

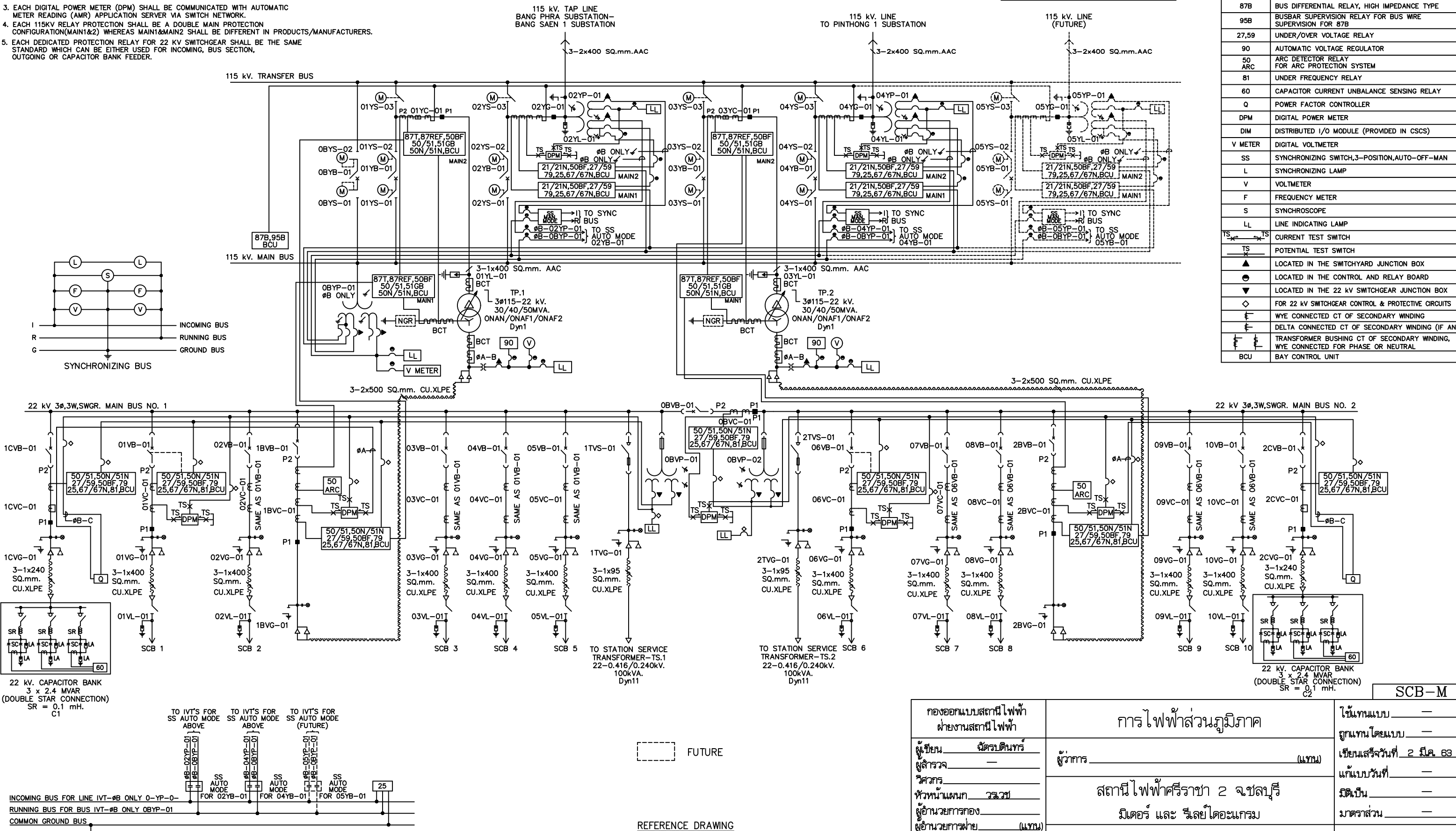
NOTES

1. THE NEUTRAL GROUNDING RESISTORS (NGR) ARE INDICATED FOR FUTURE INSTALLATION.
2. SYNCHRONIZING SCHEMATIC
- 2.1 0-Y-01 SHOWN THUS, REFER TO INCOMING IVT DESIGNATIONS.
- 2.2 0BYP-01 SHOWN THUS REFERS TO RUNNING BUS IVT
- 2.3 0B ONLY - SHOWN THUS, REFERS TO THE SECONDARY WINDING OF IVT FOR PHASE "B" AND USING FULL TAP WINDING 115V FOR SYNCHRONIZING SYSTEM WITH ONE END OF THE WINDING CONNECTED WITH COMMON GROUND BUS.
- 2.4 MANUAL SYNCHRONIZING BY SYNCHROSCOPE SHALL UTILIZE INCOMING AND RUNNING SECONDARY VOLTAGES OF METERING CORES FROM "PHASE B" FOR BOTH IVT'S.
- 2.5 AUTOMATIC SYNCHRONISM VERIFICATION BY SYNCHRO CHECK RELAY (25) SHALL UTILIZE INCOMING AND RUNNING SECONDARY VOLTAGES OF RELAYING CORES FROM "PHASE B" FOR BOTH IVT'S.
3. EACH DIGITAL POWER METER (DPM) SHALL BE COMMUNICATED WITH AUTOMATIC METER READING (AMR) APPLICATION SERVER VIA SWITCH NETWORK.
4. EACH 115KV RELAY PROTECTION SHALL BE A DOUBLE MAIN PROTECTION CONFIGURATION (MAIN1&2) WHEREAS MAIN1&MAIN2 SHALL BE DIFFERENT IN PRODUCTS/MANUFACTURERS.
5. EACH DEDICATED PROTECTION RELAY FOR 22 KV SWITCHGEAR SHALL BE THE SAME STANDARD WHICH CAN BE EITHER USED FOR INCOMING, BUS SECTION, OUTGOING OR CAPACITOR BANK FEEDER.

6. NETWORK TOPOLOGY OF SUBSTATION CONTROL AND PROTECTION SYSTEM IS TOPOLOGY 1
7. 115 kV. IVT RATIO
- $\frac{115,000}{\sqrt{3}} : \frac{115}{\sqrt{3}} // \frac{115}{\sqrt{3}} / \frac{115}{\sqrt{3}} \text{ V}$
- 50VA/0.2/1.5VF , 50VA/3P/1.5VF
(SIMULTANEOUS BURDEN = 100 VA.)
8. 115 kV. CT RATIO
- 1800/1500/900 : 1/1/1/1 A. - FOR LINE BAY
- 20VA/5P20 , 20VA/0.5FS5 , 20VA/5P20 , 20VA/5P20
- 1800/1500/1200/900/600/300 : 1 A. - FOR TRANSFORMER BAY (CORE1)
- 20VA/5P20
- 400/300/200 : 1/1/1 A. - FOR TRANSFORMER BAY (CORE2-4)
- 20VA/0.5FS5 , 30VA/5P20 , 30VA/5P20
- 500/200/100 : 1 A. - FOR HIGH SIDE TRANSFORMER BUSHING CT.
- 20VA/5P20

9. 22 kV. VT. RATIO
- $\frac{22000}{\sqrt{3}} : \frac{110}{\sqrt{3}} // \frac{110}{\sqrt{3}} \text{ V}$
- 50VA/0.5/1.9VF , 50VA/3P/1.9VF
10. 22 kV. CT. RATIO
- 1800/1500/900 : 1/1/1/1 A - FOR INCOMING BREAKER
- 20VA/5P20 , 20VA/0.5FS5 , 20VA/5P20 , 20VA/5P20
- 1800/1500/900 : 1/1 A - FOR TIE BREAKER
- 20VA/0.5FS5 , 20VA/5P20
- 600/300 : 1/1 A - FOR OUTGOING 22 kV.
- 20VA/0.5FS5 , 20VA/5P20
- 1800/900 : 1/1 A - FOR LOW SIDE TRANSFORMER BUSHING CT.
- 20VA/5P20 , 20VA/0.5FS5
- 1800/900 : 1/1 A - FOR NEUTRAL BUSHING CT.
- 20VA/5P20 , 20VA/5P20
- 600/300 : 1/1 A - FOR CAPACITOR BANK
- 20VA/0.5FS5 , 20VA/5P20

***PARTICULAR REQUIREMENT FOR ALL 5P20 CLASS CT'S
CURRENT RATIO ERROR AT 100% OF RATED CURRENT < 0.5%
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DEVICES	EXPLANATION
21, 21N	DISTANCE TIME-STEP PHASE AND GROUND DISTANCE RELAY
67	DIRECTIONAL PHASE OVERCURRENT RELAY
67N	DIRECTIONAL GROUND OVERCURRENT RELAY
25	SYNCHROCHECK RELAY
79	AUTOMATIC RECLOSEING RELAY
50 BF	BREAKER FAILURE RELAY
50	NON-DIRECTIONAL INSTANTANEOUS AND TIME PHASE OVERCURRENT RELAY
51	NON-DIRECTIONAL INSTANTANEOUS AND TIME GROUND OVERCURRENT RELAY
50N	NON-DIRECTIONAL INSTANTANEOUS AND TIME GROUND OVERCURRENT RELAY
51N	NON-DIRECTIONAL INSTANTANEOUS AND TIME GROUND OVERCURRENT RELAY
51GB	NON-DIRECTIONAL GROUND BACKUP OVERCURRENT RELAY
87T	TRANSFORMER DIFFERENTIAL RELAY
87REF	TRANSFORMER RESTRICTED EARTH FAULT RELAY THIS RELAY SHALL BE INCORPORATED IN THE TRANSFORMER DIFFERENTIAL RELAY (87T)
87B	BUS DIFFERENTIAL RELAY, HIGH IMPEDANCE TYPE
95B	BUSBAR SUPERVISION RELAY FOR BUS WIRE SUPERVISION FOR 87B
27,59	UNDER/OVER VOLTAGE RELAY
90	AUTOMATIC VOLTAGE REGULATOR
50	ARC DETECTOR RELAY FOR ARC PROTECTION SYSTEM
81	UNDER FREQUENCY RELAY
60	CAPACITOR CURRENT UNBALANCE SENSING RELAY
Q	POWER FACTOR CONTROLLER
DPM	DIGITAL POWER METER
DIM	DISTRIBUTED I/O MODULE (PROVIDED IN CSCS)
V METER	DIGITAL VOLTMETER
SS	SYNCHRONIZING SWITCH, 3-POSITION, AUTO-OFF-MAN
L	SYNCHRONIZING LAMP
V	VOLTMETER
F	FREQUENCY METER
S	SYNCHROSCOPE
LL	LINE INDICATING LAMP
TS	CURRENT TEST SWITCH
TSX	POTENTIAL TEST SWITCH
▲	LOCATED IN THE SWITCHYARD JUNCTION BOX
●	LOCATED IN THE CONTROL AND RELAY BOARD
▼	LOCATED IN THE 22 kV SWITCHGEAR JUNCTION BOX
◇	FOR 22 kV SWITCHGEAR CONTROL & PROTECTIVE CIRCUITS
⏏	WYE CONNECTED CT OF SECONDARY WINDING
⏏	DELTA CONNECTED CT OF SECONDARY WINDING (IF ANY)
⏏	TRANSFORMER BUSHING CT OF SECONDARY WINDING, WYE CONNECTED FOR PHASE OR NEUTRAL
BCU	BAY CONTROL UNIT

SCB-M

ออกแบบสถานียไฟฟ้า ฝ่ายงานสถานียไฟฟ้า	การไฟฟ้าส่วนภูมิภาค	ใช้แบบ _____ ถูกแทนโดยแบบ _____ เขียนเสร็จวันที่ 2 มี.ค. 63 แก้แบบวันที่ _____ มีมติเป็น _____ มาตรฐาน _____
ผู้เขียน _____ ผู้สำรวจ _____ วิศวกร _____ หัวหน้าแผนก _____ ผู้ดำเนินการกอง _____ ผู้ดำเนินการฝ่าย _____ รองผู้ควบคุมวิศวกรรม _____	ผู้ว่าการ _____ (นางน) สถานีไฟฟ้าเคสิรราช 2 จ.ชลบุรี มิเตอร์ และ รีเลย์ไดอะแกรม SI RACHA 2 SUBSTATION METERING AND RELAYING DIAGRAM	แบบเลขที่ FA4-011/63031 แผ่นที่ 1 ของจำนวน 1 แผ่น

FUTURE

REFERENCE DRAWING
SINGLE LINE DIAGRAM.....DWG NO. FA2-011/63002