement steel, piling works, and structural materials have not been considered in the BOQ. In view of the above, you are requested to kindly review and revise the BOQ accordingly, ensuring that all relevant items are included for accurate estimation and execution.	Please confirm.	C&M
15	Scope and Services Page no 4 of 12, tender page No 161 Sr. No 36 and General guidelines for laying of cables Sr. D	All cable drum shall be returnable basis so immediate after laying of cable, empty cable drum shall be removed away from site at their risk and cost by respective bidder from time to time in line with project progress. D)After cable laying, empty cable drums shall be taken return back by vendor from site at their own risk and cost. Cost of empty drums shall be deducted from vendor account during final settlement if not returned to BSES in case of in-house project. For turnkey/EPC project, empty drum shall be returnable basis to the vendor	Please confirm whether the cost is recovered from the vendor at the time of final settlement or not.	All cable drum shall be on returnable basis at the risk and cost of the bidder. NO amount shall be deducted from Bidder's account for Cable drum. Please quote the price of cable excluding Drum cost.
16	Scheme-1: Erection BOQ Item No. 4 & 58	It is observed that there is a duplication of line item for grouting in 66kV Scheme-1: Erection BOQ Item No. 4 & 58 Kindly clarify whether both items are to be considered separately or if this is an inadvertent duplication.	Please confirm.	Line item no 58 to be deleted. Refer Corrigendum for Revised BOQ
17	Scheme-2: Erection BOQ Item No. 7 & 8	It is observed that there is a duplication of line items for sand in 33kV scheme-2: Scheme-2: Item No. 7 & 8 Kindly clarify whether both items are to be considered separately or if this is an inadvertent duplication.	Please confirm.	Line item no 8 to be deleted. Refer Corrigendum for Revised BOQ
18	Scheme-3: Erection BOQ Item No. 4 & 30	It is observed that there is a duplication of line items for sand in 33kV scheme-3: Scheme-3: Item No. 4 & 30 Kindly clarify whether both items are to be considered separately or if this is an inadvertent duplication.	Please confirm.	Line item no 30 to be deleted. Refer Corrigendum for Revised BOQ

19	Scheme No-1: Supply BOQ Item No. 41 Erection BOQ Item No. 15 & 16	In Scheme-1, a discrepancy has been noted in the HDPE pipe size: Supply BOQ (Item No. 41) specifies 225 mm HDPE pipe & erection BOQ (Item No. 15 & 16) specifies 200 mm HDPE pipe Please confirm the correct specification to be considered.	Please confirm.	HDPE Pipe for 66kV - 225 mm size HDPE pipe for 33kV - 180 mm Refer Corrigendum for Revised BOQ
20	Scheme No-3: Supply BOQ Item No. 12 Erection BOQ Item No. 6 & 16	In Scheme-1, a discrepancy has been noted in the HDPE Pipe size: Supply BOQ (Item No. 12) specifies 180 mm HDPE pipe & erection BOQ (Item No. 6 & 16) specifies 200 mm HDPE pipe Please confirm the correct specification to be considered.	Please confirm.	HDPE Pipe for 66kV - 225 mm size HDPE pipe for 33kV - 180 mm Refer Corrigendum for Revised BOQ
21	Scheme No-3: Supply BOQ Item No. 4	In Scheme-3, GIS termination is included in the supply BOQ (S. No. 4), however, the same is not reflected in the erection BOQ. Please confirm whether erection scope for GIS termination is included or excluded.	Please confirm.	Line item 36 added under ETC Portion. Refer Corrigendum for Revised BOQ

ANNEXURE-III

COMMERCIAL TERMS & CONDITIONS

SUMMARY OF COMMERCIAL TERMS AND CONDITIONS

SL NO	PARTICULARS	CLAUSE AS PER TENDER	BIDDER'S CONFIRMATION
1	Validity of Bid	180 days from the date of submission of the bid	
2	Price Basis	"Firm" , FOR Delhi store(s)/site(s) basis. Prices shall be inclusive of all taxes & duties, freight up to Delhi store(s)/site(s).	
3	Unloading	Unloading at stores/sites shall be in the Contractor's scope	
4	Insurances	Insurances in Bidder's scope	
5	Payment Terms	Supply: i. 70% pro-rata of supply value item wise shall be payable against R/A bills for supply of equipment and materials within 30 days against receipt & acceptance of material at site and submission ii. 20% pro-rata on account of supply value of the actual executed value after installation/erection of material duly certified by BRPL Project-in- charge. iii. Balance 10% on account of supply value of the actual executed value shall be paid in 30 days after completion of successful acceptance testing, commissioning and handing over of complete systems duly certified by BRPL Engineer-in-Charge Services: i. 90% pro-rata payment of total installation value of the actual executed value shall be paid in 30 days on receipt made progressively on submission of your running invoices on Monthly basis duly certified by our Engineer In charge ii. Balance 10% on account of total installation value of the actual executed value payable shall be paid in 30 days after completion of successful acceptance testing, commissioning and handing over of complete systems duly certified by BRPL Engineer-in-Charge.	
6	Project Schedule	1. Package-B1 Scheme no.1 220kV Najafgarh to G-1 Dwarka grid - 7 months 2. Package-B2 Scheme no.2 Naraina to Mayapuri & A-43 Mayapuri to Metal Forging - 7 Months 3. Package-B2 Scheme no.3 220/33KV DTL Dev Nagar substation to DLF mall & A-4 Paschim Vihar - 5 Months	
7	Defect Liability Period	DLP shall be 24 Months from the Date of Commissioning or 30 months from the date of delivery of final lot of supplies made, whichever is later. Panels, CRP, Cable & Joints: The defect liability period shall be 60 months from the date of commissioning or 66 months from the date of delivery whichever is later. For other Equipment: As per technical Specification of equipment. If not specified, DLP shall be 24 Months from the Date of Commissioning or 30 months from the date of delivery of final lot of supplies made, whichever is later.	
9	Liquidated Damages	Supply Portion: 0.5% (half percent) of the total price for every week of delay or part thereof for undelivered units subject to maximum of 10% of total contract value	



BSES RAJDHANI POWER LIMITED

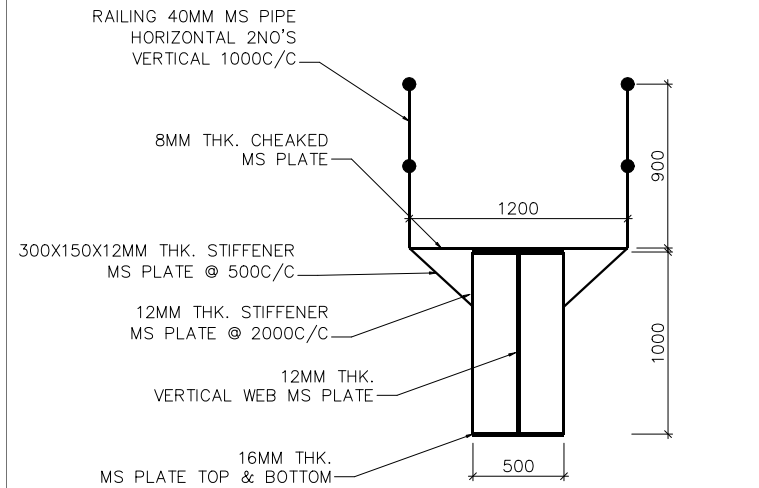
		ETC & Civil Portion: At the rate of 0.5% of the total contract price per each week of delay or pro-rate thereof, by which the completion is delayed. Max LD of delay is 10% of contract value.	
10	Contract Performance Bank Guarantee	10% (Ten percent) of the Total contract price (Incl. GST) shall be submitted within 15 days of award of contract with the validity till completion of the contract period.	
11	Performance Bank Guarantee	10% (Ten percent) of the Total contract price (Incl. GST) valid till completion of defect liability plus 3 months	
12	Reverse Auction	Acceptance for participation in Reverse Auction event	

Seal of the Bidder:

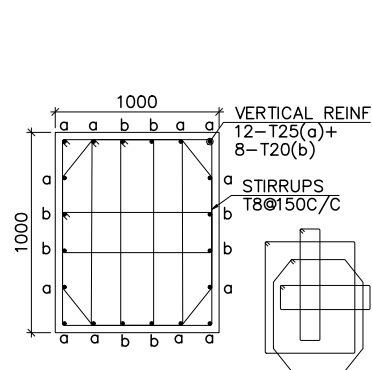
Signature:

Name:

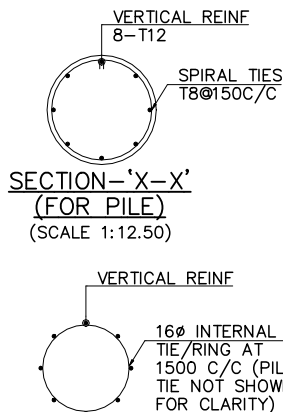
ANNEXURE-IV
TRUSS DRAWING



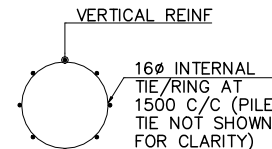
TRUSS DETAILS
(SCALE 1:25)



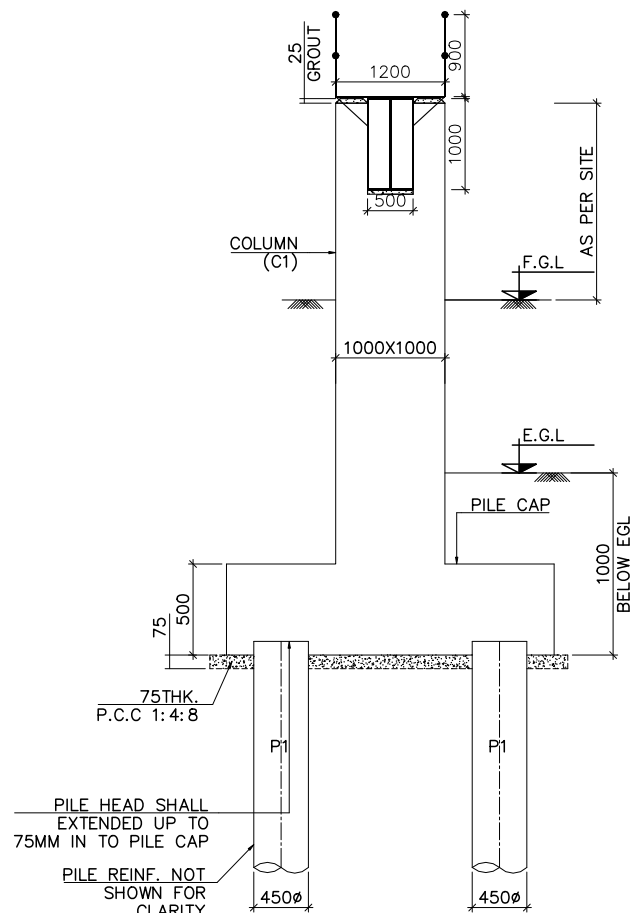
TYPICAL DETAIL FOR COLUMN C1
(SCALE 1:25)



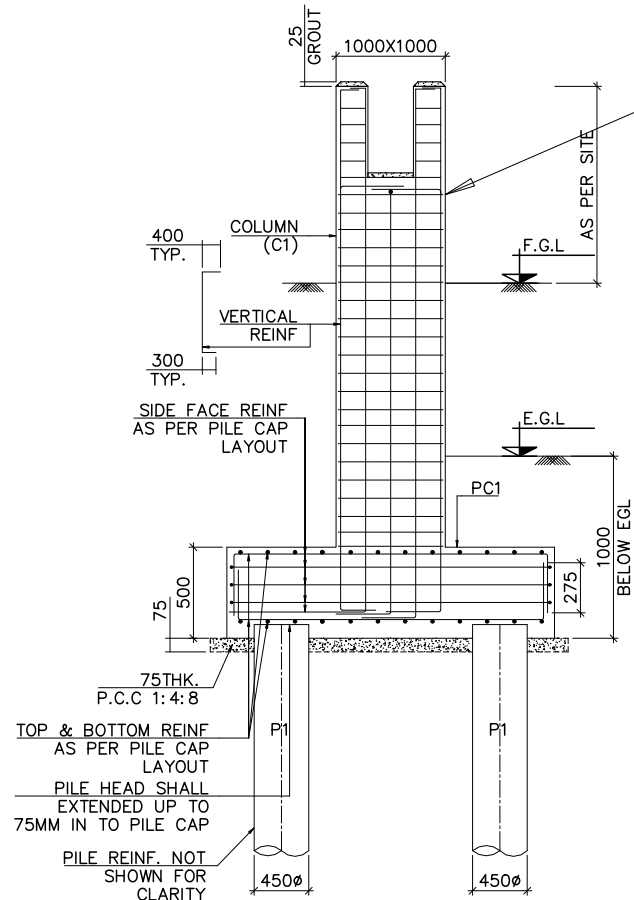
SECTION -X-X' (FOR PILE)
(SCALE 1:12.50)



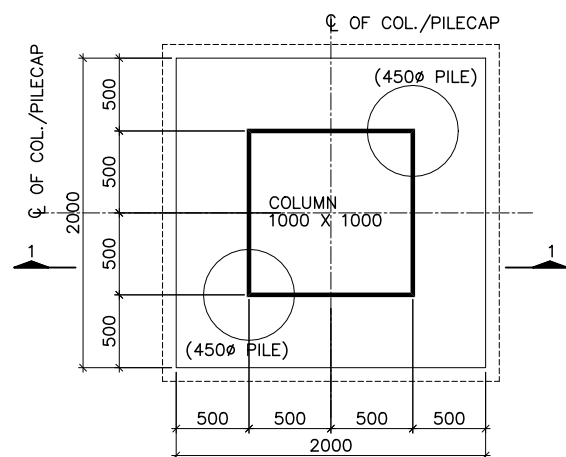
INTERNAL TIE/RING
(SCALE 1:12.50)



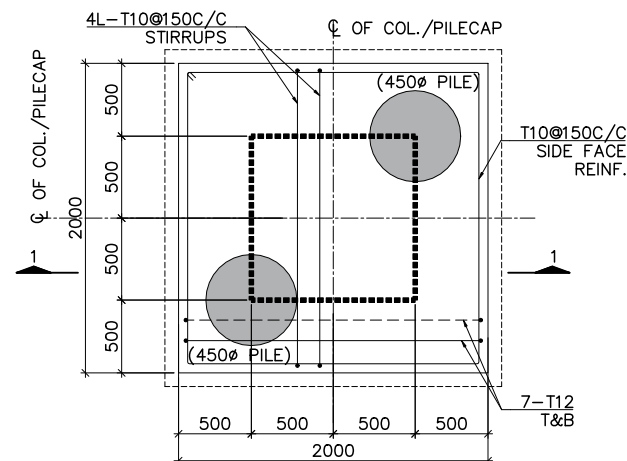
SECTION 1-1
(SCALE 1:25)



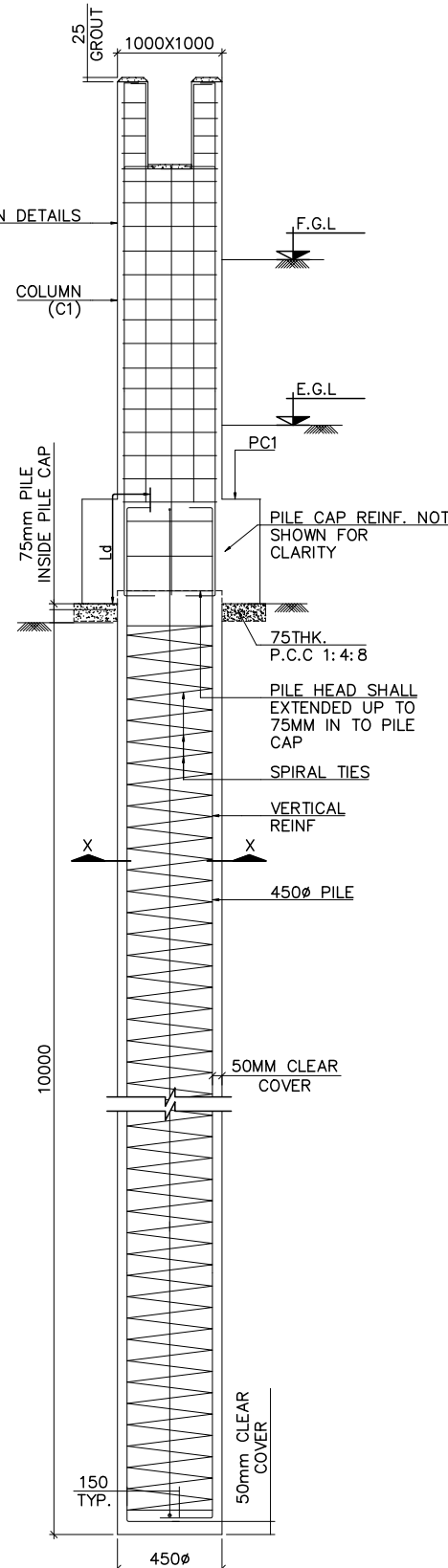
SECTION 1-1
(SCALE 1:25)



PILE CAP & COLUMN PLAN DETAIL
(SCALE 1:25)



PILE CAP & COLUMN DETAIL
(SCALE 1:25)



DETAILS OF PILE-P1 (450mm PILE)
(SCALE NTS)

GENERAL NOTES FOR PILING :

- ALL DIMENSIONS ARE IN MM AND LEVELS ARE IN METER.
- ALL PILING WORK SHALL BE CARRIED OUT AS PER TECHNICAL SPECS, SCHEDULE OF ITEMS AND CONFIRMING TO QUALITY CHECKS SPECIFIED IN THE FQP.
- MINIMUM GRADE OF CONCRETE SHALL BE M-25 FOR PILE CAP & COLUMN. (COMP. STRENGTH IN 28 DAYS 25 N/mm² CEMENT CONTENT SHALL BE 250 KG/CU.M) & MINIMUM GRADE OF CONCRETE SHALL BE M-30 FOR PILE (COMP. STRENGTH IN 28 DAYS 30 N/mm² CEMENT CONTENT SHALL BE 300 KG/CU.M).
- PILE INSTALLATION / TERMINATION CRITERION
THE TERMINATION LEVEL OF THE PILE SHALL BE DECIDED BASED ON THE CRITERIA BELOW :
4.a. MINIMUM LENGTH OF PILE BELOW EGL SHALL BE AS FOLLOWS:
FOR 300 MM DIA PILE -9.00 M.
- BORING / DRILLING SHALL BE CARRIED OUT BY TMR RIGS.
- THE BENTONITE SLURRY SHALL BE MAINTAINED AT 1.5M ABOVE THE GROUND WATER LEVEL DURING BORING OPERATIONS AND TILL THE PILE IS CONCRETED. THE BENTONITE SLURRY SHALL BE UNDER CONSTANT CIRCULATION TILL START OF CONCRETING AND SHALL MEET THE REQUIREMENTS STIPULATED IN THE TECHNICAL SPECIFICATIONS.
- WHILE WITHDRAWING THE CUTTING TOOL DURING THE PILE BORING OPERATION, EXTRA CARE SHALL BE TAKEN SO THAT NO SUCTION IS CREATED ON THE SIDES OR BELOW THE CUTTING TOOL SO AS NOT TO DISTURB THE ADJOINING SOIL. THE CUTTING TOOL SHALL BE WITHDRAWN IN SHORT STEPS TO ALLOW AIR AND BENTONITE SLURRY TO FLOW BY, THEREBY PREVENTING ANY SUCTION BELOW.
- CLEANING OF PILE BORE: AFTER COMPLETION OF THE PILE BORE UP TO THE REQUIRED DEPTH, THE PILE BORE SHALL BE CLEANED BY TWO STAGE FLUSHING OF SLURRY USING AIRLIFT TECHNIQUE i.e. AFTER COMPLETION OF BORING AND AFTER PLACEMENT OF REINFORCEMENT CAGE BUT JUST BEFORE COMMENCEMENT OF CONCRETING. THE BOTTOM OF THE PILE BORE SHALL BE THOROUGHLY CLEANED BT AIRLIFT TECHNIQUE. THE AIR PIPE SHALL BE AS CLOSE AS POSSIBLE TO BOTTOM OF PILE BORE AND SHALL CONNECT AT RIGHT ANGLE (A J-TYPE METAL PIPE WELDED / FIXED WITH THE BOTTOM SEGMENT OF TREMIE PIPE) TO TREMIE PIPE AT BOTTOM FROM OUTSIDE THE TRMIE PIPE, RATHER THAN BEING LOWERED STRAIGHT INSIDE THE TREMIE PIPE WHICH WILL DISTURB THE BOTTOM OF BOARING. THE FLUSHING SHALL BE BY THE JETTING ACTION OF AIR IN THE UPWARD DIRECTION THROUGH THE DRILLING TOOL OR TREMIE PIPE AS THE CASE MAY BE. CLEANING SHALL ENSURE THAT THE PILE BORE IS COMPLETELY FREE FROM SLUDGE / BORED MATERIAL, DEBRIS OF ROCK / BOULDER ETC. NECESSARY CHECKS SHALL BE MADE SO AS TO CONFIRM THE THOROUGH CLEANING OF THE PILE BORE.
- A SURGE CONCRETE OF ABOUT 1 TO 1.5 CUM SHALL BE DONE IN THE FIRST POUR BY SUDDENLY REMOVING THE CLOSURE PLATE PROVIDED AT THE BOTTOM OF THE FUNNEL SO AS TO DISPLACE COMPLETELY THE SLUDGE / BORED MATERIAL / DEBRIS ETC FROM THE BOTTOM OF PILE BORE. DRILLING MUD SHALL BE MAINTAINED SUFFICIENTLY ABOVE THE GROUND WATER LEVEL AS SPECIFIED IN THE SPECIFICATION.
- CONCRETING SHALL NOT PROCEED IF CONTAMINATED DRILLING MUD AT THE BOTTOM OF THE PILE BORE POSSESSES A DENSITY OF MORE THAN 1.25 T/CU.M.
- CONCRETING SHALL NOT BE DONE UNTIL THE ENGINEER IS SATISFIED THAT THE TERMINATION LEVEL OF PILE SATISFIES THE INSTALLATION CRITERIA MENTIONED IN (5) ABOVE.
- THE TIME INTERVAL BETWEEN THE COMPLETION OF BORING AND START OF PLACING OF CONCRETE IN PILE BORE SHALL NOT EXCEED 6 HOURS.
- THE SLUMP OF CONCRETE SHALL VARY BETWEEN 150 TO 180 MM.
- 0.6M PILE TOP PORTION TO BE REMOVED FOR ALL LAITANCE AND WEAK CONCRETE AND TO ENSURE GOOD CONCRETE AT CUT-OFF LEVEL.
- LONGITUDINAL REINFORCEMENT IN PILE SHALL BE HIGH STRENGTH DEFORMED TMT STEEL BARS OF GRADE Fe500D CONFORMING TO IS 2062
- LAPS IN REINFORCEMENT SHALL BE STAGGERED AS SPECIFIED IN IS 456 OR SP34.
- PLACEMENT REINFORCEMENT CAGE TO ITS FULL LENGTH SHALL BE ENSURED BEFORE CONCRETING. TO PREVENT TILTING, THE REINFORCEMENT CAGE SHALL BE SUSPENDED BY MEANS OF 2 NOS. OF HANGER BARS SUPPORTED FROM CASING PIPE.
- CONCRETING AND CASTING OF PILES SHALL BE AS PER IS456 AND TESTING OF BOTH INITIAL AND ROUTINE PILES SHALL BE CARRIED OUT AS PER IS 2911
- PROVIDE CLEAR COVER:-
19.a. COLUMN/PEDESTAL= 40mm.
19.b. FOUNDATION/PILE CAP= 50mm.
19.c. PILE= 50mm.
- FOR OVER ALL FOUNDATION DRAWING REFER DRAWING NO:PRJ25-C-SYD-F-OFL-050
- FOR ANCHOR BOLT DETAIL REFER DRAWING NO:PRJ25-C-SYD-F-FB-049

LEGENDS :

FGL	- FINISHED GROUND LEVEL	C/C	- CENTER TO CENTER
NGL	- NATURAL GROUND LEVEL	E.G.L	- EXISTING GROUND LEVEL
F.F.L	- FINISHED FLOOR LEVEL	PCC	- PLAIN CEMENT CONCRETE
T.O.C	- TOP OF CONCRETE	C.L	- CENTER LINE
DIA.	- DIAMETER	T & B	- TOP & BOTTOM
T.O.G.R	- TOP OF GRAVEL	EL.	- ELEVATION
T.O.G	- TOP OF GROUT	B/W	- BOTH WAYS
TYP.	- TYPICAL	REINF.	- REINFORCEMENT
RCC	- REINFORCED CEMENT CONCRETE		
BOC.	- BOTTOM OF CONCRETE		

CLIENT:-

BSES

BSES RAJDHANI POWER LIMITED

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Nehru Place Delhi, -110019, DELHI,
INDIA Telephone: 91-011 -39999444

FABRICATION AND ERECTION OF TRUSS OVER
DRAIN AT NEAR KAKRAULA VILLAGE BRIDGE

AT NAJAFAGARH

DRAWN BY	KSR	SCALE	1:25
CHD.BY	SK	DATE	02-07-2026
APPD.BY	AJ	DRG.NO	KVB-01-2026