


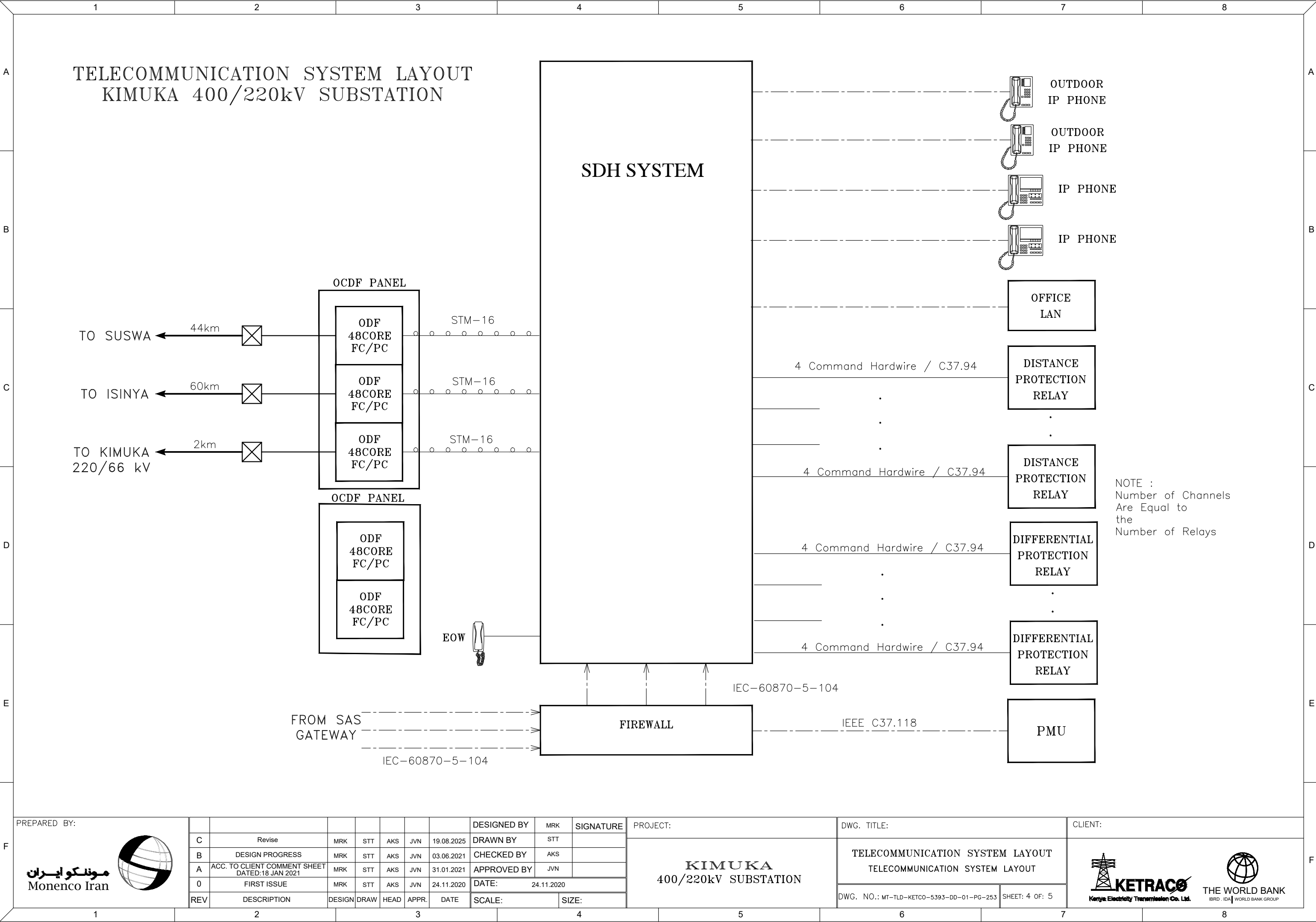
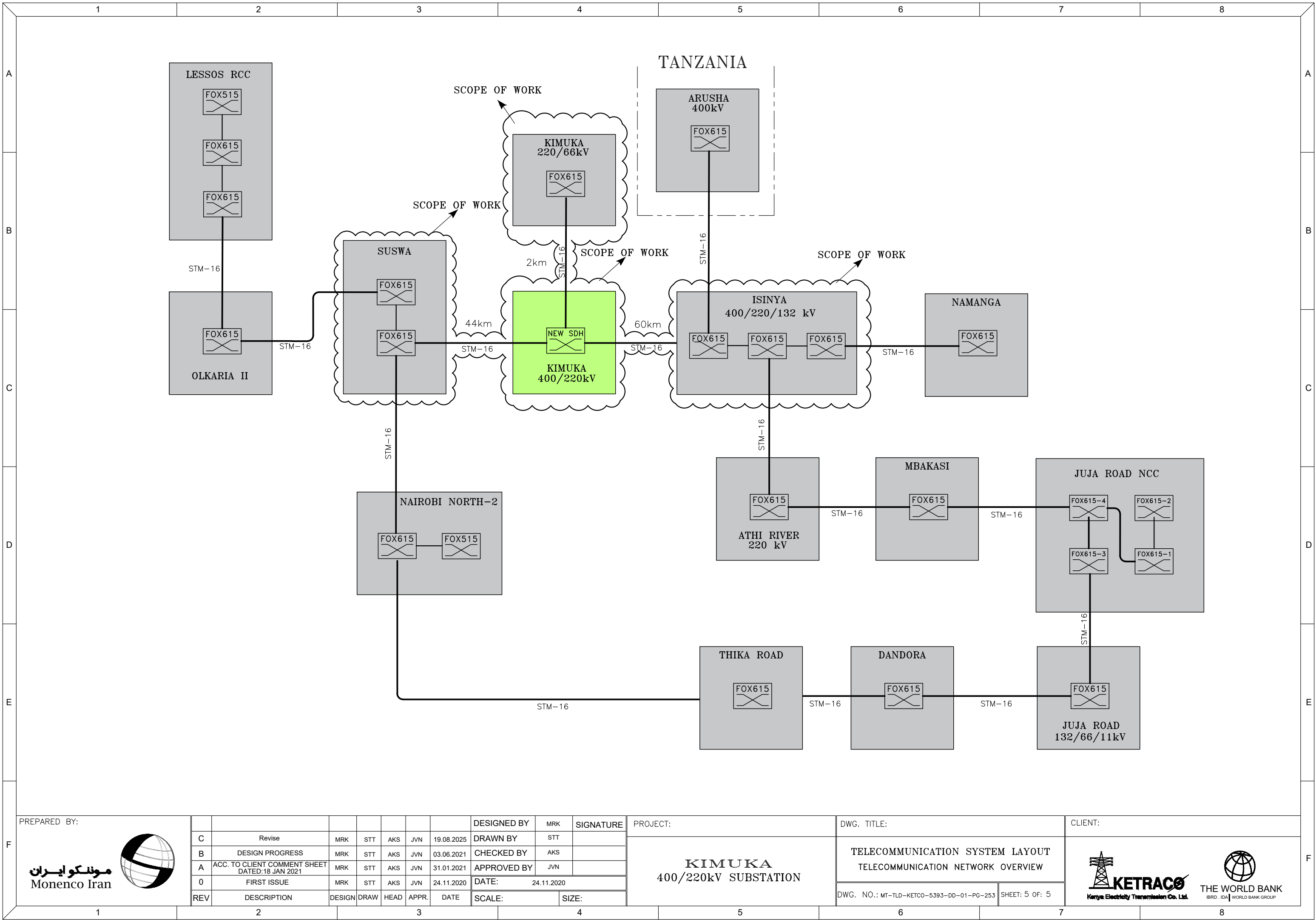


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A								A
B								B
C	KIMUKA 400/220kV SUBSTATION TELECOMMUNICATION SYSTEM LAYOUT							C
D								D
E								E

F	PREPARED BY:								DESIGNED BY	MRK	SIGNATURE	PROJECT:	DWG. TITLE:		CLIENT:						
	<div>مونکو ایران</div> <div>Monenco Iran</div> <div></div>		C	Revise	MRK	STT	AKS	JVN	19.08.2025	DRAWN BY	STT		<div>KIMUKA</div> <div>400/220kV SUBSTATION</div>		<div>TELECOMMUNICATION SYSTEM LAYOUT</div> <div>COVER</div>		<div><div>KETRACO</div><div>Kenya Electricity Transmission Co. Ltd.</div></div> <div><div>THE WORLD BANK</div><div>IBRD IDA WORLD BANK GROUP</div></div>				
			B	DESIGN PROGRESS				MRK	STT	AKS	JVN	03.06.2021							CHECKED BY	AKS	
			A	ACC. TO CLIENT COMMENT SHEET DATED:18 JAN 2021				MRK	STT	AKS	JVN	31.01.2021							APPROVED BY	JVN	
			0	FIRST ISSUE				MRK	STT	AKS	JVN	24.11.2020							DATE: 24.11.2020		
			REV	DESCRIPTION				DESIGN	DRAW	HEAD	APPR.	DATE	SCALE:		SIZE:						
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A																	
B	<div>NOTE:</div> <div>1– THIS DOCUMENT IS PRELIMINARY AND FOR BIDDING PURPOSE ONLY.</div> <div>2– THE TELE–PROTECTION INTERFACE SHALL BE SCALABLE TO ALLOW FUTURE BAY EXTENSIONS.</div> <div>3– EACH SDH SYSTEM SHALL HAVE 20% SPARE PORTS TO ACCOMMODATE EXPANSIONS.</div> <div>4– SDH SYSTEM SHALL BE IN RING TOPOLOGY AND SUPPORT RING PROTECTION PROTOCOL.</div> <div>5– THE TELE–PROTECTION INTERFACE CONFIGURATION TO REMOTE ENDS SHALL BE EXTENDED.</div> <div>6– ALL OF EQUIPMENT MUST BE INDUSTRIAL TYPE.</div> <div>7– THE CONTRACTOR SCOPE OF WORK FOR COMPLETE FUNCTIONALITY, INCLUDES BUT IS NOT LIMITED TO:</div> <div><div><div>•</div><div>PROVISION/INSTALLATION OF ALL NECESSARY HARDWARE AND SOFTWARE TO COMMUNICATE FROM NCC, NSCC AND RCC LOCALLY AND REMOTELY.</div></div><div><div>•</div><div>INCORPORATION OF STATIONS INTO THE SCADA/EMS SYSTEM AT THE NCC, NSCC AND RCC.</div></div><div><div>•</div><div>PROVISION OF A MAINTENANCE LAPTOP WITH ALL THE SUBSTATION SOFTWARE USED AND THEIR CONFIGURATION REQUIRED LICENSES.</div></div><div><div>•</div><div>PROVISION OF ALL NECESSARY WORKS, DESIGN, SUPPLY AND IMPLEMENTATION AT THE TELECOMMUNICATION SYSTEM FOR COMPLETE FUNCTIONALITY OF STATIONS.</div></div><div><div>•</div><div>ANY OTHER FACILITIES REQUIRED FOR COMPLETE TELECOMMUNICATION.</div></div></div> <div>ALL SUCH WORKS ARE TO BE CARRIED OUT BY THE CONTRACTOR AFTER THE APPROVAL OF BOTH KETRACO.</div> <div>8– COMMUNICATION TO DISPATCH CENTERS (NCC,RCC,NSCC) SHALL BE ACCORDING IEC–60870–104.</div> <div>9– ALL OUT OF PANEL FIBER OPTIC CABLES SHALL PASS THROUGH FLEXIBLE METALLIC TUBES.</div> <div>10– THE TELECOMMUNICATION SYSTEM SHOULD INCLUDE INTEGRATION TO THE EXISTING NETWORK MANAGEMENT SYSTEM AND INCLUDE ALL NECESSARY LICENSES.</div> <div>11– THE EPC CONTRACTOR SHALL VISIT THE SITES (THE EXISTING AND REMOTE SUBSTATIONS AND DISPATCHING CENTERS TO ASSESS THE EXISTING CONDITIONS AND TO DETERMINE THE REQUIRED CARDS AND PORTS (TELE–PROTECTION, F.O, OTHER INTERFACES) TO ISSUE DETAIL DESIGN DOCUMENTS FOR CLIENT/CONSULTANT APPROVAL.</div> <div>12– HARDWARE/SOFTWARE/LICENSE REQUIREMENTS IN THE REMOTE STATION (SUSWA, ISINYA AND EXITING KIMUKA 220/66kV) TOGETHER WITH OTHER STATIONS AS TRANSIT STATIONS SHALL BE INCLUDED FOR CONNECTION OF KIMUKA 400/220kV TO NCC THROUGH THE EXISTING STM LINK.</div> <div>13– IN ORDER TO HAVE STABILITY IN FIBER OPTIC NETWORK ACCORDING TO THE TENDER TECHNICAL SPECIFICATION, REDUNDANCY IN SDH BOARD IS REQUIRED.</div> <div>14– SUPPLY AND SPLICING/TERMINATION WORKS AT THE GANTRY AND END TO END TESTING OF THE FIBER OPTIC CABLE, OTDR AND CORE MATCHING TESTS FROM ODF TO ODF AND PREPARING AS–BULIT DOCUMENTS ARE IN SCOPE OF WORK.</div> <div>15– THE APPROACHING FIBER OPTIC CABLE INSTALLED SHALL MATCH THE TECHNICAL CHARACTERISTICS OF THE FIBER OPTIC ON THE OPGW.</div>																
C																	
D	<div>LEGEND:</div> <div><div><div><div><div></div><div></div><div></div></div><div>FIBER OPTIC PATCHCORD</div></div><div><div><div></div><div></div><div></div></div><div>ETHERNET CAT6 CABLE</div></div><div><div><div></div><div></div><div></div></div><div>OPTICAL POWER GROUND WIRE</div></div><div><div><div></div><div></div><div></div></div><div>FIBER OPTIC CABLE</div></div><div><div><div></div><div></div><div></div></div><div>FIBER OPTIC JOINT BOX ON GANTRY</div></div><div><div><div></div><div></div><div></div></div><div>SDH/PDH MULTIPLEXER TYPE FOX515</div></div><div><div><div></div><div></div><div></div></div><div>SDH/PDH MULTIPLEXER TYPE FOX615</div></div><div><div><div></div><div></div><div></div></div><div>EXISTING LOCATION</div></div><div><div><div></div><div></div><div></div></div><div>NEW LOCATION</div></div></div><div>ABBREVIATION:</div><div><div><div><div></div><div></div><div></div></div><div>NSCC</div><div>KETRACO’S NATIONAL SYSTEM CONTROL CENTER, A FUTURE PROJECT FOR THE CONTROL AND OPERATION OF KETRACO’S TRANSMISSION NETWORK AND FOR POWER DISPATCH.</div></div><div><div><div><div></div><div></div><div></div></div><div>NCC</div><div>NATIONAL CONTROL CENTER OWNED AND OPERATED BY KPLC FOR THE OPERATION OF THE COUNTRY’S TRANSMISSION GRID AND FOR POWER DISPATCH.</div></div><div><div><div><div></div><div></div><div></div></div><div>RCC</div><div>REGIONAL CONTROL CENTER OWNED AND OPERATED BY KPLC FOR THE OPERATION OF THE REGION’S DISTRIBUTION NETWORK AND MONITORING OF GRID.</div></div></div></div></div></div>																
E																	
F	<div><div><div>PREPARED BY:</div><div><div><div>مونenco ایران</div><div>Monenco Iran</div></div><div><div></div><div></div></div></div><div><div>C</div><div>Revise</div><div>MRK</div><div>STT</div><div>AKS</div><div>JVN</div><div>19.08.2025</div><div>DESIGNED BY</div><div>MRK</div><div>SIGNATURE</div></div><div><div>B</div><div>DESIGN PROGRESS</div><div>MRK</div><div>STT</div><div>AKS</div><div>JVN</div><div>03.06.2021</div><div>DRAWN BY</div><div>STT</div><div></div></div><div><div>A</div><div>ACC. TO CLIENT COMMENT SHEET DATED:18 JAN 2021</div><div>MRK</div><div>STT</div><div>AKS</div><div>JVN</div><div>31.01.2021</div><div>CHECKED BY</div><div>AKS</div><div></div></div><div><div>0</div><div>FIRST ISSUE</div><div>MRK</div><div>STT</div><div>AKS</div><div>JVN</div><div>24.11.2020</div><div>APPROVED BY</div><div>JVN</div><div></div></div><div><div>REV</div><div>DESCRIPTION</div><div>DESIGN</div><div>DRAW</div><div>HEAD</div><div>APPR.</div><div>DATE</div><div>SCALE:</div><div>SIZE:</div></div></div><div><div>PROJECT:</div><div><div>KIMUKA</div><div>400/220kV SUBSTATION</div></div></div><div><div>DWG. TITLE:</div><div>TELECOMMUNICATION SYSTEM LAYOUT</div><div>LEGEND & NOTE</div></div><div><div>DWG. NO.: MT–TLD–KETCO–5393–DD–01–PG–253</div><div>SHEET: 3 OF: 5</div></div><div><div>CLIENT:</div><div><div><div><div></div><div>KETRACO</div><div>Kenya Electricity Transmission Co. Ltd.</div></div><div><div></div><div>THE WORLD BANK</div><div>IBRD . IDA WORLD BANK GROUP</div></div></div></div></div></div> <tr><td></td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr>									1	2	3	4	5	6	7	8
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PREPARED BY:

مونكو ايران
Monenco Iran



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0	FIRST ISSUE	MRK	STT	AKS	JVN	24.11.2020	DATE:	24.11.2020	
							SCALE:	SIZE:	

PROJECT:

KIMUKA
400/220kV SUBSTATION

DWG. TITLE:

TELECOMMUNICATION SYSTEM LAYOUT
TELECOMMUNICATION NETWORK OVERVIEW

DWG. NO.: MT-TLD-KETCO-5393-DD-01-PG-253

SHEET: 5 OF: 5

CLIENT:

