IN SCOPE OF NPCL / UPPCL

1 R, 3C, 300 SQ MM 33 KV (E) HT XLPE AL. AR. INCOMING CABLE FROM 33 KV SUBSTATION

1 R, 3C, 300 SQ MM 33 KV (E) HT XLPE AL. AR. OUTGOING CABLE TO 33 KV SUBSTATION

33 KV 3VCB HT PANEL

33 KV ISOLATOR

33 KV ISOLATOR

33 KV VCB

3 CORE 300 SQ. MM 33 KV HT (E) XLPE INSULATED ARMOURED ALUMINIUM CABLE

TO CONNECT MAIN EARTH GRID BY 2 nos 50 X 6 MM GI STRIP

33 KV METERING PANEL

TO CONNECT MAIN EARTH GRID BY 2 nos 50 X 6 MM GI STRIP

1R, 3C, 300 SQ MM 33KV HT (E) XLPE AL. AR. CABLE

NOTES:-

1. ALL THE INDICATIONS & METERING SHALL BE DONE THROUGH 110 VOLTS FROM SECONDARY OF PT's. NO INDICATIONS LAMPS & METERING SHOULD NOT BE OPERATED AT 415 VOLTS.
2. 1 No. CT's TO BE PROVIDED IN LOOSE CONDITION BY THE PANEL MANUFACTURER TO THE CLIENT FOR REF PROTECTION.
3. 3 Nos. CT's TO BE PROVIDED IN LOOSE CONDITION BY THE PANEL MANUFACTURER TO THE CLIENT FOR DIFFERENTIAL PROTECTION.

GENERAL NOTE:- In normal case all three lamps shall be "ON" to indicate that incoming power supply is available. In case of power resumption after failure buzzer shall ring to indicate that power supply is resume, there shall be one push button to acknowledge the same.

This PLC system shall have.

1) The PLC shall have a provision of Interlocking between different Incomers & Bus couplers to avoid Paralleling of two different supplies from Transformer & DG sets.
2) Logic to AUTO START & AUTO STOP for each DG sets.
3) Taking data from Energy Analysers and issuing and selecting starting common for DG set as per above logic. Further it shall also be possible to START/STOP DG sets in Manual/Test Mode.
4) Paralleling of DG sets have not been envisaged.
5) In case of any discrepancy in interlocking scheme inform consultant before execution.

NOTE : -
FOR MAIN LT PANELS

1) All ACB should have Ics = Icu = Icw = 50 KA for 1 sec, fully rated at 50 deg C ambient temperature
2) All ACB's shall have an inbuilt facility of O/C, S/C, Instantaneous S/C & Earth fault protection
3) All ACB's shall have Auxiliary switches with 4NO + 4NC contacts.
4) All Incoming ACB's shall facility with LCD / LED display for event history & measurement of current parameters.
5) All MCCB shall be microprocessor based with inbuilt O/L & S/C release with E/F protection
6) All MCCB's shall be Ics = 100% Icu,
7) All MCCB's shall have adjustable O/L & S/C trip setting as per load requirement

GA DRAWINGS SHALL BE GOT APPROVED BEFORE FABRICATION. THE PANEL HAS TO BE SPECIFICALLY FABRICATED AS PER THE SPACE AVAILABLE AT PANEL ROOM IN BASEMENT. THE EXISTING COLUMN POSITIONS WILL ALSO BE CONSIDERED.

Interlocking Scheme For PLC load manager.

Conditions		EQUIP.	DG - 01 1010 KVA	T/F - 01 (2000 KVA)	B/C	T/F - 02 (2000 KVA)	Breaker Position DG - 02 750 KVA	B/C	DG - 03 750 KVA
		ACB No.	1	2	6	3	4	7	5
Mains "ON"	Under Normal Condition. Total Load is at Transformers.		OFF	ON	OFF	ON	OFF	ON	OFF
Mains Failure	When max. demand Load is upto 510 KW then load transferred to DG - 03		OFF	OFF	ON	OFF	OFF	ON	ON
	When max. demand Load is upto 510 KW & DG - 03 fails to starts, then Load transferred to DG - 02.		OFF	OFF	ON	OFF	ON	ON	OFF
	When max. demand Load is upto 510 KW, & DG - 02 also fails to starts, then Load transferred to DG - 01.		ON	OFF	ON	OFF	OFF	ON	OFF
	When max. demand Load is upto 687 KW then Load transferred to DG - 01.		ON	OFF	ON	OFF	OFF	ON	OFF
	When combined max. demand load of Bus section 2 & 3 is upto 510 KW . then Load of Bus section 2 & 3 transferred to DG - 03, Load of Bus section - 1 is at DG - 01		ON	OFF	OFF	OFF	OFF	ON	ON
	When combined max. demand load of Bus section 2 & 3 is upto 510 KW & DG - 03 fail to start then load of Bus section - 2 & 3 transfered to DG - 02, Load of Bus section - 1 is at DG - 01 .		ON	OFF	OFF	OFF	ON	ON	OFF
	When combined max. demand load of Bus section 1 & 2 is upto 510 KW . then Load of Bus section 1 & 2 transferred to DG - 02, Load of Bus section - 3 is at DG - 03 .		OFF	OFF	ON	OFF	ON	OFF	ON
	When combined max. demand load of Bus section 1 & 2 is upto 510 KW & DG - 02 fail to start then load of Bus section - 1 & 2 transfered to DG - 01, Load of Bus section - 3 is at DG - 03.		ON	OFF	ON	OFF	OFF	OFF	ON
	When combined max. demand load of Bus section 1 & 2 is upto 687 KW . then Load of Bus section 1 & 2 transfered to DG - 01, Load of Bus section - 3 is at DG - 03 .		ON	OFF	ON	OFF	OFF	OFF	ON
	When max. demand Load exceeds from 687 KW and not fulfill any condition shown above. then all the three DG's shall run independently at separate bus bar. ie. DG-01 at bus section 01, DG-02 at bus section -2, DG - 3 at bus section-3.		ON	OFF	OFF	OFF	ON	OFF	ON

HT CABLE TO SUBSTATION - 03

1R, 3C, 300 SQ MM 33KV HT (E) XLPE AL. AR. CABLE

33 KV 4VCB HT PANEL SUBSTATION - 01

33 KV / √3 / 110V / √3 .100VA / Ph. CL. 0.5

ENERGY ANALYSER CONSISTING OF I & V, KW, KWH, KVA, KVAH, KVARH, PF, Hz & MDI

200 / 100 / 5 / 5A

100 / 50 / 5 / 5A

630 AMP. 33 KV VCB

630 A. TP, CU. BUS BAR (25 KA FAULT FOR 3 SEC)

50 / 5 / 5A

TO CONNECT MAIN EARTH GRID BY 2 nos 50 X 6 MM GI STRIP

3 CORE 300 SQ. MM 33 KV HT (E) XLPE INSULATED ARMOURED ALUMINIUM CABLE

2000 KVA ,33 / 0.415 KV TRANSFORMER -01 (WITH OLTC)

2000 KVA ,33 / 0.415 KV TRANSFORMER -02 (WITH OLTC)

50x6MM GI STRIP (BODY)

50x6 MM CU STRIP (NEUTRAL)

TC-1's 3200 / 1A CLASS - PS (BEFORE STAR POINT OF SECONDARY WINDING)

10R, 3.5C , 300 SQ.MM LT XLPE AL. AR. CABLE

BOTTOM ENTRY FOR CABLES

3200 AMP. 4 POLE (50KA) ACB (MDO) WITH O/C, S/C & E/F (MICROPROCESSOR BASED) (NEAR TRANSFORMER)

TO CONNECT MAIN EARTH GRID BY 2 nos 50 X 6 MM GI STRIP

10R, 3.5C , 300 SQ.MM LT XLPE AL. AR. CABLE

CONTROL / PILOT WIRE

1010 KVA,415 VOLTS D.G. SET # 01 WITH ISOLATOR

3C's 1600 / 1A CLASS - PS (BEFORE STAR POINT OF ALTERNATOR)

5R, 3.5C , 300 SQ.MM LT XLPE AL. AR. CABLE

750 KVA,415 VOLTS D.G. SET # 02 WITH ISOLATOR

4R, 3.5C , 300 SQ.MM LT XLPE AL. AR. CABLE

750 KVA,415 VOLTS D.G. SET # 03 WITH ISOLATOR

4R, 3.5C , 300 SQ.MM LT XLPE AL. AR. CABLE

SPD TYPE-01 10/350 µ sec. (100/25KA)

SEE GENERAL NOTES

415V / 110V 100VA/PH CL. 1.0

1 SET 3CT's 3200 / 5A CLASS - 1.0, 15VA

1 SET 3CT's 3200 / 1A CLASS - PS

1 SET 3CT's 3200 / 5A CLASS - 1.0, 15VA

1 SET 3CT's 3200 / 5A CLASS - 5P20, 15VA

1 SET 3CT's 1600 / 5A CLASS - 1.0, 15VA

1 SET 3CT's 1600 / 5A CLASS - 5P20

1 SET 3CT's 1600 / 1A CLASS - PS

1 SET 3CT's 1200 / 5A CLASS - 1.0, 15VA

1 SET 3CT's 1200 / 5A CLASS - 5P20

TO APFCR (3Ø)

32 A TP MCCB (50 KA)

TO OLTC / RTCC PANEL

160 A TP MCCB (50 KA)

630 A TP MCCB (50 KA)

800 A TP MCCB (W/O U/V)

3C, 70 SQ.MM LT XLPE AL. CABLE

60 KVAR

MAIN LT PANEL
LOCATION - BASEMENT
Fault withstand capacity - 50 KA for 1 sec.

PLC
(WITH VIEW PANEL)
FOR SENSING MAINS, AUTOLOAD MANAGEMENT, OPERATION OF MAINS INCOMERS/BUSCOUPLERS ACBs, INTERFACE WITH DG SETS POC (NOT FOR DG SYNCHRONIZATION)

FOR OUTGOING FEEDERS METERING)

BUS PT.

1600 AMP. 4 POLE (50KA) ACB (EDO) WITH O/C, S/C & E/F (MICROPROCESSOR BASED) (WITH U/V RELEASE)

3200 AMP. 4 POLE (50KA) ACB (EDO) WITH O/C, S/C & E/F (MICROPROCESSOR BASED) (WITH U/V RELEASE)

1250 AMP. 4 POLE (50KA) ACB (EDO) WITH O/C, S/C & E/F (MICROPROCESSOR BASED) (WITH U/V RELEASE)

3200 AMP. 4 POLE (50KA) ACB (EDO) (WITH U/V RELEASE)

2000 AMP. 4 POLE (50KA) ACB (EDO) (WITH U/V RELEASE)

TRIP CKT HEALTHY

SPRING CHARGED

HOLD

3200A, 415V, 3Ø, 4W, 50Hz, 50KA, AI.BUS - 01

3200A, 415V, 3Ø, 4W, 50Hz, 50KA, AI.BUS - 02

2000A, 415V, 3Ø, 4W, 50Hz, 50KA, AI.BUS - 03

FEEDER NUMBER	F - 1	F - 2	F - 3	F - 4	F - 5	F - 6	F - 7	F - 8	F - 9	F - 10	F - 11
CIRCUIT BREAKER RATING IN AMPS	1000 A TP MCCB (50 KA)	1000 A TP MCCB (50 KA)	1250 A TP ACB (50 KA)	800 A TP MCCB (50 KA)	160 A TP MCCB (50 KA)	800 A (W/O U/V Protection) TP MCCB (50 KA)	SPACE ONLY FOR 1 NO. 800 A TP MCCB (50 KA)	400 A TP MCCB (50 KA)	400 A TP MCCB (50 KA)	1250 A TP ACB (50 KA)	1000 A TP MCCB (50 KA)
CABLE SIZE IN SQ. MM. 'AL'	3R, 3.5C, 185	3R, 3.5C, 185	3R, 3.5C, 300	2R, 3.5C, 240	1R, 3.5C, 95	2R, 3.5C, 300	..	---	---	3R, 3.5C, 300	---
FEEDER DESCRIPTION	RISING MAINS TOWER - D2	RISING MAINS TOWER - G2	RISING MAINS TOWER - D3	RISING MAINS TOWER - G4	WATER CURTAIN PUMP	FIRE FIGHTING PANEL	RISING MAINS TOWER - J2	BASEMENT VENTILATION-01	BASEMENT VENTILATION-02	CAP. PANEL-01 600 KVAR	SPARE

FEEDER NUMBER	F - 12	F - 13	F - 14	F - 15	F - 16	F - 17	F - 18
CIRCUIT BREAKER RATING IN AMPS	630 A TP MCCB (50 KA)	1250 A TP ACB (50 KA)	SPACE ONLY FOR 1 NO. 630 A TP MCCB (50 KA)	250 A TP MCCB (50 KA)	250 A TP MCCB (50 KA)	1250 A TP ACB (50 KA)	1000 A TP MCCB (50 KA)
CABLE SIZE IN SQ. MM. 'AL'	2R, 3.5C, 185	3R, 3.5C, 300	..	1R, 3.5C, 150	1R, 3.5C, 150	3R, 3.5C, 300	---
FEEDER DESCRIPTION	RISING MAINS TOWER - G1	RISING MAINS TOWER - G3	RISING MAINS TOWER - L	S.T.P.	WATER SUPPLY PUMP	CAP. PANEL-02 600 KVAR	SPARE

FEEDER NUMBER	F - 19	F - 20	F - 21	F - 22	F - 23
CIRCUIT BREAKER RATING IN AMPS	630 A TP MCCB (50 KA)	630 A TP MCCB (50 KA)	800 A TP MCCB (50 KA)	630 A TP MCCB (50 KA)	800 A TP MCCB (50 KA)
CABLE SIZE IN SQ. MM. 'AL'	2R, 3.5C, 185	2R, 3.5C, 185	2R, 3.5C, 240	2R, 3.5C, 185	---
FEEDER DESCRIPTION	MAIN COMMON SERVICE PANEL	RISING MAINS TOWER - D1	RISING MAINS TOWER - D4	CLUB	SPARE

TO CONNECT MAIN EARTH GRID BY 2 nos 50 X 6 MM GI STRIP

LEGENDS

SYMBOLS	DESCRIPTION
	33 KV VCB (VACCUM CIRCUIT BREAKER)
	ACB (AIR CIRCUIT BREAKER)
	HRC FUSES
	(MCCB) MOULDED CASE CIRCUIT BREAKER
	POTENTIAL TRANSFORMER
	CURRENT TRANSFORMER
A	AMMETER
V	VOLTMETER
ASS	AMMETER SELECTOR SWITCH
VSS	VOLTMETER SELECTOR SWITCH
	INDICATING LAMP
EA	ENERGY ANALYZER WITH MDI
PF	POWER FACTOR METER
Hz	FREQUENCY METER
	CAPACITOR
VR	VOLTAGE RELAY
	M.C.B. (MINIATURE CIRCUIT BREAKER)
DM	DUAL REGISTER ENERGY METER
	ISOLATOR
	PUSH BUTTON
S/S L R	SELECTOR SWITCH
TNC	TRIP/NORMAL/CLOSE SWITCH WITH LOST MOTION DEVICE
	ANUNCIATION WINDOW WITH
86	MASTER TRIP RELAY
59	OVER VOLTAGE RELAY
95	TRIP CIRCUIT SUPERVISION RELAY
64	RESTRICTED EARTH FAULT RELAY
50	INST. O/C RELAY
51	IDMT RELAY
50/51	IDMT & INSTANTANEOUS RELAY
59	OVER VOLTAGE RELAY WITH TIMER
27	UNDER VOLTAGE RELAY WITH TIMER
2	TIMER
32	REVERSE POWER RELAY
87	DIFFERENTIAL RELAY
BC	BATTERY CHARGER
TS	TEMPERATURE SCANNER
51V	VOLTAGE RESTRAINED OVER CURRENT RELAY
51N	IDMT EARTH FAULT RELAY
51G	SENSITIVE EARTH FAULT RELAY

project
NEO TOWN GROUP HOUSING
PLOT NO. GH-O3 SECTOR -TECHZONE-04, GREATER NOIDA FOR M/S PATEL ADVANCE JV

title
ELECTRICAL DRAWING (SUBSTATION-1)

subtitle
MAINS SCHEMATIC DIAGRAM (For Tower D1, D2, D3, D4, G1, G2, G3, G4, J2 & L)

drawing released for
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- ■ CONSTRUCTION

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