

LEGEND

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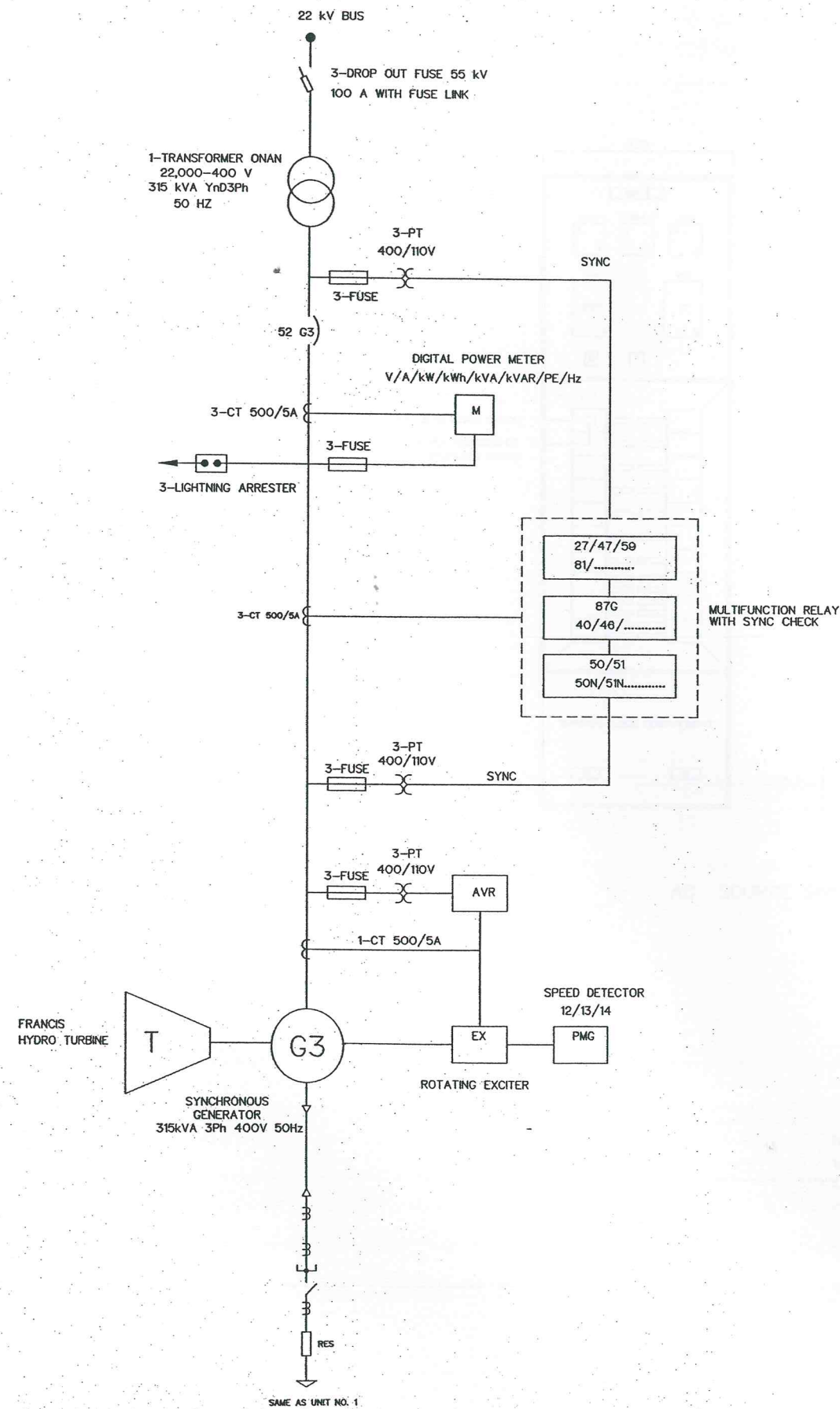
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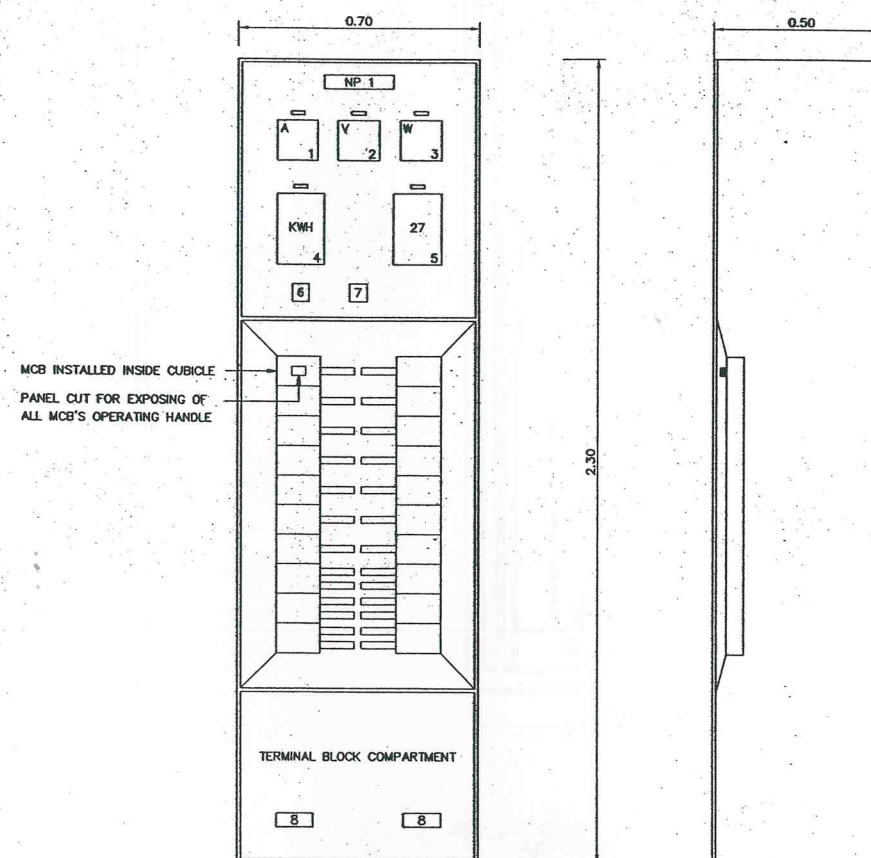
EXPLANATION

AUTOMATIC SYNCHRONIZER
UNDervOLTAGE RELAY
LOSS-OF-POTENTIAL ALARM RELAY
REVERSE POWER RELAY
GENERATOR LOSS OF FIELD RELAY
GENERATOR NEGATIVE PHASE SEQUENCE TIME OVERCURRENT RELAY
GENERATOR OVERCURRENT VOLTAGE RESTRAINT RELAY
GENERATOR NEUTRAL OVERCURRENT RELAY
PHASE OVERCUIRRENT RELAY
GROUND OVERCURRENT RELAY
GENERATOR OVERVOLTAGE RELAY
BATTERY GROUND DETECTOR RELAY
GENERATOR DIFFERENTIAL RELAY
BATTERY UNDER VOLTAGE RELAY
OVER,NORMAL,UNDER SPEED RELAY
ONIT RPM
THREE INDICATING AMMETER-ONE PER PHASE
RECORDING INSTRUMENT
KILOWATTHOUR METER
AVERAGE DEMAND PRINTER
TIME SWITCH
VOLTMETER SELECTOR SWITCH
AMMETER SELECTOR SWITCH
LINE LAMP
CURRENT & POTENTIAL TEST SWITCH
FREQUENCY METER
POWER FACTOR METER
INDICATING LAMP FOR 400/230V STATION SERVICE ENERGIZED

KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
HUAI MAE SOT HYDROPOWER PROJECT			
ELECTRO-MECHANICAL EQUIPMENT E & M EQUIPMENT LEGEND & EXPLANATION			
MAHA NAKORN CONSULTANTS CO.,LTD.		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
DESIGNED	AWL3053	REVIEWED	AWL3053
DRAWN	AWL3053	SUBMITTED	AWL3053
CHECKED	AWL3053	RECOMMENDED	AWL3053
APPROVED	AWL3053	DATE	26/06/62
CONSULTANTS		DEDE	
PROJECT MANAGER		DATE	
HMS-EM-01		SHEET NO. 8 OF 17	



KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
HUA MAE SOT HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT E & M EQUIPMENT EXISTING MAIN POWER SINGLE LINE DIAGRAM	
MAHA NAKORN CONSULTANTS CO., LTD.	
DESIGNED	REVIEWED
DRAWN	SUBMITTED
CHECKED	RECOMMENDED
APPROVED	APPROVED
PROJECT MANAGER	DATE
DRAWING NO.	SHEET NO.
HMS-EM-03	10 OF 17



1. AC AMMETER
2. AC VOLTMETER
3. AC WATTMETER
4. WATT HOUR METER
5. UNDER VOLTAGE RELAY
6. AMMETER SELECTOR SWITCH
7. VOLTMETER SELECTOR SWITCH
8. TEST TERMINAL
9. MS1 3 PHASE MOTOR STARTER , TWO DIRECTIONS , FORWARD AND REVERSE
10. MS2 WITH FORWARD AND REVERSE PUSH BUTTON , SUITABLE FOR
3 ϕ , 380 V. GATE MOTORS.

AC SOURCE SWITCHBOARD

1. ALL DIMENSIONS ARE IN METERS, UNLESS OTHERWISE SHOWN
2. THIS DRAWING IS DESIGNED FOR GUIDE LINE ONLY, IT SHALL BE BE DESIGNED AND SPECIFIED LATER BY CONTRACTOR C2 AND SUBMITTED TO FIELD ENGINEER FOR APPROVAL

3						MAHA NAKORN CONSULTANTS CO.,LTD. DEVELOPMENT AND EFFICIENCY REVIEWED <i>19/2</i> <i>2/1</i> SUBMITTED <i>6/2/11</i> <i>2/1</i> RECOMMENDED APPROVED <i>19/2/11</i>
2					DESIGNED <i>2/1</i> <i>2/1</i> <i>3053</i>	
1					DRAWN <i>2/1</i> <i>2/1</i>	
NO.	DATE	REVISIONS	CHECKED	APPROVED	CHECKED <i>2/1</i> <i>2/1</i> <i>2615220</i>	
CONSULTANTS					DEDE	PROJECT MANAGER DATE DRAWING NO. HMS-EM-04 SHEET NO. 11 OF 17

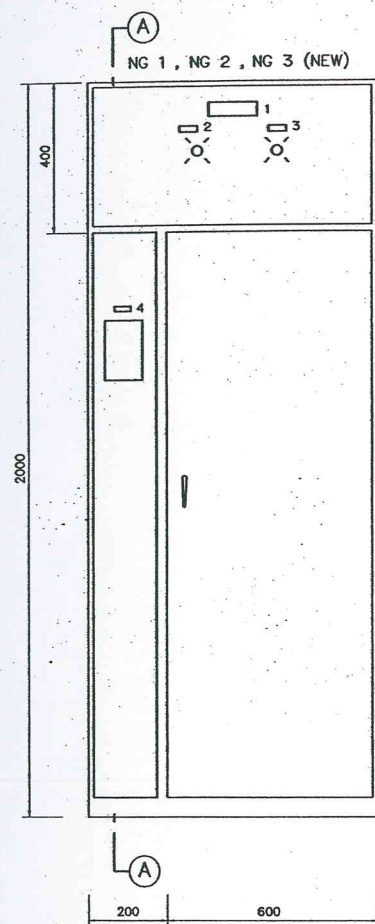
KINGDOM OF THAILAND
MINISTRY OF ENERGY
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY

HUA MAE SOT HYDROPOWER PROJECT

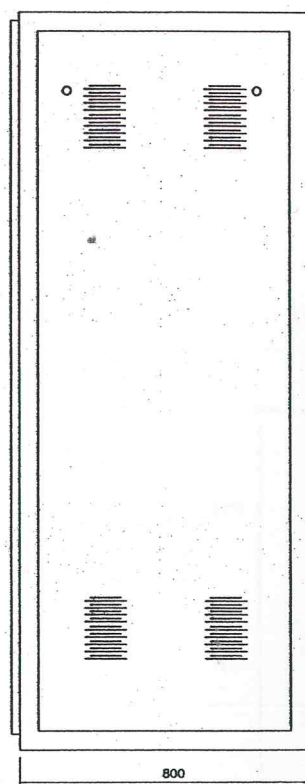
ELECTRO - MECHANICAL EQUIPMENT
E & M EQUIPMGNT
MAIN CONTROL SWITCH BOARD

MAHA NAKORN CONSULTANTS CO.,LTD. DEPARTMENT OF ALTERNATIVE ENERGY
DEVELOPMENT AND EFFICIENCY

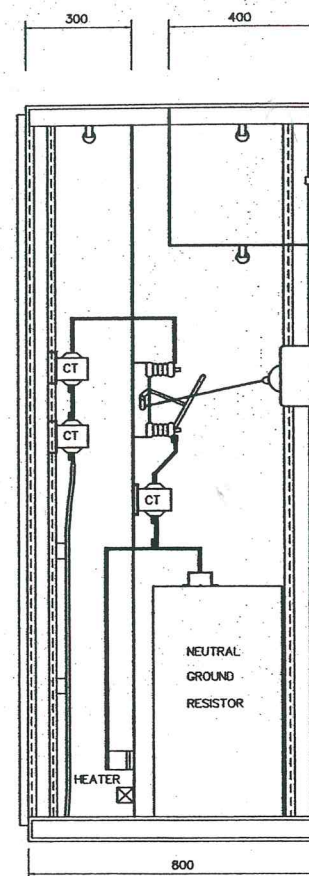
DESIGNED	<i>[Signature]</i>	04/13/2003	REVIEWED	12/2	<i>[Signature]</i>
DRAWN	<i>[Signature]</i>		SUBMITTED	6/24/04	<i>[Signature]</i>
CHECKED	<i>[Signature]</i>	02/15/2004	RECOMMENDED		
	<i>[Signature]</i>	26 Feb 02	APPROVED		<i>[Signature]</i>
PROJECT MANAGER			DRAWING NO.		SHEET NO.
DATE			HMS-EM-04		11 of 17



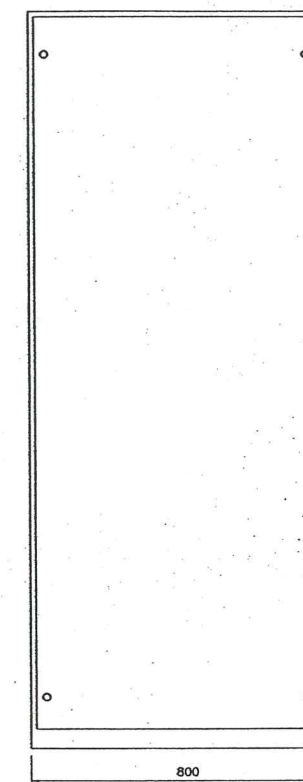
FRONT VIEW
NOT TO SCALE



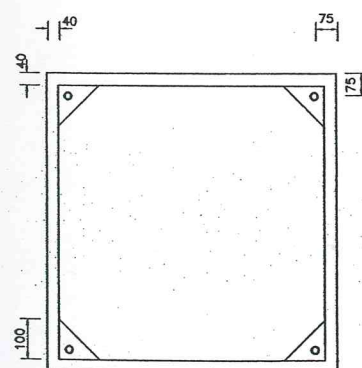
SIDE VIEW
NOT TO SCALE



SECTION A - A
NOT TO SCALE



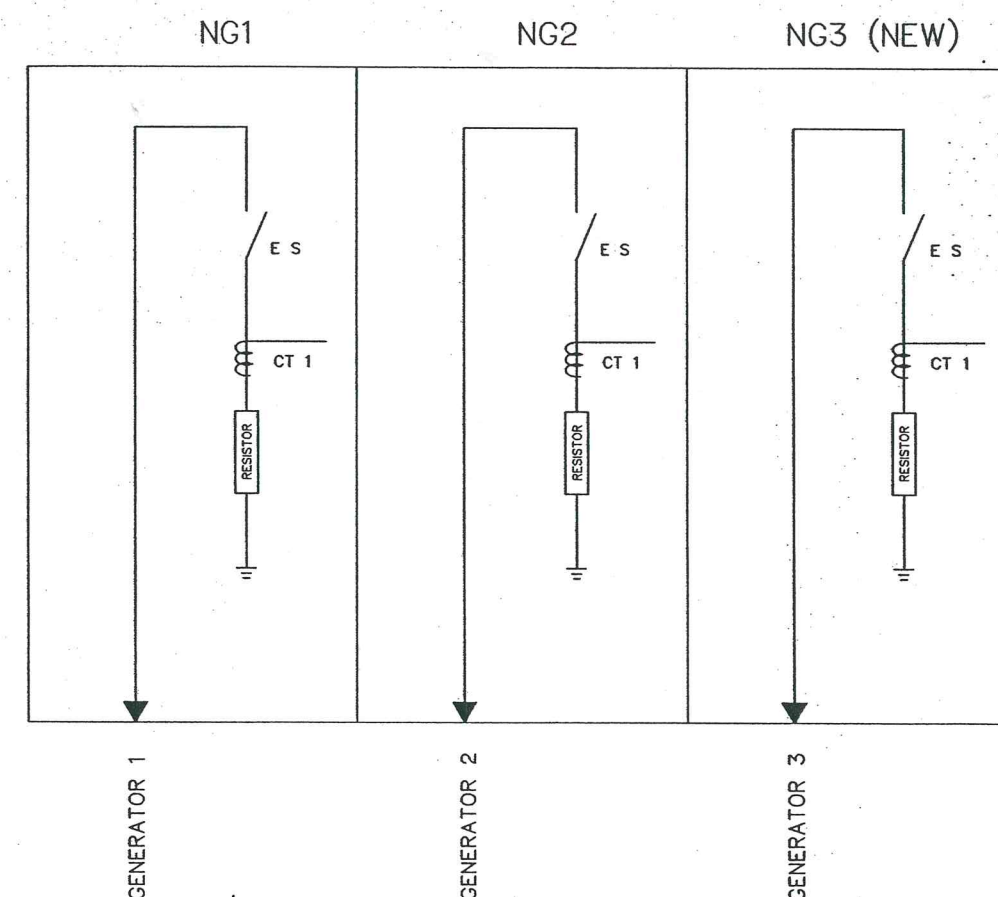
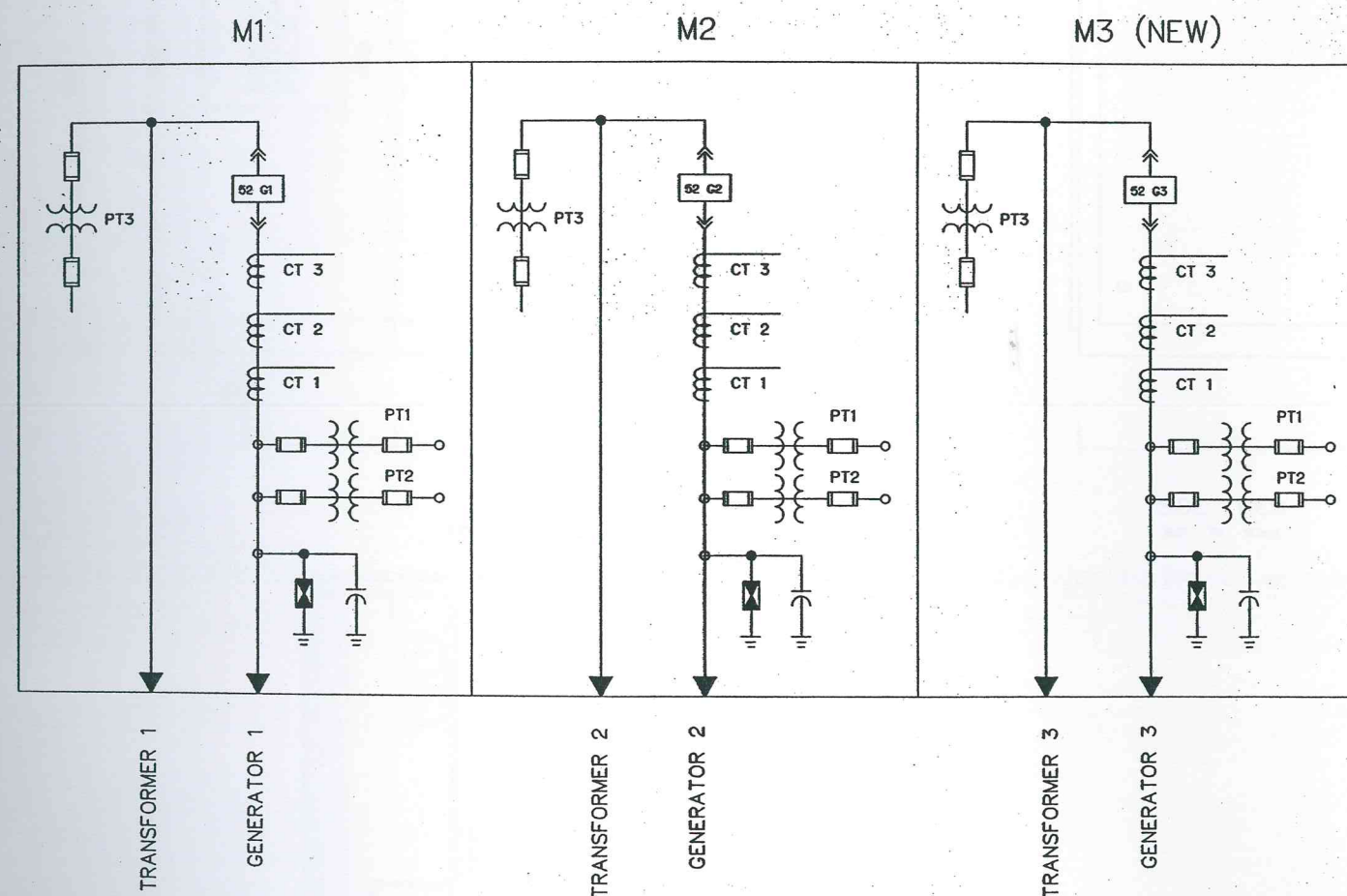
REAR VIEW
NOT TO SCALE



NOTES :

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KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
HUAI MAE SOT HYDROPOWER PROJECT			
ELECTRO-MECHANICAL EQUIPMENT E&M EQUIPMENT NEUTRAL GROUNDING CUBICLE			
MAHA NAKORN CONSULTANTS CO., LTD.		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
DESIGNED	8/11/3053	REVIEWED	8/11/3053
DRAWN	8/11/3053	SUBMITTED	8/11/3053
CHECKED	8/11/3053	RECOMMENDED	8/11/3053
APPROVED	8/11/3053	APPROVED	8/11/3053
PROJECT MANAGER	DATE	DRAWING NO.	SHEET NO.
		HMS-EM-05	12 OF 17

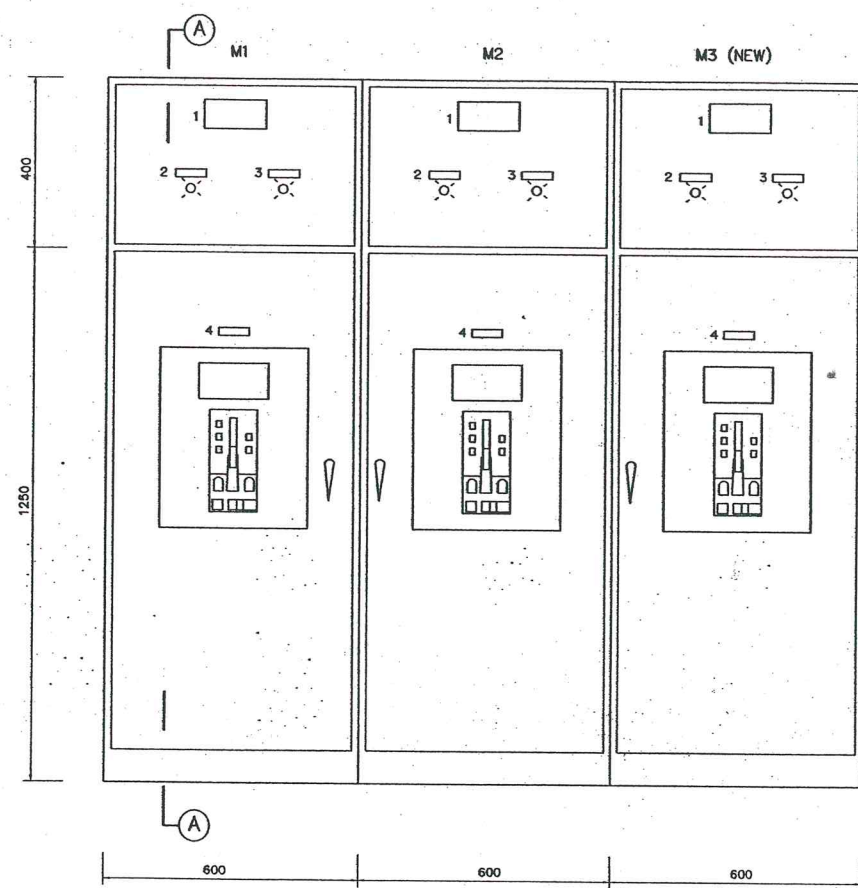


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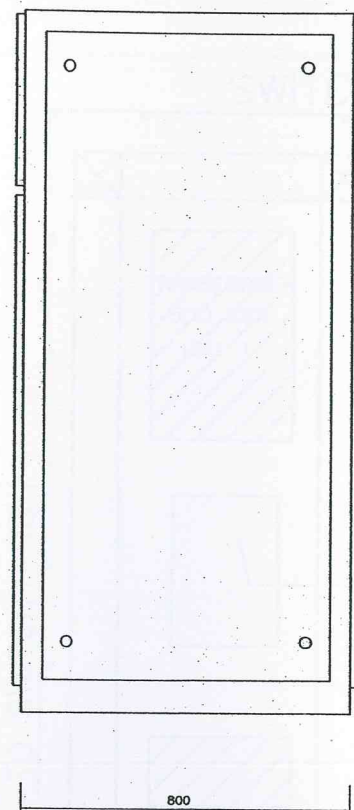
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NO.	DATE	REVISIONS	CHECKED	APPROVED
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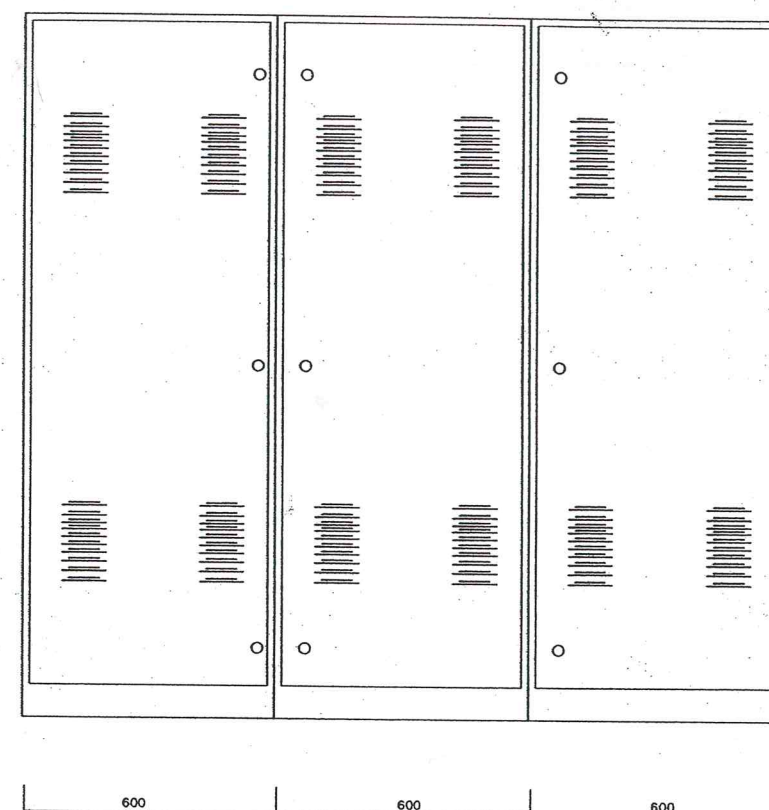
KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
HUAI MAE SOT HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT E&M EQUIPMENT LOW VOLTAGE GENERATOR CUBICLE	
MAHA NAKORN CONSULTANTS CO.,LTD.	
DESIGNED	REVIEWED
DRAWN	SUBMITTED
CHECKED	RECOMMENDED
APPROVED	APPROVED
PROJECT MANAGER	SHEET NO.
DATE	13 OF 17



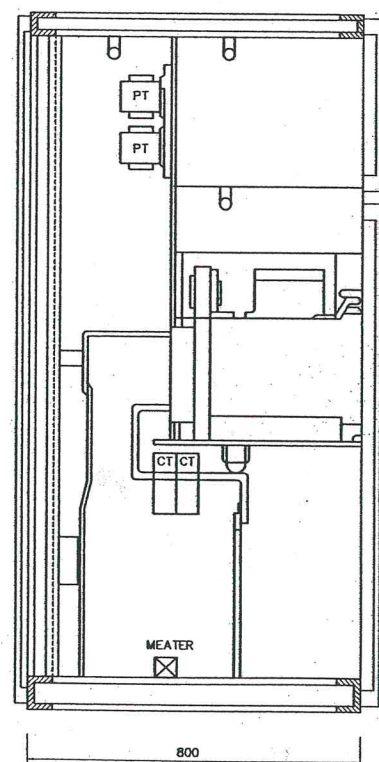
FRONT VIEW
NOT TO SCALE



SIDE VIEW
NOT TO SCALE



REAR VIEW
NOT TO SCALE



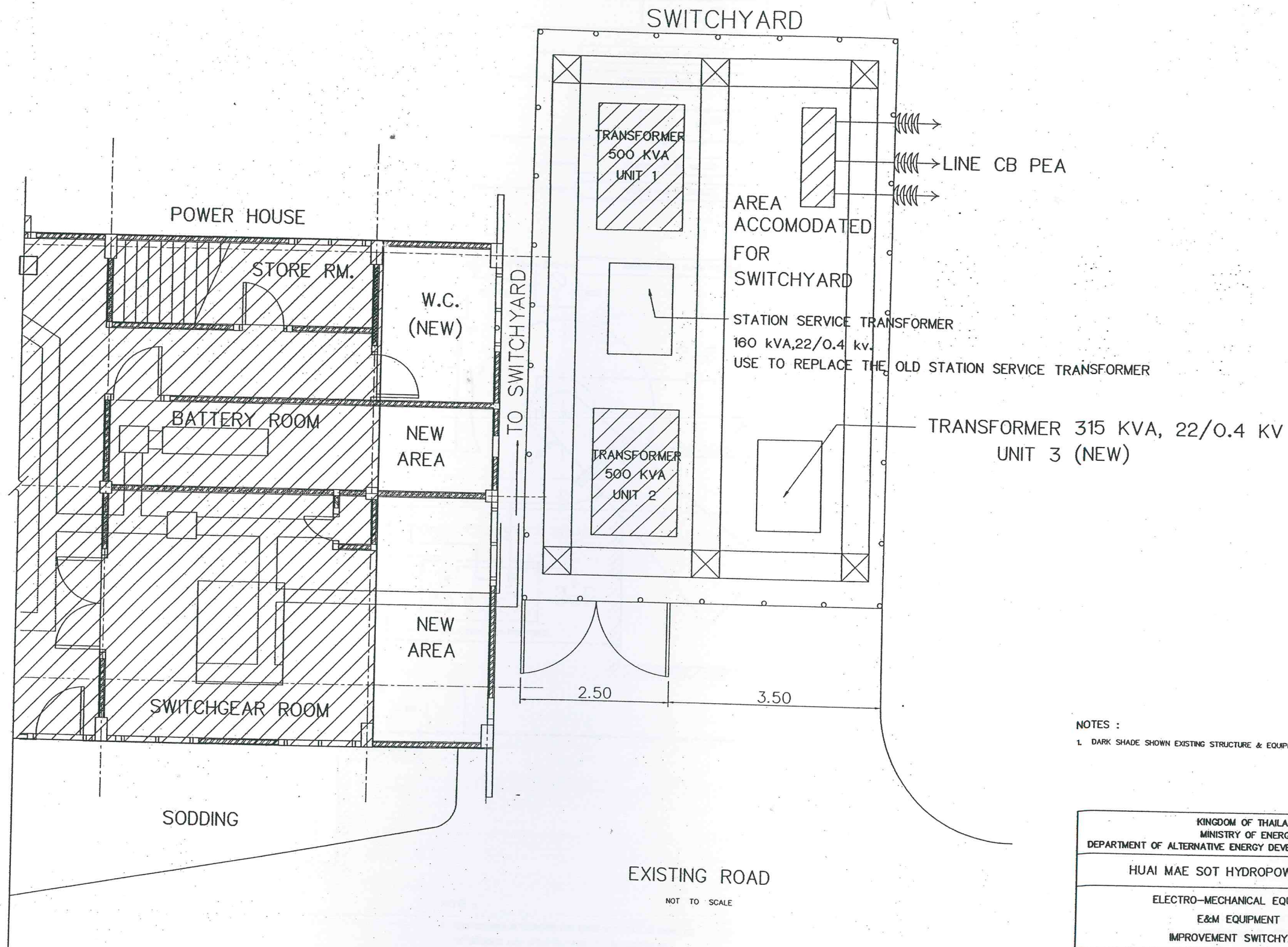
SECTION A - A
NOT TO SCALE

NOTES :

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NO.	DATE	REVISIONS	CHECKED	APPROVED

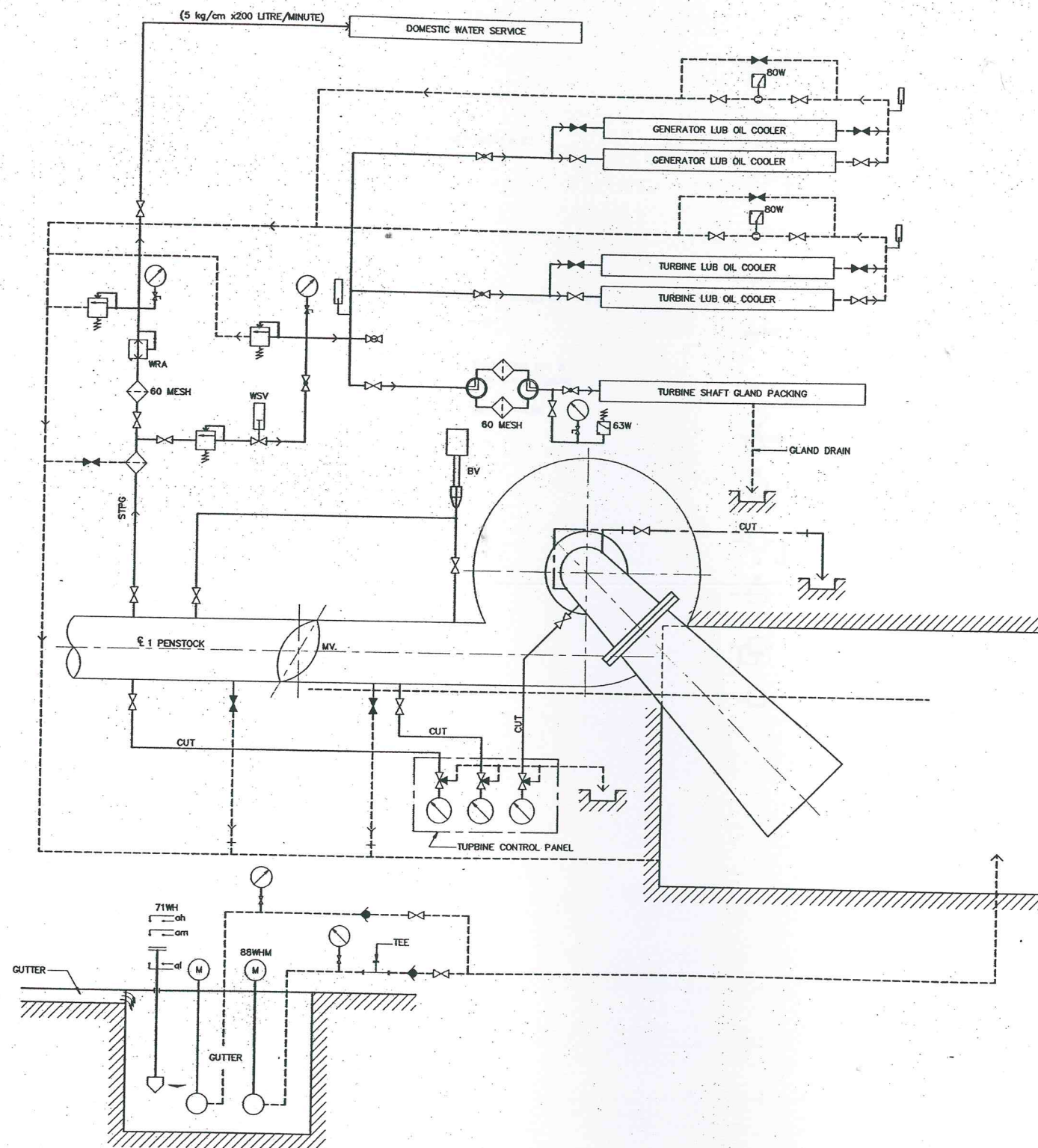
KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
HUAI MAE SOT HYDROPOWER PROJECT			
ELECTRO-MECHANICAL EQUIPMENT E&M EQUIPMENT LOW VOLTAGE GENERATOR CUBICLE			
MAHA NAKORN CONSULTANTS CO.,LTD.		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
DESIGNED	20/13053	REVIEWED	20/13053
DRAWN	20/13053	SUBMITTED	20/13053
CHECKED	20/13053	RECOMMENDED	20/13053
APPROVED	20/13053	APPROVED	20/13053
CONSULTANTS		DEDE	
PROJECT MANAGER		DATE	
		HMS-EM-07	
		14 OF 17	



NOTES :

1. DARK SHADE SHOWN EXISTING STRUCTURE & EQUIPMENT

KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
HUI MAE SOT HYDROPOWER PROJECT			
ELECTRO-MECHANICAL EQUIPMENT E&M EQUIPMENT IMPROVEMENT SWITCHYARD			
MAHA NAKORN CONSULTANTS CO., LTD.		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
DESIGNED	CHW. 2013053	REVIEWED	CHW. 2013053
DRAWN	CHW. 2013053	SUBMITTED	CHW. 2013053
CHECKED	CHW. 2013053	RECOMMENDED	CHW. 2013053
APPROVED	CHW. 2013053	APPROVED	CHW. 2013053
PROJECT MANAGER	DATE	DRAWING NO.	SHEET NO.
		HMS-EM-08	15 OF 17



LEGENDS :

- WATER SUPPLY
- - - WATER DRAINAGE
- THERMOMETER
- STOP VALVE (NORMAL OPEN)
- STOP VALVE (NORMAL CLOSE)
- CHECK VALVE
- FLOW SIGHT
- THREE WAY COCK
- STRAINER
- PRESSURE GAUGE
- PRESSURE RELIEF VALVE
- △ 71WH LEVEL SWITCH FOR SUMP PIT
- 63W PRESSURE SWITCH
- 80W FLOW RELAY
- 88WHM DRAINAGE PUMP MOTOR
- WR REDUCING VALVE
- WRA AUTOMATIC REDUCING VALVE
- BY BY-PASS VALVE
- MV MAIN INLET VALVE
- SCP CARBON STEEL PIPE
- STPG CARBON STEEL PIPE
- SUSTP STAINLESS STEEL PIPE
- CUT COPPER TUBE
- WSV COOLING WATER STOP VALVE
- GLOBE VALVE

NOTE :

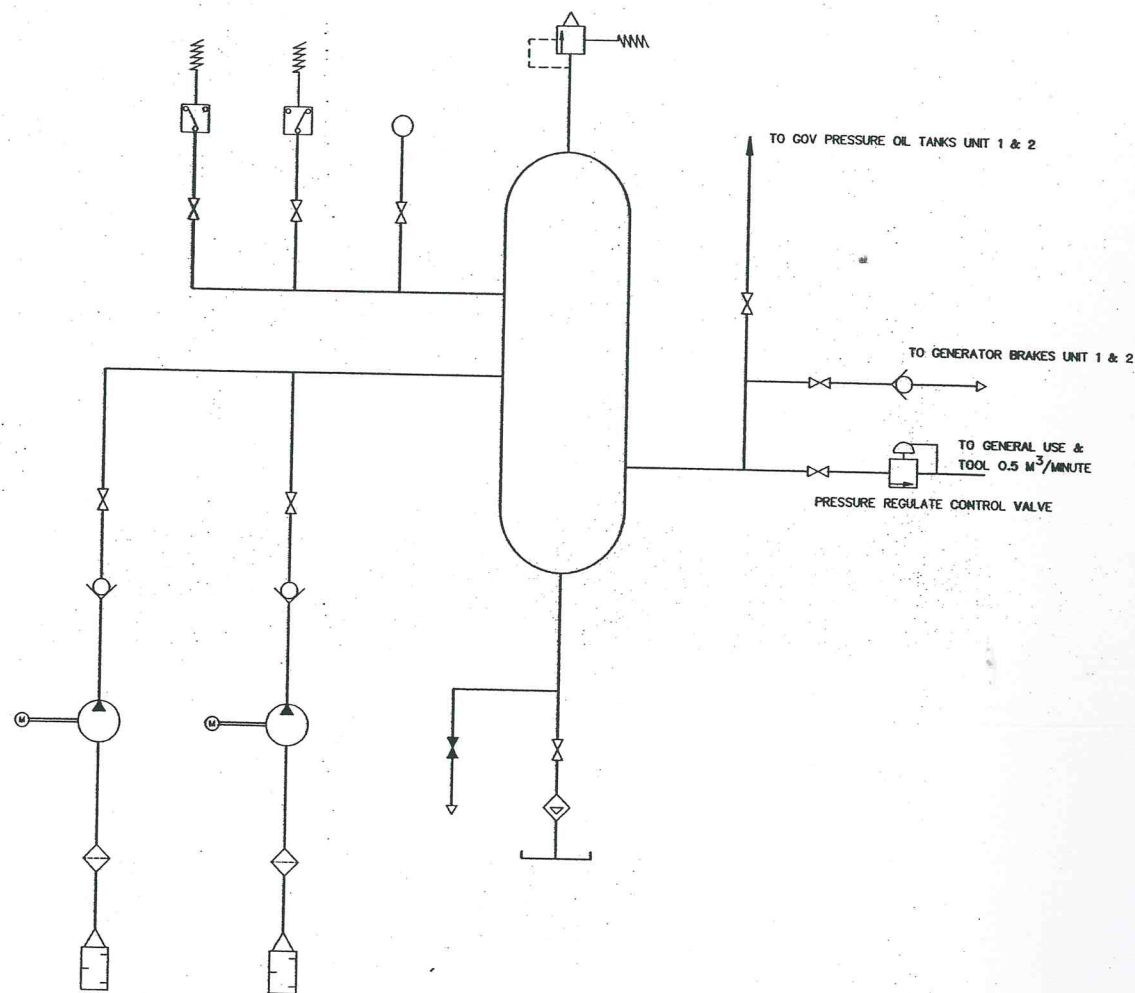
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KINGDOM OF THAILAND
MINISTRY OF ENERGY
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY

HUAI MAE SOT HYDROPOWER PROJECT

ELECTRO-MECHANICAL EQUIPMENT
E & M EQUIPMENT
WATER SUPPLY AND DRAINAGE SCHEMATIC DIAGRAM

MAHA NAKORN CONSULTANTS CO., LTD.				DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
DESIGNED	DATE	REVISIONS	CHECKED	APPROVED	REVIEWED	SUBMITTED	RECOMMENDED
1							
2							
3							
PROJECT MANAGER	DATE				DRAWING NO.	SHEET NO.	
					HMS-EM-09	16 OF 17	



COMPRESSED AIR SYSTEM SCHEMATIC

LEGENDS :

	AUTOMATIC CONDENSATE TRAP		VALVE-NON RETURN
	FILTER OR STRAINER - MANUAL		PRESSURE SWITCH
	- AUTOMATIC HAS ADDITIONAL DRAIN LINE AND VALVE		AIR VENT
	VALVE-NORMALLY OPEN		HEAD EXCHANGER
	VALVE-NORMALLY CLOSED		FLOW RELAY
	NEEDLE VALVE		FLOW METER
	ORIFICE		PRESSURE GAUGE
	VALVE-THERMOSTATICALLY CONTROLLED		RECEIVER
	VALVE-PRESSURE REGULATING		PUMP OR COMPRESSOR
	VALVE-PRESSURE RELIEF (WATER)		SILENCER
	VALVE-SOLENOID OPERATED PRESSURE REDUCING		DIRECTION OF FLOW
	VALVE-PRESSURE RELIEF (AIR)		MOTORIZED VALVE
	VALVE-SOLENOID OPERATED OIL PRESSURE ACTUATED		

NOTES :

1. PIPING & FITTING TO WORK SHOP ROOM AND MACHINE HALL SHALL BE PROVIDED BY THE CONTRACTOR
2. THIS DRAWING IS DESIGNED FOR GUIDE LINE ONLY, IT SHALL BE BE DESIGNED AND SPECIFIED LATER BY CONTRACTOR C2 AND SUBMITTED TO FIELD ENGINEER FOR APPROVAL

KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
HUAI MAE SOT HYDROPOWER PROJECT			
ELECTRO-MECHANICAL EQUIPMENT E & M EQUIPMENT COMPRESS AIR SYSTEM SCHEMATIC DIAGRAM			
DESIGNED DATE REVISIONS CHECKED APPROVED		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY REVIEWED SUBMITTED RECOMMENDED APPROVED	
CONSULTANTS		DEDE	
PROJECT MANAGER		DATE	
DRAWING NO. HMS-EM-10		SHEET NO. 17 OF 17	