



| SYSTEM PARAMETER | | | |
|---|---|---------------------|---------------------|
| SR. NO. | DESCRIPTION OF PARAMETER | 220KV SYSTEM | 66KV SYSTEM |
| 1 | SYSTEM OPERATING VOLTAGE | 220KV | 66KV |
| 2 | MAX. OPERATING VOLTAGE OF THE SYSTEM (rms) | 245KV | 72.5KV |
| 3 | RATED FREQUENCY | 50Hz | 50Hz |
| 4 | NOS. OF PHASES | 3 | 3 |
| 5 | RATED INSULATION LEVELS | | |
| i). FULL WAVE IMPULSE WITHSTAND VOLTAGE (1.2/50 microsec.) | | 1050kvp | 350kvp |
| ii). SWITCHING IMPULSE WITHSTAND VOLTAGE (250/2500 microsec.) DRY & WET | | NA | NA |
| iii). ONE MINUTE POWER FREQUENCY DRY & WET WITHSTAND VOLTAGE (rms) | | 460KV | 160KV |
| 6 | CORONA EXTINCTION VOLTAGE | 208KV | -- |
| 7 | MAX. RADIO INTERFERENCE VOLTAGE FOR FREQUENCY BETWEEN 0.5 MHz & 2 MHz AT 300V rms FOR 400V SYSTEM & 150KV rms FOR 220KV & 90KV rms FOR 132KV SYSTEM | 1000 microV | -- |
| 8 | MIN. CREEPAGE DISTANCE | 25mm/kV (6125mm) | 25mm/kV (1810mm) |
| 9 | MIN. CLEARANCE | | |
| i). PHASE TO PHASE | | 2100mm | 630mm |
| ii). PHASE TO EARTH | | 2100mm | 630mm |
| iii). SAFETY CLEARANCE | | 4600mm | 3100mm |
| iv). GROUND CLEARANCE (FROM TOP TO PLINTH) | | 5500mm | 4000mm |
| 10 | RATED SHORT CIRCUIT CURRENT FOR 3 SEC. DURATION | 40KA | 25KA |
| 11 | SYSTEM NEUTRAL EARTHING | EFFECTIVELY EARTHED | EFFECTIVELY EARTHED |

LEGEND:-

- COLUMN WITH PEAK
- COLUMN W/O PEAK
- 220 KV CIRCUIT BREAKER
- 66 KV CIRCUIT BREAKER
- 220 KV CT
- 66 KV CT
- LA
- PT
- CVT
- WT
- PI
- DB ISOLATOR W/O ES.
- DB ISOLATOR WITH ES.
- TANDEM DB ISOLATOR
- TRANSFORMER

- FOUR TIER CABLE TRENCH
- TWO TIER CABLE TRENCH
- SINGLE TIER CABLE TRENCH
- EARTH WIRE

LEGEND:

- EXISTING
- PROPOSED R7

SAFETY NOTES

- ARRANGE KICK OFF MEETING WITH ALL STAKE HOLDERS INCLUDING WORKERS AND FIX UP SAFE WORKING AREA AND SAFETY INSTRUCTIONS/BOARDS.
- WASTE MATERIAL LIKE PACKING PAPER, WOOD, STEEL CUTS ARE TO BE CLEARED FROM SITE ON DAILY BASIS.
- CHILDREN, UNAUTHORIZED PERSON AND ANIMALS SHALL NOT BE ALLOWED TO ENTER SUB-STATION PREMISES.
- DEMARICATION OF WORKING AREA MUST BE DONE BY PROVIDING RED TAPE WITH MANDATORY SIGN BOARDS.
- ENSURE AVAILABILITY OF PPE EQUIPMENTS LIKE HELMET, SAFETY BELT, SAFETY SHOES ETC. AND MUST BE USED DURING EXECUTION OF WORK.
- ONE ENGINEER FROM GETCO AND EXECUTING AGENCY TO BE NAMED AS SAFETY OFFICER WHO SHALL ENSURE OVERALL SAFETY AT SITE.
- FIRST AID KIT AND AVAILABILITY OF MEDICINE SHALL BE ENSURED BY SAFETY OFFICERS OF GETCO AND EXECUTING AGENCY.
- WINCH MACHINE, PULLEY AND ROPE MUST BE CHECKED VISUALLY AND TESTED PRIOR TO UTILIZE THEM.
- ENSURE EARTHING AFTER ISOLATION IN CASE WORKING AREA IS CLOSE TO CHARGED SWITCHYARD.
- STANDARD EARTHING RODS SHALL BE AVAILABLE IN SUFFICIENT QUANTITY AND ITS HEALTHINESS MUST BE ENSURED BY SITE ENGINEER-IN-CHARGE.
- NO SMOKING, COOKING AND FIRE ARE ALLOWED IN THE WORKING AREA.
- CEMENT, STEEL, OIL DRUMS ETC. SHALL BE STACKED OUTSIDE THE SWITCHYARD WORKING AREA.
- WATER PIPE, LINE AND WATER TAPS INSIDE BAY AREA MUST BE AVOIDED. NO WATER LEAKAGE SHALL BE LEFT UNATTENDED DURING EXECUTION AND LATER AFTER CHARGING, WATER PIPELINE MUST BE BURIED.
- ENSURE PROPER DOUBLE EARTHING OF WELDING MACHINE, FILTER MACHINE AND ANY OTHER ELECTRICAL EQUIPMENT SUPPLY WIRE OF THESE MACHINES SHOULD BE JOINTLESS AND OF ADEQUATE CAPACITY.
- ADEQUATE ILLUMINATION OF SO LUX MUST BE AVAILABLE IN CASE OF NIGHT WORK IN YARD.
- IT SHALL BE ENSURED EVERYDAY THAT NO WORKER IS MISSING AFTER THE DAYS WORK IN THE EVENING.
- IMPORTANT TELEPHONE AND CELL NO. MUST BE READILY AVAILABLE AT SITE.
- WORKING METHODOLOGY AND PROCEDURE MUST BE CLEAR BEFORE USING AND LOADING EXISTING STRUCTURES OF SWITCHYARD.
- ANY STANDING DERRICK POLE, CRANE ETC. MUST BE REMOVED AND KEPT AWAY ONCE WORK IS OVER.
- PROCEDURE AND ISOLATION MUST BE CLEAR BEFORE AC AND DC PANEL WORK AND RELAY, PROTECTION AND SCADA WORK.
- DONT LEAVE ANY WORK OF BOLTING AND TIGHTENING HALF DONE IN STRUCTURE AND EQUIPMENT ERECTION, TIME CLEARANCE BEFORE STRINGING.
- WORKING AREA MUST BE FREE FROM EXCAVATED PITS, BOTH CIVIL WORKS AND EARTHING PIT. IN UNAVOIDABLE CASE, INSTALL FENCING.
- ENSURE ELECTRICAL LICENSE OF CONTRACTORS.
- DURING PASSING THROUGH LIVE AREAYARD, NO EQUIPMENT SHALL BE CARRIED OVERHEAD.
- DURING REMOVAL OF JUMPERS, BOTH SIDE EARTHING MUST BE PROVIDED.
- ARRANGE SAFETY AUDIT AT SITE ON MONTHLY BASIS. FOLLOW UP ON ACTION POINT AFTER SUCH AUDIT MUST AND SAFETY OFFICER OF GETCO AND EXECUTING AGENCY TO ENSURE.
- ANY EXCAVATED FOUNDATION SHOULD NOT BE LEFT OPEN FOR LONG TIME PARTICULARLY BEFORE MONSOON.
- LCP LINE CLEAR PERMIT SHALL BE ISSUED FOR WORK RELATED TO YARD EQUIPMENTS AFTER NECESSARY ISOLATION IN YARD WHICH MANDATORILY REQUIRES EFFECTIVE EARTHING.
- LONG DURATION LCP MUST BE DISPLAYED IN CONTROL ROOM AND PANEL BOARD. FOR WORK BY DIFFERENT TEAMS SEPARATE LCP SHALL BE TAKEN AND ON RETURN OF PERMIT BY ALL TEAMS FURTHER ACTION SHALL BE TAKEN.
- TP TEST PERMIT SHALL BE ISSUED WHEN MAINTENANCE TESTING WORK IS INVOLVED WHICH DOES NOT REQUIRE EARTHING OF YARD EQUIPMENTS.

NOTES:-

- ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
- INTER EQUIPMENTS SPACING IS TO BE PLANNED TO ENSURE STATUTORY CLEARANCES.
- TOWERS WITH PEAK SHALL BE EARTH WITH UNTREATED ELECTRODE
- ALL THE STRUCTURES ARE TO BE MATCHED WITH EXISTING ONE.
- PHASE SEQUENCES SHALL BE MATCHED WITH THE EXISTING SYSTEM.
- ANY OBSTACLE SHALL BE REMOVED/SHIFTED WHICH ARE FALLING IN THE SWITCHYARD.
- STANDARD EARTHING PHILOSOPHY OF GETCO SHALL BE REFERRED FOR EARTHING OF PROPOSED EQUIPMENTS AND STRUCTURES. EARTH MAT OF PROPOSED SCOPE OF WORK SHALL BE CONNECTED WITH EXISTING EARTH MAT.
- CABLE TRENCH SHALL BE EXTENDED AS PER SITE CONDITION AND IT SHALL BE MATCHED WITH EXISTING ONES
- NECESSARY MINOR CORRECTION IF REQUIRED MAY BE DONE AT SITE.
- THIS DRAWING SHALL BE REFERRED ONLY FOR SCOPE SHOWN IN THE DRAWING.
- ALL THE MISSING FOUNDATION NUTS, BRACING MEMBERS AND NUT-BOLTS ARE TO BE PROVIDED ON EXISTING GANTRIES BEFORE STARTING NEW ERECTION WORK.
- FGL AND PLINTH HEIGHT OF FOUNDATIONS OF NEW BAY SHALL BE MATCHED WITH EXISTING FGL AND PLINTH HEIGHT.
- LOCATION AND ARRANGEMENT OF NIFF SYSTEM IS INDICATIVE ONLY, HOWEVER IT SHALL BE ERCTED AS PER ACTUAL SITE CONDITION.
- PLEASE VERIFY ALL DIMENSIONS SHOWN FOR PROPOSED SCOPE OF WORK BEFORE EXECUTION, IF ANY CHANGE SHALL BE INTIMATED TO ENGG. DEPT. FOR REVISION OF LAYOUT.
- AVOID FOUNDATION EXCAVATION AND CASTING WORK DURING RAINY DAYS.
- TO REFER SPECIAL NOTE SHOWN IN LAYOUT.

SPECIAL NOTE:-

- PLINTH HEIGHT OF 66KV HBPI * IS INCREASED UP TO 800MM TO ACHIEVE THE NECESSARY GROUND CLEARANCE.

SWITCH-YARD CONDUCTOR DETAILS

| DESCRIPTION | 220KV SWITCH-YARD | MV SWITCH-YARD |
|-------------------------------|---|---|
| MAIN BUS I & II | TWIN ZEBRA AC/SR / TWIN MOOSE CONDUCTOR | TWIN ZEBRA AC/SR AS PER DESIGN OF STATCOM SUPPLIER |
| TRANSFER BUS/POWER BUS | SINGLE / TWIN MOOSE AC/SR CONDUCTOR / TWIN ALSS COND | SINGLE ZEBRA AC/SR / TWIN ZEBRA AC/SR AS PER DESIGN OF STATCOM SUPPLIER |
| JUMPERS | SINGLE / TWIN MOOSE AC/SR CONDUCTOR / TWIN ALSS COND | TWIN ZEBRA AC/SR / SINGLE ZEBRA FOR LINE BAY AS PER DESIGN OF STATCOM SUPPLIER |
| DROPPERS | SINGLE / TWIN MOOSE AC/SR CONDUCTOR, SINGLE MOOSE AC/SR CONDUCTOR FOR LAY/TWIN ALSS COND (SINGLE ALSS CONDUCTOR FOR LA) | TWIN ZEBRA AC/SR / SINGLE ZEBRA FOR LINE BAY LA AS PER DESIGN OF STATCOM SUPPLIER |
| INSULATOR STRING (TENSION) | TWIN 120KN SRI | TWIN 120KN SRI |
| INSULATOR STRING (SUSPENSION) | SINGLE 120KN SRI | SINGLE 120KN SRI |
| SPACERS | 350MM AT 03 MTR. INTERVAL | 350MM AT 04 MTR. INTERVAL |

| TENDER PURPOSE | | | |
|--|---|------------------------------|-------------|
| GUJARAT ENERGY TRANSMISSION CORPN.LTD. | | | |
| S.P.VIDYUT BHAVAN, RACE COURSE, VADODARA - 390 007 | | | |
| LAY OUT PLAN OF 220KV SAGAPARA SUB STATION | | | |
| DRAWN: | CHECKED: | APPD: | SIZE: A2 |
| DE (ENGG.) | EE (CIVIL) EE (ENGG.) SE (ENGG.) | ACE (ENGG.) | |
| SCALE: | DATE: | DRG. NO: | SHEET: REV: |
| N.T.S | 13.05.2024 | GETCO / E / 2S - 041 / P-004 | 1 OF 1 R7 |
| SR NO. | REFERENCE | DATE: | REV: |
| R7 | 1.CE(CS)/SE(PPMG)/EE(PMG)/KSY/289 DTD.12.07.23 2. SITE FEASIBILITY SUBMITTED BY DE(SS) WIDE E-MAIL DTD. 09.01.24 & 13.05.24, | 13.05.24 | R7 |
| R6 | 1. ACE(TR) L. NO.-22-23/ACE(TR)/SE(EE(R&M)/ DRM3 /GEC-II/EHV AUG/2885 DTD 07.03.2023 2. SITE FEASIBILITY SUBMITTED BY EE(CONST.) AMRELI WIDE E-MAIL DTD. 18.07.23,31.07.23,02.11.23. | 06.11.23 | R6 |
| 6 | B.R.NO. 92.7/1444,DTD.12.12.13 (FOR 220KV REACTOR) -R5 | 07.01.19 | R5 |
| 5 | CE(PROJ)/EE(R&M)/DRM3/REACTIVE POWER COMP/63 | 24.08.16 | R4 |
| 4 | FIELD MAIL ON 09.04.12 | | R3 |
| 3 | FIELD MAIL ON 12.01.12 | | R2 |
| 2 | SLD DRG.NO. GETCO / E / 2S-041 / P-002 DT. 05.12.09 | | R1 |
| 1 | CE(PROJECT) L. NO. CE(PROJECT) / SE / V / 2763 DTD. 01.05.09 | | R0 |
| SR NO. | REFERENCE | DATE: | REV: |