



Department of Alternative
Energy Development and Efficiency
MINISTRY OF ENERGY

KLONG LAM PLOK HYDROPOWER PROJECT

YAN TA KHAO DISTRICT TRANG PROVINCE

CONTRACT C2

ELECTRO – MECHANICAL EQUIPMENT

VOLUME 4

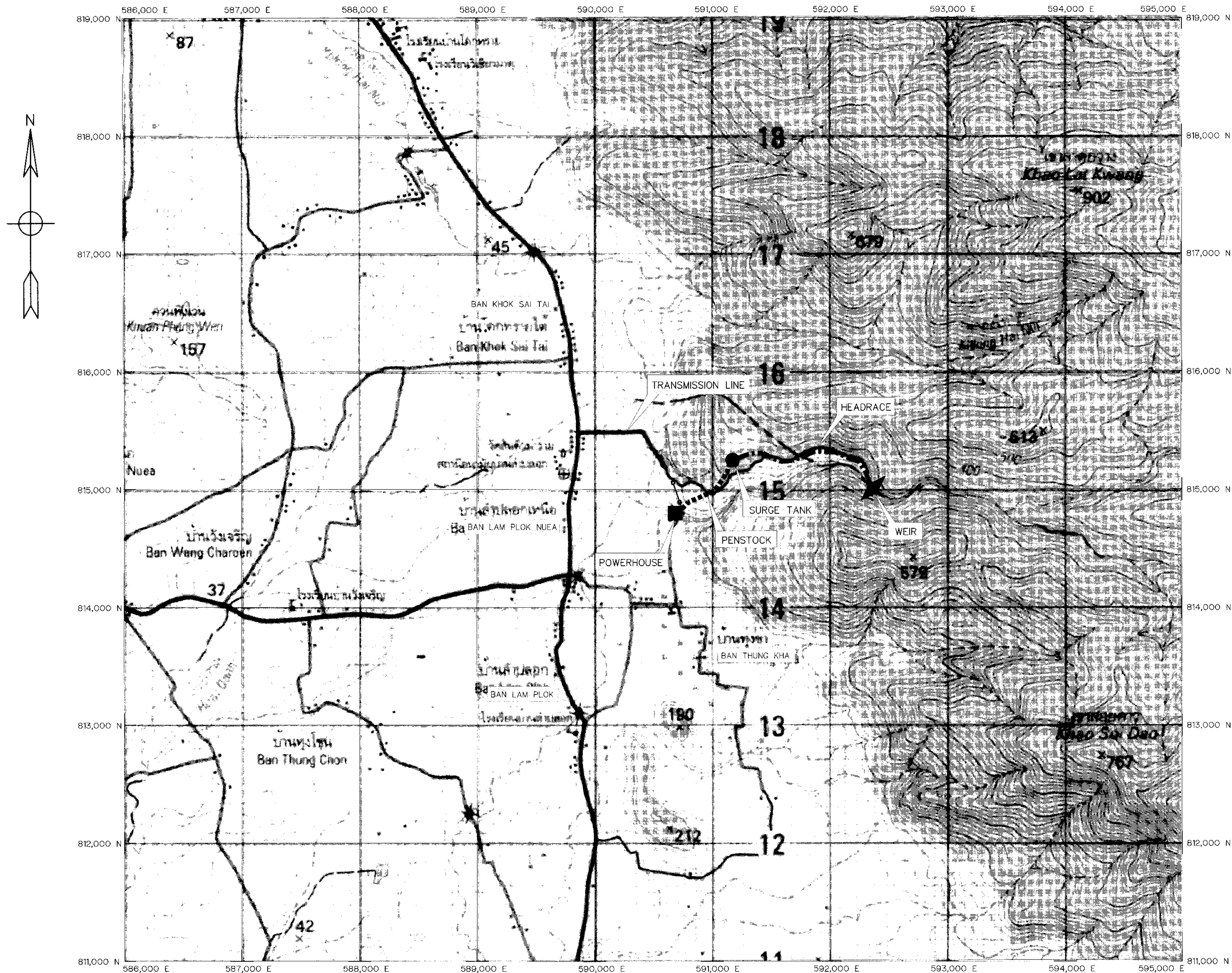
DRAWINGS



P&C MANAGEMENT CO.,LTD.

KLONG LAM PLOK HYDROPOWER PROJECT
CONTRACT C2 : LIST OF DRAWINGS

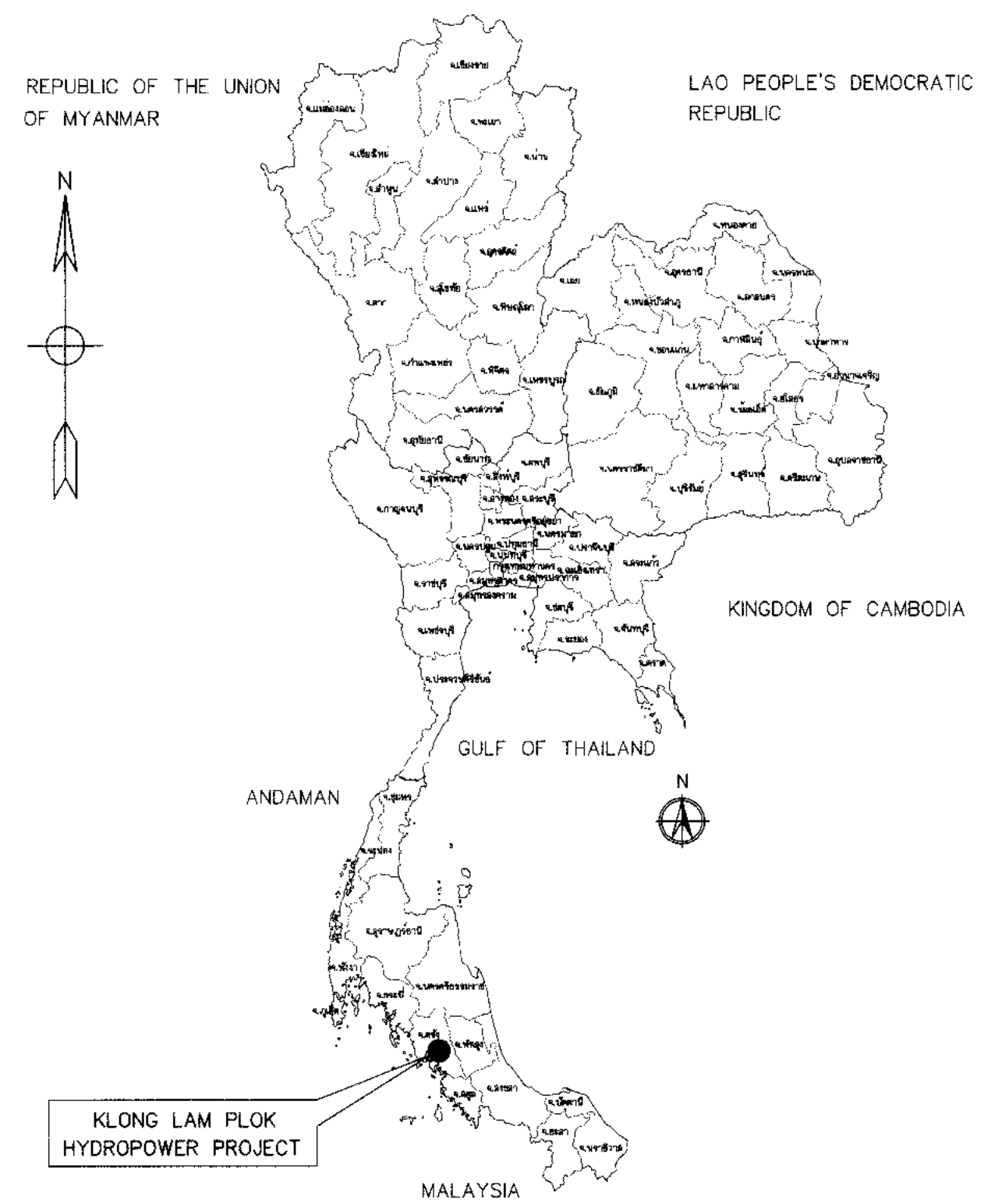
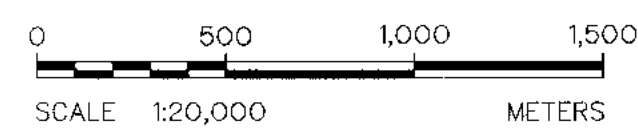
SHEET NO.	DRAWING NO.	DRAWING DETAILS
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2	KLP-GN-02	PROJECT LAY-OUT
3	KLP-GN-03	SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES
4	KLP-GN-04	PROJECT INFORMATION HYDROLOGY DATA
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7	KLP-WE-02	SECTIONS AND DETAILS
8	KLP-WE-03	PLAN AND SECTIONS
9	KLP-WE-04	SECTIONS
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11	KLP-HR-02	PLAN AND PROFILE, STA. 0+500 TO STA. 1+000
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13	KLP-HR-04	TYPICAL SECTIONS AND DETAIL
O&M ROAD		
14	KLP-OM-01	PLAN AND PROFILE, STA. 0+000 TO STA. 0+107.621
15	KLP-OM-02	TYPICAL SECTION AND DETAILS
SURGE TANK		
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17	KLP-ST-02	SECTIONS
PENSTOCK		
18	KLP-PS-01	PLAN AND PROFILE, STA. 0+000 TO STA. 0+500
19	KLP-PS-02	PLAN AND PROFILE, STA. 0+500 TO STA. 0+693.571
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POWER HOUSE		
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PROJECT AREA MAP
SCALE 1:20,000

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03

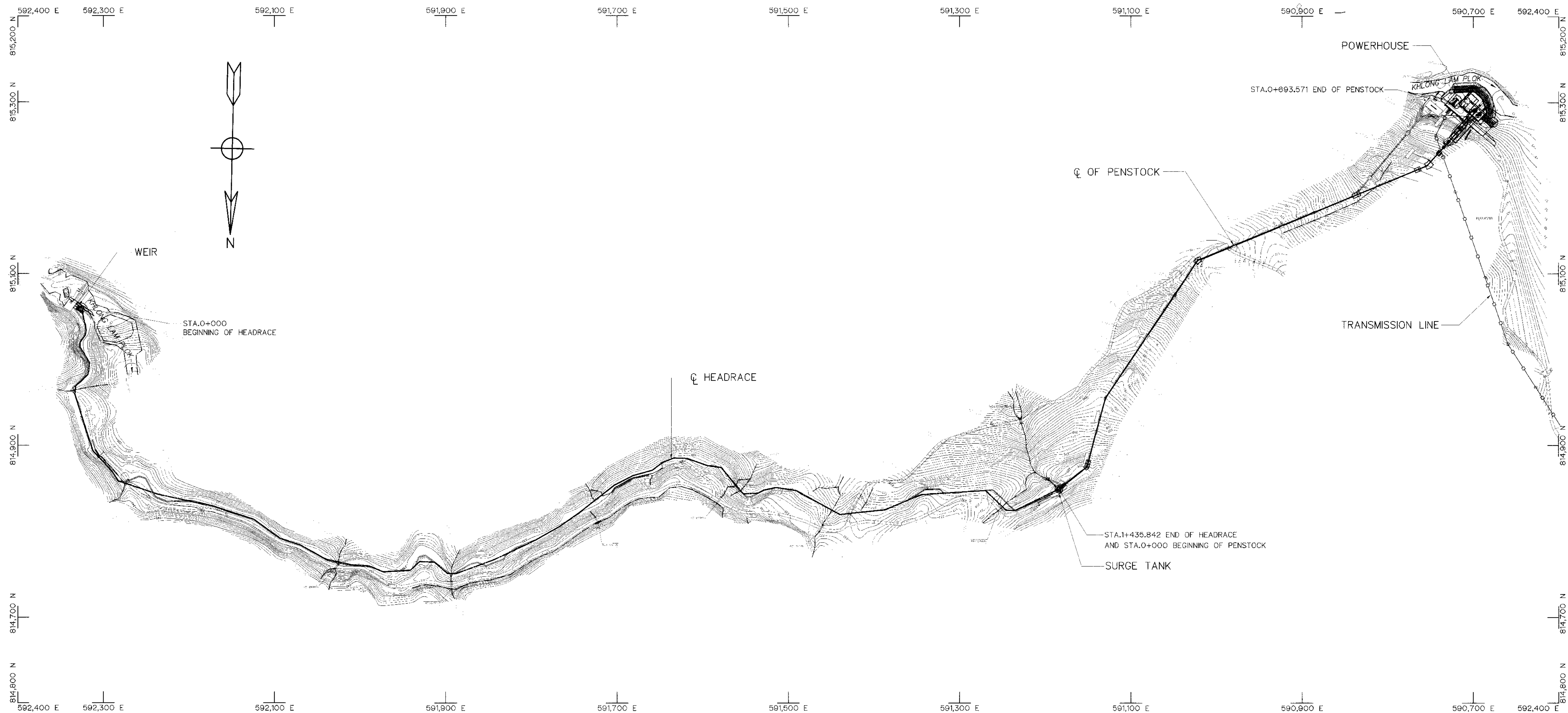


LOCATION MAP
NOT TO SCALE

LEGENDS :

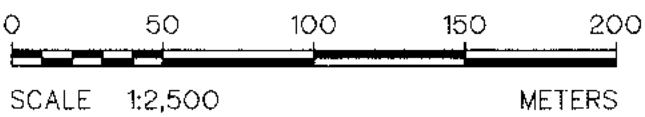
- STREAM
- WEIR
- HEADRACE
- SURGE TANK
- PENSTOCK
- POWERHOUSE
- ACCESS ROAD
- TRANSMISSION LINE

KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT GENERAL DRAWING PROJECT LOCATION MAP	
P&C MANAGEMENT CO.,LTD.	Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY
DESIGNED 88.29074 88.6226	REVIEWED 88.6226
DRAWN 88.6226	RECOMMENDED 88.6226
CHECKED 88.6226	APPROVED 88.6226
PROJECT MANAGER 08/03/2559	DRAWING NO. KLP-GN-01
DATE	SHEET NO. 1 OF 38



PROJECT LAYOUT
SCALE 1:2,500

- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS. UNLESS OTHERWISE SHOWN.
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03



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NO.	DATE	REVISIONS	CHECKED	APPROVED
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KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT GENERAL DRAWING PROJECT LAY-OUT	
P&C MANAGEMENT CO.,LTD.	REVIEWED
DESIGNED 18/28074 28/6226	SUBMITTED
DRAWN	RECOMMENDED
CHECKED 28/6226	APPROVED
PROJECT MANAGER 06/03/2559	DRAWING NO. KLP-GN-02
DATE	SHEET NO. 2 OF 38

ABBREVIATIONS :

A	CROSS-SECTION AREA OF FLOW	MAX.	MAXIMUM
AC.	ASBESTOS CEMENT PIPE	M.S.L.	MEAN SEA LEVEL
AGG.	AGGREGATE	MISC.	MISCELLANEOUS
ALT.	ALTERNATIVE	N.	NORTH
APPROX.	APPROXIMATE	n.	MANNING'S ROUGHNESS COEFFICIENT
AZ.	AZIMUTH	N.F.	NEAR FACE
B.	BEGINNING OF SURVEY	NGL.	NATURAL GROUND LEVEL
BC.	BEGINNING OF CURVE	NO. OR #	NUMBER
BEG.	BEGINNING	N.W.L.	NORMAL WATER LEVEL
BF.	BOTTOM FACE	OD.	OUTSIDE DIAMETER
B	BEAM	O.F.	OUTSIDE FACE
B.M.	BENCH MARK	O&M	OPERATION & MAINTENANCE
BOTT.	BOTTOM	PC.	POINT OF HORIZONTAL CURVATURE
BRG.	BEARING	PI.	POINT OF HORIZONTAL INTERSECTION
C.B.R.	CALIFORNIA BEARING RATIO	PL.	PLATE
C/C	CENTER TO CENTER	P.O.C.	POINT ON CURVE
CL	CENTER LINE	P.O.T.	POINT ON TANGENT
CL.	CLEARANCE	P.O.S.T.	POINT ON SUB-TANGENT
CM. OR cm.	CENTIMETER	PRC.	POINT OF HORIZONTAL REVERSE CURVE
CM./S OR cm./s	CENTIMETER PER SECOND	PT.	POINT OF TANGENT
COL.	COLUMN	PVC.	POLYVINYL CHLORIDE
CONC.	CONCRETE	PVC.	POINT OF VERTICAL CURVATURE
D	DEGREE OF CURVE	PVI.	POINT OF VERTICAL INTERSECTION
DB.	DEFORM BAR	PVRC.	POINT OF VERTICAL REVERSE CURVE
d.	DEPTH OF WATER	PVT.	POINT OF VERTICAL TANGENT
DIA. OR Ø	DIAMETER	Q.	DISCHARGE
DOH.	DEPARTMENT OF HIGHWAY	QTY. QUAN.	QUANTITY
DWG.	DRAWING	R	RADIUS OF CURVATURE
DEDE.	DEPARTMENT OF ALTERNATIVE ENERGY	r	HYDRAULIC RADIUS
	DEVELOPMENT AND EFFICIENCY	RØ , Ø	ROUND BAR
E	EAST	RC.	REINFORCED CONCRETE
E	END OF SURVEY	RD.	ROAD
EA.	EACH	REF.	REFERENCE
E.C.	END OF CURVE	REINF.	REINFORCEMENT
E.F.	END OF FACE	REQ'D	REQUIRED
EL. OR ELEV.	ELEVATION	RD.	ROYAL IRRIGATION DEPARTMENT
EXIST.	EXISTING	SCH.	SCHEDULE
EXP.	EXPANSION	SE.	SUPERELEVATION
EXT.	EXTERIOR	SETC.	SECTION
EX.	EXTERNAL DISTANCE OF CURVE	S.P.C.T.	STANDARD PROCTOR COMPACTION TEST
f	FREE BOARD , FINISH	S.S.	SIDE SLOPE
F.F.	FAR FACE	STIR.	STIRRUP
F.S.L.	FULL SUPPLY LEVEL	STA.	STATION
FTG.	FOOTING	STD.	STANDARD
HD.	HEAD	STR.	STRUCTURE
HEX.	HEXAGONAL	SYMM.	SYMMETRICAL
HOR.	HORIZONTAL	T.	TANGENT LENGTH , THICKNESS
I.D.	INSIDE DIAMETER	T	TON
iF.	INSIDE FACE	THK.	THICKNESS
IN. OR "	INCH	T.F.	TOP FACE
INT.	INTERIOR	T.I.S.	THAI INDUSTRIAL STANDARD
INV.	INVERT	Ts.	SUPERELEVATION TRANSITION LENGTH
Kg.	KILOGRAM	TYP.	TYPICAL
Km.	KILOMETER	V.	VELOCITY OF FLOW
KPH.	KILOMETER PER HOUR	V.C.	VERTICAL CURVE
KSC.	KILOGRAM PER SQUARE CENTIMETER	Vc.	LENGTH OF VERTICAL CURVE
L	LENGTH OF CURVE	VER.	VERTICAL
LC.	LENGTH OF HORIZONTAL CURVE	VOL.	VOLUME
LONG.	LONGITUDINAL	W/	WITH
LT.	LEFT	W.C.	WATER CLOSET
L.W.L.	LOW WATER LEVEL	Ø	ANGLE
M. OR m.	METER	△	DEFLECTION ANGLE
M. ² OR m. ²	SQUARE METER		
M. ³ OR m. ³	CUBIC METER		
MM. OR mm.	MILLIMETER		
M./S OR m./s	METER PER SECOND		
MIN.	MINIMUM		

SYMBOLS :

	TYPICAL NORTH ARROW
	CENTER LINE
	PAVED ROAD
	DIRT ROAD, LATEITE ROAD OR TRACK
	VILLAGE
	CITY OR DISTRICT
	POND OR SWAMP
	CULVERT UNDER ROAD
	BRIDGE
	POLE
	TEST PIT
	HAND AUGER
	EXISTING DRILL HOLES
	DRILL HOLES
	DEGREE, MINUTE, SECOND
	AT EQUAL DISTANCE BETWEEN CENTER TO CENTER
	B.M.
	STATION
	BC., EC., PC., PI., PT., 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 ROCK
	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 DIRECTION
	SLOPE DIRECTION
	SLOPE RATIO

GENERAL NOTES :

- ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS UNLESS OTHERWISE SHOWN.
- DURING THE CONTRUCTION PERIOD, IT IS THE CONTRACTOR'S DUTY TO CHECK THE CORRECTION OF ALL RELEVANT LOCATIONS, DIMENSIONS, ELEVATIONS AND OTHER DATA AS PROVIDED BY THE DRAWING AND TECHNICAL SPECIFICATIONS BEFORE THE IMPLEMENTATION OF THE WORKS.
- IN CASE OF ANY DETAILS BEING NOT MENTIONED OR NOT SHOWN IN THE DRAWING 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 RELEVENT DRAWINGS TO OBTAIN FIELD ENGINEER APPROVAL
- ADDITIONAL SYMBOLS, IF REQUIRED, ARE DEFINED IN THE RESPECTIVE DRAWINGS.
- THE SPECIFICATIONS AND THE QUANTITIES OF MATERIALS ARE SPECIFIED IN THE TECHNICAL SPECIFICATIONS.
- ALL PLAIN CONCRETE CORNERS ARE TO BE CHEMFERED 2 cm. UNLESS OTHERWISE SHOWN.
- SLOPE IN CUT AND FILL SECTIONS, UNLESS OTHERWISE SHOWN, SHALL BE CONFORMED TO THE FOLLOWING TABLE OR AS DIRECTED BY FIELD ENGINEER.

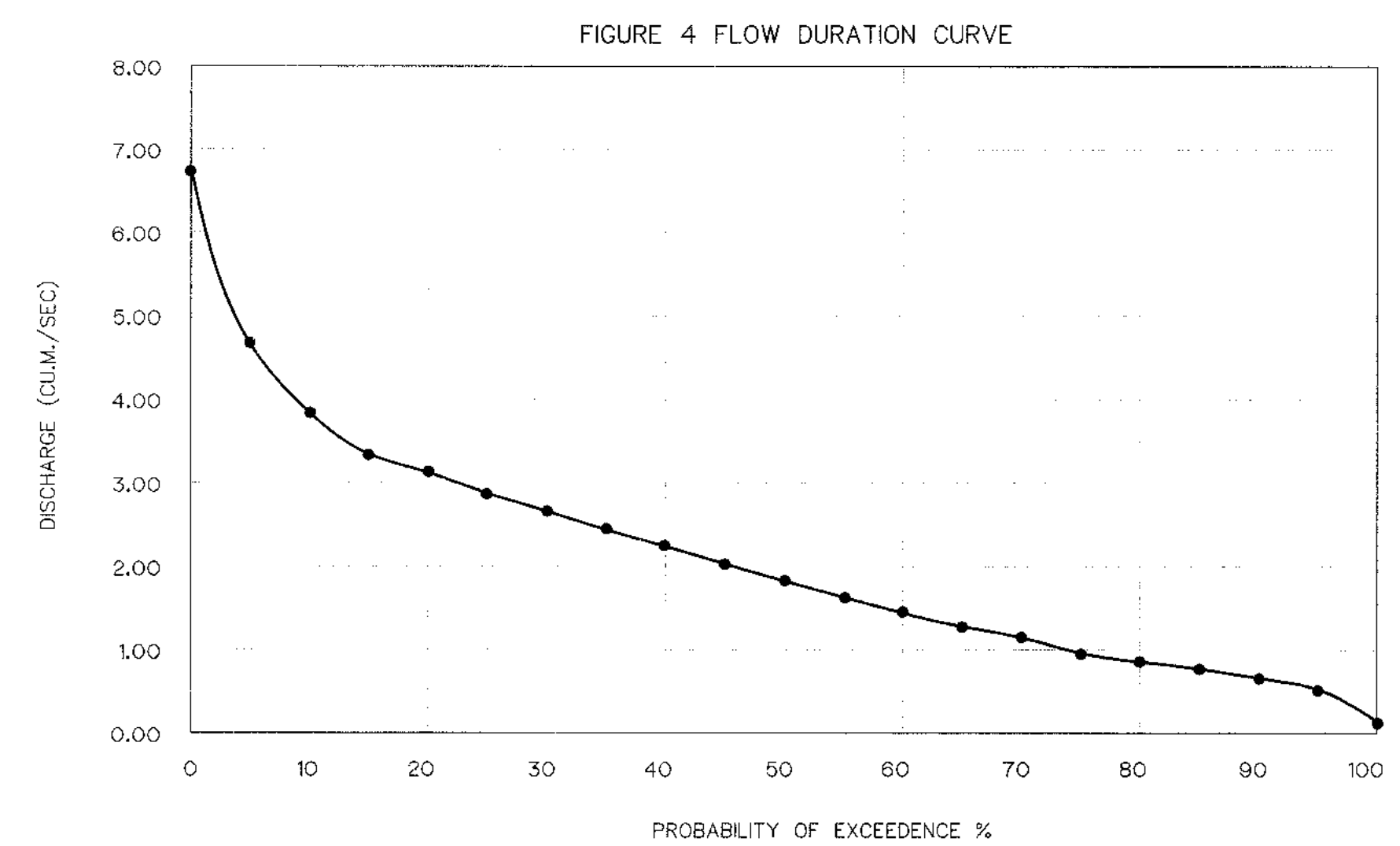
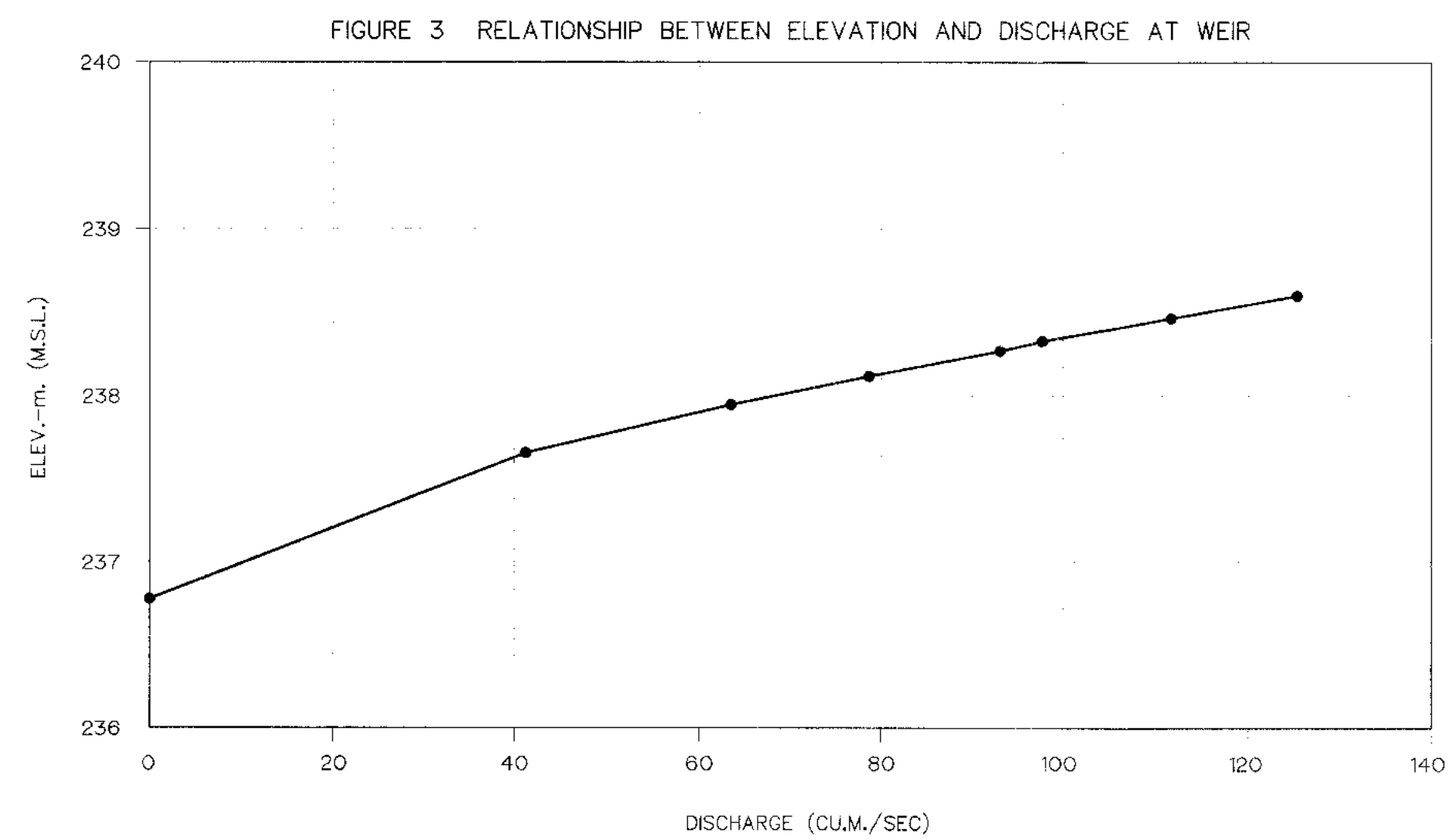
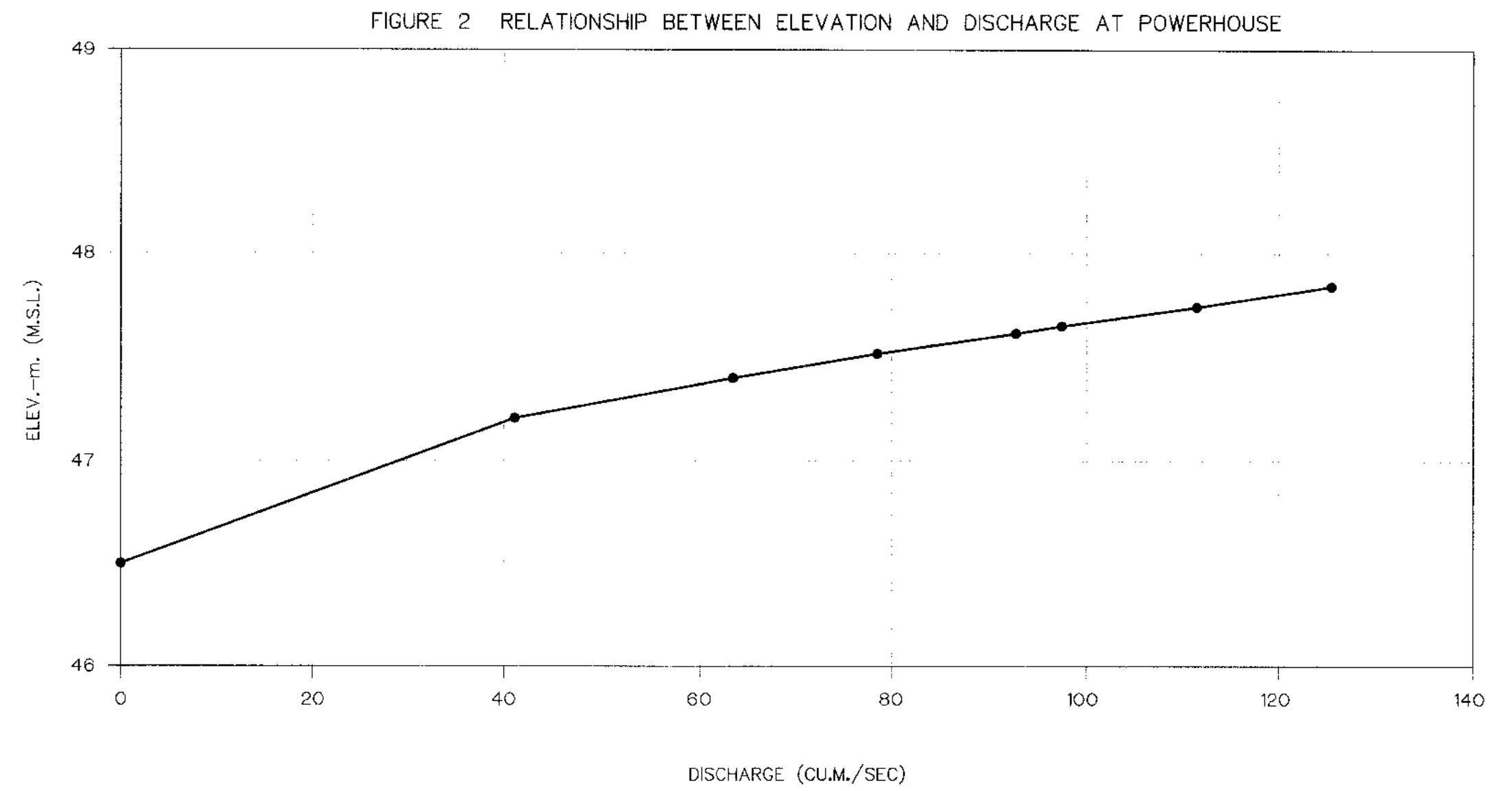
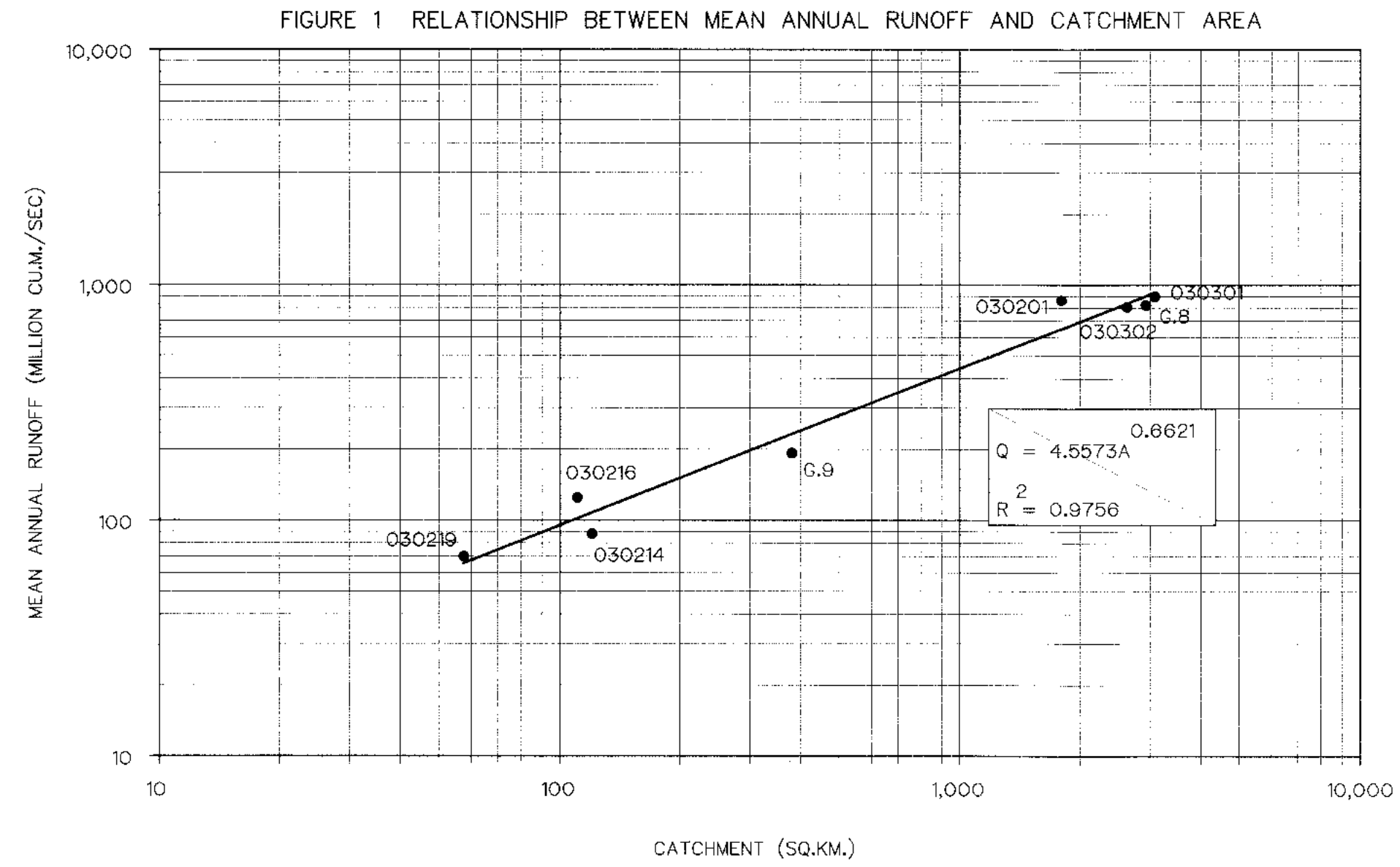
STRUCTURAL DESIGN NOTES :

- 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.

fc' (ksc)	DESCRIPTION
350	PRESTRESS CONCRETE
210	1. WEIR
	2. SURGE TANK
	3. POWERHOUSE
	4. TAILRACE
	5. MANHOLE
	6. ANCHOR BLOCK, PIPE SUPPORT
	7. HEADRACE
	8. BOX CULVERT
140	LEAN CONCRETE

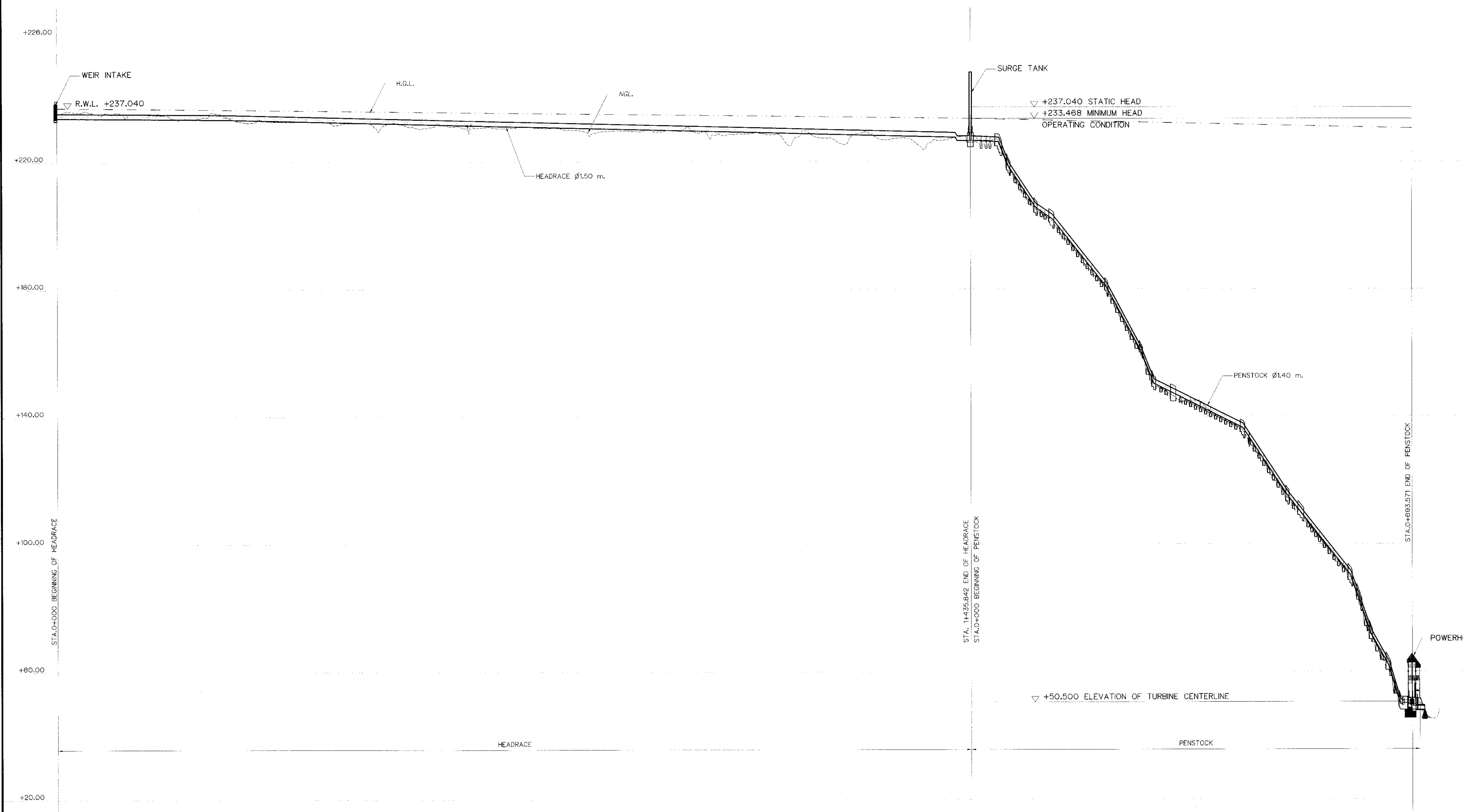
- UNLESS OTHERWISE SHOWN, THE FOLLOWING CLEAR COVER OF CONCRETE OVER OF THE REINFORCEMENT SHALL BE USED :
 - FACE EXPOSED TO SCOUR 5.0 cm.
 - FACE EXPOSED TO EARTH OR WEATHER 5.0 cm.
 - FACE UNEXPOSED TO EARTH OR WEATHER 3.0 cm.
- THE REINFORCEMENT LAP SPLICES SHALL NOT BE LESS THAN 50 DIAMETERS OF BIGGER THAN BAR WITH HOOKS, UNLESS OTHERWISE SHOWN.
- EMBEDDED METALWORK SHALL BE SECURELY FASTENED IN POSITION BEFORE PLACING CONCRETE.
- ALL CONSTRUCTION JOINT SHOULD BE TREATED AS DIRECTED IN ORDER TO ASSURE THE BEST BOND.
- A 5 cm. (MIN.) LAYER OF LEAN CONCRETE (1:3:5 BY VOLUME) SHOULD BE PLACED BELOW CONCRETE STRUCTURES.
- THE STRUCTURES SHOULD BE PLACED ON UNDISTURBED SOILS OR COMPACTED FILL AND BACKFILL AROUND THE STRUCTURES SHOULD BE COMPACTED.
- THE FOUNDATION ELEVATIONS ARE SUBJECT TO CHANGE AS DIRECTED ACCORDING TO THE SOIL CONDITIONS.
- ALL SIZES OF REINFORCING BARS AND STRUCTURAL STEELS ARE IN MILLIMETERS.
- ALL STRUCTURAL STEELS ARE THOSE OF T.I.S. DESIGNATION Fe24.
- REINFORCED STEEL BARS SHALL BE CONFORM TO T.I.S. AS FOLLOW :
 - DEFORMED BARS (SD30) - T.I.S. 24-2548
 - ROUND BARS (SR24) - T.I.S. 20-2543
- ALLOWABLE BEARING CAPACITY OF FOUNDATION SHALL NOT BE LESS THAN AS FOLLOW :
 - INTAKE $Q_a = 15 \text{ T/M.}^2$
 - HEADRACE $Q_a = 15 \text{ T/M.}^2$
 - SURGE TANK $Q_a = 20 \text{ T/M.}^2$
 - POWERHOUSE $Q_a = 20 \text{ T/M.}^2$
 - PENSTOCK $Q_a = 20 \text{ T/M.}^2$

KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY				
KLONG LAM PLOK HYDROPOWER PROJECT				
ELECTRO-MECHANICAL EQUIPMENT GENERAL DRAWING SYMBOLS, ABBREVIATIONS, AND GENERAL NOTES				
P&C MANAGEMENT CO.,LTD.		SUBMITTED <i>Chamit</i>		
DESIGNED <i>W</i> 25074 <i>W</i> 2516226		RECOMMENDED		
DRAWN <i>W</i>		APPROVED <i>W</i>		
CHECKED <i>W</i> 2516226		DRAWING NO. <i>08/03/2569</i>		
CONSULTANTS		DEDE		PROJECT MANAGER <i>W</i> DATE
3		2		SHEET NO. 3 OF 38



KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY			
KLONG LAM PLOK HYDROPOWER PROJECT			
ELECTRO-MECHANICAL EQUIPMENT			
GENERAL DRAWING			
PROJECT INFORMATION HYDROLOGY DATA			
P&C MANAGEMENT CO.,LTD.		REVIEWED	
DESIGNED <i>[Signature]</i> 28.6226		SUBMITTED <i>[Signature]</i>	
DRAWN <i>[Signature]</i>		RECOMMENDED	
CHECKED <i>[Signature]</i> 28.6226		APPROVED <i>[Signature]</i>	
PROJECT MANAGER <i>[Signature]</i> 08/03/2559		DRAWING NO. KLP-CN-04	
DATE		SHEET NO. 4 OF 38	

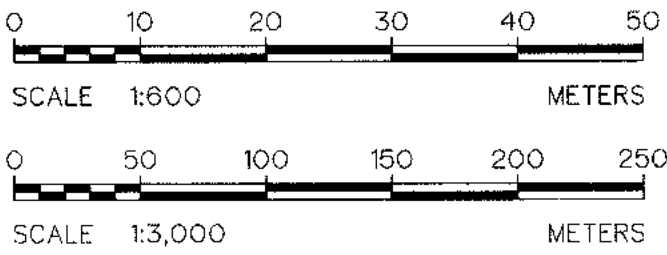
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PROFILE ALONG HEADRACE ζ

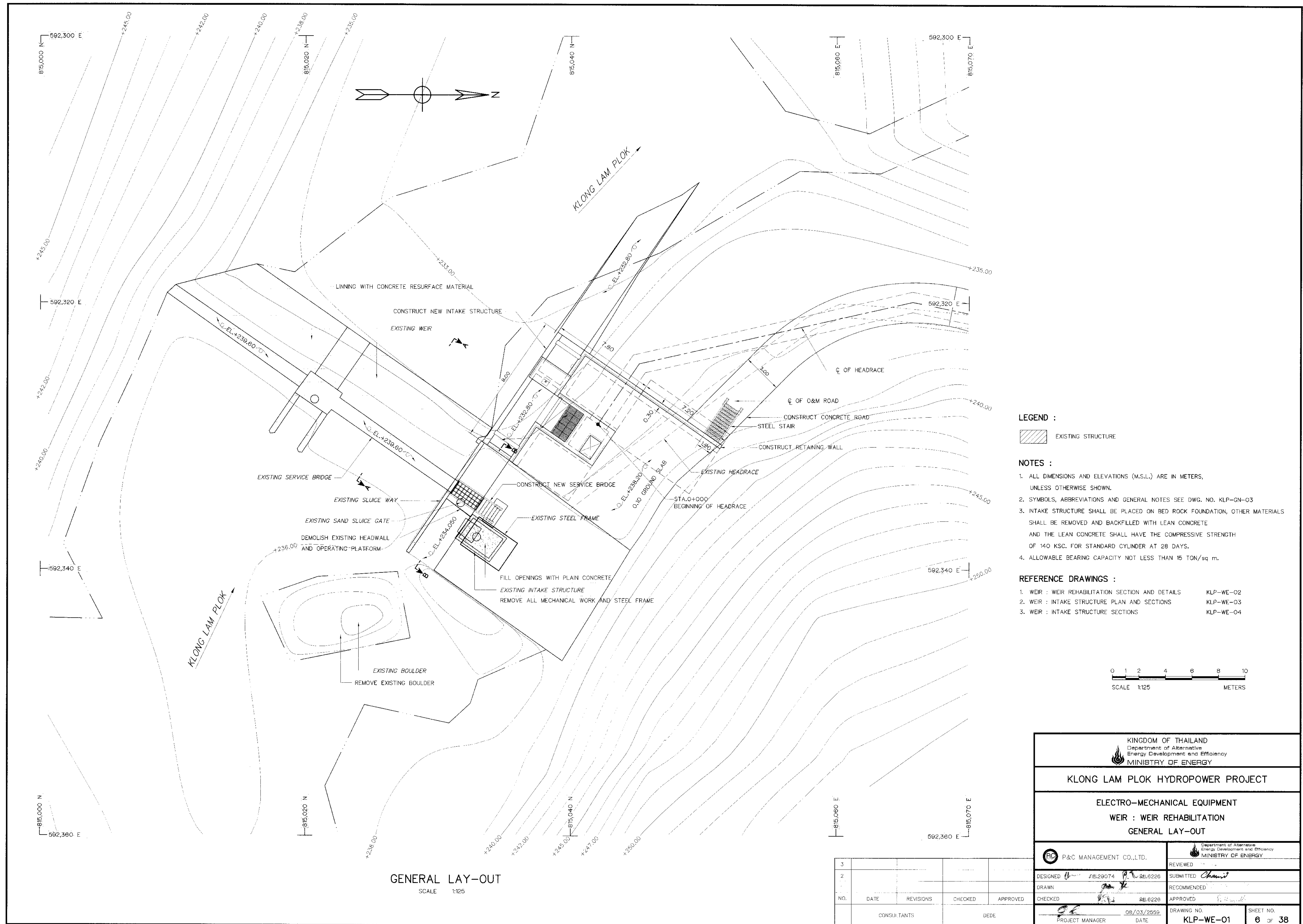
VERTICAL SCALE 1:600
HORIZONTAL SCALE 1:3,000

- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03

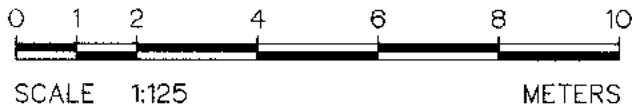


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CONSULTANT'S		DEDE		

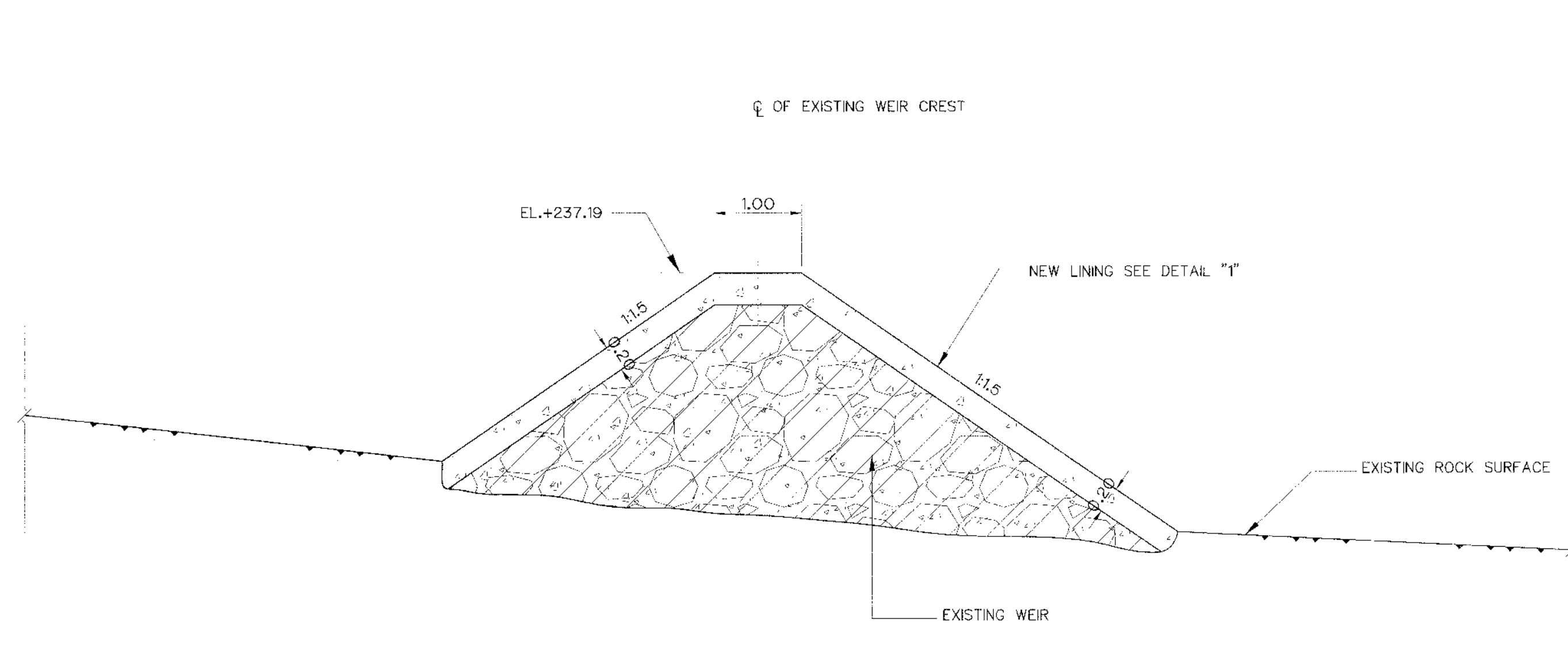
KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY			
KLONG LAM PLOK HYDROPOWER PROJECT			
ELECTRO-MECHANICAL EQUIPMENT GENERAL DRAWING POWER WATERWAY HYDRAULIC ARRANGEMENT			
P&C MANAGEMENT CO.,LTD.		MINISTRY OF ENERGY	
DESIGNED	18.29074	18.6226	REVIEWED
DRAWN			RECOMMENDED
CHECKED	18.6226		APPROVED
PROJECT MANAGER	08/03/2559	DRAWING NO.	SHEET NO.
		KLP-GN-05	5 OF 38



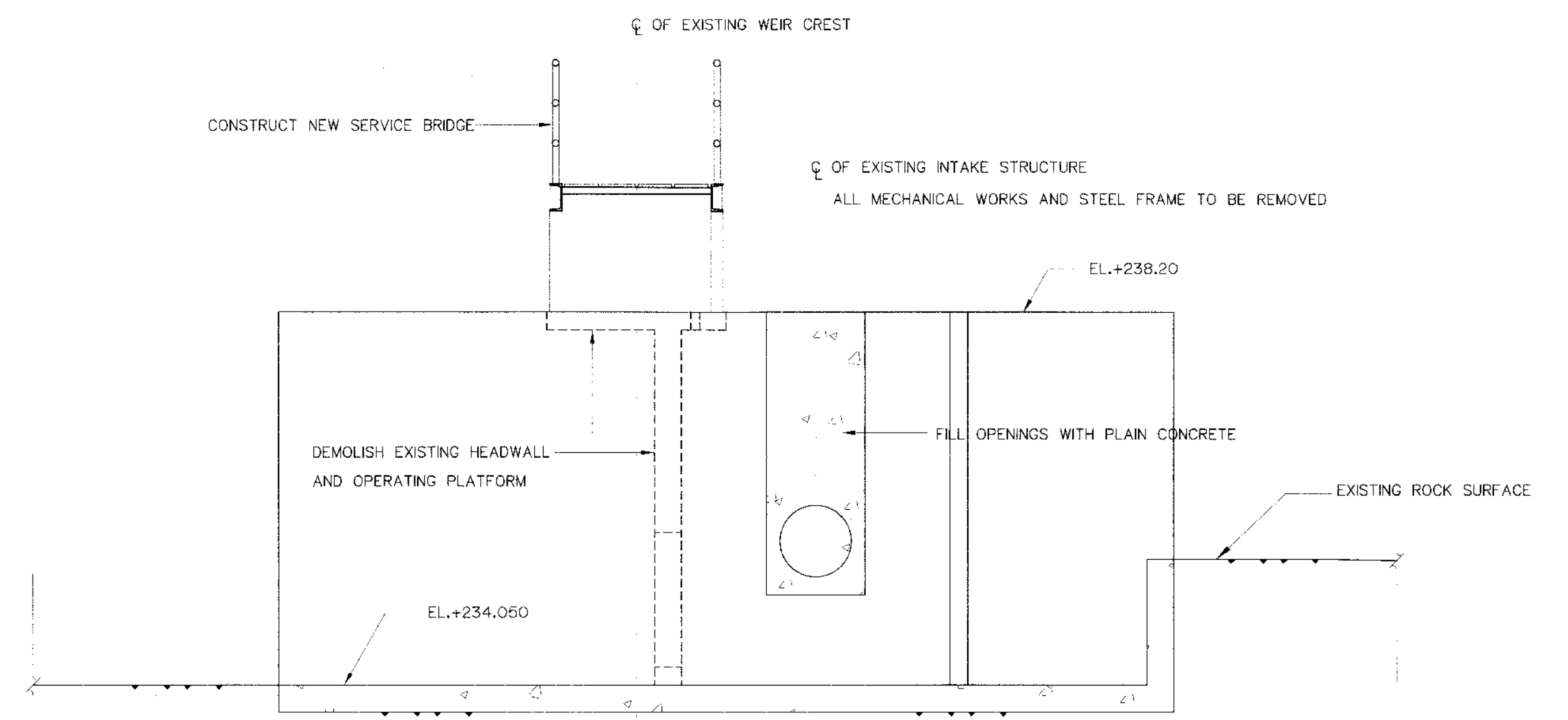
- LEGEND :**
- EXISTING STRUCTURE
- NOTES :**
- ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 - SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03
 - INTAKE STRUCTURE SHALL BE PLACED ON BED ROCK FOUNDATION, OTHER MATERIALS SHALL BE REMOVED AND BACKFILLED WITH LEAN CONCRETE AND THE LEAN CONCRETE SHALL HAVE THE COMPRESSIVE STRENGTH OF 140 KSC. FOR STANDARD CYLINDER AT 28 DAYS.
 - ALLOWABLE BEARING CAPACITY NOT LESS THAN 15 TON/sq m.
- REFERENCE DRAWINGS :**
- | | |
|---|-----------|
| 1. WEIR : WEIR REHABILITATION SECTION AND DETAILS | KLP-WE-02 |
| 2. WEIR : INTAKE STRUCTURE PLAN AND SECTIONS | KLP-WE-03 |
| 3. WEIR : INTAKE STRUCTURE SECTIONS | KLP-WE-04 |



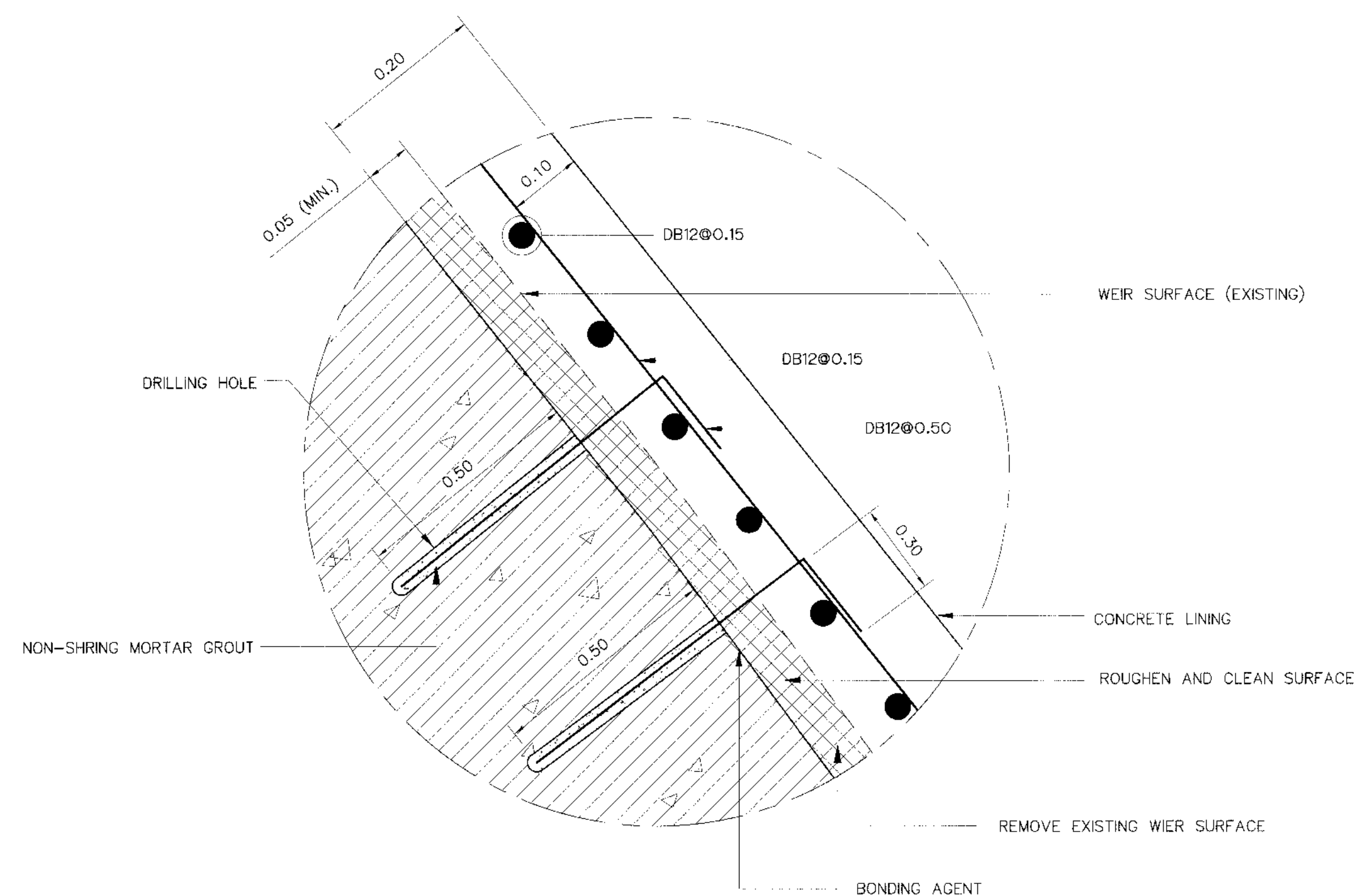
KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT WEIR : WEIR REHABILITATION GENERAL LAY-OUT	
P&C MANAGEMENT CO.,LTD.	REVIEWED
DESIGNED 18.29074 18.6226	SUBMITTED
DRAWN	RECOMMENDED
CHECKED 18.6226	APPROVED
PROJECT MANAGER 08/03/2559	DRAWING NO. KLP-WE-01
DATE	SHEET NO. 6 of 38



SECTION OF WEIR A-A
SCALE 1:50



SECTION OF SLUICE WAY B-B
SCALE 1:50



DETAIL "1"
SCALE 1:10

STEP OF LINING :

1. CONCRETE REMOVAL TECHNIQUES USED SHOULD BE EFFECTIVE, FAST, SAFE, ECONOMICAL AND ENVIRONMENTALLY FRIENDLY. THE EXISTING CONCRETE SURFACE MUST BE DRY, CLEAN, ROUGH AND FREE OF DUST SO THAT THE POURED CONCRETE WILL STICK TO THE OLD CONCRETE
2. THE REPAIRED SURFACE SHOULD BE CLEANED THOROUGHLY BY WET SAND BLASTING OR DRY SAND BLASTING OR SHOT BLASTING OR OTHER EQUIVALENT METHOD. FINALLY, IT SHOULD BE CLEANED BY WIND OR WATER USING PRESSURE.
3. A HOLE IS DRILLED TO INSTALL DOWEL BAR FIXED BY NON-SHRINK CEMENT GROUT AND INSTALL REINFORCED CONCRETE SO THAT THE POURED CONCRETE CAN REMAIN AND STICK TO THE OLD CONCRETE.
4. BEFORE POURING CONCRETE, APPLY MORTAR TO A THIN CONCRETE SURFACE NOT EXCEEDING 3 MM AND USE EPOXY RESIN BONDING AGENT, ASTM C881, TYPE II OR TYPE V.

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03
3. CONCRETE DESIGN BASED ON THE COMPRESSIVE STRENGTH OF 210 KSC, STANDARD CYLINDER $\phi 0.15 \times 0.30$ m. TEST AT AGE 28 DAYS. UNLESS OTHERWISE INDICATED IN SPECIFIC DRAWINGS.
4. ULTIMATE TENSILE STRESSES OF REINFORCING STEEL, CONFORM TO THE REQUIREMENT OF THAI INDUSTRIAL STANDARD DESIGNATION SR24 FOR STRUCTURAL GRADE PLAIN ROUND BAR AND SD30 FOR INTERMEDIATE GRADE DEFORMED BAR.

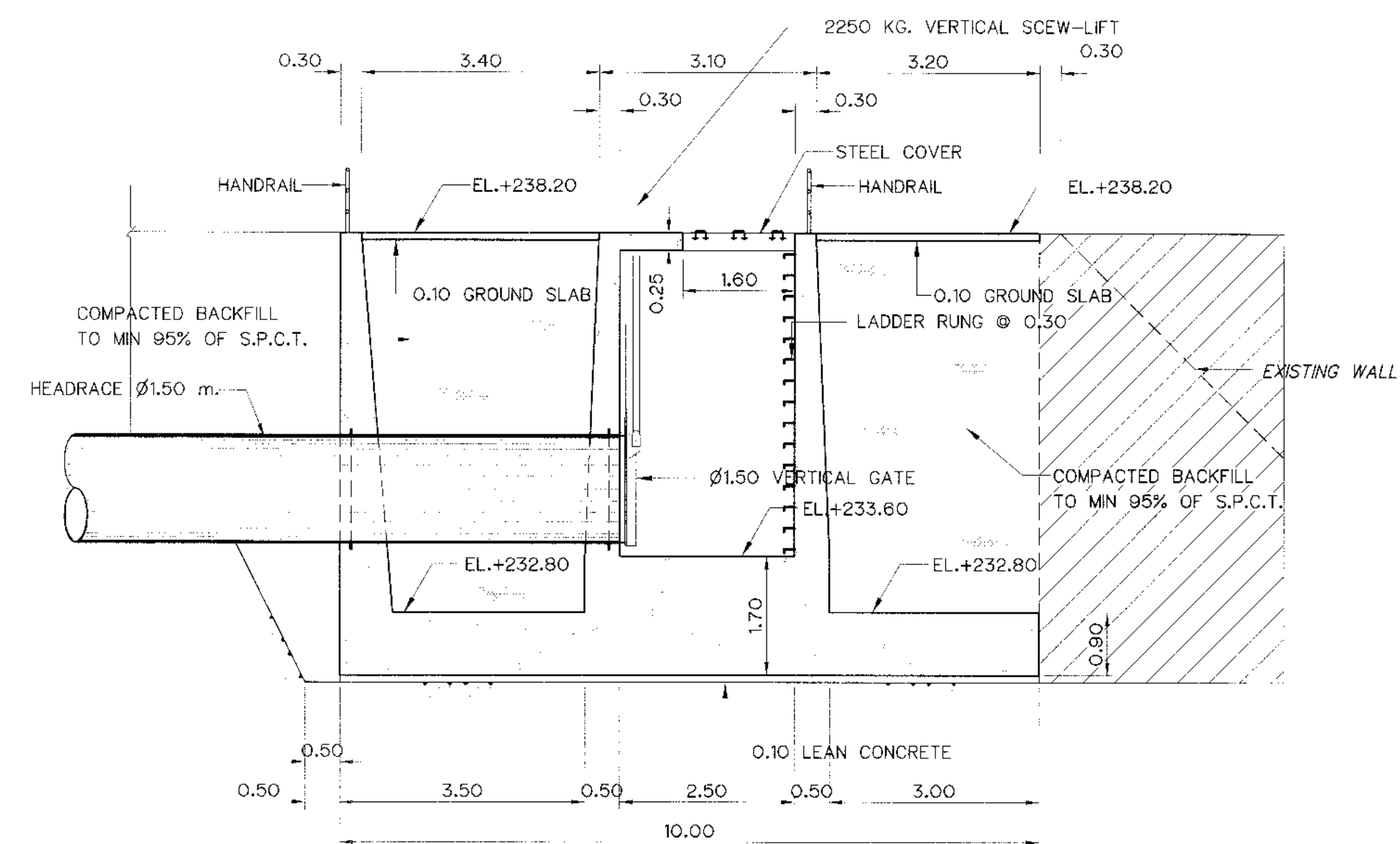
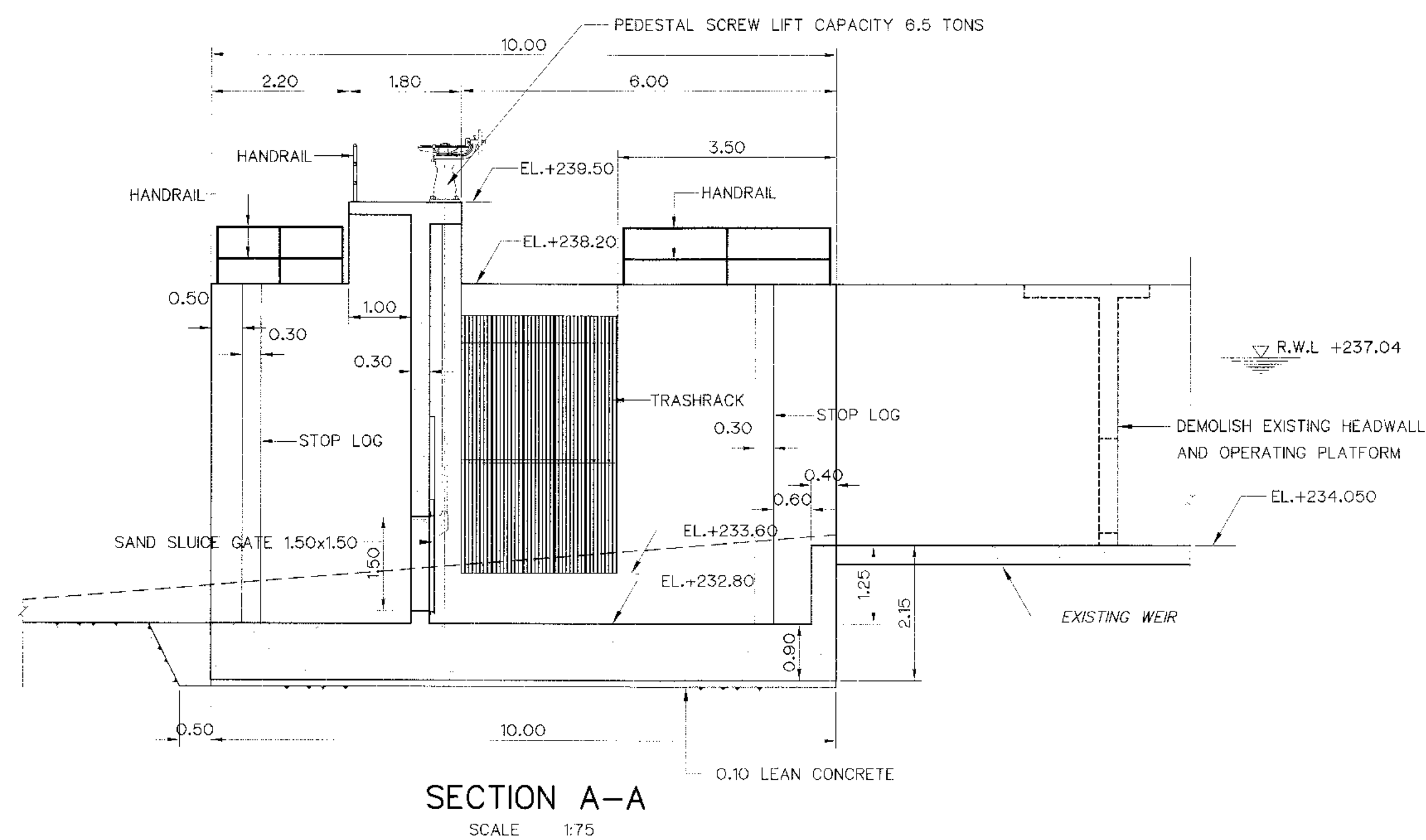
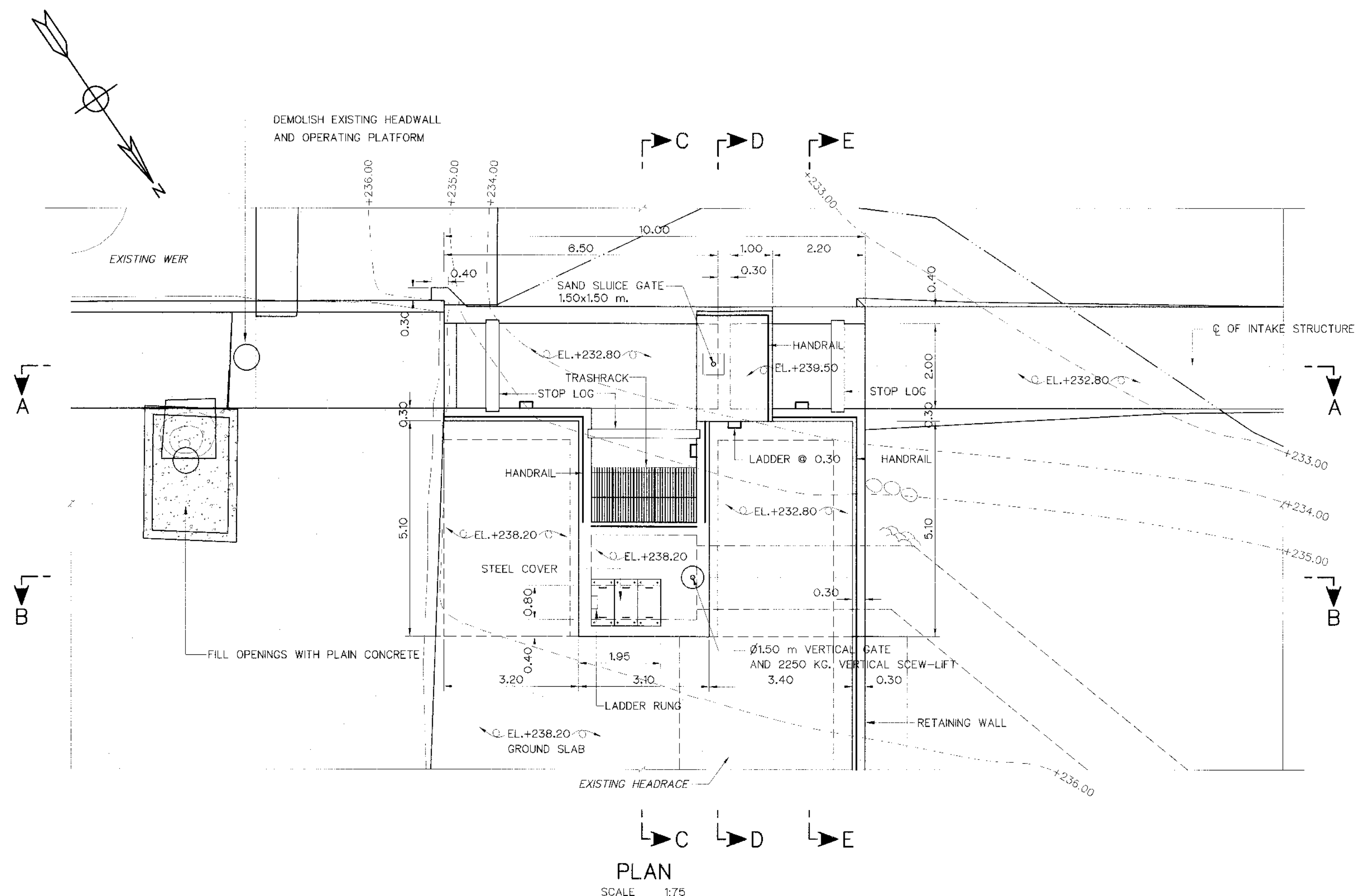
REFERENCE DRAWINGS :

1. WEIR : WEIR REHABILITATION GENERAL LAY-OUT KLP-WE-01



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NO.	DATE	REVISIONS	CHECKED	APPROVED

KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT WEIR : WEIR REHABILITATION SECTION AND DETAILS	
P&C MANAGEMENT CO.,LTD. DESIGNED <i>[Signature]</i> 08/29/07 DRAWN <i>[Signature]</i> CHECKED <i>[Signature]</i> 08/03/2559 PROJECT MANAGER	MINISTRY OF ENERGY REVIEWED <i>[Signature]</i> SUBMITTED <i>[Signature]</i> RECOMMENDED <i>[Signature]</i> APPROVED <i>[Signature]</i> DRAWING NO. KLP-WE-02 SHEET NO. 7 OF 38



LEGEND :

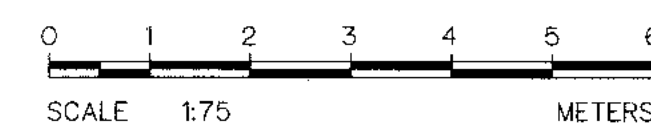
EXISTING STRUCTURE

NOTES :

- ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
- SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03
- SPACING OF HANDRAIL CAN BE ADJUSTED IN THE FIELD TO FIT WITH THE STRUCTURE BY CONTRACTOR AND APPROVED BY ENGINEER.
- INTAKE SHALL BE PLACED ON BED ROCK FOUNDATION, OTHER MATERIALS SHALL BE REMOVED AND BACKFILLED WITH LEAN CONCRETE AND THE LEAN CONCRETE SHALL HAVE THE COMPRESSIVE STRENGTH OF 140 KSC. FOR STANDARD CYLINDER AT 28 DAYS.
- ALLOWABLE BEARING CAPACITY NOT LESS THAN 15 TON/sq m.

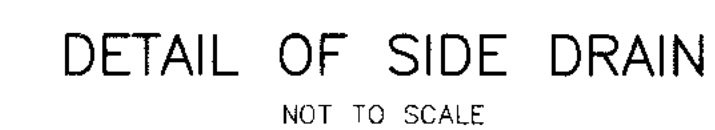
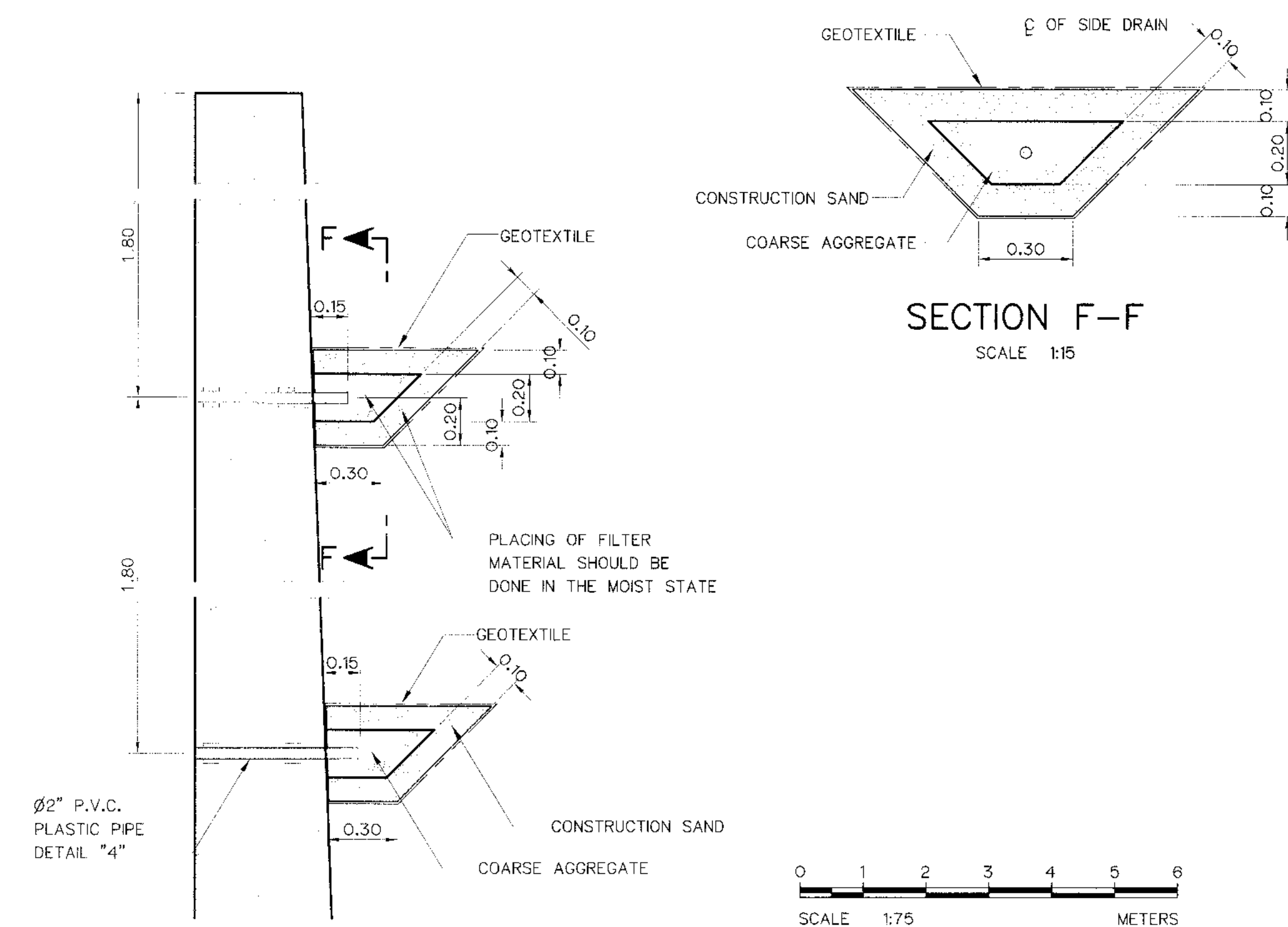
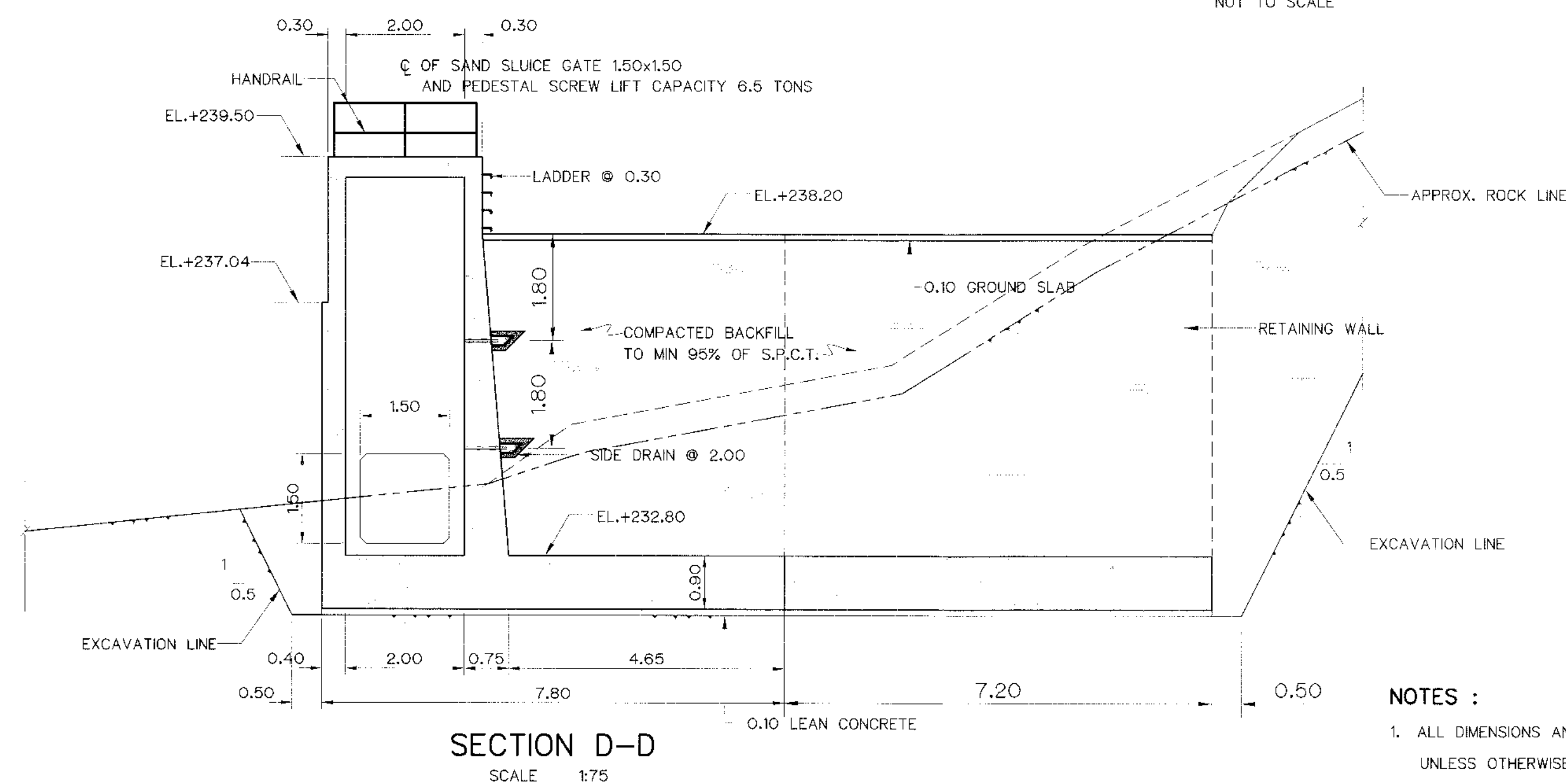
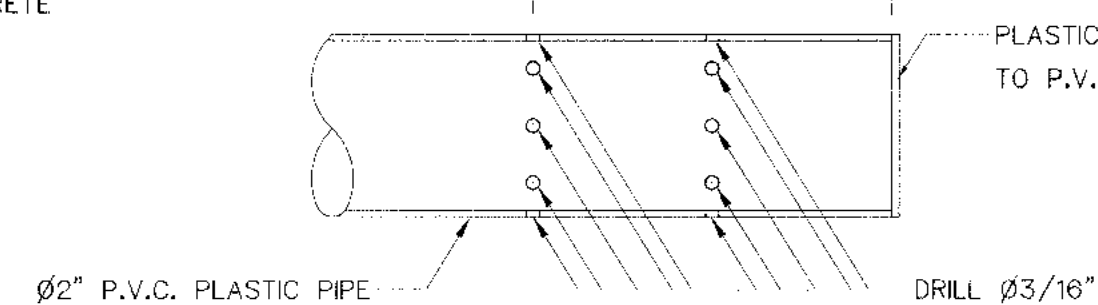
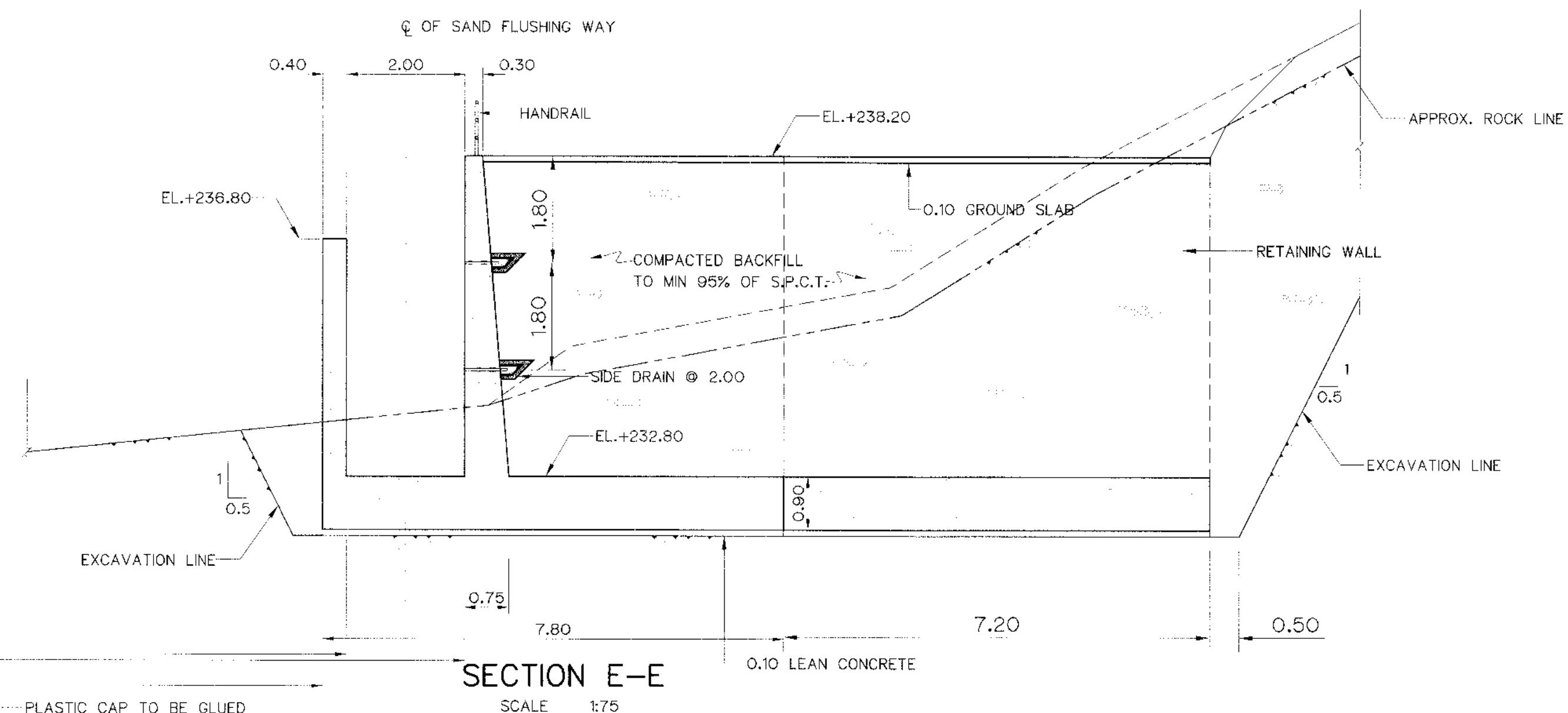
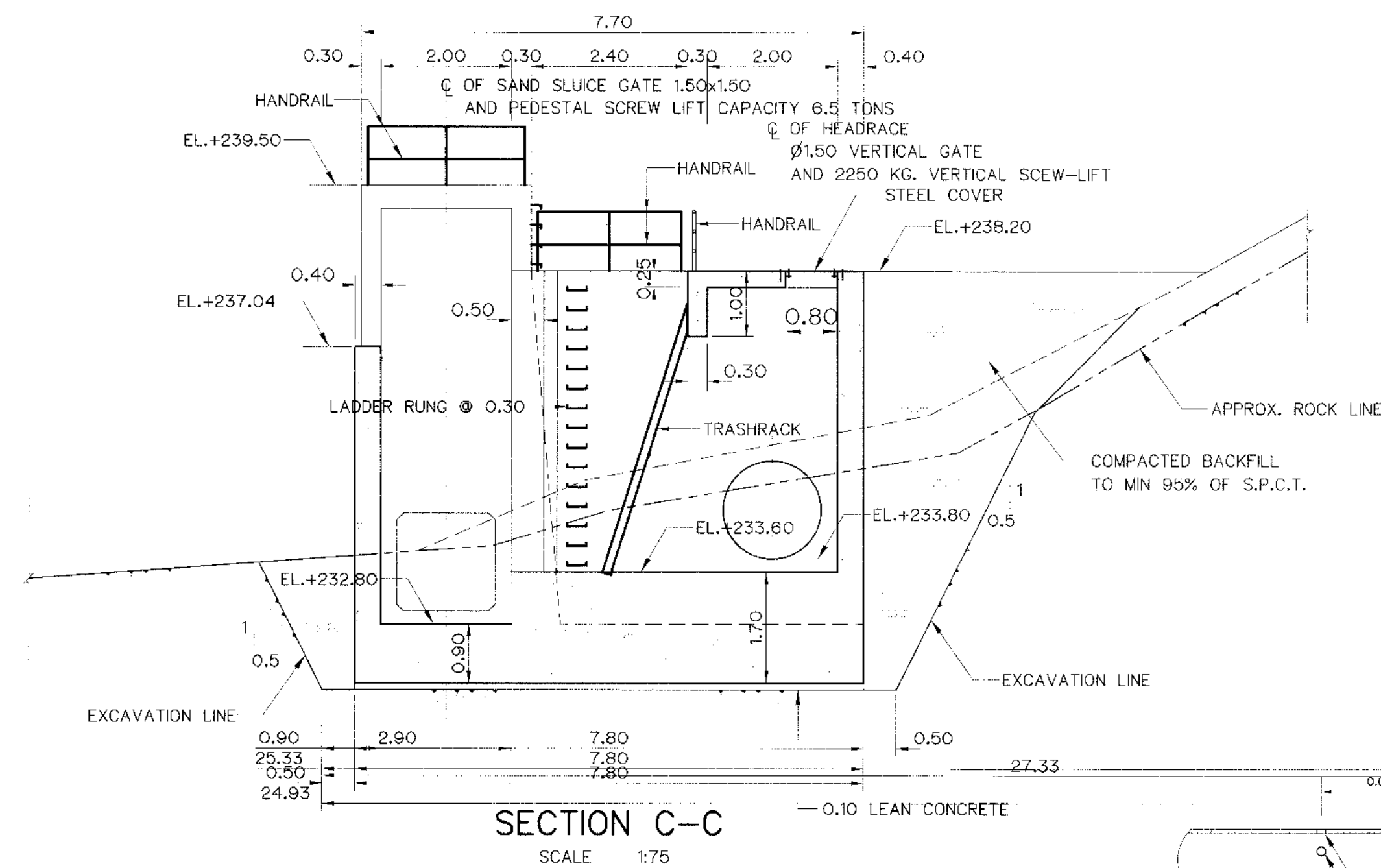
REFERENCE DRAWINGS :

- WEIR : WEIR REHABILITATION GENERAL LAY-OUT KLP-WE-01



KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT WEIR : INTAKE STRUCTURE PLAN AND SECTIONS	
P&C MANAGEMENT CO.,LTD.	REVIEWED
DESIGNED 08/29/74 08/26/226	SUBMITTED Chanit
DRAWN	RECOMMENDED
CHECKED 08/26/226	APPROVED
PROJECT MANAGER 08/03/2559 DATE	DRAWING NO. KLP-WE-03 SHEET NO. 8 OF 38

3				
2				
1				
NO.	DATE	REVISIONS	CHECKED	APPROVED



- ## NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03
 3. SPACING OF HANDRAIL CAN BE ADJUSTED IN THE FIELD TO FIT WITH THE STRUCTURE BY CONTRACTOR AND APPROVED BY ENGINEER.
 4. INTAKE SHALL BE PLACED ON BED ROCK FOUNDATION, OTHER MATERIALS SHALL BE REMOVED AND BACKFILLED WITH LEAN CONCRETE AND THE LEAN CONCRETE SHALL HAVE THE COMPRESSIVE STRENGTH OF 140 KSC. FOR STANDARD CYLINDER AT 28 DAYS.
 5. ALLOWABLE BEARING CAPACITY NOT LESS THAN 15 TON/sq. m.

REFERENCE DRAWINGS :

1. WEIR : INTAKE STRUCTURE PLAN AND SECTIONS KLP-WE-03

3				
2				
1				
NO.	DATE	REVISIONS	CHECKED	APPROVED
	CONSULTANTS		DEDE	

 KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT	
WEIR : INTAKE STRUCTURE	
SECTIONS	
 P&C MANAGEMENT CO.,LTD.	 Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY
DESIGNED <i>[Signature]</i> <u>08/22074</u> <i>[Signature]</i> <u>08/22026</u>	REVISED
DRAWN <i>[Signature]</i> <u>08/22026</u>	SUBMITTED <i>[Signature]</i>
CHECKED <i>[Signature]</i> <u>08/22026</u>	RECOMMENDED
<i>[Signature]</i> <u>08/03/2559</u>	APPROVED <i>[Signature]</i>
PROJECT MANAGER	DRAWING NO. KLP-WE-04
DATE	SHEET NO. 9 OF 38

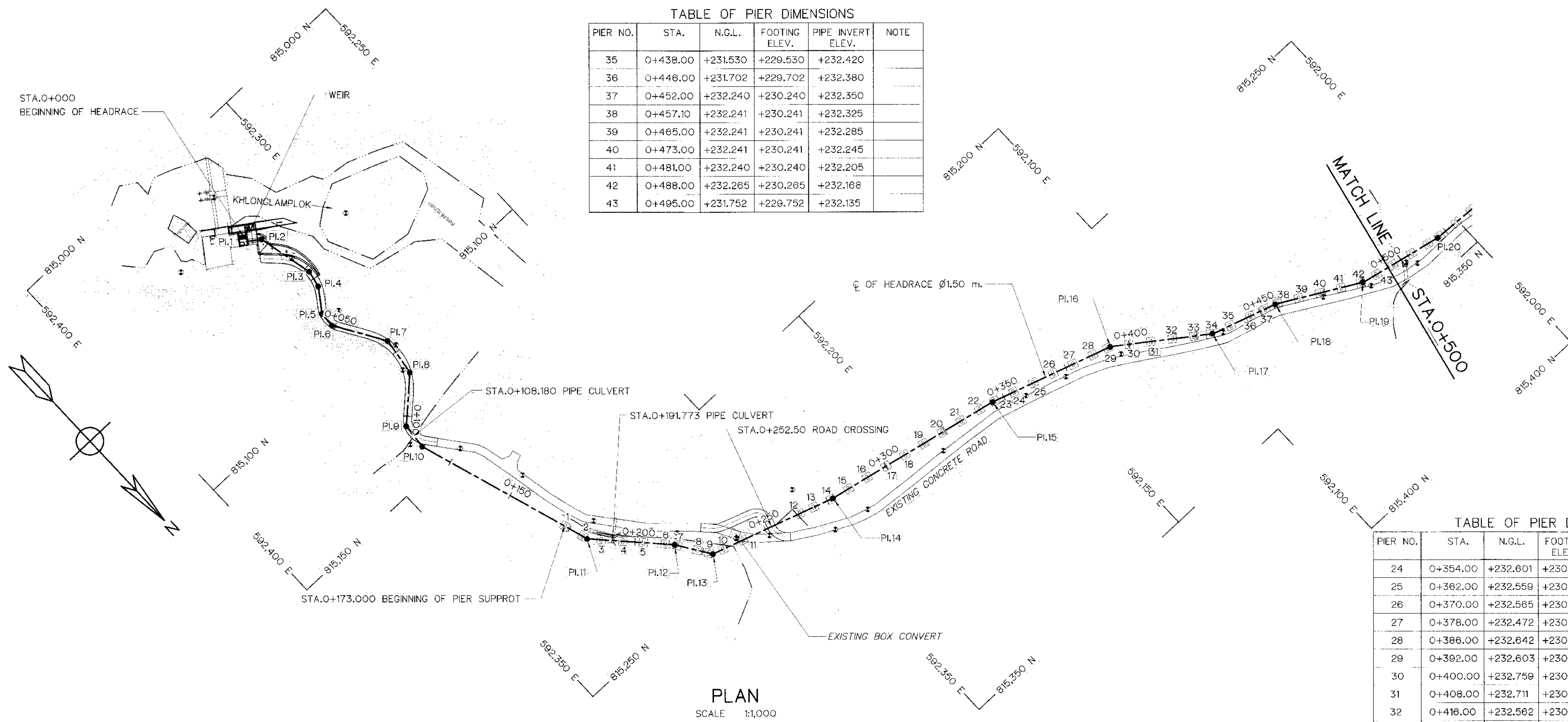


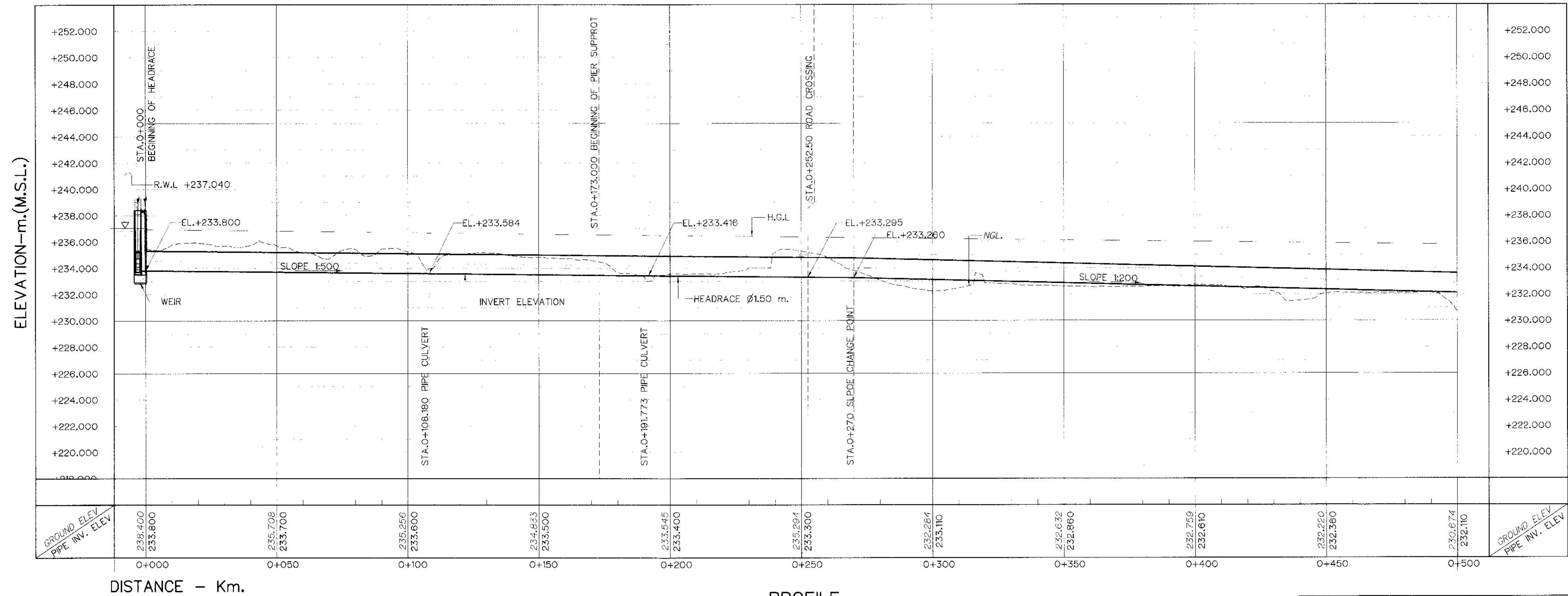
TABLE OF PIER DIMENSIONS					
PIER NO.	STA.	N.G.L.	FOOTING ELEV.	PIPE INVERT ELEV.	NOTE
35	0+438.00	+231.530	+229.530	+232.420	
36	0+448.00	+231.702	+229.702	+232.380	
37	0+452.00	+232.240	+230.240	+232.350	
38	0+457.10	+232.241	+230.241	+232.325	
39	0+465.00	+232.241	+230.241	+232.285	
40	0+473.00	+232.241	+230.241	+232.245	
41	0+481.00	+232.240	+230.240	+232.205	
42	0+488.00	+232.265	+230.265	+232.168	
43	0+495.00	+231.752	+229.752	+232.135	

HORIZONTAL CURVE OF HEADRACE

NO. PI.	COORDINATE OF PI.		PI. TO PI. (m)	DEFLECTION ANGLE (Δ) (° - ' - ")	PI. STA. (km)	BEARING (N/S - ° - ' - " E/W)
	N	E				
PI.1	815,041.962	592,329.225	-	-	0+000.000	-
PI.2	815,045.138	592,324.588	5.820	42° - 52' - 16.47"	0+005.620	N 55° - 35' - 30.33" W
PI.3	815,065.755	592,319.934	21.136	24° - 04' - 30.97"	0+026.756	N 12° - 43' - 13.86" W
PI.4	815,071.800	592,321.168	6.268	24° - 03' - 58.27"	0+033.024	N 11° - 21' - 17.11" E
PI.5	815,080.176	592,327.054	10.156	33° - 31' - 04.51"	0+043.180	N 35° - 25' - 15.38" E
PI.6	815,085.774	592,327.240	5.601	33° - 30' - 59.62"	0+048.781	N 01° - 54' - 10.87" E
PI.7	815,103.765	592,316.166	21.126	39° - 23' - 08.39"	0+069.907	N 31° - 36' - 48.76" W
PI.8	815,117.737	592,318.073	14.102	39° - 23' - 01.20"	0+084.009	N 07° - 46' - 19.63" E
PI.9	815,131.082	592,332.462	19.825	42° - 35' - 10.90"	0+103.834	N 47° - 08' - 20.83" E
PI.10	815,140.704	592,333.231	9.653	22° - 17' - 35.84"	0+113.287	N 04° - 34' - 09.83" E
PI.11	815,206.552	592,312.186	69.129	25° - 25' - 45.91"	0+182.416	N 17° - 43' - 25.91" W
PI.12	815,230.003	592,290.200	32.146	09° - 50' - 43.16"	0+214.562	N 43° - 09' - 11.82" W
PI.13	815,241.994	592,282.321	14.348	38° - 25' - 03.47"	0+228.910	N 33° - 18' - 28.66" W
PI.14	815,257.176	592,236.346	48.417	06° - 14' - 50.45"	0+277.327	N 71° - 43' - 32.13" W
PI.15	815,271.366	592,169.742	68.099	05° - 57' - 25.72"	0+345.428	N 77° - 58' - 22.58" W
PI.16	815,286.098	592,124.359	47.714	17° - 56' - 04.34"	0+393.140	N 72° - 00' - 56.86" W
PI.17	815,308.369	592,093.614	37.964	18° - 02' - 49.34"	0+431.104	N 54° - 04' - 52.52" W
PI.18	815,316.089	592,069.672	25.156	11° - 12' - 39.17"	0+456.260	N 72° - 07' - 41.86" W
PI.19	815,332.331	592,040.470	33.415	16° - 54' - 59.98"	0+489.675	N 60° - 55' - 02.70" W

TABLE OF PIER DIMENSIONS					
PIER NO.	STA.	N.G.L.	FOOTING ELEV.	PIPE INVERT ELEV.	NOTE
24	0+354.00	+232.601	+230.601	+232.840	
25	0+362.00	+232.559	+230.559	+232.800	
26	0+370.00	+232.565	+230.565	+232.760	
27	0+378.00	+232.472	+230.472	+232.720	
28	0+386.00	+232.642	+230.642	+232.680	
29	0+392.00	+232.603	+230.603	+232.650	
30	0+400.00	+232.759	+230.759	+232.610	
31	0+408.00	+232.711	+230.711	+232.570	
32	0+416.00	+232.562	+230.562	+232.530	
33	0+424.00	+232.609	+230.609	+232.490	
34	0+430.00	+232.260	+230.260	+232.460	

TABLE OF PIER DIMENSIONS					
PIER NO.	STA.	N.G.L.	FOOTING ELEV.	PIPE INVERT ELEV.	NOTE
1	0+173.00	+234.481	+234.481	+233.454	
2	0+180.50	+233.658	+231.658	+233.439	
3	0+187.50	+233.479	+231.479	+233.425	
4	0+195.50	+233.472	+231.472	+233.409	
5	0+203.00	+233.573	+231.573	+233.394	
6	0+211.00	+233.573	+231.573	+233.378	
7	0+215.50	+233.573	+231.573	+233.369	
8	0+223.00	+233.703	+231.703	+233.354	
9	0+227.30	+233.793	+231.793	+233.345	
10	0+233.00	+234.000	+232.000	+233.334	
11	0+241.00	+235.312	+233.312	+233.318	
12	0+244.00	+235.312	+233.312	+233.272	
13	0+269.00	+234.382	+232.382	+233.261	
14	0+276.00	+233.378	+231.378	+233.228	
15	0+284.00	+232.796	+230.796	+233.190	
16	0+292.00	+232.472	+230.472	+233.150	
17	0+300.00	+232.484	+230.484	+233.110	
18	0+308.00	+232.426	+230.423	+233.070	
19	0+316.00	+232.428	+230.426	+233.070	
20	0+324.00	+232.832	+230.832	+232.990	
21	0+332.00	+232.739	+230.739	+232.950	
22	0+340.00	+232.679	+230.679	+232.910	
23	0+346.00	+232.655	+230.655	+232.878	



NOTES :

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- THE ALIGNMENT OF THE HEADRACE AND RELATED STRUCTURES SHALL BE CHECK AND CORRECTED BY THE CONTRACTOR TO SUIT THE FIELD CONDITIONS AND SHALL BE SUBMITTED TO DEDE'S FIELD ENGINEER FOR APPROVAL

REFERENCE DRAWINGS :

- HEADRACE, PLAN AND PROFILE, STA. 0+500 TO STA. 1+000 KLP-HR-02
- HEADRACE, TYPICAL SECTIONS AND DETAILS KLP-HR-04

KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT HEADRACE PLAN AND PROFILE, STA. 0+000 TO STA. 0+500	
DESIGNED P&C MANAGEMENT CO., LTD. 28/03/2559	REVIEWED SUBMITTED RECOMMENDED APPROVED DATE
PROJECT MANAGER	DRAWING NO. KLP-HR-01 SHEET NO. 10 OF 38

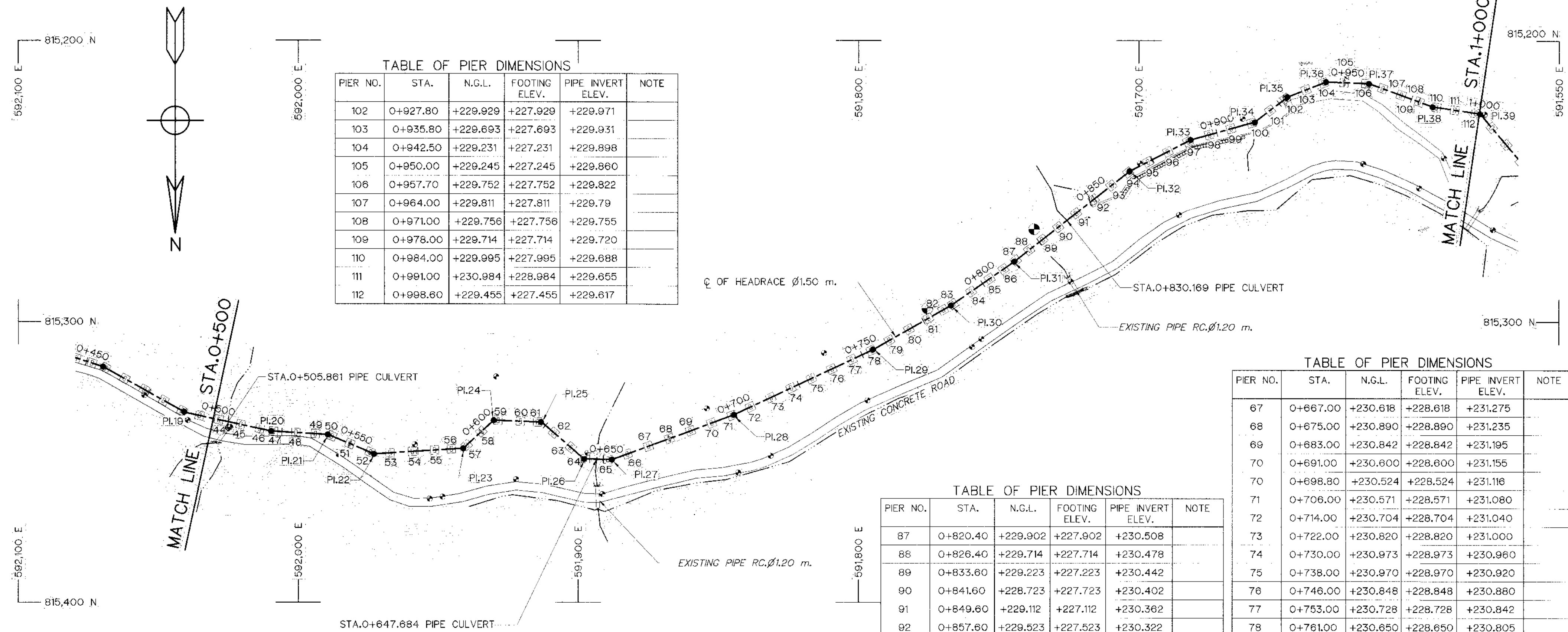


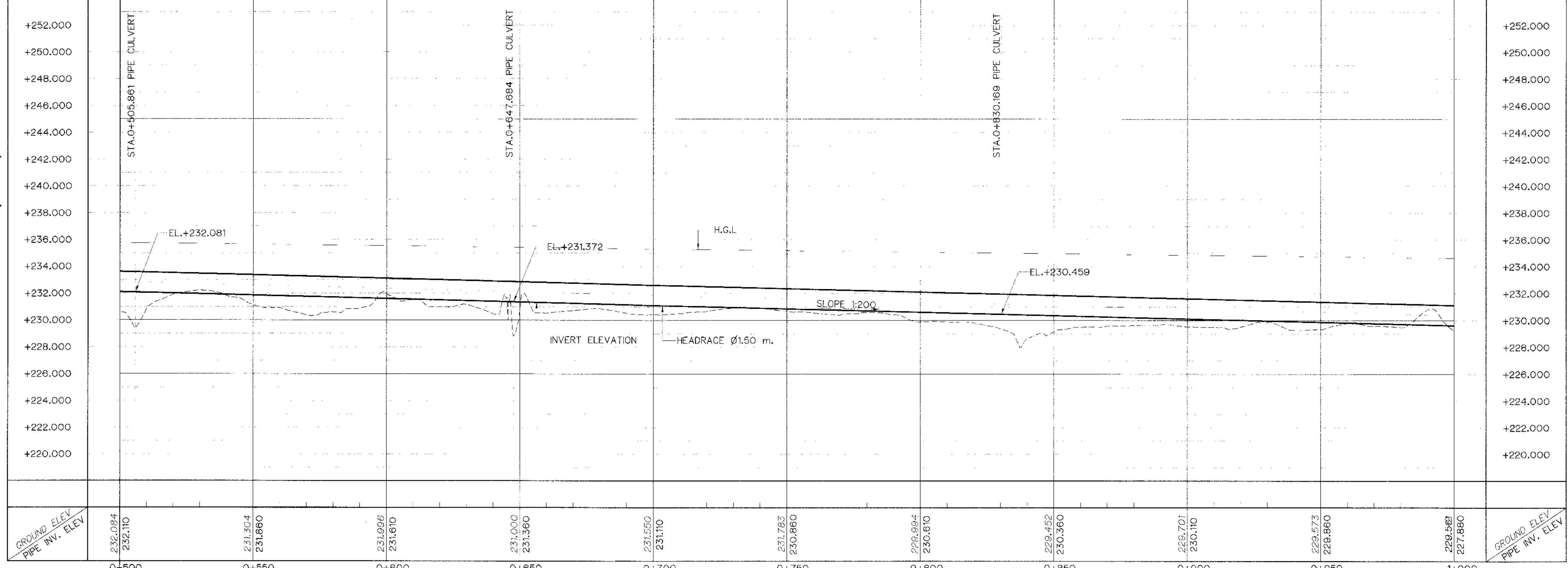
TABLE OF PIER DIMENSIONS					
PIER NO.	STA.	N.G.L.	FOOTING ELEV.	PIPE INVERT ELEV.	NOTE
102	0+927.80	+229.929	+227.929	+229.971	
103	0+935.80	+229.693	+227.693	+229.931	
104	0+942.50	+229.231	+227.231	+229.898	
105	0+950.00	+229.245	+227.245	+229.860	
106	0+957.70	+229.752	+227.752	+229.822	
107	0+964.00	+229.811	+227.811	+229.79	
108	0+971.00	+229.756	+227.756	+229.755	
109	0+978.00	+229.714	+227.714	+229.720	
110	0+984.00	+229.995	+227.995	+229.688	
111	0+991.00	+230.984	+228.984	+229.655	
112	0+998.60	+229.455	+227.455	+229.617	

TABLE OF PIER DIMENSIONS					
PIER NO.	STA.	N.G.L.	FOOTING ELEV.	PIPE INVERT ELEV.	NOTE
87	0+820.40	+229.902	+227.902	+230.508	
88	0+826.40	+229.714	+227.714	+230.478	
89	0+833.60	+229.223	+227.223	+230.442	
90	0+841.60	+228.723	+227.723	+230.402	
91	0+849.60	+229.112	+227.112	+230.362	
92	0+857.60	+229.523	+227.523	+230.322	
93	0+865.20	+229.534	+227.534	+230.284	
94	0+873.20	+229.743	+227.743	+230.244	
95	0+881.20	+229.776	+227.776	+230.204	
97	0+889.20	+229.779	+227.779	+230.164	
98	0+897.20	+229.742	+227.742	+230.124	
99	0+905.20	+229.680	+227.680	+230.084	
100	0+912.90	+229.676	+227.676	+230.046	
101	0+920.90	+229.728	+227.728	+230.006	

TABLE OF PIER DIMENSIONS					
PIER NO.	STA.	N.G.L.	FOOTING ELEV.	PIPE INVERT ELEV.	NOTE
67	0+667.00	+230.618	+228.618	+231.275	
68	0+675.00	+230.890	+228.890	+231.235	
69	0+683.00	+230.842	+228.842	+231.195	
70	0+691.00	+230.600	+228.600	+231.155	
70	0+698.80	+230.524	+228.524	+231.116	
71	0+706.00	+230.571	+228.571	+231.080	
72	0+714.00	+230.704	+228.704	+231.040	
73	0+722.00	+230.820	+228.820	+231.000	
74	0+730.00	+230.973	+228.973	+230.960	
75	0+738.00	+230.970	+228.970	+230.920	
76	0+746.00	+230.848	+228.848	+230.880	
77	0+753.00	+230.728	+228.728	+230.842	
78	0+761.00	+230.650	+228.650	+230.805	
79	0+769.00	+230.556	+228.556	+230.765	
80	0+777.00	+230.632	+228.632	+230.725	
81	0+783.00	+230.706	+228.706	+230.685	
82	0+787.10	+230.638	+228.638	+230.675	
83	0+795.00	+230.370	+228.370	+230.635	
84	0+803.00	+229.980	+227.980	+230.595	
85	0+809.00	+229.971	+227.971	+230.565	
86	0+814.40	+229.967	+227.967	+230.538	

TABLE OF PIER DIMENSIONS					
PIER NO.	STA.	N.G.L.	FOOTING ELEV.	PIPE INVERT ELEV.	NOTE
44	0+502.00	+230.653	+228.653	+232.100	
45	0+510.50	+230.846	+228.846	+232.060	
46	0+517.50	+230.806	+228.806	+232.025	
47	0+522.00	+231.034	+229.034	+232.000	
48	0+530.00	+231.337	+229.337	+231.960	
49	0+537.00	+231.261	+229.261	+231.925	
50	0+543.50	+230.737	+228.737	+231.895	
51	0+550.00	+230.305	+228.305	+231.860	
52	0+557.80	+229.952	+227.952	+231.821	
53	0+565.00	+229.678	+227.678	+231.785	
54	0+573.00	+229.678	+227.678	+231.745	
55	0+581.00	+229.445	+227.445	+231.705	
56	0+587.00	+229.642	+227.642	+231.675	
57	0+592.00	+230.000	+228.000	+231.646	
58	0+600.00	+230.996	+228.996	+231.610	
59	0+607.600	+230.587	+228.587	+231.572	
60	0+615.600	+230.000	+228.000	+231.532	
61	0+621.700	+230.000	+228.000	+231.502	
62	0+629.000	+230.370	+228.370	+231.465	
63	0+637.000	+229.785	+227.785	+231.425	
64	0+643.700	+230.679	+228.679	+231.392	
65	0+651.000	+230.954	+228.954	+231.352	
66	0+659.00	+230.618	+228.618	+231.315	

HORIZONTAL CURVE OF HEADRACE						
NO. PI.	COORDINATE OF PI.		PI. TO PI. DEFLECTION ANGLE (Δ) ($^{\circ}$ - $'$ - $''$)	PI. STA. (km)	BEARING (N/S $^{\circ}$ - $'$ - $''$ E/W)	
	N	E				
PI.20	815,338.979	592,009.633	31.545 08°-53'-13.29"	0+521.220	N 77°-50'-02.66" W	
PI.21	815,340.135	591,989.455	20.211 19°-24'-02.34"	0+541.431	N 86°-43'-15.97" W	
PI.22	815,347.054	591,972.898	17.945 26°-15'-54.64"	0+559.378	N 67°-19'-13.63" W	
PI.23	815,345.058	591,941.045	31.915 39°-04'-59.92"	0+591.291	S 86°-24'-51.74" W	
PI.24	815,335.019	591,930.154	14.812 45°-05'-37.90"	0+606.103	S 47°-19'-51.81" W	
PI.25	815,335.744	591,913.034	17.135 38°-25'-37.37"	0+623.238	N 87°-34'-30.29" W	
PI.26	815,348.782	591,897.957	19.933 39°-27'-30.77"	0+643.171	N 49°-08'-52.91" W	
PI.27	815,349.026	591,887.926	10.034 21°-36'-25.83"	0+653.205	N 88°-36'-23.68" W	
PI.28	815,333.003	591,844.409	46.373 04°-50'-25.66"	0+699.578	S 69°-47'-10.49" W	
PI.29	815,309.631	591,794.639	54.719 04°-25'-48.44"	0+754.297	S 64°-56'-44.82" W	
PI.30	815,294.053	591,766.934	32.057 05°-07'-19.80"	0+786.354	S 60°-30'-55.38" W	
PI.31	815,278.566	591,744.490	27.269 03°-20'-11.23"	0+813.623	S 55°-23'-35.58" W	
PI.32	815,246.378	591,703.207	52.348 10°-47'-46.25"	0+865.971	S 52°-03'-24.35" W	
PI.33	815,235.249	591,681.503	24.391 11°-45'-40.86"	0+890.362	S 62°-51'-10.60" W	
PI.34	815,228.970	591,658.685	23.666 21°-49'-30.63"	0+914.028	S 74°-36'-51.46" W	
PI.35	815,219.987	591,646.855	14.854 15°-59'-40.34"	0+928.882	S 52°-47'-20.83" W	
PI.36	815,214.678	591,633.174	14.676 23°-21'-45.41"	0+943.558	S 68°-47'-01.17" W	
PI.37	815,215.247	591,617.938	15.247 17°-37'-16.47"	0+958.805	N 87°-51'-13.42" W	
PI.38	815,223.502	591,594.968	24.408 11°-26'-35.69"	0+983.213	N 70°-13'-56.95" W	
PI.39	815,225.961	591,576.162	16.985 41°-29'-11.54"	1+000.198	N 81°-40'-32.64" W	



- NOTES :
- ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 - SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03
 - THE ALIGNMENT OF THE HEADRACE AND RELATED STRUCTURES SHALL BE CHECK AND CORRECTED BY THE CONTRACTOR TO SUIT THE FIELD CONDITIONS AND SHALL BE SUBMITTED TO DEDE'S FIELD ENGINEER FOR APPROVAL
- REFERENCE DRAWINGS :
- HEADRACE, PLAN AND PROFILE, STA. 0+000 TO STA. 0+500 KLP-HR-01
 - HEADRACE, PLAN AND PROFILE, STA. 1+000 TO STA. 1+459.506 KLP-HR-03
 - HEADRACE, TYPICAL SECTIONS AND DETAILS KLP-HR-04

KINGDOM OF THAILAND
Department of Alternative
Energy Development and Efficiency
MINISTRY OF ENERGY

KLONG LAM PLOK HYDROPOWER PROJECT

ELECTRO-MECHANICAL EQUIPMENT
HEADRACE
PLAN AND PROFILE, STA. 0+500 TO STA. 1+000

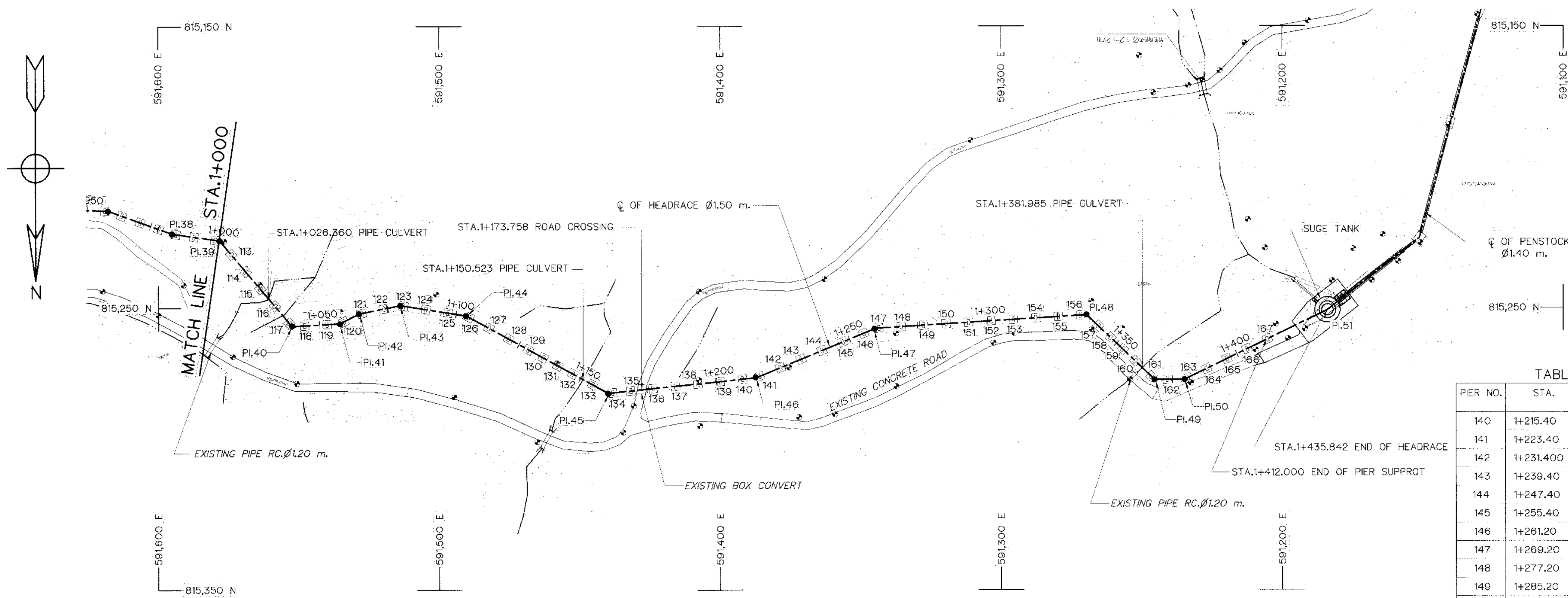
DESIGNED *[Signature]* 22.29074 22.6228
DRAWN *[Signature]*
CHECKED *[Signature]* 22.6228
PROJECT MANAGER

REVIEWED *[Signature]*
SUBMITTED *[Signature]*
RECOMMENDED
APPROVED

DATE 08/03/2559

DRAWING NO. KLP-HR-02
SHEET NO. 11 OF 38

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
CONSULTANTS		DEDE		

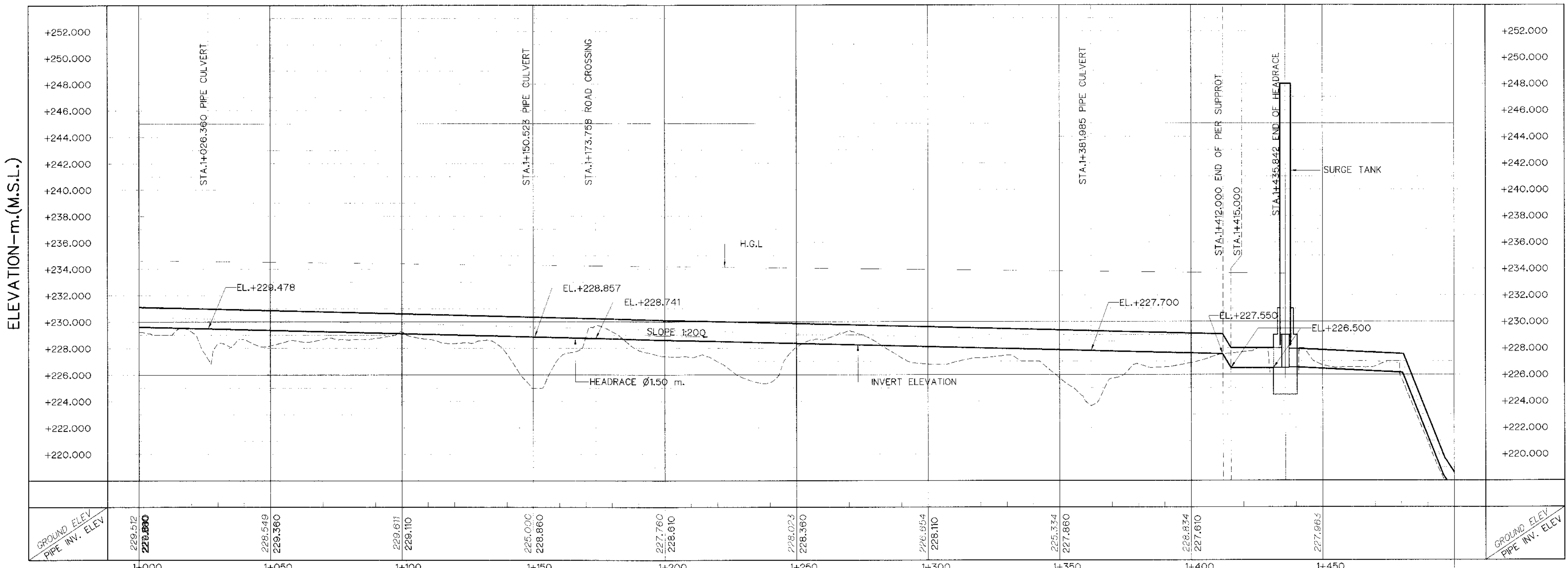


PLAN
SCALE 1:1,000

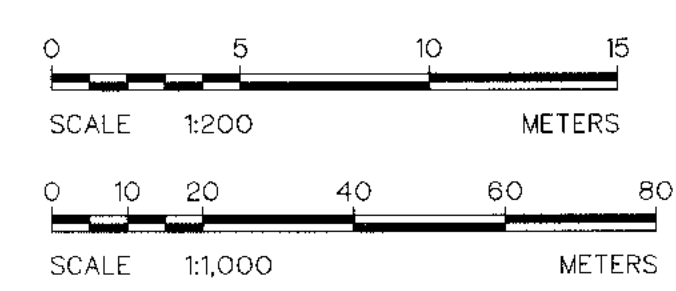
HORIZONTAL CURVE OF HEADRACE						
NO. PI.	COORDINATE OF PI.		PI. TO PI. DEFLECTION ANGLE (Δ) (° - ' - ")	PI. STA. (km)	BEARING (N/S - ° - ' - " E/W)	
	N	E				
PI.39	815,225.981	591,578.162	16.985	41° - 29' - 11.54"	1+000.198	N 81° - 40' - 32.64" W
PI.40	815,256.478	591,552.383	39.948	53° - 06' - 09.84"	1+040.146	N 40° - 11' - 21.10" W
PI.41	815,255.493	591,535.258	17.153	24° - 13' - 04.07"	1+057.299	S 86° - 42' - 29.07" W
PI.42	815,252.06	591,528.668	7.432	15° - 59' - 52.41"	1+064.731	S 62° - 29' - 25.00" W
PI.43	815,249.05	591,513.887	15.082	20° - 20' - 28.60"	1+079.813	S 78° - 29' - 17.40" W
PI.44	815,252.703	591,490.37	23.799	19° - 46' - 55.37"	1+103.812	N 81° - 10' - 14.00" W
PI.45	815,280.266	591,439.84	57.559	34° - 39' - 57.81"	1+161.171	N 61° - 23' - 18.63" W
PI.46	815,274.67	591,387.081	53.055	16° - 20' - 35.47"	1+214.226	S 83° - 56' - 43.56" W
PI.47	815,257.212	591,344.72	45.817	18° - 46' - 28.36"	1+260.043	S 67° - 36' - 08.09" W
PI.48	815,262.461	591,269.69	75.180	47° - 07' - 06.65"	1+335.223	S 86° - 22' - 36.45" W
PI.49	815,275.481	591,245.428	33.445	44° - 01' - 05.86"	1+368.668	N 46° - 30' - 16.90" W
PI.50	815,275.383	591,234.692	10.736	25° - 21' - 26.64"	1+379.404	S 89° - 28' - 37.23" W
PI.51	815,260.748	591,183.914	56.438			

TABLE OF PIER DIMENSIONS					
PIER NO.	STA.	N.G.L.	FOOTING ELEV.	PIPE INVERT ELEV.	NOTE
140	1+215.40	+227.398	+225.398	+228.533	
141	1+223.40	+226.845	+224.845	+228.493	
142	1+231.400	+225.721	+223.721	+228.453	
143	1+239.40	+225.487	+223.487	+228.413	
144	1+247.40	+227.733	+225.733	+228.373	
145	1+255.40	+228.689	+226.689	+228.333	
146	1+261.20	+228.701	+226.701	+228.304	
147	1+269.20	+229.312	+227.312	+228.264	
148	1+277.20	+228.887	+226.887	+228.224	
149	1+285.20	+227.901	+225.901	+228.184	
150	1+293.20	+226.988	+224.988	+228.144	
151	1+301.20	+226.811	+224.811	+228.104	
152	1+309.20	+226.975	+224.975	+228.064	
153	1+317.20	+227.257	+225.257	+228.024	
154	1+325.20	+227.901	+225.901	+227.984	
155	1+333.10	+227.325	+225.325	+227.945	
156	1+341.10	+227.000	+225.000	+227.905	
157	1+347.10	+226.235	+224.235	+228.064	
158	1+353.10	+225.301	+224.301	+228.024	
159	1+359.10	+223.369	+221.369	+228.024	

TABLE OF PIER DIMENSIONS					
PIER NO.	STA.	N.G.L.	FOOTING ELEV.	PIPE INVERT ELEV.	NOTE
113	1+006.60	+229.000	+227.000	+229.577	
114	1+014.60	+229.432	+227.432	+229.537	
115	1+022.60	+228.711	+226.711	+229.497	
116	1+030.60	+228.402	+226.402	+229.457	
117	1+038.60	+228.722	+226.722	+229.417	
118	1+044.60	+228.215	+226.215	+229.387	
119	1+052.60	+228.312	+226.312	+229.347	
120	1+058.80	+228.634	+226.634	+229.316	
121	1+065.80	+228.504	+226.504	+229.281	
122	1+073.80	+228.753	+226.753	+229.241	
123	1+081.80	+228.695	+226.695	+229.205	
124	1+089.00	+228.825	+226.825	+229.165	
125	1+104.80	+228.802	+226.802	+229.086	
126	1+112.80	+228.695	+226.695	+229.046	
127	1+120.80	+228.478	+226.478	+229.006	
128	1+128.80	+228.678	+226.678	+228.966	
129	1+134.80	+228.673	+226.673	+228.936	
130	1+140.80	+227.367	+225.367	+228.906	
131	1+146.80	+226.675	+224.675	+228.876	
132	1+154.80	+226.698	+224.698	+228.836	
133	1+162.70	+227.745	+225.745	+228.797	
134	1+169.20	+228.326	+226.326	+228.764	
135	1+177.20	+229.678	+227.678	+228.724	
136	1+185.20	+228.779	+226.779	+228.684	
137	1+193.20	+227.765	+225.765	+228.644	
138	1+201.20	+227.324	+225.324	+228.604	
139	1+209.20	+227.325	+225.325	+228.564	



PROFILE
VERTICAL SCALE 1:200
HORIZONTAL SCALE 1:1,000



- NOTES :
- ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 - SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03
 - THE ALIGNMENT OF THE HEADRACE AND RELATED STRUCTURES SHALL BE CHECK AND CORRECTED BY THE CONTRACTOR TO SUIT THE FIELD CONDITIONS AND SHALL BE SUBMITTED TO DEDE'S FIELD ENGINEER FOR APPROVAL
- REFERENCE DRAWINGS :
- HEADRACE, PLAN AND PROFILE, STA. 1+000 TO STA. 1+400 KLP-HR-02
 - HEADRACE, TYPICAL SECTIONS AND DETAILS KLP-HR-04

KINGDOM OF THAILAND
Department of Alternative
Energy Development and Efficiency
MINISTRY OF ENERGY

KLONG LAM PLOK HYDROPOWER PROJECT

ELECTRO-MECHANICAL EQUIPMENT
HEADRACE
PLAN AND PROFILE, STA. 1+000 TO STA. 1+459.506

P&C MANAGEMENT CO., LTD.

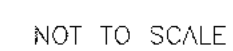
DESIGNED *[Signature]* 28/07/25 28/07/25
DRAWN *[Signature]*
CHECKED *[Signature]* 28/07/25
PROJECT MANAGER

REVIEWED *[Signature]*
SUBMITTED *[Signature]*
RECOMMENDED *[Signature]*
APPROVED *[Signature]*

DRAWING NO. KLP-HR-03
SHEET NO. 12 OF 38

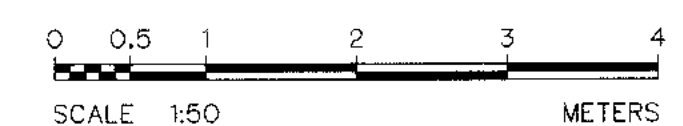


SCALE 1:50

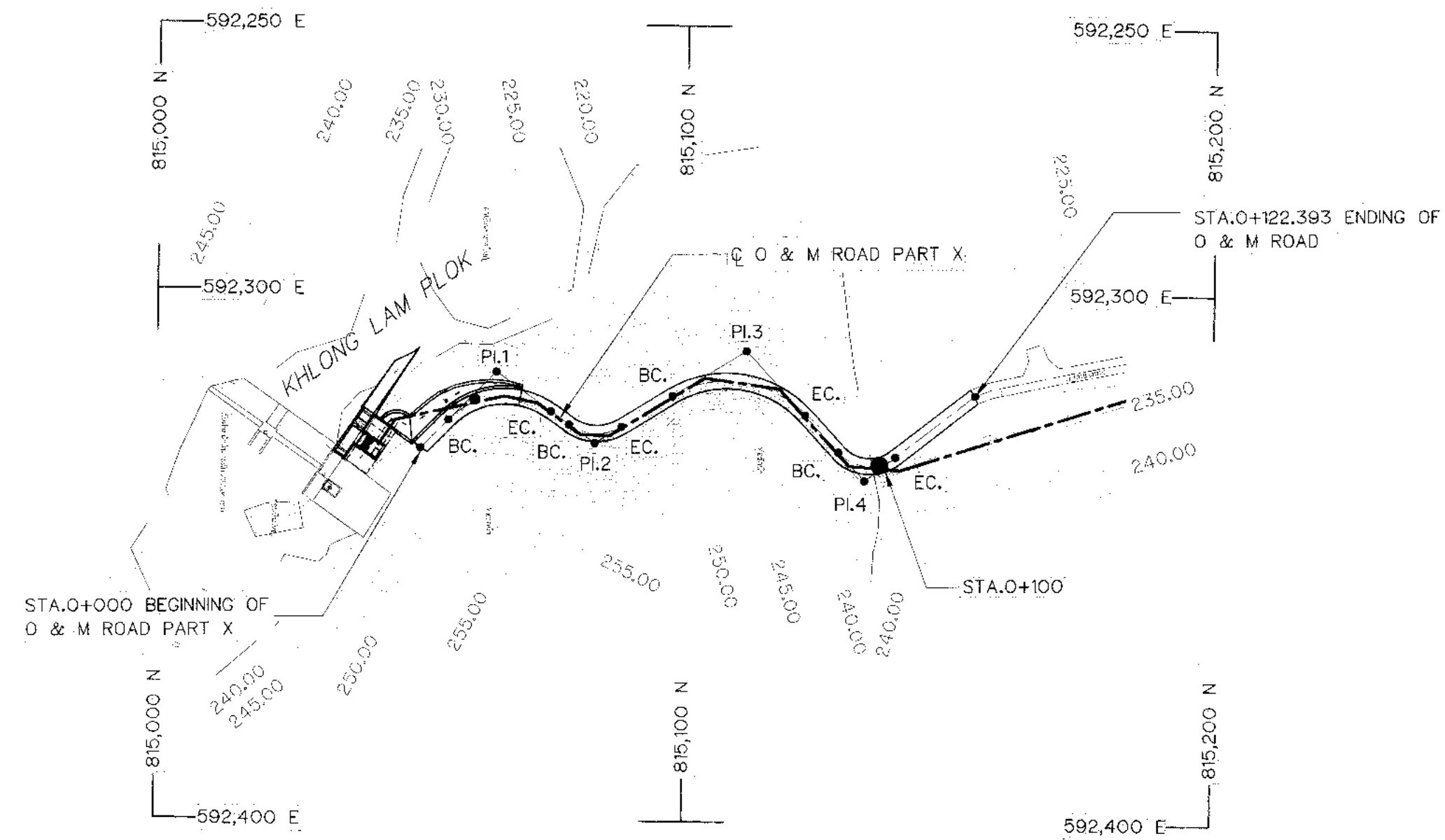


STA TO STA	TYPE OF HEADRACE SUPPORT
0+000 - 0+173	EARTH EXCAVATION
0+173 - 1+412	PIER
1+412 - 1+435.842	EARTH EXCAVATION

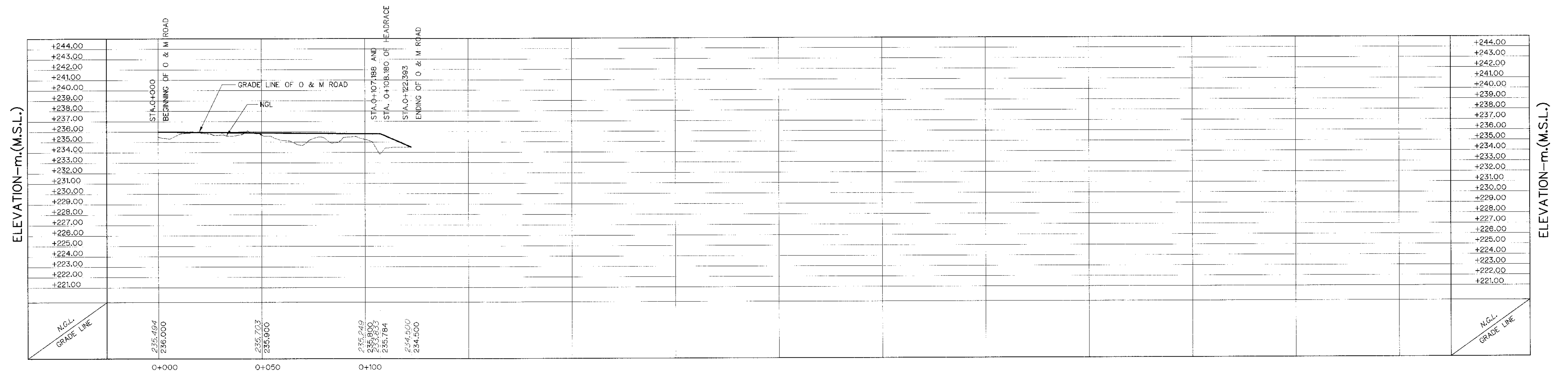
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03
3. CONCRETE DESIGN BASED ON THE COMPRESSIVE STRENGTH OF 210 KSC, STANDARD CYLINDER $\phi 0.15 \times 0.30$ m. TEST AT AGE 28 DAYS. UNLESS OTHERWISE INDICATED IN SPECIFIC DRAWINGS.
4. ULTIMATE TENSILE STRESSES OF REINFORCING STEEL, CONFORM TO THE REQUIREMENT OF THAI INDUSTRIAL STANDARD DESIGNATION SR24 FOR STRUCTURAL GRADE PLAIN ROUND BAR AND SD30 FOR INTERMEDIATE GRADE DEFORMED BAR.



 KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT HEADRACE TYPICAL SECTIONS AND DETAILS	
 P&C MANAGEMENT CO., LTD.	 Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY
DESIGNED <i>15</i> <i>ms.29074</i> <i>15</i> <i>ms.6226</i>	REVIEWED
DRAWN <i>15</i>	SUBMITTED <i>Chait</i>
CHECKED <i>15</i>	RECOMMENDED
<i>15</i> <i>ms.6226</i>	APPROVED <i>15</i>
 PROJECT MANAGER <i>06/03/2559</i> DATE	DRAWING NO. KLP-HR-04 SHEET NO. 13 OF 38



PLAN
SCALE 1:1,000



PROFILE

VERTICAL SCALE 1:200
HORIZONTAL SCALE 1:1,000

HORIZONTAL CURVE OF O&M ROAD

NO. PI.	COORDINATE		PI. - PI. (m)	DEFLECTION ANGLE (Δ) (' - ' - ")	TL	R	LC	BC. STA.	PI. STA.	EC. STA.	BEARING (N/S ' - ' - " E/W)
	N	E									
BEG.	815,049.995	592,329.732	-	-	-	-	-	-	0+000.000	-	-
1	815,064.253	592,315.360	20.245	80°-39'-05.69"	12.733	15.000	21.115	0+007.512	0+020.245	0+028.627	N45°-13'-41.31"W
2	815,082.925	592,328.641	22.914	67°-02'-14.66"	5.961	9.000	10.530	0+032.846	0+038.808	0+043.377	N35°-25'-24.39"E
3	815,111.586	592,310.999	33.656	78°-46'-17.64"	16.420	20.000	27.496	0+054.651	0+071.071	0+082.148	N31°-36'-50.30"W
4	815,134.102	592,335.278	33.113	85°-10'-47.77"	7.354	8.000	11.893	0+091.486	0+098.840	0+103.380	N47°-09'-27.35"E
END	815,154.906	592,319.080	33.553	-	-	-	-	-	0+122.393	-	N38°-01'-20.42"W

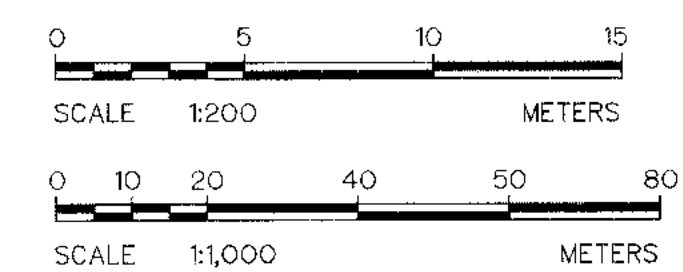
NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS UNLESS OTHERWISE SHOWN.
2. SYMBOL, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03
3. THE ALIGNMENT OF THE HEADRADE AND RELATED STRUCTURES SHALL BE CHECKED AND CORRECTED BY THE CONTRACTOR TO SUIT THE FIELD CONDITIONS AND SHALL BE SUBMITTED TO DEDE'S FIELD ENGINEER FOR APPROVAL.

REFERENCE DRAWINGS :

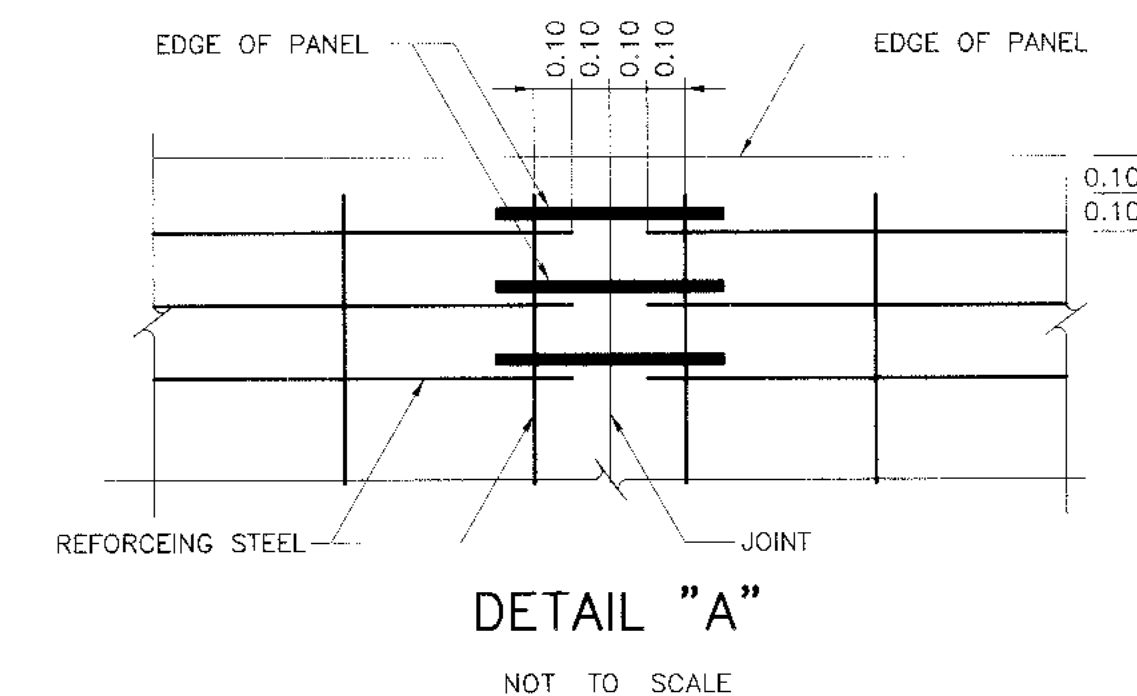
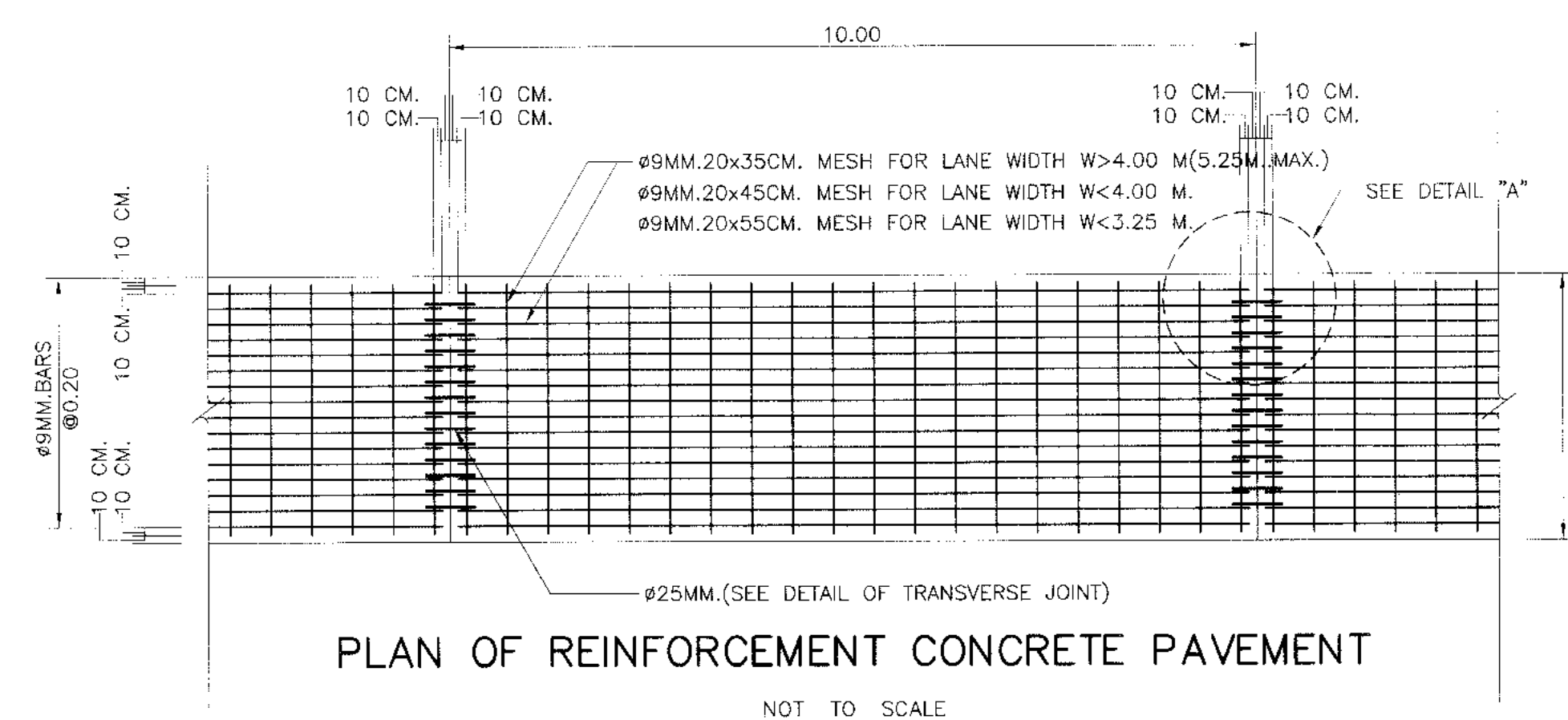
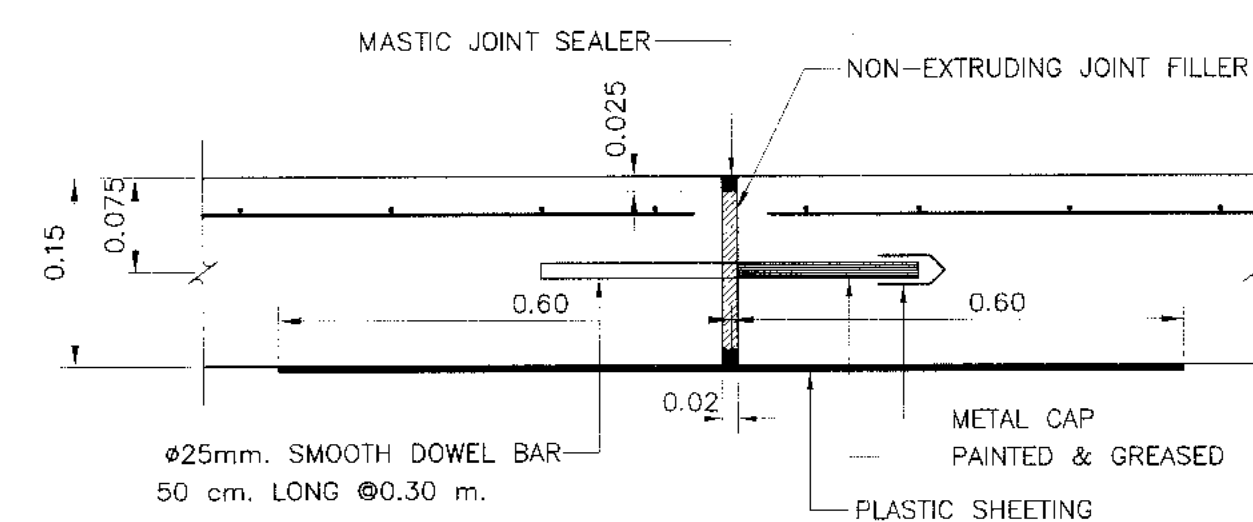
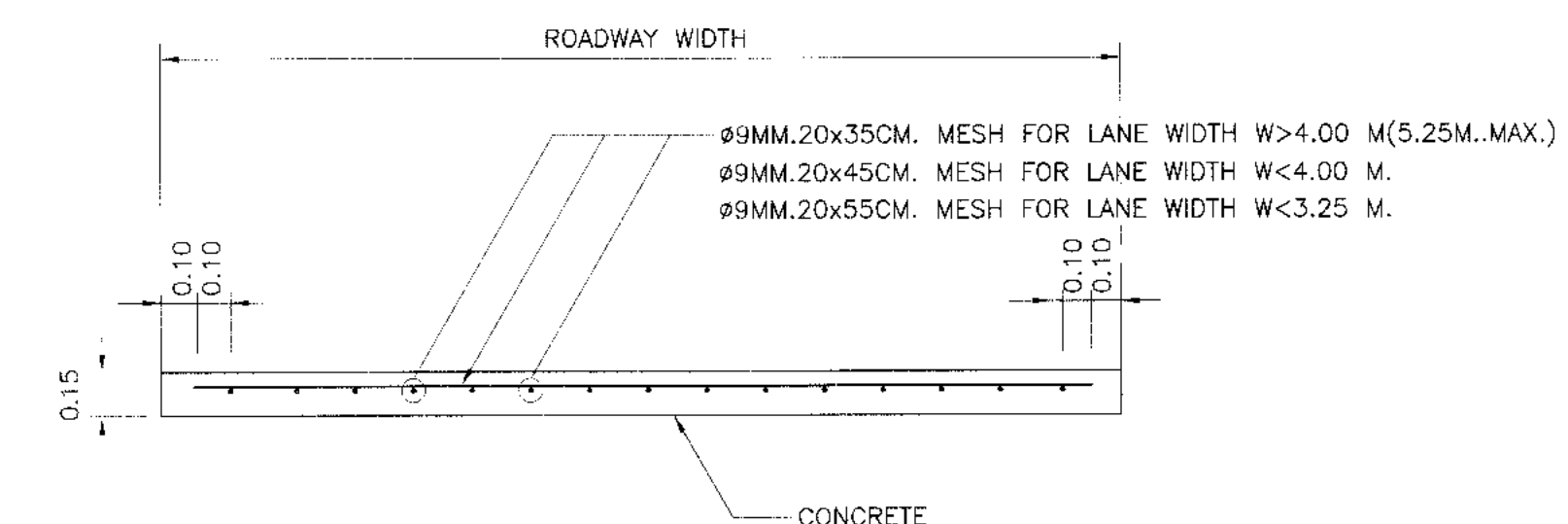
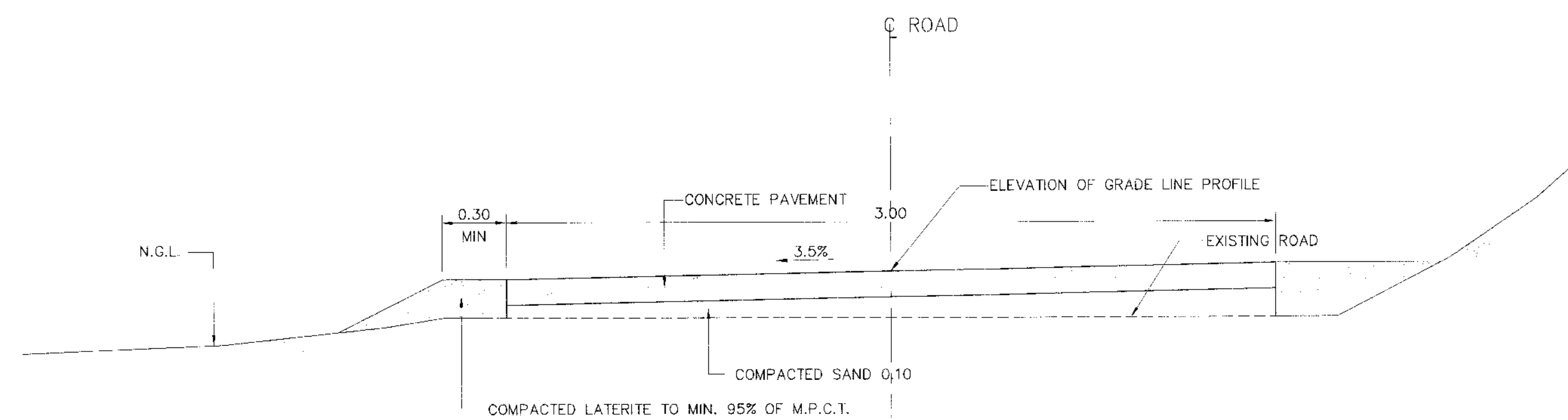
- ## 1. O&M ROAD TYPICAL SECTIONS AND DETAILS

KLP-OM-02



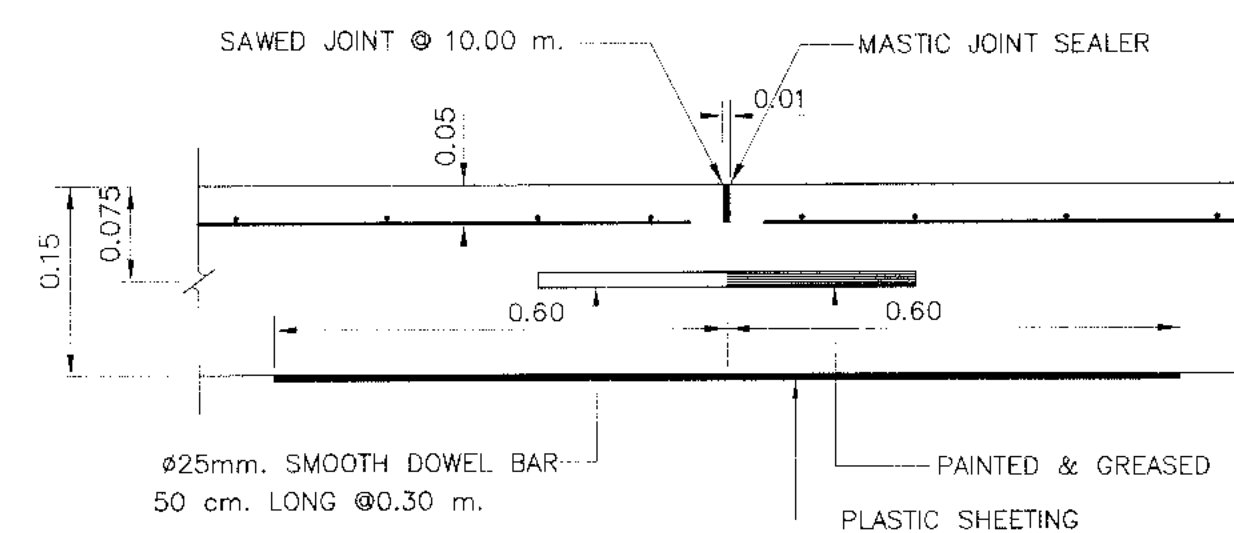
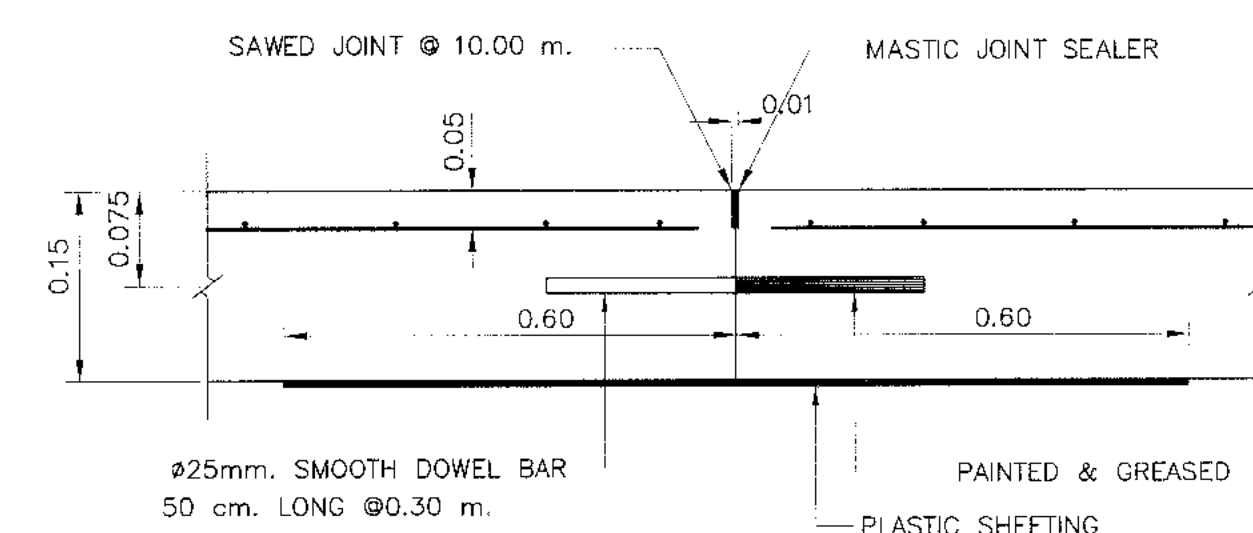
3				
2				
1				
NO.	DATE	REVISIONS	CHECKED	APPROVED
	CONSULTANTS		DEDE	

 KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT O&M ROAD PLAN AND PROFILE, STA. 0+000 TO STA. 0+107.621	
 P&C MANAGEMENT CO.,LTD.	 Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY
DESIGNED <i>Handwritten initials</i> NE.29074 <i>Handwritten initials</i> 261.6226	REVIEWED <i>Handwritten signature</i>
DRAWN <i>Handwritten initials</i>	RECOMMENDED
CHECKED <i>Handwritten initials</i> 261.6226	APPROVED <i>Handwritten signature</i>
<i>Handwritten initials</i> PROJECT MANAGER	DRAWING NO. KLP-OM-01
08/03/2559 DATE	SHEET NO. 14 OF 38



- NOTES 1 :

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE INDICATED.
2. EXPANSION JOINT SHALL BE CONSTRUCTED AT THE INTERVAL OF 90 METERS.
3. MASTIC JOINT SEALER SHALL BE OF THE HOT POURED ELASTIC TYPE CONFORMING TO TIS.479.
4. JOINT FILLER SHALL CONFORM TO THE AASHTO M.213-74 OR ASTM.D1751-73 SPECIFICATION.
5. CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 300 KSC. FOR 15x15x15 CM. CUBE AT 28 DAYS.
6. REINFORCING STEEL SHALL CONFORM TIS.20 GRADE SR 24 FOR ROUND BARS AND TIS.24 GRADE SD 30 FOR DEFORMED BAR.
7. PLASTIC SHEET USED IN CONSTRUCTION SHALL HAVE THE FOLLOWING REQUIREMENTS :
 - 7.1 THICKNESS OF 0.07 MM. WITH A TOLERANCE OF NOT MORE THAN 7 % SHALL BE REQUIRED.
 - 7.2 WIDTH SHALL NOT BE LESS THAN 1.20 M.
 - 7.3 IT SHALL BE COLOURLESS, TRANSPARENT AND WATERPROOF, FREE FROM POROUS AREA, TURN AREA AND BLISTERING AREA WHICH ARE VISIBLE BY NAKED EYE. EDGE SHALL BE STRAIGHT.
 - 7.4 CONTINUOUS LENGTH SHALL BE REQUIREMENT TO THE WIDTH OF TRAFFIC LANES. CONNECTION ALLOWED AT LONGITUDINAL JOINTS WITH NOT LESS THAN 20 CM. OVERLAPPING SHALL BE REQUIRED.

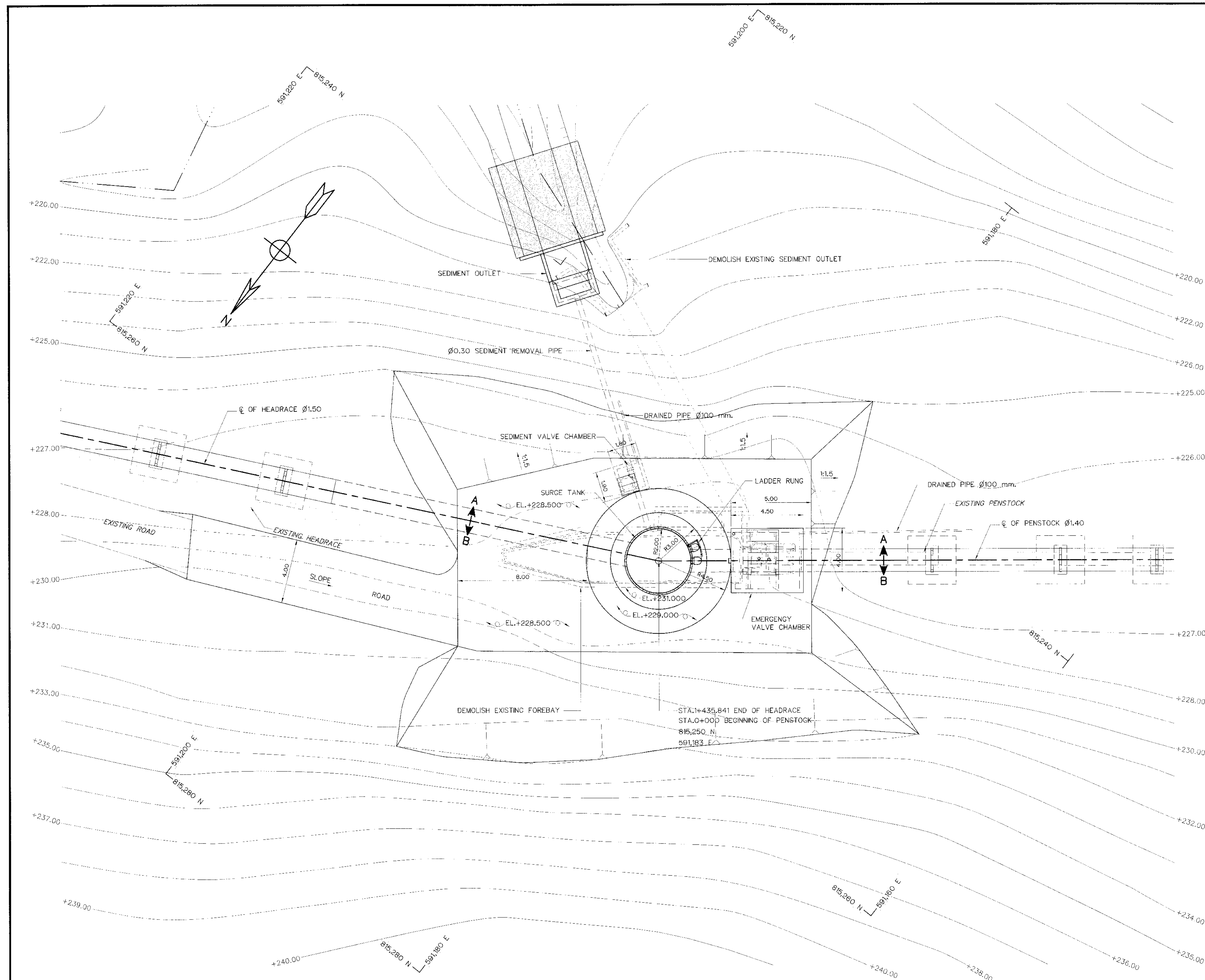


REFERENCE DRAWINGS :

1. O&M ROAD PLAN AND PROFILE, KLP-OM-01

3				
2				
1				
NO.	DATE	REVISIONS	CHECKED	APPROVED
	CONSULTANT'S		DEDE	

 KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY					
KLONG LAM PLOK HYDROPOWER PROJECT					
ELECTRO-MECHANICAL EQUIPMENT					
O&M ROAD					
TYPICAL SECTION AND DETAILS					
 P & C MANAGEMENT CO., LTD.			 Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY		
			REVIEWED		
DESIGNED <i>[Signature]</i> JUL 29 2014 <i>[Stamp]</i> REF: 6226			SUBMITTED <i>[Signature]</i>		
DRAWN			RECOMMENDED		
CHECKED <i>[Signature]</i>	REF: 6226		APPROVED <i>[Signature]</i>		
PROJECT MANAGER			DRAWING NO.		SH-FET NO.
DATE			KLP-OM-02		15 of 38

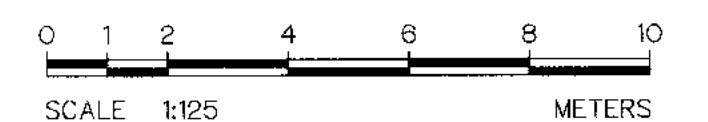


NOTES :

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. STEEL PIPE SHELL CONFORM TO JIS G 3101 SS34
3. BASE OF CONCRETE FOUNDATION SHALL BE DETERMINED IN FIELD BY EMBEDDING TO STABLE ROCK FOUNDATION WITH A ALLOWABLE BEARING CAPACITY NOT LESS THAN 20 T/m²
4. CORROSION PROTECTION OF STEEL PIPE OR GUARDRAIL IS WARNED TO STRICTLY FOLLOW GALVANIZE SPECIFICATION
5. STEEL TANK , GIRDER AND STIFFENER SHALL CONFORM TO JIS G 3101 SS34

REFERENCE DRAWING :

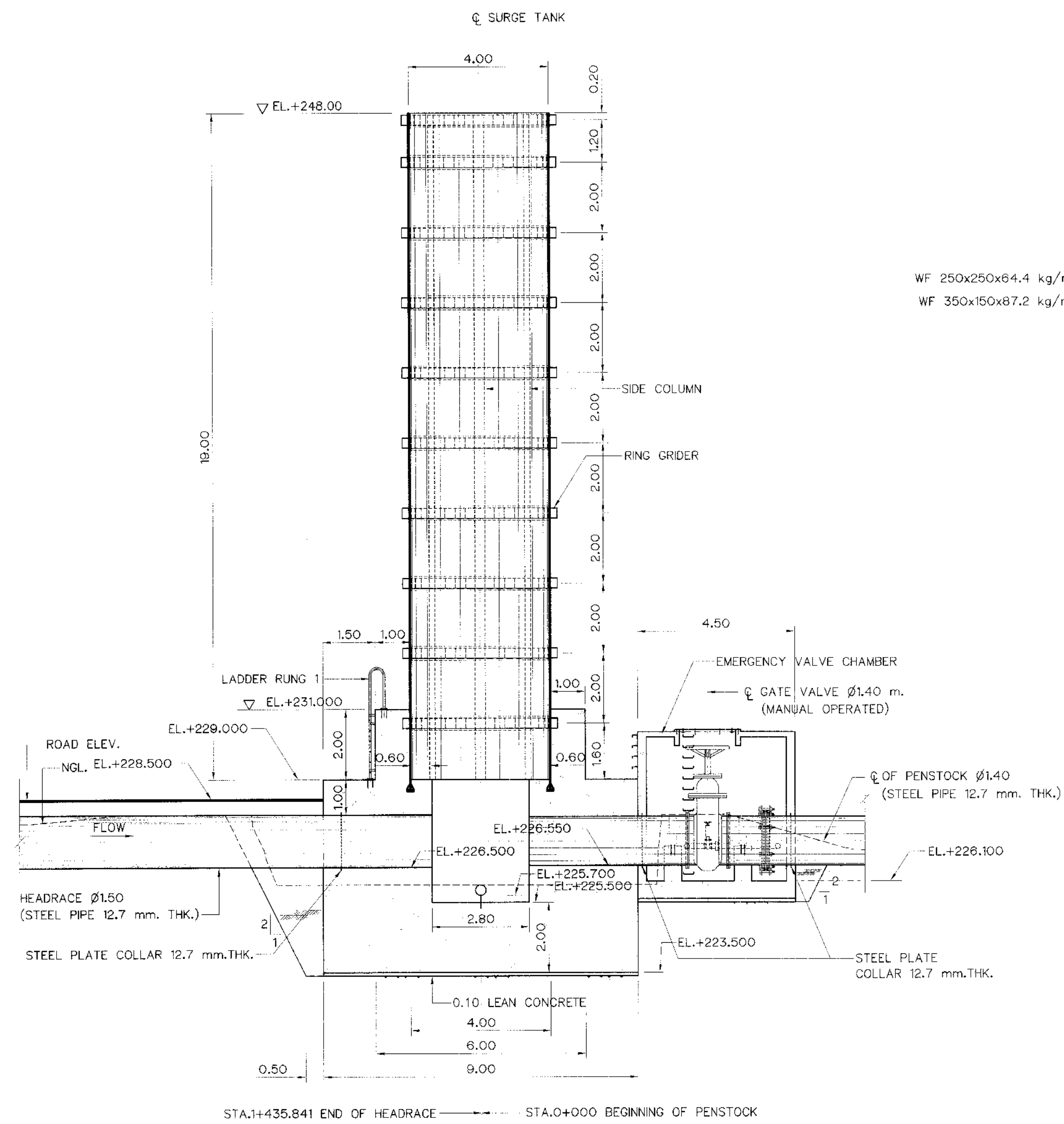
1. SURGE TANK SECTIONS KLP-ST-02



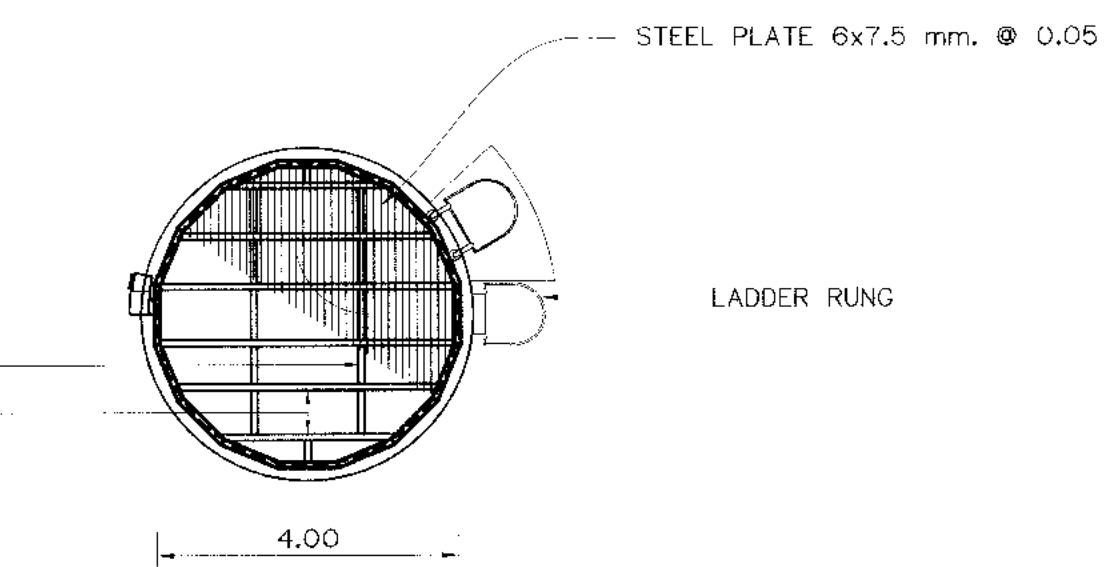
GENERAL LAY-OUT

SCALE 1:125

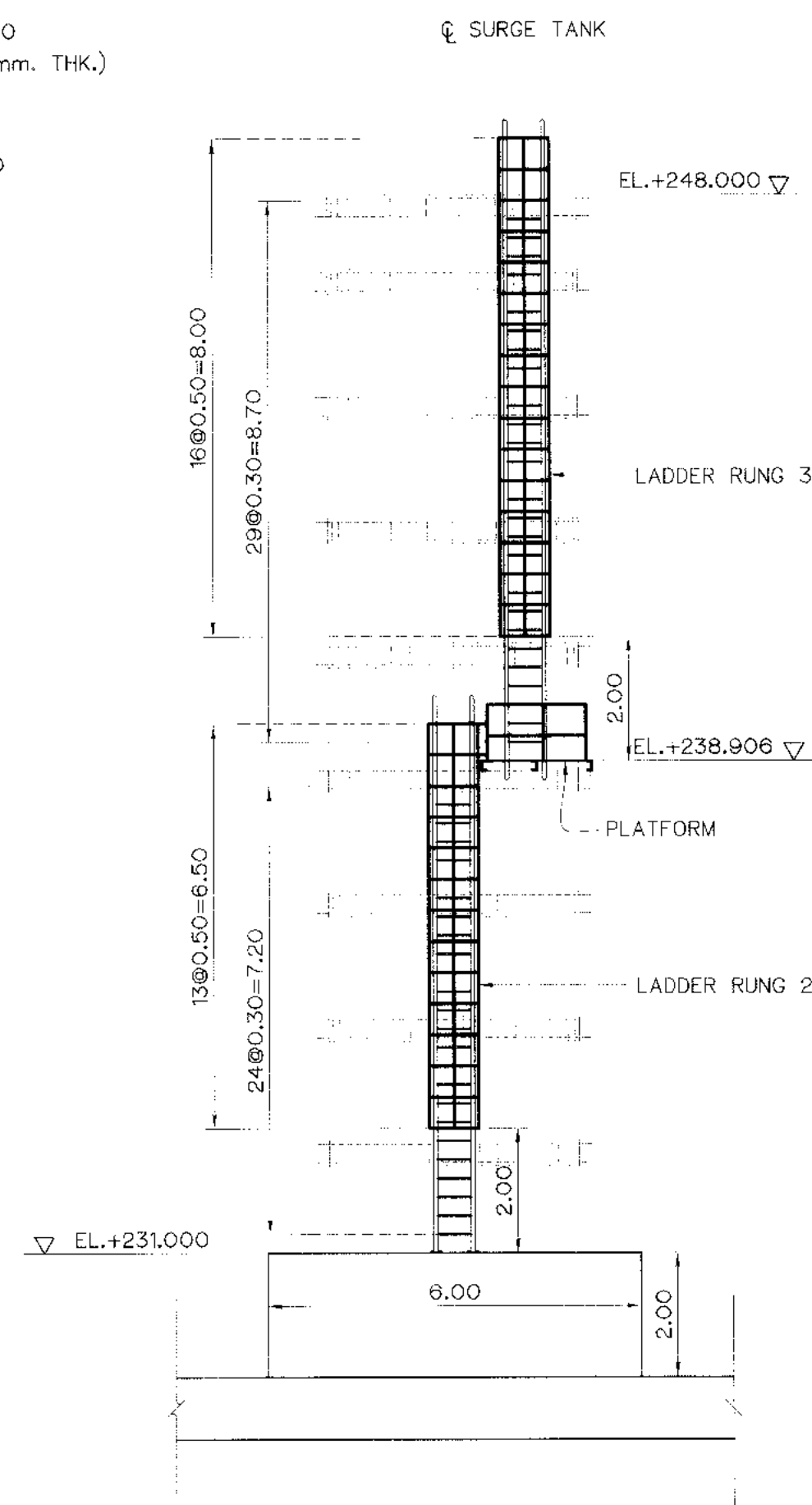
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					KLONG LAM PLOK HYDROPOWER PROJECT	
					ELECTRO-MECHANICAL EQUIPMENT SURGE TANK GENERAL LAY-OUT	
					P&C MANAGEMENT CO.,LTD.	
					REVIEWED	
					DESIGNED	
					DRAWN	
					CHECKED	
					APPROVED	
					PROJECT MANAGER	
					DATE	
					DRAWING NO.	
					SHEET NO.	



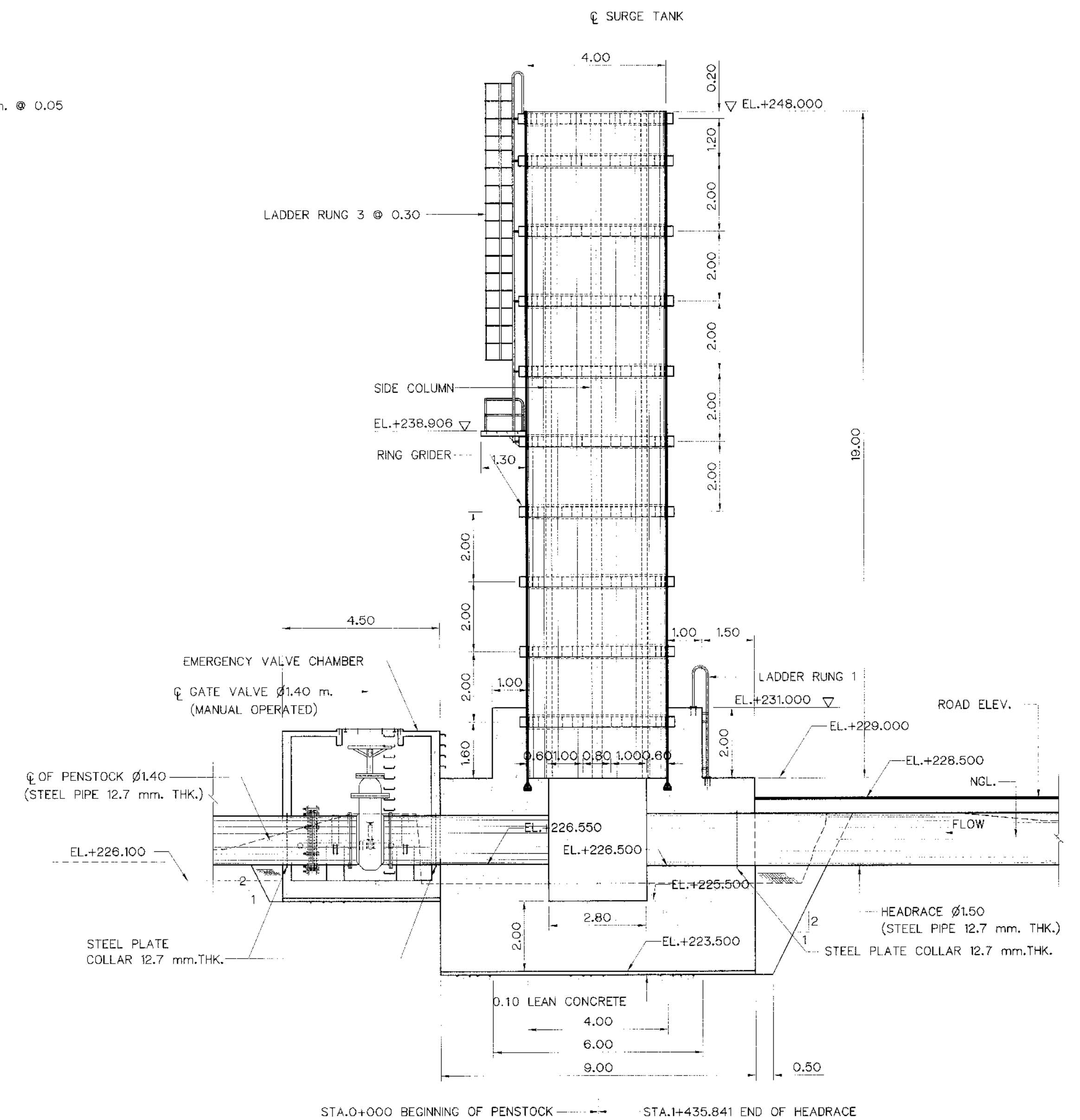
SECTION A-A
SCALE 1:100



PLAN ON TOP LEVEL
SCALE 1:100



LADDER RUNG 2&3 ELEVATION
SCALE 1:100



SECTION B-B
SCALE 1:100

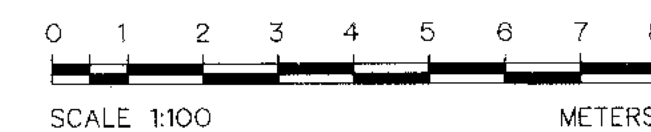
NOTES :

- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SHOWN.
- STEEL PIPE SHELL CONFORM TO JIS G 3101 SS34
- BASE OF CONCRETE FOUNDATION SHALL BE DETERMINED IN FIELD BY EMBEDDING TO STABLE ROCK FOUNDATION WITH A ALLOWABLE BEARING CAPACITY NOT LESS THAN 20 T/m²
- CORROSION PROTECTION OF STEEL PIPE OR GUARDRAIL IS WARNED TO STRICTLY FOLLOW GALVANIZE SPECIFICATION
- STEEL TANK , GIRDER AND STIFFENER SHALL CONFORM TO JIS G 3101 SS34

REFERENCE DRAWING :

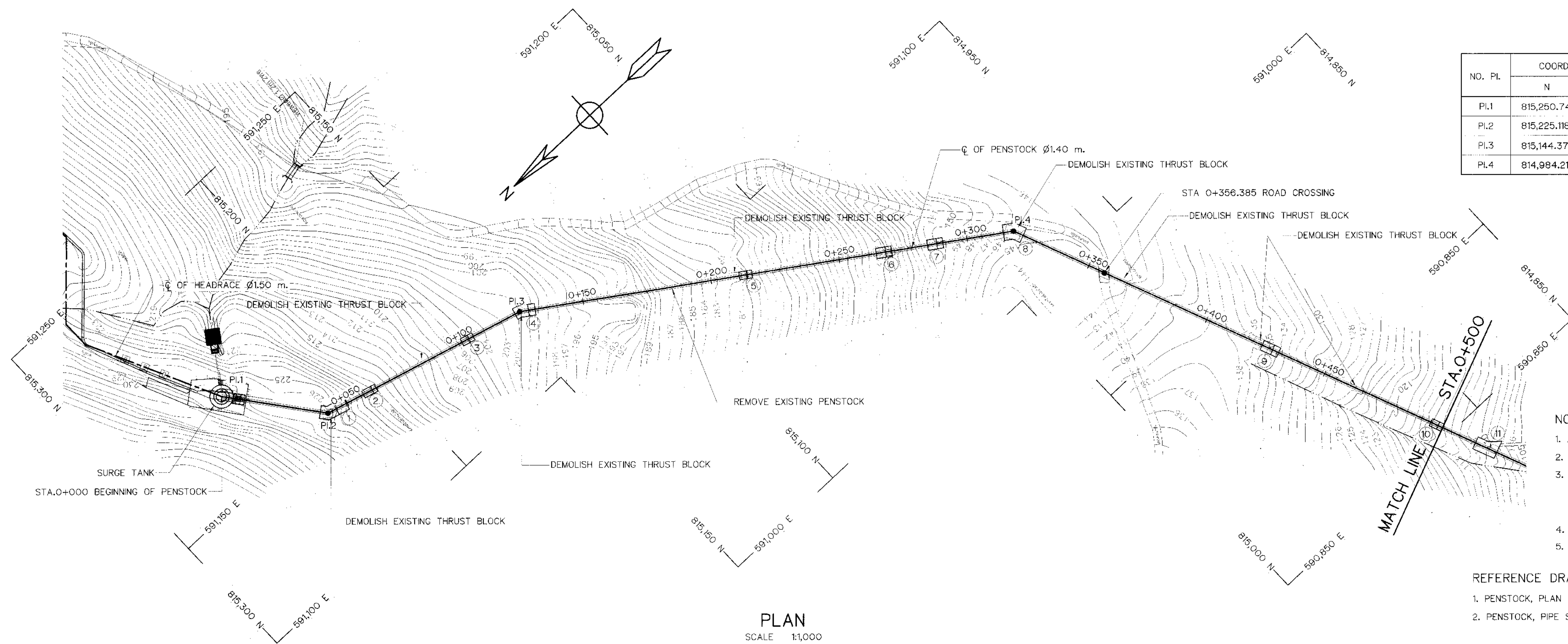
- SURGE TANK GENERAL LAY-OUT

KLP-ST-01



NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
CONSULTANTS		DEDE		

KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY			
KLONG LAM PLOK HYDROPOWER PROJECT			
ELECTRO-MECHANICAL EQUIPMENT SURGE TANK SECTIONS			
P&C MANAGEMENT CO.,LTD.		MINISTRY OF ENERGY	
DESIGNED 08/29/74 08/6226		REVIEWED	
DRAWN		RECOMMENDED	
CHECKED 08/6226		APPROVED	
PROJECT MANAGER		DATE 08/03/2559	
DRAWING NO.		SHEET NO.	
KLP-ST-02		17 OF 38	



HORIZONTAL CURVE OF HEADRACE

NO.	COORDINATE OF PI.		PI TO PI. (m)	DEFLECTION ANGLE (Δ) (° - ' - ")	PI STA. (km)	BEARING (N/S ° - ' - " E/W)
	N	E				
PI.1	815,250.748	591,183.914	—	—	0+000.000	—
PI.2	815,225.118	591,151.169	41.583	36° - 44' - 08.88"	0+041.583	S 51° - 56' - 57.06" W
PI.3	815,144.370	591,129.210	83.681	18° - 39' - 52.83"	0+125.284	S 15° - 12' - 48.16" W
PI.4	814,984.219	591,021.682	192.901	33° - 44' - 59.21"	0+318.165	S 33° - 52' - 41.01" W

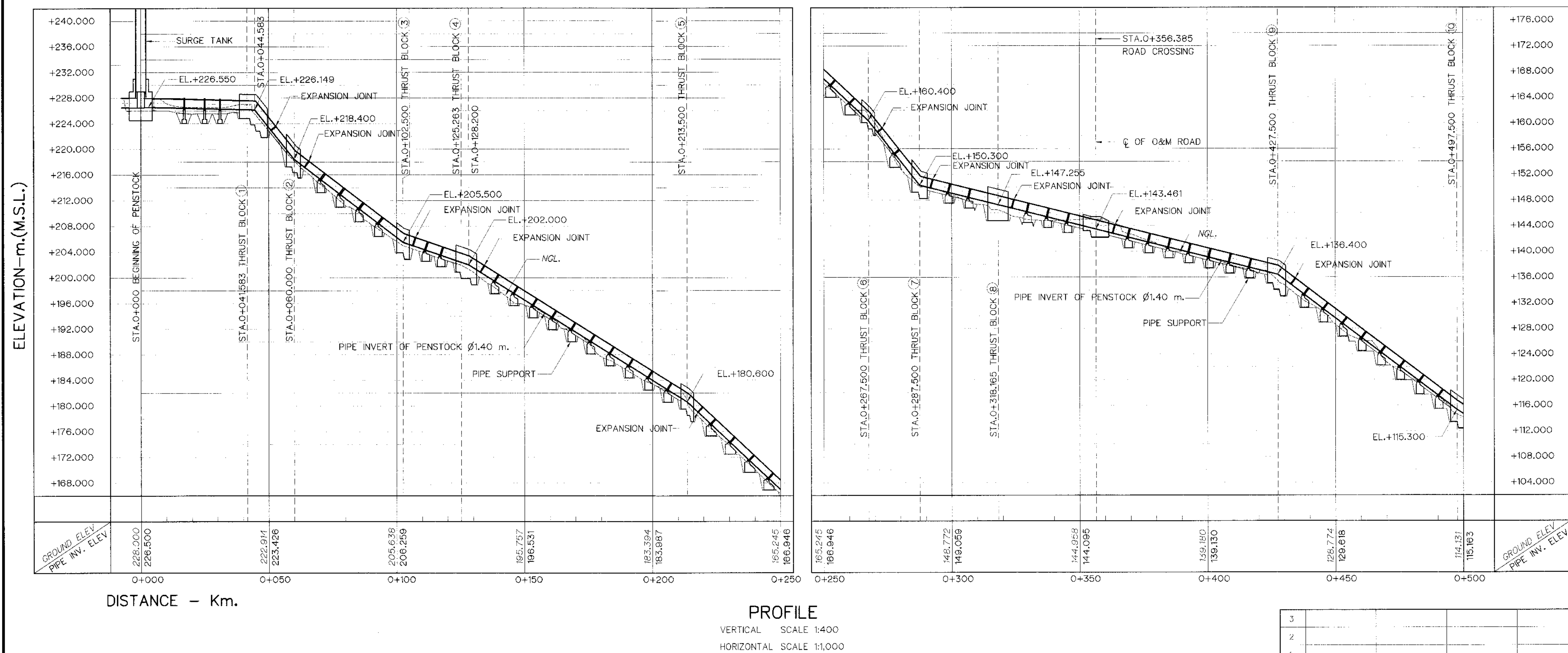
NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03
3. THE ALIGNMENT OF THE PENSTOCK AND RELATED STRUCTURES SHALL BE CHECK AND CORRECTED BY THE CONTRACTOR TO SUIT THE FIELD CONDITIONS AND SHALL BE SUBMITTED TO DEDE'S FIELD ENGINEER FOR APPROVAL
4. REMOVE EXISTING HEADRACE
5. DEMOLISHED EXISTING THRUST BLOCKS

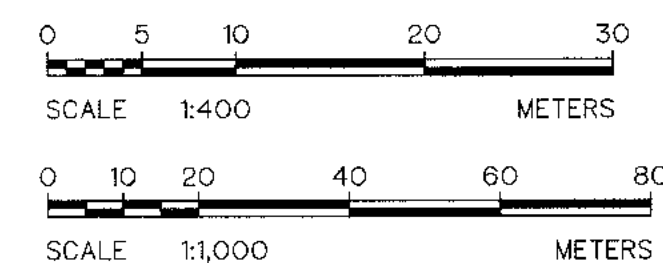
REFERENCE DRAWINGS :

1. PENSTOCK, PLAN AND PROFILE, STA. 0+500 TO STA. 0+693.571
2. PENSTOCK, PIPE SUPPORT, PLAN, SECTIONS AND DETAILS

KLP-PS-02
KLP-PS-03



ELEVATION-m.(M.S.L.)



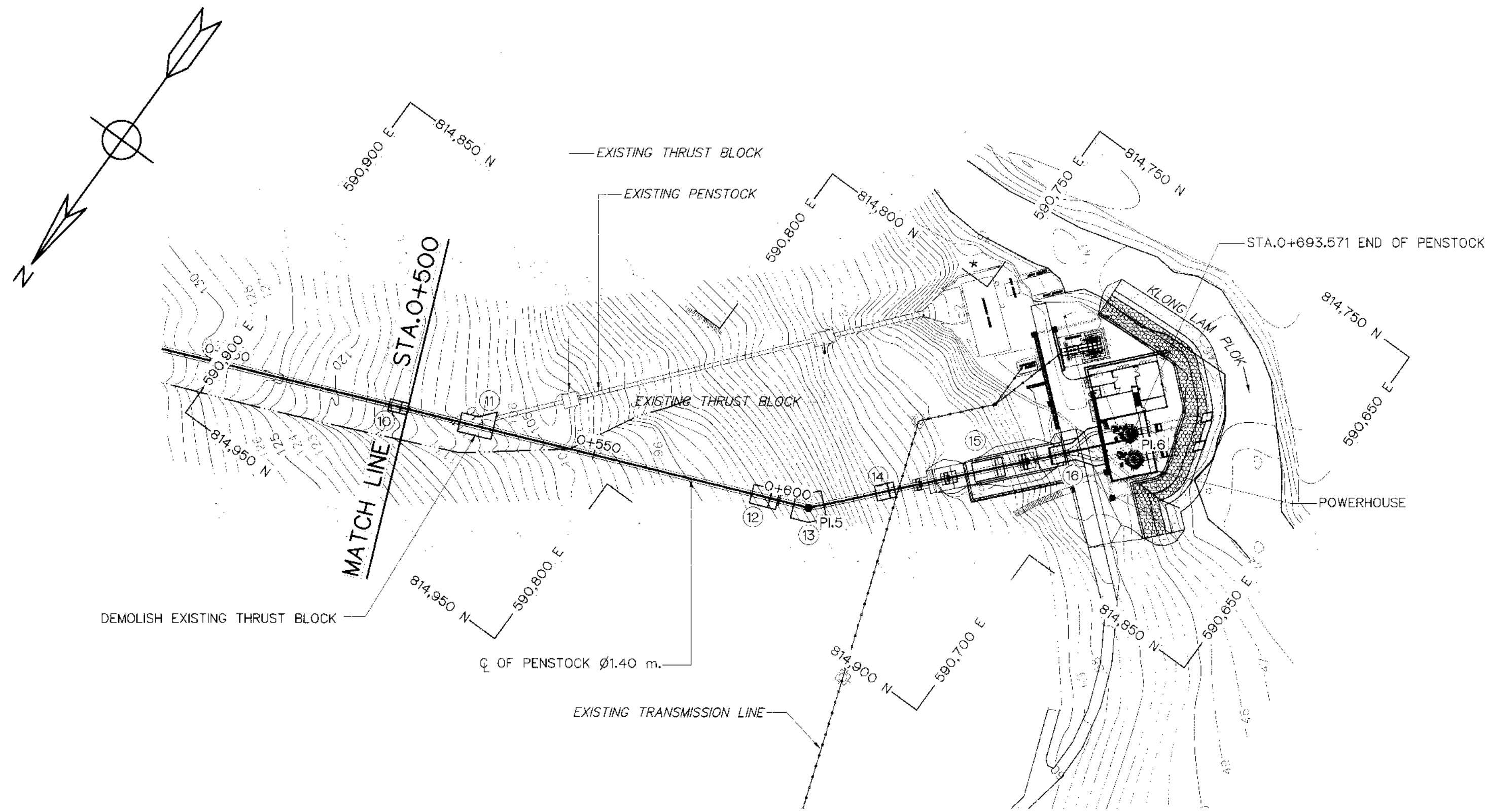
KINGDOM OF THAILAND
Department of Alternative
Energy Development and Efficiency
MINISTRY OF ENERGY

KLONG LAM PLOK HYDROPOWER PROJECT

ELECTRO-MECHANICAL EQUIPMENT
PENSTOCK
PLAN AND PROFILE, STA. 0+000 TO STA. 0+500

DESIGNED 28.29074 28.6226	DRAWN 28.6226	CHECKED 28.6226	APPROVED 28.6226	SUBMITTED 28.6226	RECOMMENDED 28.6226	APPROVED 28.6226	DRAWING NO. KLP-PS-01	SHEET NO. 18 OF 38

3					
2					
1					
NO.	JAIL	REVISIONS	CHECKED	APPROVED	
CONSULTANTS			DEDE		
PROJECT MANAGER			DATE		

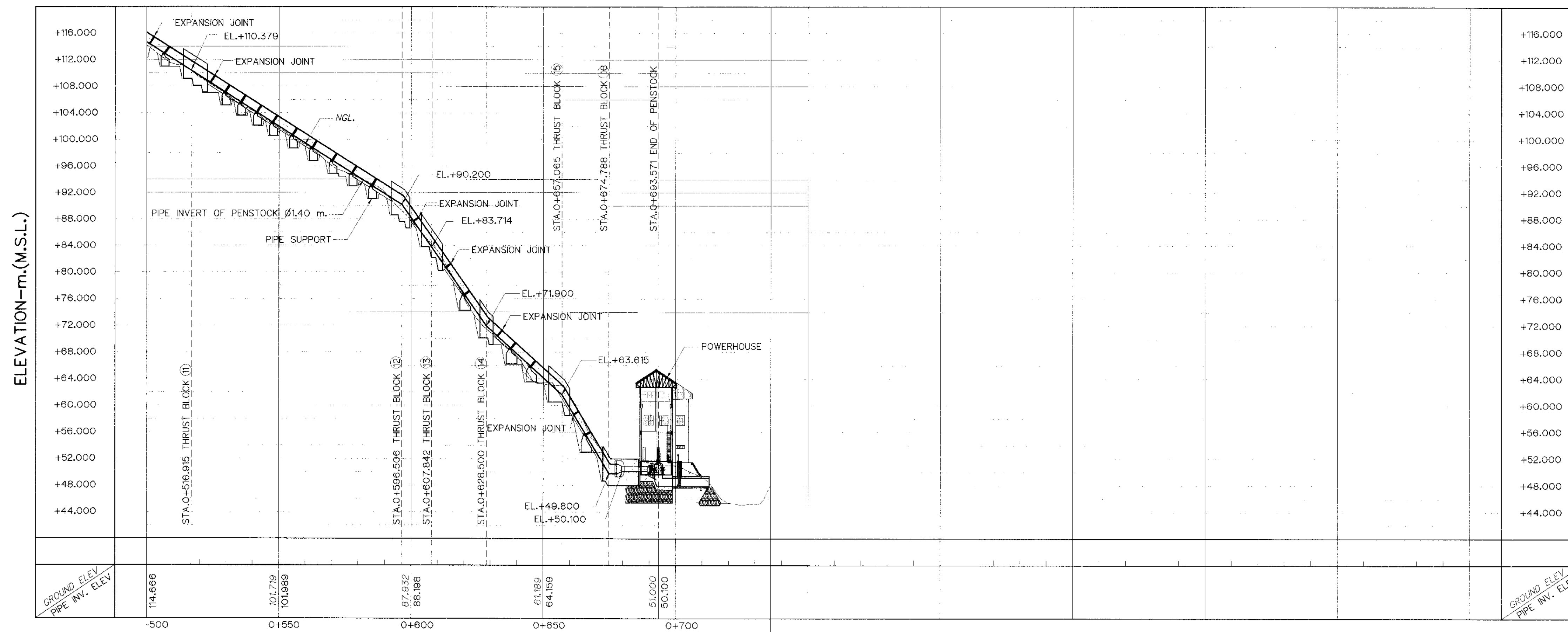


PLAN
SCALE 1:1,000

NO. PI.	COORDINATE OF PI.		PI. TO PI. (m)	DEFLECTION ANGLE (Δ) (° - ' - ")	PI. STA. (km)	BEARING (N/S ° - ' - " E/W)
	N	E				
PI.5	814,873.965	590,753.808	289.678	25° - 42' - 42.07"	0+607.842	S 67° - 37' - 40.22" W
PI.6	814,810.169	590,696.571	85.729		0+693.571	

NOTES :

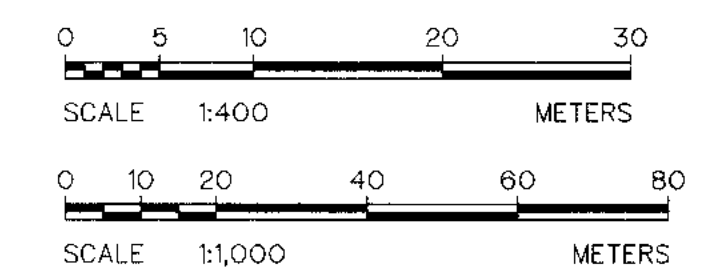
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03
3. THE ALIGNMENT OF THE PENSTOCK AND RELATED STRUCTURES SHALL BE CHECK AND CORRECTED BY THE CONTRACTOR TO SUIT THE FIELD CONDITIONS AND SHALL BE SUBMITTED TO DEDE'S FIELD ENGINEER FOR APPROVAL



PROFILE
VERTICAL SCALE 1:400
HORIZONTAL SCALE 1:1,000

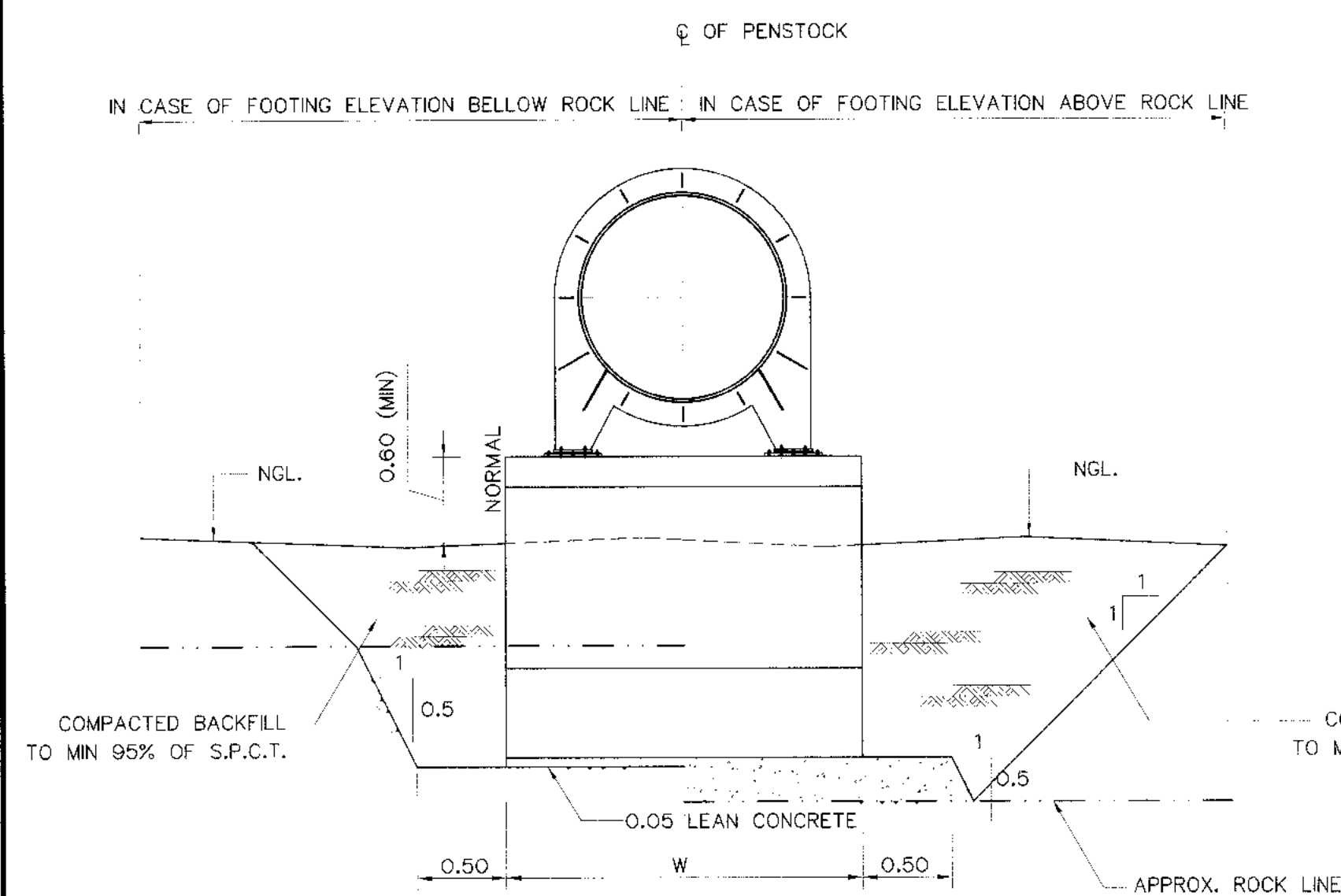
REFERENCE DRAWINGS :

1. PENSTOCK, PLAN AND PROFILE, STA. 0+000 TO STA. 0+500 KLP-PS-01
2. PENSTOCK, PIPE SUPPORT, PLAN, SECTIONS AND DETAILS KLP-PS-03

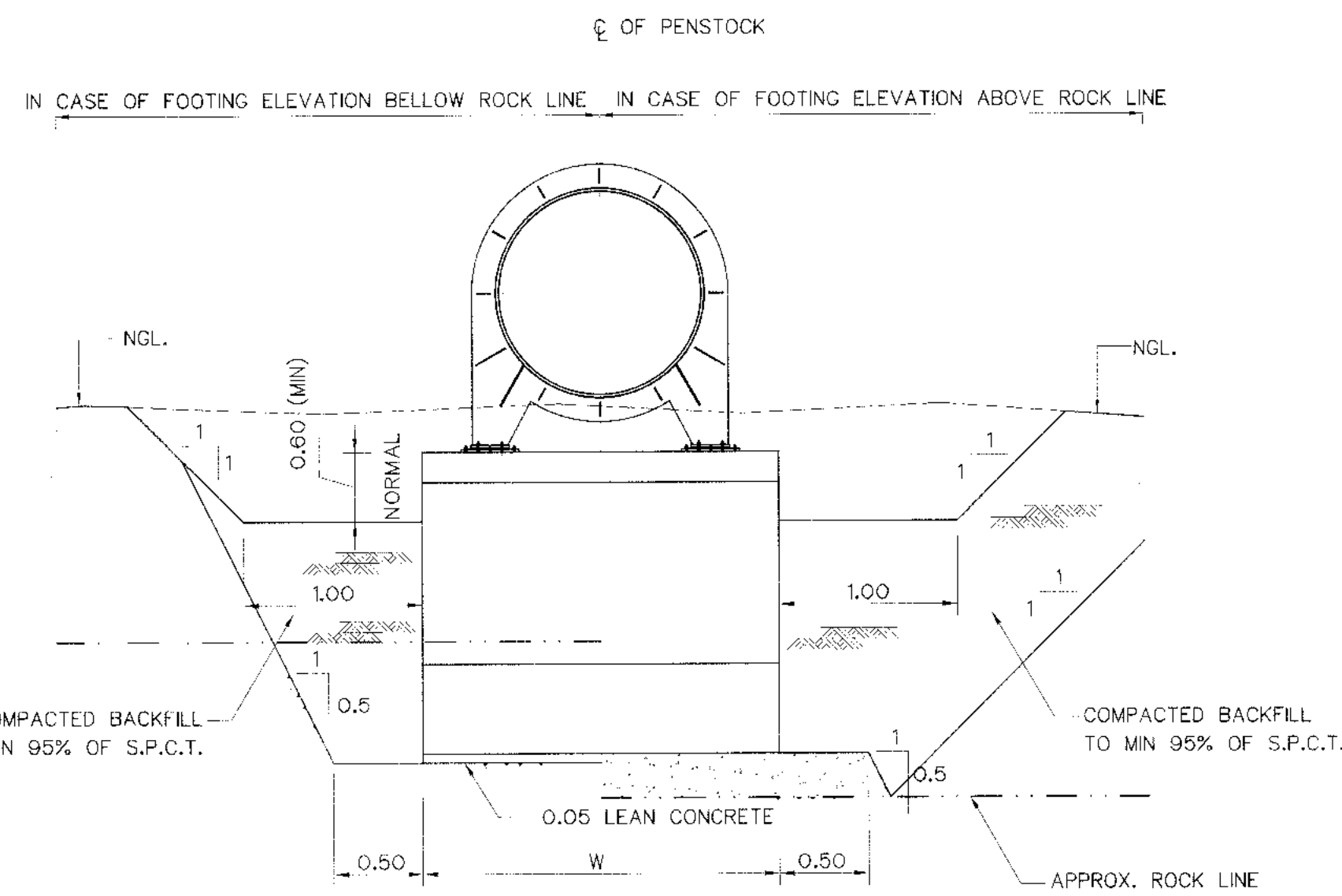


ELEVATION-m.(M.S.L.)

KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT PENSTOCK PLAN AND PROFILE, STA. 0+500 TO STA. 0+693.571	
DESIGNED DRAWN CHECKED PROJECT MANAGER	REVIEWED SUBMITTED RECOMMENDED APPROVED DATE
CONSULTANT'S DEDE	SHEET NO. 19 OF 38

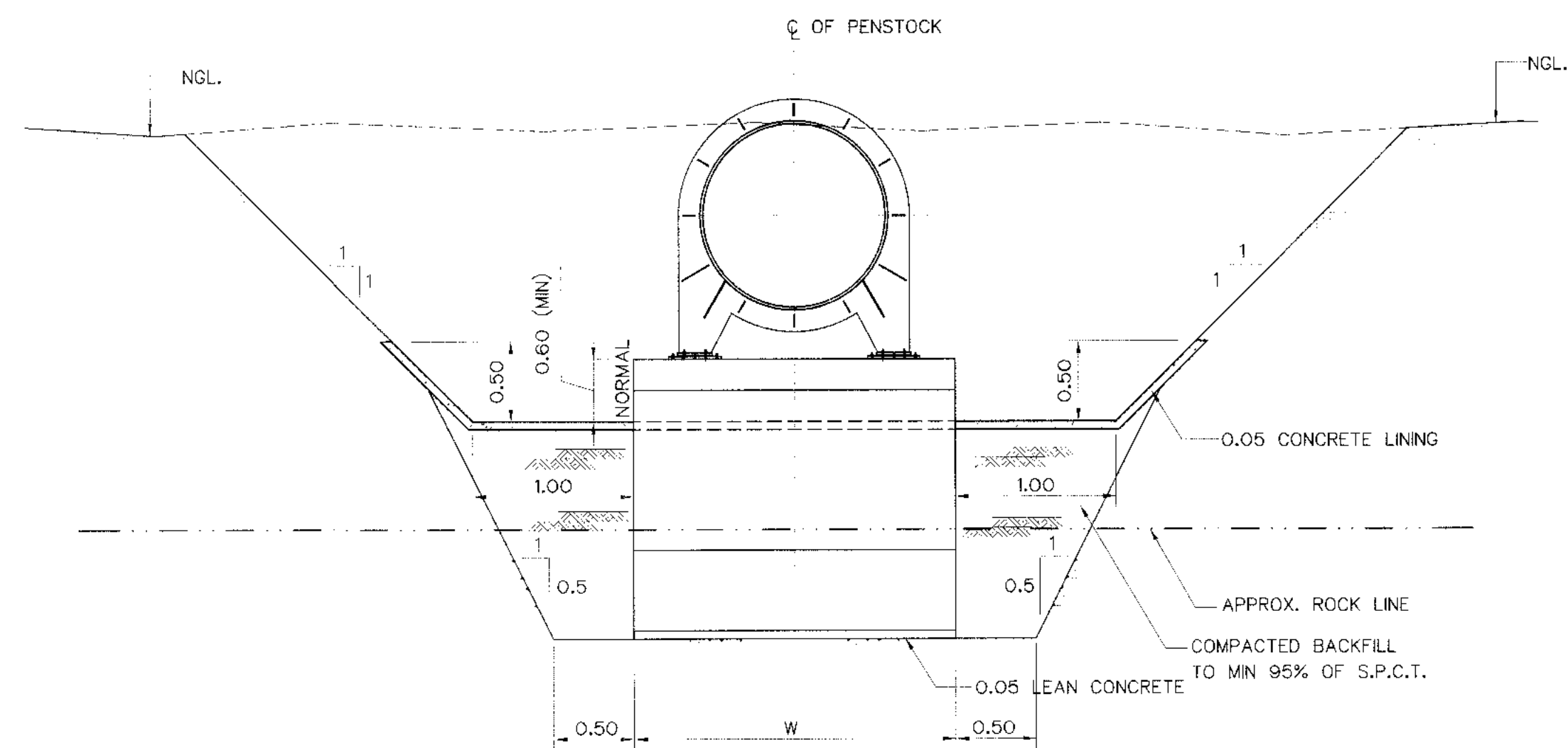


N.G.L. BELOW INVERT ELEVATION

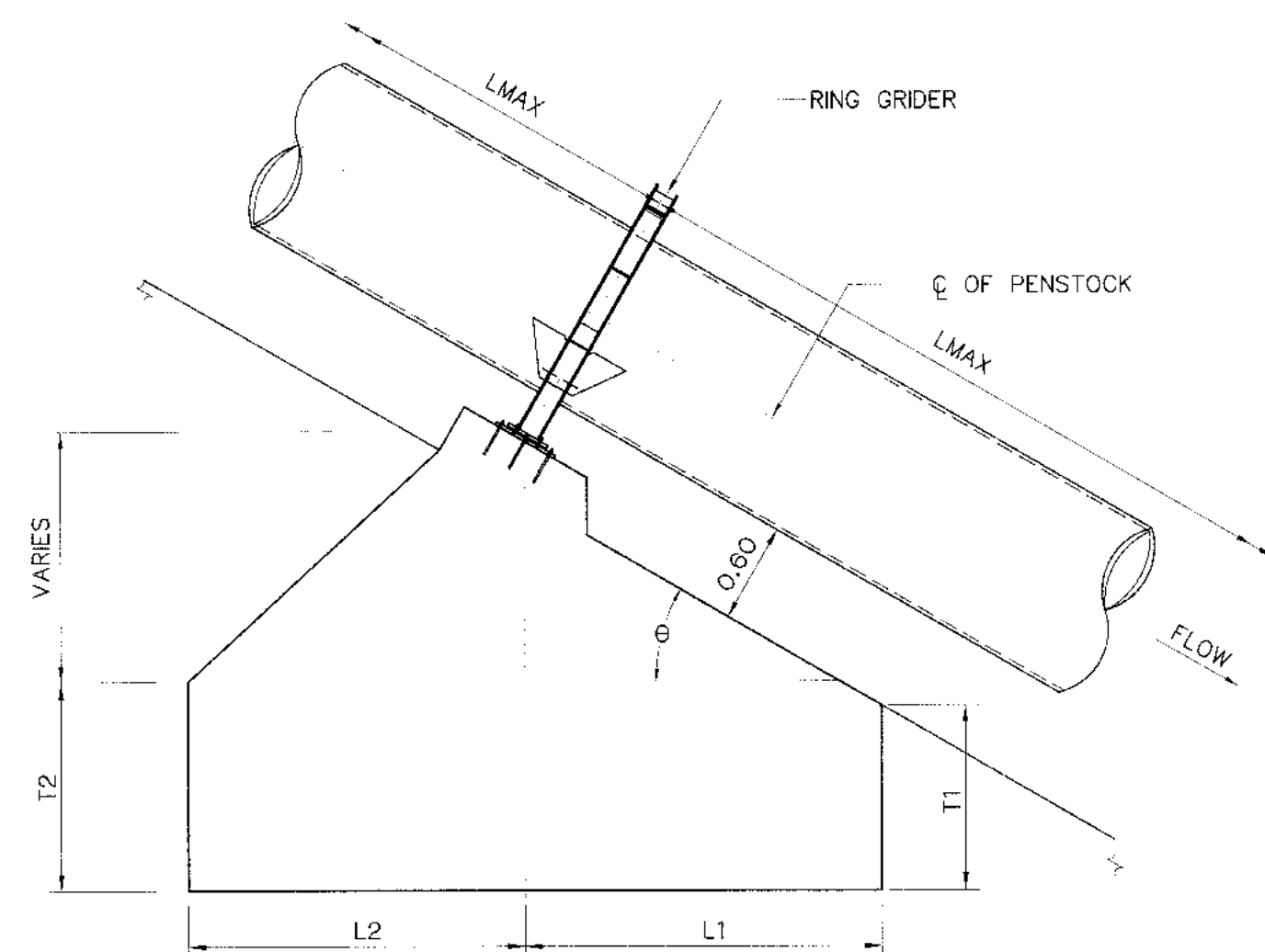


N.G.L. ABOVE INVERT ELEVATION

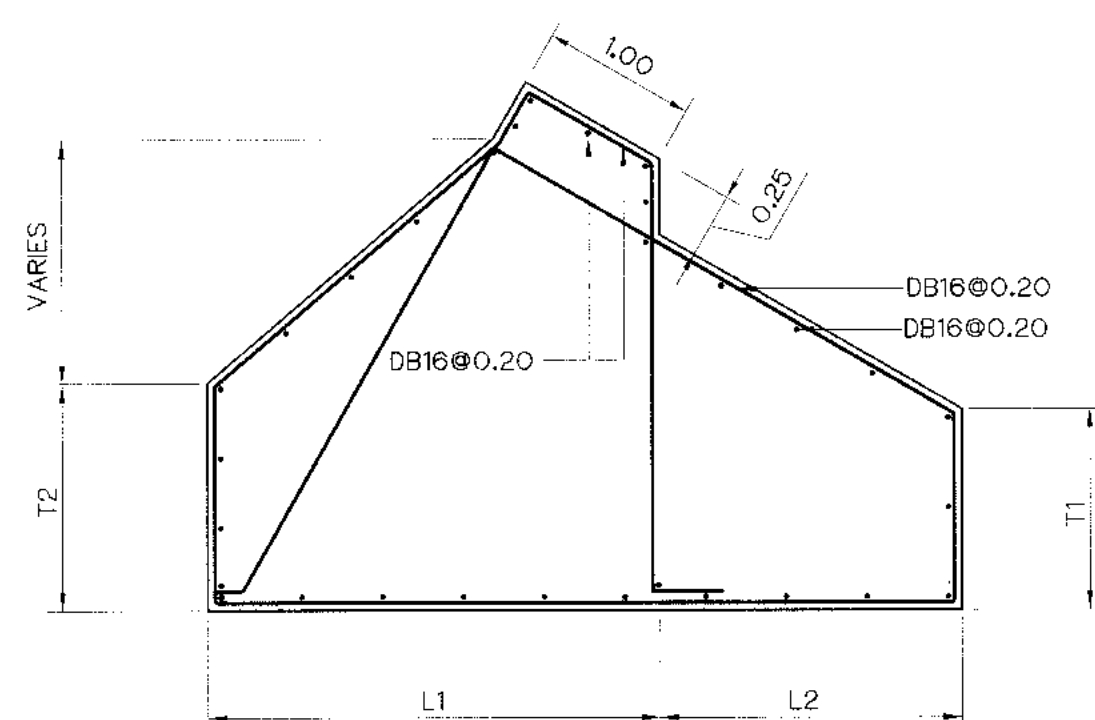
TYPICAL SECTION OF PENSTOCK
NOT TO SCALE



STA.0+657.065 TO 0+674.788



PIER TYPE 2
NOT TO SCALE

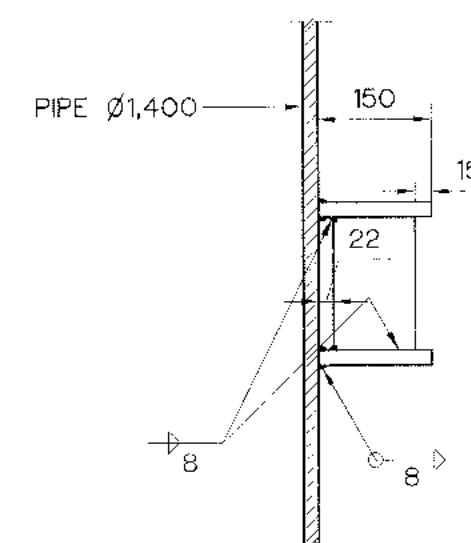


PIER (REINFORCEMENT DETAIL)

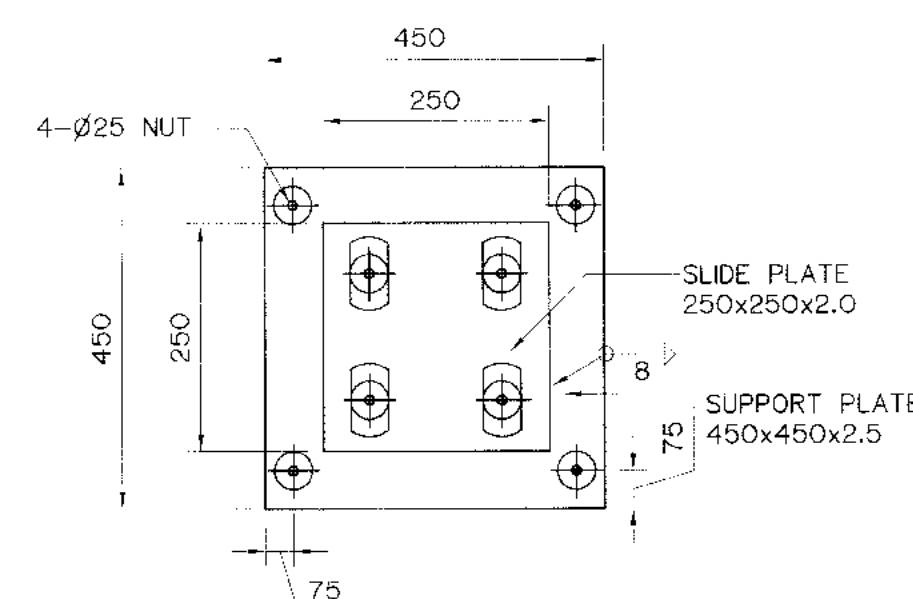
NOT TO SCALE

DIMENSIONS FOR PIER

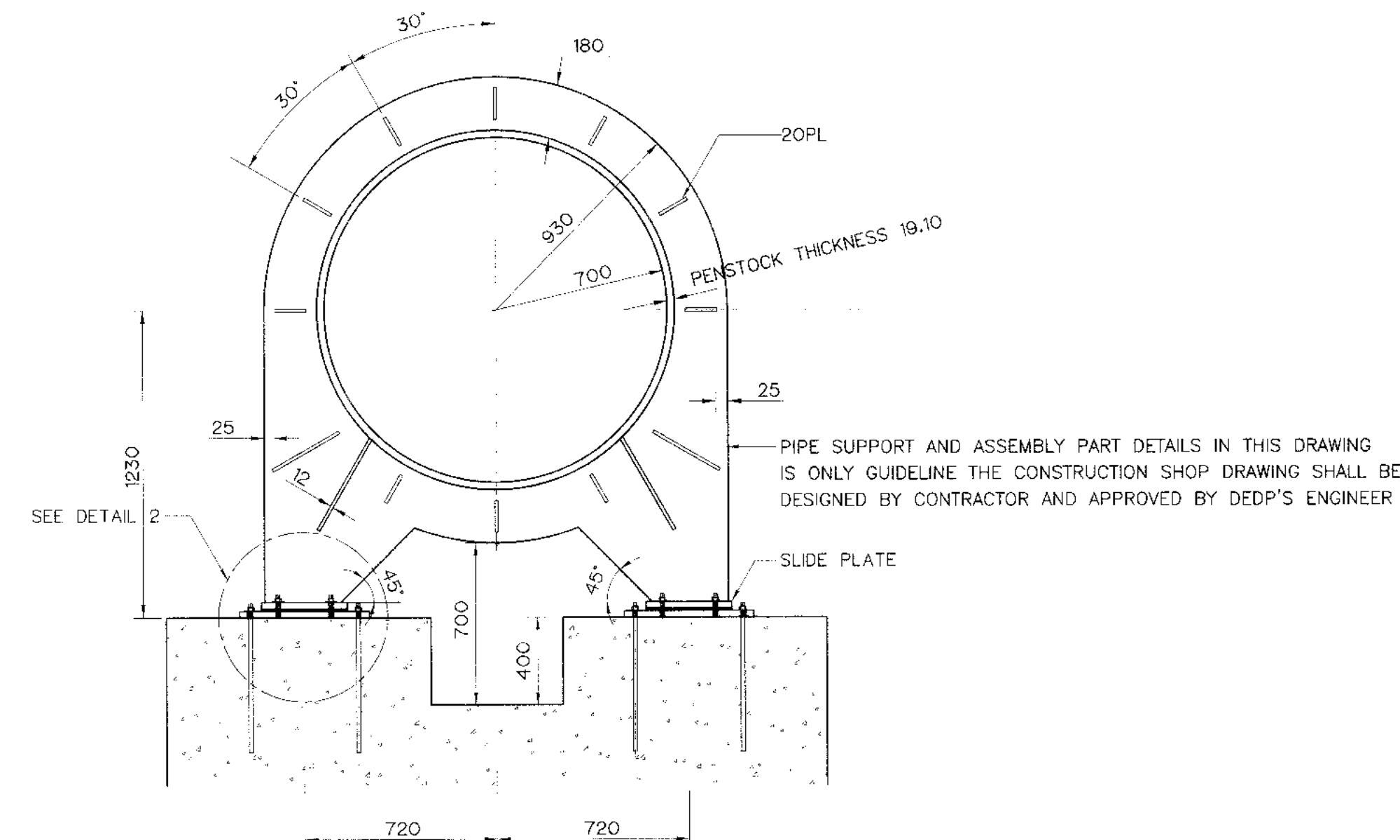
STA.	SLOPE (°)	L1	L2	T1	T2	W	LMAX
FROM	TO	DEGREE	(m.)	(m.)	(m.)	(m.)	(m.)
0+060.000	0+102.500	16.88	2.00	1.00	1.50	1.00	3.00
0+102.500	0+125.263	7.76	2.00	1.00	1.00	1.00	3.00
0+125.263	0+213.500	14.08	2.00	1.00	1.50	1.00	3.00
0+213.500	0+267.500	20.51	2.50	1.50	1.50	1.50	4.00
0+267.500	0+287.500	26.79	2.50	1.50	1.50	1.50	4.00
0+287.500	0+427.500	5.67	2.00	1.00	1.00	1.00	3.00
0+427.500	0+497.500	18.77	2.00	1.00	1.50	1.00	3.00
0+497.500	0+596.500	14.23	2.00	1.00	1.50	1.00	3.00
0+596.500	0+628.500	29.76	2.50	1.50	1.50	1.50	4.00
0+628.500	0+657.065	19.80	2.50	1.50	1.50	1.50	4.00
0+657.065	0+674.788	33.69	2.50	1.50	1.50	1.50	4.00



DETAIL "1"
SCALE 1:20



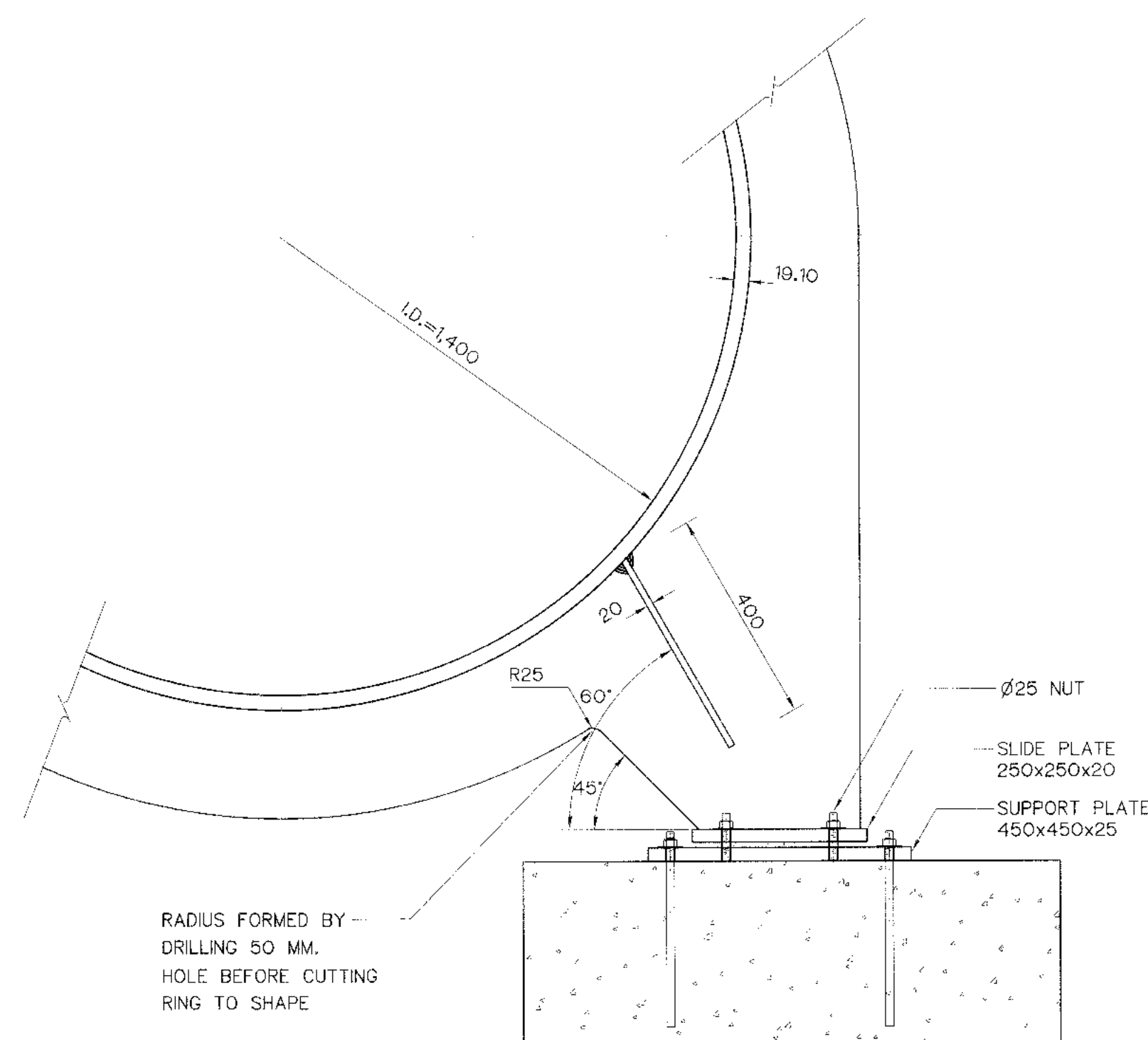
DETAIL "2"
SCALE 1:10



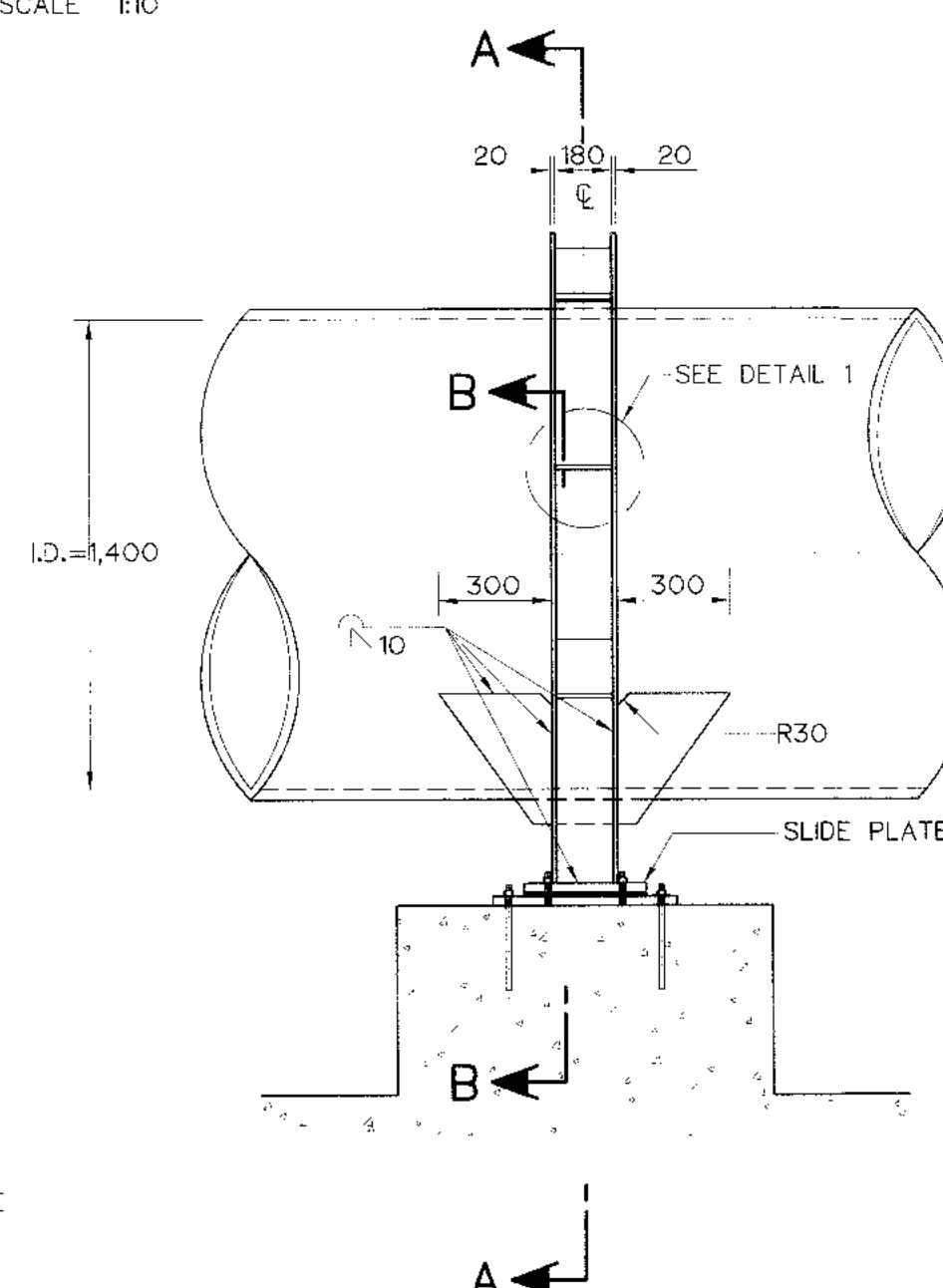
SECTION A - A
SCALE 1:20

NOTES :

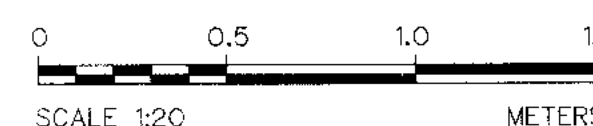
1. ALL DIMENSIONS ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO.
3. CORROSIVE PROTECTION IS WARNED TO STRICTLY FOLLOW PAINTING SPECIFICATION
4. PIPE SUPPORT AND ASSEMBLY PART DETAILS IN THIS DRAWING IS ONLY GUIDELINE THE CONSTRUCTION SHOP DRAWING SHALL BE DESIGNED BY CONTRACTOR AND APPROVED BY DEDP'S ENGINEER



SECTION B - B

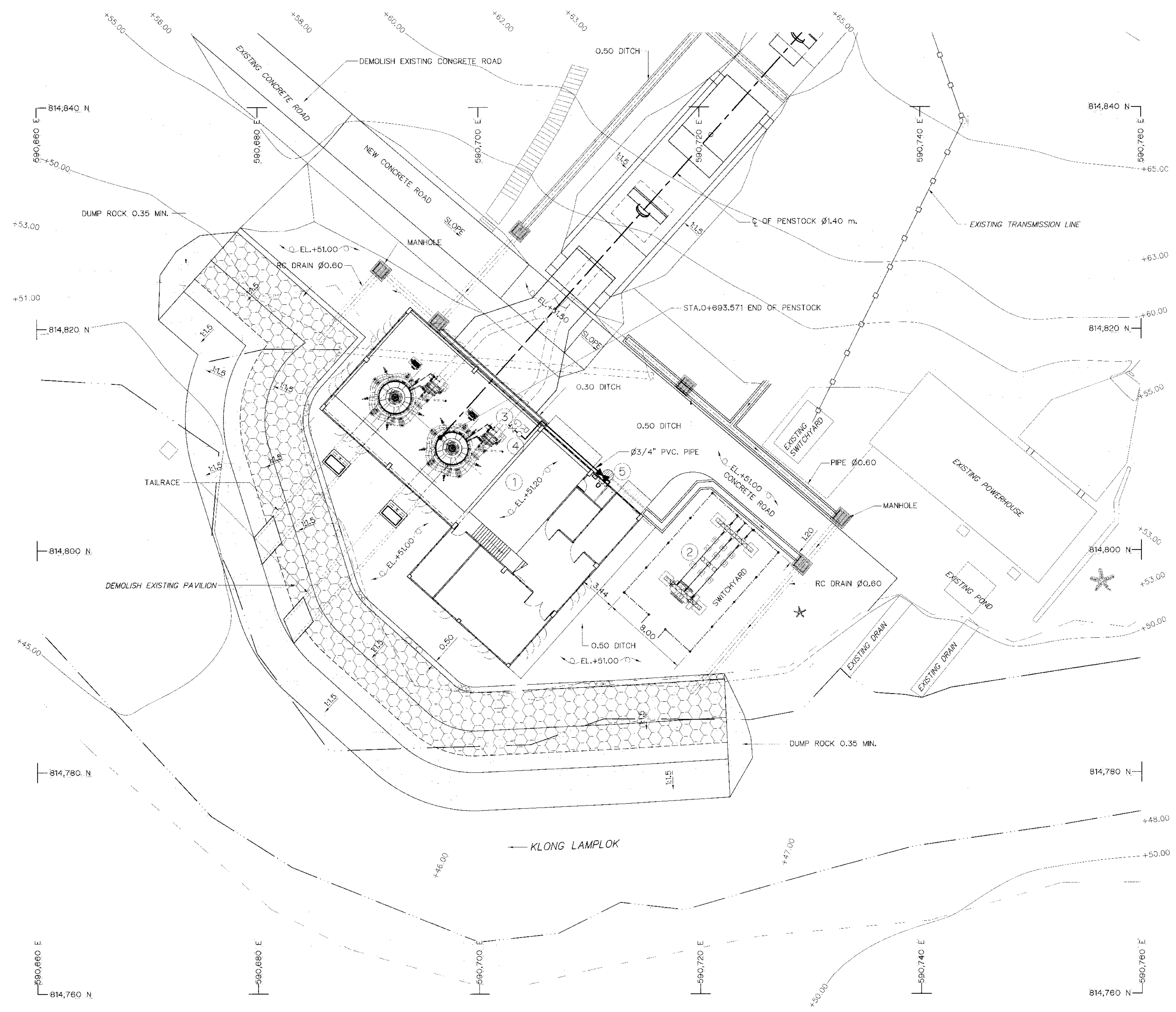
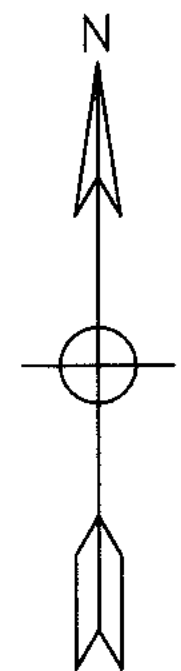


RING GIRDER FOR 1,400 I.D. PIPE



3				
2				
1				
NO.	DATE	REVISIONS	CHECKED	APPROVED

KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT PENSTOCK PIPE SUPPORT SECTIONS AND DETAILS	
P&C MANAGEMENT CO.,LTD.	REVIEWED
DESIGNED 08/29/74 08/22/26	SUBMITTED Chanit
DRAWN	RECOMMENDED
CHECKED 08/22/26	APPROVED
PROJECT MANAGER 08/03/2559	DRAWING NO. KLP-PS-03
DATE	SHEET NO. 20 OF 38



GENERAL LAY-OUT
SCALE 1:200

LISTS :

- ① POWER HOUSE
- ② SWITCHYARD
- ③ GATE VALVE Ø3/4"
- ④ PRESSURE REDUCING VALVE
- ⑤ SEPTICK TANK

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03

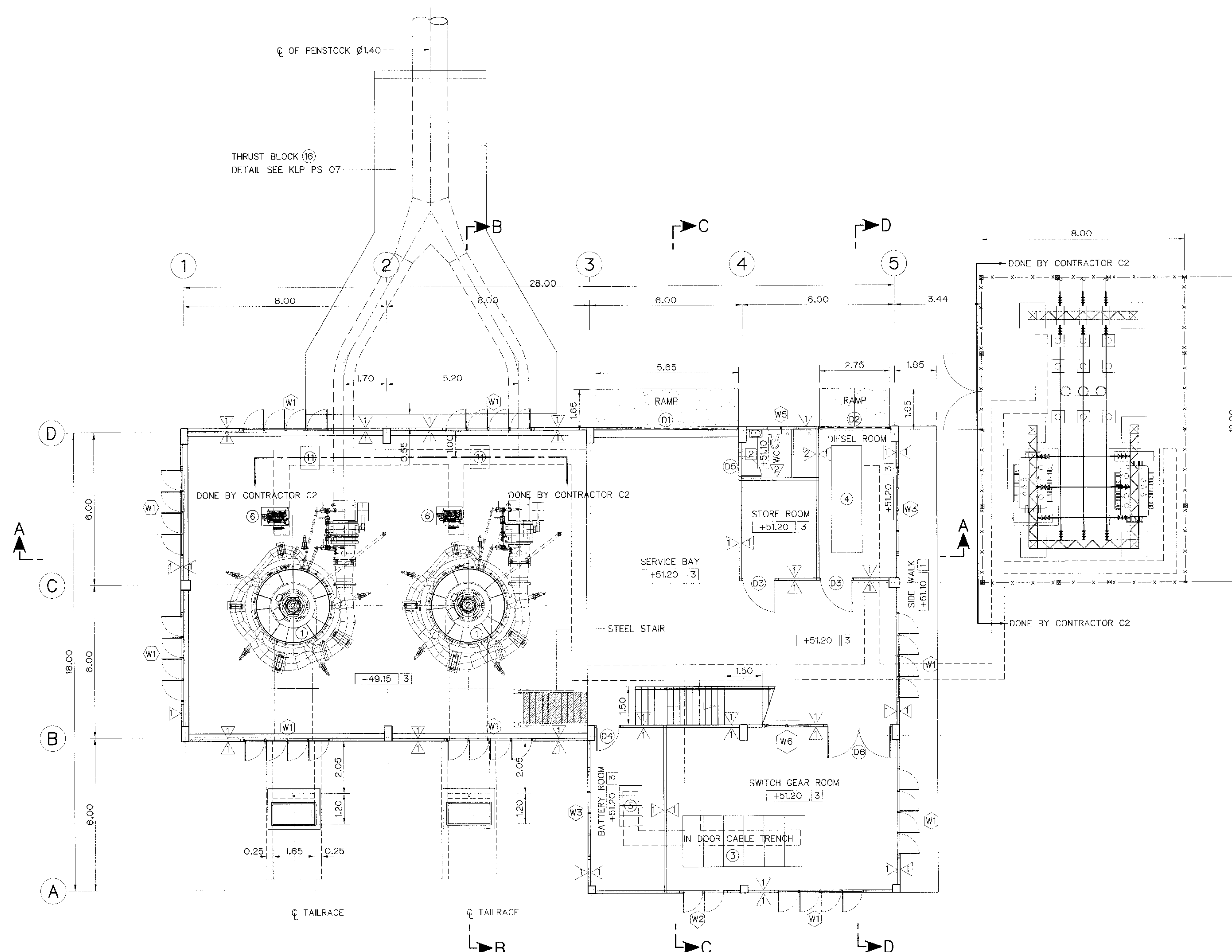
REFERENCE DRAWINGS :

- | | |
|-------------------------------|-----------|
| 1. POWERHOUSE, PLAN 1st FLOOR | KLP-PH-02 |
| 2. TAILRACE, GENERAL LAY-OUT | KLP-TR-01 |



 KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT	
POWERHOUSE	
GENERAL LAY-OUT	
 P&C MANAGEMENT CO., LTD.	 MINISTRY OF ENERGY
DESIGNED <i>[Signature]</i> 28/29074 28/6226	SUBMITTED <i>[Signature]</i>
DRAWN <i>[Signature]</i>	RECOMMENDED <i>[Signature]</i>
CHECKED <i>[Signature]</i> 28/6226	APPROVED <i>[Signature]</i>
PROJECT MANAGER <i>[Signature]</i> 08/03/2559	DRAWING NO. KLP-PH-01
DATE	SHEET NO. 21 OF 38

3					
2					
1					
NO.	DATE	REVISIONS	CHECKED	APPROVED	
CONSULTANTS			DEDE		



PLAN 1st FLOOR
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 BATTERY CHARGER CUBICLE
- ⑨ MAIN CONTROL SWITCHBOARD
- ⑩ SWITCHYARD
- ⑪ NEUTRAL GROUNDING CUBICLE

FLOOR FINISH SYMBOLS :

- ① COARSE FINISHED
- ② 12"x12" CERAMIC FLOOR TILES
- ③ COATED WITH EPOXY RESIN

WALL FINISH SYMBOLS :

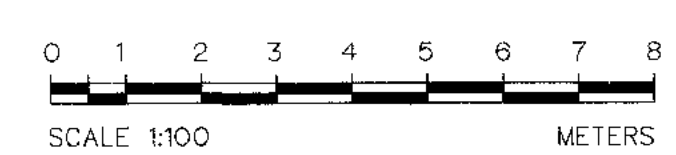
- ① CEMENT PLASTER
- ② 8"x8" CERAMIC WALL TILES
- ③ CLASS BLOCK

NOTES :

- 1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
- 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03

REFERENCE DRAWINGS :

- 1. POWERHOUSE, GENERAL LAY-OUT KLP-PH-01
- 2. POWERHOUSE, PLAN 2nd FLOOR KLP-PH-03
- 3. POWERHOUSE, ELEVATIONS KLP-PH-04
- 4. POWERHOUSE, SECTIONS KLP-PH-05

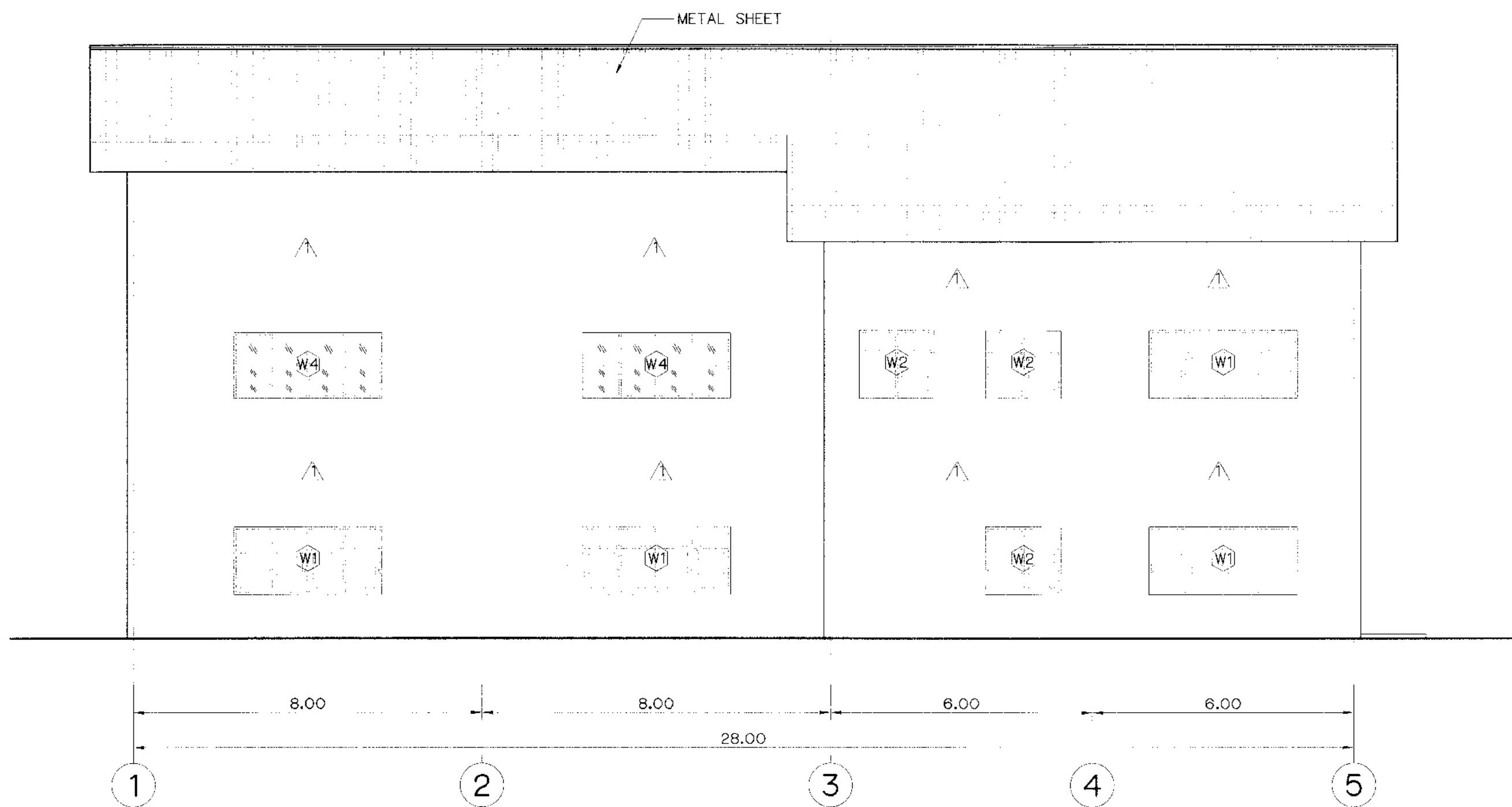


KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY			
KLONG LAM PLOK HYDROPOWER PROJECT			
ELECTRO-MECHANICAL EQUIPMENT POWERHOUSE PLAN 1st FLOOR			
P&C MANAGEMENT CO.,LTD.		Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
DESIGNED	29074	29074	REVIEWED
DRAWN	29074	29074	RECOMMENDED
CHECKED	29074	29074	APPROVED
CONSULTANTS		DATE	
PROJECT MANAGER		DATE	
DRAWING NO. KLP-PH-02		SHEET NO. 22 OF 38	

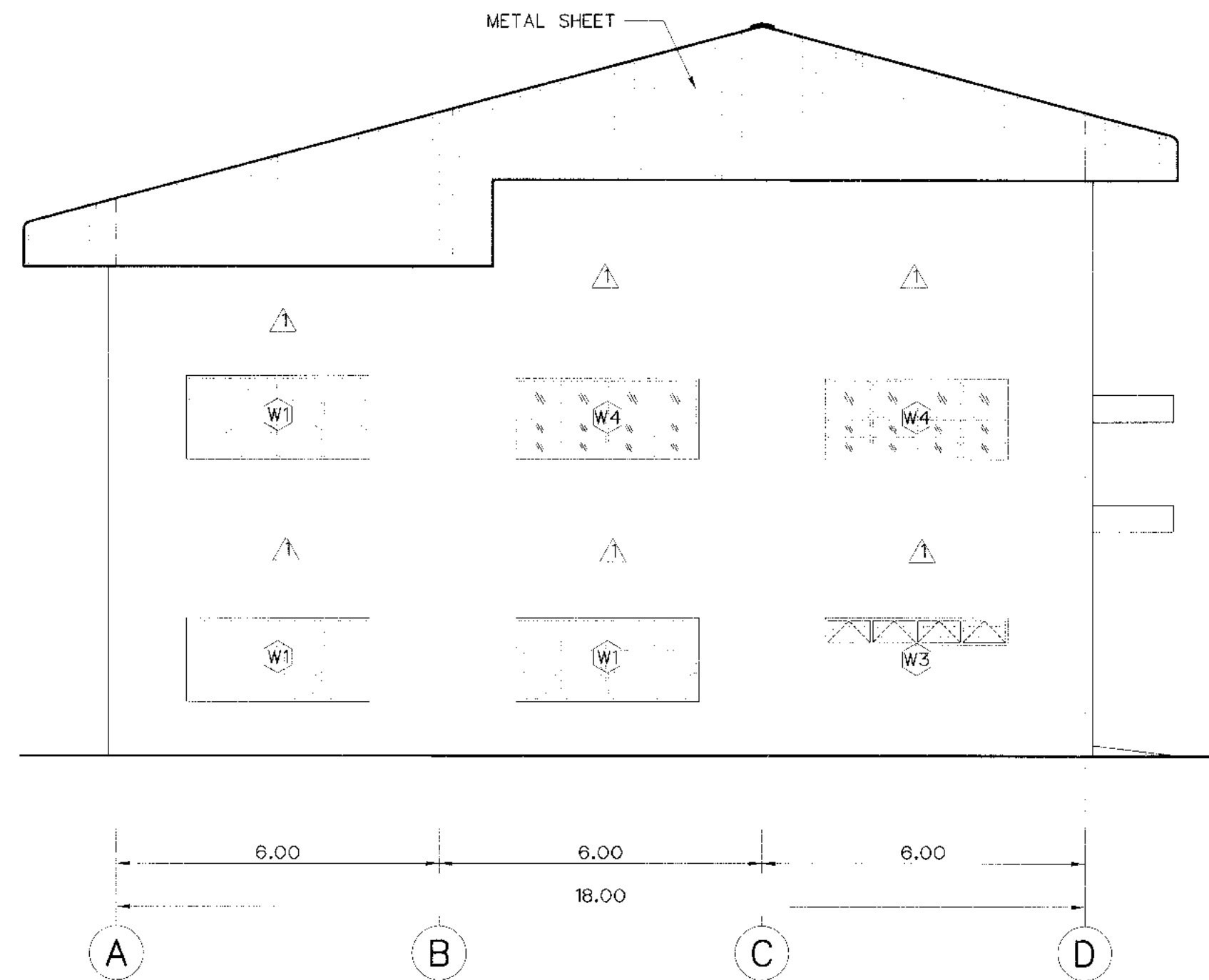


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2				
1				
N.O.	DATE	REVISIONS	CHECKED	APPROVED
CONSULTANTS			DEDE	

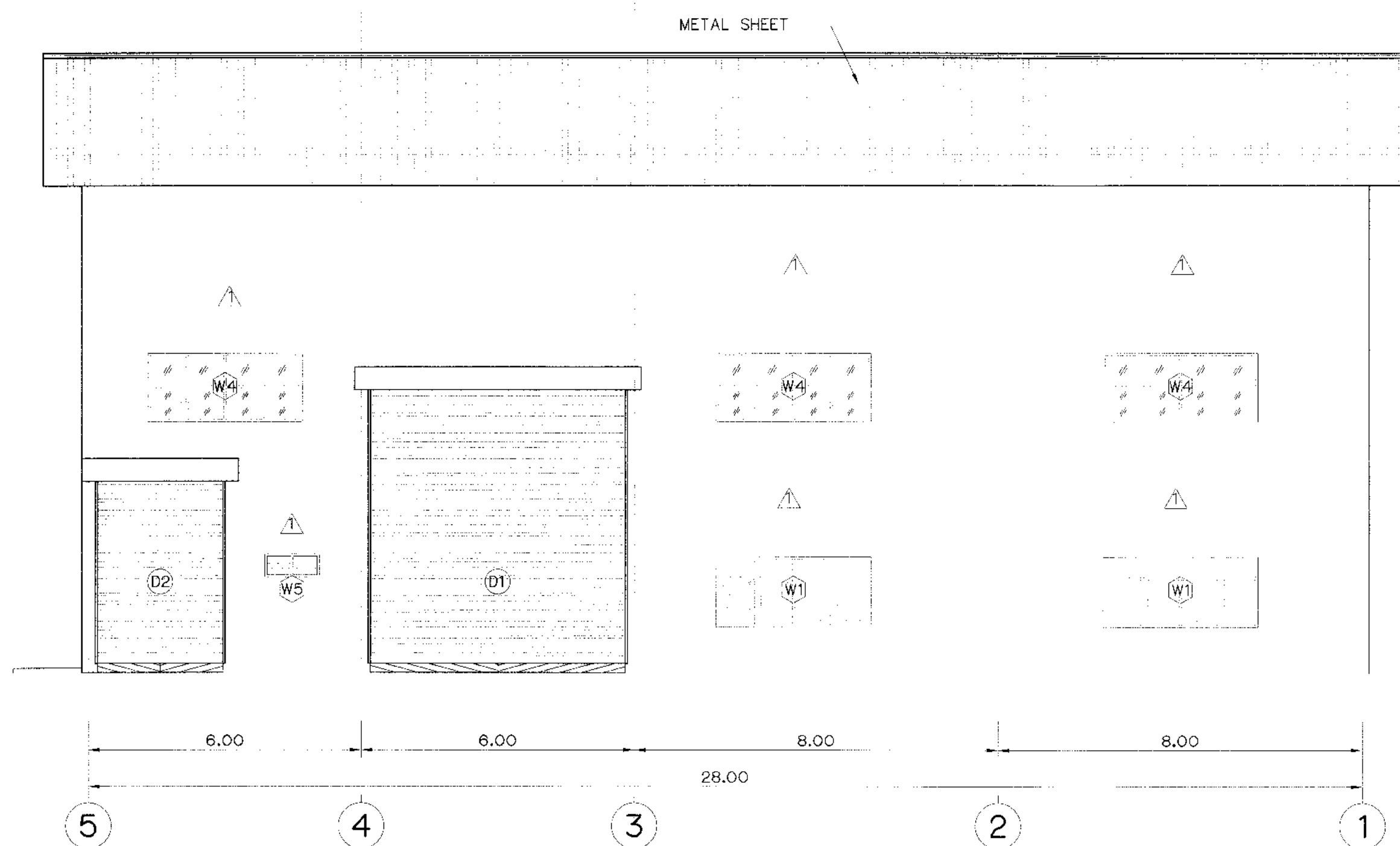
 KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY			
KLONG LAM PLOK HYDROPOWER PROJECT			
ELECTRO-MECHANICAL EQUIPMENT			
POWERHOUSE			
PLAN 2nd AND ROOF PLAN			
 P&C MANAGEMENT CO., LTD.		 Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
DESIGNED <i>U</i> NE-29074 <i>8/5</i> NEJ-6226		REVISED	
DRAWN <i>for</i>		SUBMITTED <i>Chait</i>	
CHECKED <i>for</i>		RECOMMENDED	
 OS/03/2559 PROJECT MANAGER		APPROVED <i>U</i> DRAWING NO. KLP-PH-03	
DATE		SHEET NO. 23 OF 38	



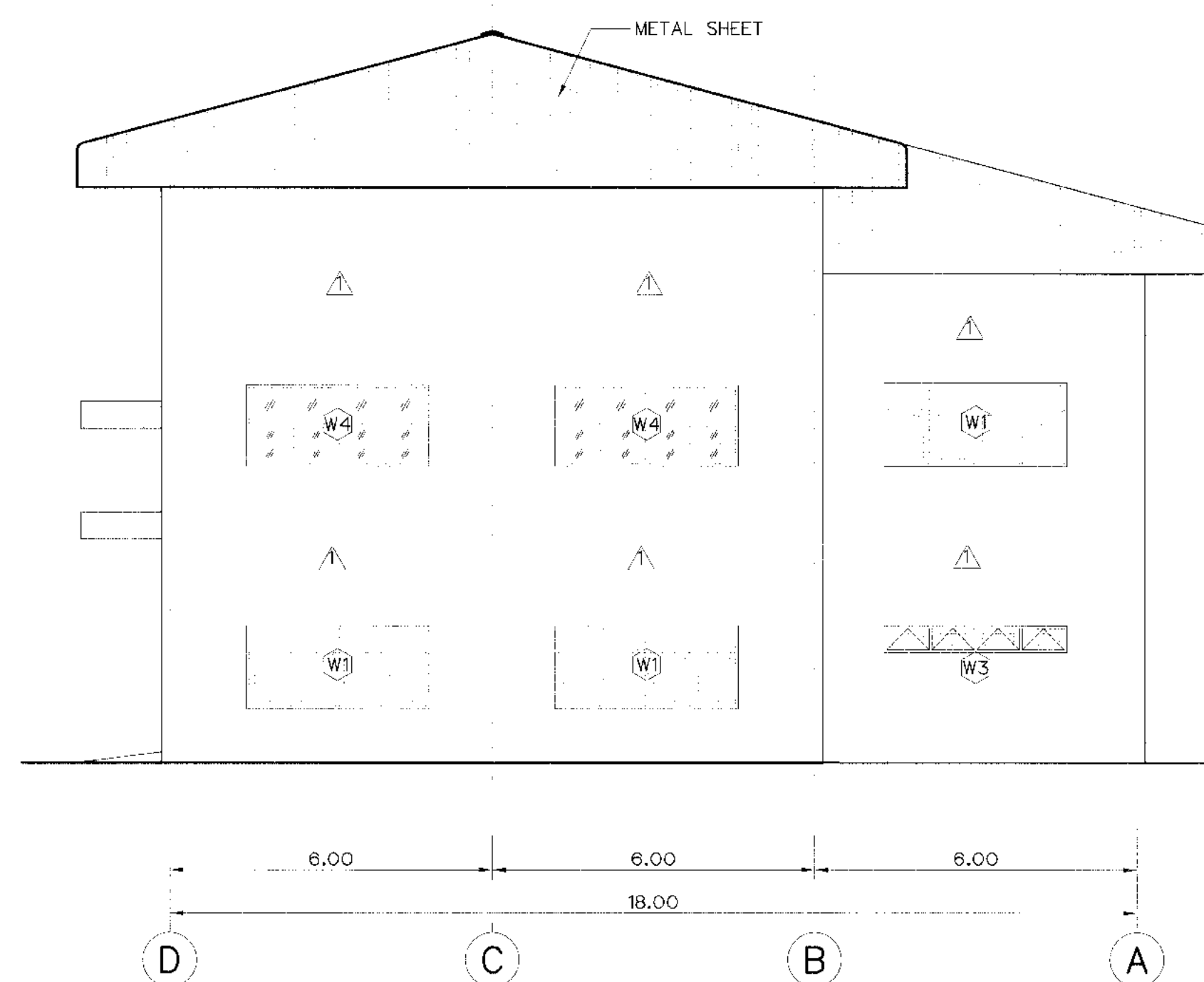
ELEVATION "A"
SCALE 1:100



ELEVATION "B"
SCALE 1:100



ELEVATION "C"
SCALE 1:100



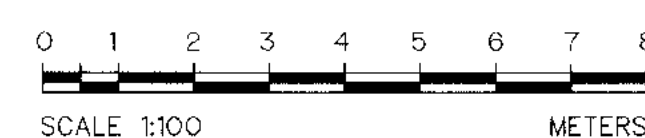
ELEVATION "D"
SCALE 1:100

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03

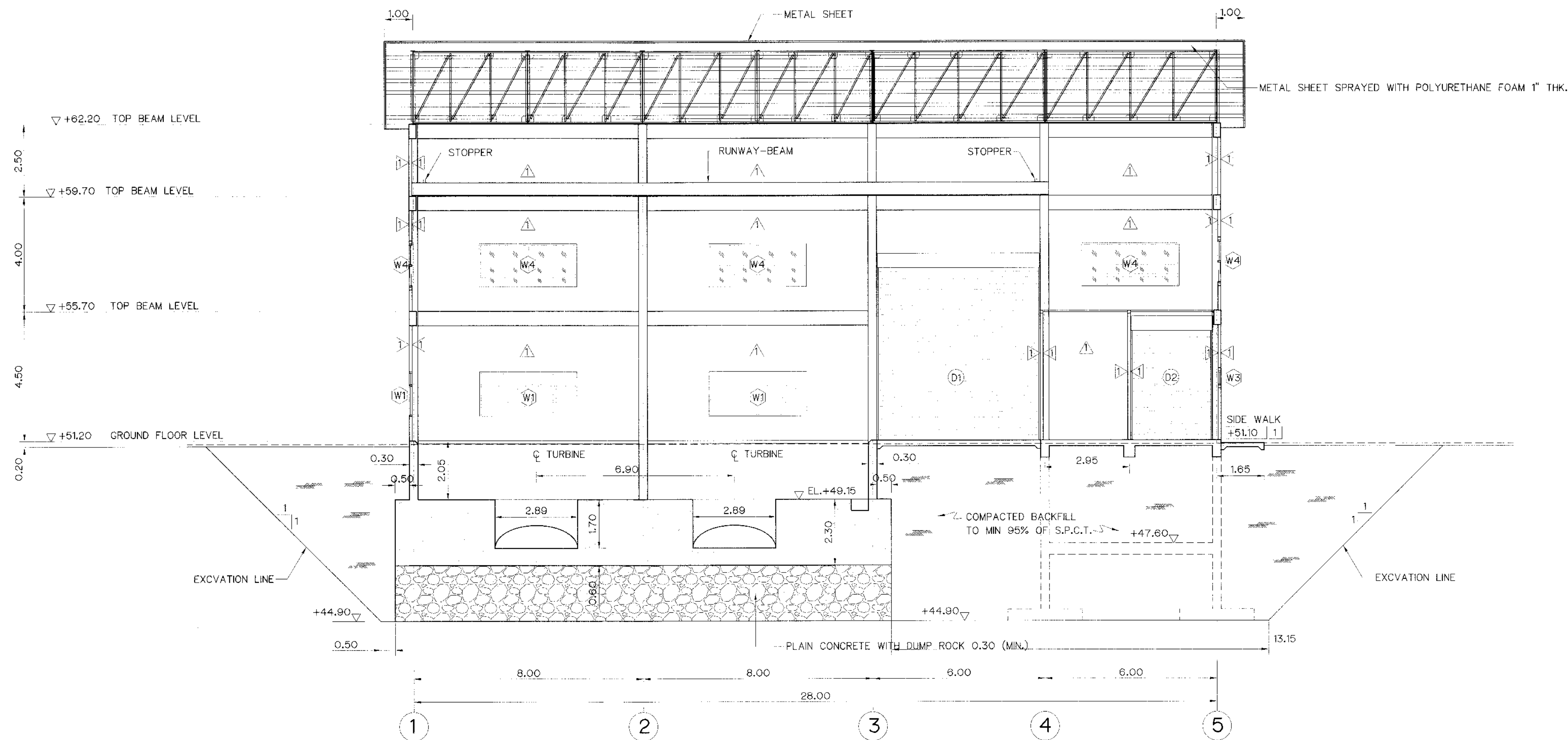
REFERENCE DRAWINGS :

1. PLAN 1st FLOOR KLP-PH-02
2. PLAN 2nd AND ROOF PLAN KLP-PH-03

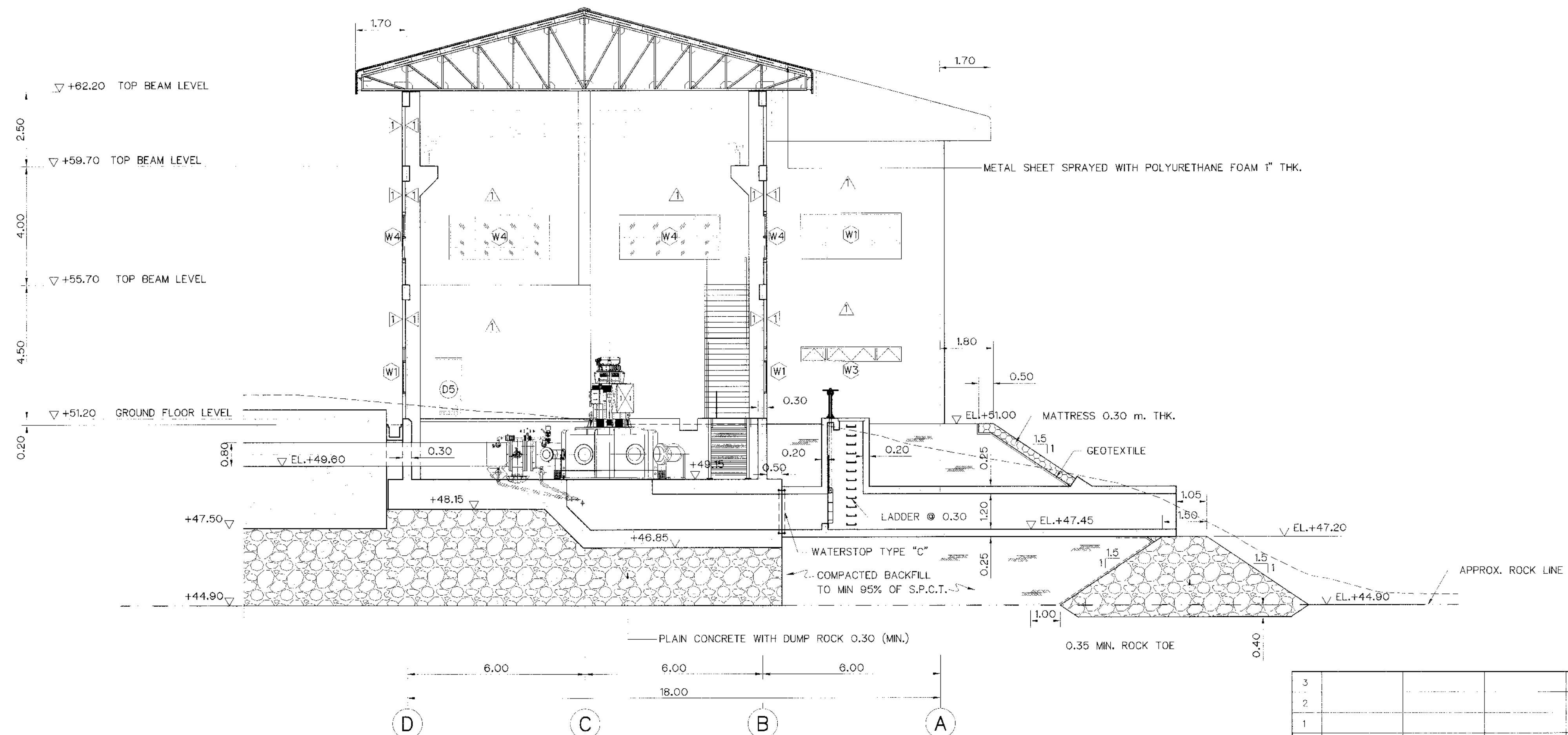


3				
2				
1				
NO.	DATE	REVISIONS	CHECKED	APPROVED
		CONSULTANTS		DEDE

KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT POWERHOUSE ELEVATIONS	
P&C MANAGEMENT CO.,LTD.	Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY
DESIGNED <i>JB.28074</i> DRAWN <i>JB.28074</i> CHECKED <i>JB.28074</i> PROJECT MANAGER	REVIEWED <i>JB.28074</i> SUBMITTED <i>JB.28074</i> RECOMMENDED <i>JB.28074</i> APPROVED <i>JB.28074</i> DATE <i>08/03/2553</i>
DRAWING NO. KLP-PH-04	SHEET NO. 24 OF 38



SECTION A-A
SCALE 1:100



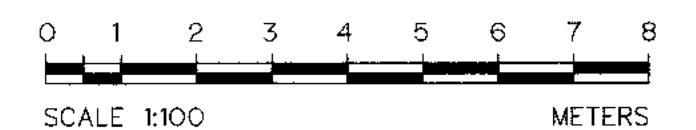
SECTION B-B
SCALE 1:100

NOTES :

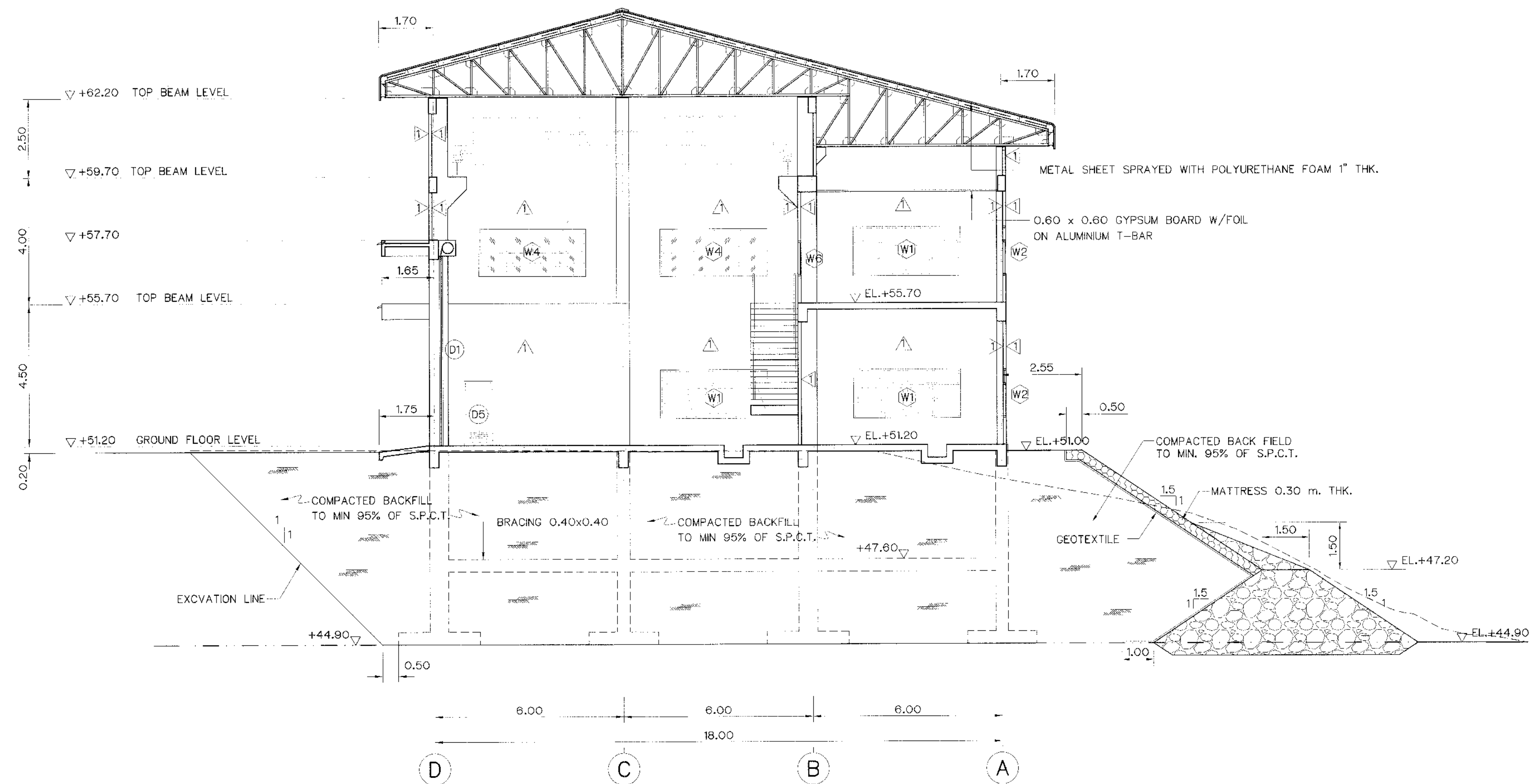
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03

REFERENCE DRAWINGS :

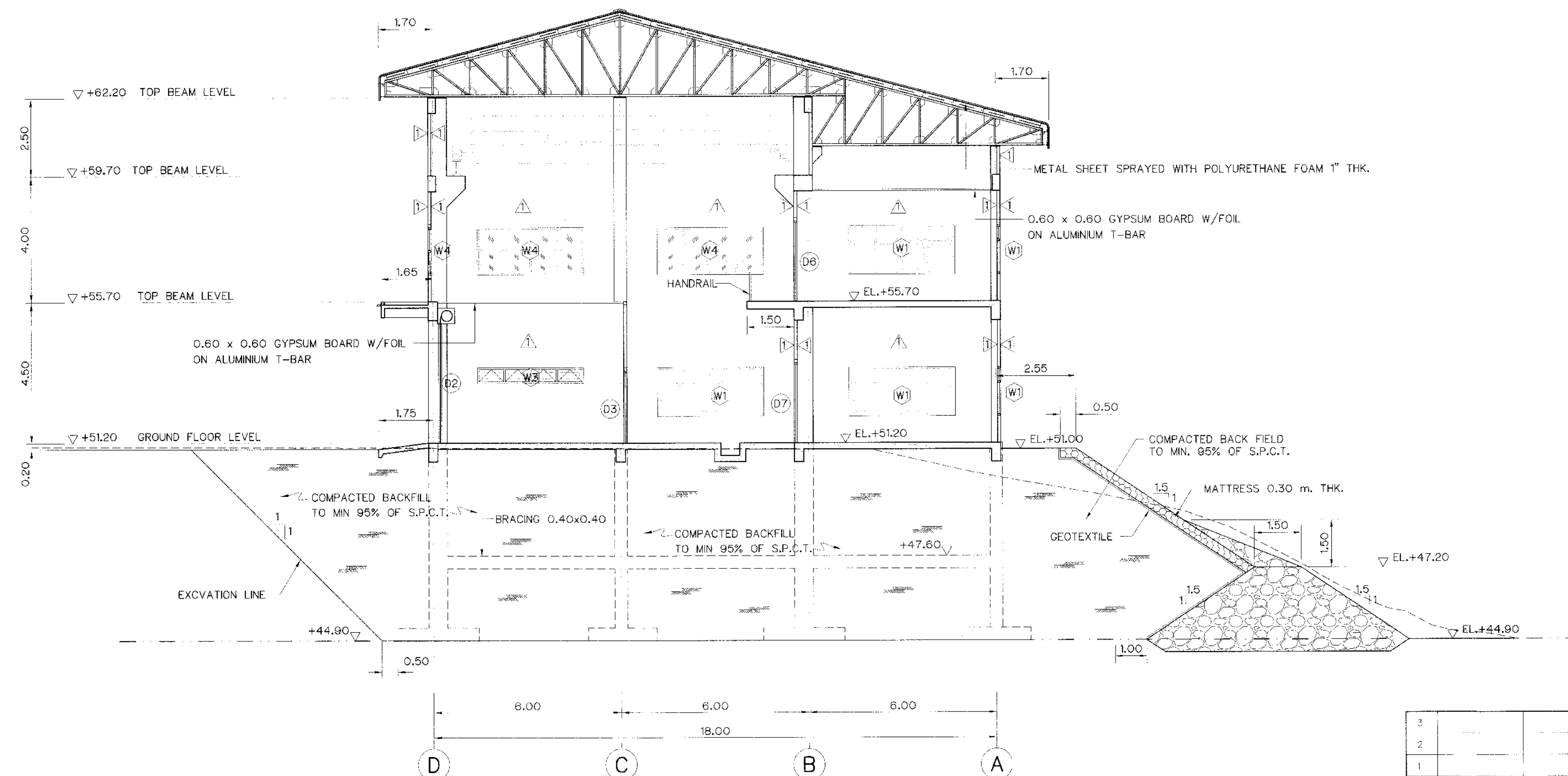
1. PLAN 1st FLOOR KLP-PH-02
2. PLAN 2nd AND ROOF PLAN KLP-PH-03
3. ELEVATIONS KLP-PH-04



KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT POWERHOUSE SECTIONS (SHEET 1/2)	
DESIGNED <i>[Signature]</i> 28/07/2559	REVIEWED <i>[Signature]</i>
DRAWN <i>[Signature]</i>	RECOMMENDED <i>[Signature]</i>
CHECKED <i>[Signature]</i> 28/07/2559	APPROVED <i>[Signature]</i>
PROJECT MANAGER <i>[Signature]</i> 08/03/2559	DRAWING NO. KLP-PH-05
DATE	SHEET NO. 25 OF 38



SECTION C-C
SCALE 1:100



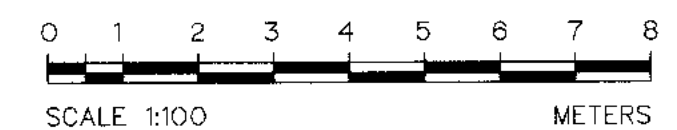
SECTION D-D
SCALE 1:100

NOTES :

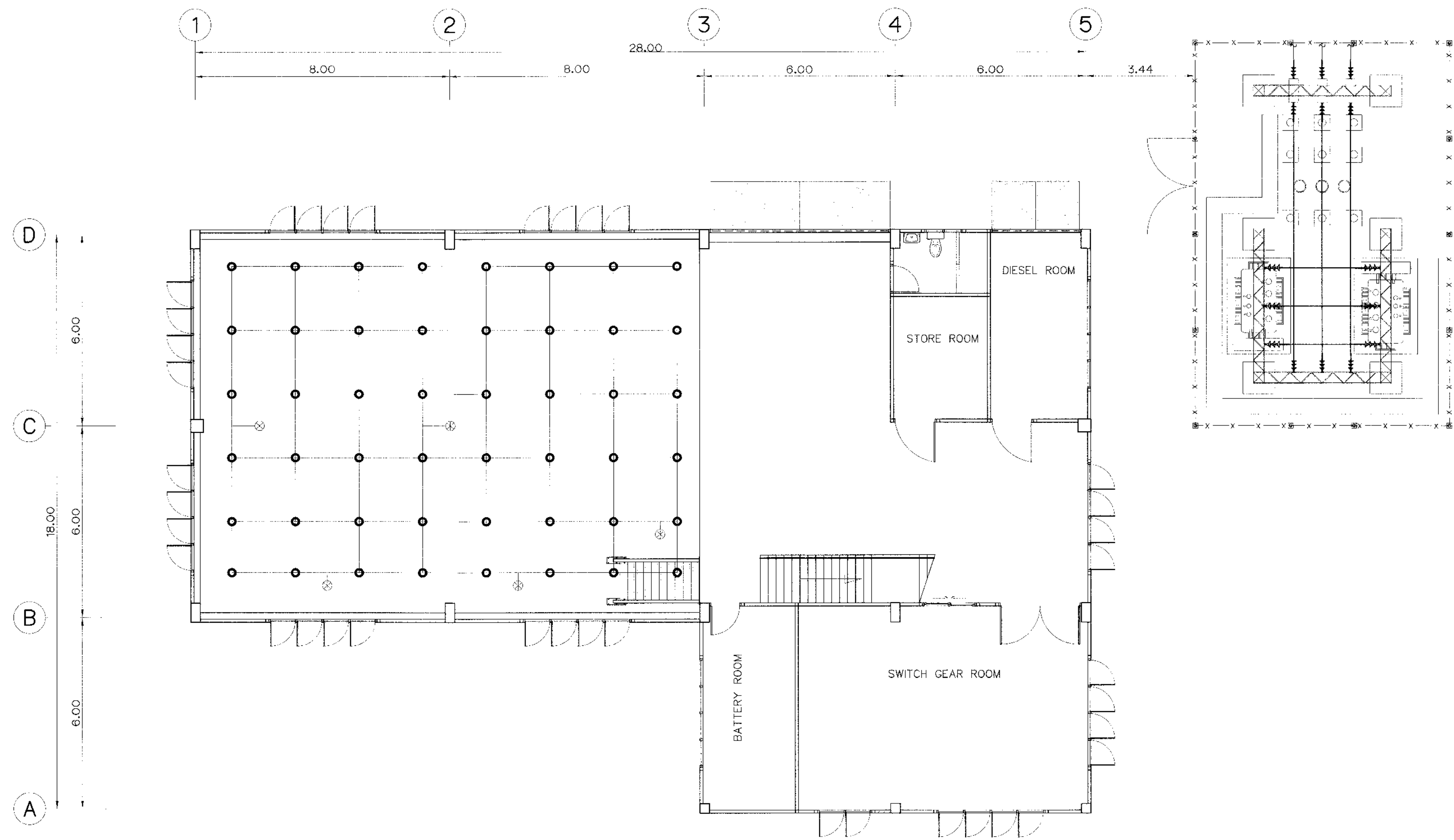
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03

REFERENCE DRAWINGS :

1. PLAN 1st FLOOR KLP-PH-02
2. PLAN 2nd AND ROOF PLAN KLP-PH-03
3. ELEVATIONS KLP-PH-04



KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY			
KLONG LAM PLOK HYDROPOWER PROJECT			
ELECTRO-MECHANICAL EQUIPMENT POWERHOUSE SECTIONS (SHEET 2/2)			
P&C MANAGEMENT CO., LTD.		REVIEWED	
DESIGNED 29074 281.6226		SUBMITTED 281.6226	
DRAWN 281.6226		RECOMMENDED	
CHECKED 281.6226		APPROVED	
CONSULTANTS		DEDE	
PROJECT MANAGER		DATE 08/03/2559	
KLP-PH-06		SHEET NO. 26 OF 38	



PLAN 1st FLOOR
SCALE 1:100

LEGENDS :

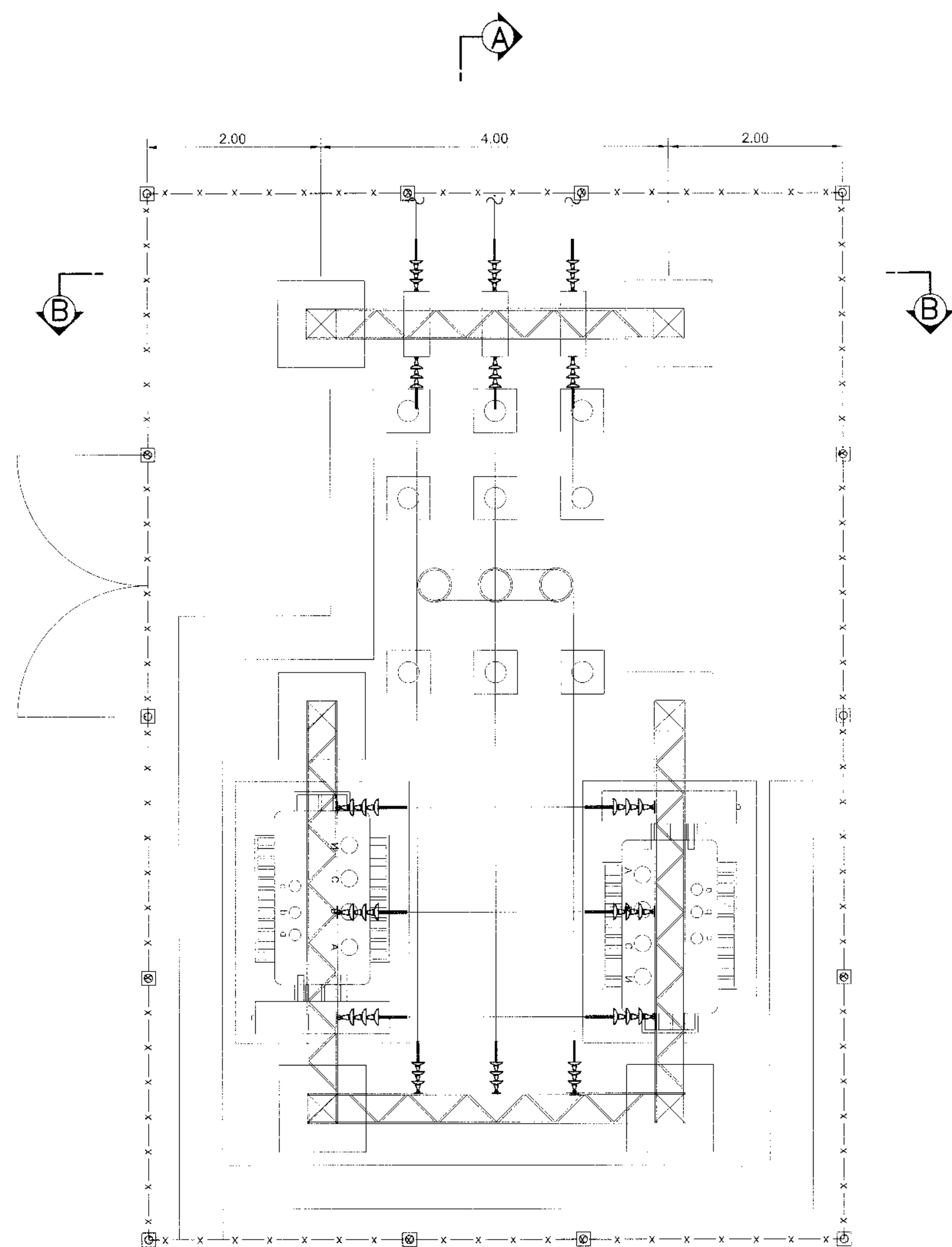
- GROUND ROD
- ⊗ GROUND POINT FOR POWER PLANT EQUIPMENT GROUNDING
- BARE CUPPER CONDUCTOR

NOTE

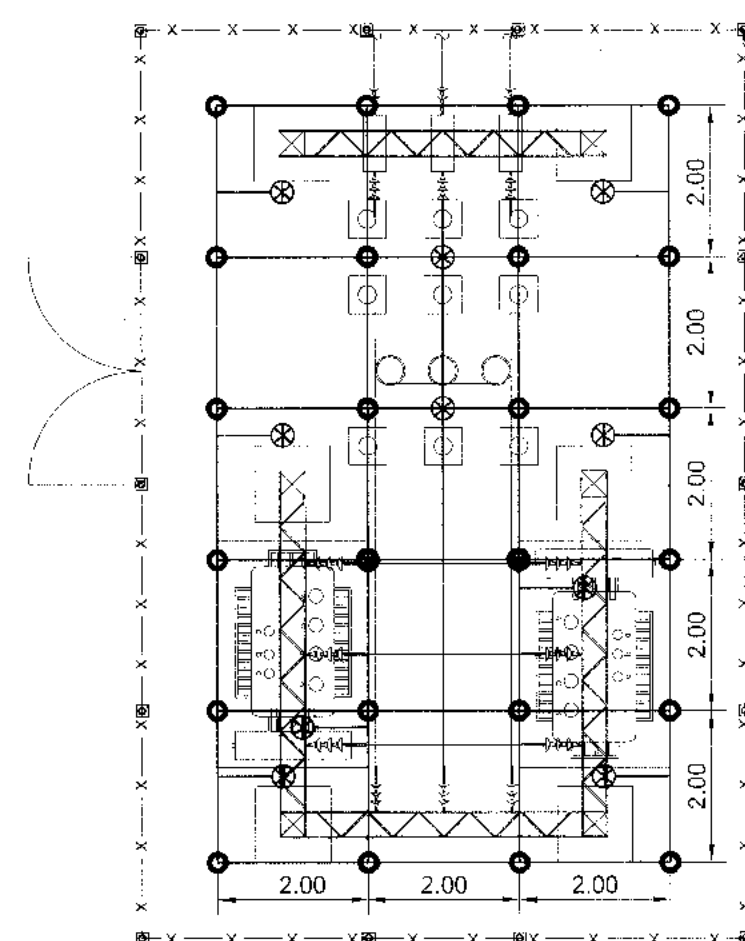
1. GROUNDING SYSTEM DONE BY CONTRACTOR C2
2. GROUNDING CONDUCTOR, TAP AND RISER FROM GROUNDING NETWORK TO POWER EQUIPMENT SHALL BE FORMED BY BARE COPPER CONDUCTOR NOT LESS THAN 95 SQ.MM.
3. GROUNDING SYSTEM RESISTANCE WILL NOT EXCEED 5 OHM.
4. CONNECTOR TO WITH IN & BETWEEN THE GROUNDING NETWORK TO POWER PLANT EQUIPMENT WILL BE MADE BY THERMAL CADWELD
5. GROUND ROD WILL BE COPPER COVER STEEL DIAMETER 15.87 MM. 2,400 MM. LONG
6. THIS DRAWING USE FOR GUIDE ONLY

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NO.	DATE	REVISIONS	CHECKED	APPROVED
		CONSULTANTS		DEDF

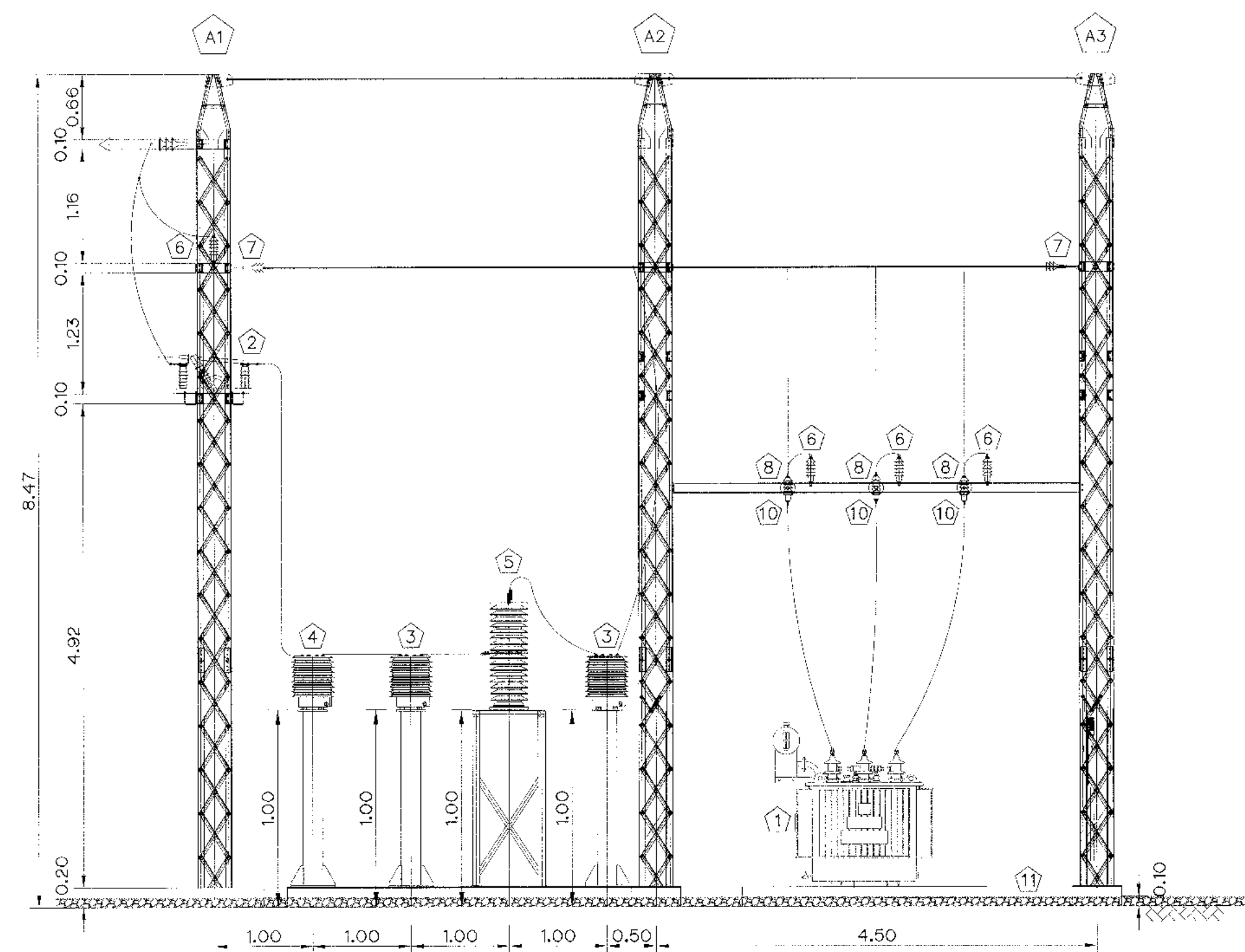
KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT POWERHOUSE GROUNDING SYSTEMS	
P&C MANAGEMENT CO.,LTD.	MINISTRY OF ENERGY
DESIGNED 24/11/604	REVIEWED
DRAWN	SUBMITTED
CHECKED 24/11/604	RECOMMENDED
08/03/2559 PROJECT MANAGER DATE	APPROVED
DRAWING NO. KLP-PH-07	SHEET NO. 27 OF 38



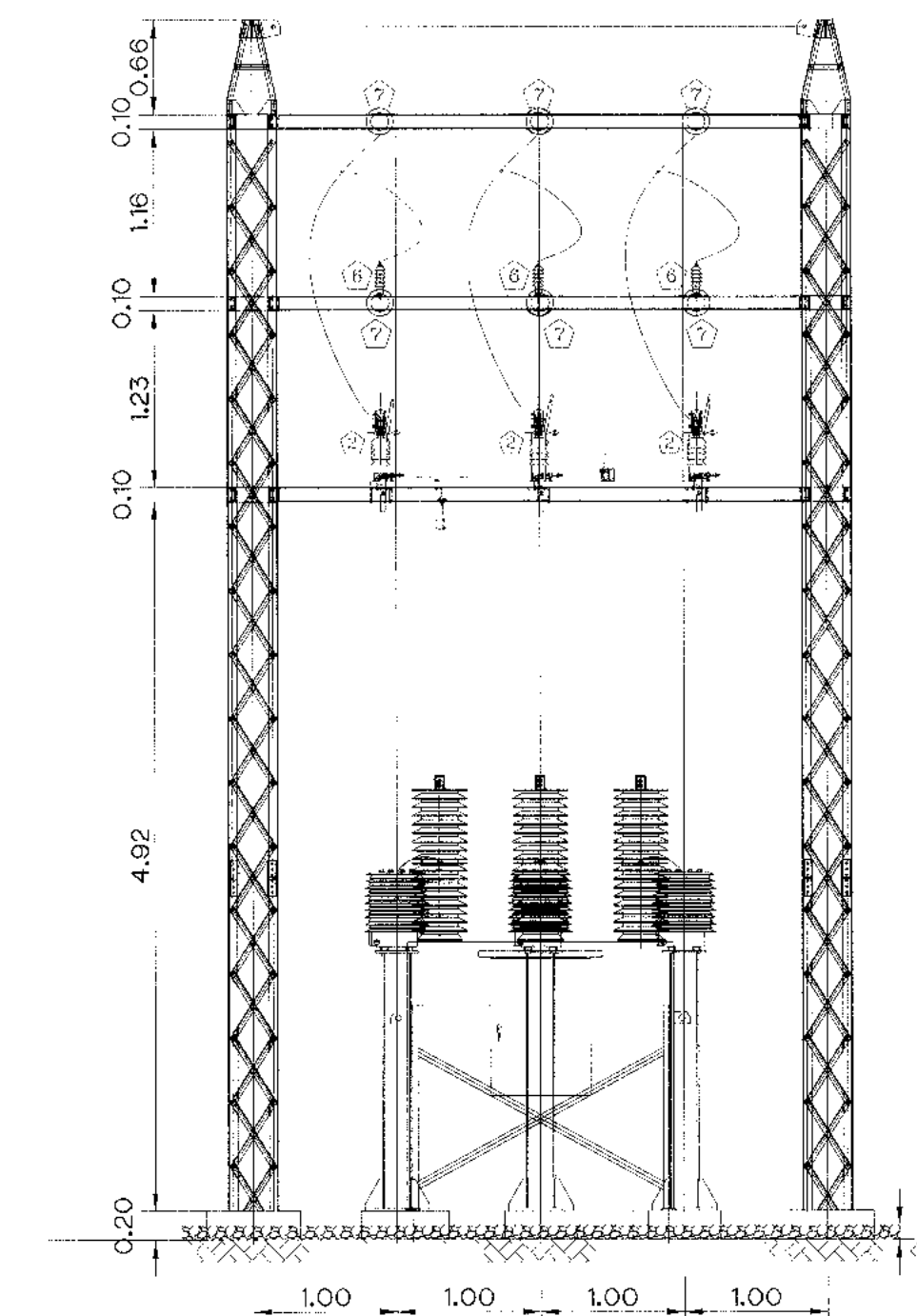
SWITCHYARD PLAN LAYOUT
SCALE 1:50



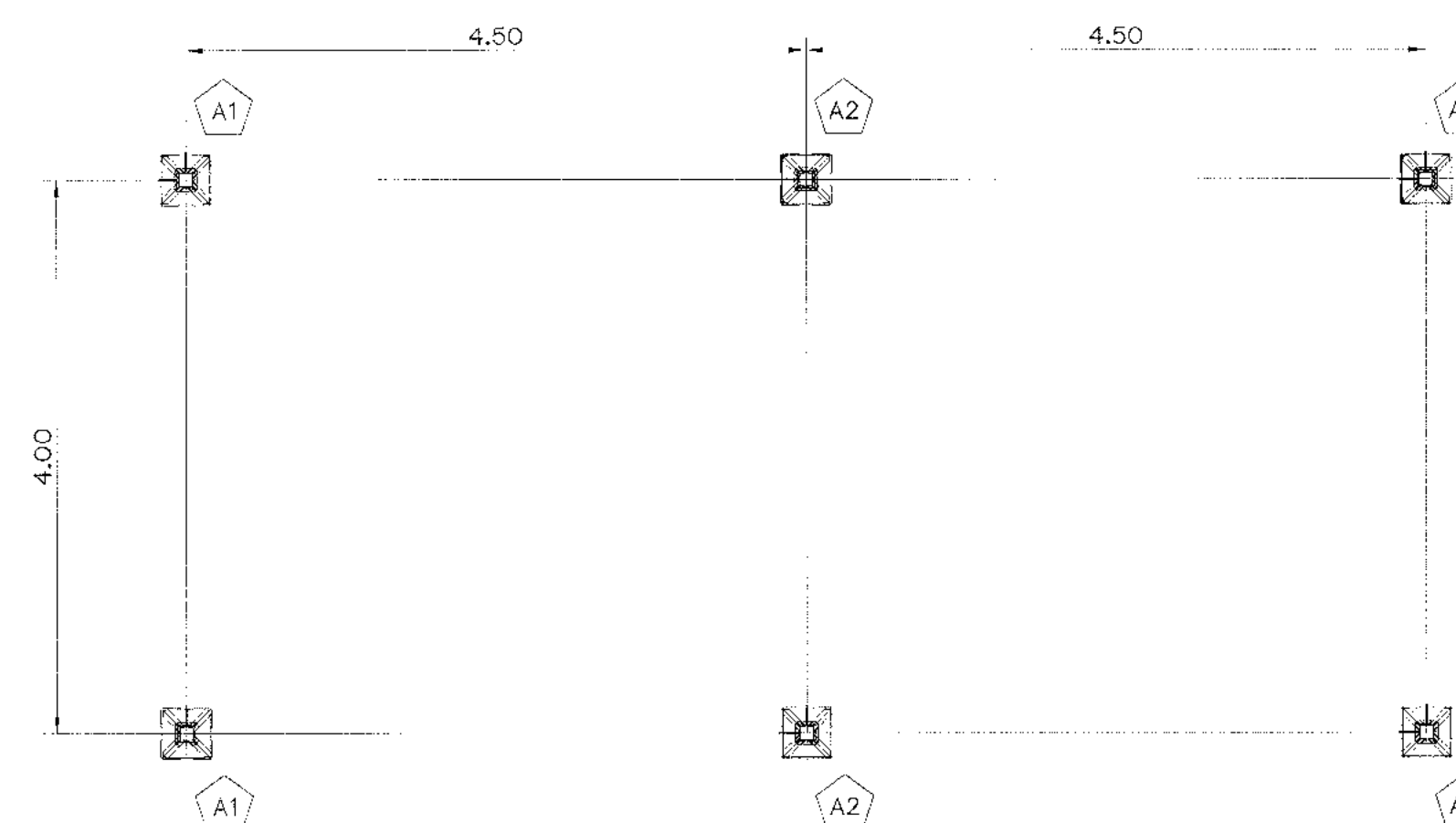
GROUND SYSTEM
SCALE 1:100



SECTION A-A
SCALE 1:50



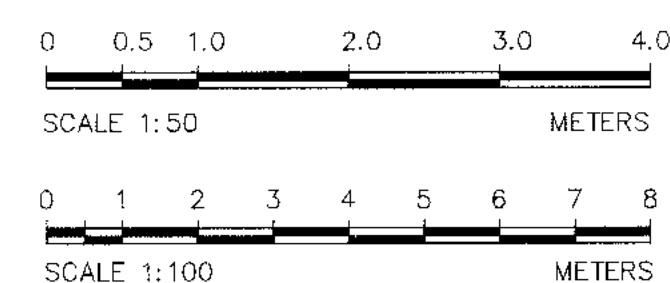
SECTION B-B
SCALE 1:50

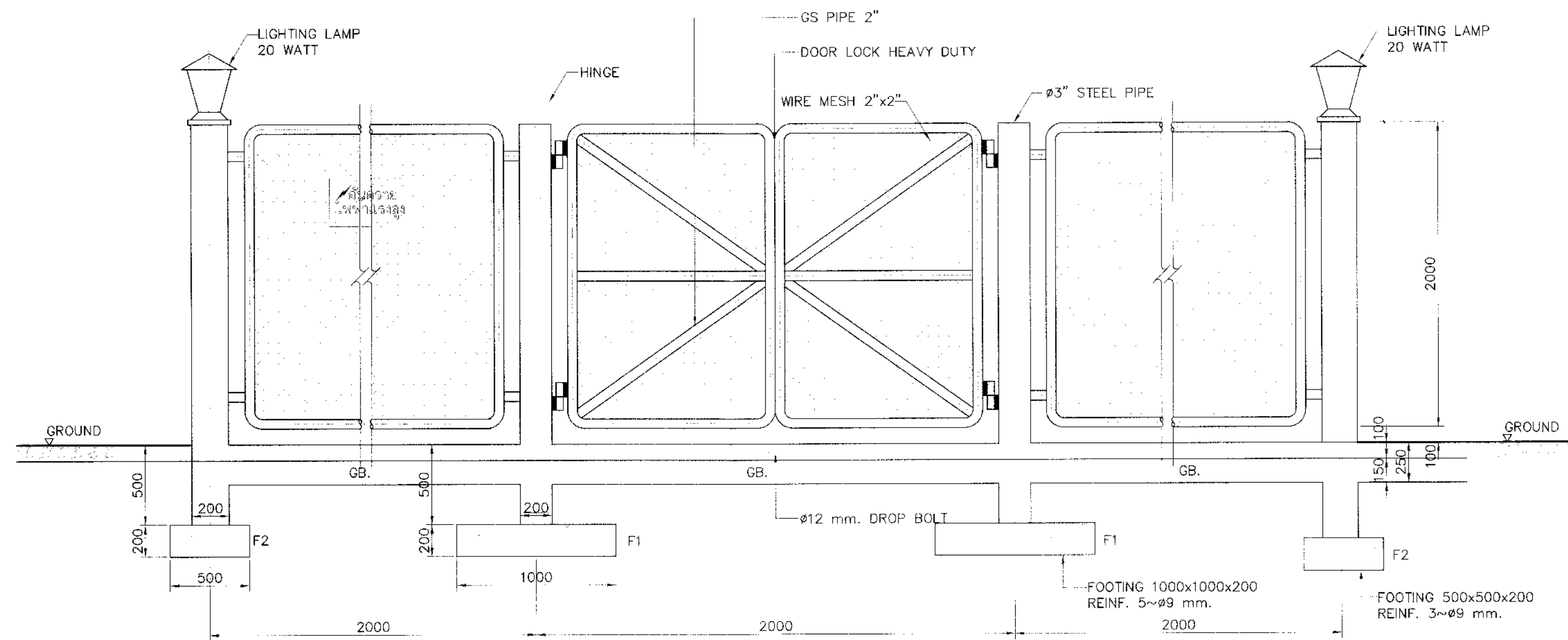


OVERHEAD GROUND WIRE PLAN
SCALE 1:50

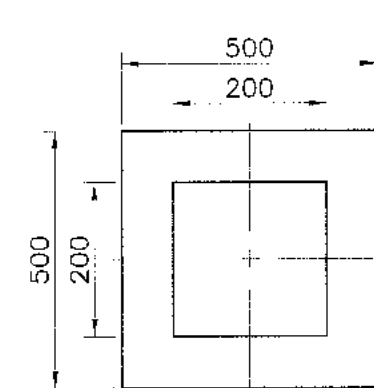
ITEM.	DESCRIPTION	Q'TY.	REMARK.
1	MAIN TRANSFORMER 22000/3300 V.	2	
2	DISCONNECTING SWITCH	1	
3	OUTDOOR CURRENT TRANSFORMERS RATIO	6	
4	OUTDOOR VOLTGE TRANSFORMER RATIO	3	
5	SF6 CIRCUIT-BREAKER	1	
6	SURGE ARRESTERS	9	
7	SUSPENSION INSULATORS	45	
8	LINE POST INSULATORS	6	
9	LINE GROUND SWITCH	2	
10	33 KV. DROP OUT FUSE	6	
11	GRAVEL	1	

KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY			
KLONG LAM PLOK HYDROPOWER PROJECT			
ELECTRO-MECHANICAL EQUIPMENT POWERHOUSE SWITCHYARD PLAN LAYOUT SECTIONS AND GROUND SYSTEM			
P&C MANAGEMENT CO., LTD.		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY MINISTRY OF ENERGY	
DESIGNED	AWN.604	REVIEWED	AWN.604
DRAWN	AWN.604	SUBMITTED	AWN.604
CHECKED	AWN.604	RECOMMENDED	AWN.604
APPROVED	AWN.604	APPROVED	AWN.604
PROJECT MANAGER		DATE 08/03/2559	DRAWING NO. KLP-PH-08 SHEET NO. 28 OF 38

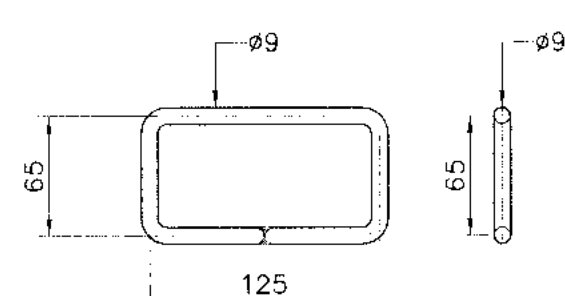
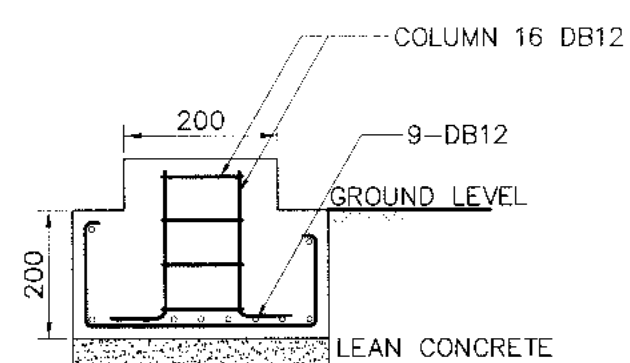




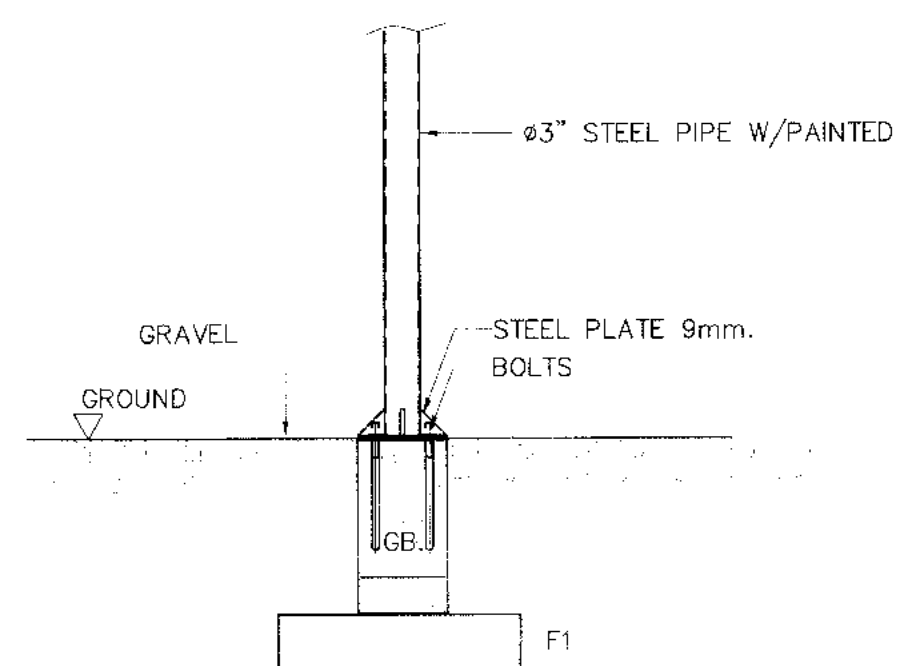
FENCE DETAIL
NOT TO SCALE



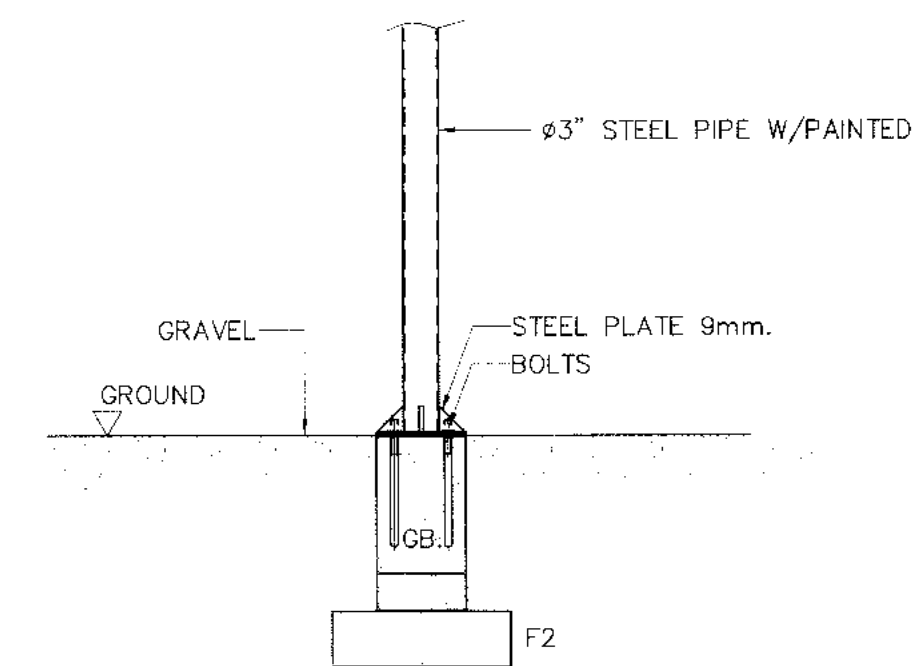
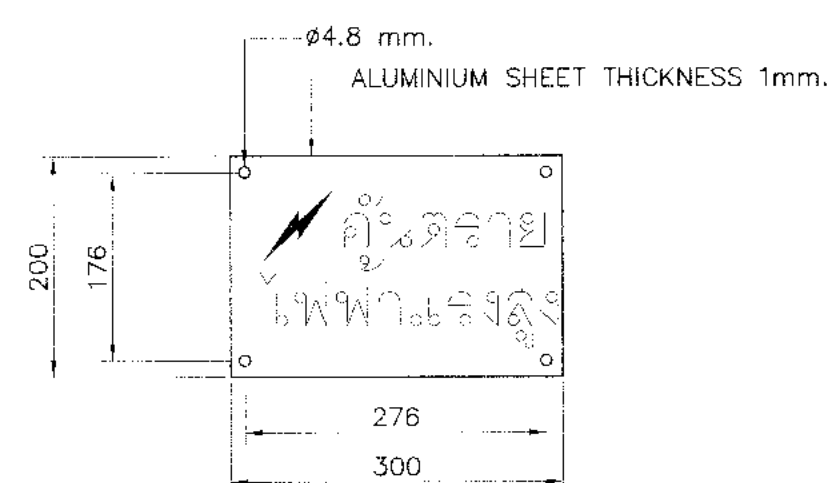
DETAIL COLUMN F2
NOT TO SCALE



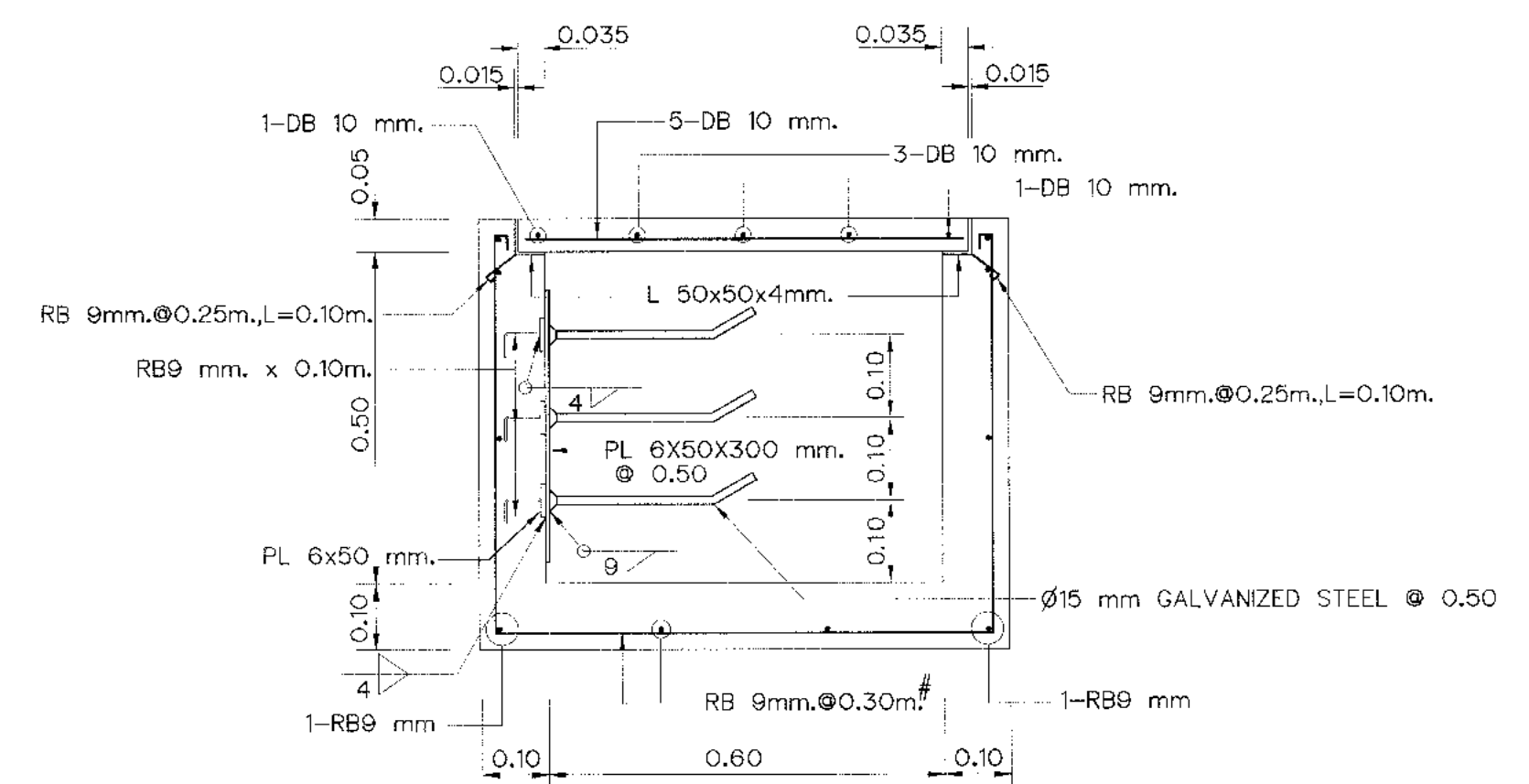
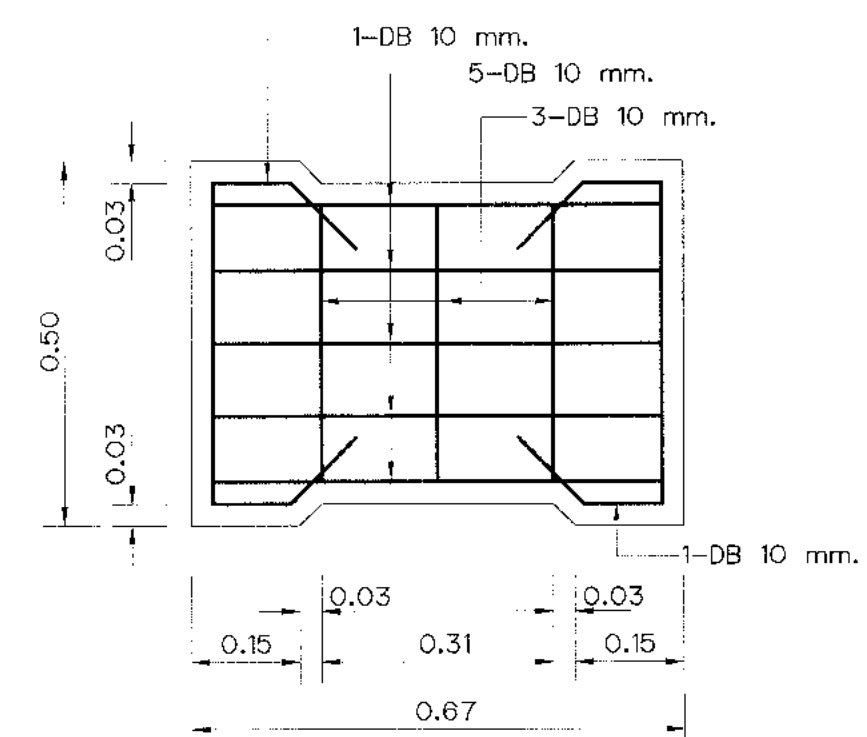
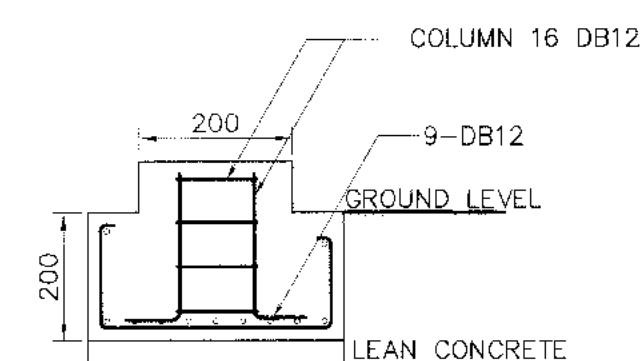
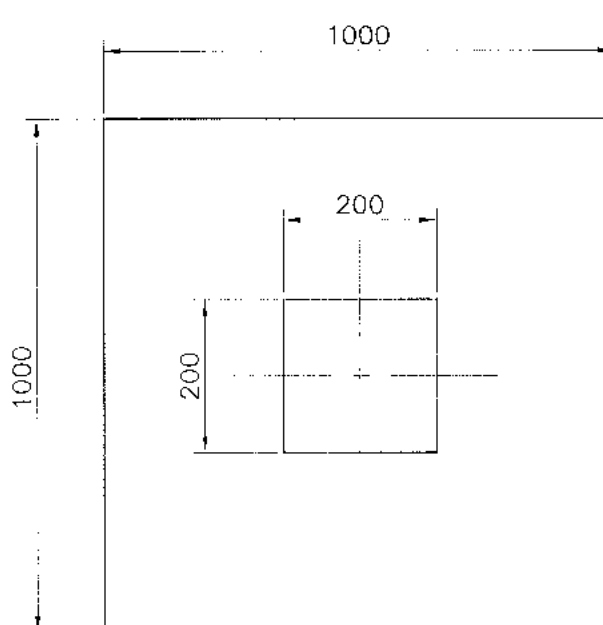
DETAIL "A"
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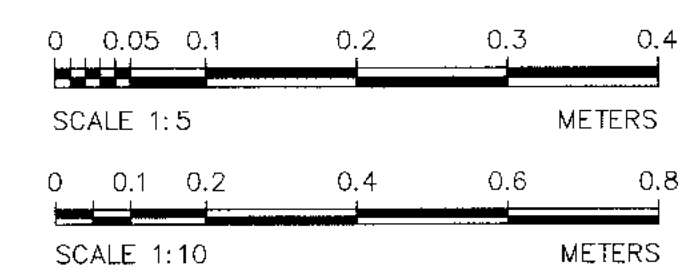
WARNING SIGN
NOT TO SCALE



DETAIL COLUMN F1
NOT TO SCALE



DETAIL CABLE TRENCH IN SWITCHYARD
SCALE 1:10

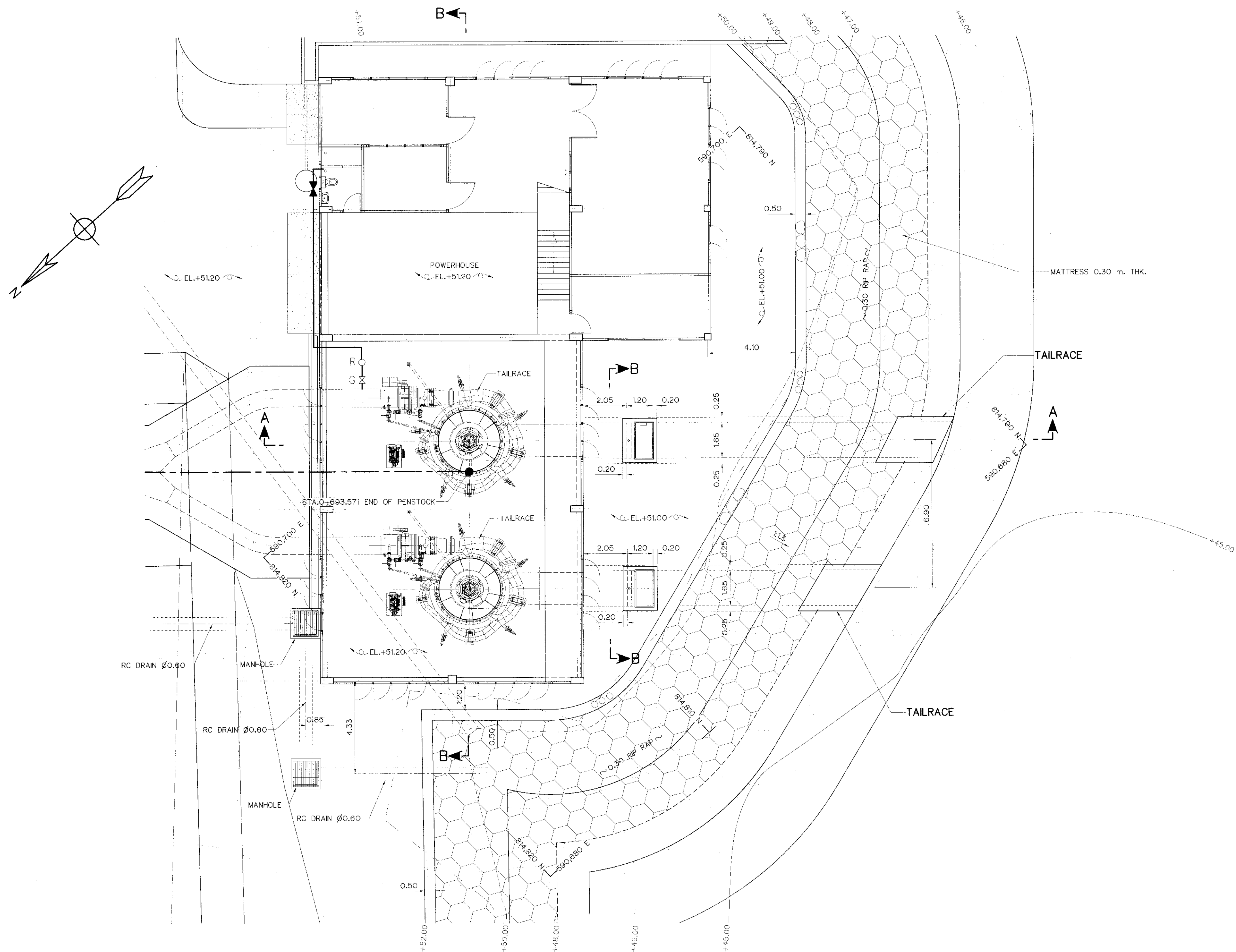


NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. HMP-GN-03
3. THE TRANSFORMER YARD WILL BE ACCORDING TO PEA STANDARD.

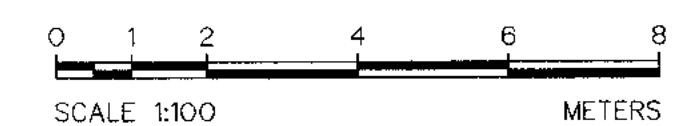
KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT POWERHOUSE SWITCHYARD FENCE AND CABLE TRENCH	
P&C MANAGEMENT CO.,LTD.	REVIEWED
DESIGNED 28.29074 28.6226	SUBMITTED Chanit
DRAWN 28.6226	RECOMMENDED
CHECKED 28.6226	APPROVED
PROJECT MANAGER 08/03/2559	DRAWING NO. KLP-PH-09
DATE	SHEET NO. 29 OF 38

3				
2				
1				
NO.	DATE	REVISIONS	CHECKED	APPROVED

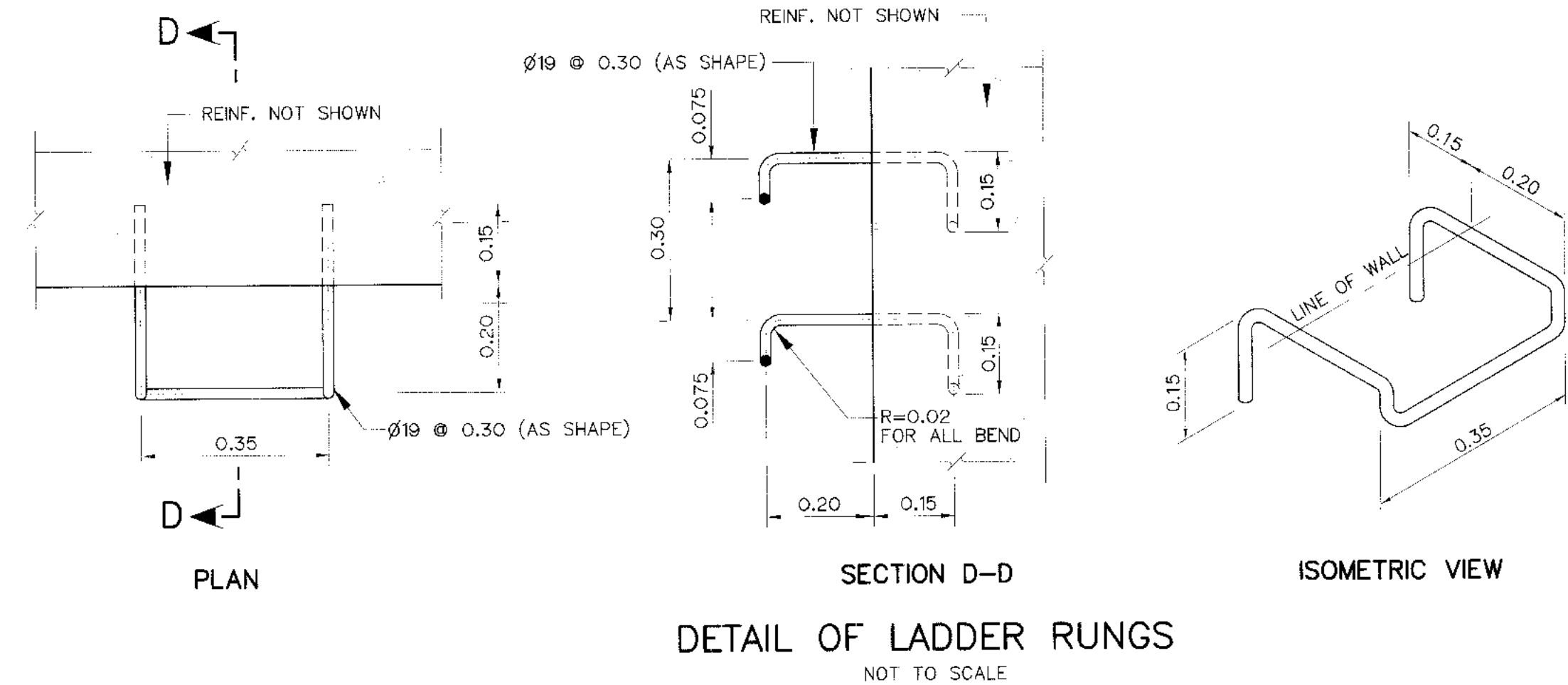
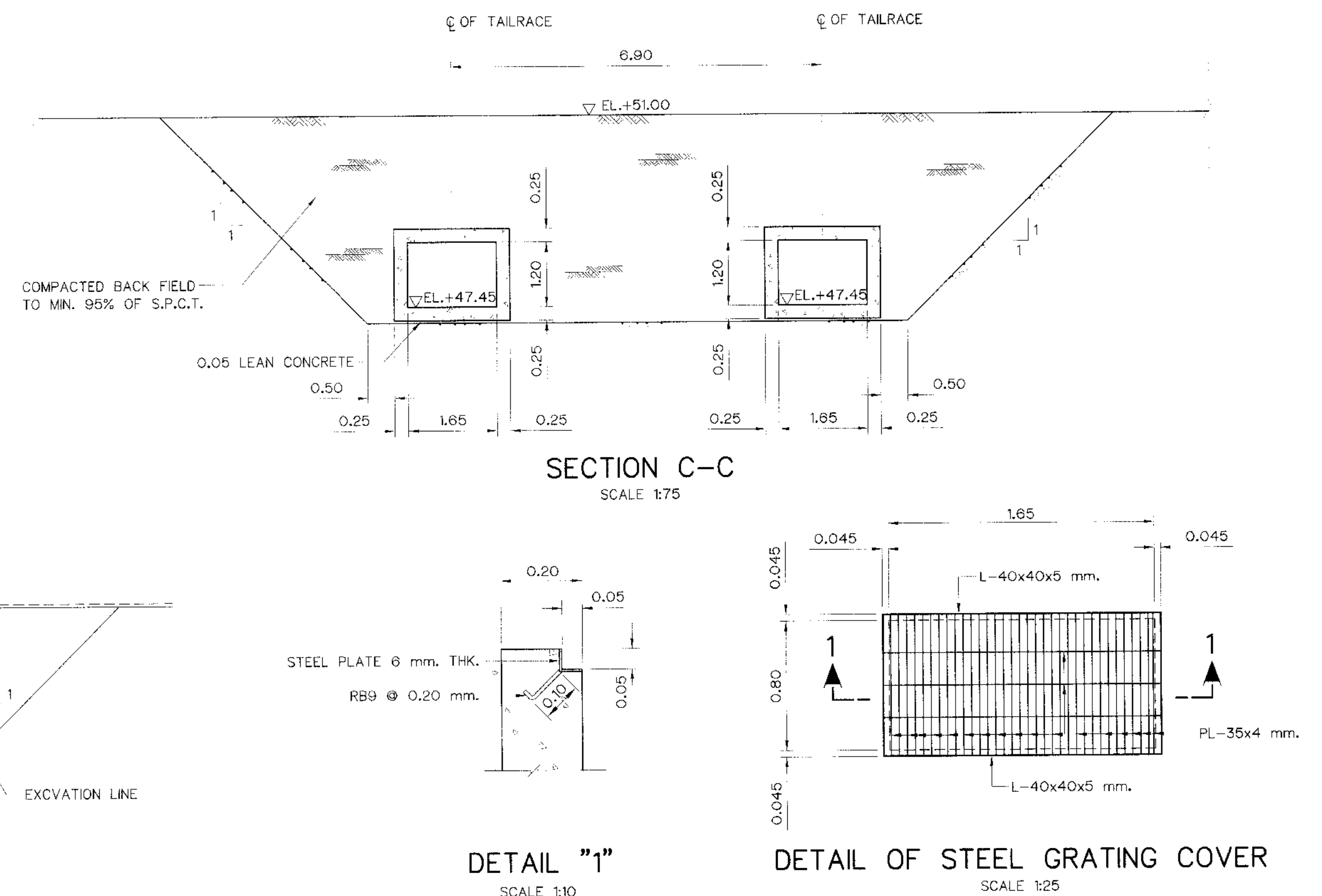
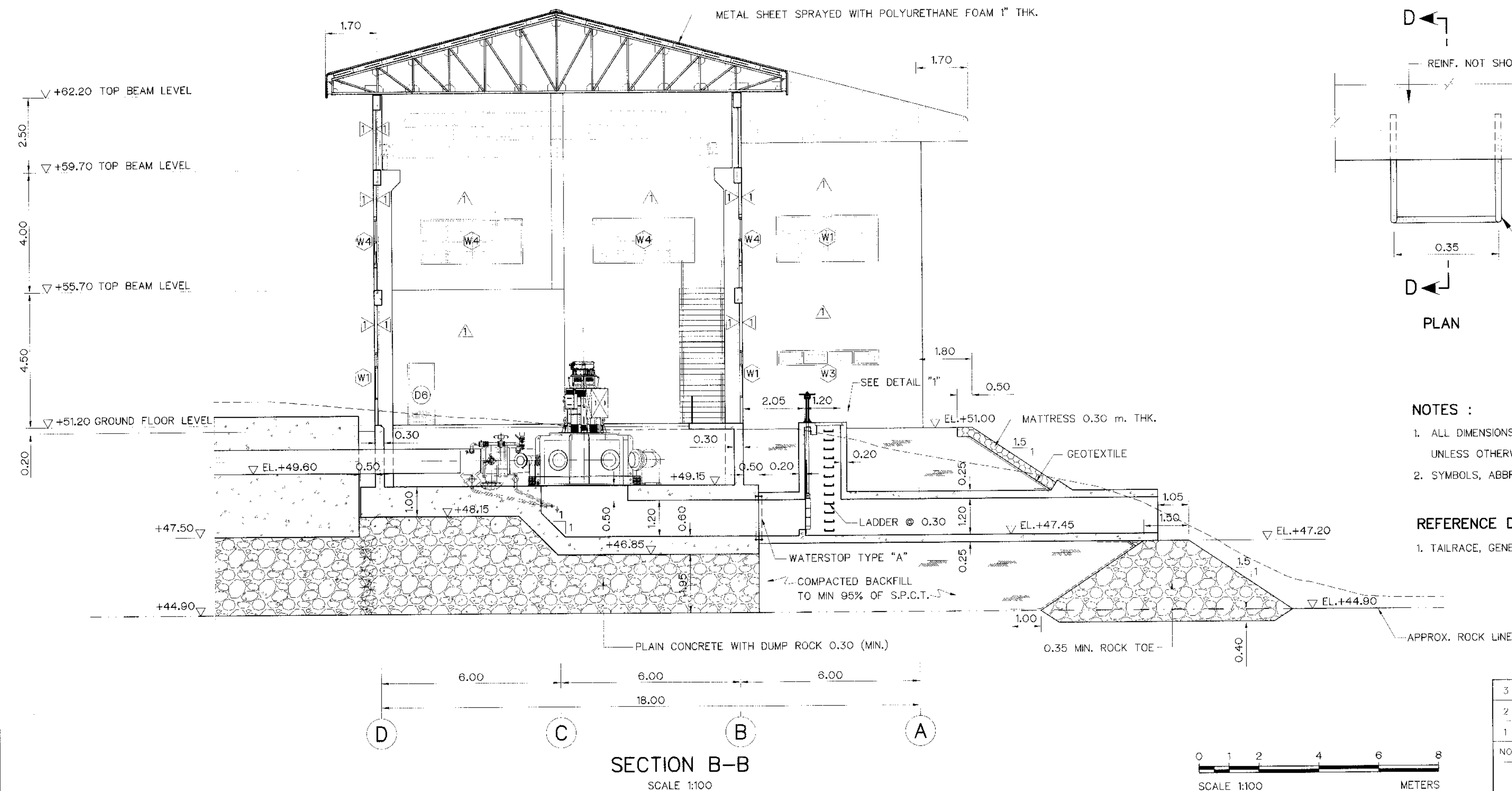
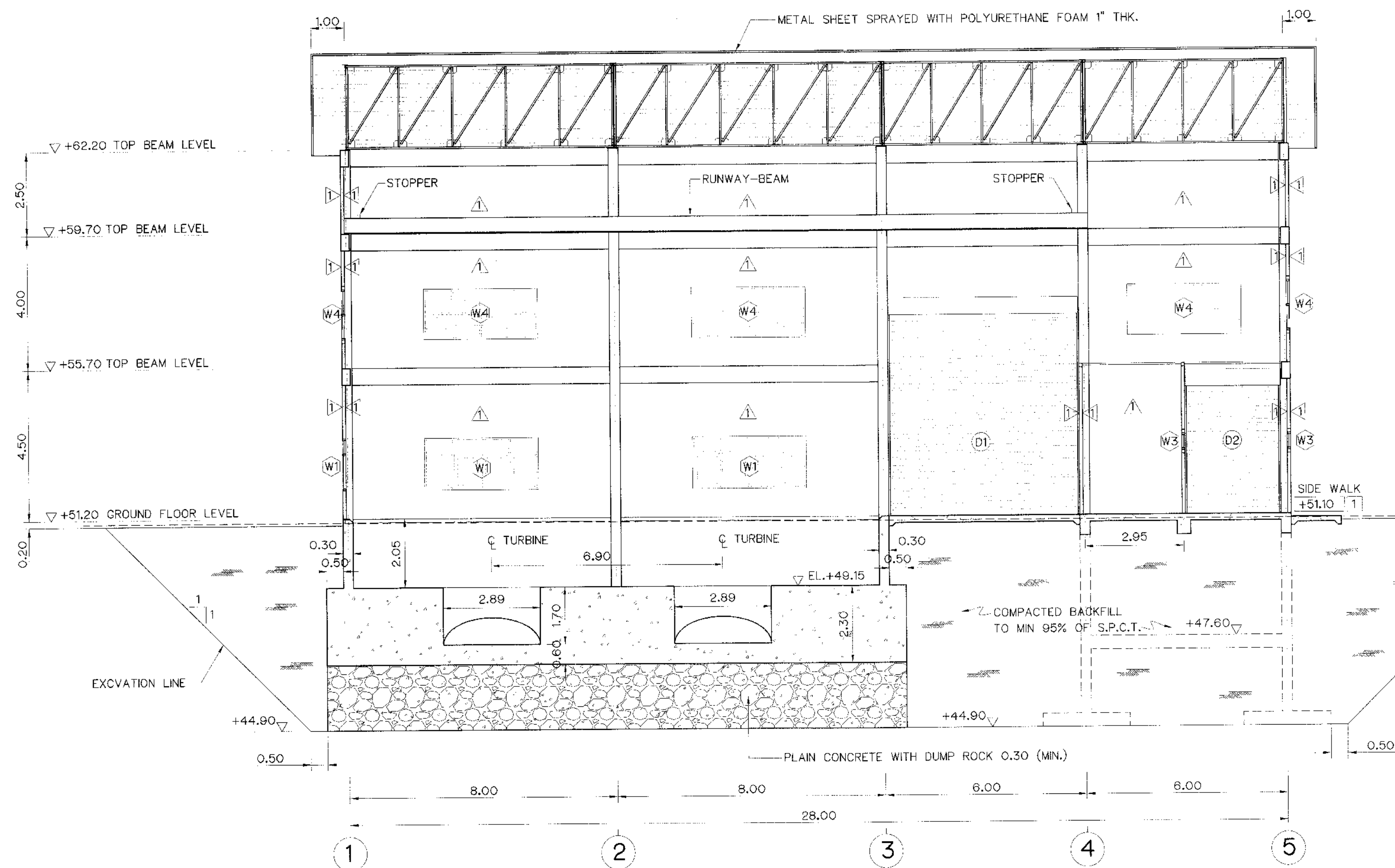


- NOTES :**
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03

- REFERENCE DRAWINGS :**
1. TAILRACE, SECTIONS AND DETAILS KLP-TR-02



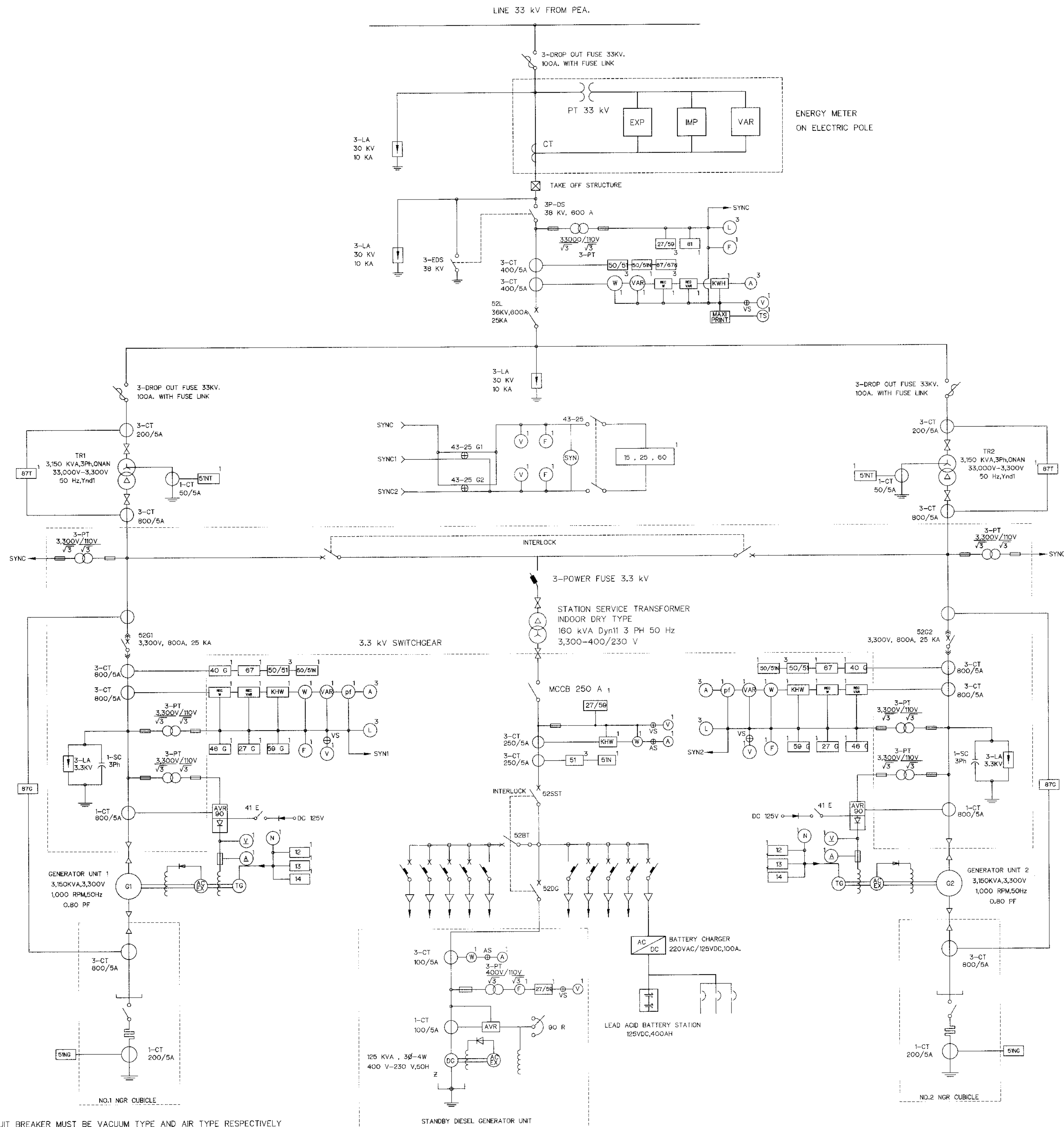
KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY			
KLONG LAM PLOK HYDROPOWER PROJECT			
ELECTRO-MECHANICAL EQUIPMENT TAILRACE GENERAL LAY-OUT			
P&C MANAGEMENT CO., LTD.		MINISTRY OF ENERGY	
DESIGNED	18/29074	SUBMITTED	Chait
DRAWN	18/8226	RECOMMENDED	
CHECKED	18/8226	APPROVED	
PROJECT MANAGER		DATE	
CONSULTANT'S		DEDE	
DRAWING NO. KLP-TR-01		SHEET NO. 30 OF 38	



- NOTES :
- ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 - SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. KLP-GN-03

- REFERENCE DRAWINGS :
- TAILRACE, GENERAL LAY-OUT KLP-TR-01

KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY			
KLONG LAM PLOK HYDROPOWER PROJECT			
ELECTRO-MECHANICAL EQUIPMENT			
TAILRACE			
SECTIONS AND DETAILS			
P&C MANAGEMENT CO., LTD.		Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
DESIGNED	18.29074	18.6226	REVIEWED
DRAWN	18.6226	18.6226	SUBMITTED
CHECKED	18.6226	18.6226	RECOMMENDED
APPROVED	18.6226	18.6226	APPROVED
PROJECT MANAGER		DATE	
CONSULTANTS		DLD	
SHEET NO.		31 OF 38	



NOTES :

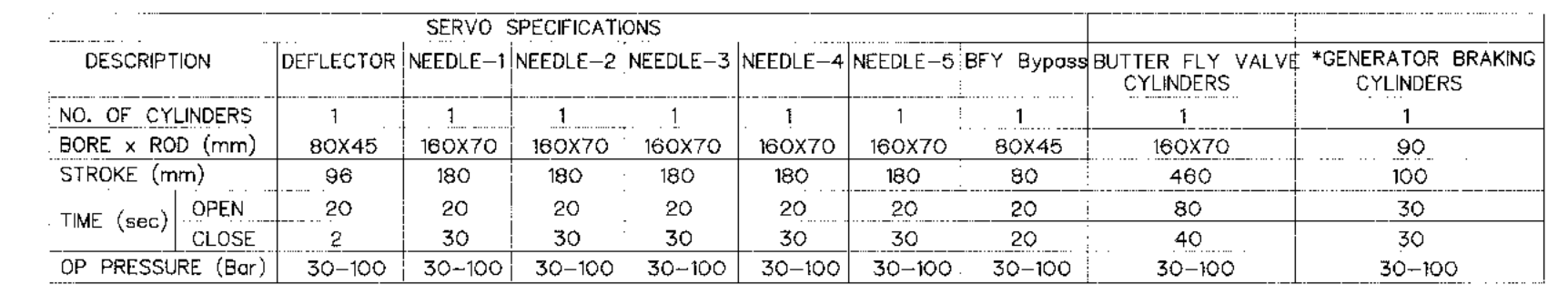
- 33 AND 3.3 KV CIRCUIT BREAKER MUST BE VACUUM TYPE AND AIR TYPE RESPECTIVELY
- 3.3 KV CURRENT TRANSFORMER AND POTENTIAL TRANSFORMER MUST BE DRY TYPE
- 33 KV CURRENT TRANSFORMER AND POTENTIAL TRANSFORMER MUST BE EPOXY RESIN MOLD
- ALL POTENTIAL TRANSFORMER : ACCURACY CLASS 0.5
- ALL CURRENT TRANSFORMER : FOR METERING ACCURACY CLASS 0.5

: FOR RELAY ACCURACY CLASS 5P 20

LEGEND :

12	OVERSPEED RELAY	43	MANUAL TRANSFER SWITCH
13	SYNCHRONOUS SPEED RELAY	L	INDICATING LAMP
14	UNDERSPEED RELAY	F	FREQUENCY METER
15	SPEED OR FREQUENCY MATCHING RELAY	V	VOLT. METER
25	SYNCHRONISING RELAY	A	AMP. METER
27	UNDERVOLTAGE RELAY	W	WATT. METER
32	REVERSE POWER RELAY	VAR	VAR METER
40	FIELD RELAY	pf	POWER FACTOR METER
48	REVERSE PHASE RELAY	N	RPM. SPEED METER
50	INSTANTANEOUS OVERCURRENT	V	DC. VOLT METER
51	TIME OVERCURRENT RELAY	A	DC. AMP. METER
59	OVERVOLTAGE RELAY	TG	TACHO-GENERATOR
60	VOLTAGE OR CURRENT BALANCE RELAY	EX	AC. EXCITOR
64	GROUND PROTECTIVE RELAY	G1	GENERATOR NO.1
67	DIRECTIONAL OVERCURRENT RELAY	3P-D	3-PHASE DROP-OUT FUSE
81	FREQUENCY RELAY	3P-D	3-PHASE DISCONNECTING SWITCH
87	DIFFERENTIAL PROTECTIVE RELAY	3-LA	3-PHASE LIGHTNING ARRESTER
+	SELECTOR SWITCH	3P-PF	3-PHASE POWER FUSE
W	WATT RECORDER	CB	CIRCUIT BREAKER
VAR	VAR RECORDER	VCB OR ACB	VACUUM CIRCUIT BREAKER OR AIR CIRCUIT BREAKER (DRAW OUT TYPE)
kwh	KELOWATT HOUR METER		
3-CT	3-PHASE POTENTIAL TRANSFORMER		
3-CT	3-PHASE CURRENT TRANSFORMER		
SYNC	SYNCHRONISING SIGNAL		
CONTROL FUSE			
LAMP			
SYN	SYNCHRONOSCOPE		

KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY			
KLONG LAM PLOK HYDROPOWER PROJECT			
ELECTRO-MECHANICAL EQUIPMENT MAIN POWER SINGLE LINE DIAGRAM			
P&C MANAGEMENT CO., LTD.		DEPARTMENT OF ALTERNATIVE ENERGY DEVELOPMENT AND EFFICIENCY MINISTRY OF ENERGY	
DESIGNED	24/11/604	SUBMITTED	Chant
DRAWN	24/11/604	RECOMMENDED	
CHECKED	24/11/604	APPROVED	
PROJECT MANAGER		DATE	
CONSULTANTS		DEDE	
DRAWING NO.		SHEET NO.	
KLP-EM-01		33 OF 38	

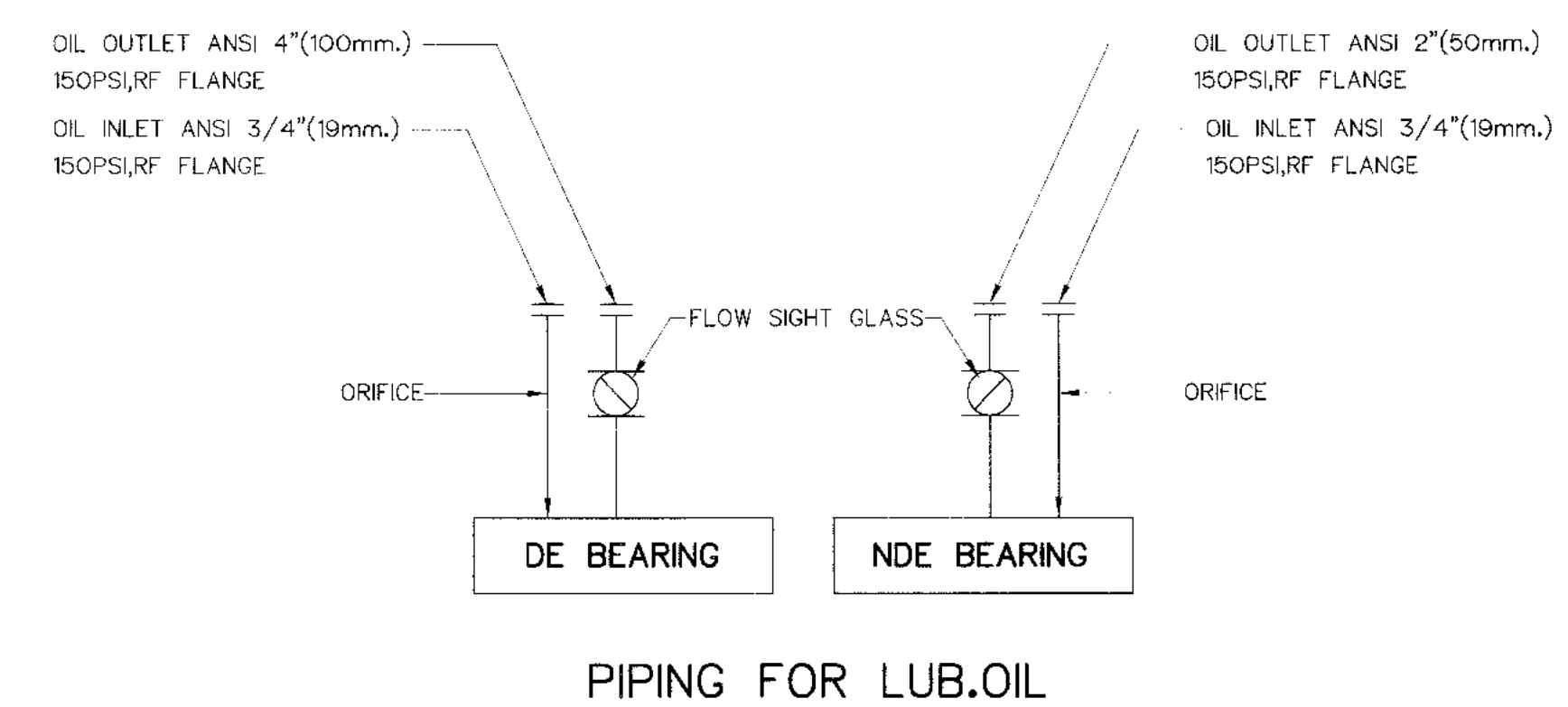
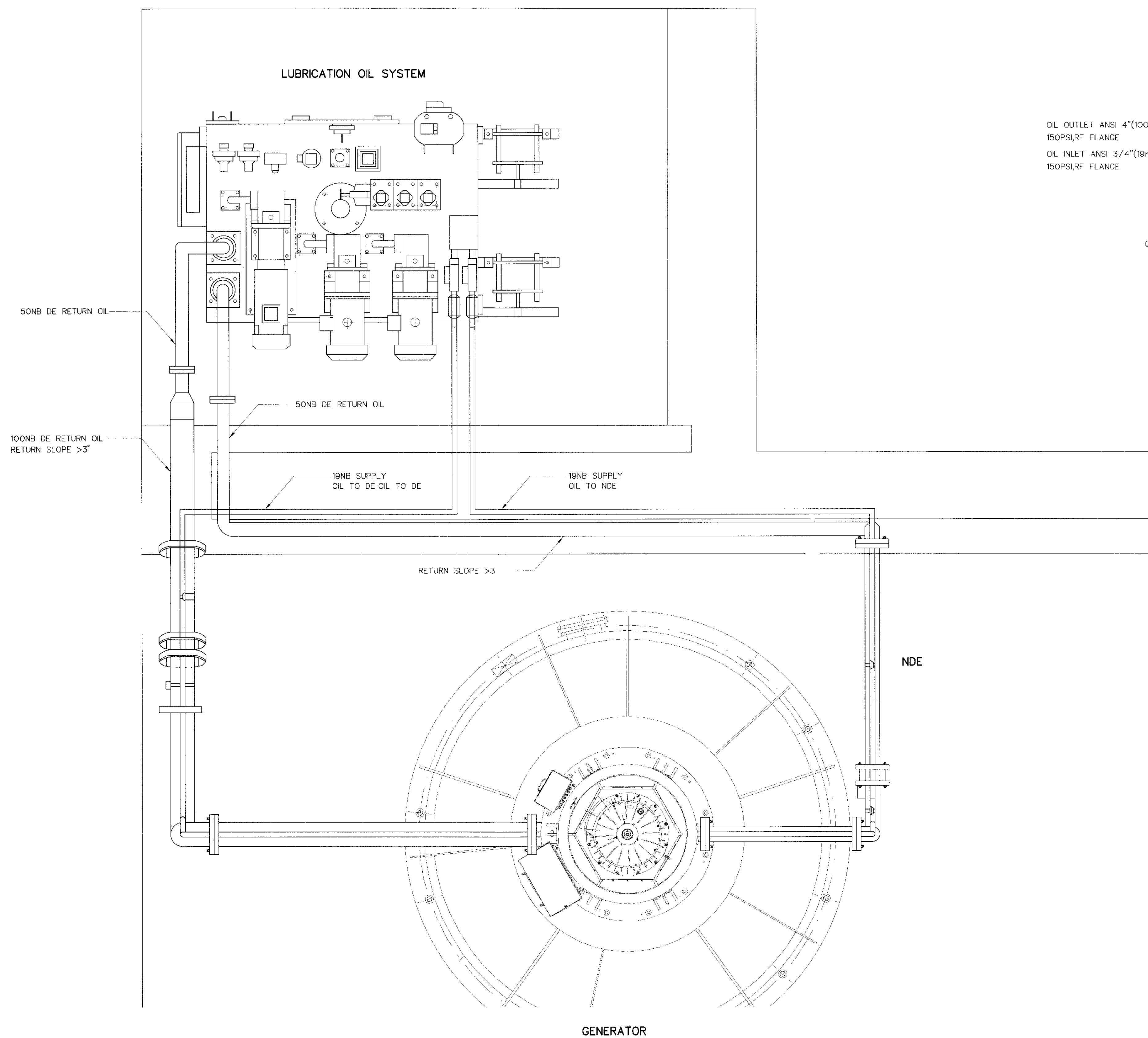


1. THE SNOS. DEFLECTORS ON THE TURBINE (NO EACH FOR EACH NOZZLE)
2. PUMP SETTING-50 LPM @ 100 BAR.
3. PRESSURE TRANSDUCER/SWITCH SETTING.
P>100 BAR PUMP OFF.
P>70 BAR PUMP ON.
P>60 BAR ALARM
P>50 BAR TRIP.
4. PUMP SETTING-50 LPM @ 100 BAR.
FR. RELIFT VALVE SETTING = 110 BAR (ITEM No. 14)

SAFETY RUEUF VALVE SETTING + 120 BAR (ITEM No. 22)
5. 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

QTY	S/LNO	DESCRIPTION	SPEC'N	REF/DWG
01	01	OL RESERVOIR	750 Liters	—
01	02	OL LEVEL INDICATOR	—	—
02	03	SUCTION STRAINER	—	—
01	04	OL FILLER/BREATHER	10 Microns	—
01	05	TEMPERATURE GAUGE	—	—
01	06	OL LEVEL SENSOR	—	—
01	07	GATE VALVE	—	—
01	08	RTD	—	—
02	09	VARIABLE DISPLACEMENT PUMP	23 LPM	—
01	10	FLEXIBLE DRIVE COUPLING	—	—
02	11	ELECTRIC MOTOR 3 PHASE	3.7 kW (5 hp) 1500 RPM B5 50 Hz 400v IP 55 Class F insulation	—
02	12	FLEXIBLE HOSE	—	—
02	13	INLINE TYPE CHECK VALVE	—	—
01	14	PILOT OPERATED RELIEF VALVE	—	—
01	15	RETURN LINE FILTER	—	—
01	16	COUPLEX PRESSURE LINE FILTER	—	—
02	17	PRESSURE SWITCH	—	—
01	18	PRESSURE TRANSDUCER	—	—
10	19	SHUT OFF VALVE	3/4" Gasket mounted type	—
01	20	SHUT OFF VALVE	1/2" Gasket mounted type	—
01	21	SHUT OFF VALVE	3/4" Gasket mounted type	—
04	22	ACCUMULATOR (PISTON TYPE)	2 x 55 Ltrs	—
01	23	DIRECT TYPE RELIEF VALVE	—	—
01	24	PILOT OPERATED CHECK VALVE	—	—
01	25	MODULAR PILOT OPERATED CHECK VALVE	—	—
01	26	MODULAR THROTTLE & CHECK VALVE	—	—
01	27	SOLENOID OPERATED DIRECTION CONTROL VALVE	—	—
01	28	MODULAR PILOT OPERATED CHECK VALVE	—	—
01	29	MODULAR THROTTLE & CHECK VALVE	—	—
05	30	PROPORTIONAL VALVE	Off P<5bar, command + 10 VDC	—
10	31	MODULAR PILOT OPERATED CHECK VALVE	—	—
08	32	MODULAR THROTTLE & CHECK VALVE	—	—
07	33	DIRECTION CONTROL CHECK VALVE	220V D.C	—
01	34	DIRECTION CONTROL CHECK VALVE	220V D.C	—
02	35	MODULAR THROTTLE & CHECK VALVE	—	—
01	36	MULTISTATION PRESSURE GAUGE ISOLATOR	SPECIAL	—
01	37	PRESSURE GAUGE	100 mm dia (4") 0-210 bars FB mounting glycerine filled	—
01	38	TERMINAL BOX	Retail make	—
01—each	39	ACCUMULATOR CHARGING KIT	—	—
01	40	MODULAR PILOT OPERATED CHECK VALVE	—	—
01	41	MODULAR THROTTLE & CHECK VALVE	—	—



NOTE

1. ALL DIMENSION ARE IN MILLIMETER UNLESS OTHERWISE SHOW.
2. 3° MINIMUM SLOPE REQUIRED ON OIL OUTLET (RETURN) PIPING FROM BEARING TO TANK TO ENSURE GRAVITY FLOW OF OIL BACK TO TANK.
3. 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.

3				
2				
1				
NO.	DATE	REVISIONS	CHECKED	APPROVED
		CONSULTANTS		DEDE

P&C MANAGEMENT CO.,LTD.	MINISTRY OF ENERGY
DESIGNED <i>[Signature]</i> 08/03/2559	SUBMITTED <i>[Signature]</i>
DRAWN <i>[Signature]</i>	RECOMMENDED <i>[Signature]</i>
CHECKED <i>[Signature]</i> 08/03/2559	APPROVED <i>[Signature]</i>
PROJECT MANAGER	DATE

DRAWING NO.	SHEET NO.
KLP-EM-03	35 OF 38

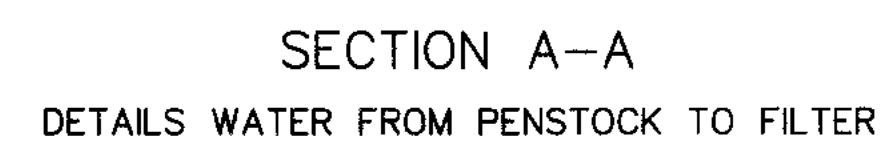
KINGDOM OF THAILAND
Department of Alternative
Energy Development and Efficiency
MINISTRY OF ENERGY

KLONG LAM PLOK HYDROPOWER PROJECT

ELECTRO-MECHANICAL EQUIPMENT

PIPE LINE OF LUBRICATION OIL SYSTEM

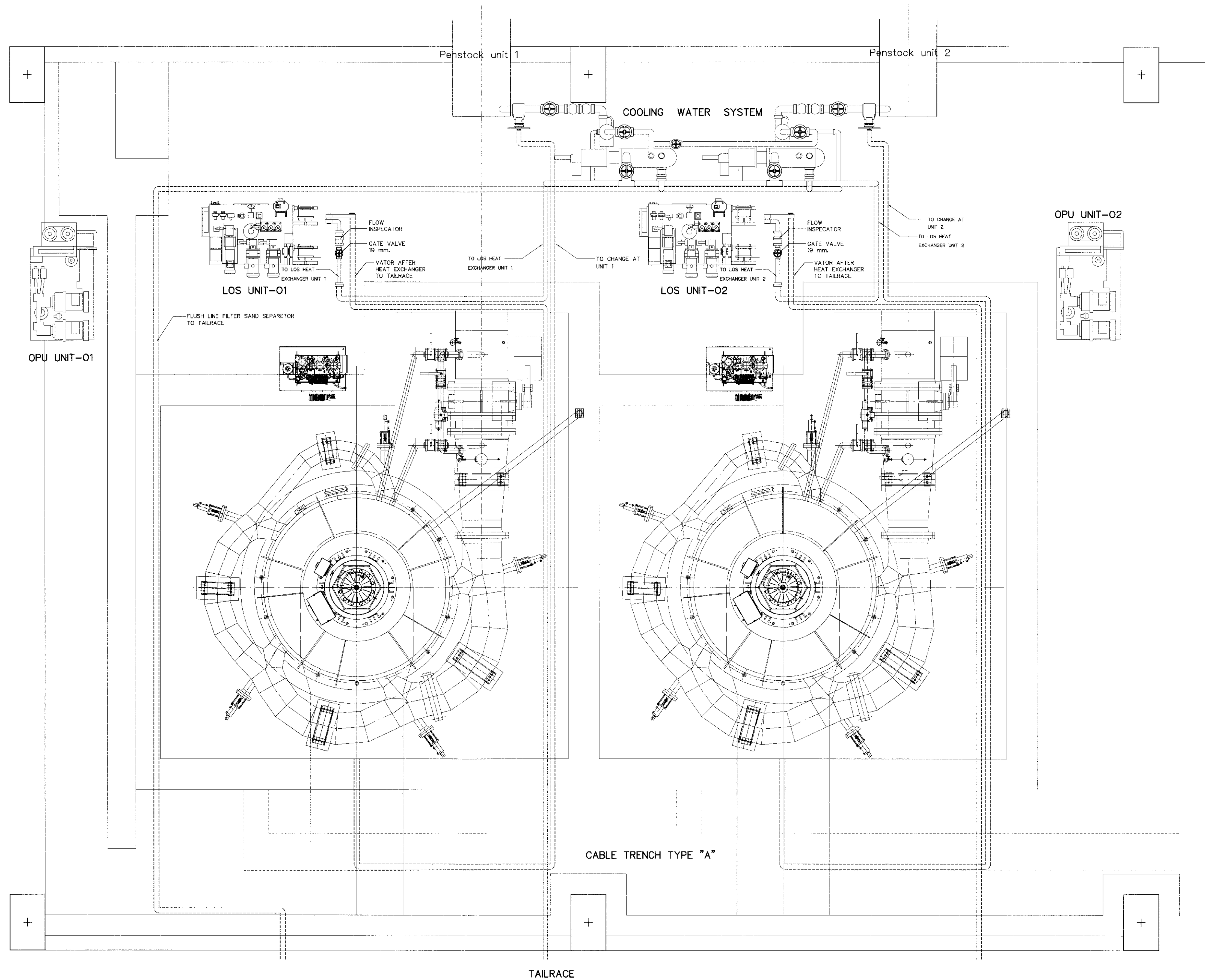
(UNIT 1 AND 2) DETAILS



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

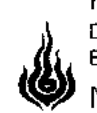
3				
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NO.	DATE	REVISIONS	CHECKED	APPROVED
	CONSULTANTS		DEDE	

 KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
KLONG LAM PLOK HYDROPOWER PROJECT	
ELECTRO-MECHANICAL EQUIPMENT	
COOLING WATER SYSTEM SECTION	
(UNIT 1 AND 2) DETAILS	
 P&C MANAGEMENT CO., LTD.	 Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY
DESIGNED  08/03/2550	REVISED
DRAWN  08/03/2550	SUBMITTED 
CHECKED  08/03/2550	RECOMMENDED
 PROJECT MANAGER 08/03/2550 DATE	APPROVED  DRAWING NO. KLP-FM-05 SHEET NO. 37 OF 38



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



KINGDOM OF THAILAND
Department of Alternative
Energy Development and Efficiency
MINISTRY OF ENERGY

KLONG LAM PLOK HYDROPOWER PROJECT

ELECTRO-MECHANICAL EQUIPMENT

PLAN PIPE LINE OF COOLING WATER SYSTEM

(UNIT 1 AND 2) DETAILS

 P&C MANAGEMENT CO., LTD.	 MINISTRY OF ENERGY
DESIGNED <i>[Signature]</i> 20/10/60	REVIEWED <i>[Signature]</i>
DRAWN <i>[Signature]</i>	SUBMITTED <i>Chant</i>
CHECKED <i>[Signature]</i> 20/10/60	RECOMMENDED <i>[Signature]</i>
APPROVED <i>[Signature]</i>	APPROVED <i>[Signature]</i>
PROJECT MANAGER <i>[Signature]</i> 08/03/2559 DATE	DRAWING NO. KLP-EM-06 SHEET NO. 38 OF 38

3				
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NO.	DATE	REVISIONS	CHECKED	APPROVED