



Department of Alternative
Energy Development and Efficiency

MINISTRY OF ENERGY

MAE TUEN HYDROPOWER PROJECT

CHIANGMAI PROVINCE

CONTRACT C2

ELECTRO - MECHANICAL EQUIPMENT

VOLUME 4

DRAWINGS

MAE TUEN HYDROPOWER PROJECT
ELECTRO – MECHANICAL
LIST OF DRAWINGS

SHEET NO.	DWG. NO.	DRAWING DETAILS
GENERAL		
00	MT-GN-00	GENERAL LIST OF DRAWINGS
01	MT-GN-01	GENERAL, SYMBOLS, ABBREVIATIONS AND GENERAL NOTES
02	MT-GN-02	GENERAL, HYDROLOGY DATA
03	MT-GN-03	GENERAL, LOCATION MAP AND PROJECT AREA MAP
04	MT-GN-04	GENERAL, SITE PLAN
WEIR		
05	MT-WE-01	WEIR, CONCRETE COVER
06	MT-WE-02	WEIR, INTAKE, PLAN SECTIONS AND DETAILS
HEADRACE		
07	MT-HR-01	HEADRACE, ACCESS ROAD, PLAN & PROFILE (SHEET 1/5)
08	MT-HR-02	HEADRACE, ACCESS ROAD, PLAN & PROFILE (SHEET 2/5)
09	MT-HR-03	HEADRACE, ACCESS ROAD, PLAN & PROFILE (SHEET 3/5)
10	MT-HR-04	HEADRACE, ACCESS ROAD, PLAN & PROFILE (SHEET 4/5)
11	MT-HR-05	HEADRACE, ACCESS ROAD, PLAN & PROFILE (SHEET 5/5)
FOREBAY		
12	MT-FB-01	FOREBAY, PLAN AND SECTIONS
PENSTOCK		
13	MT-PS-01	PENSTOCK, PLAN AND PROFILE
POWERHOUSE		
14	MT-PH-01	POWERHOUSE, LAY-OUT
15	MT-PH-02	POWERHOUSE, PLANS
16	MT-PH-03	POWERHOUSE, ELEVATIONS
17	MT-PH-04	POWERHOUSE, SECTIONS
18	MT-PH-05	POWERHOUSE, SECTIONS
19	MT-PH-06	POWERHOUSE, SWITCHYARD PLAN LAYOUT
20	MT-PH-07	POWERHOUSE, SWITCHYARD, SECTIONS
21	MT-PH-08	POWERHOUSE, SWITCHYARD GROUNDING SYSTEM
22	MT-PH-09	POWERHOUSE, SWITCHYARD FENCE
23	MT-PH-10	POWERHOUSE, SWITCHYARD, REINFORCEMENT
ACCESS ROAD		
24	MT-AR-01	ACCESS ROAD, NO.1 PLAN AND PROFILE KM.0+000 TO KM.0+600
25	MT-AR-02	ACCESS ROAD, NO.1 PLAN AND PROFILE KM.0+600 TO KM.0+803.854
26	MT-AR-03	ACCESS ROAD, NO.2 PLAN AND PROFILE KM.0+000 TO KM.0+600
27	MT-AR-04	ACCESS ROAD, NO.2 PLAN AND PROFILE KM.0+600 TO KM.0+990.474
ELECTRO – MECHANICAL EQUIPMENT		
28	MT-EM-01	MAIN POWER SINGLE LINE DIAGRAM
29	MT-EM-02	COMPRESS AIR SYSTEM SCHEMATIC DIAGRAM
30	MT-EM-03	WATER SUPPLY AND DRAINAGE SCHEMATIC DIAGRAM

KINGDOM OF THAILAND			
MINISTRY OF ENERGY			
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
MAE TUEN HYDROPOWER PROJECT			
ELECTRO – MECHANICAL EQUIPMENT			
GENERAL			
LIST OF DRAWINGS			
DESIGNED <i>[Signature]</i> 26.04.05		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
DRAWN <i>[Signature]</i>		REVIEWED <i>[Signature]</i>	
CHECKED <i>[Signature]</i>		RECOMMENDED <i>[Signature]</i>	
PROJECT MANAGER <i>[Signature]</i> 27/08/13		DRAWING NO. MT-GN-00	
DATE		SHEET NO. 00 OF 30	

3			
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1			
NO.	DATE	REVISIONS	CHECKED
			APPROVED
			DEC

ABBREVIATIONS :

A	CROSS-SECTION AREA OF FLOW	MAX.
AC	ASBESTOS CEMENT PIPE	M.S.L.
AGG.	AGGREGATE	MISC.
ALT	ALTERNATIVE	N.
APPROX.	APPROXIMATE	n.
AZ.	AZIMUTH	N.F.
B	BEGINNING OF SURVEY	NGL.
BC	BEGINNING OF CURVE	NO. OR #
BF	BOTTOM FACE	N.W.L
B	BEAM	OD
B.M.	BENCH MARK	O.F.
BOTT.	BOTTOM	O&M
BRG.	BEARING	PC
C.B.R.	CALIFORNIA BEARING RATIO	PL
C/C	CENTER TO CENTER	PL
CL	CENTER LINE	P.O.C
CL	CLEARANCE	P.O.T
CM. OR cm.	CENTIMETER	P.O.S.T
CM./S OR cm./s	CENTIMETER PER SECOND	PRC.
COL.	COLUMN	PT
CONC.	CONCRETE	PVC
D	DEGREE OF CURVE	PVC
DB	DEFORM BAR	P.V.
d	DEPTH OF WATER	P.W.C.
DA. OR #	DIAMETER	P.Y.T.
DOH.	DEPARTMENT OF HIGHWAY	Q.
DWG.	DRAWING	QTY. QUAN.
DEDE.	DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	R
E	EAST	r
E	END OF SURVEY	RB.
EA.	EACH	RC.
E.C.	END OF CURVE	RD.
E.L.T.	THE ENGINEERING INSTITUTE OF THAILAND UNDER H.M. THE KING'S PATRONAGE	REF.
E.F.	ELEVATION	REINF.
EL. OR ELEV.	ELEVATION	RECD
EXIST.	EXISTING	RID.
EXP.	EXPANSION	SCH.
EXT.	EXTERIOR	SE.
EX	EXTERNAL DISTANCE OF CURVE	SETC.
f	FREE BOARD . FINISH	S.P.C.T
F.F.	FAR FACE	S.S.
F.S.L.	FULL SUPPLY LEVEL	SIR.
FTG.	FOOTING	STA.
HD.	HEAD	STD.
HEX.	HEXAGONAL	SIR.
HOR.	HORIZONTAL	SYMA.
ID.	INSIDE DIAMETER	T
I.F.	INSIDE FACE	TKH.
IN. OR "	INCH	T.F.
INT.	INTERIOR	T.S.
INV.	INVERT	TS.
K9.	KILOGRAM	TY.
Km	KILOMETER	V.
KPH.	KILOMETER PER HOUR	V.C
KSC.	KILOGRAM PER SQUARE CENTIMETER	Vc.
L	LENGTH OF CURVE	VER.
LC.	LENGTH OF HORIZONTAL CURVE	VOL.
LONG.	LONGITUDINAL	W.
LT.	LEFT	W/C.
L.W.L.	LOW WATER LEVEL	W.
M. OR m.	METER	WATER CLOSET
M ² OR m ²	SQUARE METER	ANGLE
M ³ OR m ³	CUBIC METER	DEFLECTION ANGLE
MM. OR mm.	MILLIMETER	
M./S OR m./s	METER PER SECOND	
MIN.	MINIMUM	

SYMBOLS :

	TYPICAL NORTH ARROW
	CENTER LINE
	PAVED ROAD
	DIRT ROAD, LATITE ROAD OR TRACK
	VILLAGE
	CITY OR DISTRICT
	POND OR SWAMP
	CULVERT UNDER ROAD
	BRIDGE
	POLE
	TEST PIT
	EXISTING HAND AUGER
	EXISTING DRILL HOLES
	DRILL HOLES
	DEGREE, MINUTE, SECOND
	AT EQUAL DISTANCE BETWEEN CENTER TO CENTER
	B.M.
	STATION
	BC, EC, PC, PI, PCV, PVT.
	WATER LEVEL
	PLAN OF RIPRAP
	PLAN OF SLOPE RIPRAP
	SECTION OF DUMPED RIPRAP
	SECTION OF HAND PLACED RIPRAP
	SECTION OF SAND
	SECTION OF GRAVEL OR COARSE AGGREGATE
	SECTION OF EARTH
	SECTION OF BACKFILL
	SECTION OF CONCRETE
	STEEL SECTION
	ELEVATION OR PLAN OF EARTH CUT OR FILL
	ELEVATION OR PLAN OF ROCK CUT
	ELEVATION OR PLAN OF SLOPE
	NATURAL GROUND LEVEL
	CONTOUR LINE
	RIVER, STREAM OR NATURAL DRAIN
	FLOW
	SLOPE DIRECTION
	SLOPE RATIO

GENERAL NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS UNLESS OTHERWISE SHOWN.
2. DURING THE CONSTRUCTION PERIOD, IT IS THE CONTRACTOR'S OBLIGATION TO CHECK THE CORRECTION OF ALL RELEVANT LOCATIONS, DIMENSIONS, ELEVATIONS AND OTHER DATA AS PROVIDED BY THE DRAWINGS AND TECHNICAL SPECIFICATIONS BEFORE IMPLEMENTATION OF THE WORKS.
3. IN CASE OF ANY DETAILS NOT MENTIONED OR NOT SHOWN IN THE DRAWINGS OR TECHNICAL SPECIFICATIONS, OR IN CASE OF ANY DISCREPANCY, DEFECTIVE DESCRIPTION, ERROR, DIMENSION OR AMBIGUITY BETWEEN OR IN ANY OF THE DRAWINGS, IT IS THE CONTRACTOR'S RESPONSIBILITY TO CORRECT AND/OR ADJUST THE RELEVANT DRAWINGS TO OBTAIN FIELD ENGINEER APPROVAL.
4. ADDITIONAL SYMBOLS, IF REQUIRED, ARE DEFINED IN THE RESPECTIVE DRAWINGS.
5. THE SPECIFICATIONS AND THE QUANTITIES OF MATERIALS ARE SPECIFIED IN THE TECHNICAL SPECIFICATIONS.
6. ALL PLAIN CONCRETE CORNERS ARE TO BE CHAMFERED 2 cm. UNLESS OTHERWISE SHOWN.
7. SODDING ON 0.10 M TOP SOIL SHALL BE PROVIDED ON EMBANKMENT SLOPES
8. IN CASE SLURSTONE OR SHALE OR MOOSTONE FOUNDATION, AS SOON AS FINISHED EXCAVATION TO FOUNDATION ELEVATION, SHOTCRETE OR LEAN CONCRETE MUST BE APPLIED IMMEDIATELY.

STRUCTURAL DESIGN NOTES :

1. THE ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE OF STANDARD CYLINDER (Ø0.15x0.30 m.) TEST AT AGE 28 DAYS SHALL BE AS THE FOLLOWING, UNLESS OTHERWISE SHOWN.

DESCRIPTION	f _c (ksc)
PRESTRESSED CONCRETE	350
REINFORCEMENT CONCRETE	210
LEAN CONCRETE	140

2. UNLESS OTHERWISE SHOWN, THE FOLLOWING CLEAR COVERING OF CONCRETE OVER REINFORCEMENT SHALL BE USED :
 - CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH 7.5 cm
 - CONCRETE EXPOSED TO EARTH OR WEATHER 5.0 cm
 - CONCRETE NOT EXPOSED TO EARTH OR WEATHER 2.5 cm.
3. THE REINFORCEMENT LAP SPICES SHALL NOT BE LESS THAN 50 DIAMETERS
4. EMBEDDED METALWORK SHALL BE SECURELY FASTENED IN POSITION BEFORE PLACING CONCRETE.
5. ALL CONSTRUCTION JOINT SHALL BE TREATED AS DIRECTED IN ORDER TO ASSUME THE BEST BOND.
6. A 5 cm (MIN.) LAYER OF LEAN CONCRETE SHALL BE PLACED BELOW CONCRETE STRUCTURES.
7. THE STRUCTURES SHALL BE PLACED ON UNDISTURBED SOILS AND BACKFILL AROUND
8. THE STRUCTURES SHALL BE WELL COMPACTED
9. ALL SIZES OF REINFORCING BARS AND STRUCTURAL STEELS ARE IN MILLIMETERS
10. ALL STRUCTURE STEELS SHALL BE CONFORMED TO T.I.S. 1227-2539.
11. REINFORCED STEEL BARS SHALL BE CONFORMED TO T.I.S. AS FOLLOW :
 - DEFORMED BARS (SD30) - T.I.S. 24-2548
 - ROUND BARS (SP24) - T.I.S. 20-2543
12. THE E.L.T. STANDARDS SHALL BE APPLIED FOR ALL STRUCTURES WHICH ARE NOT SPECIFIED IN STRUCTURAL DESIGN NOTE 1 TO 11.

KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
MAE TUEN HYDROPOWER PROJECT			
ELECTRO - MECHANICAL EQUIPMENT			
GENERAL			
SYMBOLS, ABBREVIATIONS AND GENERAL NOTES			
PANYA CONSULTANTS CO.,LTD.		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
3		DESIGNED	SUBMITTED
2		DRAWN	RECOMMENDED
1		CHECKED	APPROVED
NO.	DATE	REVISIONS	CHECKED
CONSULTANTS		DEDE	DATE
PROJECT MANAGER		DATE	DRAWING NO.
			SHEET NO.
			01 OF 30

TABLE 1 CLIMATOLOGICAL DATA FOR THE PERIOD 1981-2010

Station		BHUMBOL DAM		Elevation of station above M.S.L.		143 Meters								
Index station		48377		Height of barometer above M.S.L.		144 Meters								
Latitude		17o 14' 00" N		Height of thermometer above ground		1.25 Meters								
Longitude		89o 03' 00" E		Height of wind vane above ground		15.30 Meters								
				Height of rain gauge		1.00 Meters								
Elements	N-YEARS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
Pressure(hPa)														
Mean	30	1012.9	1010.8	1008.7	1007.1	1006.1	1006.2	1005.3	1005.5	1007.5	1010.4	1012.7	1014.2	1008.8
Mean Daily Range	30	2.7	2.9	3	2.7	1.7	0.7	0.5	0.9	1.6	1.7	1.9	2.3	1.9
Ext.Max.	29	1025.4	1023.6	1027.1	1017.4	1014.2	1012.4	1013.5	1012.4	1015	1018.3	1023.6	1025.6	1027.1
Ext.Min.	29	1010	1010	1010	1010	1010	1010	1010	1010	1010	1010	1010	1010.2	1010
Temperature(Celcius)														
Mean Max.	30	31.9	34.9	37.2	36.2	35.2	33.4	33	33	33	32.1	31.2	30.2	33.6
Ext.Max.	30	37.9	40.8	42.3	43.7	43	39.5	39	38.5	38	36.7	37.4	35.7	43.7
Mean Min.	30	17.5	19.9	23	25.2	25	24.8	24.6	24.4	23.7	22.6	20.2	17.2	22.3
Ext.Min.	30	16.7	18.6	21	23.4	24.1	24.2	24.2	23.7	23.1	22.2	19.4	16.9	16.9
Mean	30	23.7	26.7	29.7	30.9	29.2	28.5	28.2	28.1	27.5	26.4	24.8	22.7	27.2
Dew Point Temp.(Celcius)														
Mean	30	16.9	16.5	16.1	21.1	23.1	23	22.6	22.8	23.4	23	20.5	17.5	20.7
Relative Humidity(%)														
Mean	30	69	57	54	59	72	74	73	74	80	83	79	75	71
Mean Max.	30	88	78	74	77	87	88	86	88	93	95	94	93	87
Mean Min.	30	42	35	34	40	54	59	59	59	62	63	56	48	51
Ext.Min.	30	52	43	47	52	47	59	62	58	62	57	60	54	43
Visibility(Km.)														
07.00LST	30	6	6	6	8	11	11	12	11	11	9	8	7	9
Cloud Amount(1-10)														
Mean	30	2	2	2	3	6	8	8	8	6	6	4	2	5
Pon. Evaporation(mm.)														
Mean	30	108	135	183	193	159	133	134	129	119	104	96	97	133
Wind (Knots)														
Prev.Wind	30	E	W	W	W	W	W	W	W	W	E	E	E	-
Mean	30	0.8	1.3	1.7	1.8	1.5	1.8	1.9	2	0.9	0.4	0.4	0.5	1.2
Max.	30	23	30	30	40	30	30	33	30	28	25	36	30	40
Rainfall(mm)														
Mean	30	2.8	7.7	21.8	66.1	187.9	108.5	68.7	112	207.6	204.3	47.6	8	87.4
Mean Rainy Day	30	1	1	2	5	14	15	14	18	17	14	5	1	9
Daily Max.	30	36.7	87.6	72	93.9	247.1	85.7	44.7	80.6	100.7	155.3	68.4	64.9	247.1
Phenomena(Days)														
Fog	30	0	0	0	0	0	0	0	0	0	0	0	0	0
Haze	30	29	27	29	21	3	0	0	0	2	9	18	25	14
Hail	30	0	0	0	0	0	0	0	0	0	0	0	0	0
ThunderStorm	30	0	0	2	5	8	4	2	3	6	5	1	0	3
Squall	30	0	0	0	0	0	0	0	0	0	0	0	0	0

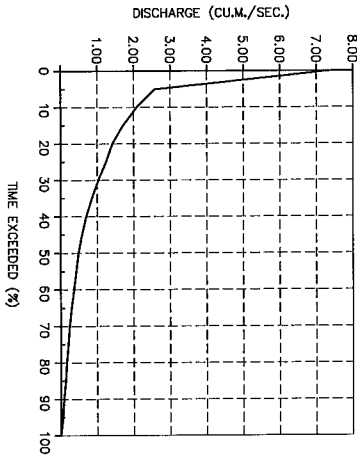


FIGURE 1 FLOW DURATION CURVE

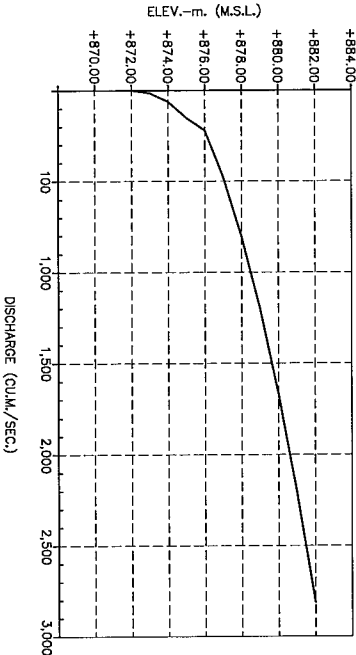
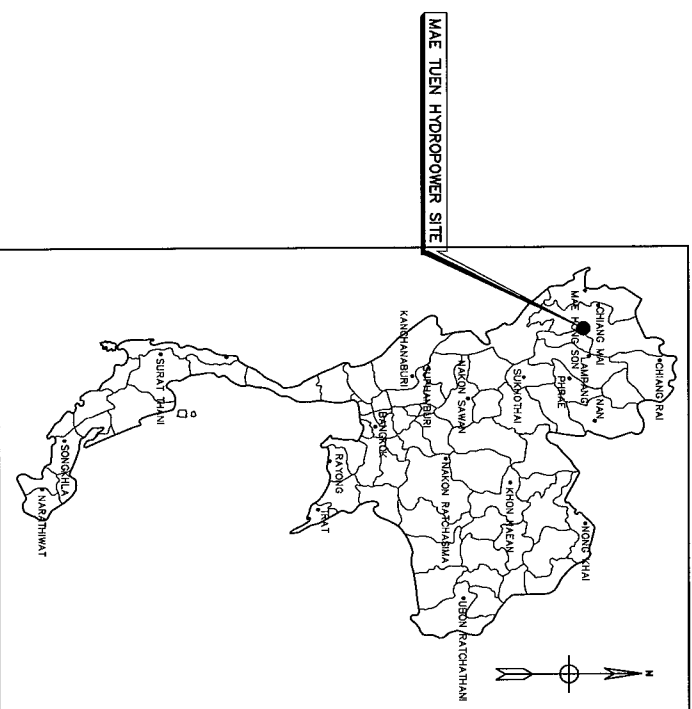


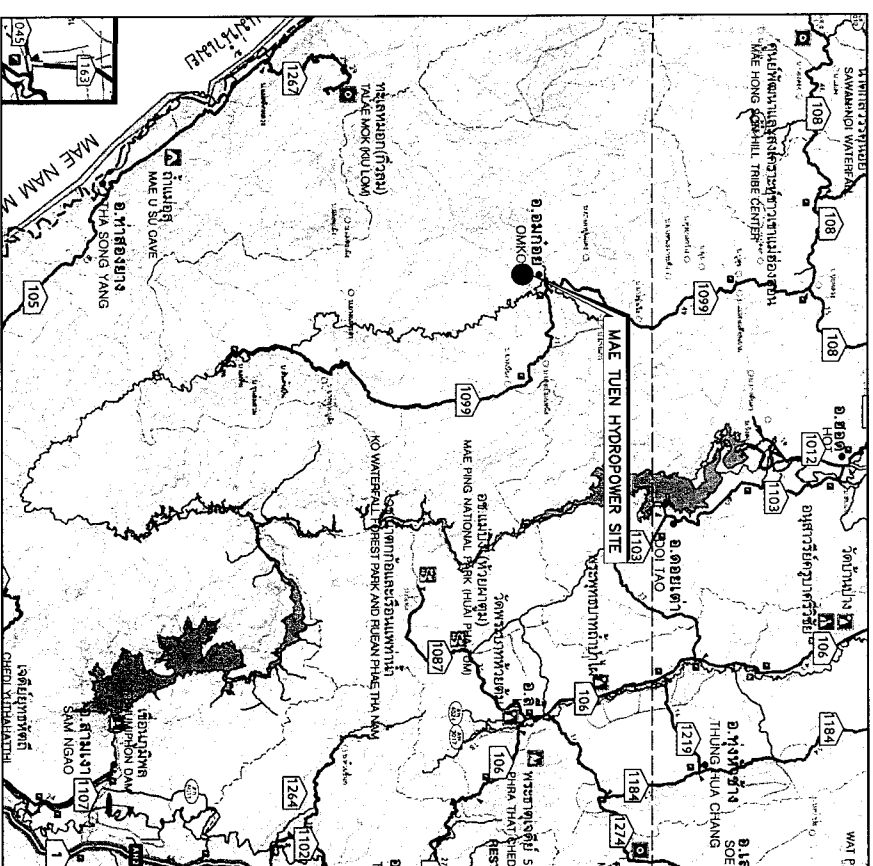
FIGURE 2 RELATIONSHIP BETWEEN TAIL WATER LEVEL AND DISCHARGE AT POWERHOUSE

- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MT-GN-01.

KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY				DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
MAE TUEN HYDROPOWER PROJECT				ELECTRO - MECHANICAL EQUIPMENT GENERAL			
HYDROLOGY DATA							
PANYA CONSULTANTS CO.,LTD.				DESIGNED BY <i>[Signature]</i> 14/2/2014			
				SUBMITTED BY <i>[Signature]</i> 14/2/2014			
				RECOMMENDED BY <i>[Signature]</i> 14/2/2014			
				CHECKED BY <i>[Signature]</i> 14/2/2014			
				APPROVED BY <i>[Signature]</i> 14/2/2014			
				PROJECT MANAGER <i>[Signature]</i> 14/2/2014			
				DATE 27/05/13			
				DRAWING NO. MT-GN-02			
				SHEET NO. 02 OF 30			



LOCATION MAP
NOT TO SCALE



MAE TUEN HYDROPOWER SITE LOCATION

NOT TO SCALE

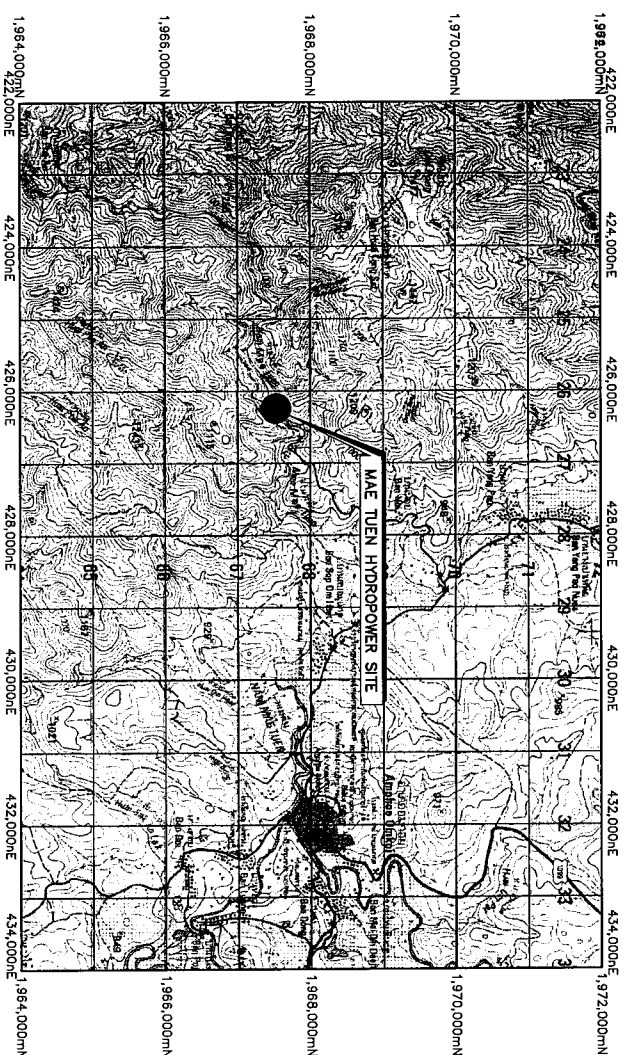
SYMBOLS :



NATIONAL HIGHWAYS
HIGHWAY DISTRICT OFFICE
SUB-DIVISION, HIGHWAYS POLICE STATION
HOSPITAL
RIVER, CANAL
PROVINCE, DISTRICT

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METRES. DISTANCES ARE IN KILOMETRES, UNLESS OTHERWISE SHOWN.
2. SITE LOCATION MAP IS BASED ON THE HIGHWAY MAP 1:1,000,000 SCALE, PUBLISHED BY ROADS ASSOCIATION OF THAILAND, 2012.
3. THE MAP OF MAE TIEN HYDROPOWER SITE AND RESERVOIR IS BASED ON TOPOGRAPHIC MAPS, SCALE 1:50,000 (SHEET 4644-I) AND PUBLISHED BY THE ROYAL THAI SURVEY DEPARTMENT, 1999.

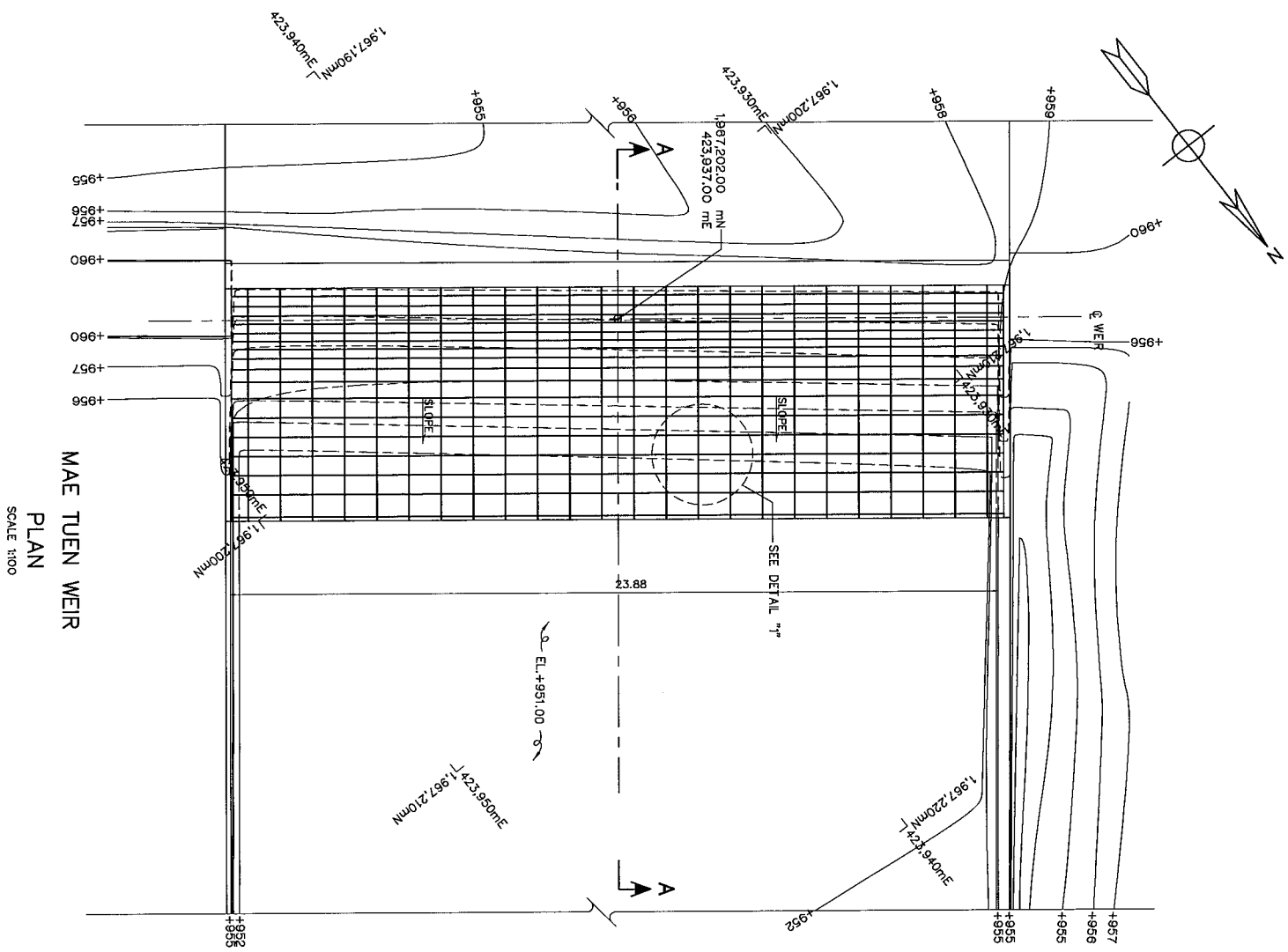


PROJECT AREA

SCALE 1:50,000



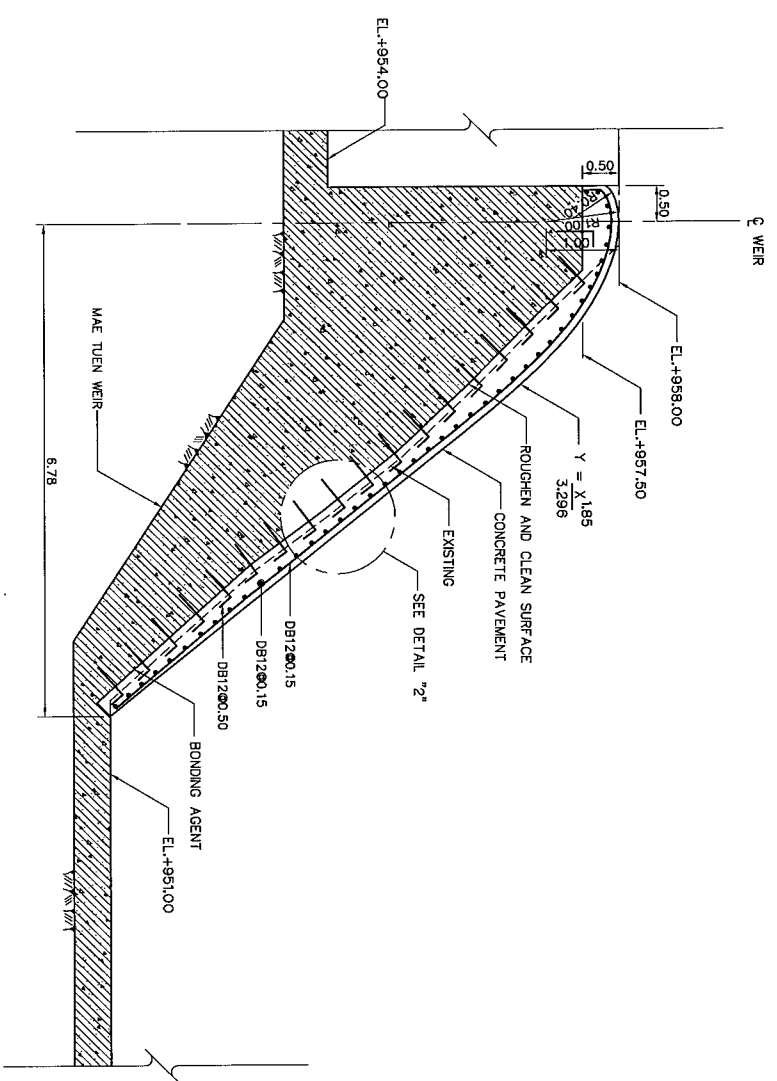
KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
MAE TUEN HYDROPOWER PROJECT			
ELECTRO - MECHANICAL EQUIPMENT GENERAL			
LOCATION MAP AND PROJECT AREA MAP			
DESIGNED <i>W. MUESTHA</i> DRAWN <i>W. MUESTHA</i> CHECKED <i>W. MUESTHA</i>		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY REVIEWED <i>[Signature]</i> SUBMITTED <i>[Signature]</i> RECOMMENDED <i>[Signature]</i> APPROVED <i>[Signature]</i>	
27/06/75 PROJECT MANAGER <i>[Signature]</i>		DRAWING NO. MT-GN-03 SHEET NO. 03 OF 30	



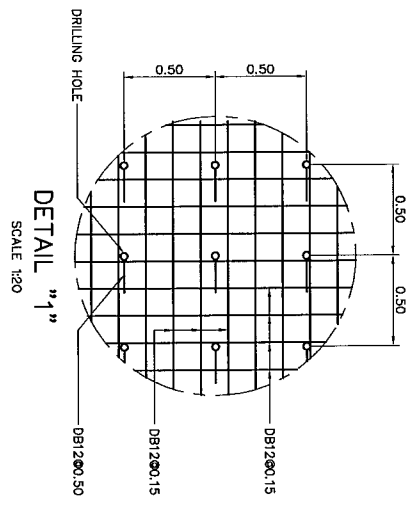
MAE TUEN WEIR
PLAN
SCALE 1:100

- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS
REINFORCEMENT BARS ARE IN MILLIMETERS, UNLESS OTHERWISE SHOWN.
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MT-CN-01.
- REFERENCE DRAWINGS :-
1. WEIR, INTAKE, PLAN SECTIONS AND DETAILS

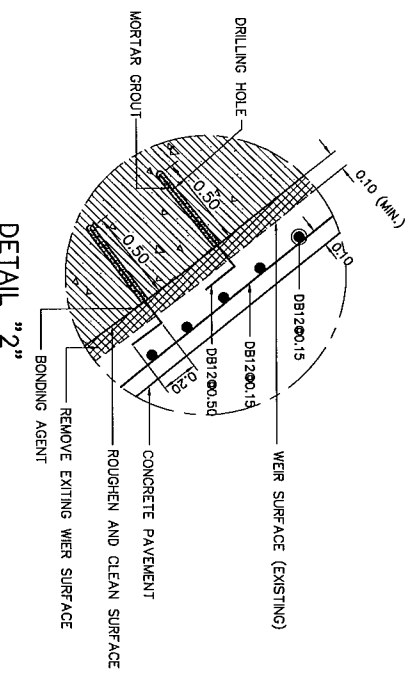
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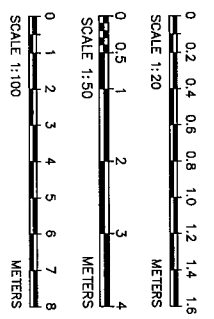
SECTION A-A
SCALE 1:50



DETAIL "1"
SCALE 1:20

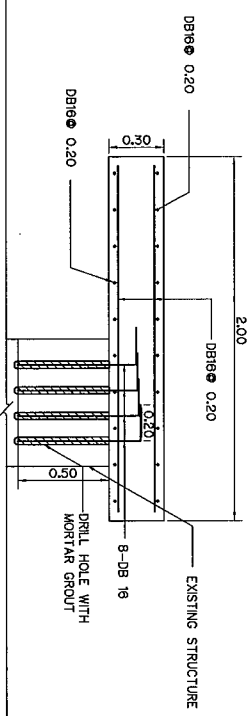
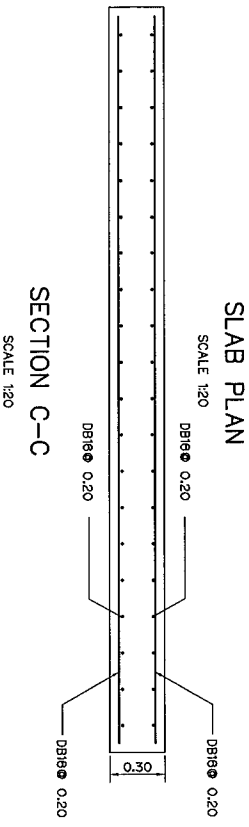
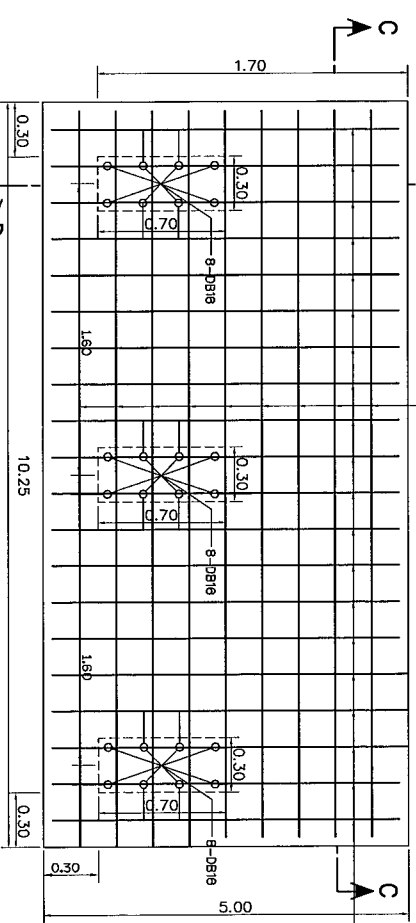
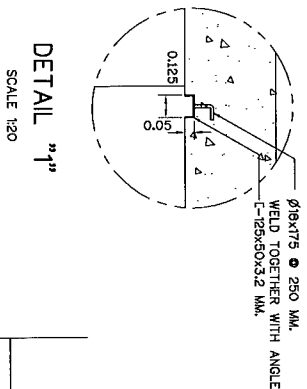
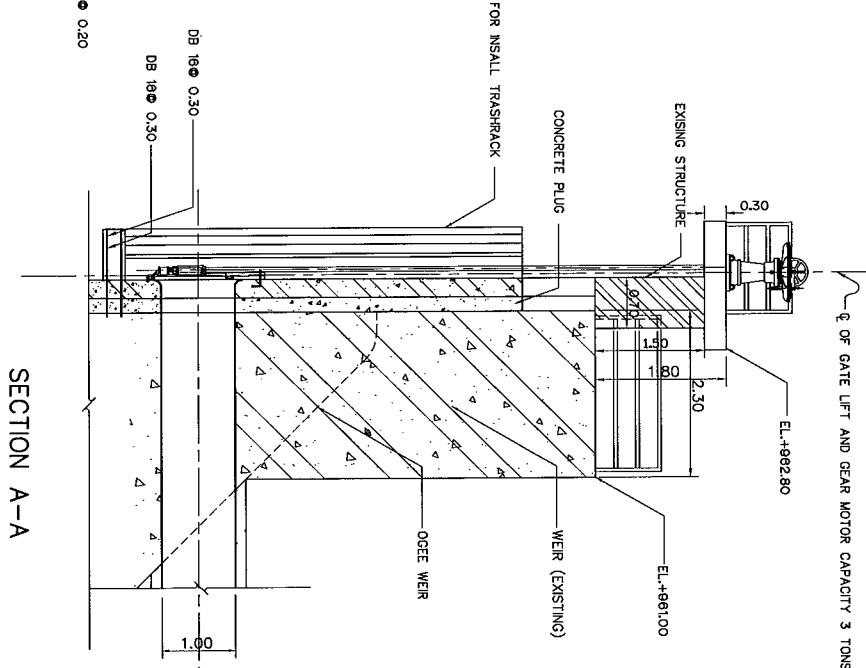
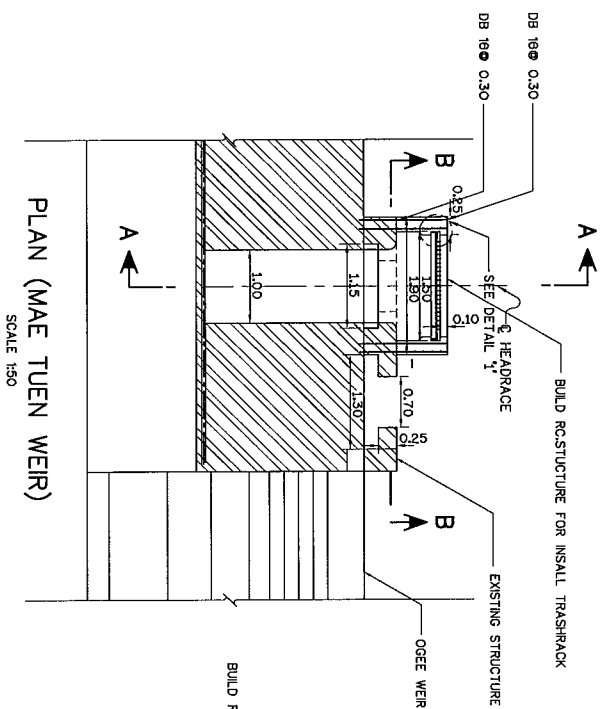


DETAIL "2"
SCALE 1:20

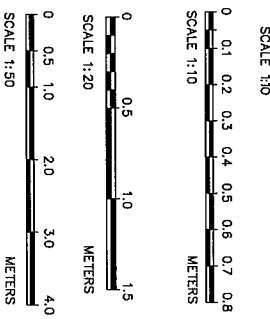
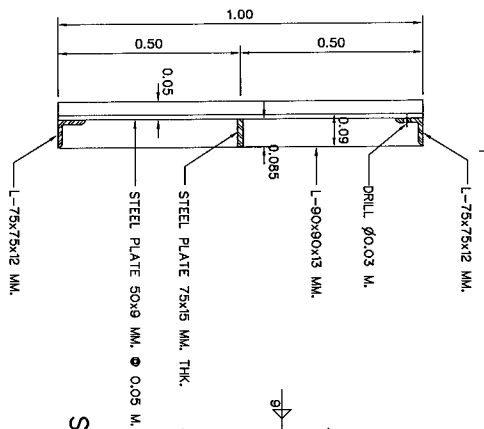
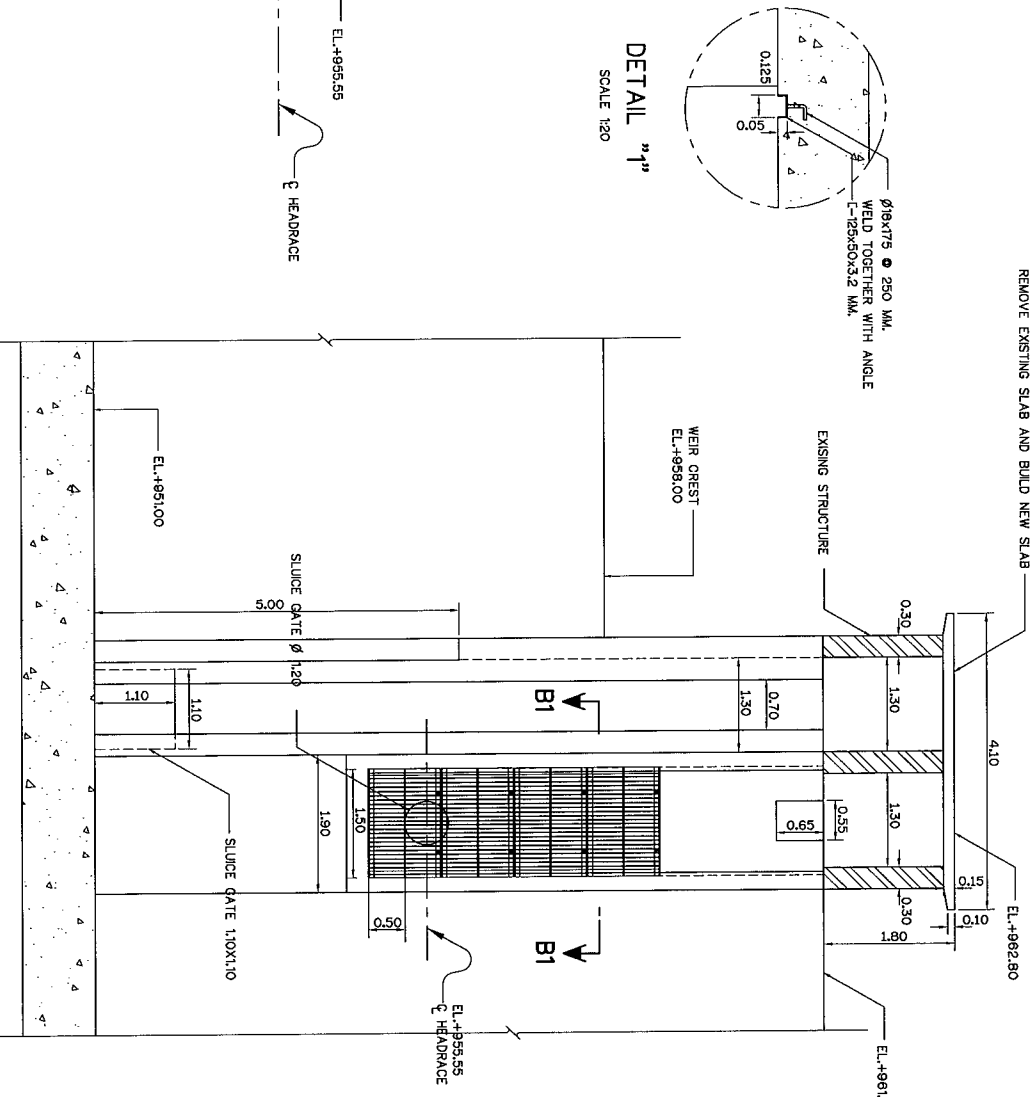
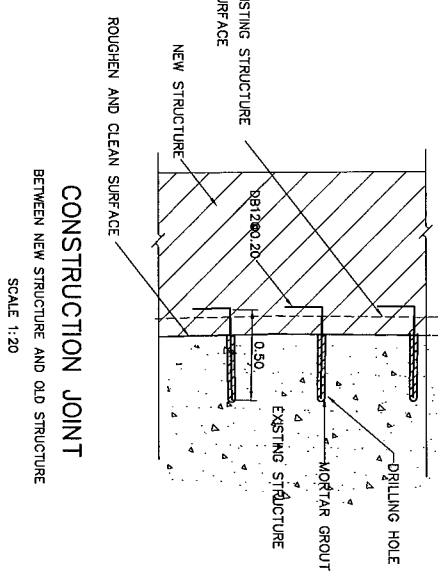
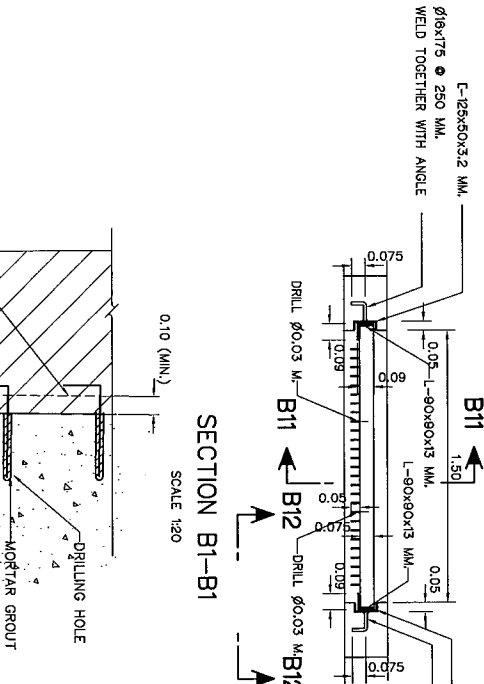


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1				
NO.	DATE	REVISIONS	CHECKED	DATE
CONSULTANTS				

KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
MAE TUEN HYDROPOWER PROJECT			
ELECTRO - MECHANICAL EQUIPMENT			
WEIR			
CONCRETE COVER			
PANA CONSULTANTS CO., LTD.		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
REVIEWED		APPROVED	
DESIGNED		DRAWING NO.	
CHECKED		PROJECT MANAGER	
DATE		DATE	
27/05/13		27/05/13	
MT-WE-01		SHEET NO.	
		05 OF 30	

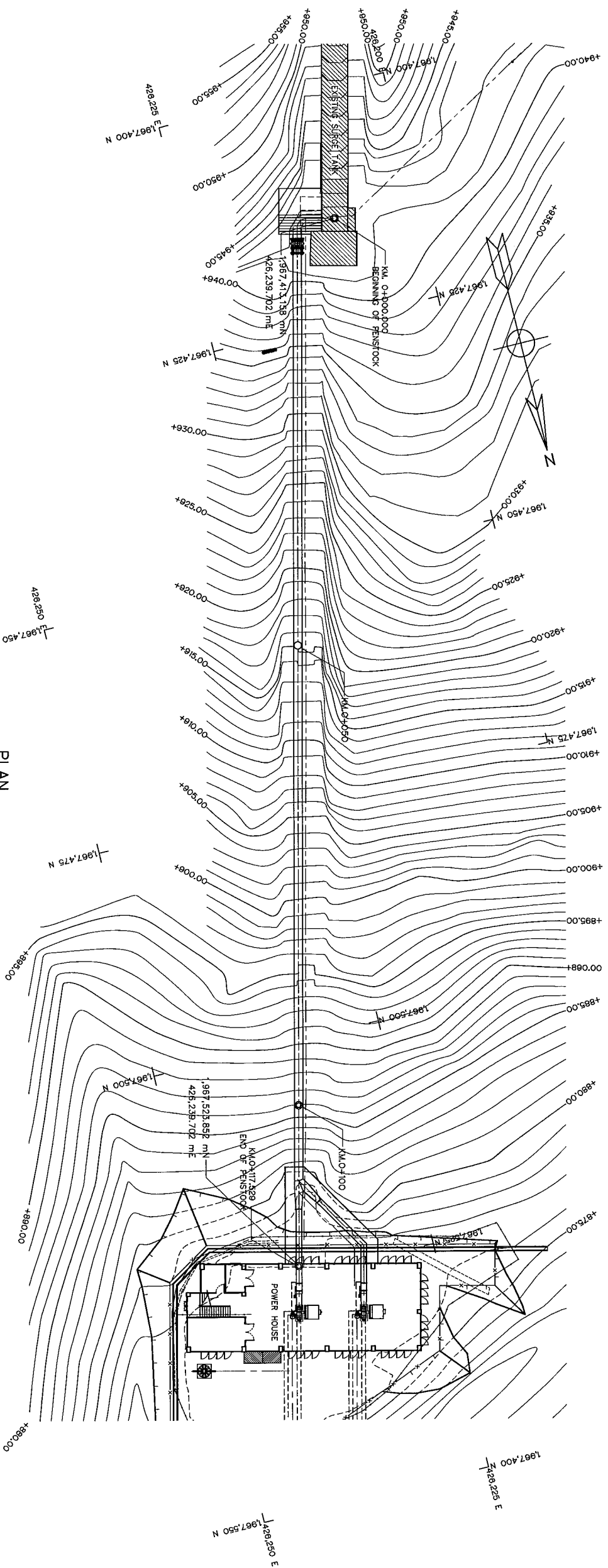


NOTES:
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MT-01-01

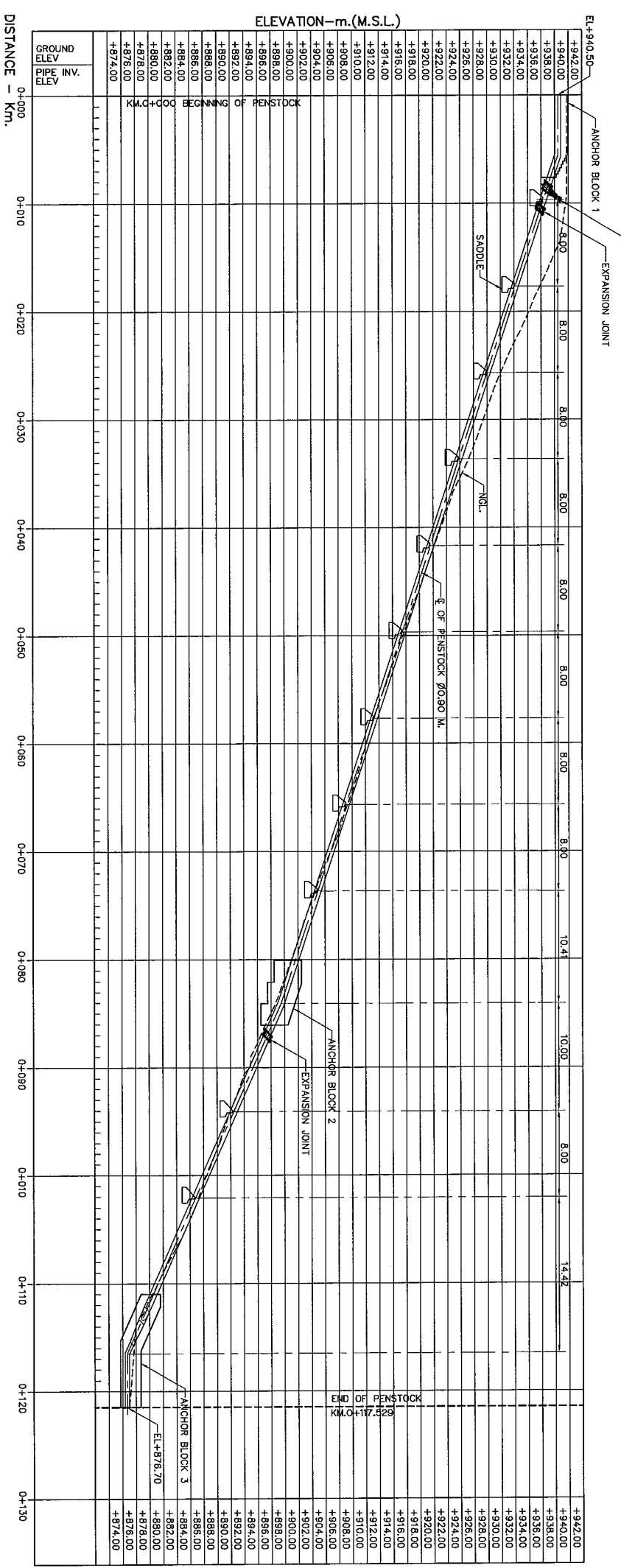


NO.	DATE	REVISIONS	CHECKED	APPROVED	DATE
1					
2					
3					

DESIGNED BY: RAJAT K. SINGH		REVIEWED BY: RAJAT K. SINGH	
DRAWN BY: RAJAT K. SINGH		RECOMMENDED BY: RAJAT K. SINGH	
CHECKED BY: RAJAT K. SINGH		APPROVED BY: RAJAT K. SINGH	
PROJECT MANAGER		SHEET NO. 06 OF 30	

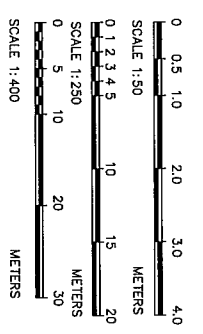


PLAN
SCALE 1:250



NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MT-CN-01
3. ALLOWABLE BEARING CAPACITY NOT LESS THAN 20 TON/M. 2

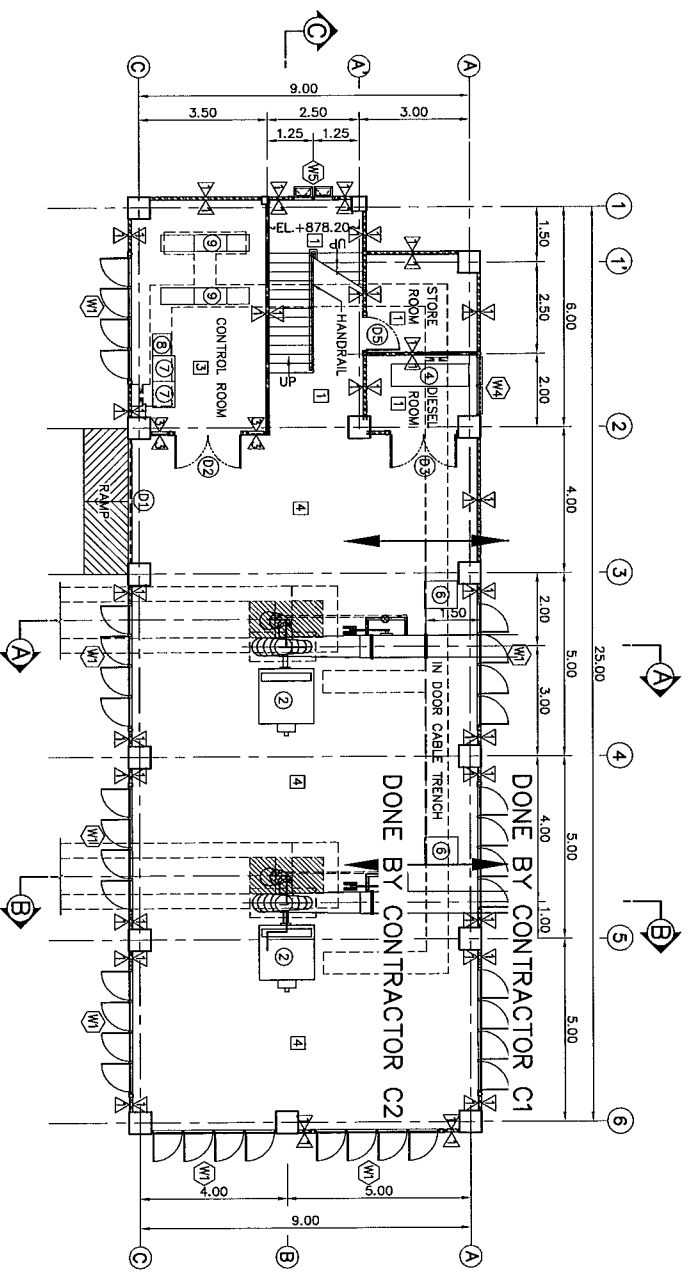


KINGDOM OF THAILAND
MINISTRY OF ENERGY
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY
MAE TUEH HYDROPOWER PROJECT

ELECTRO - MECHANICAL EQUIPMENT
PENSTOCK
PLAN AND PROFILE

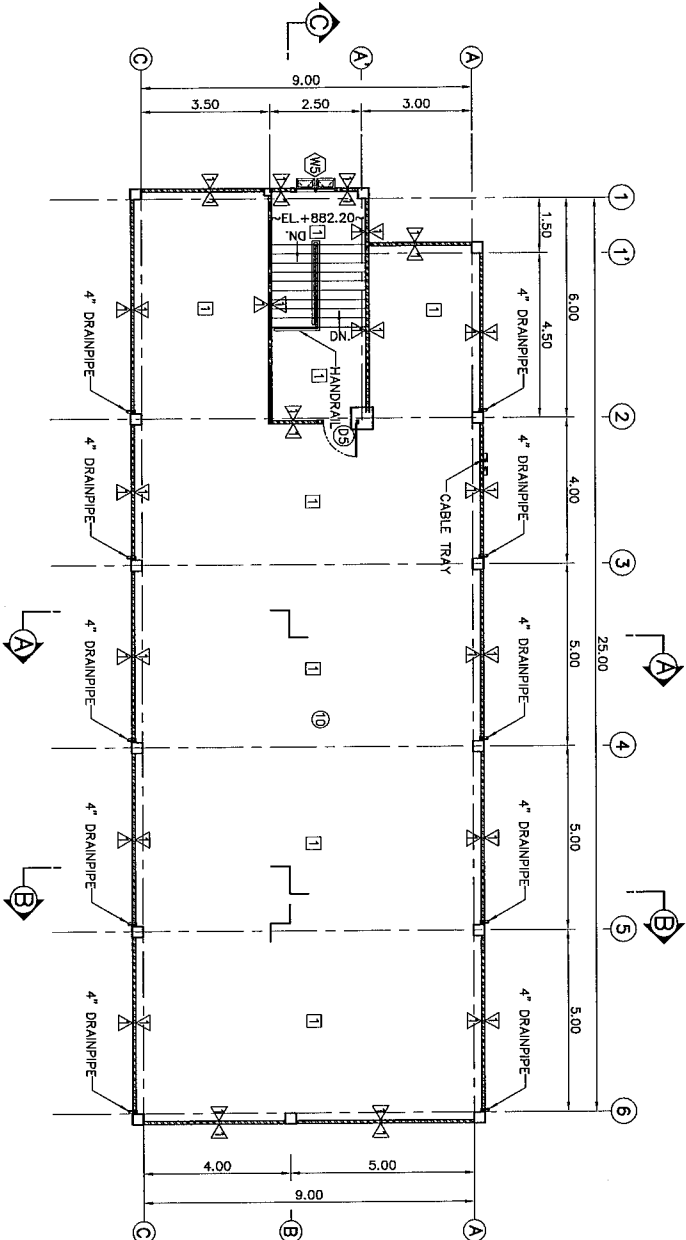
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY

DESIGNED BY	2014/03	SUBMITTED	2014/03
DRAWN BY	2014/03	RECOMMENDED	2014/03
CHECKED BY	2014/03	APPROVED	2014/03
DATE	2014/03	DRAWING NO.	MT-PS-01
PROJECT VESSEL	2014/03	SHEET NO.	13 OF 30



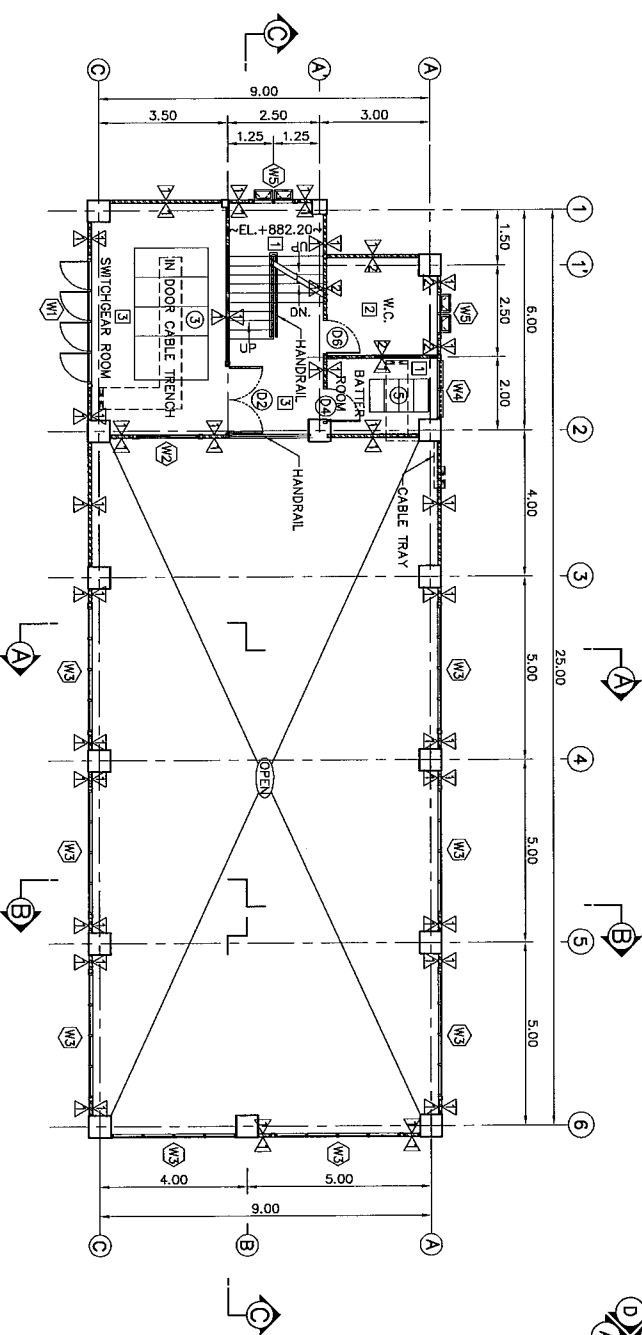
GROUND FLOOR PLAN (EL.+876.20)

SCALE 1:100



ROOF DECK PLAN (EL.+884.20)

SCALE 1:100

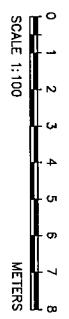


SECOND FLOOR PLAN (EL.+880.20)

SCALE 1:100

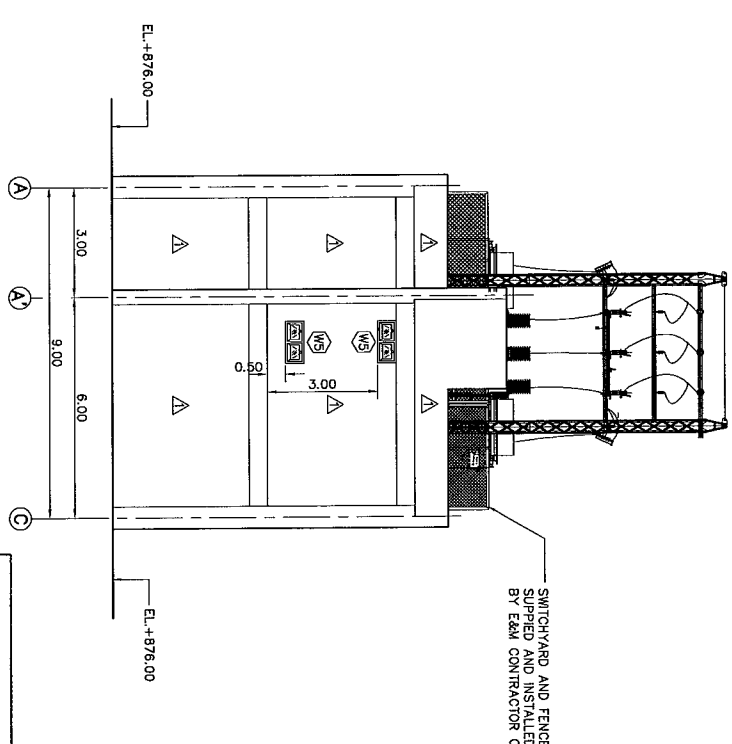
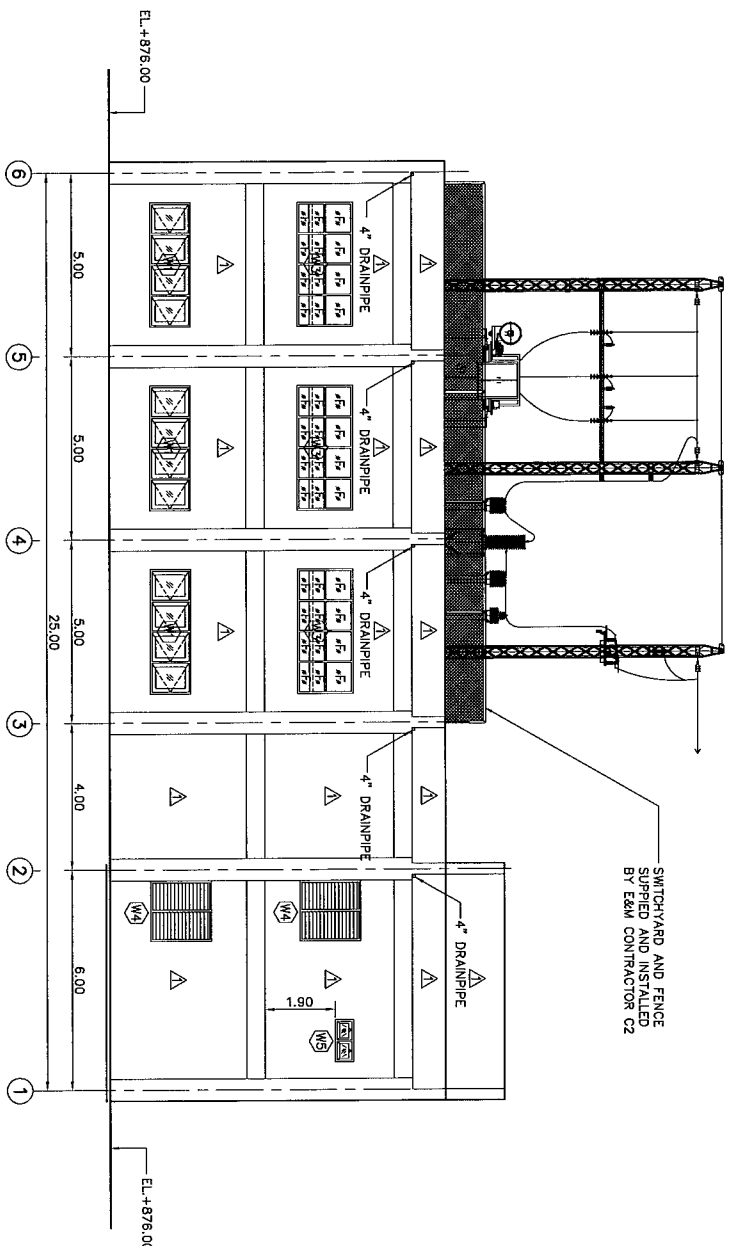
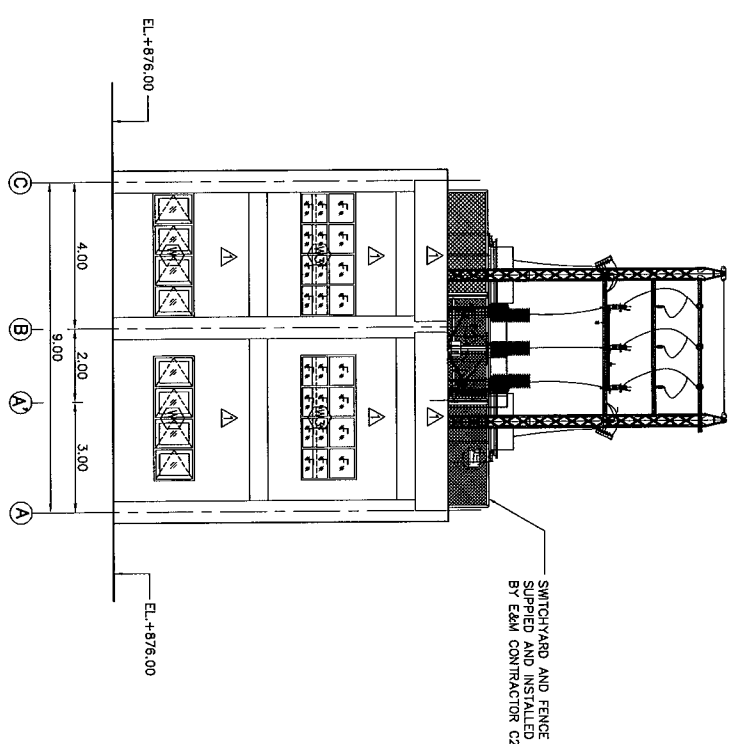
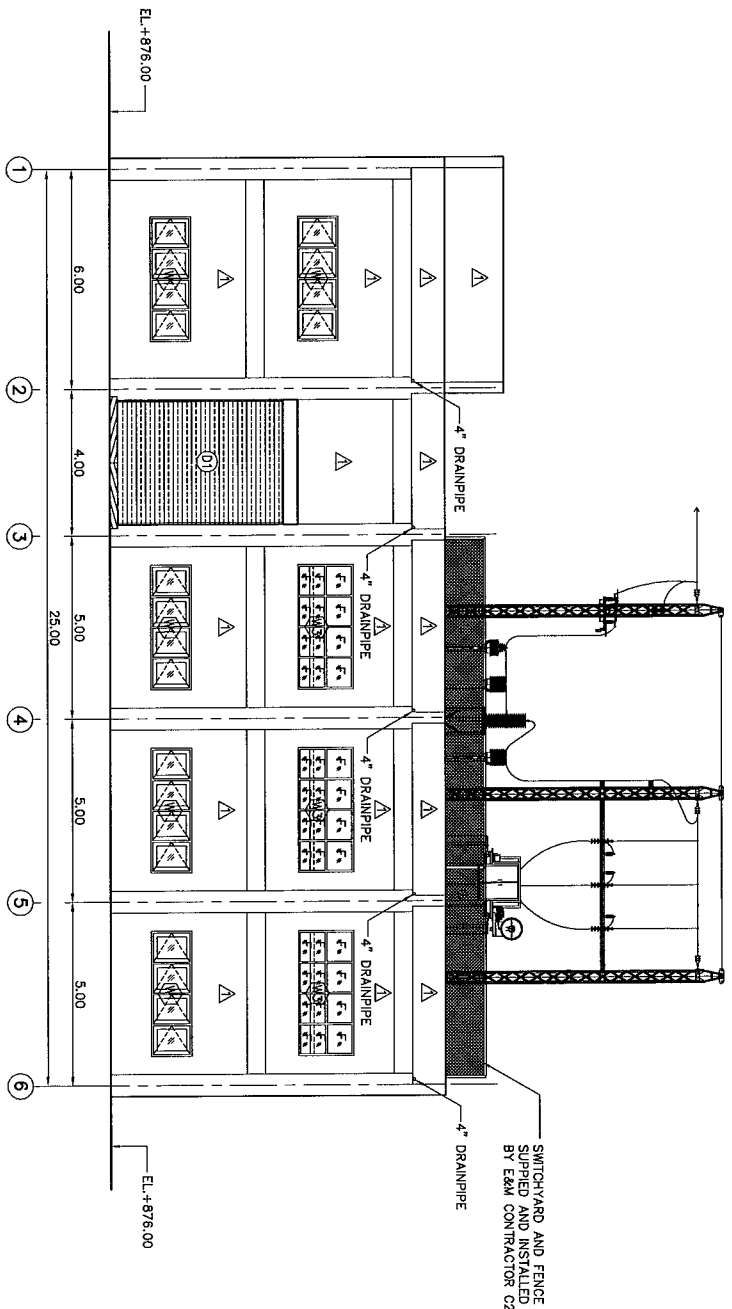
- DESCRIPTIONS :
- ① VERTICAL SHAFT KAPLAN TURBINE
 - ② GENERATOR
 - ③ SWITCH GEAR CUBICLES
 - ④ DIESEL GENERATOR SET
 - ⑤ BATTERY AND RACK
 - ⑥ OIL PRESSURE TANK
 - ⑦ AC AND DC SWITCHBOARD AND
 - ⑧ TURBINE-GOVERNOR BOARD
 - ⑨ MAIN CONTROL SWITCHBOARD
 - ⑩ BATTERY CHARGER CUBICLE
 - ⑪ SWITCHYARD
- WALL FINISH SYMBOLS :
- △ PLASTERING W/PAINT
 - △ 8"x8" NON SLIP CERAMIC TILES
 - △ GLASS W/ALUMINUM FRAME
- FLOOR FINISH SYMBOLS :
- COARSE FINISHED
 - ② 8"x8" NON SLIP CERAMIC FLOOR TILES
 - ③ 8"x8" CERAMIC FLOOR TILES
 - ④ ACID PROOF EPOXY
- CELLINGS :
- OFFICE, CONTROL ROOM, DIESEL ROOM, SWITCHGEAR ROOM, BATTERY ROOM AND STORE ROOM
 - PLASTERING W/PAINT
 - WC.
 - 9 mm THK. GYPSUM BOARD WITH T-BAR STUD 0.60X0.60
- NOTES :
- 1. ALL DIMENSIONS AND ELEVATIONS (A.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 - 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MT-GN-01.

- REFERENCE DRAWINGS :
- 1. POWERHOUSE, LAY-OUT MT-PH-01
 - 2. POWERHOUSE, ELEVATIONS MT-PH-03
 - 3. POWERHOUSE, SECTIONS (SHEET 1/2) MT-PH-04
 - 4. POWERHOUSE, SECTIONS (SHEET 2/2) MT-PH-05



NO.	DATE	REVISIONS	CHECKED	APPROVED
1				
2				
3				

KINGDOM OF THAILAND		DEPARTMENT OF ALTERNATIVE ENERGY	
MINISTRY OF ENERGY		DEPARTMENT OF ALTERNATIVE ENERGY	
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY		DEVELOPMENT AND EFFICIENCY	
MAE TUEN HYDROPOWER PROJECT		RECOMMENDED	
ELECTRO - MECHANICAL EQUIPMENT		APPROVED	
POWERHOUSE		REVIEWED	
PLANS		SUBMITTED	
DESIGNED BY: [Signature]		DRAWN BY: [Signature]	
CHECKED BY: [Signature]		PROJECT MANAGER: [Signature]	
DATE: 27/08/13		DRAWING NO.: MT-PH-02	
		SHEET NO. 15 OF 30	



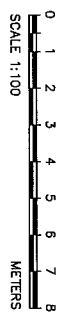
NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.

2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MT-GN-01.

REFERENCE DRAWINGS :

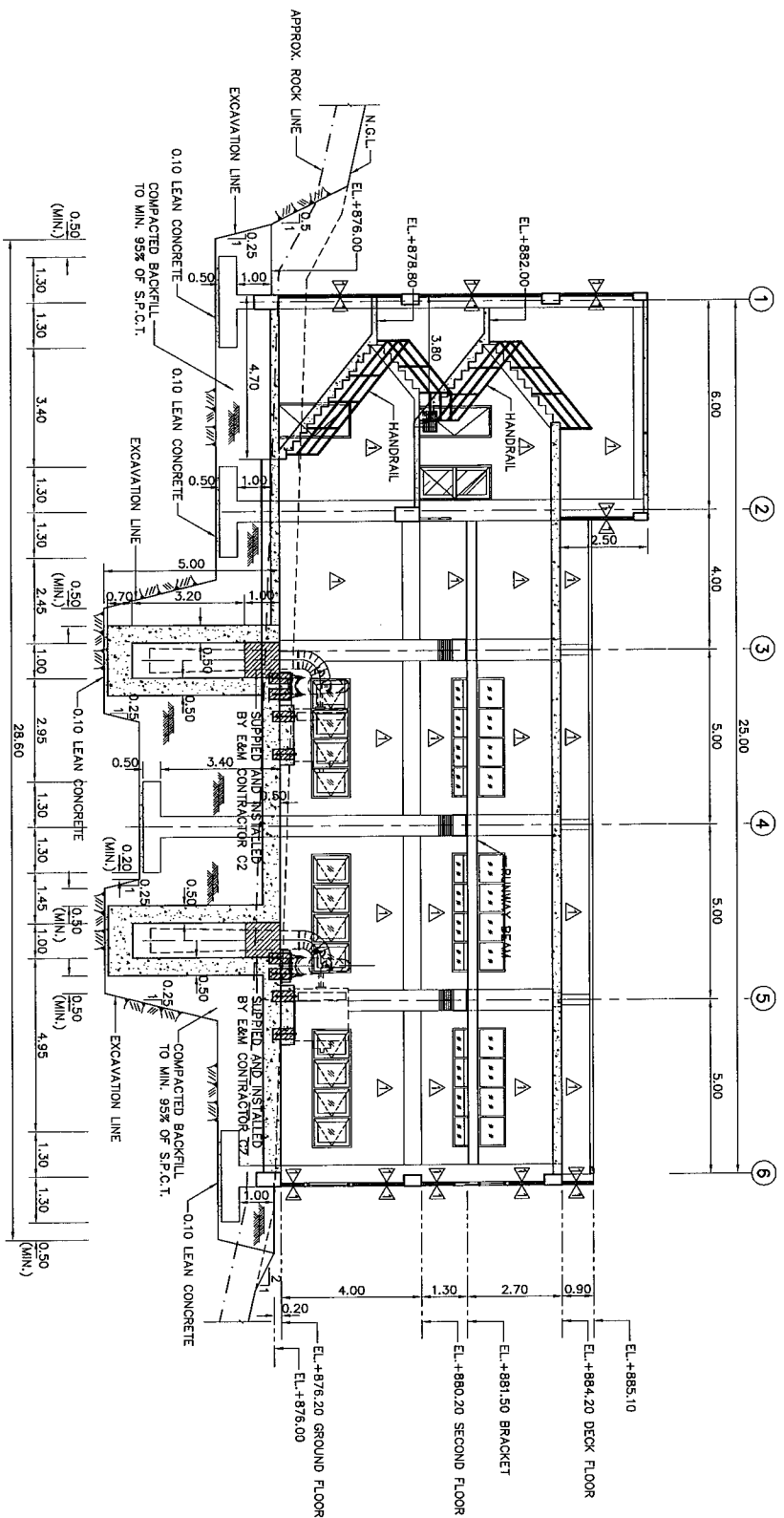
MT-PH-02



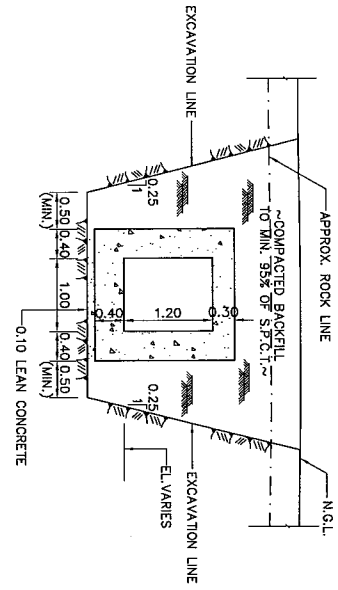
0	1	2	3	4	5	6	7	8
METERS								

0	1	2	3	4	5	6	7	8
METERS								

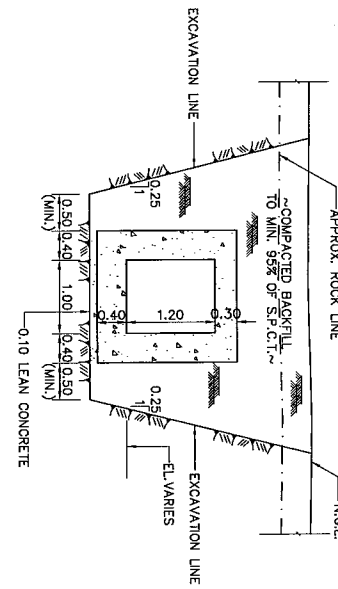
KINGDOM OF THAILAND			
MINISTRY OF ENERGY			
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
MAE TUEH HYDROPOWER PROJECT			
ELECTRO - MECHANICAL EQUIPMENT			
POWERHOUSE			
ELEVATIONS			
PAVVA CONSULTANTS CO., LTD.		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
SUBMITTED		REVIEWED	
DRAWN		RECOMMENDED	
CHECKED		APPROVED	
DATE		DATE	
PROJECT MANAGER		DRAWING NO.	
27/06/13		MT-PH-03	
		SHEET NO.	
		16 OF 30	



SECTION C-C
SCALE 1:100



SECTION D-D
SCALE 1:50



SECTION E-E
SCALE 1:50

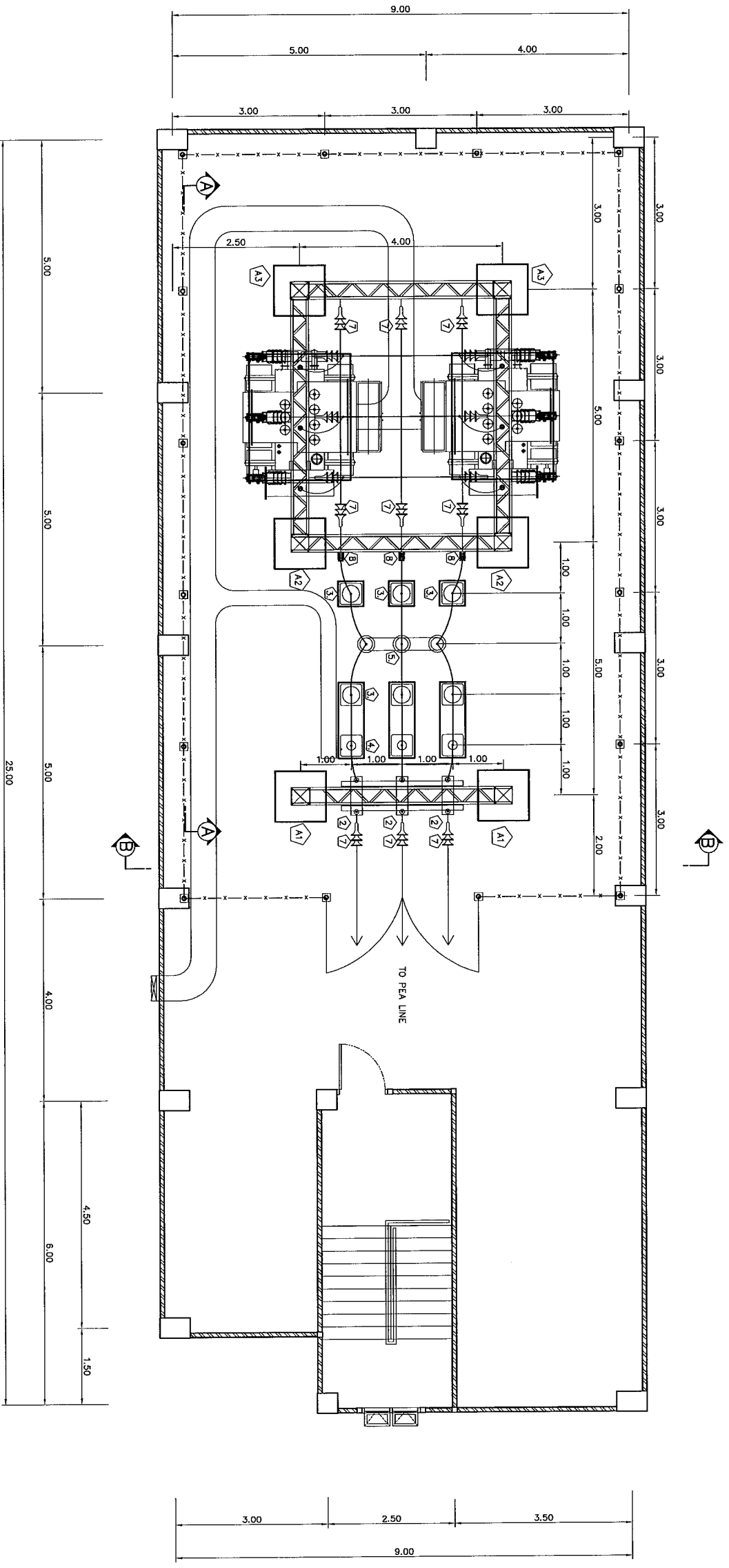
- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MT-GN-01.
 3. ALLOWABLE BEARING CAPACITY NOT LESS THAN 30 TON/M²

- REFERENCE DRAWINGS :
1. POWERHOUSE LAY-OUT
 2. POWERHOUSE PLANS
 3. POWERHOUSE SECTIONS (SHEET 1/2)

- MT-PH-01
MT-PH-02
MT-PH-04



KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
MAE TUEN HYDROPOWER PROJECT			
ELECTRO - MECHANICAL EQUIPMENT			
POWERHOUSE			
SECTIONS			
DESIGNED BY PANTHA CONSULTANTS CO., LTD. DRAWN BY S. S. S. S.		REVIEWED BY S. S. S. S.	
CHECKED BY S. S. S. S.		APPROVED BY S. S. S. S.	
DATE 27/06/13		SHEET NO. 18 OF 30	
PROJECT MANAGER S. S. S. S.		DRAWING NO. MT-PH-05	

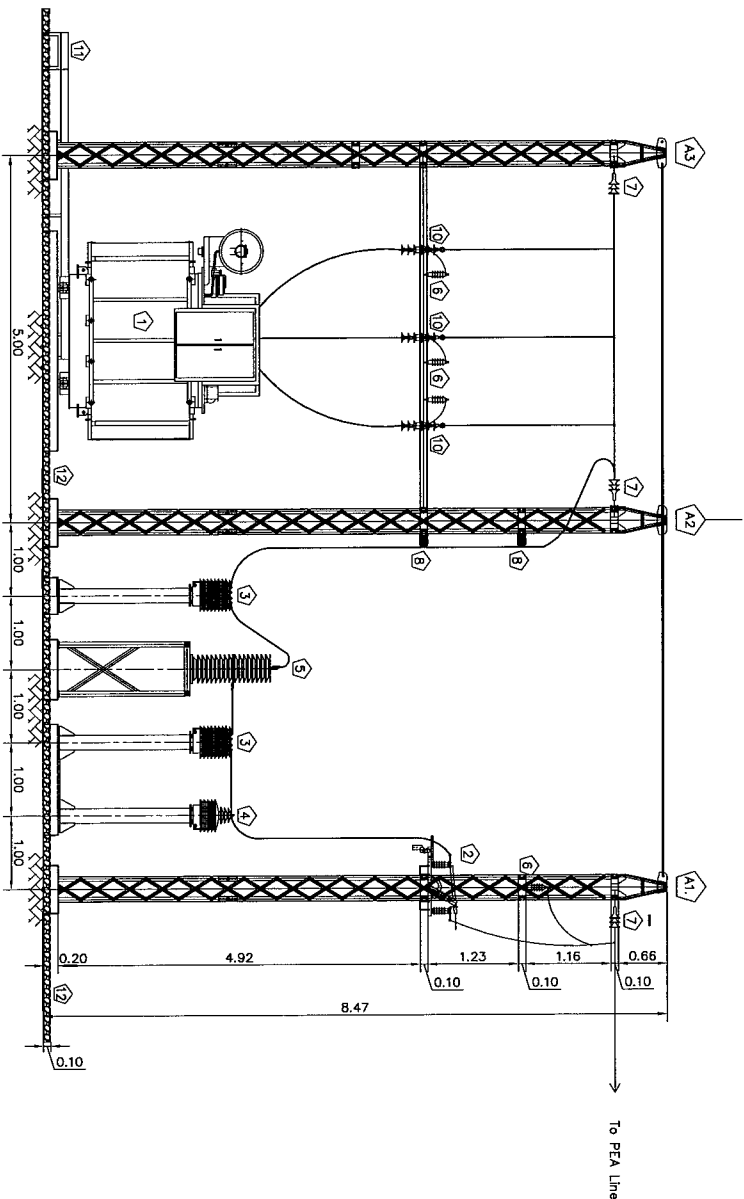


SWITCHYARD PLAN LAYOUT
SCALE 1:50

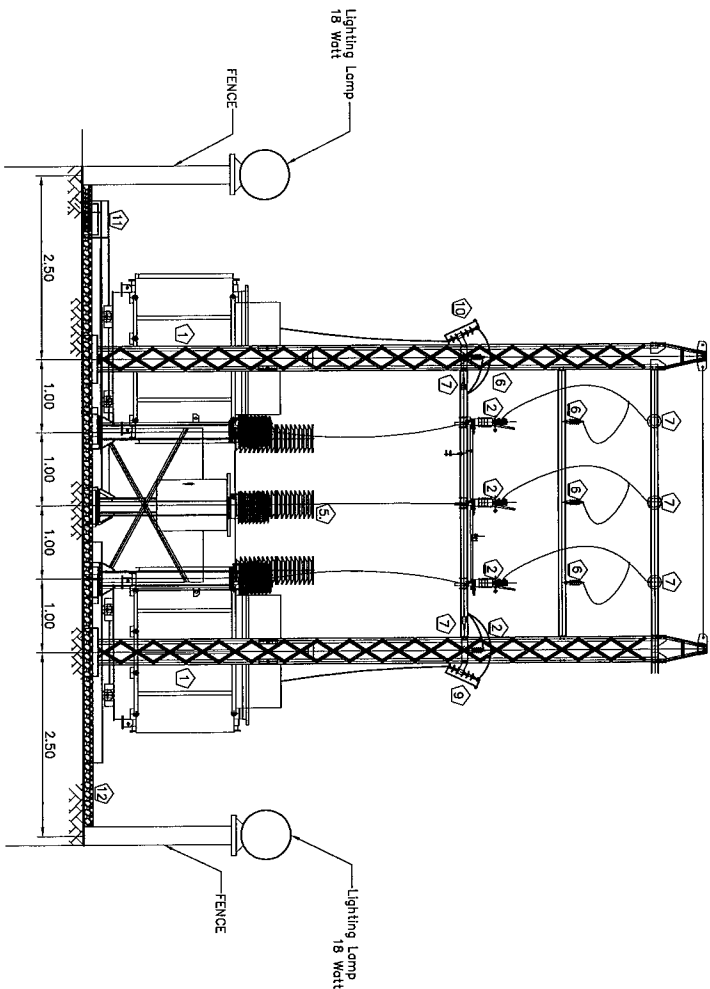


NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				

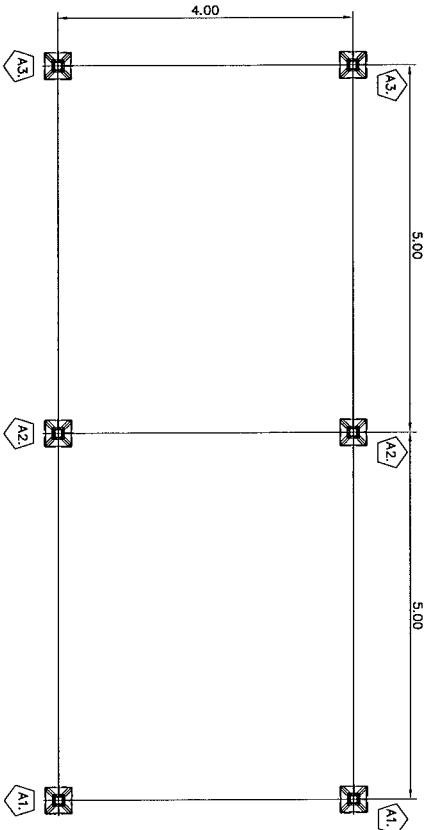
KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
MAE TUEN HYDROPOWER PROJECT			
ELECTRO – MECHANICAL EQUIPMENT			
SWITCHYARD PLAN LAYOUT			
DESIGNED DRAWN CHECKED PROJECT MANAGER		SUBMITTED RECOMMENDED APPROVED DRAWING NO.	
PAIYA CONSULTANTS CO., LTD.		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
27/06/13		19 OF 30	



SECTION A-A
SCALE 1:50



SECTION B-B
SCALE 1:50



OVERHEAD GROUND WIRE PLAN
SCALE 1:50

ITEM.	DESCRIPTION	QTY.	REMARK.
1	MAIN TRANSFORMER 22000/2300 V.	2	
2	DISCONNECTING SWITCH	1	
3	OUTDOOR CURRENT TRANSFORMERS RATIO	6	
4	OUTDOOR VOLTGE TRANSFORMER RATIO	3	
5	SFB CIRCUIT-BREAKER	1	
6	SURGE ARRESTERS	9	
7	SUSPENSION INSULATORS	45	
8	LINE POST INSULATORS	6	
9	LINE GROUND SWITCH	2	
10	22 KV. DROP OUT FUSE	6	
11	CABLE TRAY	1	
12	GRAVEL	1	

KINGDOM OF THAILAND
MINISTRY OF ENERGY
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY
MAE TUEN HYDROPOWER PROJECT
ELECTRO – MECHANICAL EQUIPMENT
POWERHOUSE
SWITCHYARD, SECTIONS

DESIGNED BY PANYA CONSULTANTS CO.,LTD.

DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY

REVIEWED BY

RECOMMENDED BY

DRAWN BY

APPROVED BY

CHECKED BY

DATE

PROJECT MANAGER

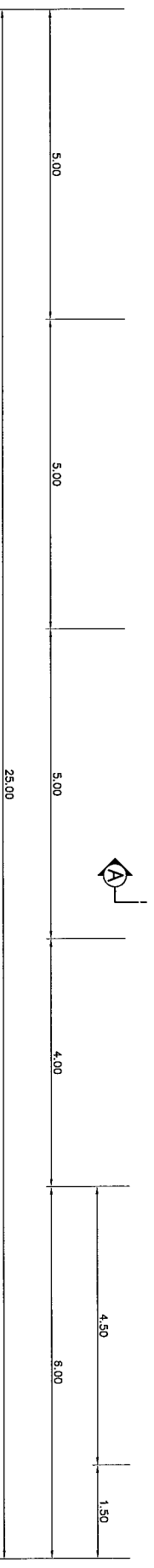
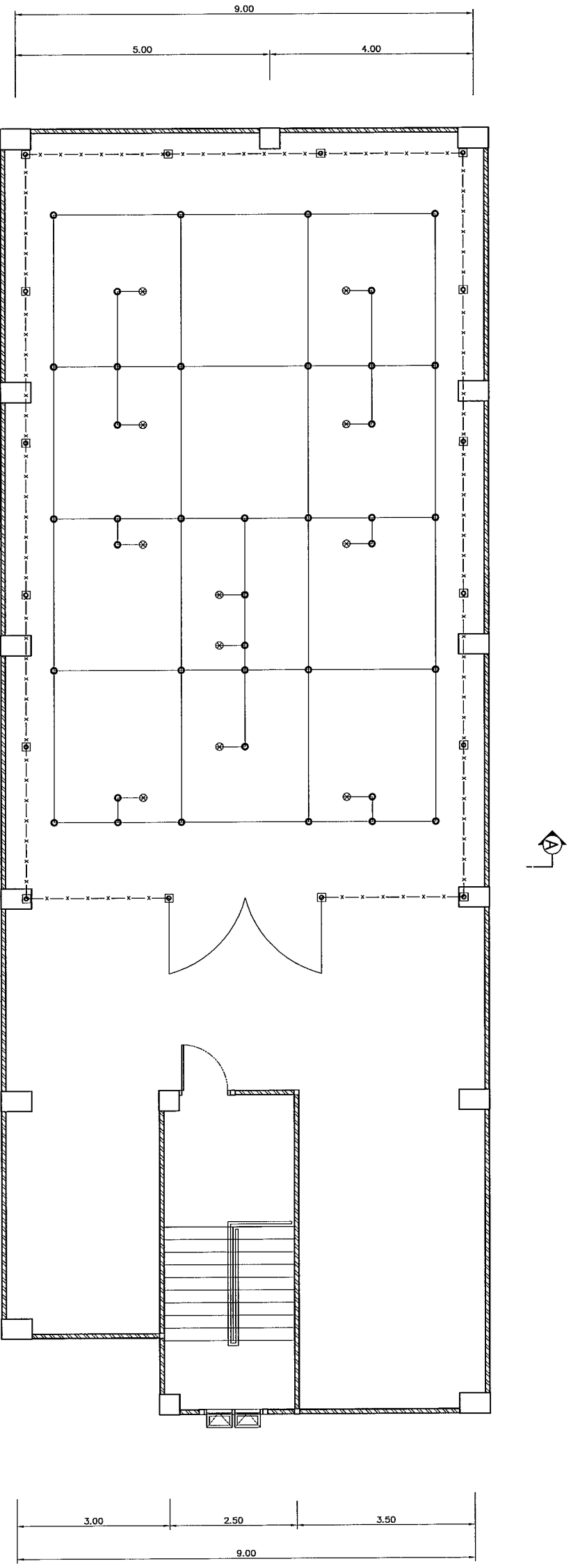
DATE

MT-PH-07

SHEET NO

20 OF 30

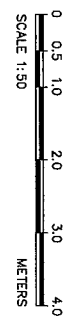
0 1 2 3 4 5 6 7 8
SCALE 1:100
METERS



SWITCHYARD GROUNDING SYSTEM
SCALE 1:50

- LEGENDS :
- GROUND TAP
 - ⊗ GROUND POINT FOR POWER PLANT EQUIPMENT GROUNDING
 - ⊗ CUPPER BAR FLAT CONDUCTOR

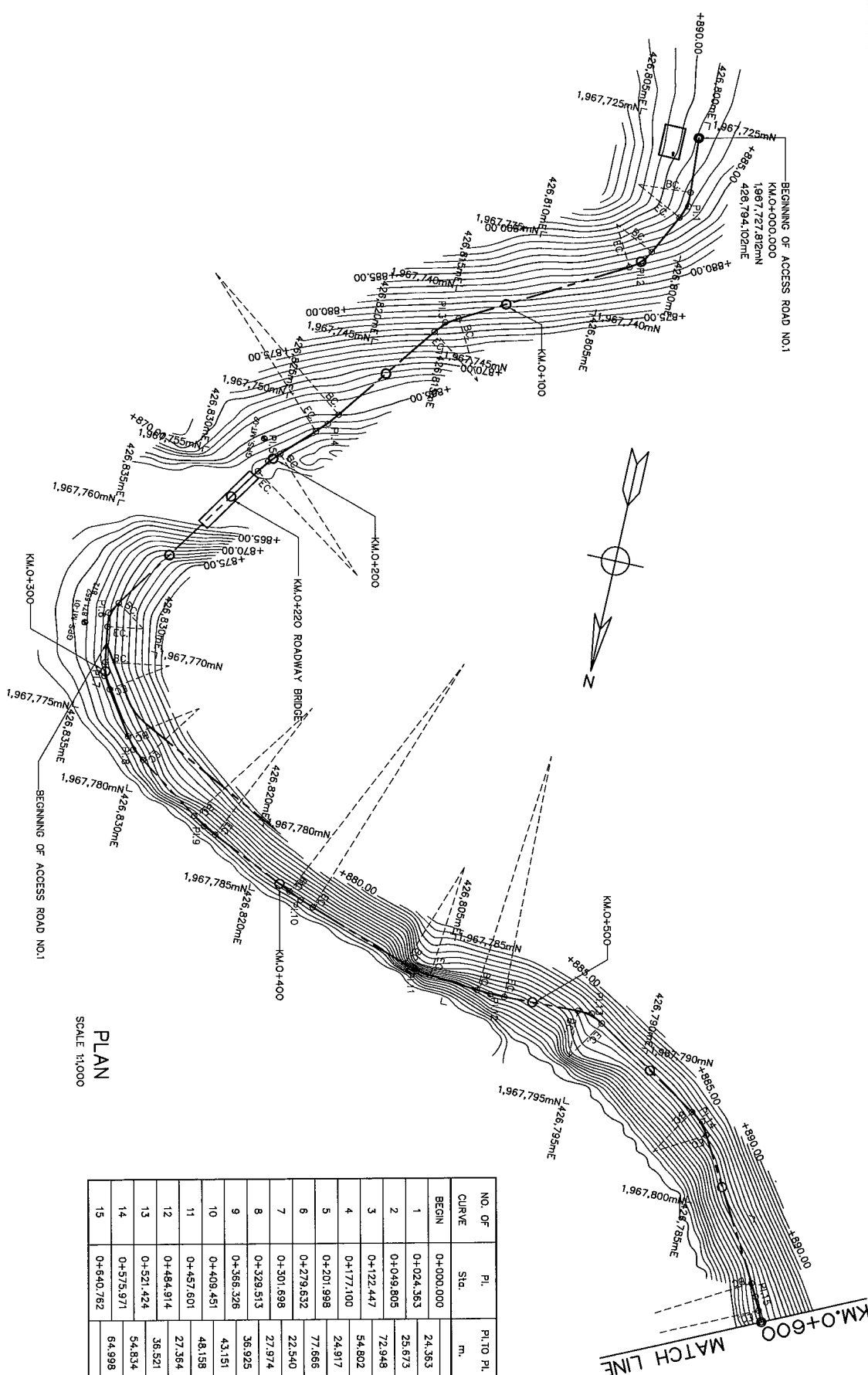
- NOTES :
1. GROUNDING CONDUCTOR, TAP AND RISER FROM GROUNDING NETWORK TO POWER EQUIPMENT SHALL BE FORMED BY BARE COPPER CONDUCTOR NOT LESS THAN 95 SQ.MM.
 2. GROUNDING SYSTEM RESISTANCE WILL NOT EXCEED 5 OHM.
 3. CONNECTOR TO WITH IN & BETWEEN THE GROUNDING NETWORK TO POWER PLANT EQUIPMENT WILL BE MADE BY THERMAL COWELED
 4. GROUND ROD WILL BE COPPER COVER STEEL DIAMETER 15.87 MM, 2.400 MM. LONG
 5. THIS DRAWING USE FOR GUIDE ONLY



NO.	DATE	REVISIONS	CHECKED	APPROVED	DEDE
1					
2					
3					

CONSULTANTS	DATE

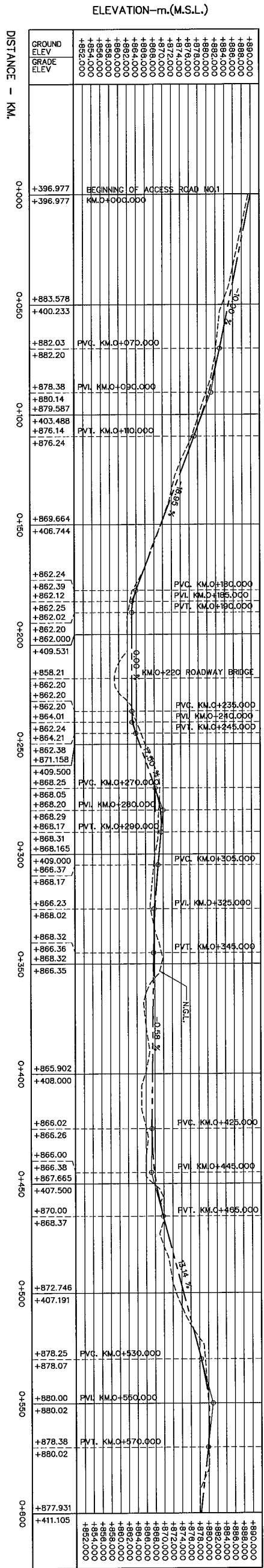
KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
MAE TUEN HYDROPOWER PROJECT			
ELECTRO – MECHANICAL EQUIPMENT			
POWERHOUSE			
SWITCHYARD GROUNDING SYSTEM			
DRAWN DATE PROJECT MANAGER		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY REMARKED SUBMITTED RECOMMENDED APPROVED	
7/11/504 27/08/13 MT-PH-08		7/11/504 27/08/13 MT-PH-08	
SHEET NO. 21 OF 30		SHEET NO. 21 OF 30	



PLAN
SCALE 1:1000

ALIGNMENT DATA CURVE

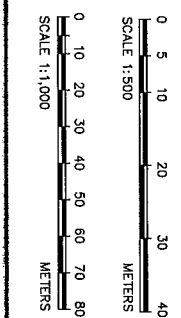
NO. OF CURVE	P.L. Sta.	P.L. TO P.L. m.	COORDINATE OF P.L.		ANGLE I	T m.	R m.	L m.	BC. Sta.	EC. Sta.	BEARING
			N	E							
BEGIN	0+000.000		1967,727.810	426,794.102							S 86°-03'-25" W
1	0+024.363	24.363	1967,726.137	426,786.797	30°-04'-38"	5.000	18.610	8.799	0+019.363	0+029.132	N 63°-51'-57" W
2	0+049.805	25.673	1967,737.445	426,746.749	34°-38'-18"	5.000	16.035	9.694	0+044.805	0+054.499	N 28°-13'-40" W
3	0+122.447	72.948	1967,801.108	426,711.130	24°-10'-46"	5.000	23.343	9.851	0+117.447	0+127.288	N 53°-24'-29" W
4	0+177.100	54.602	1967,833.774	426,687.429	8°-35'-48"	5.000	66.521	9.881	0+172.100	0+182.081	N 44°-48'-40" W
5	0+201.998	24.917	1967,851.451	426,646.599	11°-12'-33"	5.000	50.662	9.886	0+199.998	0+206.986	N 56°-01'-13" W
6	0+279.632	22.540	1967,864.889	426,685.164	43°-00'-32"	5.000	12.690	9.926	0+274.632	0+284.158	S 80°-26'-14" W
7	0+301.698	22.540	1967,861.321	426,682.904	24°-59'-20"	5.000	22.664	9.841	0+286.998	0+306.539	S 55°-56'-54" W
8	0+328.513	27.974	1967,875.671	426,536.717	20°-08'-31"	5.000	27.054	9.888	0+324.513	0+334.401	S 39°-02'-23" W
9	0+366.326	36.925	1967,845.439	426,516.517	10°-08'-36"	5.000	56.335	9.974	0+361.326	0+371.300	S 24°-53'-44" W
10	0+408.451	43.151	1967,806.287	426,500.352	5°-38'-36"	5.000	101.431	9.992	0+404.451	0+414.443	S 19°-15'-05" W
11	0+457.601	48.158	1967,760.833	426,484.473	14°-11'-58"	5.000	40.144	9.849	0+452.601	0+462.550	S 5°-03'-08" W
12	0+484.914	27.364	1967,733.578	426,482.094	6°-35'-27"	5.000	66.838	9.899	0+479.914	0+489.803	S 1°-32'-19" E
13	0+521.424	36.521	1967,697.088	426,483.044	33°-33'-01"	5.000	18.587	9.713	0+516.424	0+526.137	S 32°-00'-41" W
14	0+575.971	54.534	1967,650.571	426,453.977	28°-30'-08"	5.000	19.689	9.793	0+570.971	0+580.764	S 80°-30'-47" W
15	0+640.762	64.998	1967,618.578	426,397.399	4°-25'-41"	5.000	129.328	9.895	0+635.762	0+645.757	



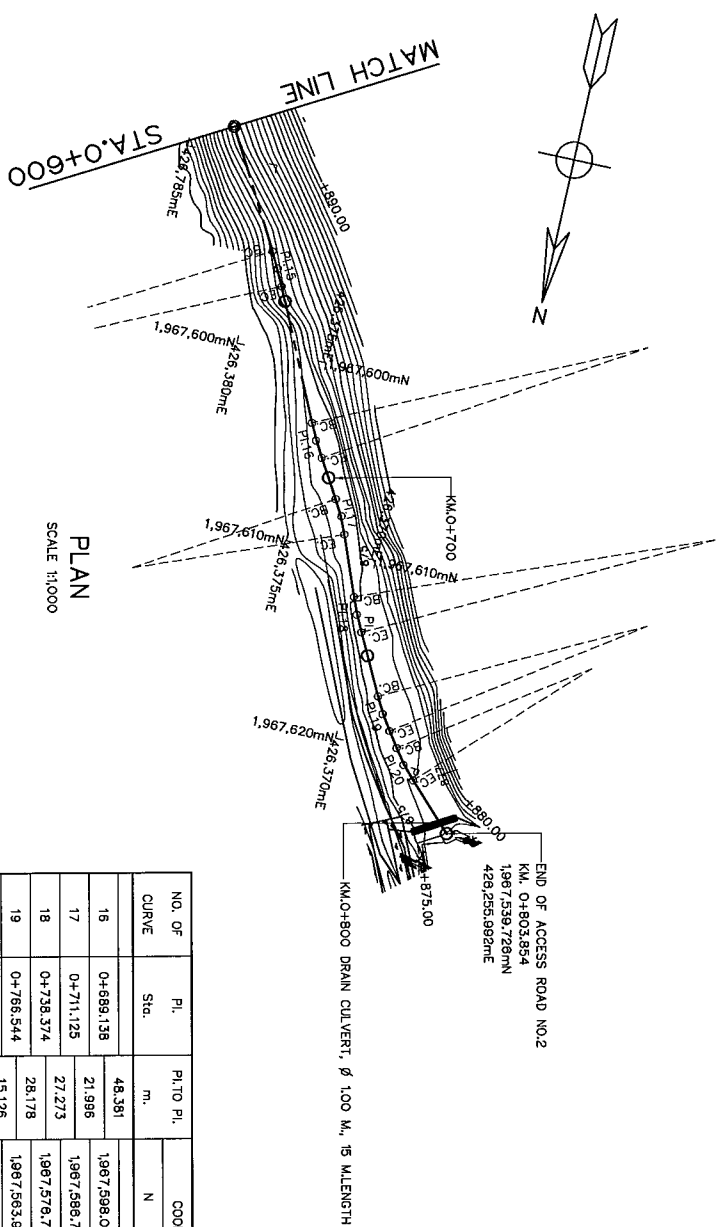
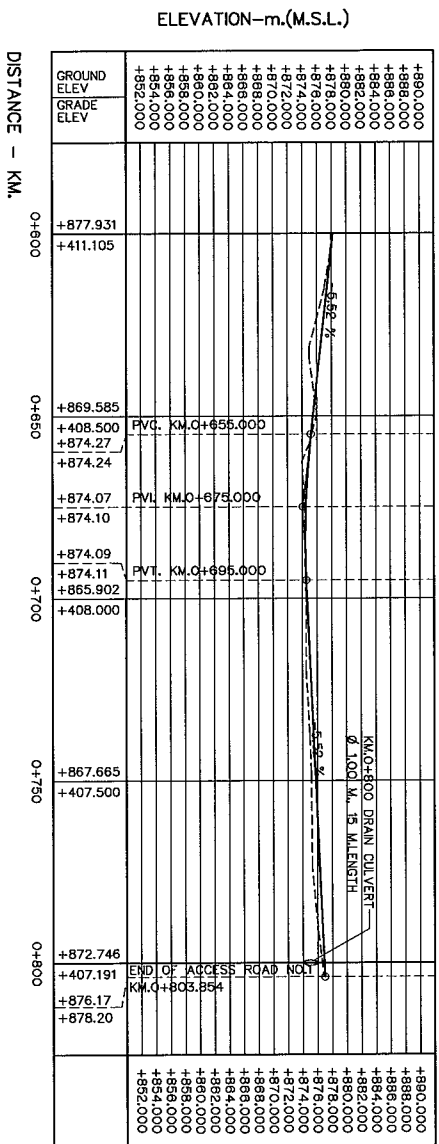
PROFILE
HORIZONTAL SCALE 1:1000
VERTICAL SCALE 1:500

- NOTES :
- ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS.
 - UNLESS OTHERWISE SHOWN.
 - SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MT-AR-01.
 - THE ACCESS ROAD WAS DESIGNED BASED ON THE DIGITAL ELEVATION MODEL. THE CONSTRUCTOR SHALL CONDUCT SURVEYS AND PREPARE DRAWINGS TO BE SUBMITTED TO THE PROJECT OWNER FOR APPROVAL PRIOR TO CONSTRUCTION.

REFERENCE DRAWINGS :-
1. ACCESS ROAD, NO.1 PLAN AND PROFILE KM.0+000 TO KM.0+803.894 MT-AR-02

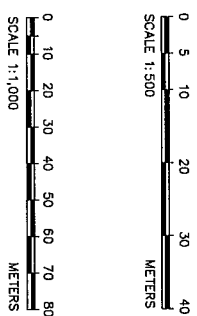


KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
MAE TUEN HYDROPOWER PROJECT			
ELECTRO - MECHANICAL EQUIPMENT ACCESS ROAD			
NO.1 PLAN AND PROFILE KM.0+000 TO KM.0+600			
DESIGNED BY: <i>[Signature]</i> 16/22/14		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
DRAWN BY: <i>[Signature]</i>		REVIEWED BY: <i>[Signature]</i>	
CHECKED BY: <i>[Signature]</i>		APPROVED BY: <i>[Signature]</i>	
DATE: 27/06/13		SHEET NO: 24 OF 30	

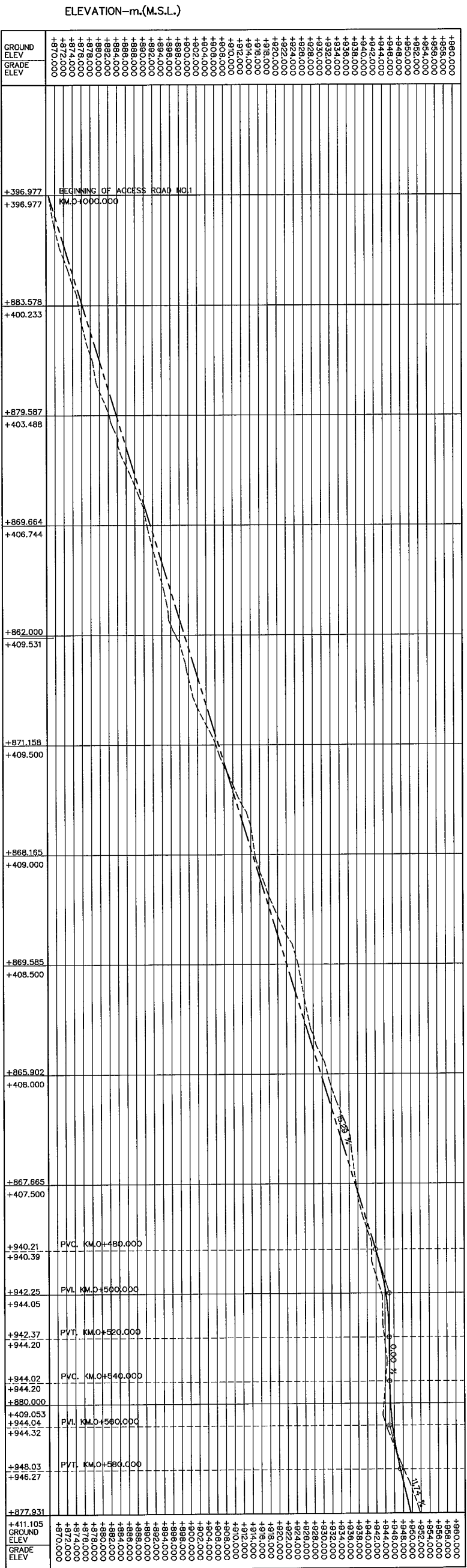
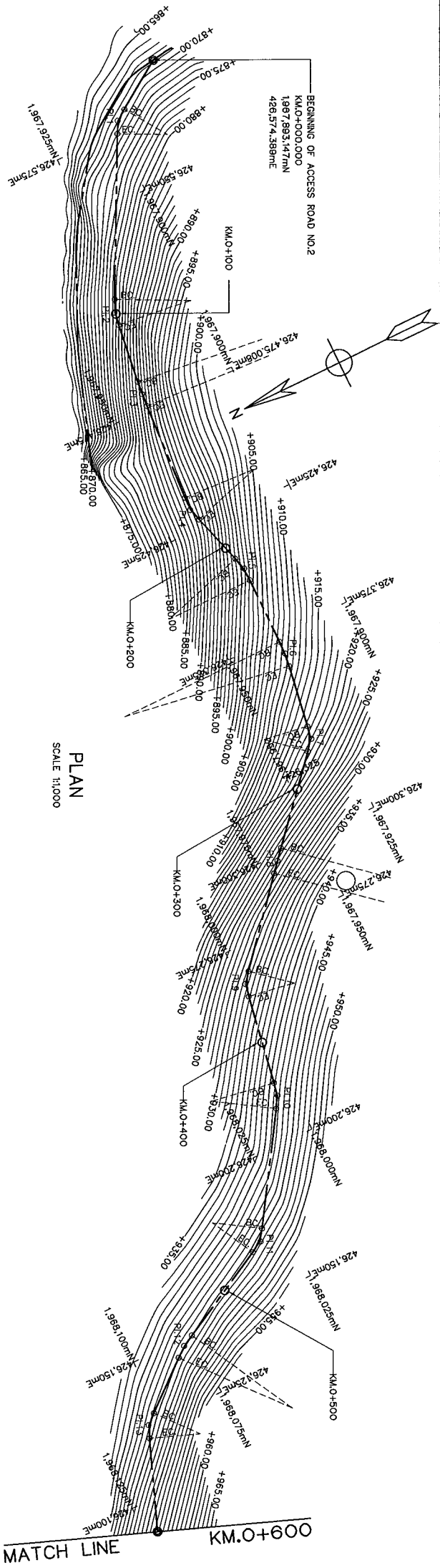
[illegible]

- NOTES :**
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. M1-GN-01.
 3. THE ACCESS ROAD WAS DESIGNED BASED ON THE DIGITAL ELEVATION MODEL. THE CONSTRUCTOR SHALL CONDUCT SURVEYS AND PREPARE DRAWINGS TO BE SUBMITTED TO THE PROJECT OWNER FOR APPROVAL PRIOR TO CONSTRUCTION.

REFERENCE DRAWINGS :-
1.ACCESS ROAD, NO.1 PLAN AND PROFILE KM.0+000 TO KM.0+600



KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY			
MAE TUEN HYDROPOWER PROJECT			
ELECTRO – MECHANICAL EQUIPMENT			
ACCESS ROAD			
NO. 1 PLAN AND PROFILE KM.0+600 TO KM.0+803.854		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
PANYA CONSULTANTS CO., LTD. REVIEWED <i>[Signature]</i>		SUBMITTED <i>[Signature]</i>	
DESIGNED <i>[Signature]</i> RD 225/14 RD 44/403		RECOMMENDED <i>[Signature]</i> P. Hongs	
DRAWN <i>[Signature]</i>		APPROVED <i>[Signature]</i>	
CHECKED <i>[Signature]</i> RD 39/36		DRAWING NO. MT-AR-02	
22/06/13		SHEET NO. 25 OF 30	
PROJECT MANAGER			



DISTANCE - KM.

ALIGNMENT DATA CURVE

NO. OF CURVE	PI.	PI TO PI.	COORDINATE OF PI.		ANGLE	T	R	L	BC.	EC.	BEARING
	Sta.	m.	N	E	I	m.	m.	m.	Sta.	20'±	
BEGIN	0+000.000	26.706	1987.893.147	426.574.389							S 56°-22'-35" W
1	0+028.706	72.995	1987.878.359	426.552.151	28°-28'-12"	5.000	19.000	9.778	0+021.706	0+031.484	S 28°-53'-23" W
2	0+089.448	32.880	1987.813.283	426.519.159	19°-33'-56"	5.000	28.989	9.803	0+094.448	0+104.352	S 7°-19'-27" W
3	0+132.202	47.935	1987.780.701	426.514.931	3°-47'-33"	5.000	15.1025	9.999	0+127.202	0+137.198	S 3°-31'-54" W
4	0+180.133	30.451	1987.732.857	426.512.012	20°-01'-32"	5.000	28.319	9.899	0+175.133	0+185.031	S 16°-28'-38" E
5	0+210.482	36.905	1987.703.656	426.520.656	19°-48'-13"	5.000	33.853	9.828	0+205.482	0+215.410	S 0°-18'-35" W
6	0+248.445	33.880	1987.687.825	426.520.480	8°-44'-42"	5.000	65.392	9.881	0+241.445	0+251.428	S 9°-03'-17" W
7	0+280.408	48.288	1987.634.088	426.515.132	32°-23'-05"	5.000	17.219	9.732	0+275.408	0+285.136	S 41°-26'-21" W
8	0+328.436	48.288	1987.597.881	426.483.181	0°-43'-30"	5.000	78.017	10.000	0+323.436	0+333.436	S 40°-42'-51" W
9	0+378.944	48.508	1987.561.081	426.451.572	30°-53'-45"	5.000	18.093	9.757	0+371.944	0+381.701	S 8°-49'-08" W
10	0+421.219	44.518	1987.517.227	426.443.915	22°-55'-43"	5.000	24.854	9.896	0+418.219	0+428.085	S 32°-44'-48" W
11	0+477.146	56.081	1987.470.078	426.413.591	28°-28'-02"	5.000	19.013	9.779	0+472.146	0+481.925	S 82°-12'-51" W
12	0+528.203	49.278	1987.447.104	426.389.898	12°-02'-21"	5.000	47.418	9.883	0+521.203	0+531.166	S 50°-10'-30" W
13	0+589.318	33.182	1987.423.872	426.344.534	29°-01'-00"	5.000	19.322	9.785	0+584.318	0+594.103	

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MT-AR-01.
 3. THE ACCESS ROAD WAS DESIGNED BASED ON THE DIGITAL ELEVATION MODEL. THE CONSTRUCTOR SHALL CONDUCT SURVEYS AND PREPARE DRAWINGS TO BE SUBMITTED TO THE PROJECT OWNER FOR APPROVAL PRIOR TO CONSTRUCTION.
- REFERENCE DRAWINGS :-
1. ACCESS ROAD NO.1 PLAN AND PROFILE KM.0+000 TO KM.0+800
 2. ACCESS ROAD NO.2 PLAN AND PROFILE KM.0+800 TO KM.0+980.474
- MT-AR-01
MT-AR-04

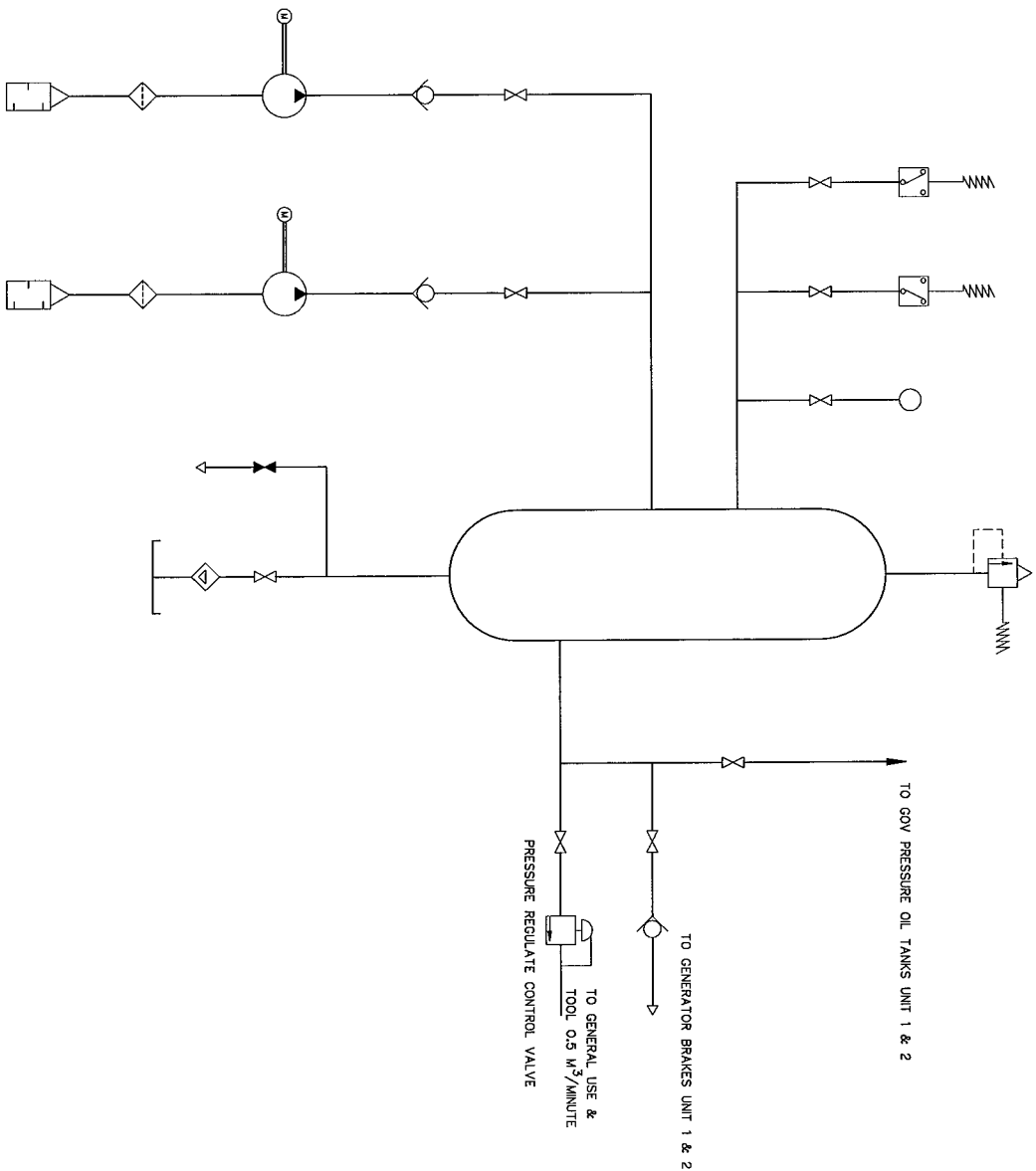
NO.	DATE	REVISIONS	CHECKED	APPROVED
1				
2				
3				

DEPARTMENT OF THAILAND
MINISTRY OF ENERGY
DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY
MAE TUEN HYDROPOWER PROJECT
ELECTRO - MECHANICAL EQUIPMENT
ACCESS ROAD
NO.2 PLAN AND PROFILE KM.0+000 TO KM.0+600

DESIGNED: 20/12/24
DRAWN: 20/12/24
CHECKED: 27/09/25
PROJECT MANAGER: 27/09/25

DEPARTMENT OF ALTERNATIVE ENERGY
DEVELOPMENT AND EFFICIENCY
SUBMITTED: 27/09/25
RECOMMENDED: 27/09/25
APPROVED: 27/09/25

DRAWING NO. MT-AR-03
SHEET NO. 26 OF 30



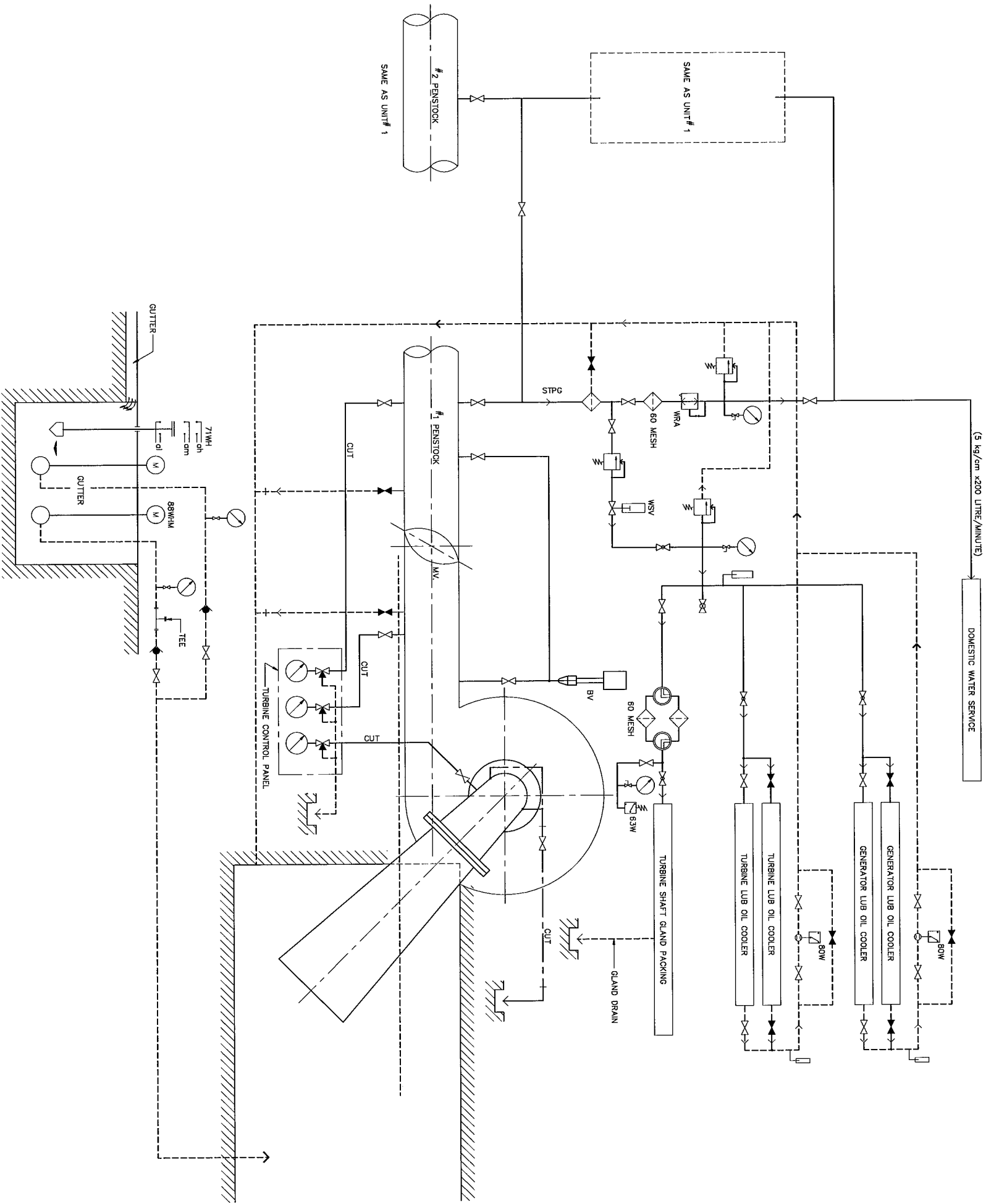
COMPRESSED AIR SYSTEM SCHEMATIC

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

NOTES :

1. PIPING & FITTING TO WORK SHOP ROOM AND MACHINE HALL FOR UNIT 1 & UNIT 2 SHALL BE PROVIDED BY THE CONTRACTOR
2. THIS DRAWING IS DESIGNED FOR GUIDE LINE ONLY, IT SHALL 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			
MAE TUEN HYDROPOWER PROJECT			
ELECTRO-MECHANICAL EQUIPMENT COMPRESS AIR SYSTEM SCHEMATIC DIAGRAM			
PANYA CONSULTANTS CO., LTD.		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
DESIGNED	21/1/98	REVIEWED	21/1/98
DRAWN	21/1/98	RECOMMENDED	21/1/98
CHECKED	21/1/98	APPROVED	21/1/98
DATE	27/06/73	DATE	27/06/73
CONSULTANTS	ENGINEER	DRIVER	MANAGER
NO	1	MT-EM-02	29 OF 30



NOTE :
1. THIS DRAWING IS DESIGNED FOR GUIDE LINE ONLY, IT SHALL BE
DESIGNED AND SPECIFIED LATER BY CONTRACTOR C2
AND SUBMITTED TO FIELD ENGINEER FOR APPROVAL

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
- LEVEL SWITCH FOR SUP PIT
- PRESSURE SWITCH
- FLOW RELAY
- DRAINAGE PUMP MOTOR
- REDUCING VALVE
- AUTOMATIC REDUCING VALVE
- BY-PASS VALVE
- MAIN INLET VALVE
- CARBON STEEL PIPE
- CARBON STEEL PIPE
- STAINLESS STEEL PIPE
- COPPER TUBE
- COOLING WATER STOP VALVE
- GLOBE VALVE

3				
2				
1				
NO.	DATE	REVISIONS	CHECKED	APPROVED
CONSULTANTS				

KINGDOM OF THAILAND MINISTRY OF ENERGY DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY	
MAE TUEN HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT	
WATER SUPPLY AND DRAINAGE SCHEMATIC DIAGRAM	
PANA CONSULTANTS CO., LTD.	
DESIGNED DRAWN CHECKED PROJECT MANAGER	RECOMMENDED APPROVED DATE
27/06/13	MT-EM-03
30 OF 30	