CEYLON ELECTRICITY BOARD SRI LANKA

SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

(ADB LOAN NO: 3409-SRI)

PACKAGE 7 - LOT A3

Procurement of Plant

Design, Supply and Install

Single-Stage, Two-Envelope Bidding Procedure

BIDDING DOCUMENT for Procurement of

Augmentation of:
Substation A, B, I, L, M, N and Thulhiriya Grid Substation

VOLUME 6 of 8

PART II REQUIREMENTS

Section 6 -Employer's Requirements (ERQ)

Issued on: 11th June 2020
Invitation for Bids No.: CEB/AGM/PRO/2019/IFB/SESRIP-P7 Lot A3
ICB No.: CEB/AGM/PRO/2019/ICB/SESRIP-P7 Lot A3
Employer: Ceylon Electricity Board
Country: Sri Lanka

Project Division
Ceylon Electricity Board
P.O. Box 540, Colombo 02
Sri Lanka
Document Revision C

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Contents - Summary Description

VOLUME 1 of 8

PART I BIDDING PROCEDURES

Section 1 -Instructions to Bidders (ITB) 1-1

This Section specifies the procedures by Bidders in the preparation and submission of their Bids following a Single-Stage, Two-Envelope bidding procedure. Information is also provided on the submission, opening, and evaluation of bids and on the award of contract.

Section 2 ---------- Bid Data Sheet (BDS) 2-1

This section consists of provisions that are specific to each procurement and supplement the information or requirements included in Section 1 - Instructions to Bidders.

Section 3 -Evaluation and Qualification Criteria (EQC) 3-1

This section contains all the criteria that the Employer shall use to evaluate bids and qualify Bidders. In accordance with ITB 25, ITB 48 and ITB 50, no other factors, methods or criteria shall be used. The Bidder shall provide all the information requested in the forms included in Section 4 (Bidding Forms).

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PART I BIDDING PROCEDURES

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Part A-Price Bid

This Section contains the forms which are to be completed by the Bidder and submitted as part of his Bid.

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PART I BIDDING PROCEDURES

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This section contains the list of eligible countries.

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PART II REQUIREMENTS

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Part A-Scope of Works

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PART II REQUIREMENTS

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Part D-Supplementary Information,

Bank Guaranties and Certificates, Change Orders

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This Section contains the general clauses to be applied in all contracts. These Conditions are subject to the variations and additions set out in Section 8 (Special Conditions of Contract).

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This Section supplements the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC. The clause number of the SCC is the corresponding clause number of the GCC.

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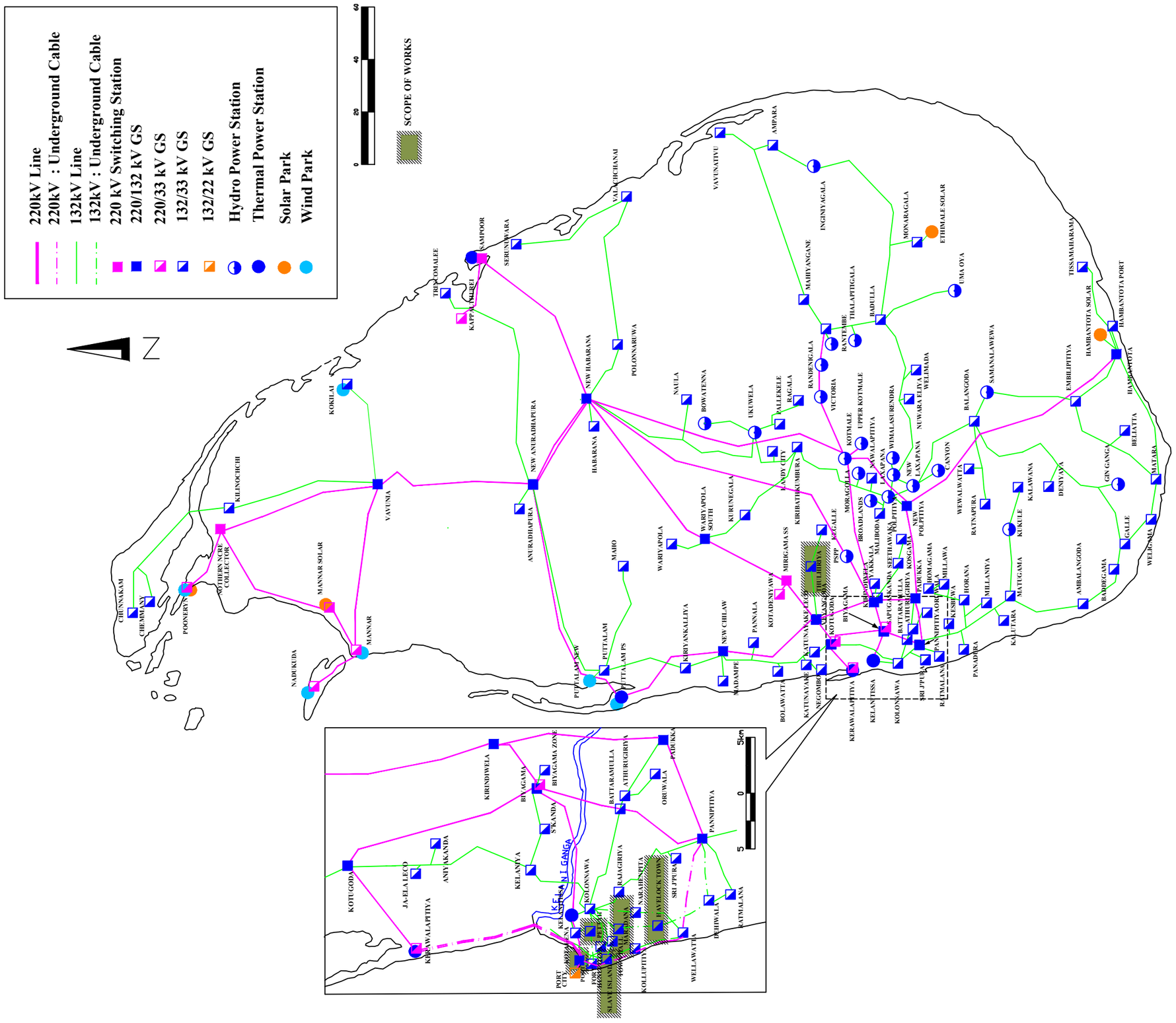
The Map of Sri Lanka Transmission System in Year 2027



Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD
TRANSMISSION DESIGN

Project Title
SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

Funding Agency
ADB

Drawing Title
MAP SHOWING THE LOCATION OF SITES

				Signature	Date
Scale - NTS	Rev. Date		Drawn	Sandamali	26.04.2019
Size - A3	26.04.2019		Designed	Kushan	
Sheet	of	Rev.	Checked		
Dwg. No. TD/CE/1/186/D/09/00			Approved		
			Released for	Tendering	✓
				Construction	

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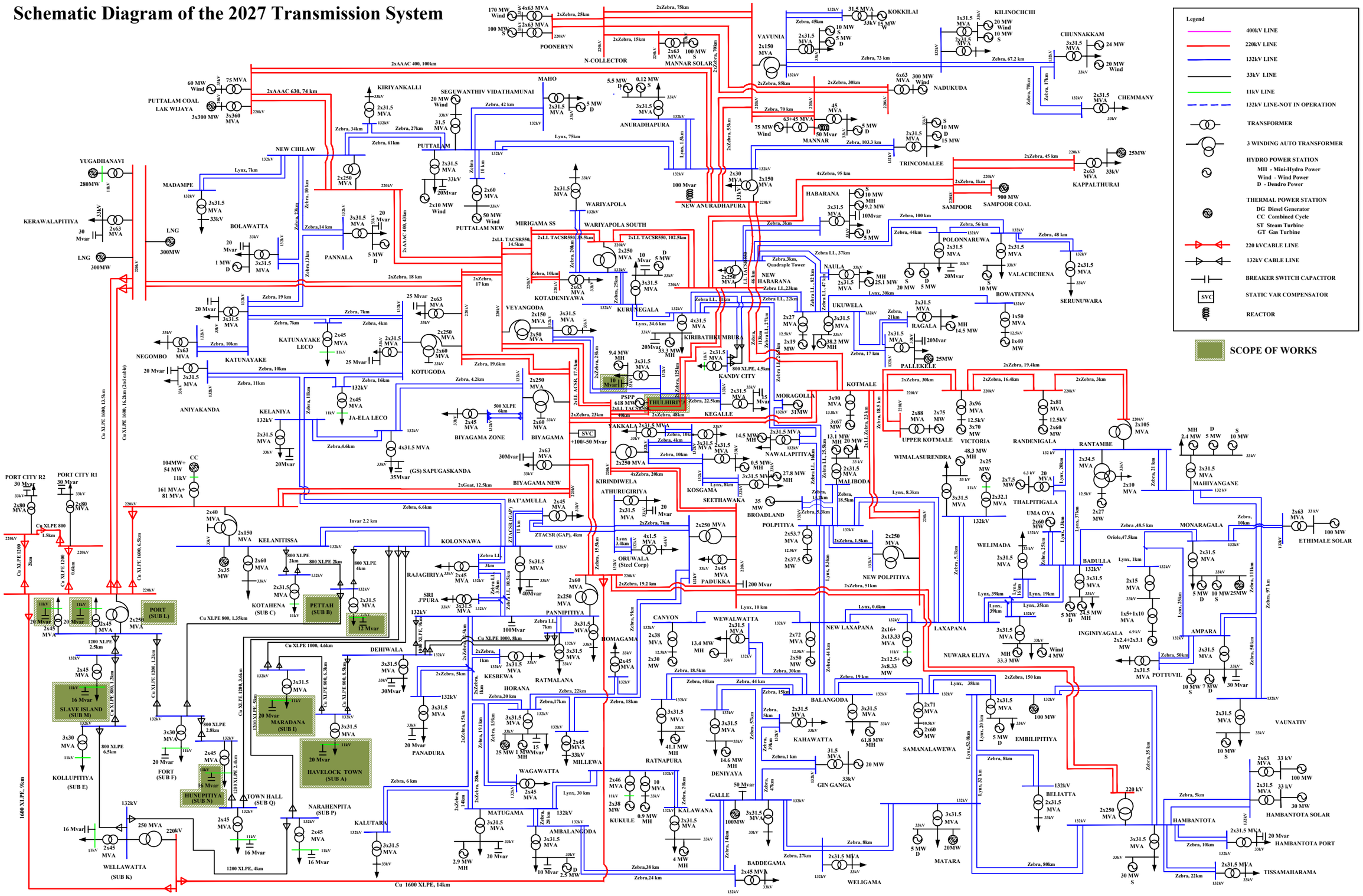
Schematic Diagram of the 2027 Transmission System



Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD
TRANSMISSION DESIGN

Project Title
SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

Funding Agency
ADB

Drawing Title
CEB Power System Diadram in Year 2027

Scale - NTS		Rev. Date		Signature	Date
Size - A3		26.04.2019	Drawn	Sandamali	26.04.2019
Sheet	of	Rev.	Designed	Kushan	
			Checked		
Dwg. No. TD/CE/1/186/D/08/00			Approved		
			Released for	Tendering	✓
				Construction	

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- Disconnector Switch
- Circuit Breaker
- Disconnector Switch with Earth Switch
- Lightning Arrester
- Motor
- Delta – Star Auxiliary Transformer
- Star – Delta Transformer
- Zigzag – Earthing Transformer
- Auto Transformer
- Three phase Transformer with on load tap change (Primary)
- Voltage Transformer
- Capacitor Voltage Transformer with three windings
- Two core Current Transformer
- Three core Current Transformer
- Four core Current Transformer
- Neutral Current Transformer
- Interposing current transformer

SINGLE BATTERY BANK

- Relay supplied by Battery /Triping at trip coil 01

DOUBLE BATTERY BANK

- Relay supplied by Battery No1/Triping at trip coil 01
- Relay supplied by Battery No2/Triping at trip coil 02
- Redundend supplied by both Batteries /Triping both trip coil of the CB
- MCCB – Moulded Case Circuit Breaker
- MCB – Miniature Circuit Breaker
- Battery
- Auto Reclose Device
- Timer
- Rectifier in full wave
- Fuse
- Plug & Socket
- Synchronoscope
- Cable head
- A – Ammeter
- V – Volt meter
- Ammeter / Voltmeter selector switch
- W – Watt meter
- Var – Var meter
- F – Frequency meter
- PF – Power Factor meter
- I > – Over current relay
- SF6 Bus Duct
- Neutral Resistor

- I > – Directional over current relay
- I >> – Instantaneous over current relay
- Z < – Distance relay
- U < – Undervoltage relay
- U > – Overvoltage relay
- I – Earth Fault relay
- I > – Directional Earth Fault relay
- Id/> – Differential Relay
- REF – Restricted Earth Fault relay
- SBEF – Stand By Earth Fault relay
- AVR – Automatic Valtage Regulator
- SEF – Sensitive Earth Fault relay
- SYN – Check Synchronising relay
- MDI Wh – Watt–hour meter with Maximum Demand indicator
- BFR – Breaker Failure relay
- VTS – Voltage supervision relay
- TCS – Trip Circuit supervision
- BB – Busbar Protection
- VCU – Voltage Control Unit
- Protective device (Gas relay)
- Oil Level indicator
- P > – Over Pressure relief
- P>o – Sudden Pressure relief
- Oil Temperature indication
- Oil Flow indicator
- f > – Over Frequency Relay
- f < – Under Frequency Relay
- df/dt – Rate of change of Frequency Relay

- f < – Unbalance Protection
- Battery Charger
- Set of Battery
- 3 – Over Load Protection
- A – Ammeter DC
- V – Volt meter DC
- Inductor
- Capacitor
- Variable Shunt Reactor with On Load Tap Changer
- Cable Sealing End (SF6 Gas Type)
- Cable Sealing End (Oil Type)
- Iub – Unbalance Protection

REFERENCE – IEC 617

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD
TRANSMISSION DESIGN

Project Title: *SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: ADB

Drawing Title: SYMBOLS

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Scale - NTS	Rev. Date	Drawn	Sandamali	26.04.2019
Size - A3	26.04.2019	Designed	Kushan	
Sheet of	Rev. 0	Checked		
Dwg. No. TD/CE/1/186/D/00/00		Approved		
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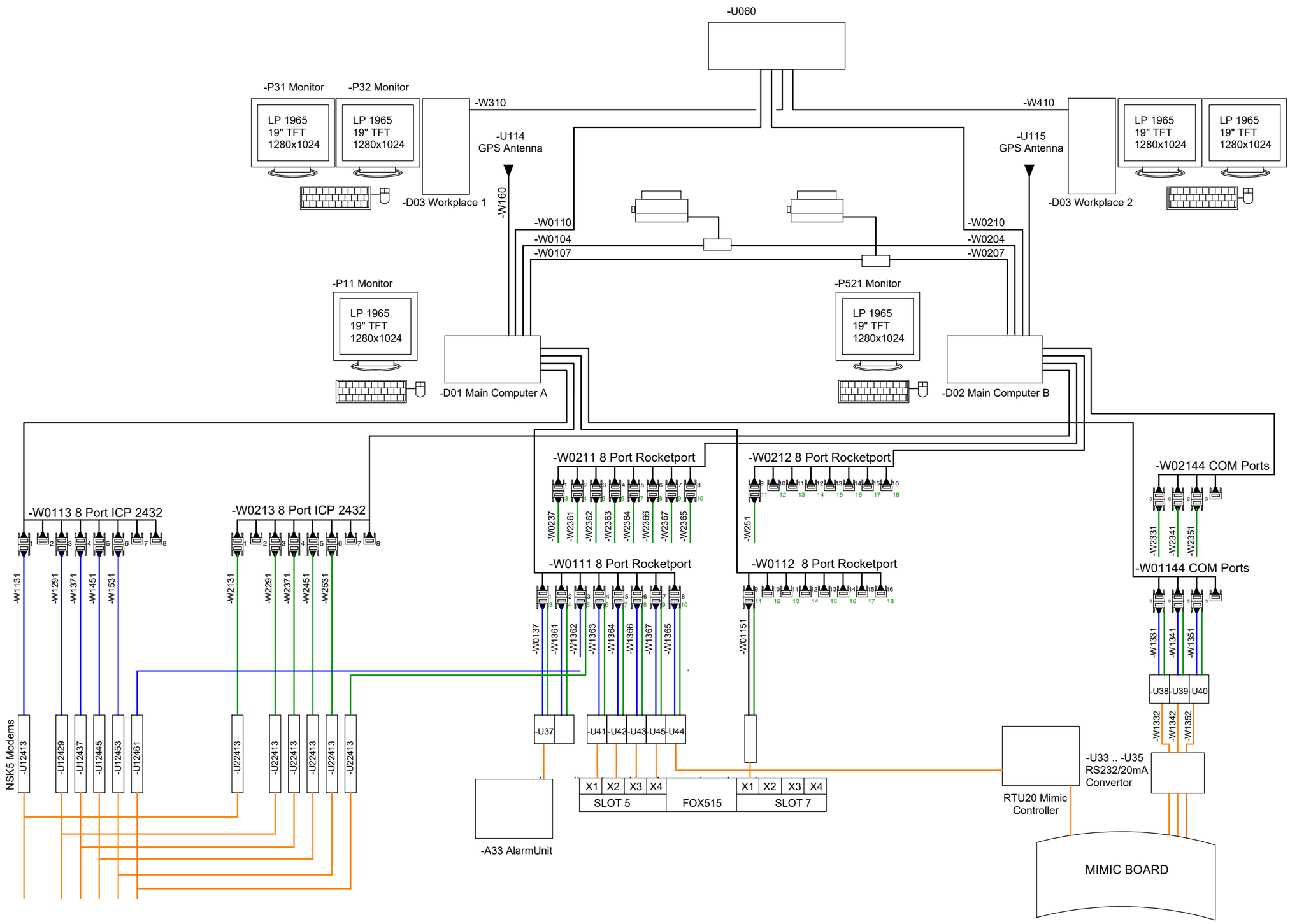

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CEYLON ELECTRICITY BOARD
TRANSMISSION DESIGN

Project Title
SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

Funding Agency
ADB

Drawing Title
COMMUNICATION DRAWING
MASTER STATION SCC

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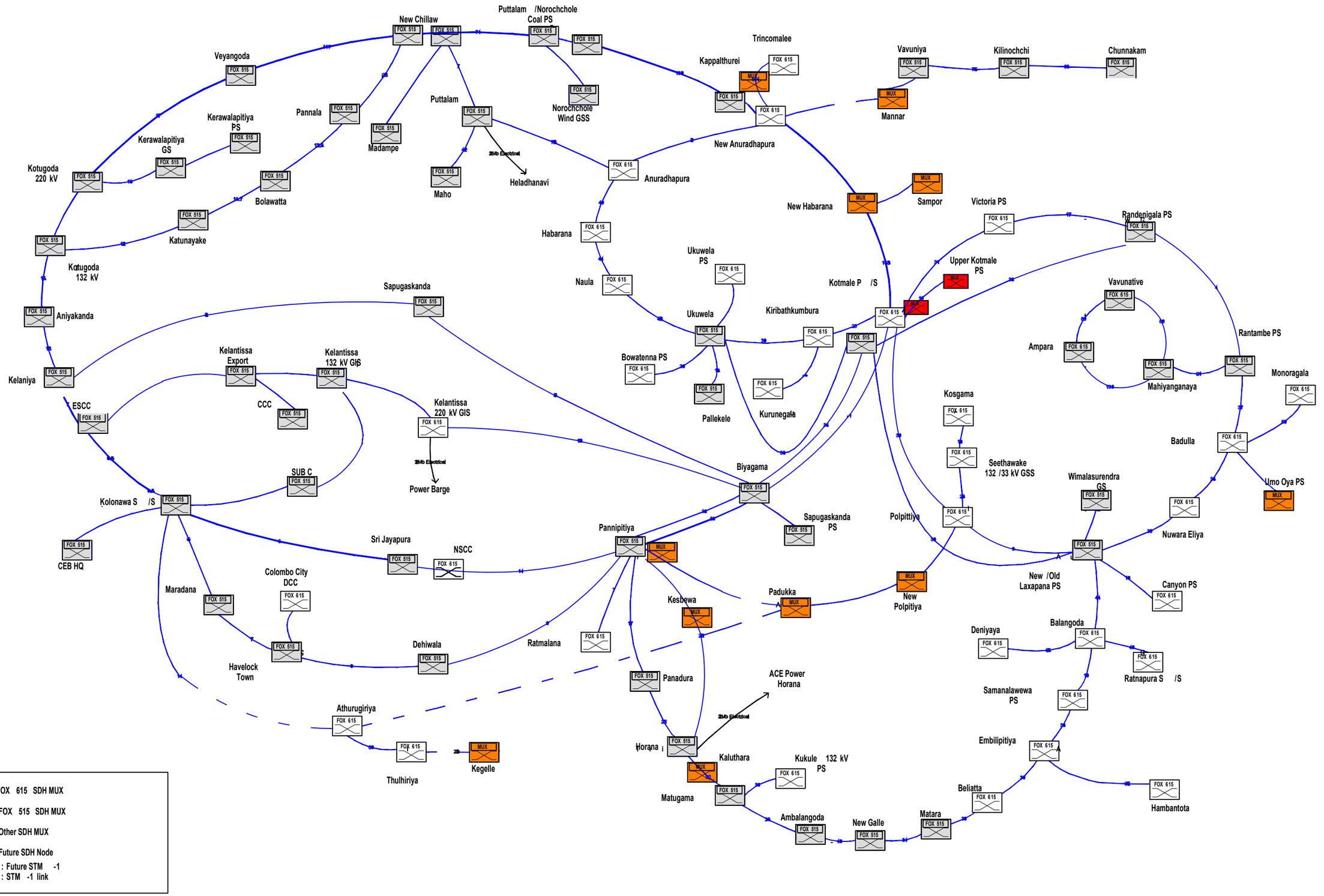

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CEYLON ELECTRICITY BOARD
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Project Title: SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

Funding Agency: ADB

Drawing Title: SDH NETWORK OVERVIEW

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Sheet of	Rev.	Designed	Kushan
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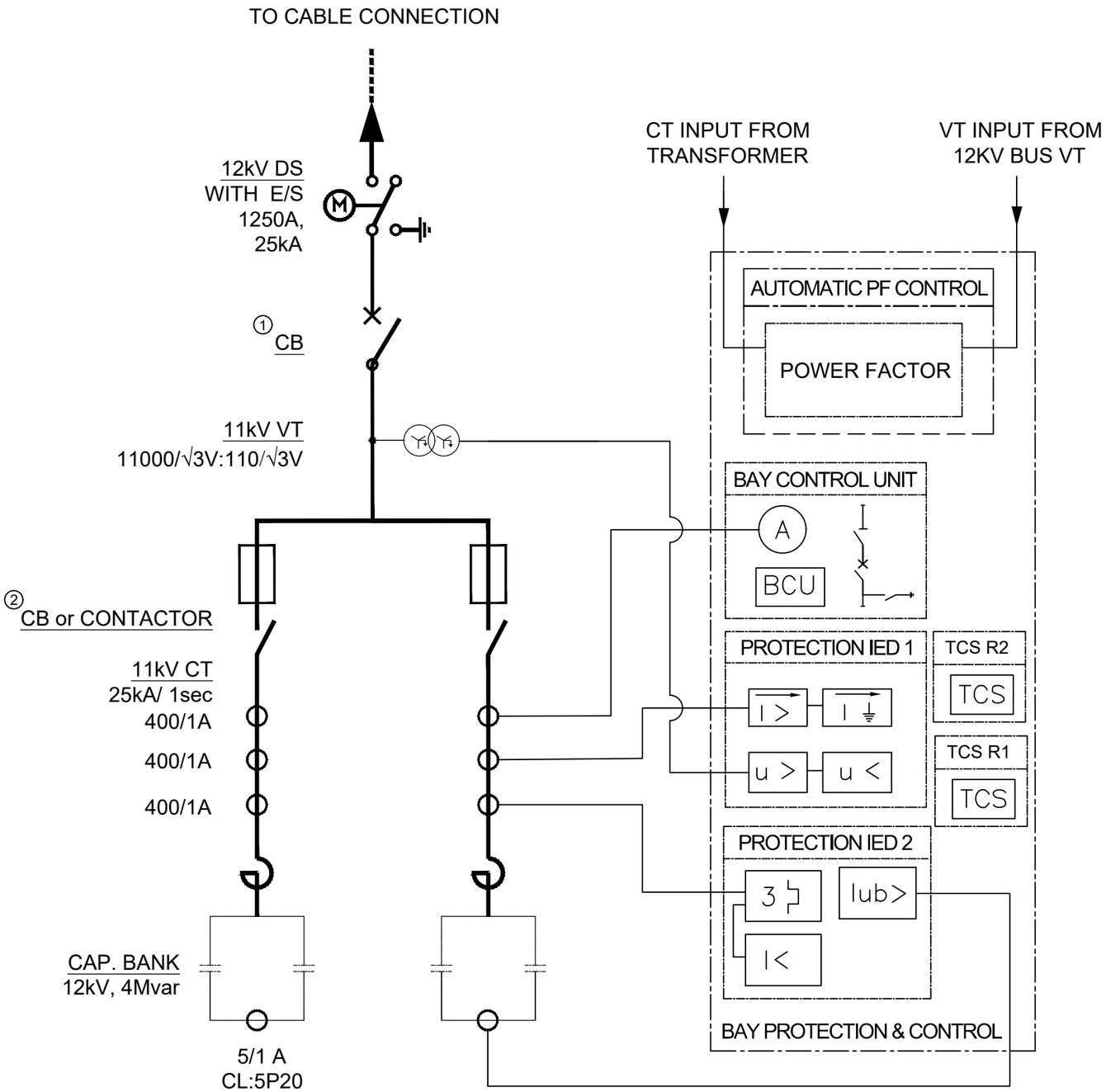

* INCOMER BREAKER AND STEP SWITCHING UNIT SELECTION SHALL BE PROVIDE WITH THE CAPACITOR BANK DESIGN REPORT

NOTE :

① CIRCUIT BREAKER SHALL BE CAPABLE OF ISOLATING THE CAPACITOR BANK FAULT

② CB OR CONTACTOR SHALL BE CAPABLE TO WITHSTAND THE SWITCHING TRANSIENTS & TRANSIENT RECOVERY VOLTAGE

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CEYLON ELECTRICITY BOARD

Project Title: *SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: ADB

Drawing Title: TYPICAL DIAGRAM FOR INDOOR CAPACITOR BANK

				Signature	Date
Scale -	NTS	Rev. Date	Drawn	Anusha	03.05.2019
Size -	A3	03.05.2019	Designed	Kushan	
Sheet	01 of 01	Rev.	Checked		
Dwg. No.	TD/CE/1/186/D/00/00 - A		Approved		
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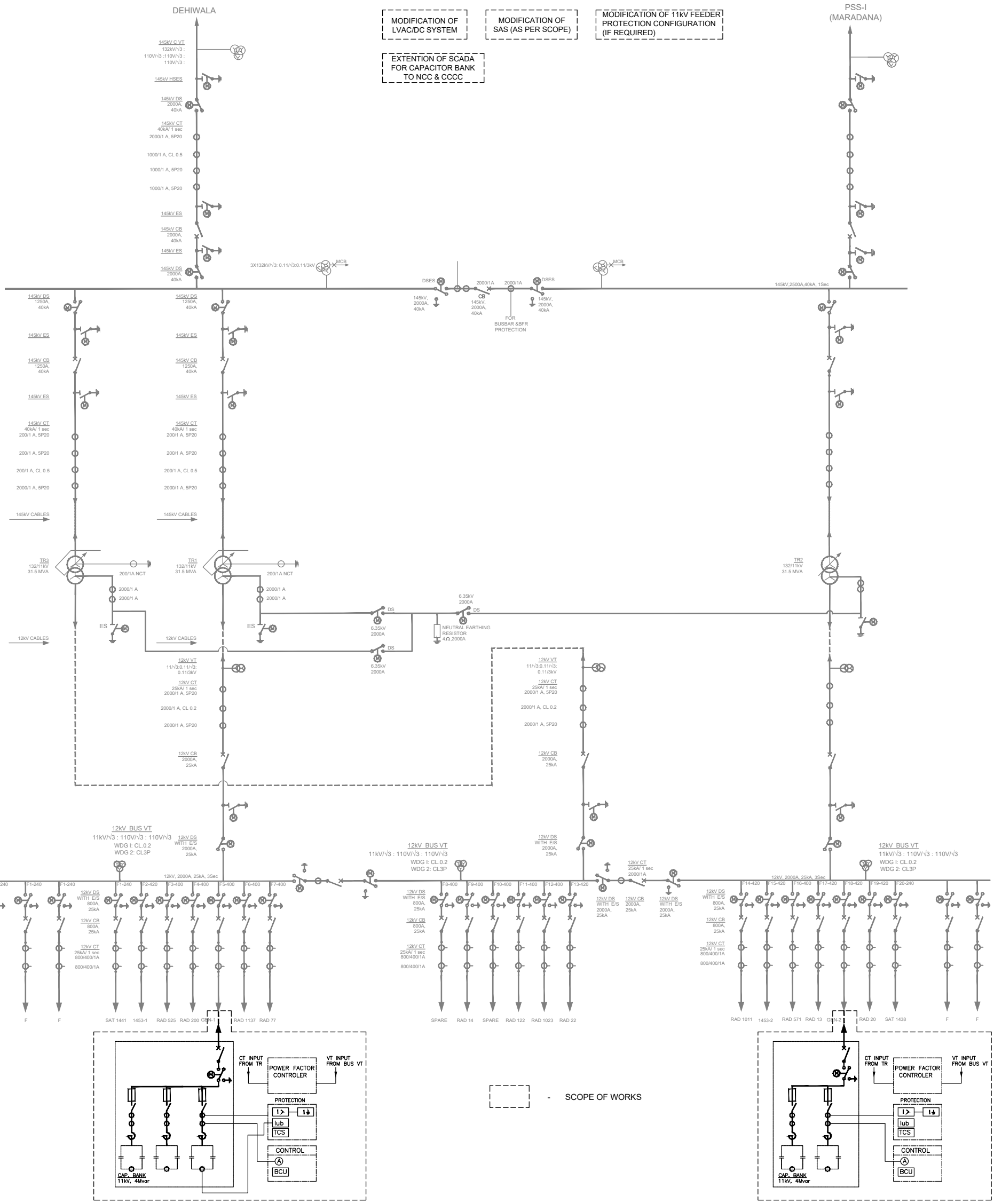

CEYLON ELECTRICITY BOARD
TRANSMISSION DESIGN

Project Title
SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

Drawing Title
SINGLE LINE DIAGRAM FOR SUBSTATION A WITH PROPOSED CAPACITOR BANK

Rev. No.	Date	Description	Drawn	Checked	Approved

Funding Agency: ADB

Scale -	NTS	Rev. Date	
Size -	A3	01.05.2019	
Sheet	of	Rev.	

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Dwg. No. TD/CE/1/186/D/00/01

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Drawn	Anusha		01.05.2019
Designed	Kushan		
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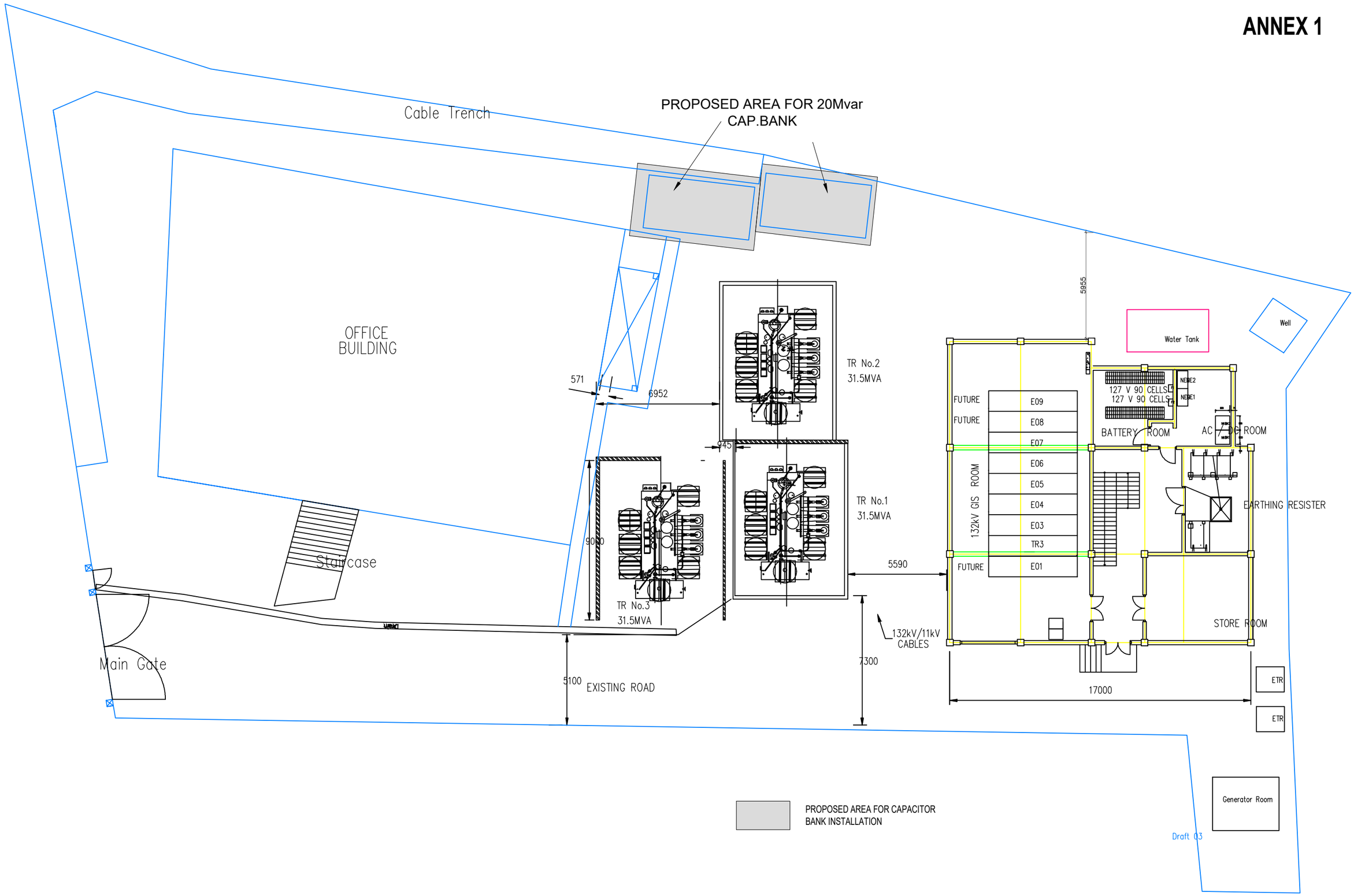
ANNEX 1



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Revision Record					
Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD
TRANSMISSION DESIGN

Project Title
SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

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Drawing Title
GENARAL LAYOUT OF SUBSTATION A
WITH PROPOSED CAPACITOR BANK

Scale -	1:200	Rev. Date		Signature	Date
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Sheet	of	Rev. 0	Designed	Kushan	
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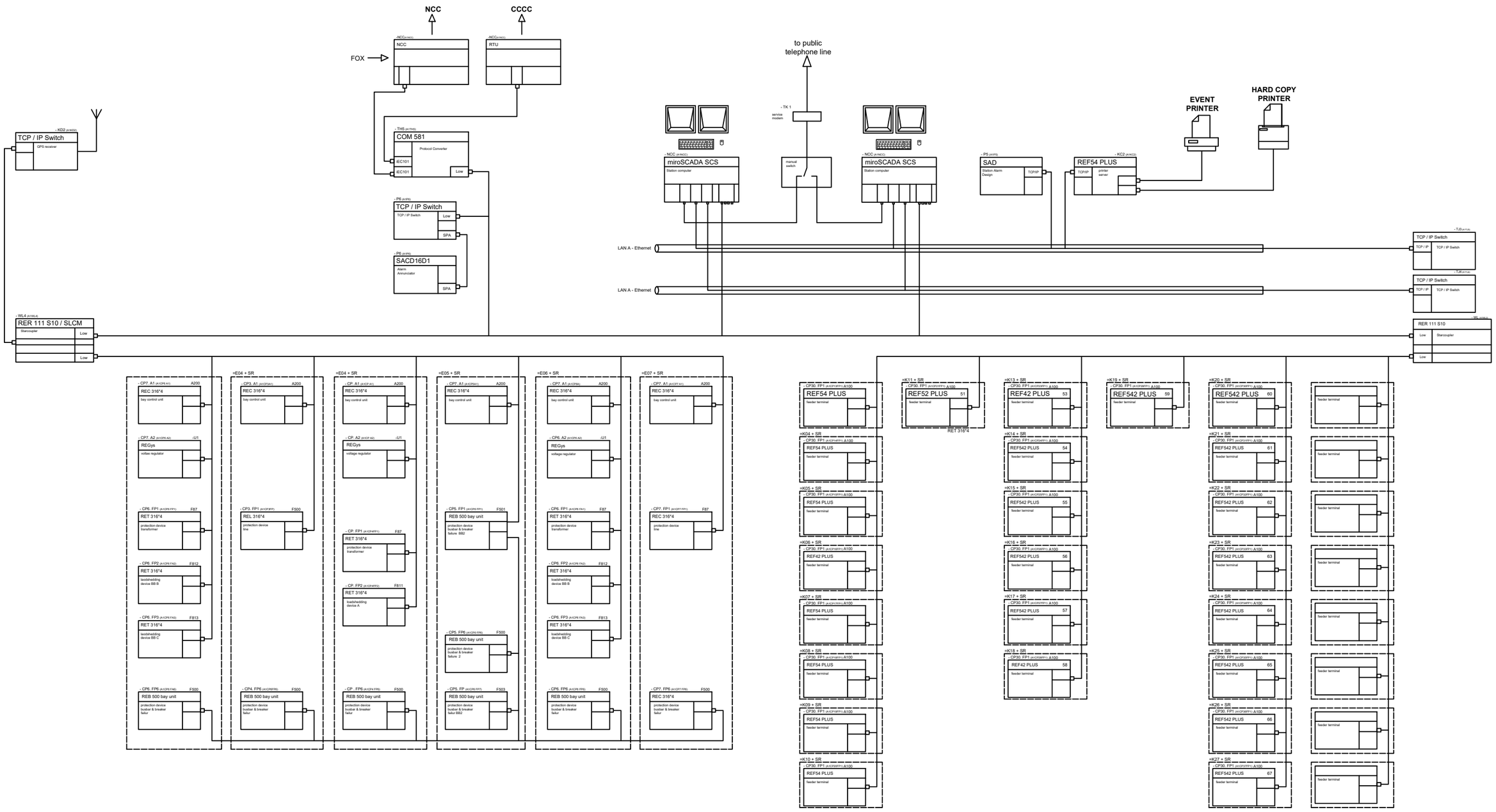

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CEYLON ELECTRICITY BOARD

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SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

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Drawing Title
ARCHITECTURE FOR THE SUBSTATION AUTOMATION SYSTEM FOR SUBSTATION A

Scale -	NTS	Rev. Date	03.03.2020
Size -	A3		
Sheet	01 of 01	Rev.	
Dwg. No.	TD/CE/1/186/D/07/01		

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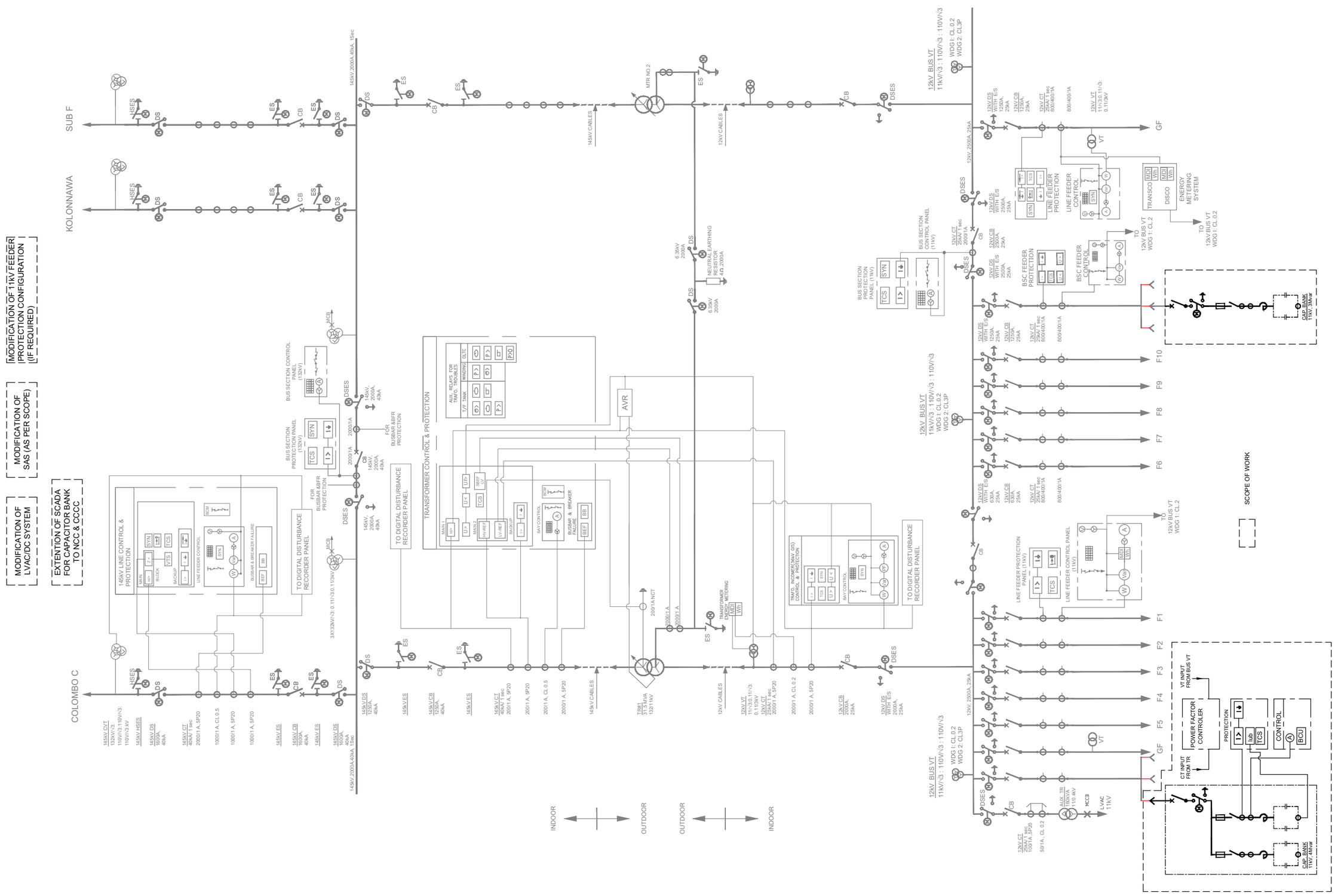
	Construction		



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CEYLON ELECTRICITY BOARD
TRANSMISSION DESIGN

Project Title
SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

Funding Agency
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Drawing Title
SINGLE LINE DIAGRAM FOR SUBSTATION B WITH PROPOSED CAPACITOR BANK

Scale - NTS		Rev. Date	
Size - A3		01.05.2019	
Sheet	of	Rev.	
Dwg. No. TD/CE/1/186/D/00/02			

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Drawn	Anusha		01.05.2019
Designed	Kushan		
Checked			
Approved			

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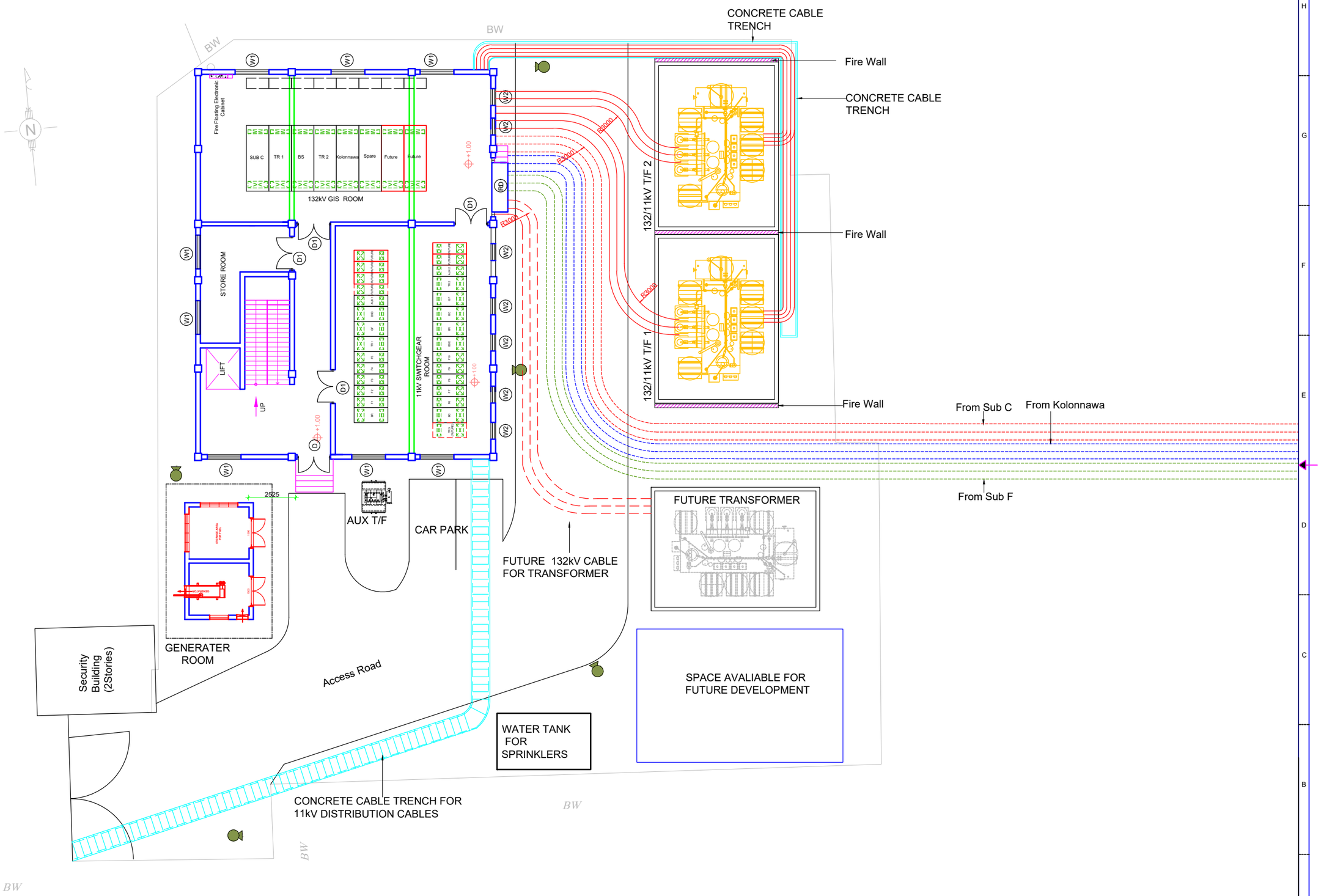

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CEYLON ELECTRICITY BOARD
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SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

Funding Agency
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Drawing Title
LAYOUT OF SUBSTATION B

Scale - 1:200	Rev. Date		
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Sheet	of	Rev.	
Dwg. No. TD/CE/1/186/D/01/02			

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Designed	Kushan	
Checked		
Approved		

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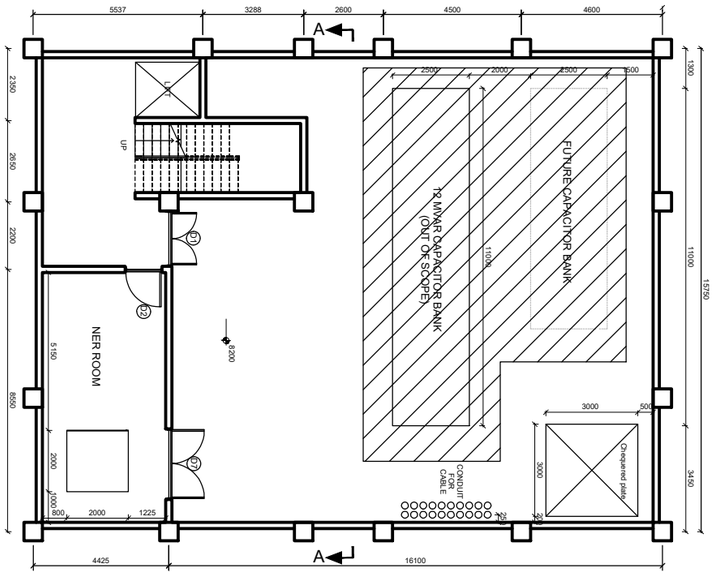
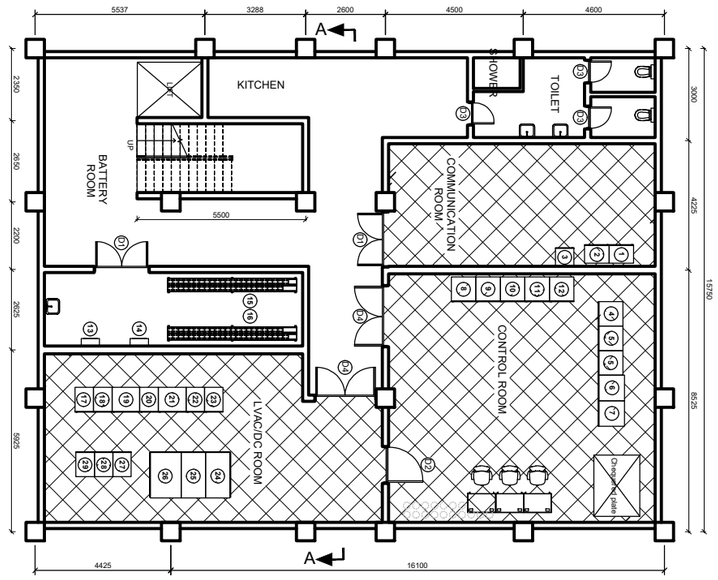
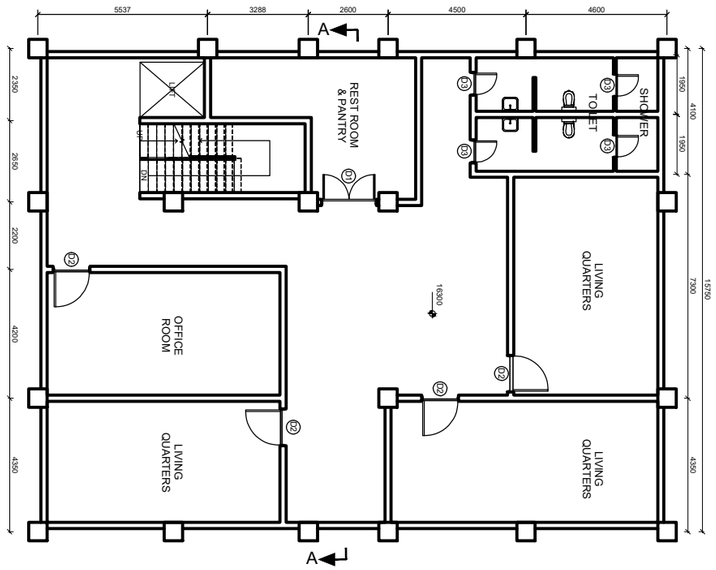


FIRST FLOOR PLAN



SECOND FLOOR PLAN



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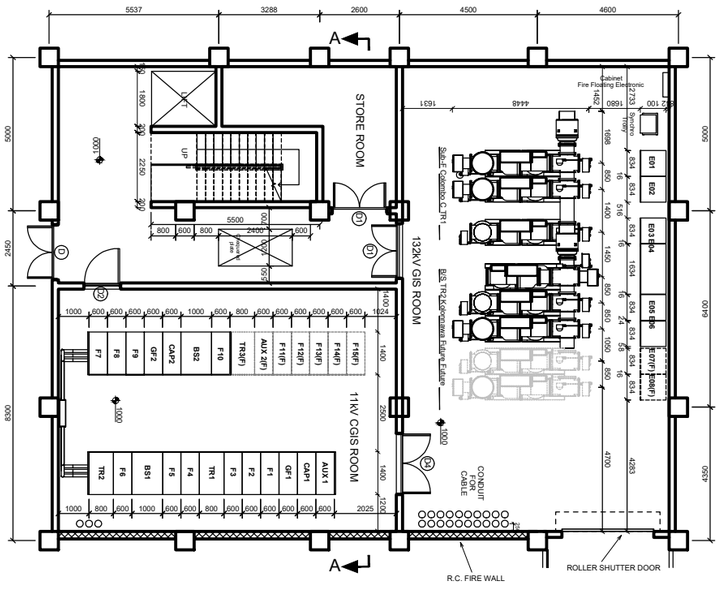
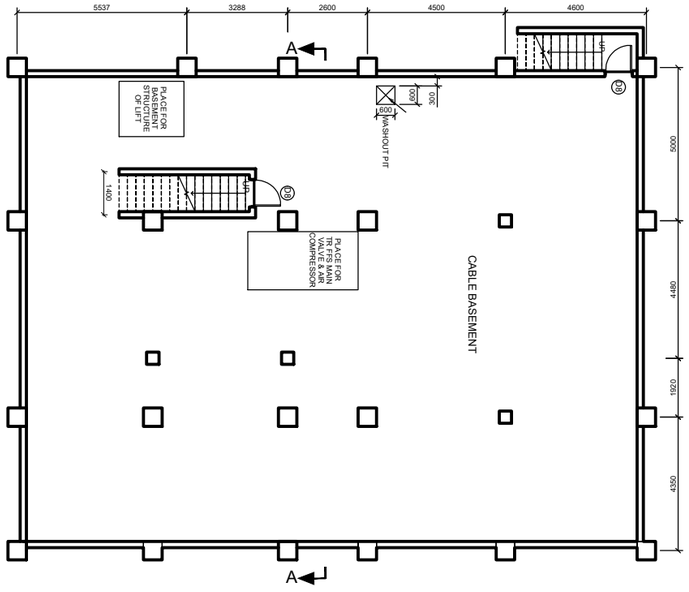


GROUND FLOOR PLAN



BASEMENT FLOOR PLAN

D1 - 1800x2400
D2 - 1200x2100
D3 - 750x2100
W1 - 1800x1500
FW - 1800x1200
PRW - 900x1000
F - 600x450
D - ROLLAR SHUTTER DOOR

NOTE
ALL DIMENSIONS ARE IN MILLIMETERS

SCOPE OF WORK

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CEYLON ELECTRICITY BOARD
TRANSMISSION DESIGN

Project Title
SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

Funding Agency
ADB

Drawing Title
PROPOSED CONTROL BUILDING FOR SUBSTATION B

				Signature		Date
Scale - 1:200	Rev. Date		Drawn	Anusha		01.05.2019
Size - A3	01.05.2019		Designed	Kushan		
Sheet	of	Rev.	Checked			
Dwg. No. TD/CE/1/186/D/60/02			Approved			
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				Construction		

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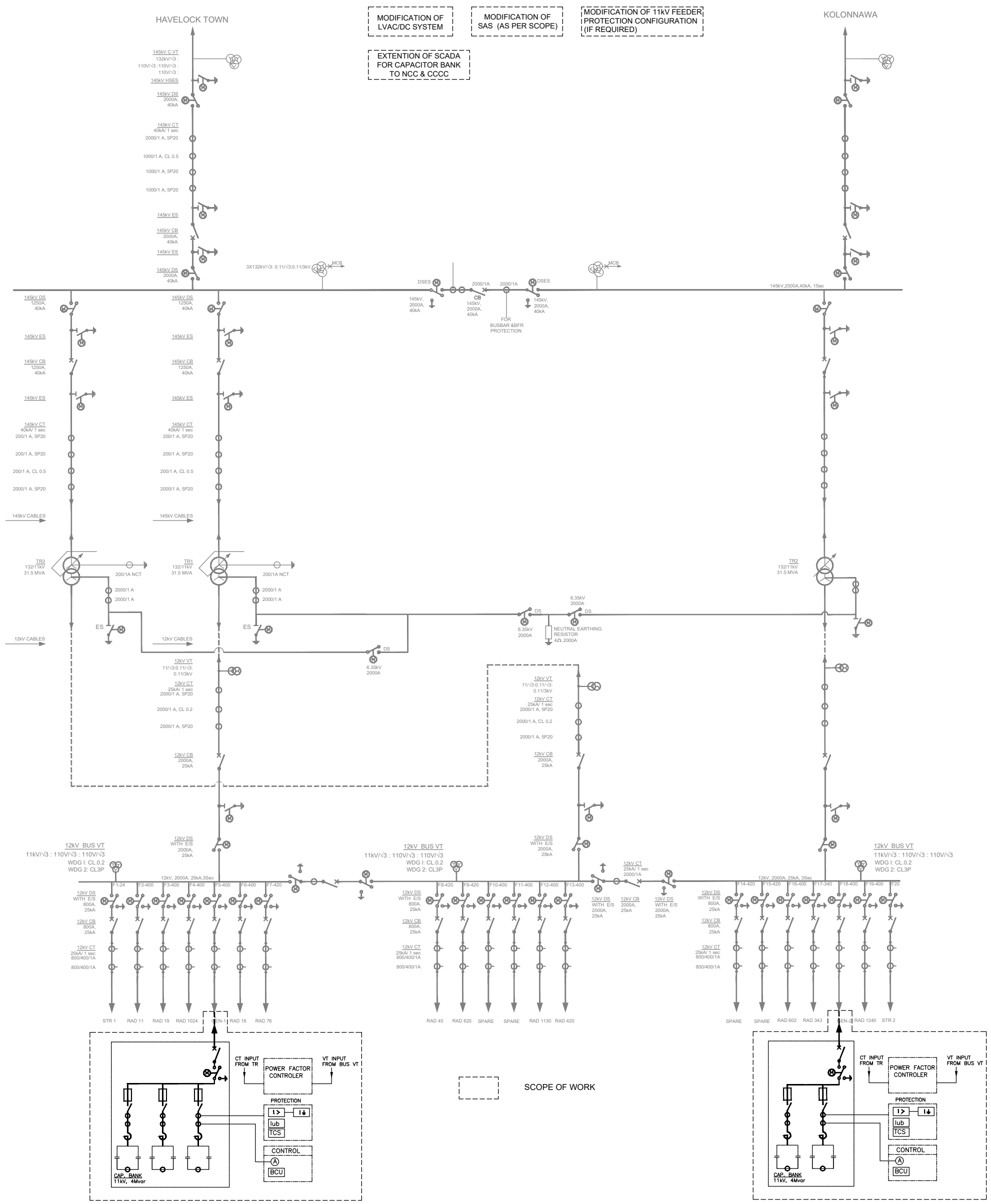

CEYLON ELECTRICITY BOARD
TRANSMISSION DESIGN

Project Title

SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

Drawing Title

SINGLE LINE DIAGRAM FOR SUBSTATION I
WITH PROPOSED CAPACITOR BANK

Rev. No.	Date	Description	Drawn	Checked	Approved

Funding Agency: ADB

Scale - NTS | Size - A3 | Sheet ___ of ___ | Rev. Date 02.05.2019 | Rev.

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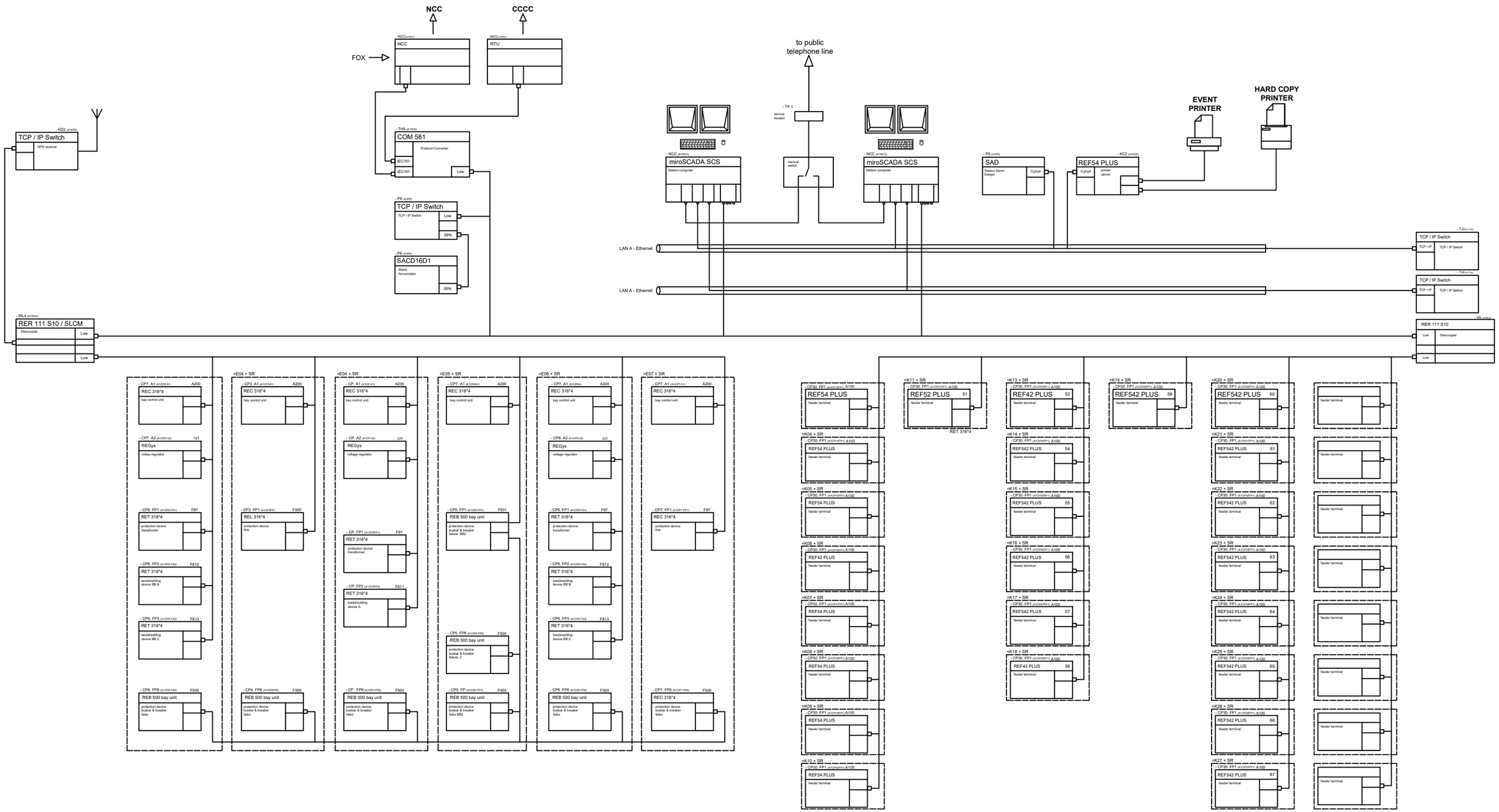
Dwg. No. CE/TD/1/186/D/00/04

		Signature	Date
Drawn	Anusha		02.05.2019
Designed	Kushan		
Checked			
Approved			



Property of CEB Tr. Design Branch

Property of CEB Tr. Design Branch

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

Project Title
SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

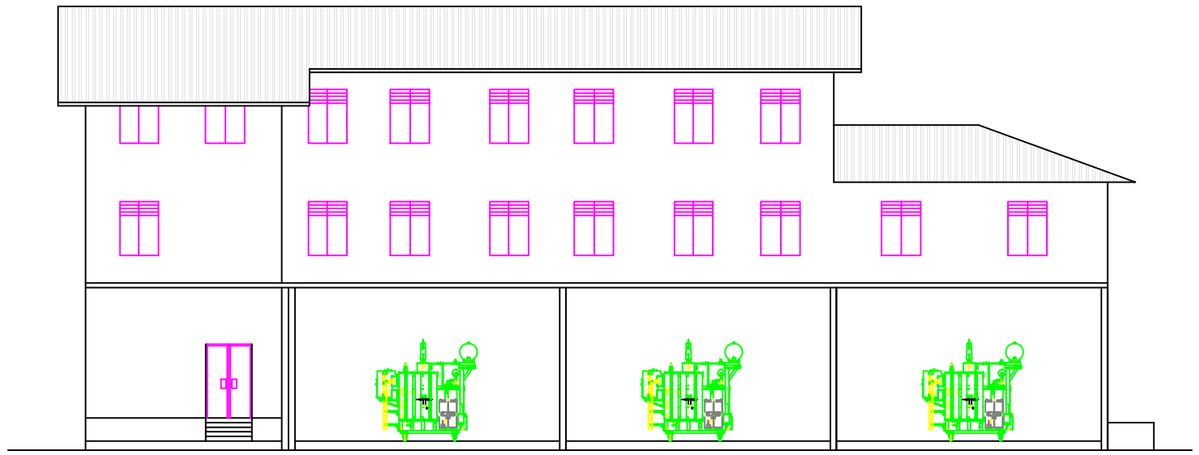
Funding Agency
ADB

Drawing Title
ARCHITECTURE FOR THE SUBSTATION AUTOMATION SYSTEM FOR SUBSTATION I

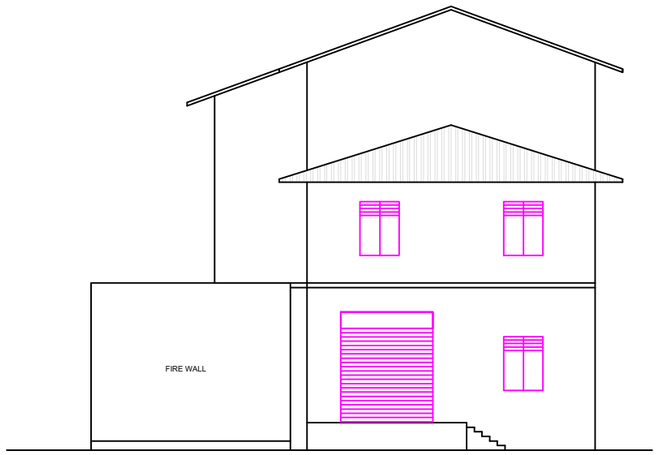
Scale -	NTS	Rev. Date	03.03.2020
Size -	A3		
Sheet	01 of 01	Rev.	
Dwg. No.	TD/CE/1/186/D/07/04		

	Signature	Date
Drawn	Anusha	03.03.2020
Designed	Kushan	
Checked		
Approved		

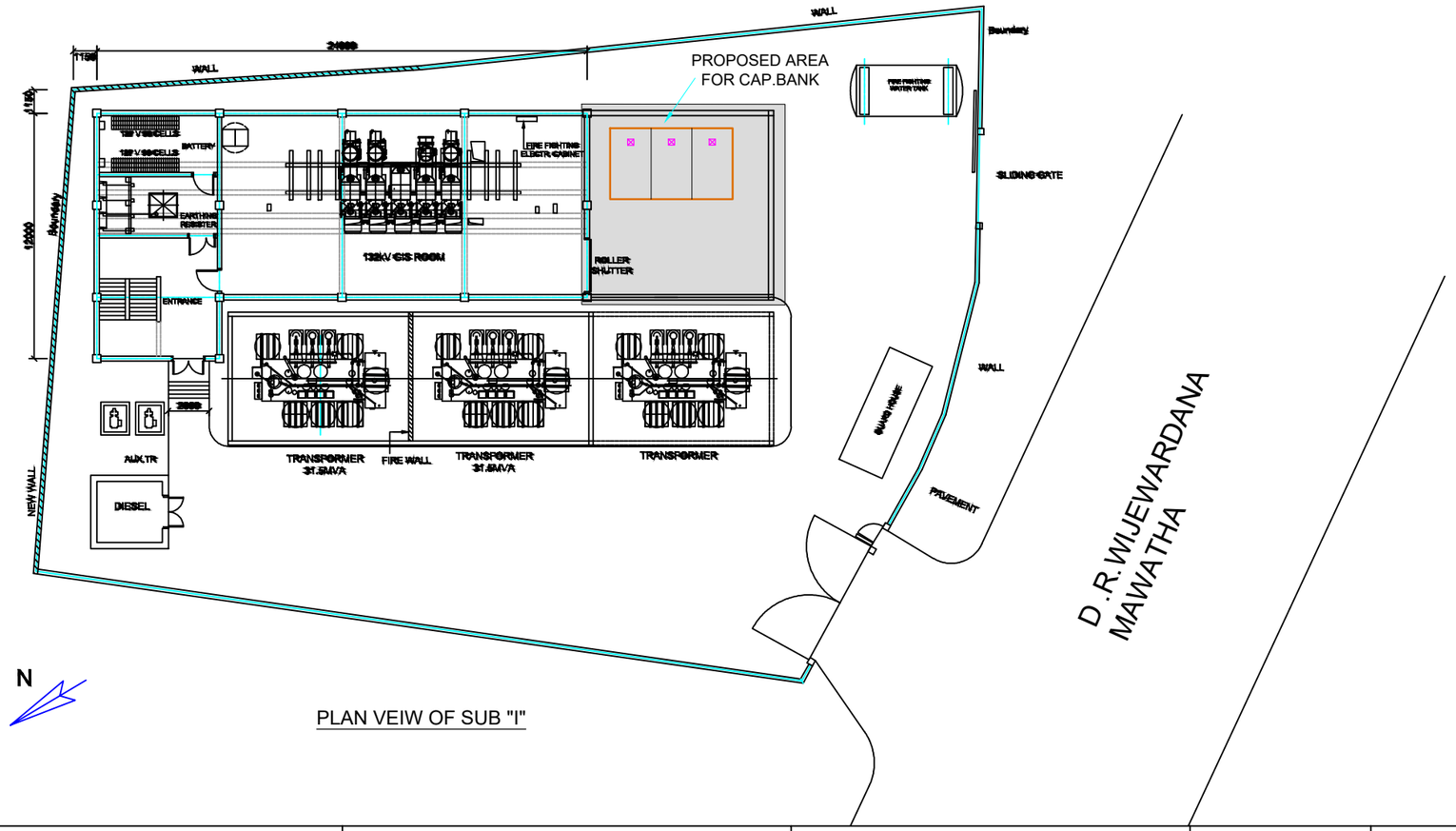
Released for: Tendering / Construction



FRONT ELEVATION



SIDE ELEVATION



PLAN VEIW OF SUB "I"

SCOPE OF WORK

NOTE

* THE FRONT AND SIDE VIEW DRAWING IS FOR ILLUSTRATION PURPOSE ONLY

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Revision Record

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD
TRANSMISSION DESIGN

Project Title
SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

Funding Agency
ADB

Drawing Title
PROPOSED 11kV CAPACITOR BANK
LAYOUT & ELEVATION AT SUBSTATION I

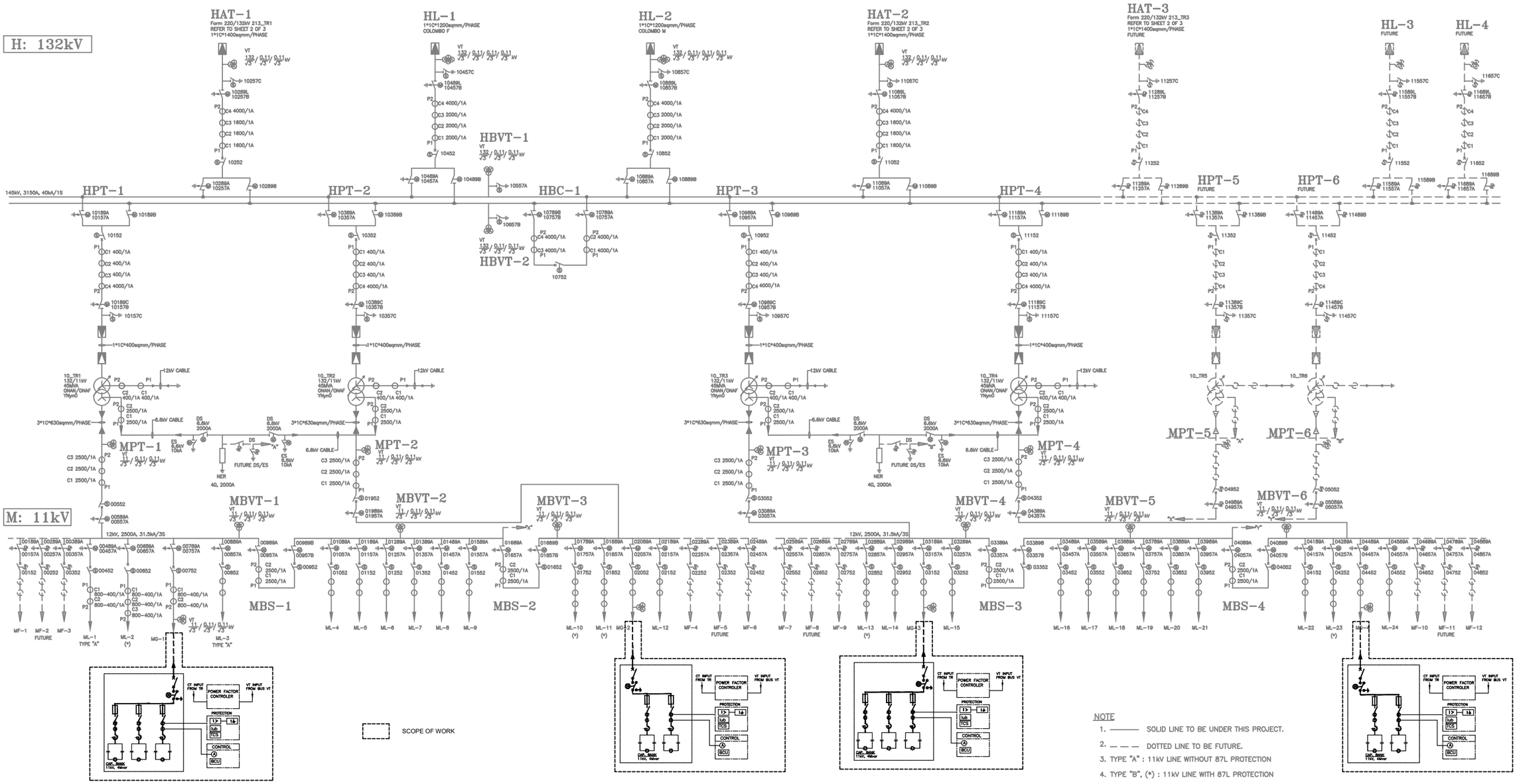
Scale - NTS	Rev. Date		Signature / Date
Size - A3	06.05.2019	Drawn	Anusha 06.05.2019
Sheet of	Rev. 0	Designed	Kushan
Dwg. No. TD/CE/1/186/D/60/04		Checked	
		Approved	
		Released for	Tendering / Construction

MODIFICATION OF LVAC/DC SYSTEM

MODIFICATION OF SAS (AS PER SCOPE)

MODIFICATION OF 11kV FEEDER PROTECTION CONFIGURATION (IF REQUIRED)

EXTENTION OF SCADA FOR CAPACITOR BANK TO NCC & CCCC



NOTE

1. ——— SOLID LINE TO BE UNDER THIS PROJECT.
2. — — — DOTTED LINE TO BE FUTURE.
3. TYPE "A" : 11kV LINE WITHOUT 87L PROTECTION
4. TYPE "B", (*) : 11kV LINE WITH 87L PROTECTION
5. T.B.D : TO BE DETERMINED

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

Project Title: *SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: ADB

Drawing Title: SINGLE LINE DIAGRAM FOR SUBSTATION L WITH CAPACITOR BANK

Scale - NTS	Rev. Date		
Size - A3	01.05.2019		
Sheet 01 of 01	Rev.		
Dwg. No. TD/CE/1/186/D/00/05			

	Signature	Date
Drawn	Anusha	01.05.2019
Designed	Kushan	
Checked		
Approved		
Released for	Tendering	
	Construction	

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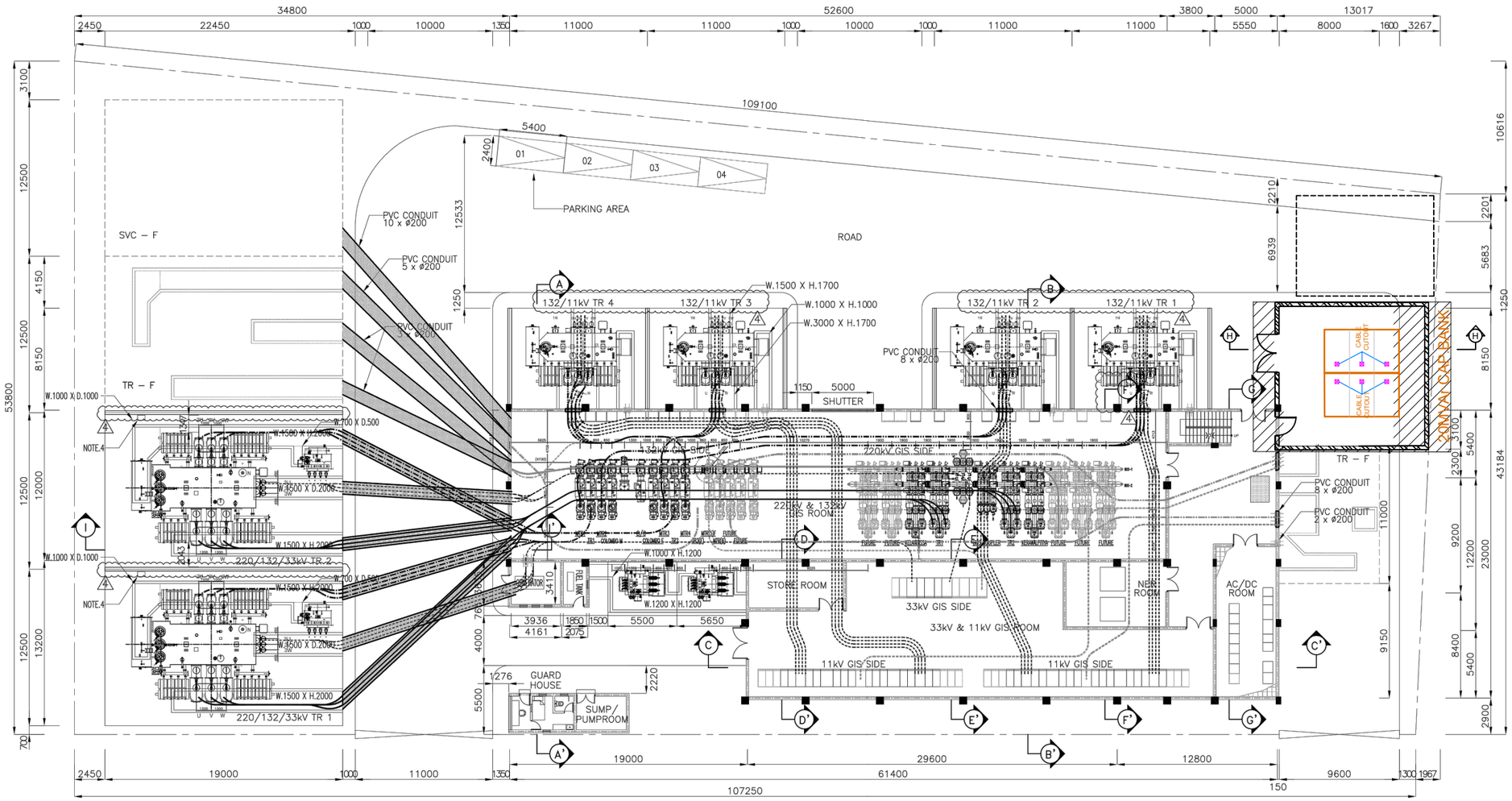
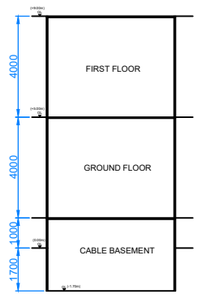
NOTE

1. ——— SOLID LINE TO BE UNDER THIS PROJECT.
2. – – – – DOTTED LINE TO BE FUTURE.
3. ALL DIMENSIONS ARE IN MILLIMETERS(mm), UNLESS NOTED OTHERWISE.
4. TMS PANEL : TRANSFORMER MONITORING SYSTEM PANEL. (APPLICABLE TO ONLY AUTO TR)
5. HV, MV CABLE DESCRIPTION
   - ——— 220kV 800SQmm CABLE (220kV GIS to 220/132/33kV AUTO TR)
   - —·—·— 132kV 1400SQmm CABLE (132kV GIS to 220/132/33kV AUTO TR)
   - - - - - 33kV 630SQmm CABLE (33kV CGIS to 220/132/33kV AUTO TR)
   - —··—··— 132kV 500SQmm CABLE (132kV GIS to 132/11kV POWER TR)
   - - - - - 11kV 630SQmm CABLE (11kV CGIS to 132/11kV POWER TR)

SCOPE OF WORK



OVERALL LAYOUT PLAN



SECTION H-H

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

Project Title: *SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: ADB

Drawing Title: GENARAL LAYOUT OF SUBSTATION L WITH PROPOSED CAPACITOR BANK

Scale - NTS	Rev. Date		
Size - A3	02.05.2019		
Sheet 01 of 01	Rev.		
Dwg. No. TD/CE/1/186/D/01/05			

	Signature		Date
Drawn	Anusha		02.05.2019
Designed	Kushan		
Checked			
Approved			
Released for: Tendering			
Construction			

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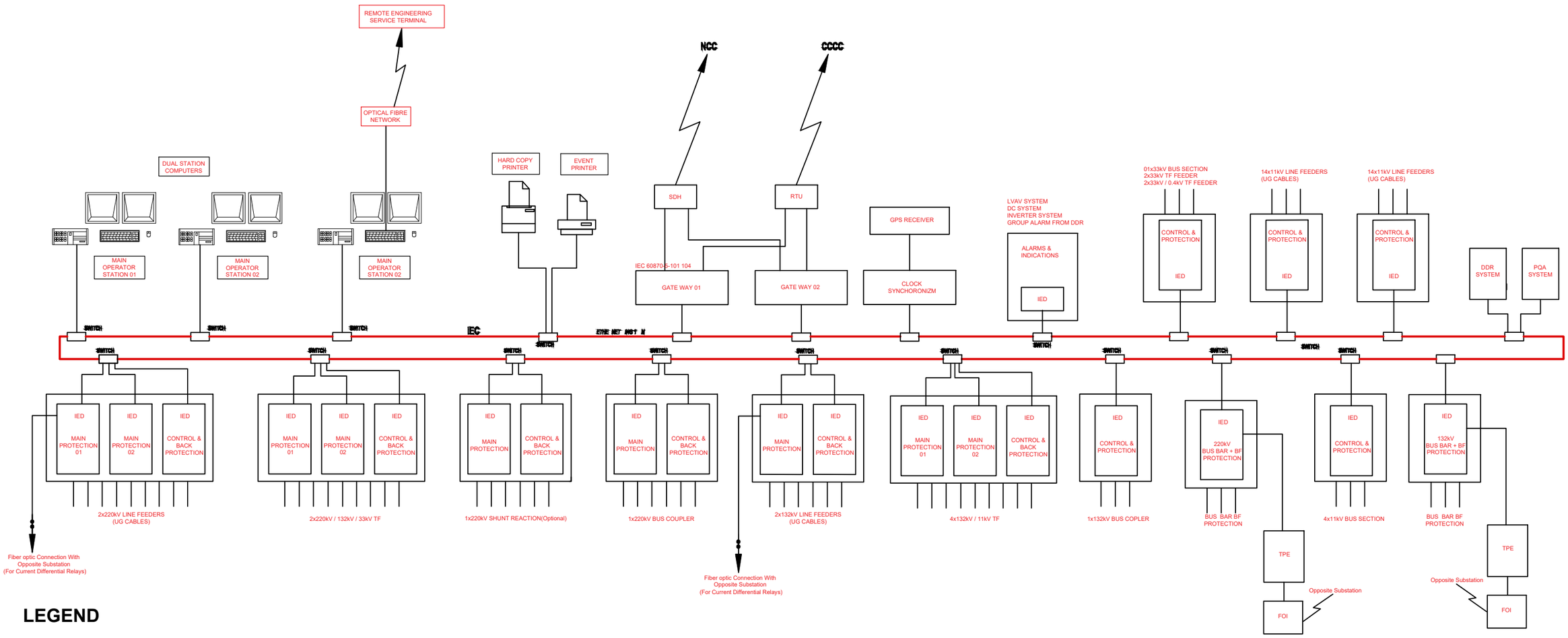

LEGEND

IED - Intelegent Electronic Device
TPE - Teleprotection Equipment
FOI - Fiber Optic Interface
DDR - Digital Disturbance Recorder
FO - Fiber Optical Cable

Rev. No	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD
TRANSMISSION DESIGN

Project Title
SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

Funding Agency
ADB

Drawing Title
ARCHITECTURE FOR THE SUBSTATION AUTOMATION SYSTEM FOR SUBSTATION L

Scale - NTS		Rev. Date	
Size - A3		02.03.2020	
Sheet 01 of 01		Rev.	
Dwg. No. TD/CE/1/186/D/07/05			

	Signature		Date
Drawn	Ranjana		02.03.2020
Designed	Kushan		
Checked			
Approved			
Released for	Tendering		
	Construction		

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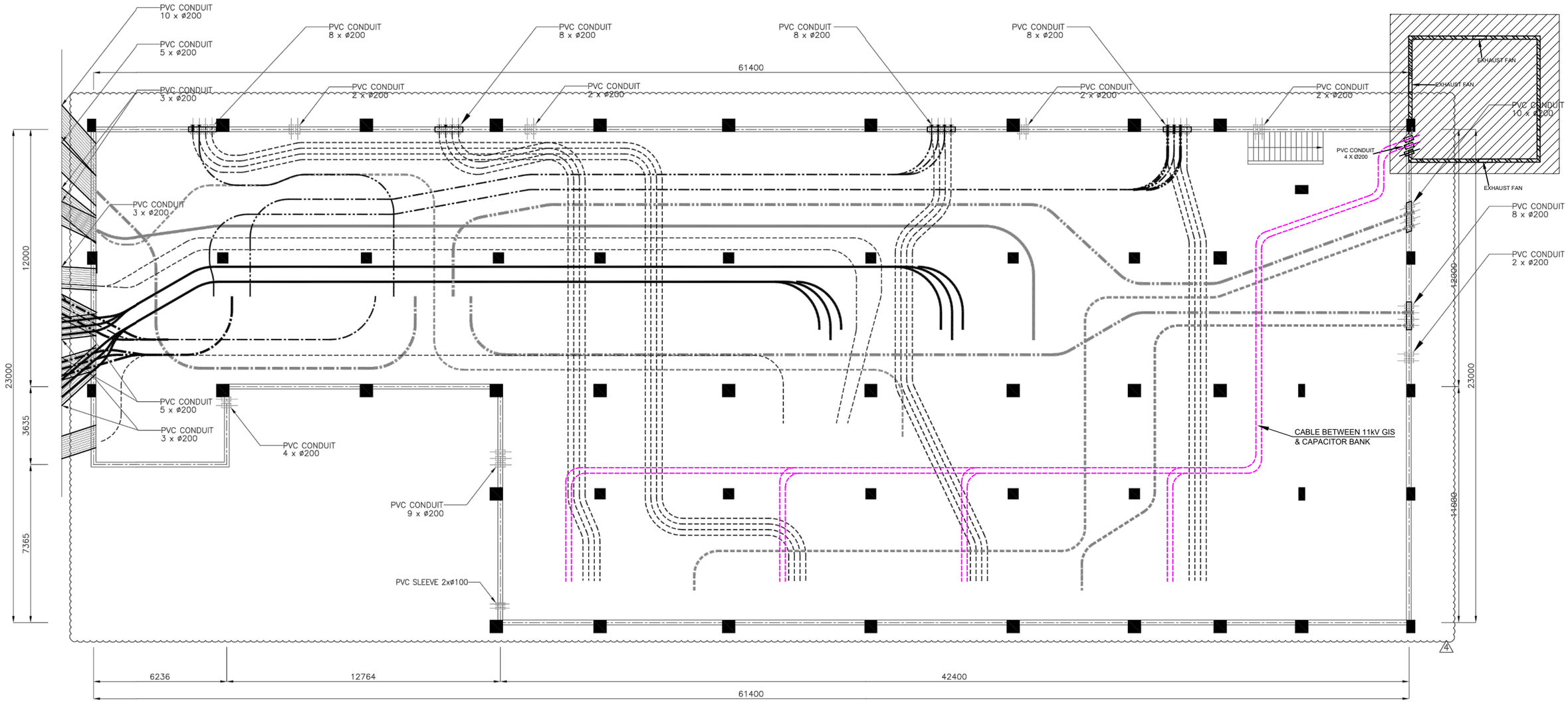

BASEMENT FLOOR

SCOPE OF WORK

NOTE

1. ——— SOLID LINE TO BE UNDER THIS PROJECT.
2. – – – – DOTTED LINE TO BE FUTURE.
3. ALL DIMENSIONS ARE IN MILLIMETERS(mm), UNLESS NOTED OTHERWISE.
4. BASEMENT COLUMN TO BE DETERMINED.

* HV, MV CABLE DESCRIPTION

- ——— 220kV 800SQmm CABLE (220kV GIS to 220/132/33kV AUTO TR)
- —·—·— 132kV 1400SQmm CABLE (132kV GIS to 220/132/33kV AUTO TR)
- – – – – – 33kV 630SQmm CABLE (33kV CGIS to 220/132/33kV AUTO TR)
- —··—··— 132kV 500SQmm CABLE (132kV GIS to 132/11kV POWER TR)
- – – – – – 11kV 630SQmm CABLE (11kV CGIS to 132/11kV POWER TR)

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

Project Title: *SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: *ADB*

Drawing Title: BASEMANT FLOOR LAYOUT FOR SUBSTATION L

Scale -	NTS		Rev. Date		
Size -	A3		02.05.2019		
Sheet	01	of 03	Rev.		
Dwg. No.	TD/CE/1/186/D/60/05 - A				

	Signature		Date
Drawn	Anusha		02.05.2019
Designed	Kushan		
Checked			
Approved			
Released for	Tendering		
	Construction		

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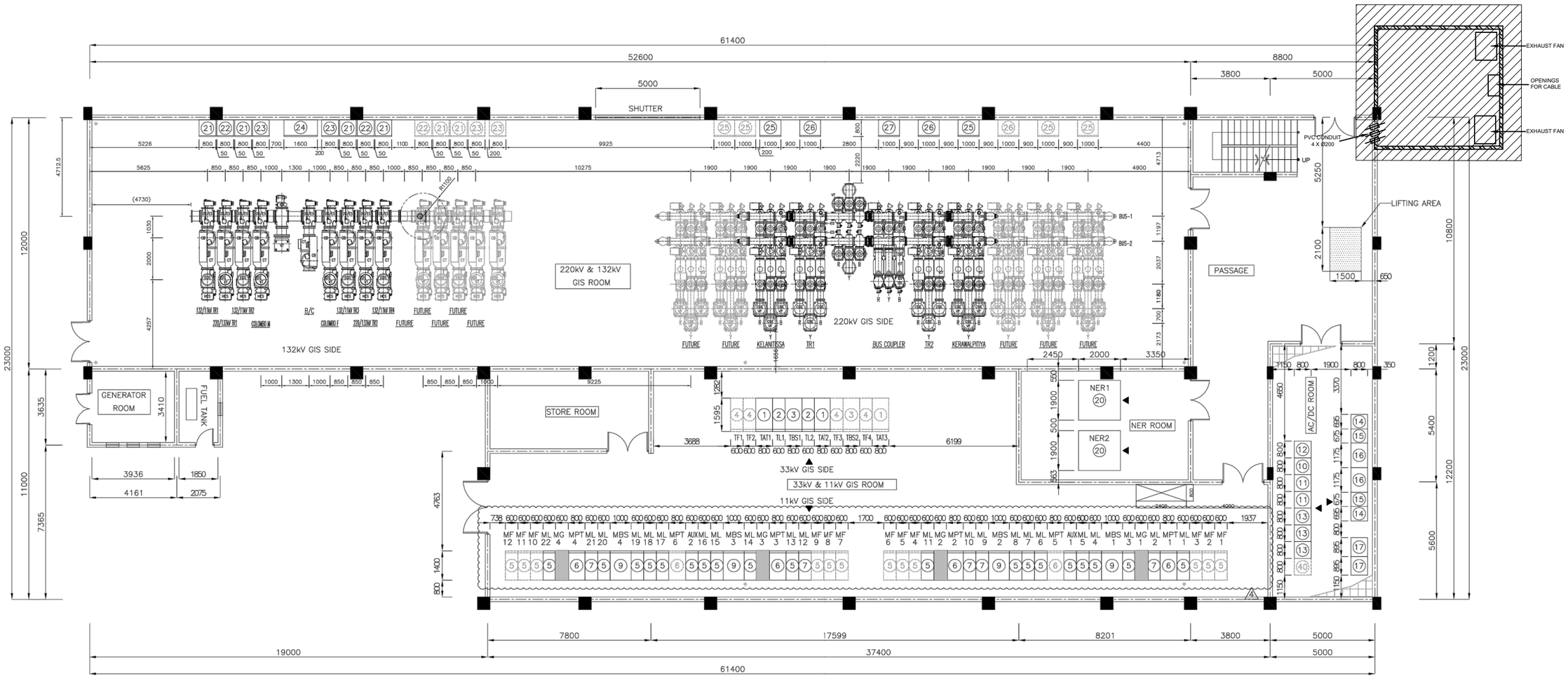


NO.	DESCRIPTION (PANEL NAME)	Ref.	Q'TY	SIZE	NO.	DESCRIPTION (PANEL NAME)	Ref.	Q'TY	
33kV & 11kV GIS ROOM									
1	33kV INCOMING FEEDER GIS	TAT1 TO TAT3	3 EA	W.800 X D.1595 X H.2400	17	230V AC INVERTER & DB PANEL		2 EA	W.895 X D.800 X H.2200
2	33kV OUTGOING & BB VT FEEDER GIS	TL1 TO TL2	2 EA	W.600 X D.1595 X H.2400	40	SOLAR BATTERY PANEL		1 EA	TO BE INFORMED
3	33kV BUS SECTION GIS	TBS1 TO TBS2	2 EA	W.800 X D.1595 X H.2400	NER ROOM				
4	33kV FUTURE OUTGOING GIS	TF1 TO TF4	4 EA	W.600 X D.1595 X H.2400	20	6.6kV NER	NER1 TO NER2	2 EA	W.1900 X D.2000 X H.2350
5	11kV LINE FEEDER GIS	ML1 TO ML22 AUX1, AUX2	19 EA	W.600 X D.1400 X H.2350	132kV GIS CONTROL & PROTECTION PANEL				
5	11kV LINE FEEDER GIS (FUTURE)	MF1 TO MF12	12 EA	W.600 X D.1400 X H.2350	21	132kV POWER TR CONTROL & PROTECTION PANEL		6 EA	W.800 X D.800 X H.2200
6	11kV INCOMING FEEDER GIS	MPT1 TO MPT6	6 EA	W.800 X D.1400 X H.2350	22	132kV AUTO TR CONTROL & PROTECTION PANEL		3 EA	W.800 X D.800 X H.2200
7	11kV LINE(87L) FEEDER GIS	ML2, ML9, ML10 ,ML12, ML21	5 EA	W.600 X D.1400 X H.2350	23	132kV LINE FEEDER CONTROL & PROTECTION PANEL		4 EA	W.800 X D.800 X H.2200
8	11kV GENERATOR FEEDER GIS	MG1 TO MG4	4 EA	W.600 X D.1400 X H.2350	24	132kV BUS COUPLER CONTROL & PROTECTION PANEL		1 EA	W.1600 X D.800 X H.2200
9	11kV BUS SECTION GIS	MBS1 TO MBS4	4 EA	W.1000 X D.1400 X H.2350	220kV GIS CONTROL PANEL				
AC/DC ROOM					25	220kV LINE FEEDER CONTROL PANEL		6 EA	W.800 X D.800 X H.2200
10	LVAC GENERATOR & BUS TIE PANEL		1 EA	W.800 X D.800 X H.2200	26	220kV AUTO TR CONTROL PANEL		3 EA	W.800 X D.800 X H.2200
11	LVAC INCOMER PANEL		2 EA	W.800 X D.800 X H.2200	27	220kV BUS COUPLER CONTROL PANEL		1 EA	W.800 X D.800 X H.2200
12	LVAC ESSENTIAL LOAD PANEL		1 EA	W.800 X D.800 X H.2200					
13	LVAC GENERAL LOAD PANEL		3 EA	W.800 X D.800 X H.2200					
14	220V DC RECTIFIER PANEL		2 EA	W.695 X D.800 X H.2200					
15	220V DC DROPPER DIODES PANEL		2 EA	W.675 X D.800 X H.2200					
16	220V DC DCDB		2 EA	W.1175 X D.800 X H.2200					

GROUND FLOOR

SCOPE OF WORK

PROPOSED 11kV SWITCHGEAR BAYS FOR CAPACITOR BANK INTERCONNECTION

NOTE

1. ——— SOLID LINE TO BE UNDER THIS PROJECT.
2. – – – – DOTTED LINE TO BE FUTURE.
3. ALL DIMENSIONS ARE IN MILLIMETERS(mm), UNLESS NOTED OTHERWISE.

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

Project Title: *SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: *ADB*

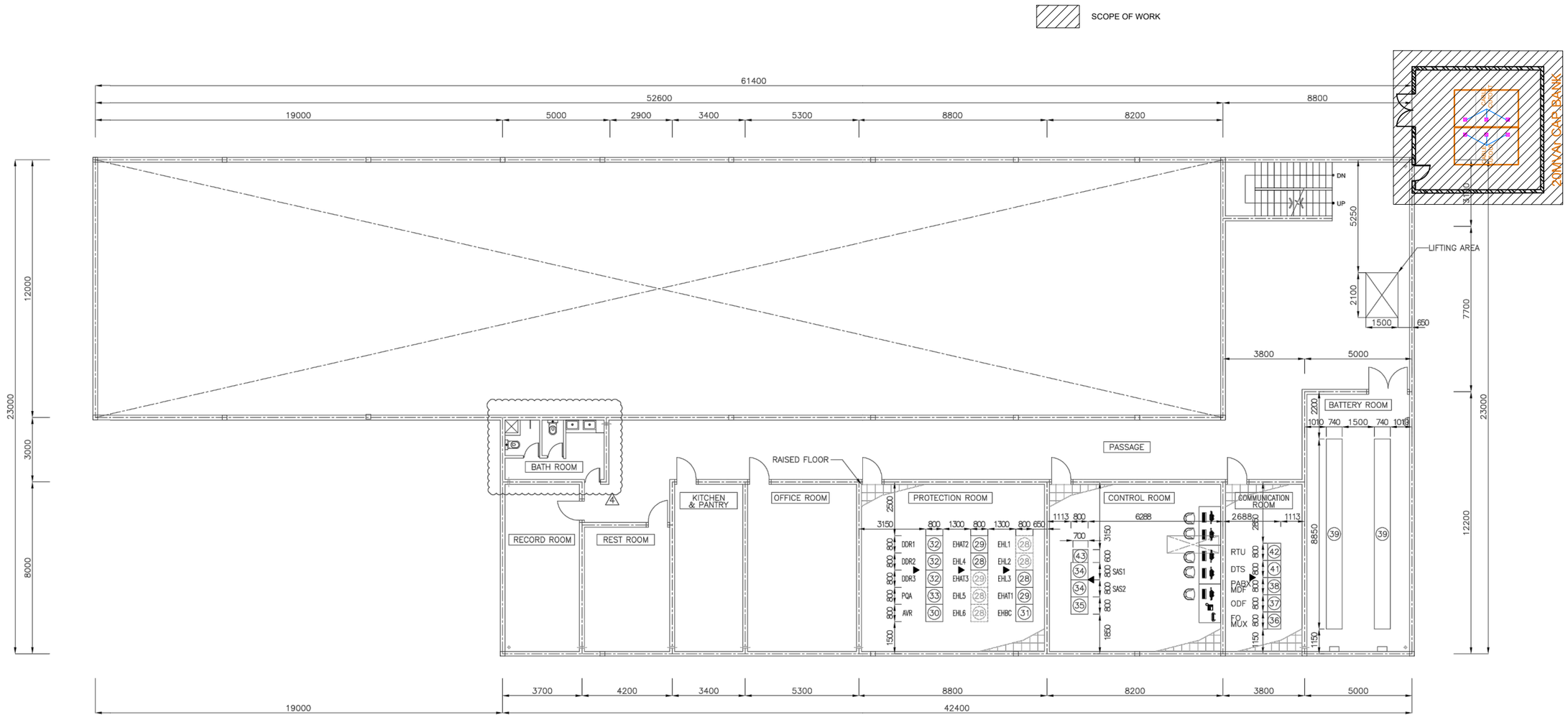
Drawing Title: GROUND FLOOR LAYOUT FOR SUBSTATION L (11kV GIS BAYS FOR CAPACITOR BANK)

Scale - NTS | Rev. Date | Size - A3 | 02.05.2019 | Sheet 02 of 03 | Rev. | Dwg. No. TD/CE/1/186/D/60/05 - B

	Signature	Date
Drawn	Anusha	02.05.2019
Designed	Kushan	
Checked		
Approved		

Released for: Tendering / Construction

Property of CEB Tr. Design Branch



FIRST FLOOR

NO.	DESCRIPTION (PANEL NAME)	Ref.	Q'TY	SIZE
PROTECTION ROOM				
28	220kV LINE FEEDER PROTECTION PANEL	EHL1 TO EHL6	6 EA	W.800 X D.800 X H.2200
29	220kV AUTO TR PROTECTION PANEL	EHAT1 TO EHAT3	3 EA	W.800 X D.800 X H.2200
31	220kV BUS COUPLER PROTECTION PANEL	EHBC	1 EA	W.800 X D.800 X H.2200
32	DIGITAL DISTURBANCE RECORDER PANEL	DDR1 TO DDR3	3 EA	W.800 X D.800 X H.2200
33	POWER QUALITY ANALYZER PANEL	PQA	1 EA	W.800 X D.800 X H.2200
30	132/11kV POWER TR AVR PANEL		1 EA	W.800 X D.800 X H.2200
CONTROL ROOM				
34	SAS PANEL	SAS1 TO SAS2	2 EA	W.800 X D.800 X H.2200
35	CCTV PANEL	CCTV	1 EA	TO BE INFORMED
43	TMS PANEL	TMS	1 EA	W.600 X D.700 X H.500
COMMUNICATION ROOM				
36	FO MUX PANEL		1 EA	W.800 X D.600 X H.2000
37	ODF PANEL		1 EA	(OUT OF HYSUNG SCOPE)
38	PABX & MDF PANEL		1 EA	W.800 X D.600 X H.2000
41	DISTRIBUTE TEMPERATURE MONITORING SYSTEM PANEL	DTS	1 EA	(OUT OF HYSUNG SCOPE)
42	SCADA RTU PANEL	RTU	1 EA	(OUT OF HYSUNG SCOPE)
BATTERY ROOM				
39	220V DC BATTERY		2 EA	W.8850 X D.740 X H.1600

NOTE

1. ——— SOLID LINE TO BE UNDER THIS PROJECT.
2. – – – – DOTTED LINE TO BE FUTURE.
3. ALL DIMENSIONS ARE IN MILLIMETERS(mm), UNLESS NOTED OTHERWISE.

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

Project Title: *SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: *ADB*

Drawing Title: FIRST FLOOR LAYOUT FOR SUBSTATION L

Scale -	NTS		Rev. Date		
Size -	A3		02.05.2019		
Sheet	03	of 03	Rev.		
Dwg. No.	TD/CE/1/186/D/60/05 - C				

	Signature	Date
Drawn	Anusha	02.05.2019
Designed	Kushan	
Checked		
Approved		
Released for: Tendering		
Construction		

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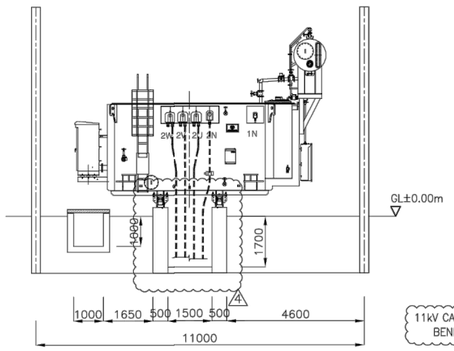
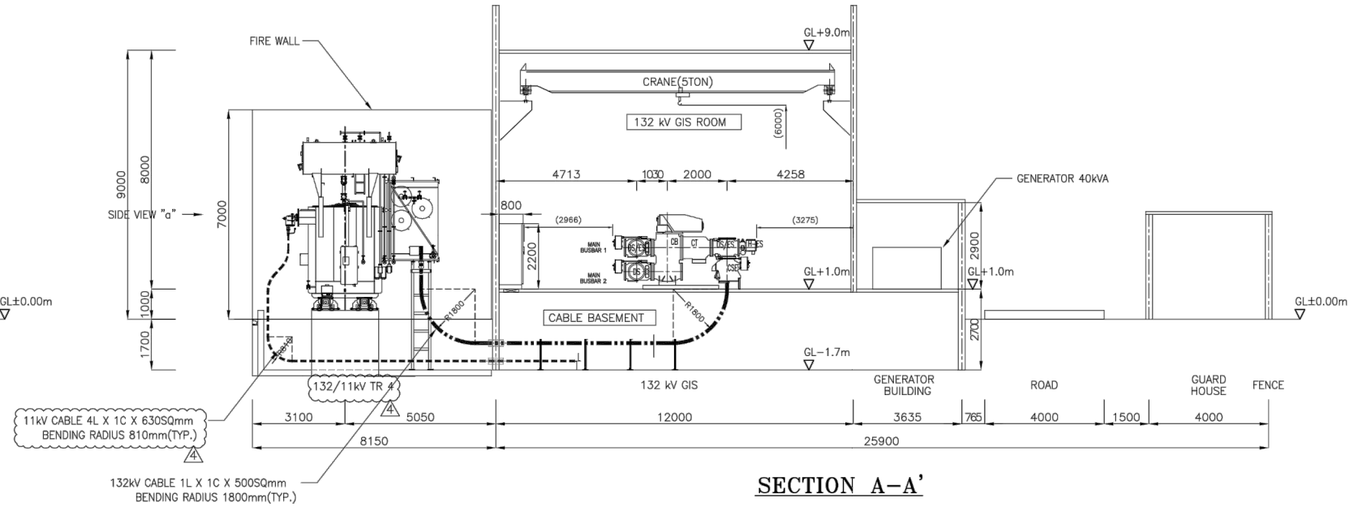
NOTE

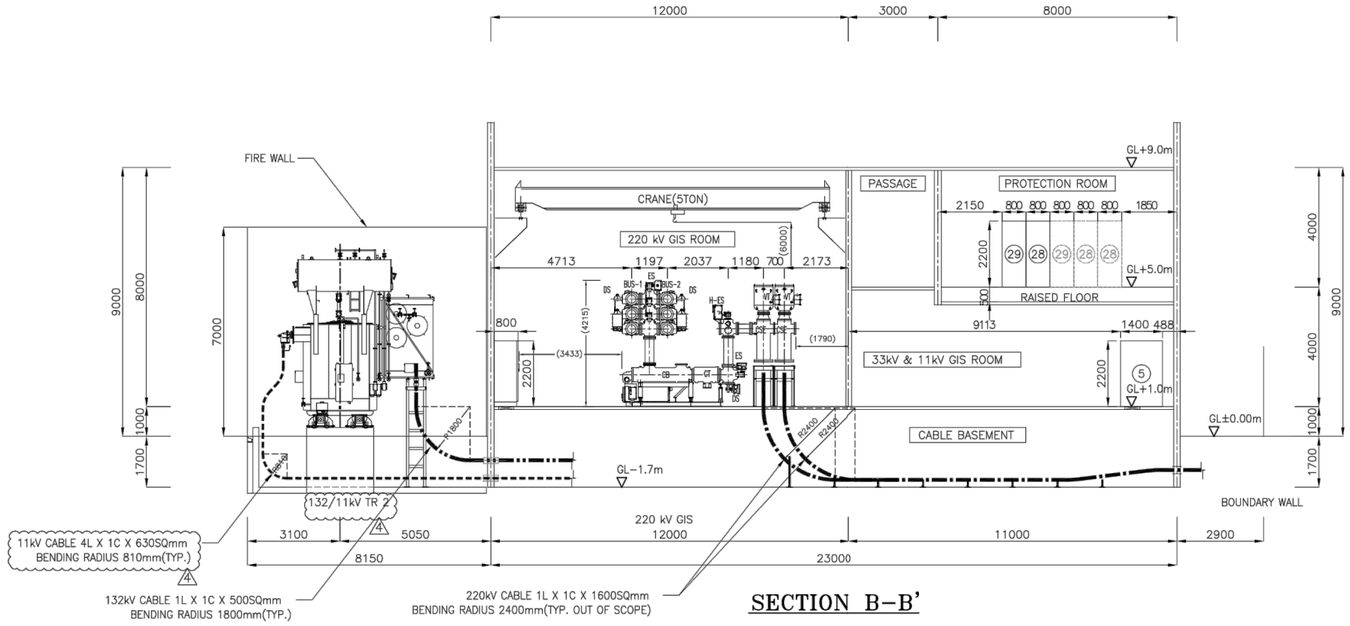
1. ——— SOLID LINE TO BE UNDER THIS PROJECT.
2. - - - - DOTTED LINE TO BE FUTURE.
3. ALL DIMENSIONS ARE IN MILLIMETERS(mm), UNLESS NOTED OTHERWISE.



SIDE VIEW "a"



SECTION A–A'



SECTION B–B'

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

Project Title: *SUPPORTING ELECTRICITY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: *ADB*

Drawing Title: PROPOSED 11kV OUT DOOR CAPACITOR BANK FOR SUBSTATION L

Scale - NTS		Rev. Date	
Size - A3		24.04.2019	
Sheet 05 of 08		Rev.	
Dwg. No. TD/CE/1/186/D/01/05 - D			

	Signature		Date
Drawn	Anusha		24.04.2019
Designed	Kushan		
Checked			
Approved			
Released for	Tendering		
	Construction		

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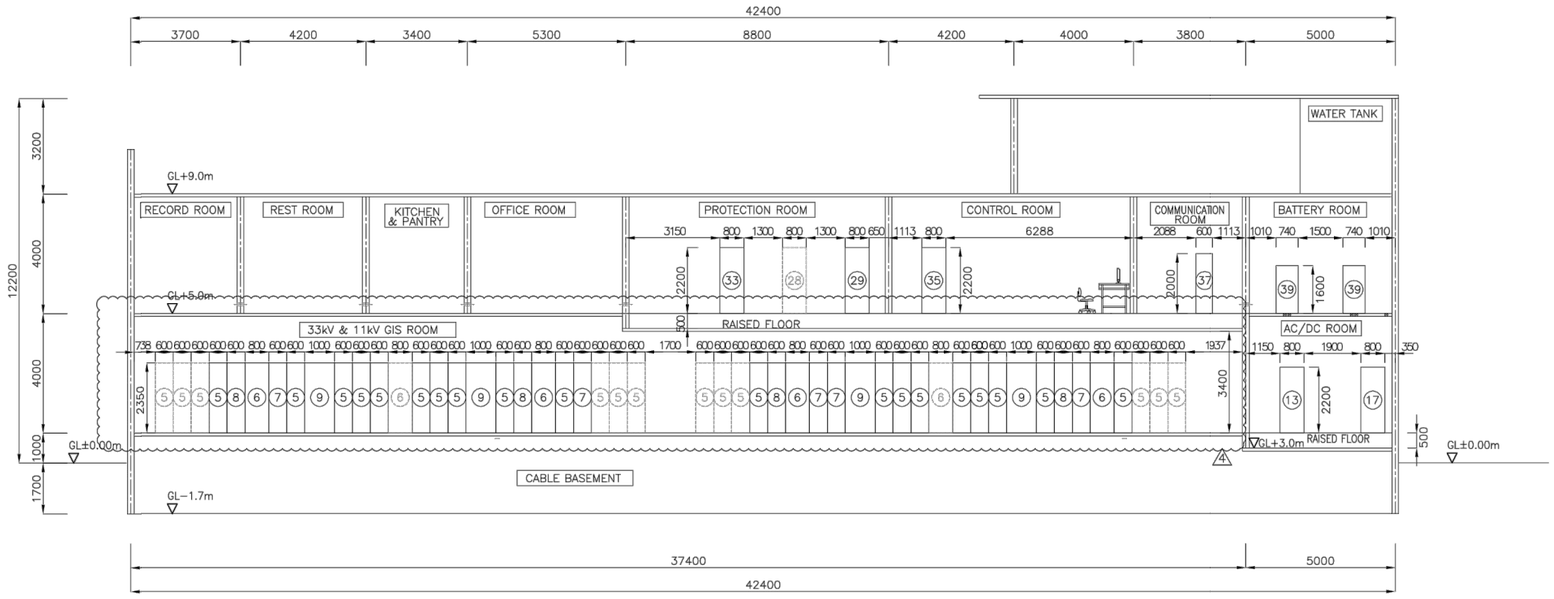
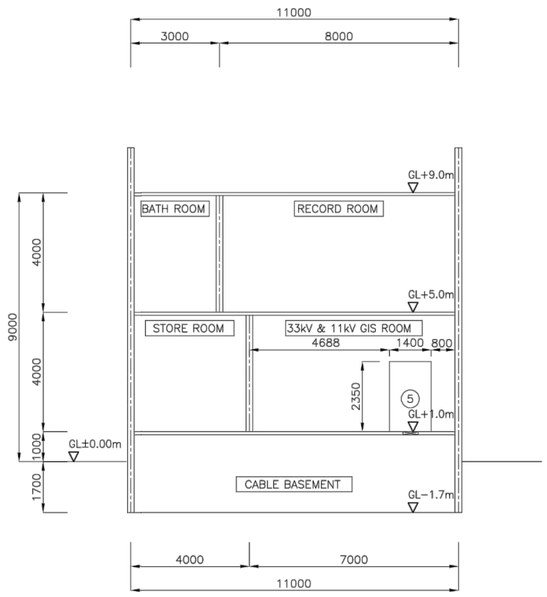
NOTE

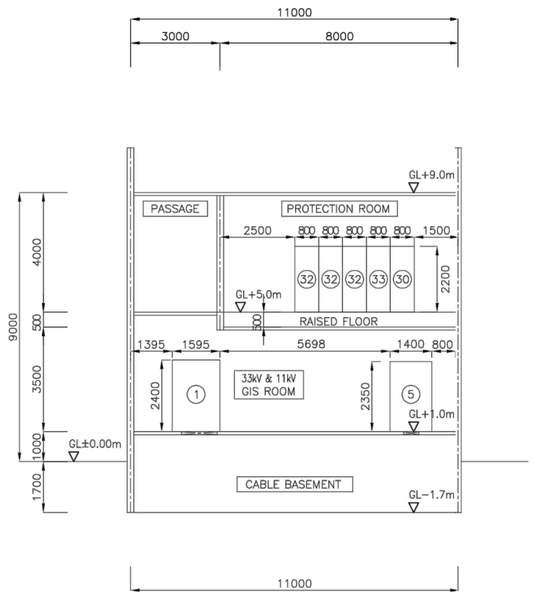
1. ——— SOLID LINE TO BE UNDER THIS PROJECT.
2. - - - - DOTTED LINE TO BE FUTURE.
3. ALL DIMENSIONS ARE IN MILLIMETERS(mm), UNLESS NOTED OTHERWISE.



SECTION C–C'



SECTION D–D'



SECTION E–E'

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

Project Title: *SUPPORTING ELECTRICITY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: *ADB*

Drawing Title: PROPOSED 11kV OUT DOOR CAPACITOR BANK FOR SUBSTATION L

Scale - NTS		Rev. Date	
Size - A3		24.04.2019	
Sheet 06 of 08		Rev.	
Dwg. No. TD/CE/1/186/D/01/05 - E			

		Signature	Date
Drawn	Anusha		24.04.2019
Designed	Kushan		
Checked			
Approved			
Released for	Tendering		
	Construction		

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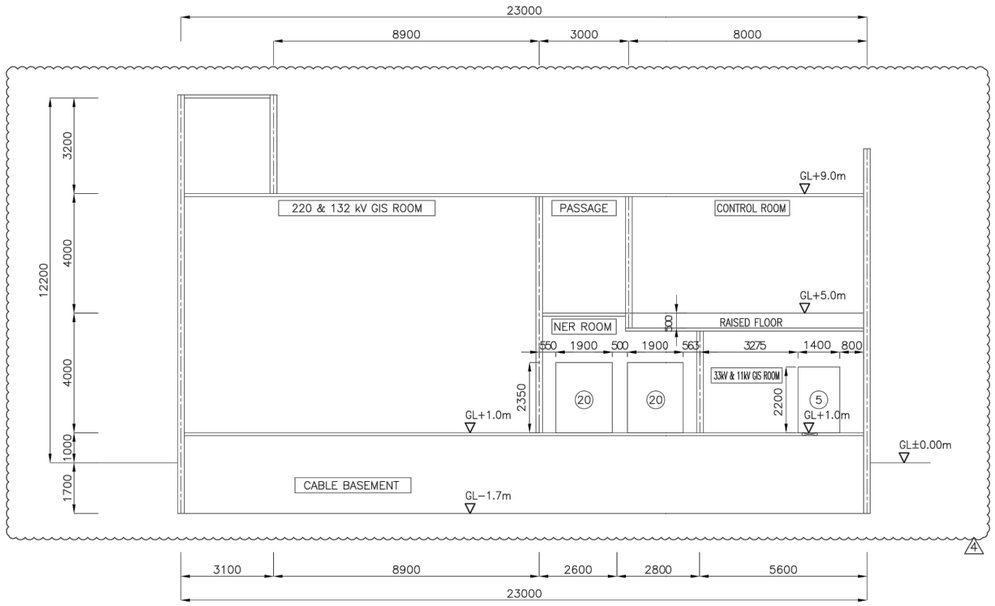
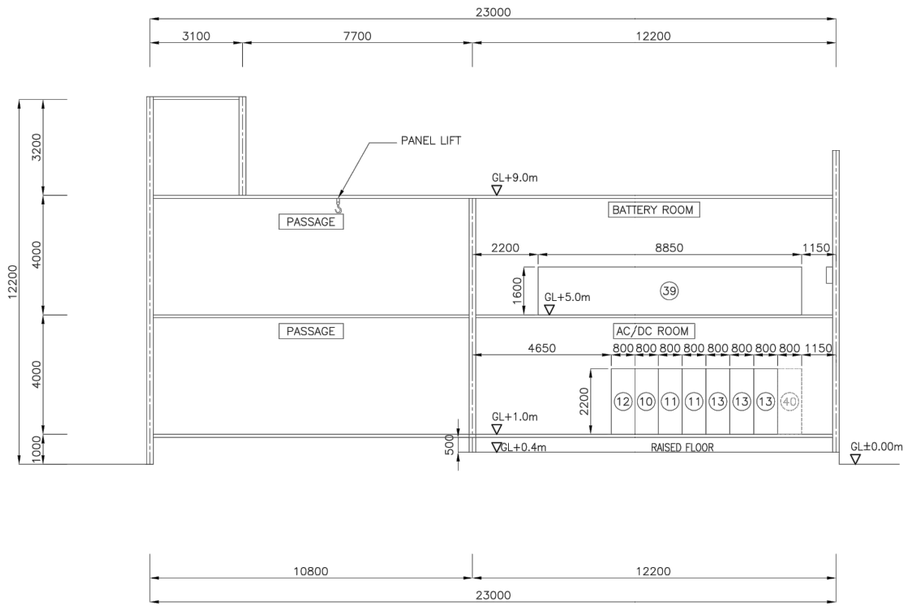
NOTE

1. ——— SOLID LINE TO BE UNDER THIS PROJECT.
2. – – – – DOTTED LINE TO BE FUTURE.
3. ALL DIMENSIONS ARE IN MILLIMETERS(mm), UNLESS NOTED OTHERWISE.



SECTION F−F'



SECTION G−G'

Property of CEB Tr. Design Branch

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Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

Project Title: *SUPPORTING ELECTRICITY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: *ADB*

Drawing Title: PROPOSED 11kV OUT DOOR CAPACITOR BANK FOR SUBSTATION L

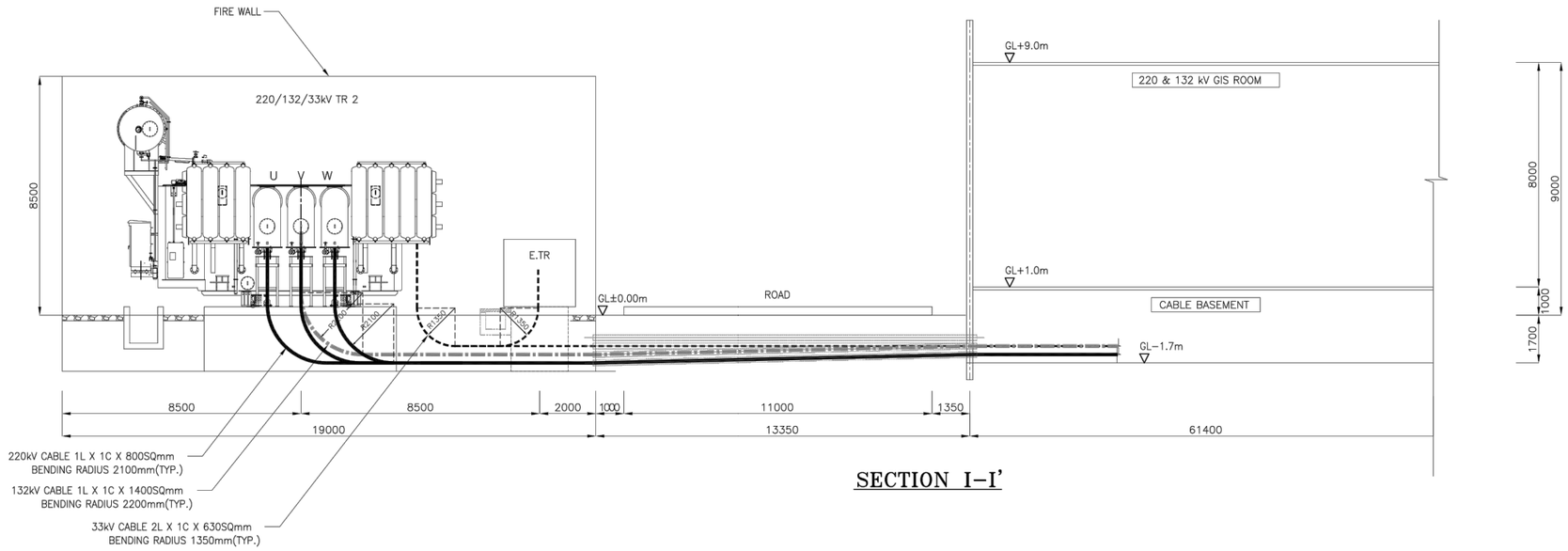
Scale -	NTS		Rev. Date		
Size -	A3		24.04.2019		
Sheet	07 of 08		Rev.		
Dwg. No.	TD/CE/1/186/D/01/05 - F				

	Signature		Date
Drawn	Anusha		24.04.2019
Designed	Kushan		
Checked			
Approved			

Released for: Tendering / Construction

NOTE

1. ——— SOLID LINE TO BE UNDER THIS PROJECT.
2. – – – – DOTTED LINE TO BE FUTURE
3. ALL DIMENSIONS ARE IN MILLIMETERS(mm), UNLESS NOTED OTHERWISE.



SECTION I–I'

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

Project Title: *SUPPORTING ELECTRICITY RELIABILITY IMPROVEMENT PROJECT*

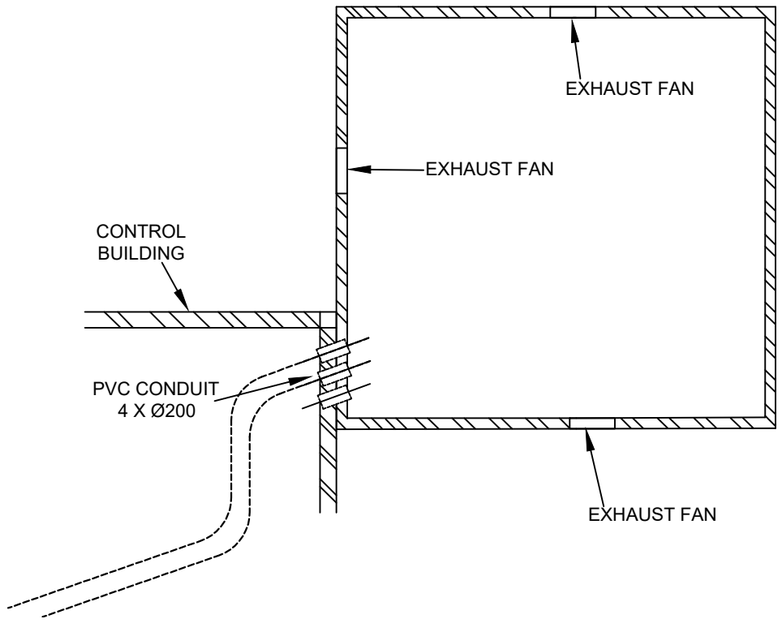
Funding Agency: *ADB*

Drawing Title: PROPOSED 11kV OUT DOOR CAPACITOR BANK FOR SUBSTATION L

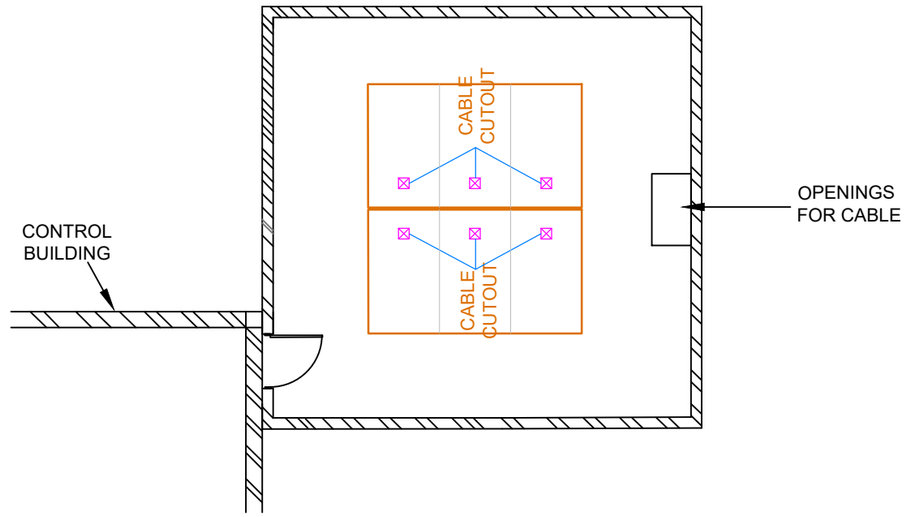
Scale -	NTS		Rev. Date	
Size -	A3		24.04.2019	
Sheet	08	of 08	Rev.	
Dwg. No.	TD/CE/1/186/D/01/05 - G			

		Signature	Date
Drawn	Anusha		24.04.2019
Designed	Kushan		
Checked			
Approved			
Released for	Tendering		
	Construction		

Property of CEB Tr. Design Branch
Property of CEB Tr. Design Branch



BASEMENT FLOOR



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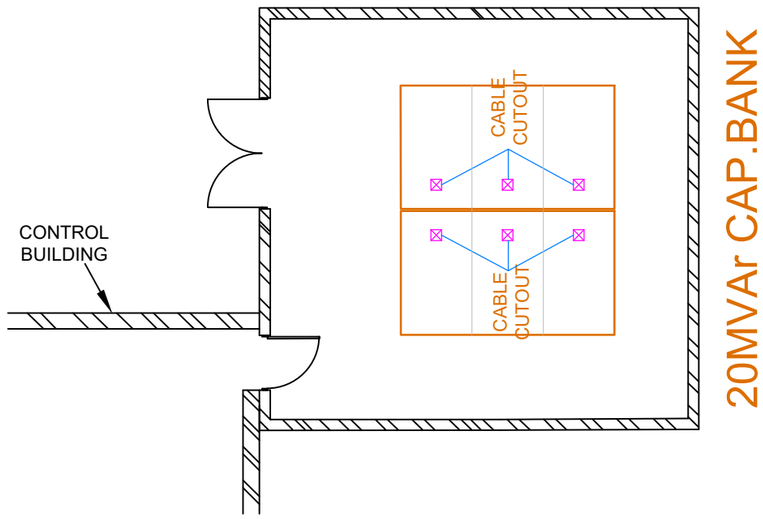

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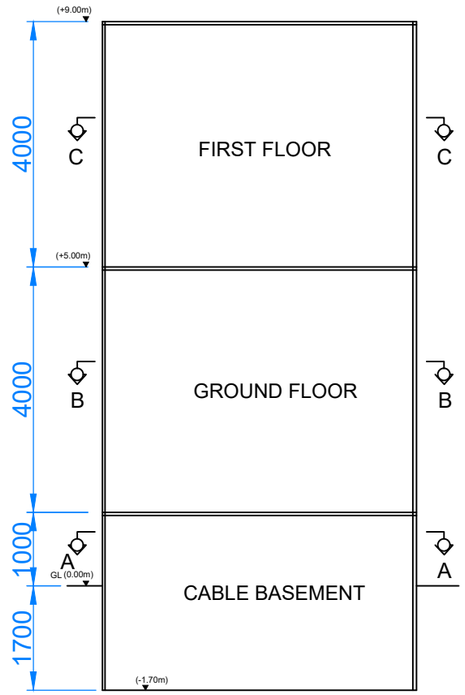

ELEVATION

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Property of CEB Tr. Design Branch

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

Project Title: *SUPPORTING ELECTRICITY RELIABILITY IMPROVEMENT PROJECT*

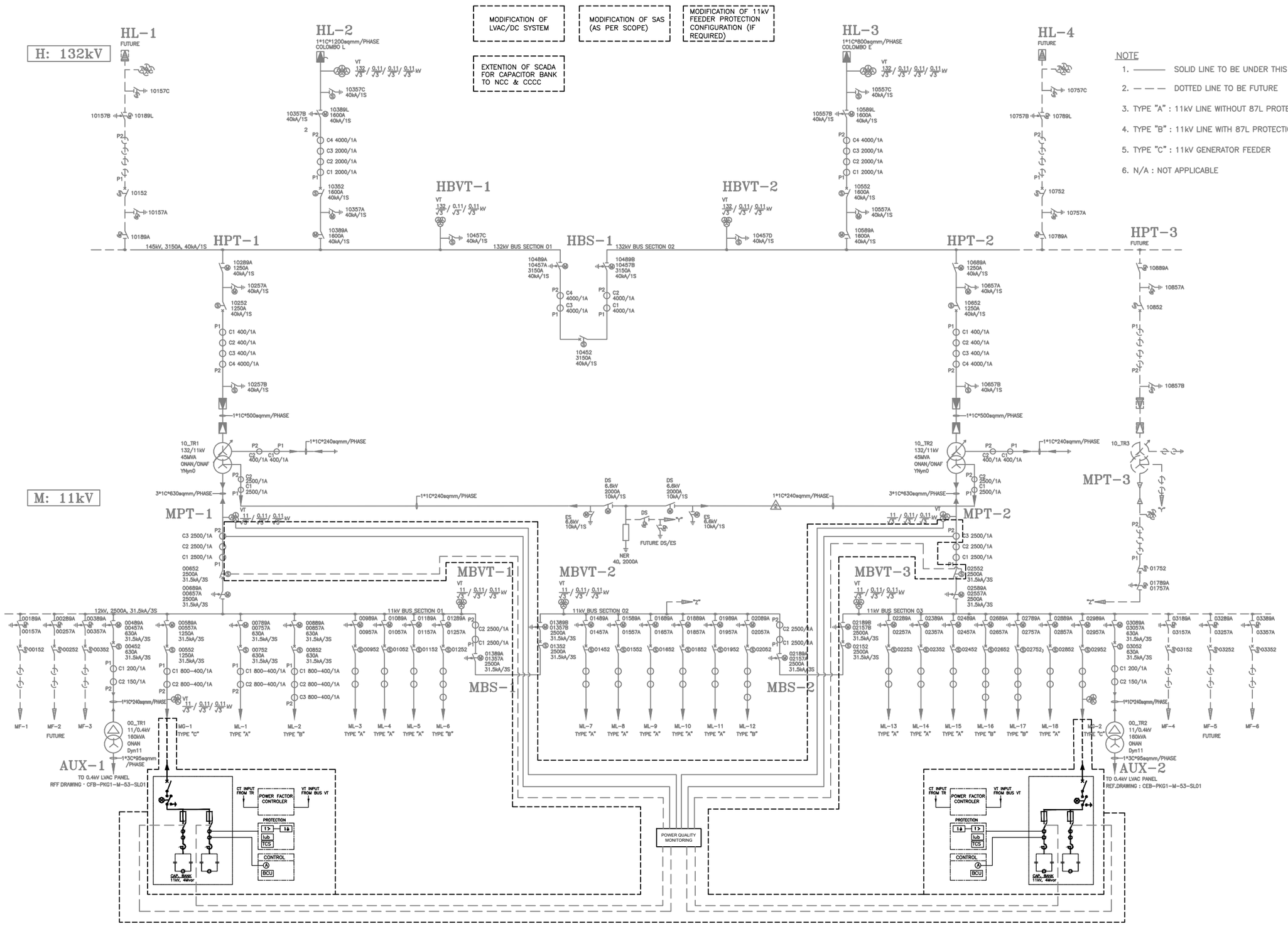
Funding Agency: *ADB*

Drawing Title: PROPOSED 11kV OUT DOOR CAPACITOR BANK FOR SUBSTATION L

Scale - NTS		Rev. Date	
Size - A3		24.04.2019	
Sheet 08 of 08		Rev.	
Dwg. No. TD/CE/1/186/D/01/05 - H			

	Signature		Date
Drawn	Anusha		24.04.2019
Designed	Kushan		
Checked			
Approved			

Released for: Tendering / Construction



Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

Project Title
SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

Funding Agency
ADB

Drawing Title
PROPOSED SINGLE LINE DIAGRAM FOR SUBSTATION M

Scale - NTS		Rev. Date	
Size - A3		01.05.2019	
Sheet 01 of 01		Rev.	
Dwg. No. TD/CE/1/186/D/00/06			

		Signature	Date
Drawn	Anusha		01.05.2019
Designed	Kushan		
Checked			
Approved			
Released for	Tendering		
	Construction		

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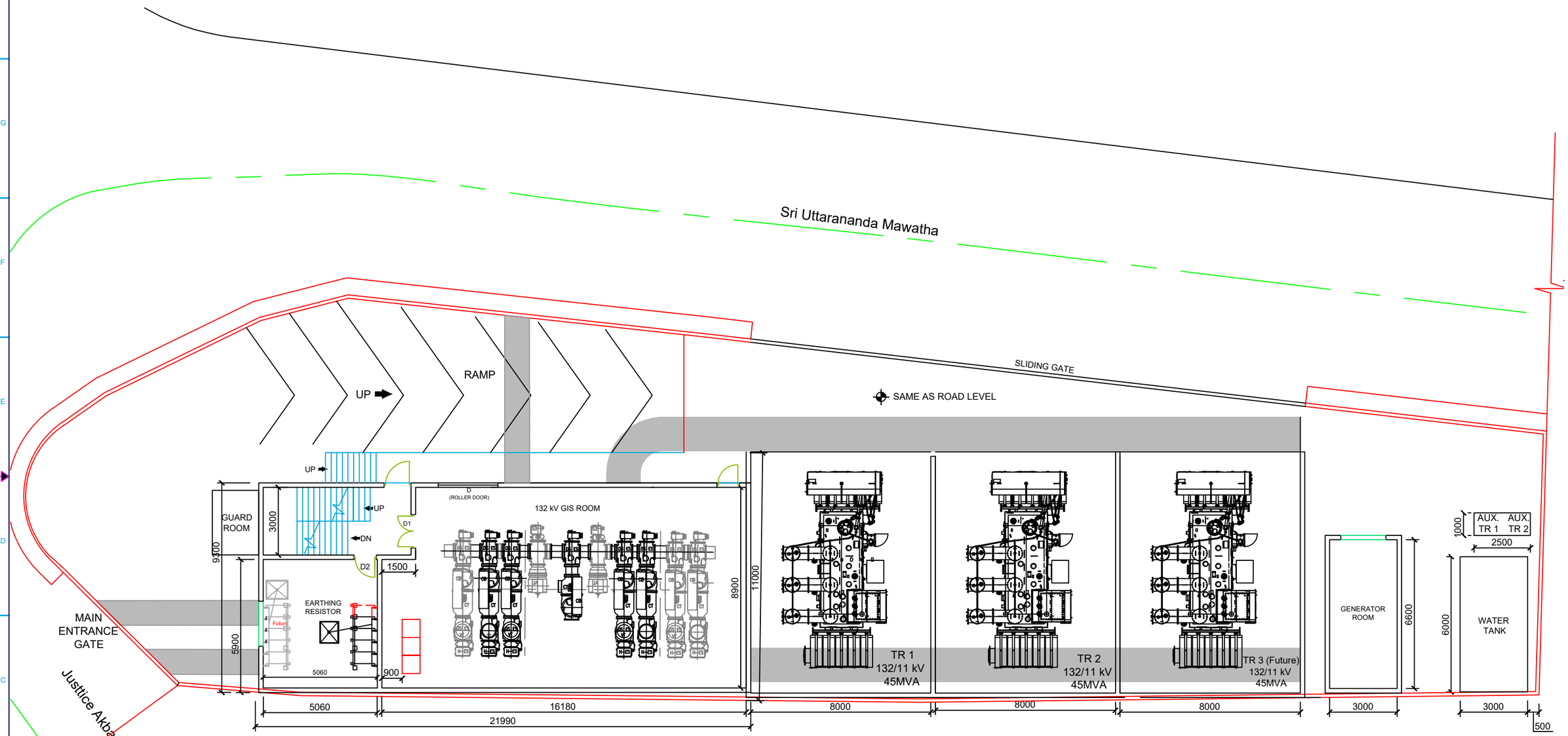

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Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

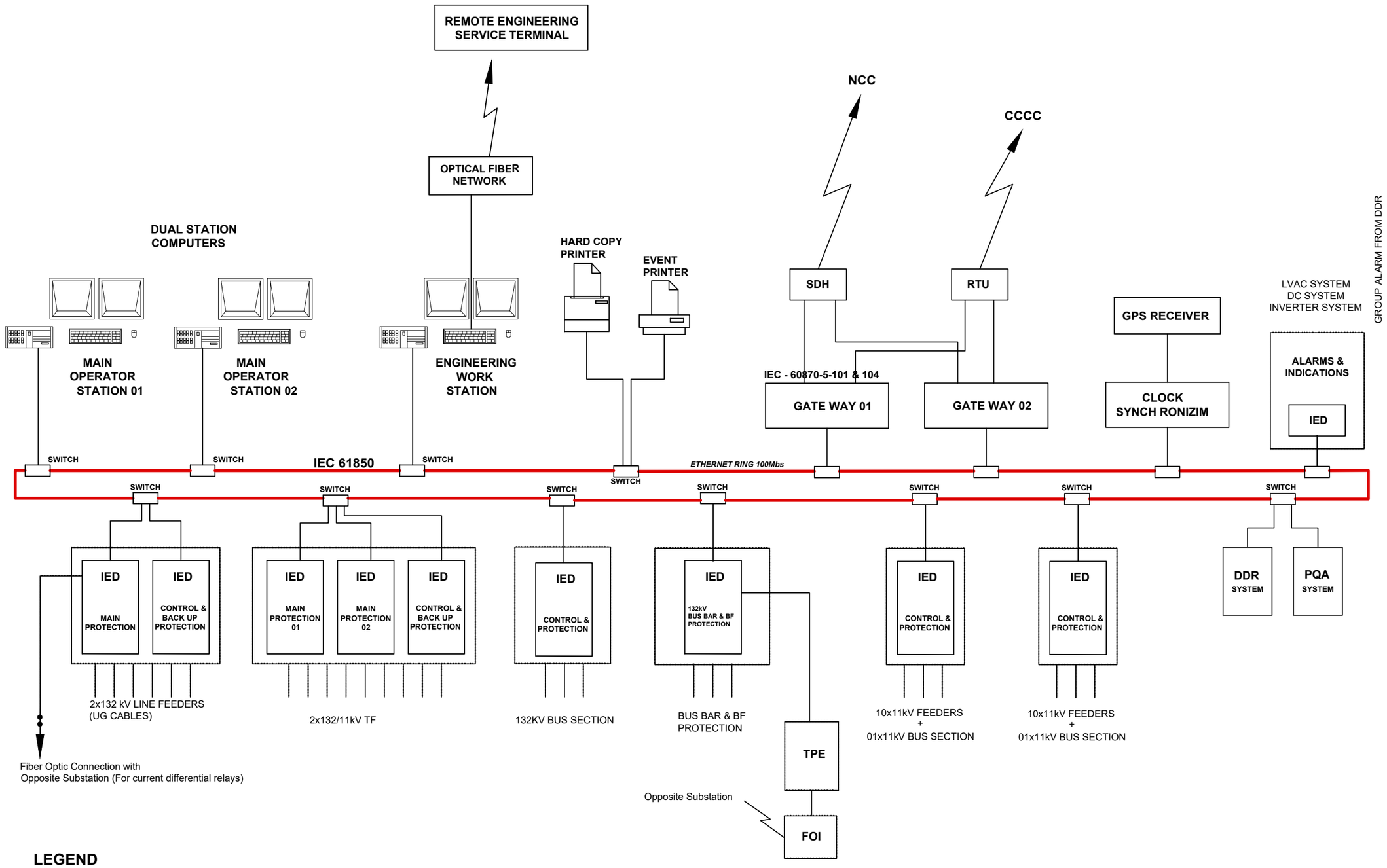
Project Title
SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

Funding Agency
ADB

Drawing Title
GENARAL LAYOUT OF SUBSTATION M

Scale -	NTS	Rev. Date	01.05.2019
Size -	A3		
Sheet	01 of 01	Rev.	
Dwg. No.	TD/CE/1/186/D/01/06		

		Signature	Date
Drawn	Anusha		01.05.2019
Designed	Kushan		
Checked			
Approved			
Released for	Tendering		
	Construction		



LEGEND

IED - Intelegent Electronic Device
TPE - Teleprotection Equipment
FOI - Fiber Optic Interface
DDR - Digital Disturbance Recorder

Rev. No	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD
TRANSMISSION DESIGN

Project Title: *SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: ADB

Drawing Title: ARCHITECTURE FOR THE SUBSTATION AUTOMATION SYSTEM FOR SUBSTATION M

Scale - NTS	Rev. Date		Signature / Date
Size - A3	02.03.2020	Drawn	Ranjana — 02.03.2020
Sheet 01 of 01	Rev.	Designed	Kushan
Dwg. No. TD/CE/1/186/D/07/06		Checked	
		Approved	
		Released for	Tendering / Construction

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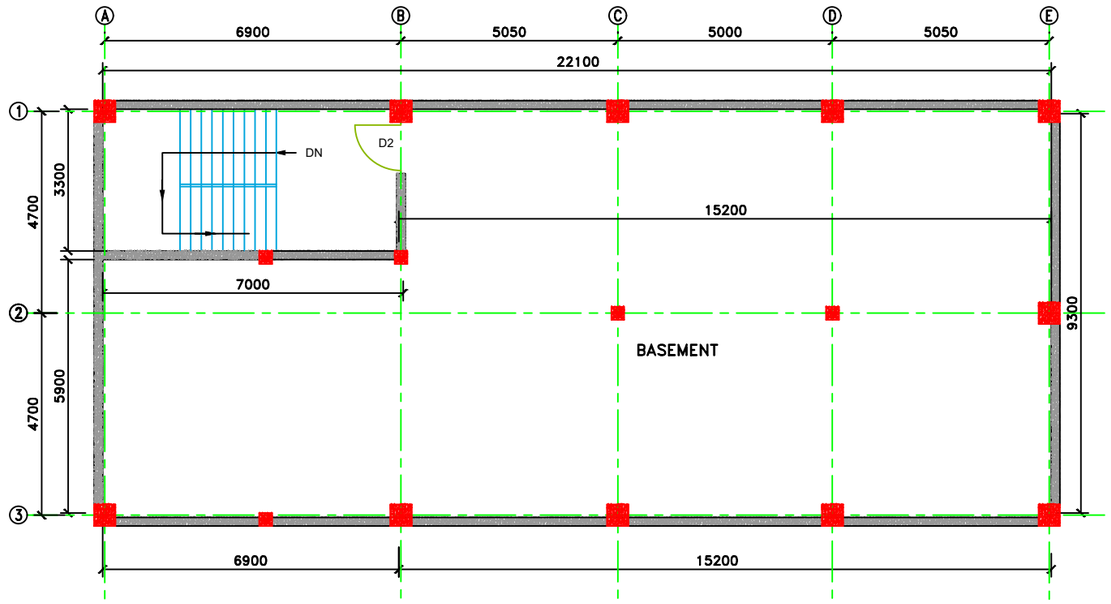
Property of CEB Tr. Design Branch



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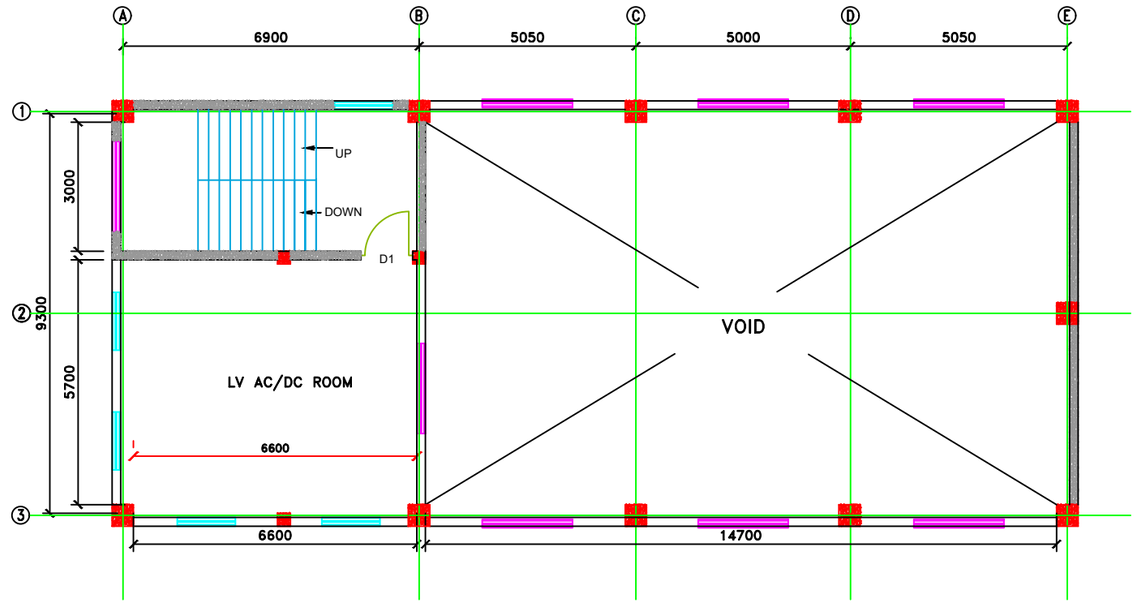
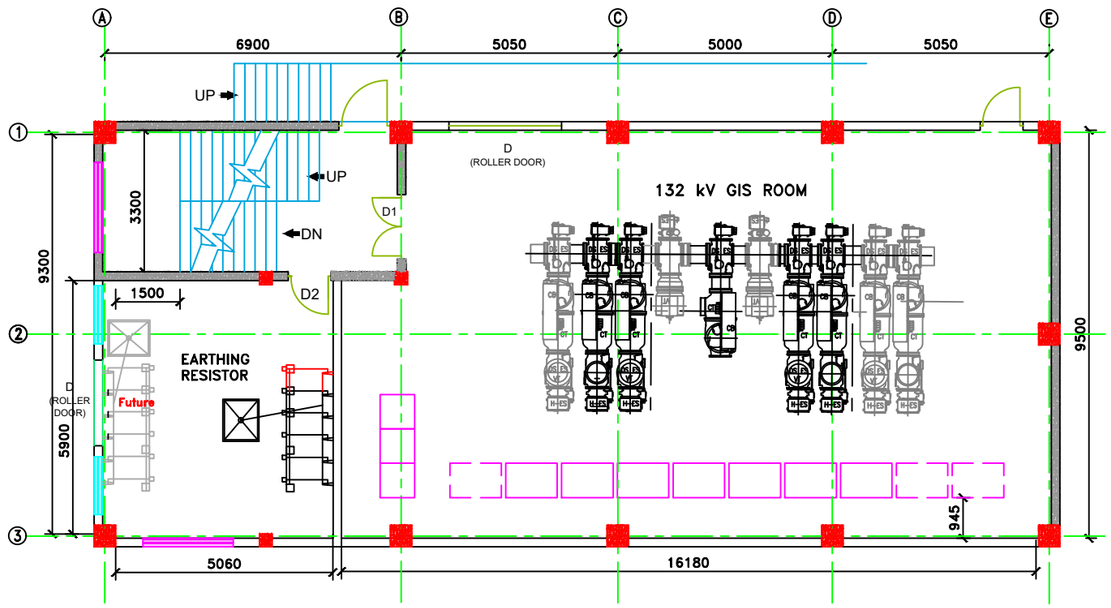


MEZZANINE FLOOR



GROUND FLOOR

FIXED GLASS

WINDOW

Property of CEB Tr. Design Branch

Property of CEB Tr. Design Branch

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

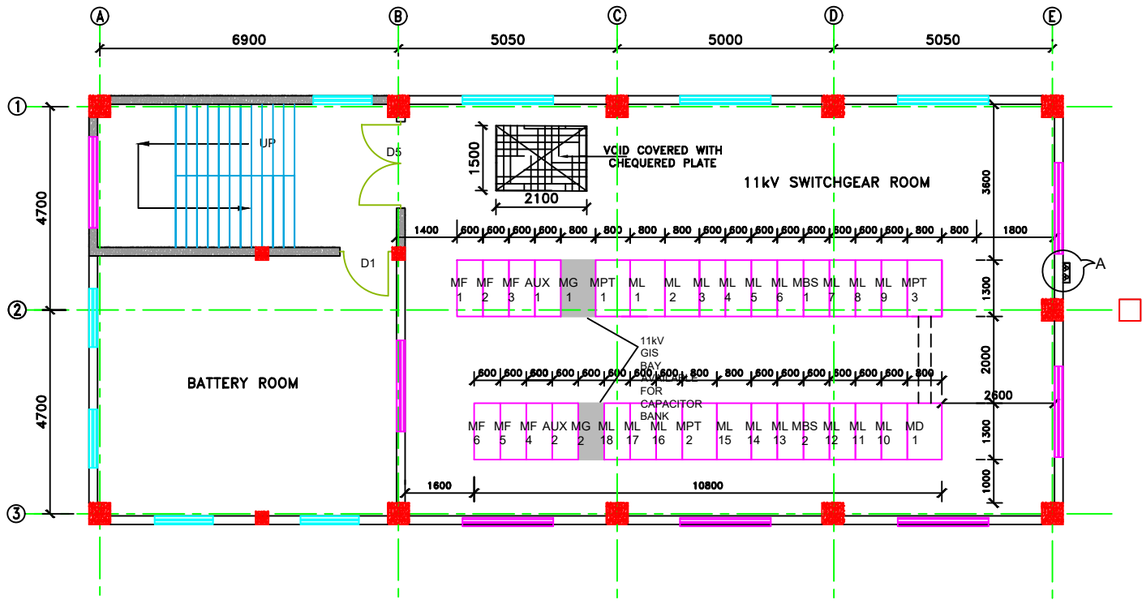
Project Title: *SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: ADB

Drawing Title: CONTROL BUILDING FOR SUBSTATION M

Scale -	NTS	Rev. Date	
Size -	A3	01.05.2019	
Sheet	01 of 04	Rev.	
Dwg. No.	TD/CE/1/186/D/60/06 - A		

	Signature		Date
Drawn	Anusha		01.05.2019
Designed	Kushan		
Checked			
Approved			
Released for	Tendering		
	Construction		



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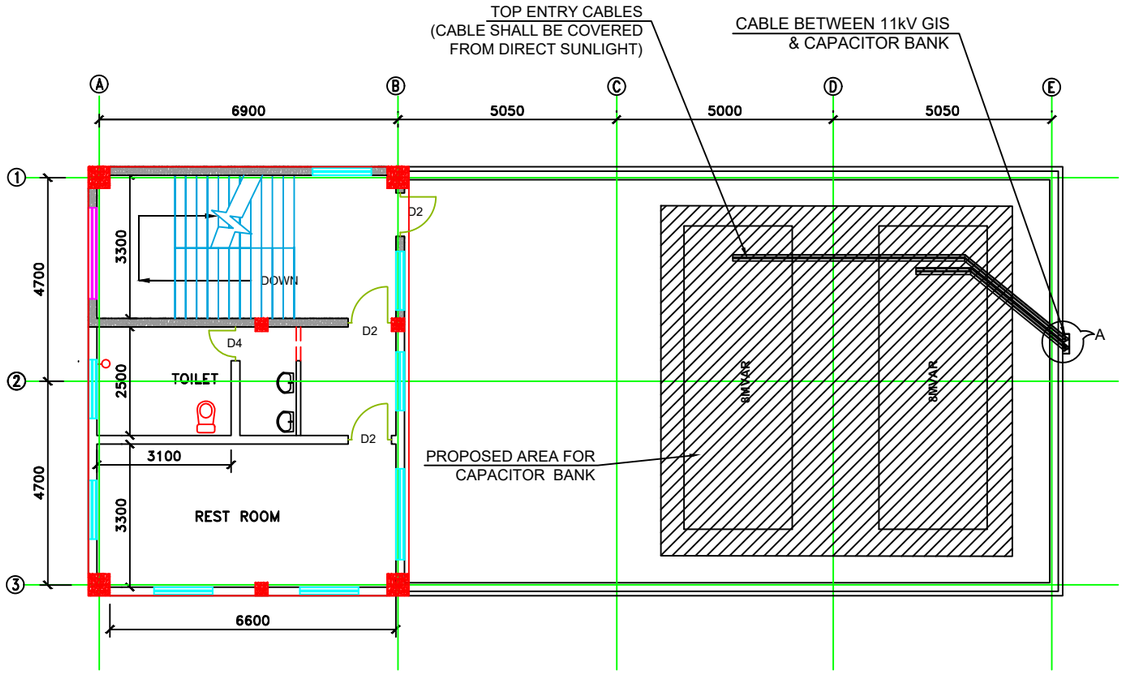
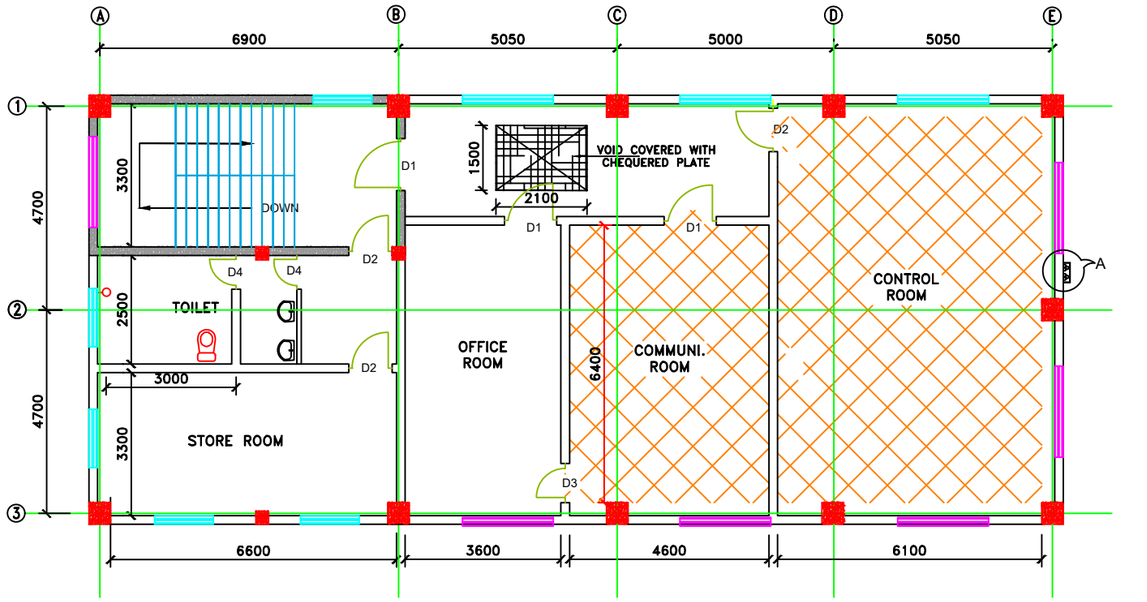


THIRD FLOOR & ROOF TERRACE



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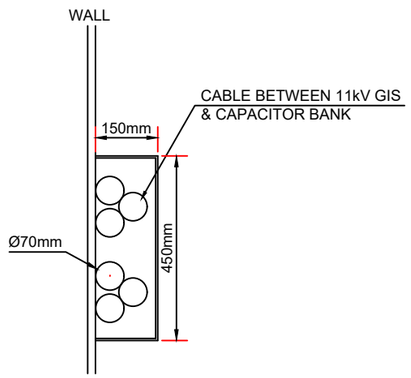

VIEW - A

LEGEND

- FIXED GLASS
- WINDOW
- SCOPE OF WORK

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

Project Title: *SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: ADB

Drawing Title: CONTROL BUILDING FOR SUBSTATION M

Scale - NTS	Rev. Date		
Size - A3	01.05.2019		
Sheet 02 of 04	Rev.		
Dwg. No. TD/CE/1/186/D/60/06 - B			

	Signature	Date
Drawn	Anusha	01.05.2019
Designed	Kushan	
Checked		
Approved		

Released for: Tendering / Construction

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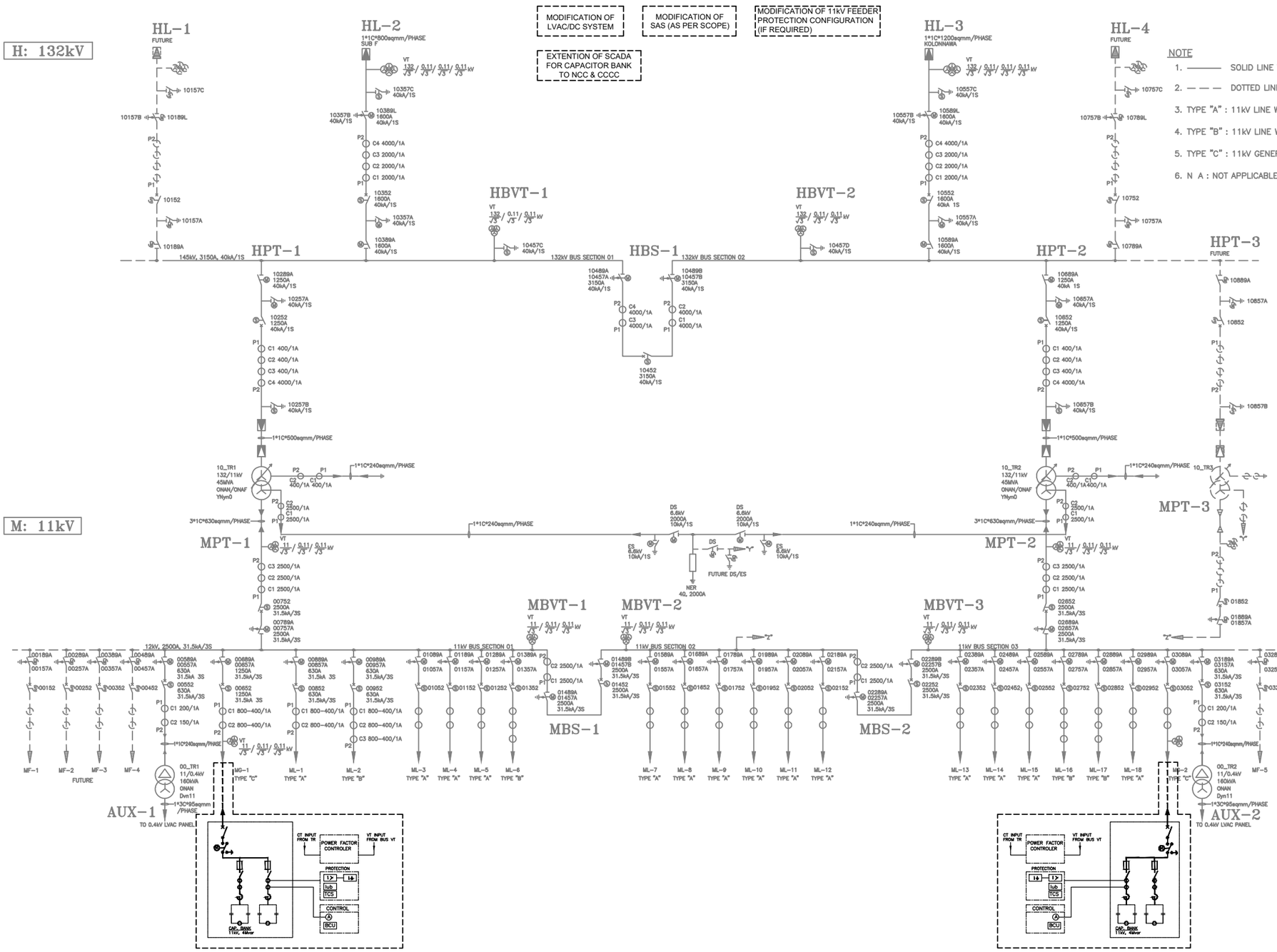
Property of CEB Tr. Design Branch



NOTE

1. ——— SOLID LINE TO BE UNDER THIS PROJECT.
2. — — — DOTTED LINE TO BE FUTURE
3. TYPE "A" : 11kV LINE WITHOUT 87L PROTECTION
4. TYPE "B" : 11kV LINE WITH 87L PROTECTION
5. TYPE "C" : 11kV GENERATOR FEEDER
6. N A : NOT APPLICABLE

ABBREVIATION

1. H : 132kV
2. M : 11kV
3. L : LINE
4. B : BUSBAR
5. BS : BUS SECTION
6. G : GENERATOR
7. F : FUTURE
8. PT : POWER TRANSFORMER
9. AUX : AUXILIARY TRANSFORMER
10. NER : NEUTRAL EARTHING RESISTOR
11. C : CT CORE

SCOPE OF WORK

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Property of CEB Tr. Design Branch

Rev. No.	Date	Description	Drawn	Checked	Approved

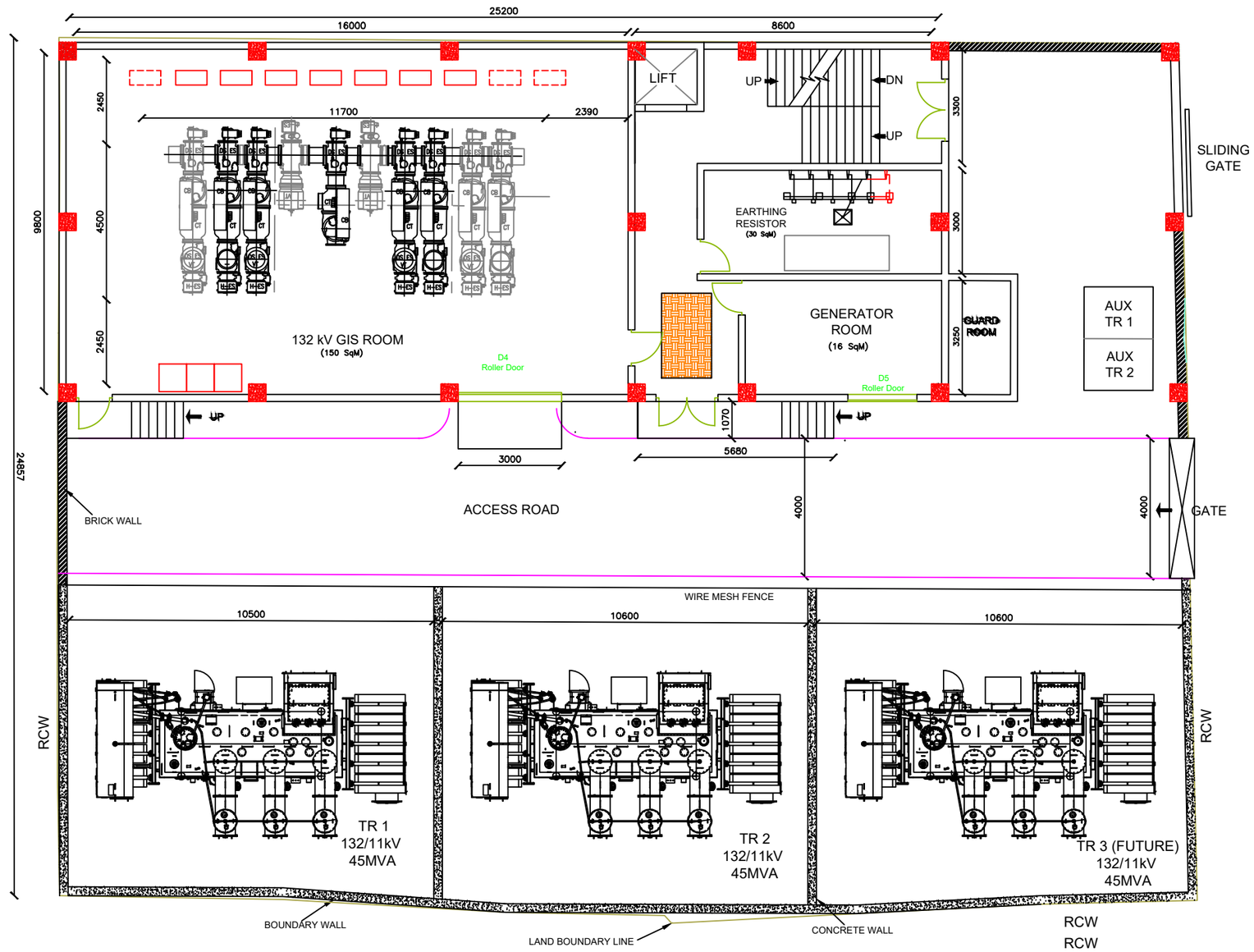
CEYLON ELECTRICITY BOARD

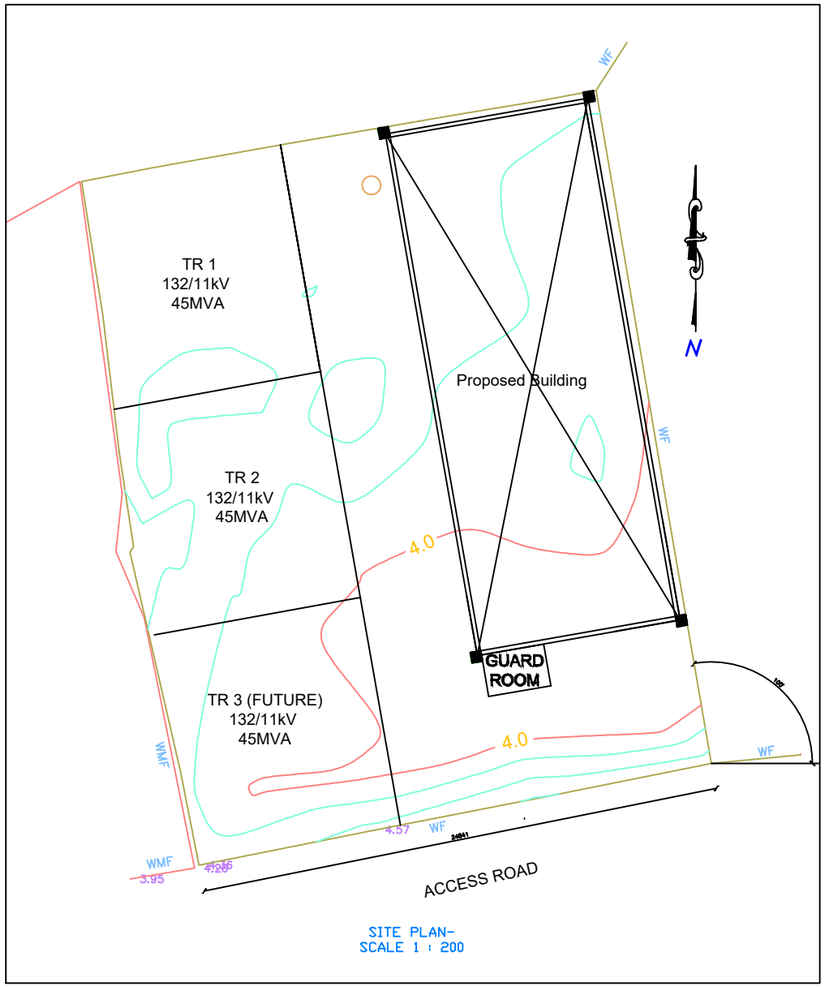
Project Title
SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

Funding Agency
ADB

Drawing Title
SINGLE LINE DIAGRAM FOR SUBSTATION N WITH PROPOSED CAPACITOR BANK

Scale - NTS	Rev. Date			Signature		Date
Size - A3	01.05.2019	Drawn	Anusha		01.05.2019
Sheet 01 of 01	Rev.	Designed	Kushan		
Dwg. No. TD/CE/1/186/D/00/07		Checked			
		Approved			
		Released for	Tendering		
			Construction		





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Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

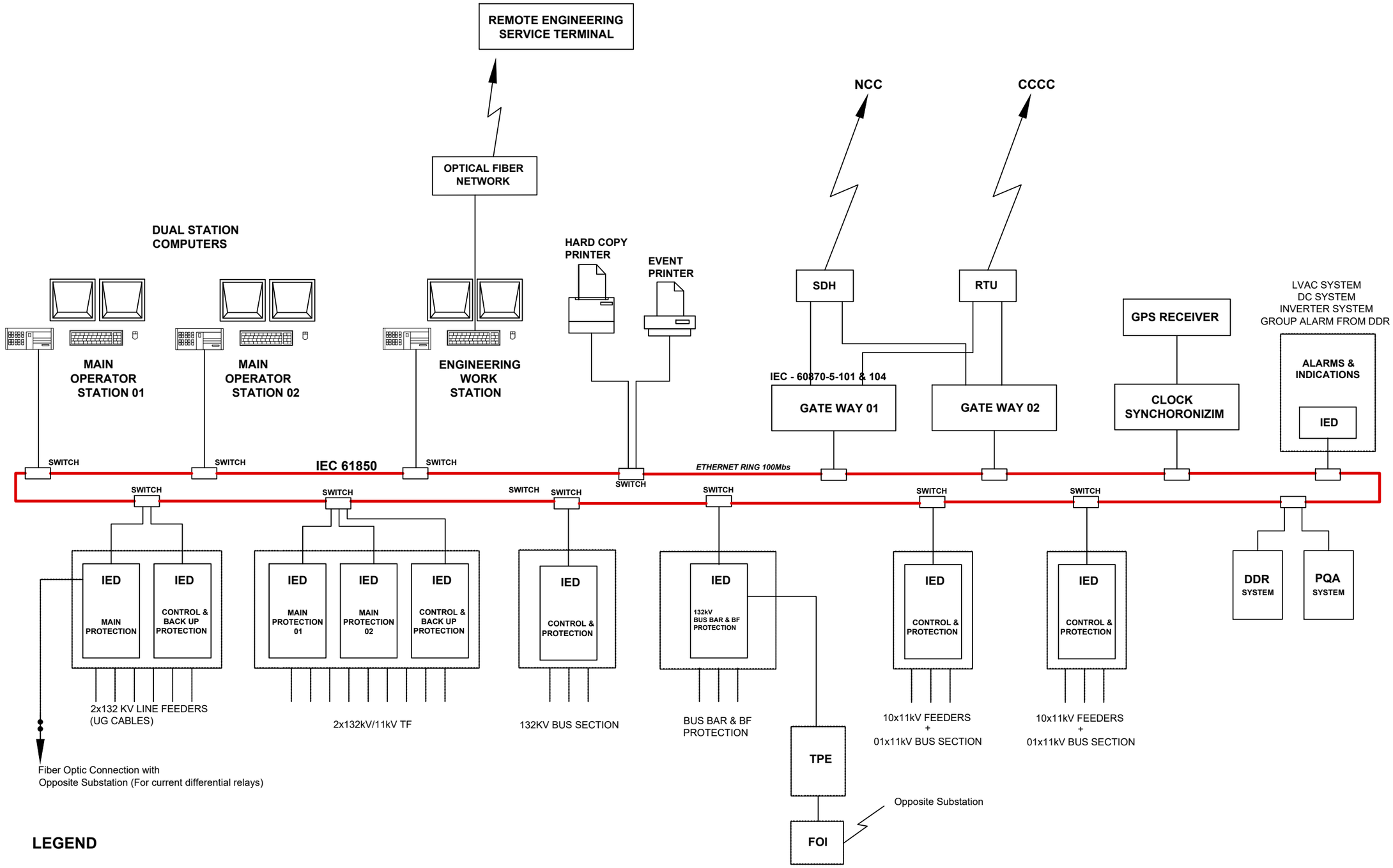
Project Title: *SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: ADB

Drawing Title: PROPOSED LAYOUT FOR 11kV OUT DOOR CAPACITOR BANK AT SUBSTATION N

Scale -	NTS		Rev. Date		
Size -	A3		01.05.2019		
Sheet	01 of 01		Rev.		
Dwg. No.	TD/CE/1/186/D/01/07				

		Signature	Date
Drawn	Anusha		01.05.2019
Designed	Kushan		
Checked			
Approved			
Released for	Tendering		
	Construction		



LEGEND

IED - Intelegent Electronic Device
TPE - Teleprotection Equipment
FOI - Fiber Optic Interface
DDR - Digital Disturbance Recorder
FO - Fiber Optical Cable

Rev. No	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD
TRANSMISSION DESIGN

Project Title: *SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: ADB

Drawing Title: ARCHITECTURE FOR THE SUBSTATION AUTOMATION SYSTEM FOR SUBSTATION N

Scale - NTS | Size - A3 | Sheet 01 of 01 | Rev. Date 02.03.2020 | Rev.

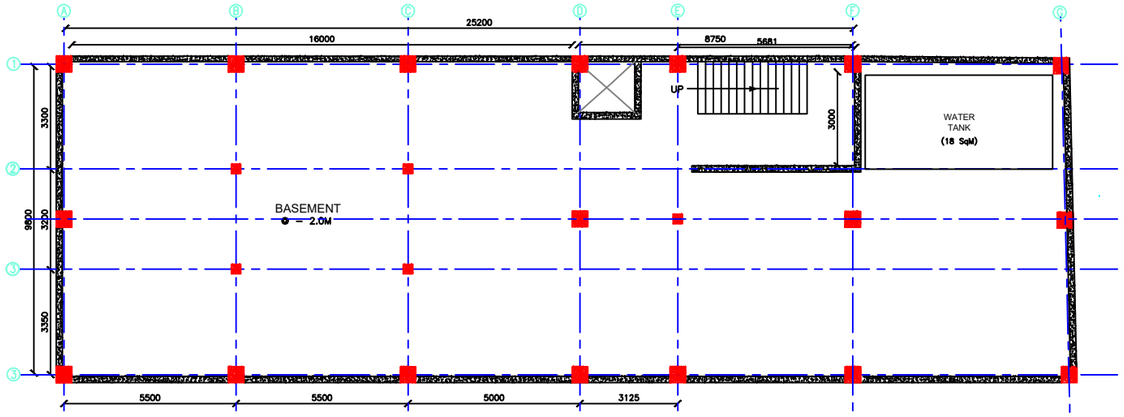
Dwg. No. TD/CE/1/186/D/07/07

	Signature	Date
Drawn	Ranjana	02.03.2020
Designed	Kushan	
Checked		
Approved		

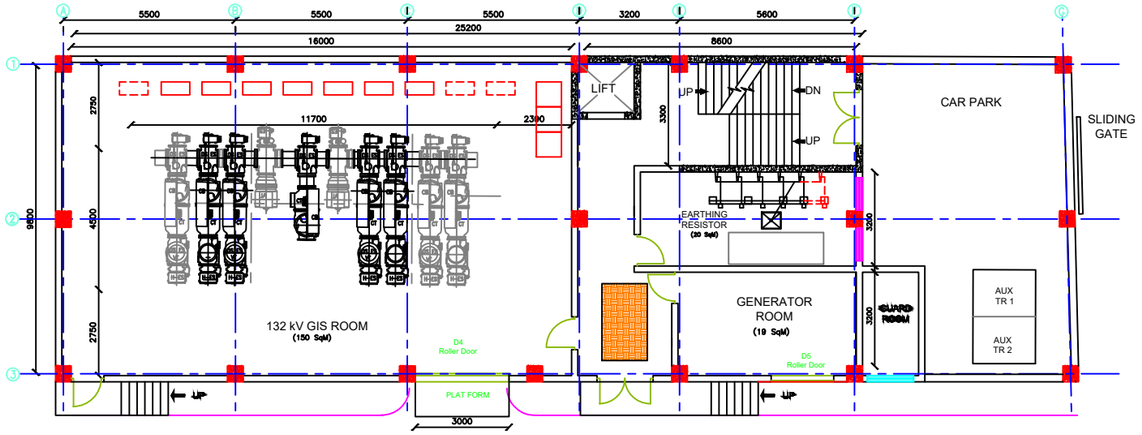
Released for: Tendering / Construction

Property of CEB Tr. Design Branch

Property of
CEB Tr. Design Branch



BASEMENT



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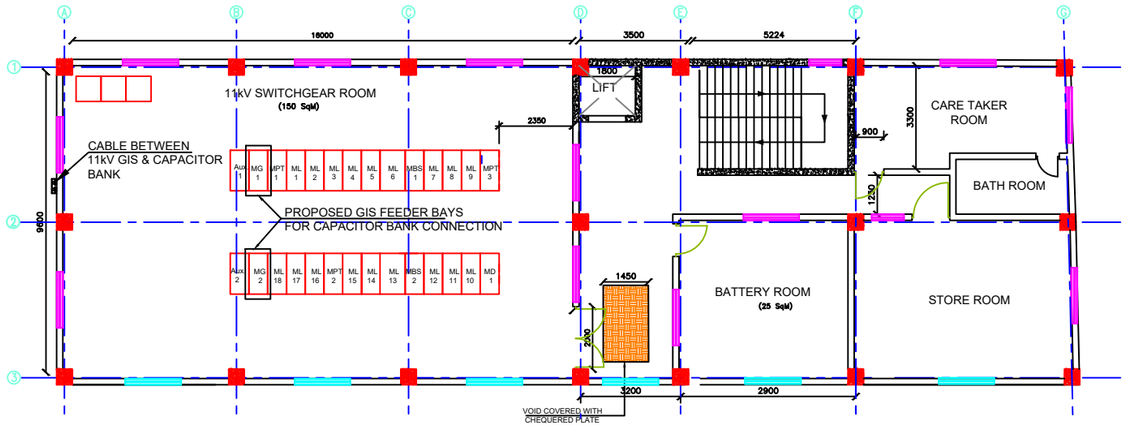
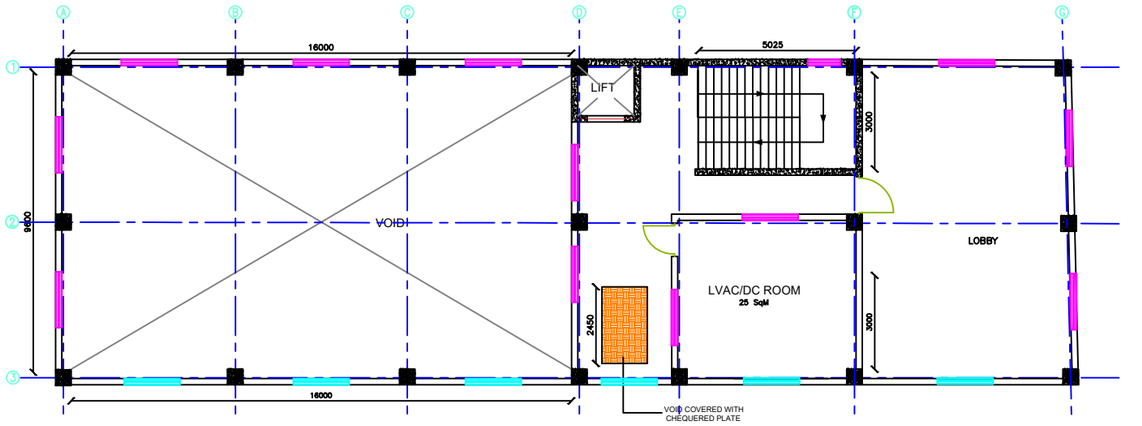


FIRST FLOOR



MEZZANINE FLOOR

Property of
CEB Tr. Design Branch

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

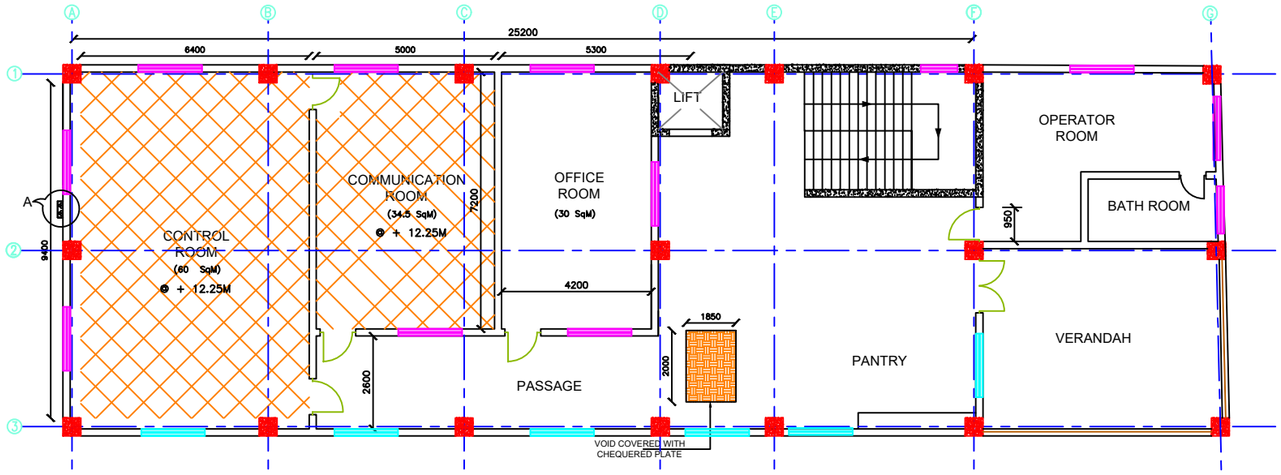
Project Title
SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

Funding Agency
ADB

Drawing Title
FLOOR LAYOUT FOR SUBSTATION N

Scale -	NTS	Rev. Date	
Size -	A3	01.05.2019	
Sheet	01 of 02	Rev.	
Dwg. No.	TD/CE/1/186/D/60/07 - A		

	Signature		Date
Drawn	Anusha		01.05.2019
Designed	Kushan		
Checked			
Approved			
Released for	Tendering		
	Construction		



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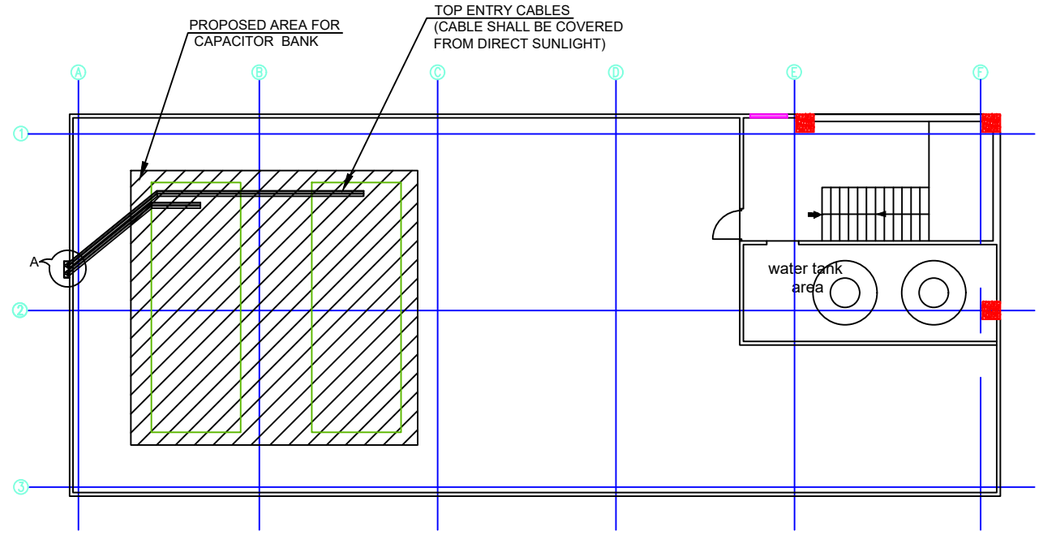
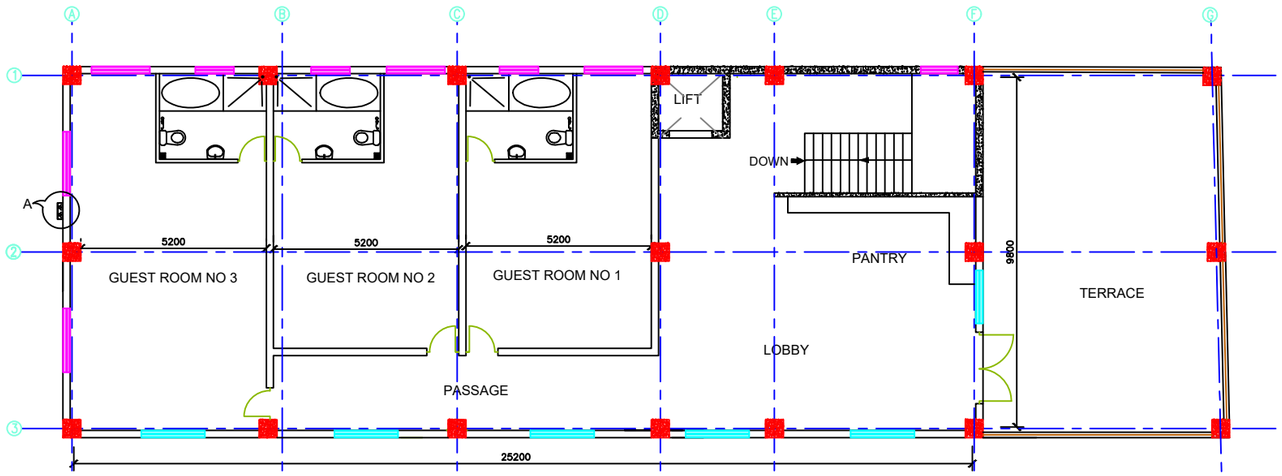
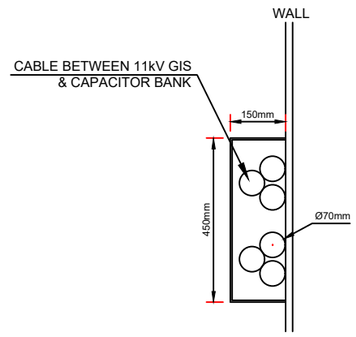


ROOF TERRACE



THIRD FLOOR



VIEW A

FIXED GLASS

WINDOW

PROPOSED AREA FOR CAPACITOR BANK INSTALLATION

NOTE :

1. METALLIC PROTECTION COVER SHALL BE USED TO COVER THE CABLE

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD

Project Title: *SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: ADB

Drawing Title: FLOOR LAYOUT FOR SUBSTATION N

Scale - NTS	Rev. Date			Signature	Date
Size - A3	01.05.2019	Drawn	Anusha		01.05.2019
Sheet 02 of 02	Rev.	Designed	Kushan		
Dwg. No. TD/CE/1/186/D/60/07 - B		Checked			
		Approved			
		Released for	Tendering		
			Construction		

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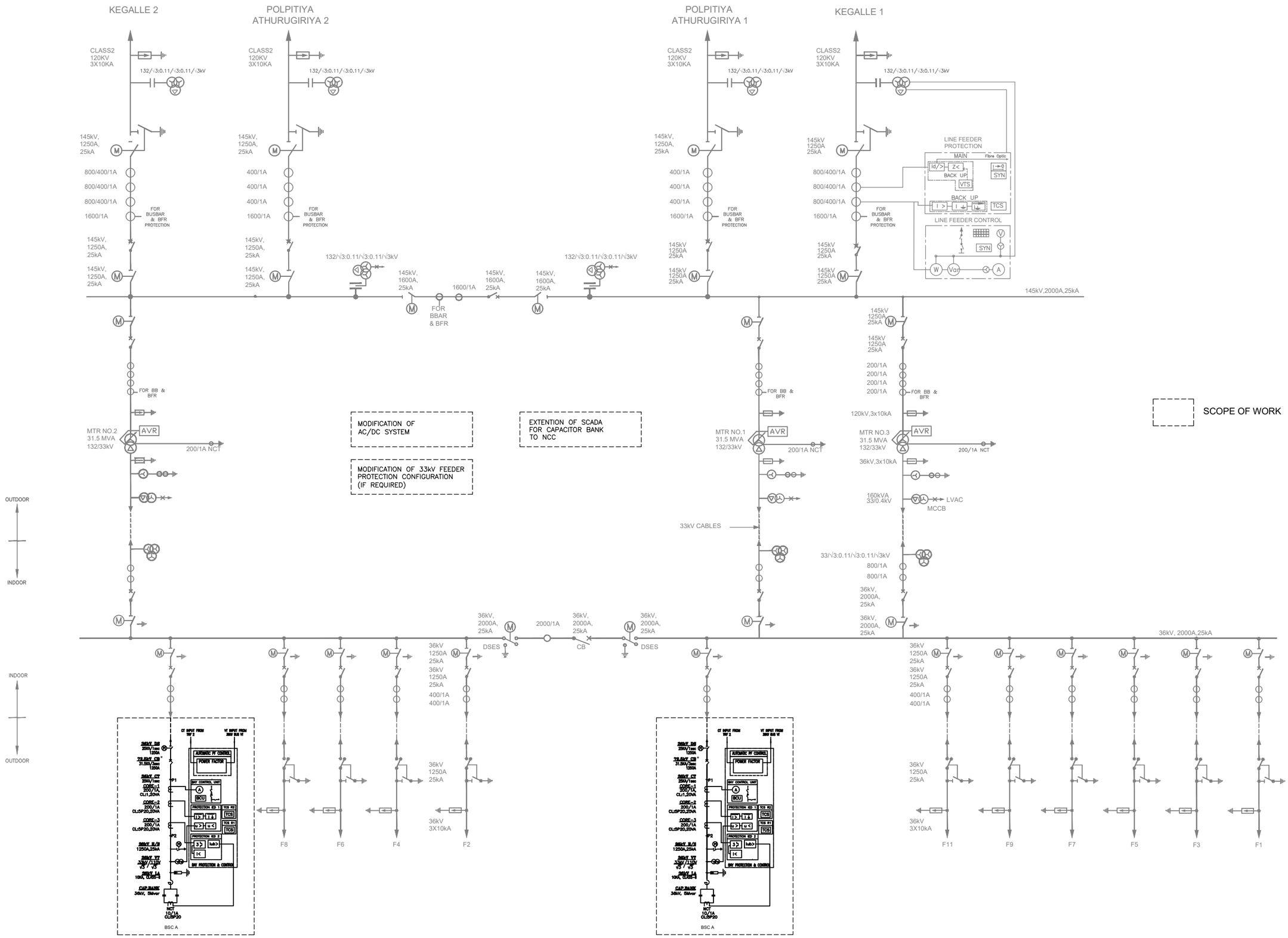
Property of CEB Tr. Design Branch



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Revision Record					
Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD
TRANSMISSION DESIGN

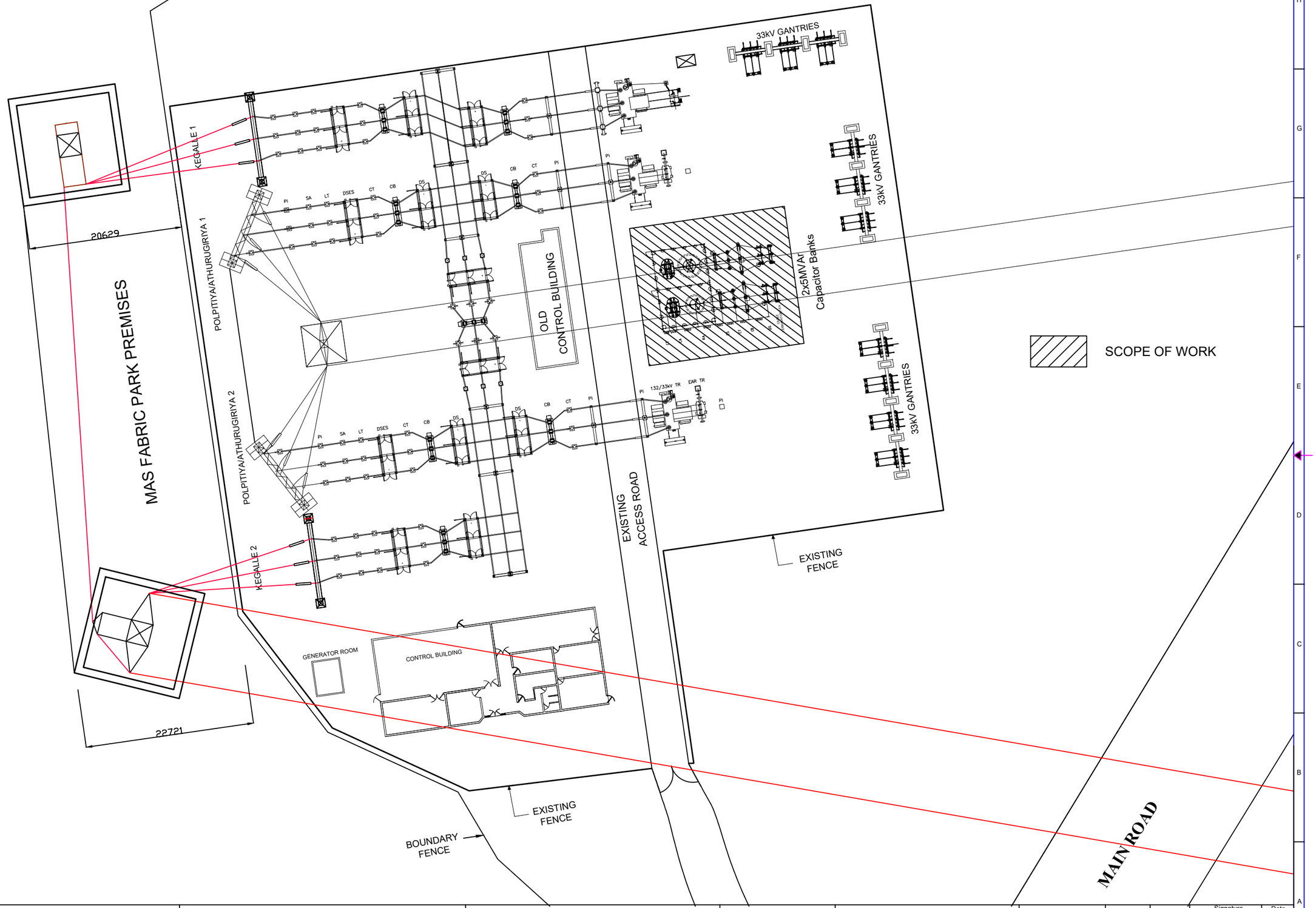
Project Title: *SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: ADB

Drawing Title: SINGLE LINE DIAGRAM FOR THULHIRIYA GSS WITH PROPOSED CAPACITOR BANK

				Signature		Date
Scale - NTS	Rev. Date		Drawn	Anusha		02.05.2019
Size - A3	02.05.2019		Designed	Kushan		
Sheet of	Rev. 0		Checked			
Dwg. No. TD/CE/1/186/D/00/08			Approved			
		Released for	Tendering	✓		
			Construction			

Property of
CEB Tr. Design Branch



Revision Record					
Rev. No.	Date	Description	Drawn	Checked	Approved

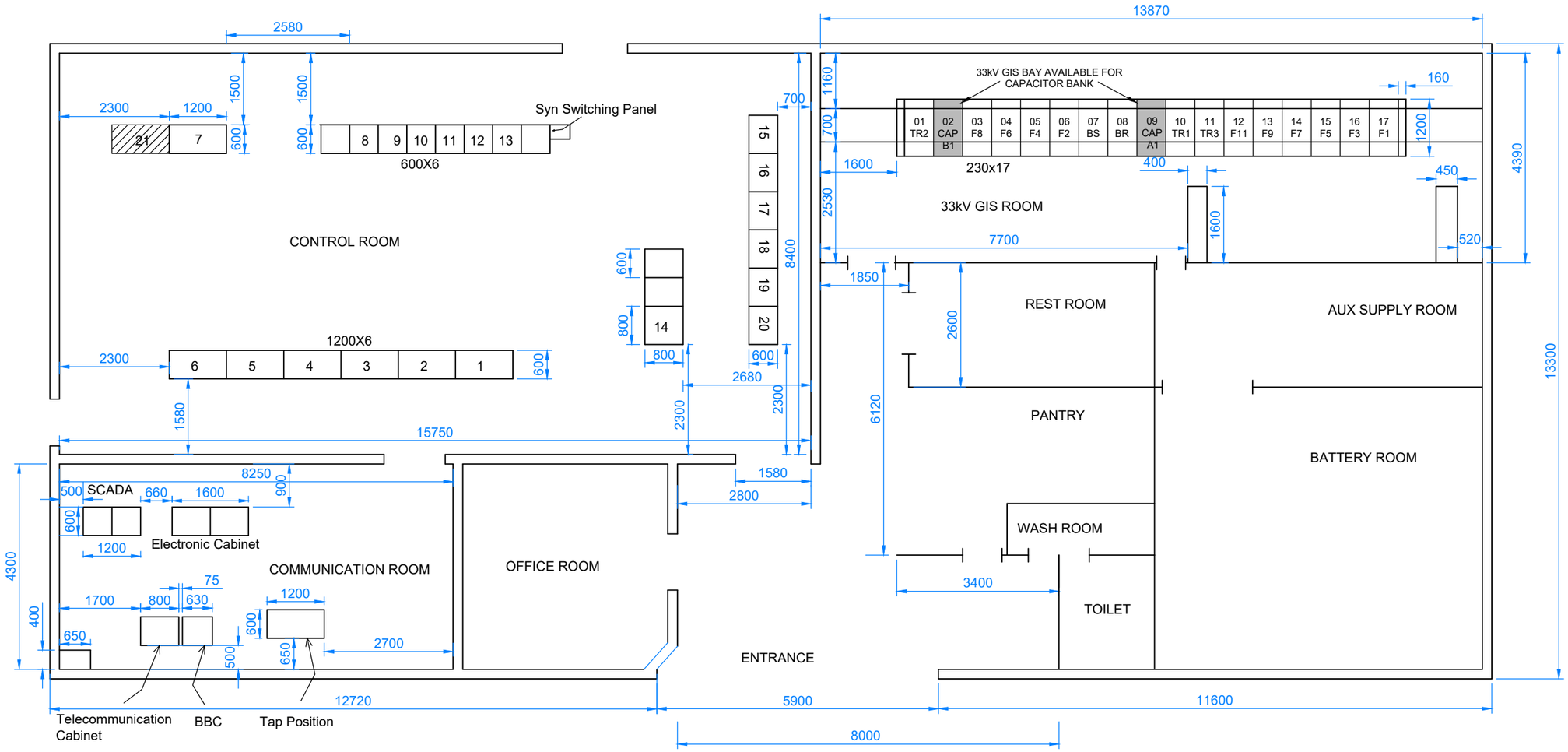
CEYLON ELECTRICITY BOARD
TRANSMISSION DESIGN

Project Title
SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT

Funding Agency
ADB

Drawing Title
PROPOSED LAYOUT FOR
THULHIRIYA GSS

Scale - 1:500	Rev. Date		Signature / Date
Size - A3	02.05.2019	Drawn	Anusha — 02.05.2019
Sheet of Rev. 0		Designed	Kushan
Dwg. No. TD/CE/1/186/D/01/08		Checked	
		Approved	
		Released for	Tendering ✓
			Construction



LEGEND

CONTROL ROOM PANELS

1 Transformer Feeder No. 2 Control Panel 33kV / 33kV 5 MVAr Breaker Switch Capaciter Bank B1 Control Panel

2 Warakapola 02, 33kV Feeder No. 8 Control Panel / Warakapola 01, 33kV Feeder No. 6 Control Panel / Kegalle 33kV Feeder No 4 Control Panel

3 Polgahawela/Narammala 33kV Feeder No. 2 Control Panel / 33kV Bus Section Control Panel / 33kV 5 MVAr Breaker Switch Capaciter Bank A1 Control Panel

4 Transformer Feeder No. 1 Control Panel (33kV) / Transformer Feeder No 3 Control Panel (33kV) / BOI 33kV Feeder No 11 Control Panel

5 Meerigama 02 33kV Feedrer No. 9 Control Panel / Meerigama 01 33kV Feeder No 7 Control Panel / Kuliyapitiya 33kV Feeder No 5 Control Panel

6 Pannala 33kV Feedrer No. 3 Control Panel / Pothuhera 33kV Feeder No 1 Control Panel

7 Auto Voltage Control Panel (TR1, TR2, TR3)

8 Transformer Feeder No. 2 Control Panel 132kV

9 132kV Line Control Panel Polpitiya/Athurugiriya 2 (Veyangoda 2)

10 132kV Bus Section Control Panel

11 132kV Line Control Panel Polpitiya/Athurugiriya 1 (Veyangoda 1)

12 Transformer Feeder No 1 Control Panel (132kV)

13 Transformer Feeder No 3 Control Panel (132kV) Syn. Panel

14 Bus Bar Protective Panel

15 Transformer Feeder No 2 Protection Panel (132kV)

16 132kV Line Protection Panel Polpitiya/Athurugiriya 2 (Veyangoda 2)

17 132kV Bus Section Protection Panel

18 132kV Line Protection Panel Polpitiya/Athurugiriya 1 (Veyangoda 1)

19 Transformer Feeder No 1 Protection Panel (132kV)

20 Transformer Feeder No 3 Protection Panel (132kV)

21 Capaciter Bank Protection & Control Panel

GIS

1 Transformer 2	10 Transformer 1
2 5 Mvar Cap Bank B1	11 Transformer 3
3 Feeder 8	12 Feeder 11
4 Feeder 6	13 Feeder 9
5 Feeder 4	14 Feeder 7
6 Feeder 2	15 Feeder 5
7 Bus Section	16 Feeder 3
8 Bus Riser	17 Feeder 1
9 5 Mvar Cap Bank A1	

SCOPE OF WORK

NOTE

CONTROL & PROTECTION PANEL LOCATION AND AVAILABLE 33kV GIS BAYS ARE INDICATED IN THE DRAWING

Rev. No.	Date	Description	Drawn	Checked	Approved

CEYLON ELECTRICITY BOARD
TRANSMISSION DESIGN

Project Title: *SUPPORTING ELECTRICITY SUPPLY RELIABILITY IMPROVEMENT PROJECT*

Funding Agency: ADB

Drawing Title: PROPOSED CONTROL BUILDING ARRANGEMENT FOR THULHIRIYA GSS

Scale - 1:100
Size - A3
Sheet of
Rev. Date 02.05.2019
Dwg. No. TD/CE/1/186/D/60/08

	Signature	Date
Drawn	Anusha	02.05.2019
Designed	Kushan	
Checked		
Approved		

Released for: Tendering ✓ / Construction

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