

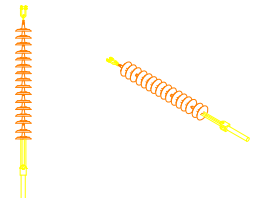

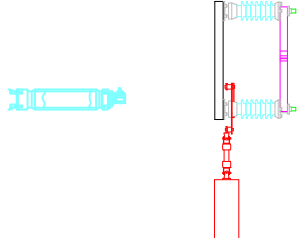




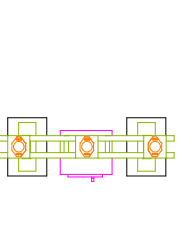




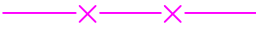

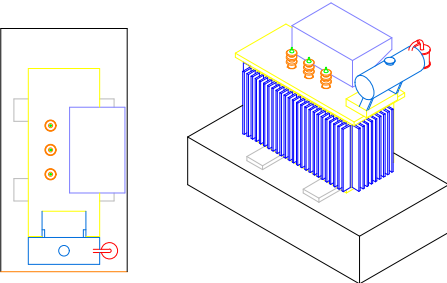


LEGEND

	GANTRY TOWER		VOLTAGE TRANSFORMER		STRING INSULATOR		ROAD
	DISCONNECTING SWITCH MOTOR OPERATED WITH ONE EARTH SWITCH MOTOR OPERATED		CURRENT TRANSFORMER		BAY MARSHALLING KIOSK		STRANDED CONDUCTOR
	DISCONNECTING SWITCH MOTOR OPERATED		CIRCUIT BREAKER MOTOR OPERATED		CABLE TRENCH		SHIELD WIRE
	POST INSULATOR		CUTOFF FUSE				CHAIN-LINK FENCE
	LIGHTNING ARRESTER		AUXILIARY TRANSFORMER				

MINIMUM AIR CLEARANCES

MINIMUM AIR CLEARANCES	33kV
RATED LIGHTNING IMPULSE WITHSTAND VOLTAGE	170 KV
RATED SWITCHING IMPULSE WITHSTAND VOLTAGE (PHASE-EARTH)	—
RATED SWITCHING IMPULSE WITHSTAND VOLTAGE (PHASE-PHASE)	—
BASIC VALUE (NON-FLASHOVER DISTANCE, INCLUDING SAFETY-MARGIN)	0.32m +10%
MINIMUM CLEARANCE BETWEEN LOWEST LIVE PART AND GROUND (TOTAL SAFETY ZONE)	3m
CLEARANCE BETWEEN GROUND AND THE INSULATOR'S BASE	2.5m
VERTICAL CLEARANCE WORKING ZONE	3m
HORIZONTAL CLEARANCE WORKING ZONE	3m
CLEARANCE OF CONDUCTORS ABOVE THE MAIN ROADS	7.5m
PHASE SPACING OF RIGID BUSBAR (CENTER LINE TO CENTER LINE)	1m
PHASE SPACING OF OVERSPAN (CENTER LINE TO CENTER LINE)	1m
PHASE SPACING OF FLEXIBLE CONDUCTOR BETWEEN EQUIPMENT (CENTER LINE TO CENTER LINE)	1m
POWER FREQUENCY WITHSTAND VOLTAGE	70kV
VERTICAL CLEARANCE BETWEEN LIVE CONDUCTOR AND SHIELD	2m



ABBREVIATION

ABBR.	EQUIPMENT
CB	CIRCUIT BREAKER
CT	CURRENT TRANSFORMER
VT	VOLTAGE TRANSFORMER
DS	DISCONNECTING SWITCH
DSE	DISCONNECTING SWITCH WITH EARTHING SWITCH
EM	EARTH MAT
ES	EARTH SWITCH
GA	GANTRY TOWER
LA	LIGHTNING ARRESTER
BMK	BAY MARSHALLING KIOSK
PI	POST INSULATOR
SC	SURGE COUNTER
SI	STRING INSULATOR
TW	TOWER
MH	MANHOLE

NOTE:

- 1- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
- 2- 132kV SWITCHYARD LAYOUT PLAN & SECTION ARE TYPICAL REPRESENTATION & PRELIMINARY.
- 3- ALL CLEARANCES ARE AS PER IEC GUIDELINES.
- 4- LOCATION OF MARSHALLING BOX SHOWN IN DRAWING ARE TENTATIVE AND SHALL BE SUITABLY LOCATED CONSIDERING ACTUAL SITE CONDITION.
- 5- ALL THE EQUIPMENT & BUSES IN THE SOW WILL BE PROTECTED FROM LIGHTNING STRIKE BY MEANS OF SHIELD WIRE.
- 6- DISCONNECTOR SWITCH WILL HAVE MECHANICAL AND ELECTRICAL INTERLOCK WITH THE RELEVANT EARTH SWITCH.
- 7- ELECTRICAL INTERLOCK WILL BE PROVIDED BETWEEN DISCONNECTORS & CIRCUIT BREAKER SUCH THAT DISCONNECTOR WILL BE OPEN AND CLOSED WHEN RESPECTIVE CIRCUIT BREAKER IS IN OFF POSITION.
- 8- THIS IS CONCEPTUAL DRAWING FOR TENDER PURPOSE. HOWEVER IT IS MANDATORY TO FOLLOW THE REQUIREMENT OF KETRACO STANDARD.
- 9- ALL CABLE TRENCHES' SIZES AND ROUTES ARE TENTATIVE AND SUBJECTED TO CABLE TRENCH LAYOUT & DETAIL DOCUMENT AND CLIENT/ CONSULTANT'S APPROVAL.
- 10- CONTRACTOR SHALL VISIT THE SITE AND REQUIRED MODIFICATIONS/ DEMOLITIONS ARE IN THE CONTRACTOR'S RESPONSIBILITY.
- 11- CONTRACTOR SHALL VISIT THE SITE TO ENSURE THAT SUFFICIENT SPACE IS AVAILABLE FOR EXISTING CABLE TRENCHES TO IMPLEMENT NEW CABLES
- 12- ALL CLEARANCES WILL BE FINALIZED AFTER APPROVAL OF INSULATION COORDINATION DOCUMENT IN EPC DETAIL DESIGN STAGE.
- 13- CONSIDERING THE SIGNIFICANT LEVEL DIFFERENCE BETWEEN THE EDGE/ FENCE TO BE DEMOLISHED AND THE COVERING THE NEW SCOPE, THE CONTRACTOR SHALL SELF-APPRAISE ON THIS ASPECT WHICH MAY INFLUENCE DESIGN DECISION ON BUSBAR EXTENSION, EARTHWORKS AND DRAINAGE WORKS.
- 14- THE CONTRACTOR SHOULD STUDY FOUNDATION DRAWINGS/ SITE CONDITION CAREFULLY BEFORE FIRING UP ON THE FOUNDATION DESIGN CONSIDERING THE 200mm. THICK CONCRETE RAFT FOUNDATION OVER THE ENTIRE SUBSTATION SWITCHYARD.
- 15- WHEREVER THE CABLE TRENCH CROSSES THE ROAD, AN UNDER ROAD CONCRETE CABLE DUCT SHALL BE CONSIDERED IN GENERAL LAYOUT, TOGETHER WITH PROVIDING THE ELABORATE DESIGN DURING EPC DETAIL DESIGN STAGE.
- 16- THE LIGHTNING PROTECTION IS INDICATIVE ONLY AND THE CONTRACTOR SHALL PROVIDE CALCULATIONS.
- 17- THE LIGHTNING AND POWER FREQUENCY WITHSTAND VOLTAGE WILL BE GUIDED BY AN INSULATION COORDINATION STUDY IN ACCORDANCE TO IEC.
- 18- EXISTING 100kVA AUXILIARY TRANSFORMER HAS TO BE DISASSEMBLED AND DELIVERED TO CLIENT. NEW 315kVA AUXILIARY TRANSFORMER HAS TO BE REPLACED.

GENERAL NOTES & LEGENDS OF 33KV EQUIPMENT

REFERENCE DRAWINGS	
DRAWINGS NO.:	TITLE:
<input type="checkbox"/> APPROVED	<input type="checkbox"/> APPROVED WITH COMMENTS
<input type="checkbox"/> NOT APPROVED	<input type="checkbox"/> FOR INFORMATION
DATE:..... SIGNATURE/STAMP:.....PROJECT CONSULTANT.....	
 KENYA ELECTRICITY TRANSMISSION COMPANY LTD	
 COLENCO CONSULTING LIMITED	
PROJECT:	
KENYA TRANSMISSION NETWORK IMPROVEMENT PROJECT (KTRNIP).	
PROJECT DRAWING NO.:	
NAME:	DATE:
PROJECT NO:	
PREPARED:	NIL
RUMURUTI 132/33kV SUBSTATION	
DRAWN:	F.J
14/05/2025	
CHECKED:	V.JOSHI
14/05/2025	
APPROVED:	S.DESHMAUKH
14/05/2025	
GENERAL NOTES & LEGENDS OF 33KV EQUIPMENT	
REVISIONS	
NO.	NAME
DATE	
SCALE:	1:600
DWG NO.	
REV.:	