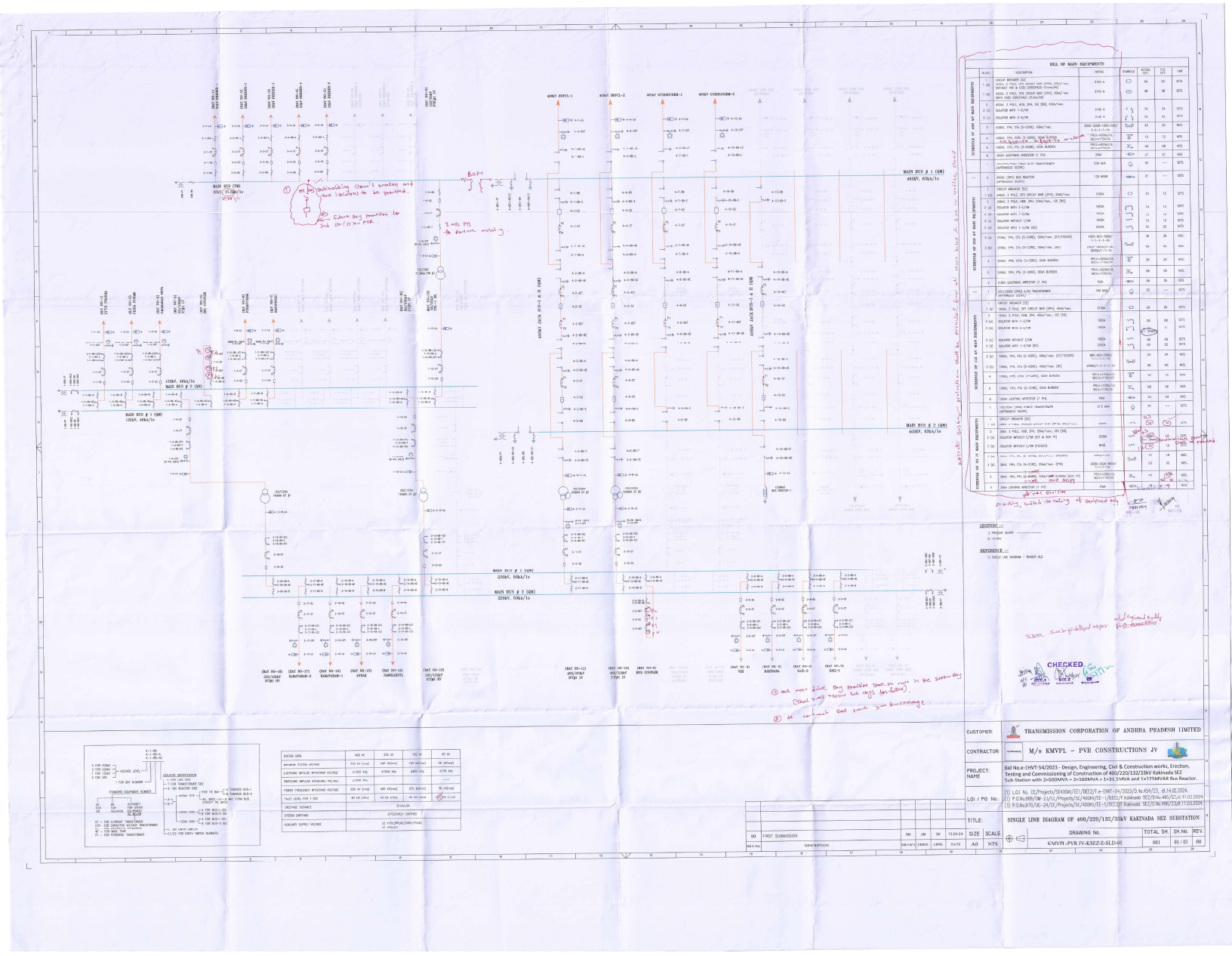


BILL OF MAIN EQUIPMENTS

SCHEDULE OF 400 kV MAIN EQUIPMENTS	SL.NO.	DESCRIPTION	RATING	SYMBOLS	ACTUAL QTY.	P.S. QTY.	UNIT
	1	CIRCUIT BREAKER [CB]					
	1 (a)	400kV, 3 POLE, SF6 CIRCUIT BKR (3PH), 50kA/1sec. (WITHOUT PIR & CSD) (DEAD TANK)	3150 A		04	04	NOS.
	1 (b)	400kV, 3 POLE, SF6 CIRCUIT BKR (3PH), 50kA/1sec. (WITH CSD) (DEAD TANK)-TYPE-PVT	3150 A		08	08	SETS
	2	400kV, 3 POLE, HOR, 3PH, ISO [BB], 50kA/1sec.	3150 A		34	34	SETS
	2 (a)	ISOLATOR WITH 1-E/SW					
	2 (b)	ISOLATOR WITH 2-E/SW	3150 A		02	02	SETS
	5	420kV, 1PH, CTs (5-CORE), 50kA/1sec.	3000-2000-1000-500/1-1-1-1-1A		42	42	NOS.
	4	420kV, 1PH, CVTs (3-CORE), 50kA BURDEN	420/√3 kV/110/√3 V, 50/50/50/50 VA		12	12	NOS.
	5	420kV, 1PH, PTs (3-CORE), 50kA BURDEN	400/√3 kV/110/√3 V, 50/50/50 VA		08	08	NOS.
	6	350kV LIGHTNING ARRESTOR (1 PH)	336kV		21	21	NOS.
	---	AUXILIARY TRANSFORMER (ATF) (WITHOUT SCOPE)	500 kVA		02	---	SETS
	3	400kV, 125MVAR BUS REACTOR (WITHOUT SCOPE)	125 MVAR		01	---	SETS
SCHEDULE OF 220 kV MAIN EQUIPMENTS	1	CIRCUIT BREAKER [CB]					
	1 (a)	245kV, 3 POLE, SF6 CIRCUIT BKR (3PH), 50kA/1sec.	3150A		13	13	SETS
	2	245kV, 3 POLE, HOR, 3PH, 50kA/1sec, ISO [BB].					
	2 (a)	ISOLATOR WITH 2-E/SW	1600A		14	14	SETS
	2 (b)	ISOLATOR WITH 1-E/SW	1600A		12	12	SETS
	2 (c)	ISOLATOR WITHOUT E/SW	1600A		12	12	SETS
	2 (d)	ISOLATOR WITH 1-E/SW (BC)	2000A		02	02	SETS
	5 (a)	245kV, 1PH, CTs (5-CORE), 50kA/1sec. (ICT/FEEDER)	1600-800-500/1-1-1-1-1A		38	38	NOS.
	5 (b)	245kV, 1PH, CTs (3-CORE), 50kA/1sec. (BC)	2000-1000-500/1-1-1A		02	02	NOS.
	4	245kV, 1PH, CVTs (3-CORE), 50kA BURDEN	245/√3 kV/110/√3 V, 50/50/50/50 VA		35	35	NOS.
	5	245kV, 1PH, PTs (3-CORE), 50kA BURDEN	220/√3 kV/110/√3 V, 50/50/50/50 VA		08	08	NOS.
	6	216kV LIGHTNING ARRESTOR (1 PH)	192kV		36	36	NOS.
	---	220/132kV [ICT#1 &2] TRANSFORMER (WITHOUT SCOPE)	160 MVA		02	---	SETS
SCHEDULE OF 132 kV MAIN EQUIPMENTS	1	CIRCUIT BREAKER [CB]					
	1 (a)	145kV, 3 POLE, SF6 CIRCUIT BKR (3PH), 40kA/1sec.	3150A		08	08	SETS
	2	145kV, 3 POLE, HOR, 3PH, 40kA/1sec, ISO [BB].					
	2 (a)	ISOLATOR WITH 1-E/SW	1600A		08	08	SETS
	2 (b)	ISOLATOR WITHOUT E/SW	1600A		11	11	SETS
	2 (c)	ISOLATOR WITH E/SW (BC)	1000A		02	02	SETS
	3 (a)	145kV, 1PH, CTs (5-CORE), 40kA/1sec. (ICT/FEEDER)	800-400-200/1-1-1-1-1A		24	24	NOS.
	3 (b)	145kV, 1PH, CTs (3-CORE), 40kA/1sec. (BC)	2400/1-1-1-1-1A		08	08	NOS.
	4	145kV, 1PH, CVTs (3-CORE), 50kA BURDEN	132/√3 kV/110/√3 V, 50/50/50/50 VA		12	12	NOS.
	5	145kV, 1PH, PTs (3-CORE), 50kA BURDEN	132/√3 kV/110/√3 V, 50/50/50/50 VA		08	08	NOS.
	6	120kV LIGHTNING ARRESTOR (1 PH)	96kV		24	24	NOS.
	---	132/33kV [3MVA] 4TWCR TRANSFORMER (WITHOUT SCOPE)	31.5 MVA		01	---	SETS
SCHEDULE OF 33 kV MAIN EQUIPMENTS	1	CIRCUIT BREAKER [CB]					
	1 (a)	36kV, 3 POLE, SF6 CIRCUIT BKR (3PH), 40kA/1sec.	2000A		13	13	SETS
	2	36kV, 3 POLE, HOR, 3PH, 25kA/1sec, ISO [BB].					
	2 (a)	ISOLATOR WITH 1-E/SW	800A		18	18	NOS.
	2 (b)	ISOLATOR WITHOUT E/SW (FEEDER)	800A		13	13	NOS.
	3 (a)	36kV, 1PH, CTs (5-CORE), 25kA/1sec. (PTR)	2000-1200-800/1-1-1-1-1A		33	33	NOS.
	4	36kV, 1PH, PTs (3-CORE), 25kA/1sec BURDEN (ISO. PT)	33/√3 kV/110/√3 V, 50/50/50/50 VA		01	01	NOS.
	5	30kV LIGHTNING ARRESTOR (1 PH)	30kA		06	06	NOS.

SYSTEM DATA	400 kV	220 kV	132 kV	33 kV
MAXIMUM SYSTEM VOLTAGE	420 kV (rms)	245 kV(rms)	145 kV(rms)	36 kV(rms)
LIGHTNING IMPULSE WITHSTAND VOLTAGE	1425 KVp	1050 KVp	650 KVp	170 KVp
SWITCHING IMPULSE WITHSTAND VOLTAGE	1050 KVp			
POWER FREQUENCY WITHSTAND VOLTAGE	630 kV (rms)	460 kV(rms)	275 kV(rms)	70 kV(rms)
FAULT LEVEL FOR 1 SEC	63 kA (rms)	50 kA (rms)	40 kA (rms)	25 kA (rms)
CREEPAGE DISTANCE	31mm/kV			
SYSTEM EARTHING	EFFECTIVELY EARTHED			
AUXILIARY SUPPLY VOLTAGE	a) 415V,3PHASE,50HZ,1PHASE b) 110V,DC			

REV.NO.	DESCRIPTION	DRAWN	CHECD.	APPD.	DATE
00	FIRST SUBMISSION	RM	JM	SK	12.04.24

CUSTOMER: TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED

CONTRACTOR: M/s KMVPL – PVR CONSTRUCTIONS JV

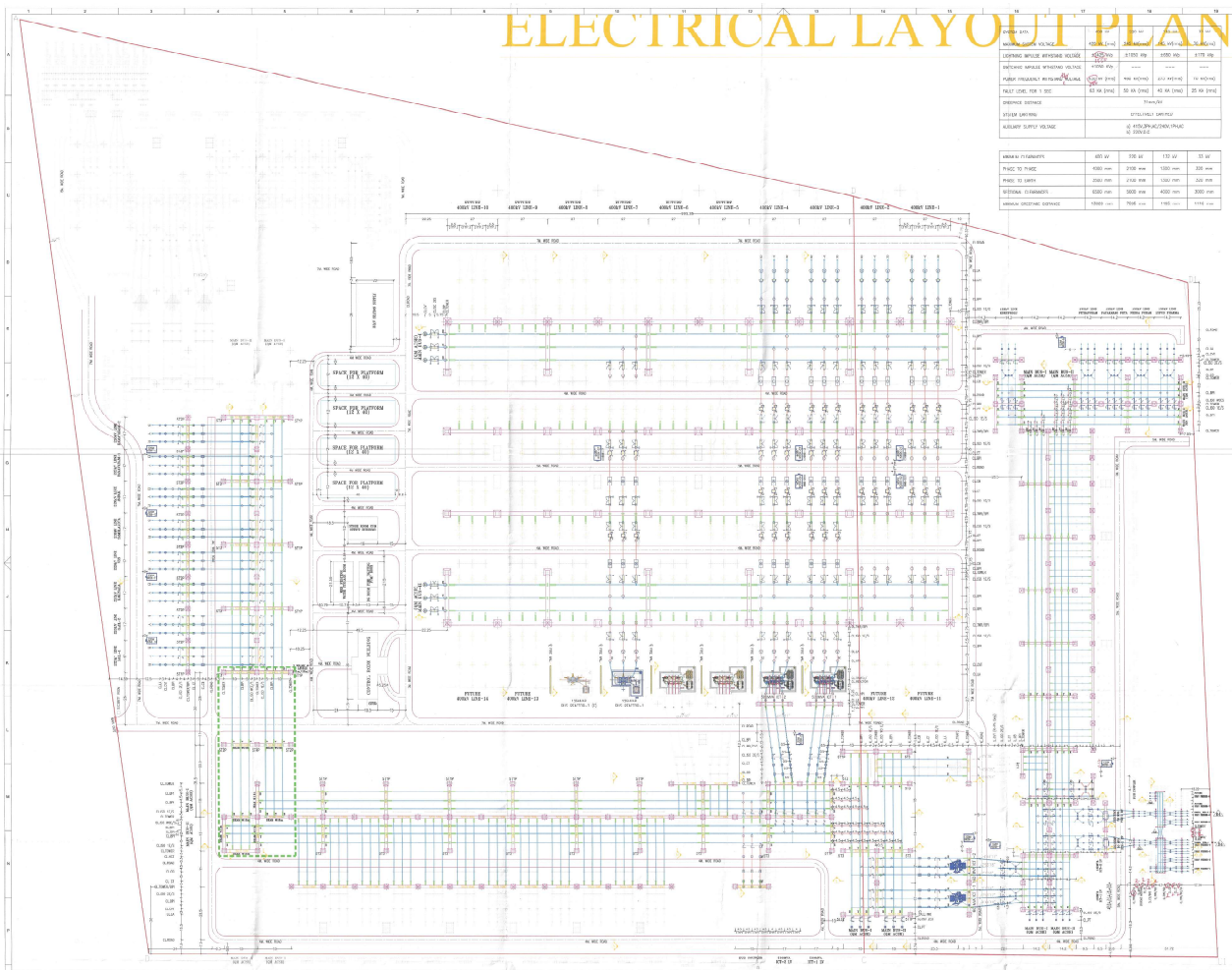
PROJECT NAME: Bid No.e-CHVT-54/2023 - Design, Engineering, Civil & Construction works, Erection, Testing and Commissioning of Construction of 400/220/132/33kV Kakinada SEZ Sub-Station with 2×500MVA + 2×160MVA + 1×31.5MVA and 1x175MVAR Bus Reactor.

LOI / PO No.: (1) LOI No. CE/Projects/SE400kV/EE1/DEE2/F.no-CHVT-54/2023/D.No.454/23, dt.14.02.2024.
(2) P.O.No.SEB/CM-23/U2/Projects/SE/400kV/EE-1/DEE2/F.Kakinada SEZ/D.No.495/23,dt.11.03.2024
(3) P.O.No.870/OC-24/E2/Projects/SE/400kV/EE-1/DEE2/F.Kakinada SEZ/D.No.498/23,dt.11.03.2024

TITLE: SINGLE LINE DIAGRAM OF 400/220/132/33kV KARINADA SEZ SUBSTATION

SIZE	SCALE	DRAWING No.	TOTAL SH.	SH.No.	REV.
A0	NTS	KMVPL-PVR JV-KSEZ-E-SLD-01	001	01 / 01	00

ELECTRICAL LAYOUT PLAN



SYSTEM KV/S	400 kV / 220 kV / 132 kV / 33 kV
MAXIMUM SYSTEM VOLTAGE	420kV(r.m.s) / 245kV(r.m.s) / 145kV(r.m.s) / 36kV(r.m.s)
LIGHTNING IMPULSE WITHSTAND VOLTAGE	1425 kVp / 1050 kVp / 650 kVp / 170 kVp
SWITCHING IMPULSE WITHSTAND VOLTAGE	1050 kVp / ---- / ---- / ----
PURUSH FREQUENCY WITHSTAND VOLTAGE	630 kV (r.m.s) / 460 kV(r.m.s) / 230 kV(r.m.s) / 70 kV(r.m.s)
FAULT LEVEL FOR 1 SEC	63 kA (r.m.s) / 50 kA (r.m.s) / 40 kA (r.m.s) / 25 kA (r.m.s)
CREEPAGE DISTANCE	31mm/kV
SYSTEM EARTHING	SOLIDLY/EFFECTIVELY EARTHED
AUXILIARY SUPPLY VOLTAGE	a) 415V,3PH,AC,50HZ,4 WIRE b) 220V,D.C

MINIMUM CLEARANCES	400 kV	220 kV	132 kV	33 kV
PHASE TO PHASE	4000 mm	2100 mm	1500 mm	320 mm
PHASE TO EARTH	3500 mm	2100 mm	1300 mm	320 mm
SECTIONAL CLEARANCES	6500 mm	5000 mm	4000 mm	3000 mm
MINIMUM CREEPAGE DISTANCE	10500 mm	7056 mm	1905 mm	1116 mm

BILL OF MAIN REQUIREMENTS

	SL.NO.	DESCRIPTION	RATING	SYMBOLS	ACTUAL QTY.	P.O. QTY.	UNIT
SCHEDULE OF 400kV MAIN EQUIPMENTS	1	CIRCUIT BREAKER (CB)					
	1 (a)	400kV, 3 POLE, SF6 CIRCUIT BRKR (3PH), 63kA/1sec. (WITHOUT PIR & CSD) (CREEPAGE-31mm/kV)	3150 A		04	04	SETS
	1 (b)	400kV, 3 POLE, SF6 CIRCUIT BRKR (3PH), 40kA/1sec. (WITH LOSS) (CREEPAGE-31mm/kV)	3150 A		08	08	SETS
	2	400kV, 3 POLE, MOG, 3PH, 4kV (DC), 63kA/1sec.					
	2 (a)	ISOLATOR WITH 1-E/S	3150 A		14	14	SETS
	2 (b)	ISOLATOR WITH 2-E/S	3150 A		02	02	SETS
	3	420kV, 1PH, CTs (5-CORE), 63kA/1sec.	3000-2000-1000-500/1-1-1-1-1A		42	42	NOS.
	4	420kV, 1PH, CVTs (3-CORE), 50VA BURDEN (0.2kV/√3-50VA, 0.2-50VA)	420/√3 kV/100/√3V, 0.2/0.2-50VA		13	12	NOS.
	5	420kV, 1PH, PTs / LAVB (3-CORE), 50VA BURDEN (3P-50VA, 3P-50VA)	420/√3 kV/100/√3V, 3P-50VA/3P-50VA		06	06	NOS.
	6	360kV LIGHTNING ARRESTOR (1 PH)	304kV		21	21	NOS.
	7	400kV, 1PH, BUS POST INSULATOR (LOW LEVEL)			123	108	NOS.
	8	400kV, 1PH, BUS POST INSULATOR (HIGH LEVEL)			09		NOS.
	1	400/220/33kV (3PH) AUTO TRANSFORMER (WITHARDUS SCOPE)	500 MVA		01	---	SETS
	2	400kV (3PH) NGR RESISTOR (WITHARDUS SCOPE)	125 KVAR		01	---	SETS
SCHEDULE OF 220kV MAIN EQUIPMENTS	1	CIRCUIT BREAKER (CB)					
	1 (a)	245kV, 3 POLE, SF6 CIRCUIT BRKR (3PH), 50kA/1sec.	3150A		13	13	SETS
	2	245kV, 1 POLE, MOM, 3PH, 90kA/1sec. ISO (BK)					
	2 (a)	ISOLATOR WITH 3-E/S	1600A		14	14	SETS
	2 (b)	ISOLATOR WITH 1-E/S	1600A		13	12	SETS
	2 (c)	ISOLATOR WITHOUT E/S	1600A		12	12	SETS
	2 (d)	ISOLATOR WITH 1-E/S (BC)	2500A		02	02	SETS
	3 (a)	245kV, 1PH, CTs (5 CORE), 800A/1sec. (MT/PROTECTION)	1600-800-400A/1-1-1-1-1A		36	36	NOS.
	3 (b)	245kV, 1PH, CTs (5 CORE), 800A/1sec. (BC)	2400-1600-800/1-1-1-1-1A		06	06	NOS.
	4	245kV, 1PH, CVTs (3-CORE), 50VA BURDEN (0.2kV/√3-50VA, 3P-50VA, 0.5-50VA)	245/√3 kV/100/√3V, 0.2/0.2-50VA		26	26	NOS.
	5	245kV, 1PH, PTs (3-CORE), 50VA BURDEN (3P-50VA, 3P-50VA, 0.5-50VA)	245/√3 kV/100/√3V, 3P-50VA/3P-50VA		08	08	NOS.
	6	216kV LIGHTNING ARRESTOR (1 PH)	10kA		36	36	NOS.
	7	220kV, 1PH, BUS POST INSULATOR (LOW LEVEL)			152	152	NOS.
	8	220kV, 1PH, BUS POST INSULATOR (HIGH LEVEL)			15	180	NOS.
	1	220/132kV (3PH) AUTO TRANSFORMER (WITHARDUS SCOPE)	160 MVA		02	---	SETS
SCHEDULE OF 132kV MAIN EQUIPMENTS	1 (a)	145kV, 3 POLE, SF6 CIRCUIT BRKR (3PH), 40kA/1sec.	2150A		12 (02)	12 (02)	SETS
	2	145kV, 3 POLE, MOM, 3PH, 40kA/1sec. ISO (BK)					
	2 (a)	ISOLATOR WITH 1-E/S	1600A		03 (01)	03 (01)	SETS
	2 (b)	ISOLATOR WITH 2-E/S	1600A		11 (01)	11	SETS
	2 (c)	ISOLATOR WITHOUT E/S	1600A		09 (01)	08	SETS
	2 (d)	ISOLATOR WITH 1-E/S (BC)	2000A		02	02	SETS
	3 (a)	145kV, 1PH, CTs (5-CORE), 400A/1sec. (MT/PROTECTION)	800-400-200A/1-1-1-1-1A		42	36	NOS.
	3 (b)	145kV, 1PH, CTs (5 CORE), 400A/1sec. (BC)	2400/1-1-1-1-1A		06	06	NOS.
	4	145kV, 1PH, CVTs (3-CORE), 50VA BURDEN (3P-50VA, 3P-50VA, 0.5-50VA)	145/√3 kV/100/√3V, 3P-50VA/3P-50VA		13	12	NOS.
	5	145kV, 1PH, PTs (3-CORE), 50VA BURDEN (3P-50VA, 3P-50VA, 0.5-50VA)	145/√3 kV/100/√3V, 3P-50VA/3P-50VA		08	08	NOS.
	6	120kV LIGHTNING ARRESTOR (1 PH)	10kA		24 (01)	24	NOS.
	7	132kV, 1PH, BUS POST INSULATOR (LOW LEVEL)			174	234	NOS.
	1	132/33kV (3PH) POWER TRANSFORMER (WITHARDUS SCOPE)	50 MVA		03 (01)	---	SETS
SCHEDULE OF 33kV MAIN EQUIPMENTS	1	CIRCUIT BREAKER (CB)					
	1 (a)	36kV, 3 POLE, VACUUM CIRCUIT BRKR (3PH), 25kA/1sec.	2000A		000	1 (01)	SETS
	2	36kV, 3 POLE, MOM, 3PH, 25kA/1sec. ISO (BK)					
	2 (a)	ISOLATOR WITH E/S&M	1250A		03 (01)	03	SETS
	2 (b)	ISOLATOR WITHOUT E/S&M (FEEDER & BUS PT)	800A		03 (01)	10	SETS
	3 (a)	36kV, 1PH, CTs (2-CORE), 200A/1sec. (FEEDER)	400A/1-1A		18	18	NOS.
	3 (b)	36kV, 1PH, CTs (4-CORE), 250A/1sec. (TYP)	2000-1200-800A/1-1-1-1A		06 (01)	03	NOS.
	4	36kV, 1PH, PTs (1-CORE), 50VA BURDEN (0.5)	33/√3 kV/110/√3V, 0.5-50VA		00 (01)	03	NOS.
	5	36kV, 1PH, PTs (3-CORE), 50VA BURDEN (METERING)	33/√3 kV/110/√3V, 0.5-50VA		06 (01)	03	NOS.
	6	33kV LIGHTNING ARRESTOR (1 PH).	10kA		12 (01)	18	NOS.

LEGENDS :-
- EXISTING SCOPE
- FUTURE SCOPE

NOTES :-
1. ALL DIMENSIONS ARE IN MTS UNLESS OTHERWISE MENTIONED.
2. QUANTITY & LOCATION OF AC MODES AND DMDS ARE TENTATIVE AND TO BE FINALISED DURING DETAILED ENGG. STAGE.
3. INCOMING & TOWER CONDUCTORS AND PHASE SEQUENCE SHOWN SHALL BE S.L.D. OF ENTIRE SUBSTATION.
4. SUBSTATION EQUIPMENTS EMBEDDING AND ARRANGEMENT SHOWN INDICATIVE ONLY. FINAL DESIGN SHALL BE ACCORDING TO ACTUAL EQUIPMENTS.
5. LIGHTNING MAST AND FENCE OF TOWERS SHALL BE AS PER STUP LAYOUT.
* REFER INDIVIDUAL CIVIL DRAWINGS FOR CONSTRUCTION OF BAY & PT, SHELL, CONTROL ROOM BUILDING, PLATFORM, ETC.,

REFERENCE DRAWING :-
1. SLD :- DWG. NO.:-KMVPL-PVR-SLD-C-001-01
2. PDA LAYOUT :- DWG. NO.:-KMVPL-PVR-PDA-C-001-01

APPROVED
SUPERINTENDING ENGINEER
400kV PROJECTS(PTP) KANDUCU
VIJAYAWADA (AUTONOMOUS)

DEE (400KV) CE (400KV)

CHECKED

Remarks:
1. In Section-A, the restriction distance for allowance of bottom most cable is 2250mm, whereas PDA is showing 2000mm. Hence, the bottom most cable is not allowed and shall not be laid in this section.
2. The bay loaded during the 220kV Bays shall be utilized also as standby and shall not be disturbed.
3. The bay loaded during the 220kV Bays shall be utilized by both substations. The same is shall be established by both substations. The road is used widening loaded bays on 2 sides.

400kV SWITCHYARD CONDUCTOR & STRINGING DETAILS :-

DESCRIPTION	SUB-CONDUCTOR DETAILS	TENSION / SUSPENSION INSULATOR STRING / V'SHAPE	CONNECTION HEIGHT (ABOVE FLOOR LEVEL)
MAIN BUS	QUAD MOOSE ACSR WITH 450mm S/C SPACING	5. ISOLTED DOUBLE TENSION, 420kV DISC INSULATORS (12000mm CREEPAGE)	15.5m
JACK BUS	QUAD MOOSE ACSR WITH 450 mm S/C SPACING	5. ISOLTED DOUBLE TENSION, 420kV DISC INSULATORS (12000mm CREEPAGE)	23m
DISCHARGES	TRIAD / TWIN MOOSE ACSR WITH 450 mm S/C SPACING	DOUBLE SUSPENSION, 120kN PORCELAIN DISC INSULATORS	----
EQUIPMENT CONNECTION	4.5 m/s MS TUBE (STATCOM TRANSFORMER CONNECTION)		08
BUS TIE & PT JUMPER	TWIN MOOSE ACSR WITH 450 mm S/C SPACING		----
LINE SIDE JUMPER	QUAD / TWIN MOOSE ACSR WITH 450 MM S/C SPACING		----
LINE SIDE JUMPER (LA & CVT)	TWIN MOOSE ACSR WITH 450 MM S/C SPACING		6.6m
LINE SIDE JUMPER (LA & CVT)	SINGLE MOOSE ACSR		4.6m

220kV SWITCHYARD CONDUCTOR & STRINGING DETAILS :-

DESCRIPTION	SUB-CONDUCTOR DETAILS	TENSION / SUSPENSION INSULATOR STRING / V'SHAPE	CONNECTION HEIGHT (ABOVE FLOOR LEVEL)
MAIN BUS	QUAD MOOSE ACSR WITH 450mm S/C SPACING (EXCEPT STATCOM'S SPECIFIED)	5. ISOLTED DOUBLE TENSION, 120kN DISC INSULATORS (10400mm CREEPAGE)	11m
JACK BUS (LINE SIDE)	SINGLE MOOSE ACSR	5. ISOLTED SINGLE TENSION, 120kN DISC INSULATORS (5400mm CREEPAGE)	10.5m
JACK BUS (TRANSFORMER BAYS)	TWIN MOOSE ACSR WITH 400 mm S/C SPACING	5. ISOLTED DOUBLE TENSION, 120kN DISC INSULATORS (10400mm CREEPAGE)	19.5m
JACK BUS (STATCOM BAY)	QUAD MOOSE ACSR WITH 450 mm S/C SPACING	5. ISOLTED DOUBLE TENSION, 120kN DISC INSULATORS (10400mm CREEPAGE)	10m
TERMINATION	QUAD / TWIN MOOSE ACSR WITH 400 mm S/C SPACING / SINGLE MOOSE ACSR	DOUBLE / SINGLE SUSPENSION, 120kN PORCELAIN DISC INSULATORS	10.5m
EQUIPMENT CONNECTION (LINE TRAPS, BAYS & BUS PT)	TWIN MOOSE ACSR WITH 400 mm S/C SPACING	----	9.5m
EQUIPMENT CONNECTION (BUS SECTION BAY)	4.5 m/s MS TUBE (STATCOM TRANSFORMER CONNECTION)	----	8.5m
LINE SIDE JUMPER	TWIN MOOSE ACSR WITH 400 MM S/C SPACING	----	----
LINE SIDE JUMPER (LA & CVT)	SINGLE MOOSE ACSR	----	----

132kV SWITCHYARD CONDUCTOR & STRINGING DETAILS :-

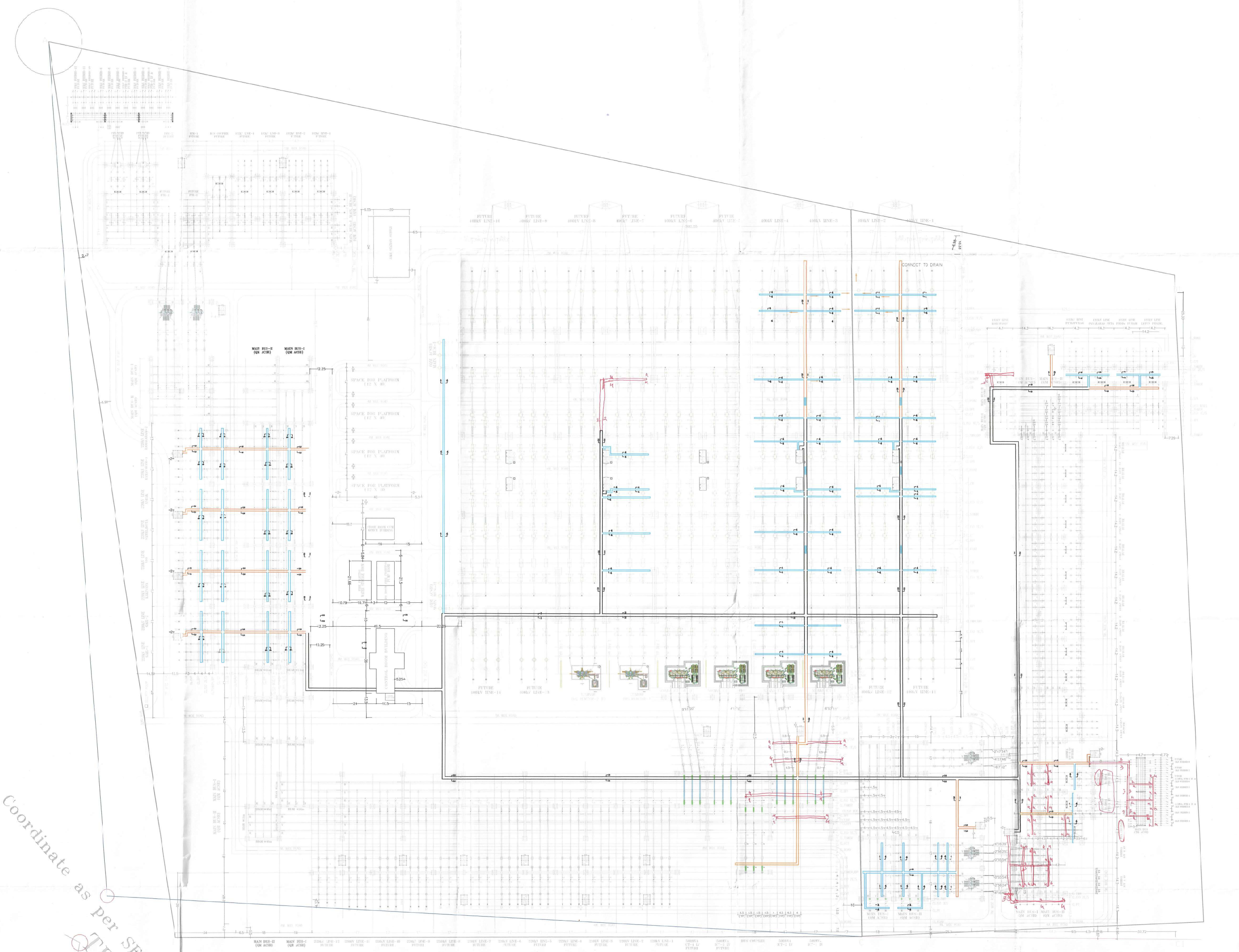
DESCRIPTION	SUB-CONDUCTOR DETAILS	TENSION / SUSPENSION INSULATOR STRING / V'SHAPE	CONNECTION HEIGHT (ABOVE FLOOR LEVEL)
MAIN BUS	TWIN MOOSE ACSR WITH 450 mm S/C SPACING (EXCEPT STATCOM'S SPECIFIED)	5. ISOLTED SINGLE TENSION, 70kN DISC INSULATORS (7175mm CREEPAGE)	8.35m
JACK BUS	SINGLE MOOSE ACSR	5. ISOLTED SINGLE TENSION, 70kN DISC INSULATORS (5175mm CREEPAGE)	6.35m
EQUIPMENT CONNECTION	TRIPLE MOOSE ACSR (STATCOM TRANSFORMER SPECIFIED)	----	3.5m
LINE SIDE JUMPER	TRIPLE MOOSE ACSR	----	----

REV.No.	DESCRIPTION	DRAWN	CHKD.	APPD.	DATE
03	REVISED AS PER CLIENT COMMENTS	RM	UM	SK	
02	REV AS PER CLIENT COMMENTS (R. LINE) 220/24 DT 15.07.2024 & REV SLD	RM	UM	SK	14.09.24
01	REV AS PER CLIENT COMMENTS	RM	UM	SK	30.07.24
00	FIRST SUBMISSION	RM	UM	SK	19.07.24

LOI NUMBER:	TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED
CONTRACTOR:	M/s KMVPL – PVR CONSTRUCTIONS JV
PROJECT NAME:	Bid No.e-C(IVT-54/2023 - Design, Engineering, Civil & Construction works, Erection, Testing and Commissioning of Construction of 400/220/132/33kV Kakinada SEZ Sub-Station with 2×500MVA + 2×160MVA + 2×50MVA and 1×125MVAR Bus Reactor. (R4)
LOI / PO. No.:	(1) LOI No. CE/Projects/SE(400kV)/CE1/DEE2/F.Kakinada SEZ/D.No.454/23, dt.14.02.2024. (2) P.O.No.800/GM-23/CE/Projects/SE/400kV/CE-1/DEE2/F.Kakinada SEZ/D.No.455/23,dt.11.03.2024. (3) P.O.No.870/GC-24/CE/Projects/SE/400kV/CE-1/DEE2/F.Kakinada SEZ/D.No.494/23,dt.11.03.2024
TITLE:	DCA LAYOUT OF 400/220/132/33 KV KAKINADA SEZ SUBSTATION

SIZE	SCALE	DRAWING NO.	TOTAL SH.	SH.No.	REV.
A0	SCALE:	KMVPL-PVR-JV-ESEZ-C-DDA-02	001	01/01	04

400/220/132/33kV KAKINADA SEZ SUBSTATION



BOUNDARY CO-ORDINATES:-

A-646840.525 E, 1899757.285N
B-647224.576 E, 1899474.535N
C-647513.938 E, 1899782.487N
D-647200.895 E, 1900039.264N
C1-647637.300 E, 1899926.322N
D1-647351.765 E, 1900 46.768N

SYSTEM DATA	400 kV	220 kV	132 kV	33 kV
MAXIMUM SYSTEM VOLTAGE	420 kV (rms)	245 kV(rms)	145 kV(rms)	36 kV(rms)
LIGHTNING IMPULSE WITHSTAND VOLTAGE	±1425 kVp	±1050 kVp	±650 kVp	±170 kVp
SWITCHNIG IMPULSE WITHSTAND VOLTAGE	±1050 KVp	---	---	---
POWER FREQUENCY WITHSTAND VOLTAGE	630 kV (rms)	460 kV(rms)	275 kV(rms)	70 kV(rms)
FAULT LEVEL FOR 1 SEC	63 KA (rms)	50 KA (rms)	40 KA (rms)	25 KA (rms)
CREEPAGE DISTANCE	31mm/kV			
SYSTEM EARTHING	EFFECTIVELY EARTHED			
AUXILIARY SUPPLY VOLTAGE	a) 415V,3PH AC/240V,1PH,AC b) 220V,D.C			

MINIMUM CLEARANCES	400 kV	220 kV	132 kV	33 kV
PHASE TO PHASE	4000 mm	2100 mm	1300 mm	320 mm
PHASE TO EARTH	3500 mm	2100 mm	1300 mm	320 mm
SECTIONAL CLEARANCES	6500 mm	5000 mm	4000 mm	3000 mm
MINIMUM CREEPAGE DISTANCE	13020 mm	7595 mm	4495 mm	1116 mm

LEGENDS :-

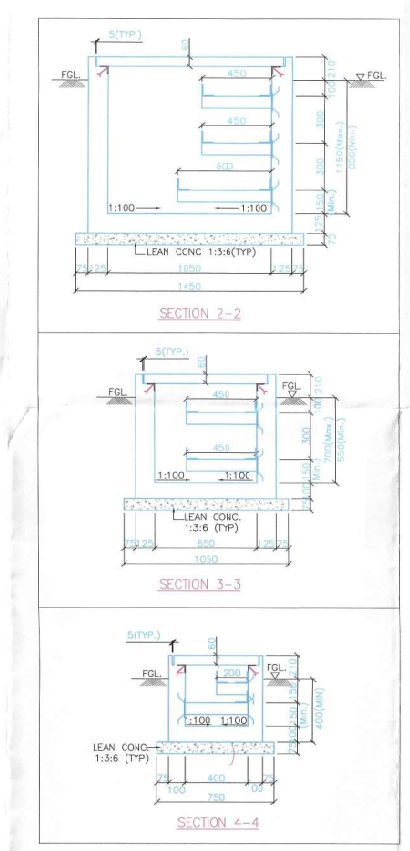
1) PRESENT SCOPE
2) FUTURE

REFERENCE :-

1. ALL DIMENSIONS ARE IN MTR. UNLESS OTHERWISE SPECIFIED.
2. PHASE SEQUENCE SHALL BE MAINTAINED IN ACCORDANCE TO SOURCE AND TRANSFORMER REQUIREMENT.

REFERENCE :-

1) SINGLE LINE DIAGRAM - TENDER SLD



→ The Bus coupler Bay and 132/33kV PTR Bay arrangements shall be followed as per the approved R3 electrical layout for the work.
→ wherever a minimum number of cables are required and a cable trench is not available suitable diameter PVC pipes shall be adopted for ~~cables~~ cables in coordination with field engineers.

CHECKED
DEE-1 DESIGNS
DEE-2 DESIGNS
SE DESIGNS

//APPROVED//
SUPERINTENDING ENGINEER
400kV/PROJECTS/APTRANSCO
VIDYUT SOUDHA, VIJAYAWADA-04
DEE-2/400KV EE-1/400KV

TITLE: SWITCHYARD CABLE TRENCH LAYOUT	PROJECT: 400/220/132/33 KV SUBSTATION KAKINADA SEZ
CLIENT: TRANSMISSION CORPORATION OF ANDHRA PRADESH LIMITED	
Po.No: 969/OM-23/CE/Projects/SE/400KV/EE-1/DEE-1/F.Kakinada SEZ/D.No.495/23, Dt 11.03.2024. Po.No: 970/CC-24/CE/Projects/SE/400KV/EE-1/DEE-1/F.Kakinada SEZ/D.No.496/23, Dt 11.03.2024.	
CONTRACTOR: M/s. KMV PROJECTS LTD JV WITH M/s. PYR POWERCON PVT LTD, HYDERABAD	Drwg No. KMVPL-PVR JV-KSEZ-Cable Trench Layout SHEET No: 01 of 01