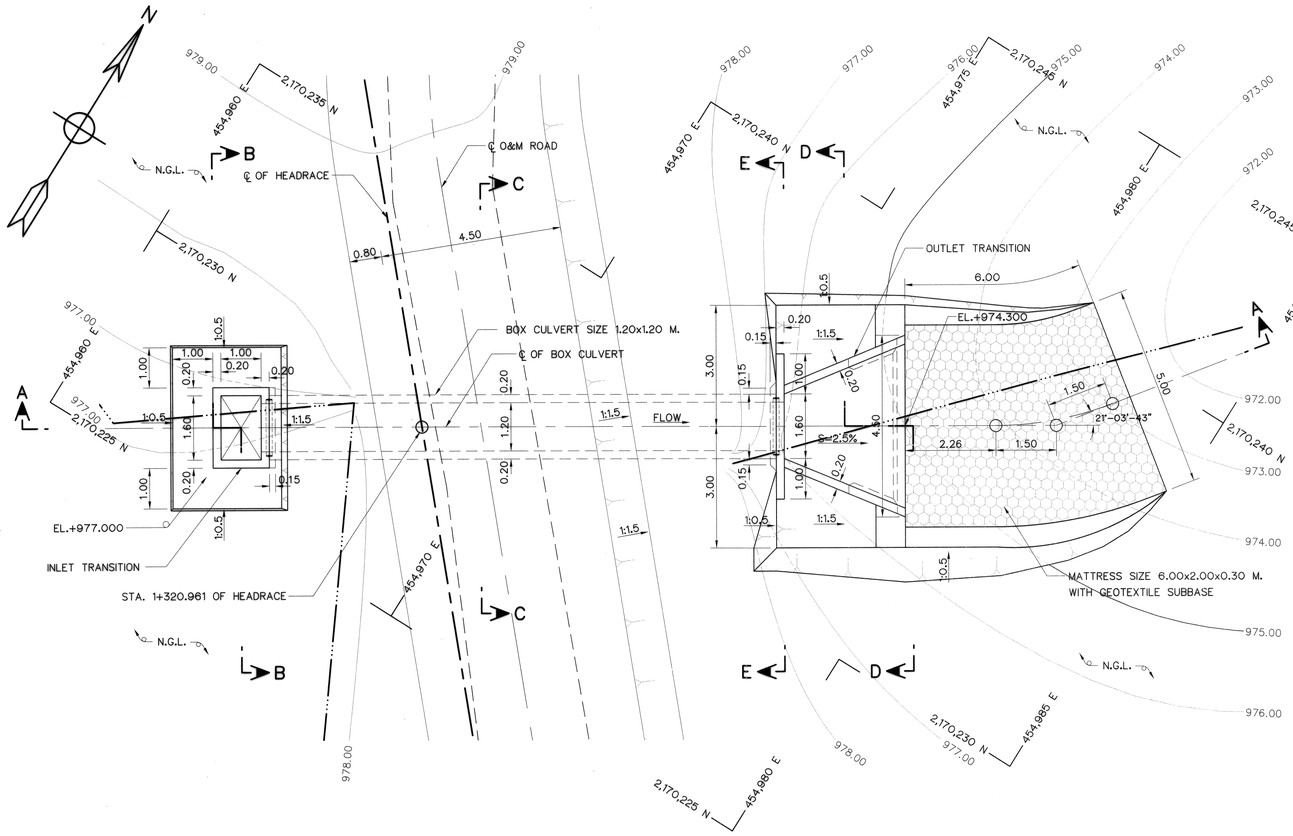
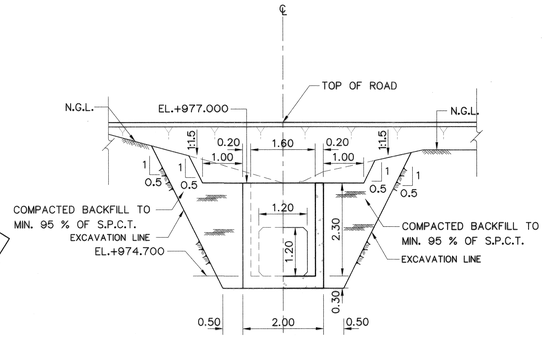


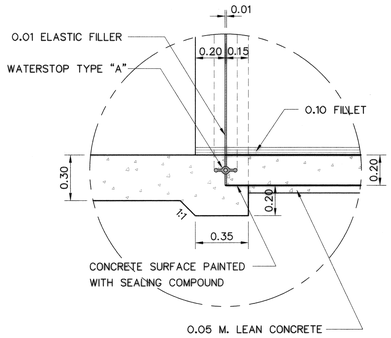
PLAN

SCALE 1:75



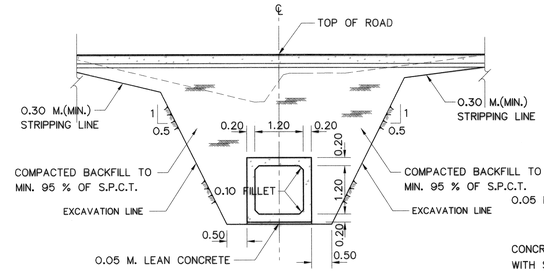
SECTION B–B

SCALE 1:75



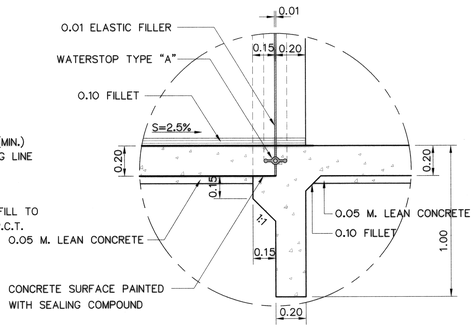
DETAIL "1"

SCALE 1:20



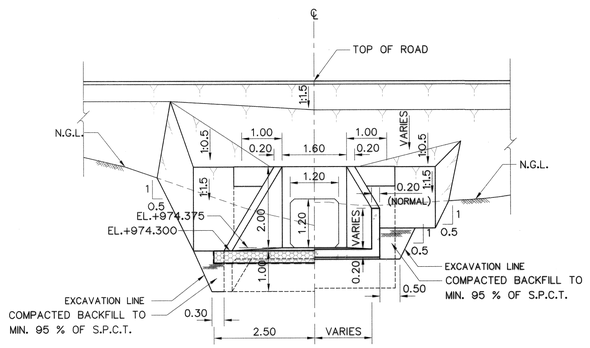
SECTION C–C

SCALE 1:75



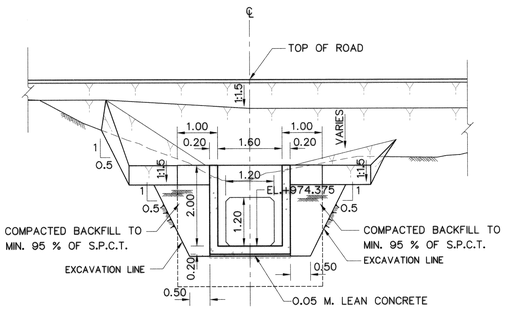
DETAIL "2"

SCALE 1:20



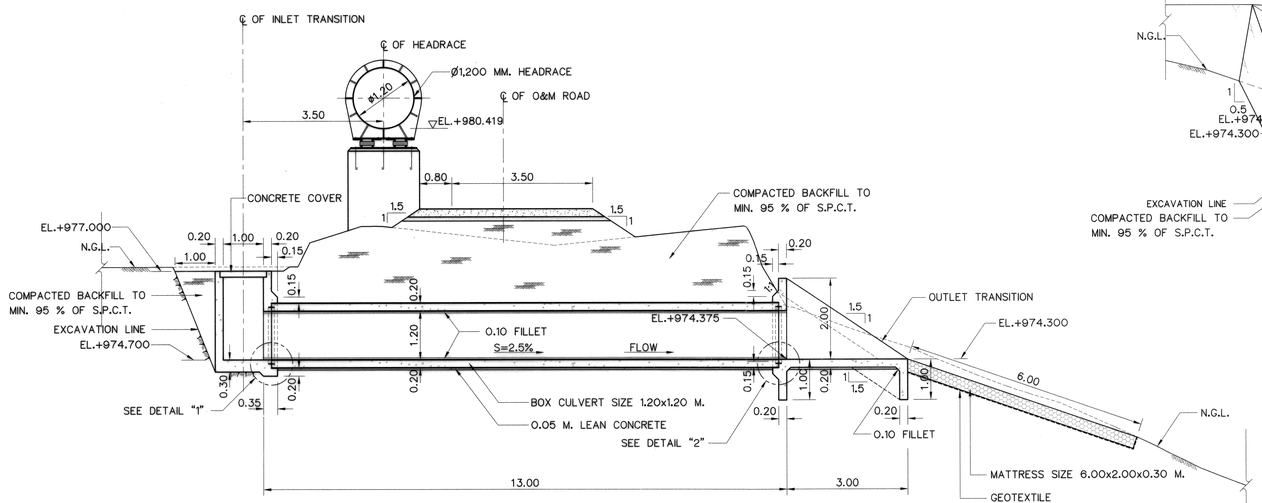
SECTION D–D

SCALE 1:75



SECTION E–E

SCALE 1:75



SECTION A–A

SCALE 1:75

NOTES :

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

0 0.5 1.0 1.5
SCALE 1:20 METERS

0 0.5 1 2 3 4 5 6
SCALE 1:75 METERS

REFERENCE DRAWING :

1. HEADRACE PLAN AND PROFILE, STA. 1+000 TO STA. 1+500	MH-HR-03
2. DRAIN CULVERT STA. 1+320.961, REINFORCEMENT DETAILS	MH-HR-19

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
HEADRACE
DRAIN CULVERT STA. 1+320.961 , PLAN AND SECTION

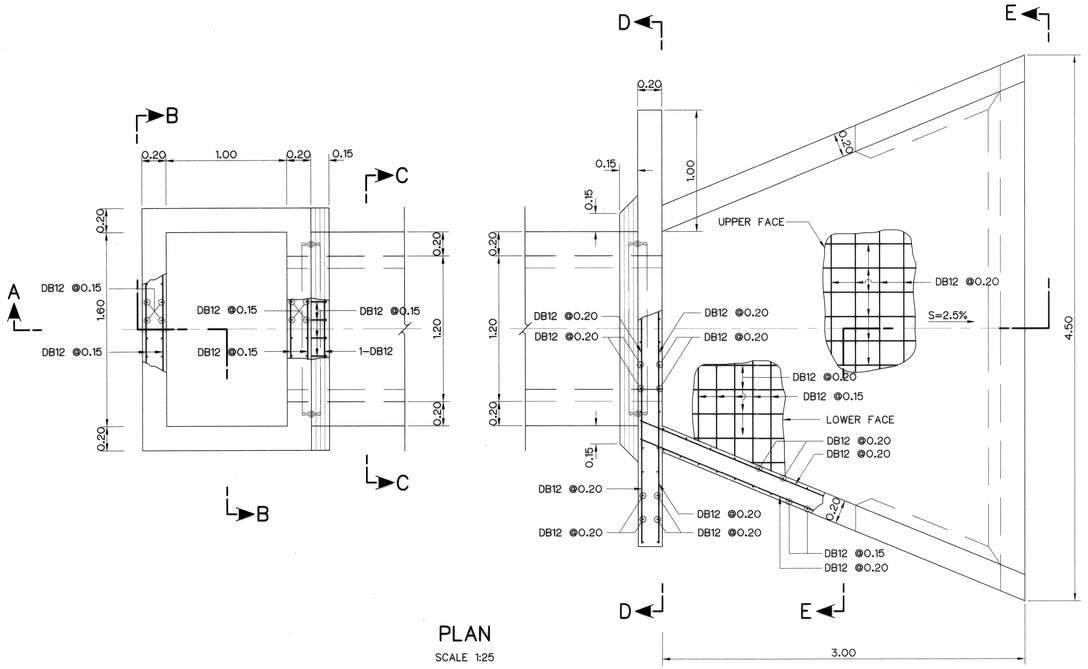
P&C MANAGEMENT CO.,LTD.

Department of Alternative Energy Development and Efficiency
MINISTRY OF ENERGY

DESIGNED	วิชัย.64624	วิ.ว.	25.6226
DRAWN			
CHECKED		วิ.ว.	25.6226
PROJECT MANAGER		08/03/2569	DATE

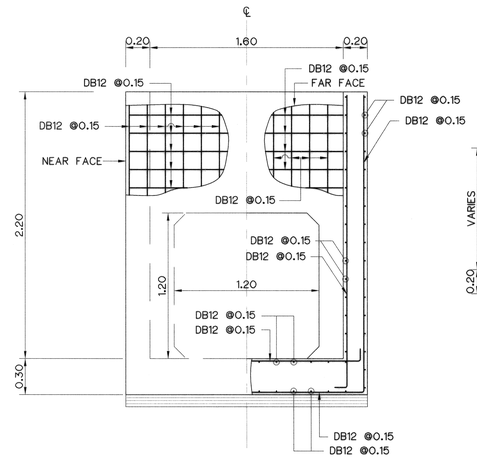
REVIEWED
SUBMITTED
RECOMMENDED
APPROVED P. Hongsa

DRAWING NO. MH-HR-18
SHEET NO. 42 OF 130



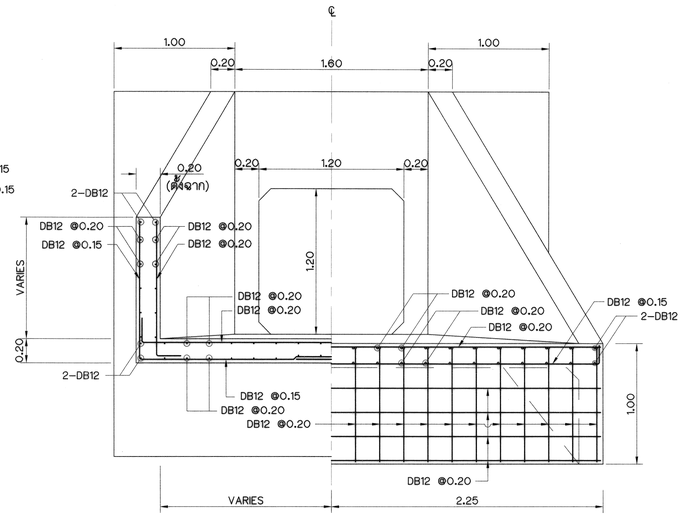
PLAN

SCALE 1:25



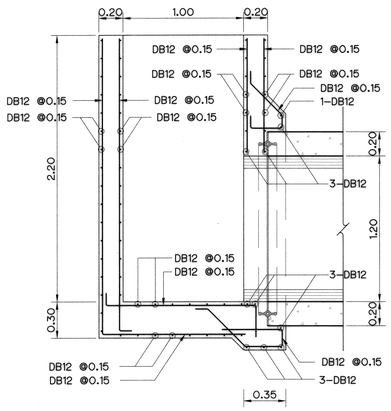
SECTION B–B

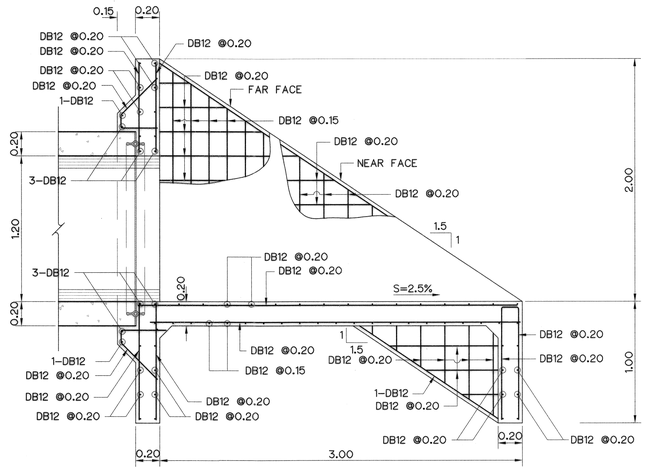
SCALE 1:25



SECTION E–E

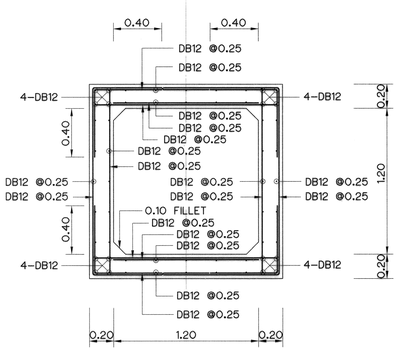
SCALE 1:25





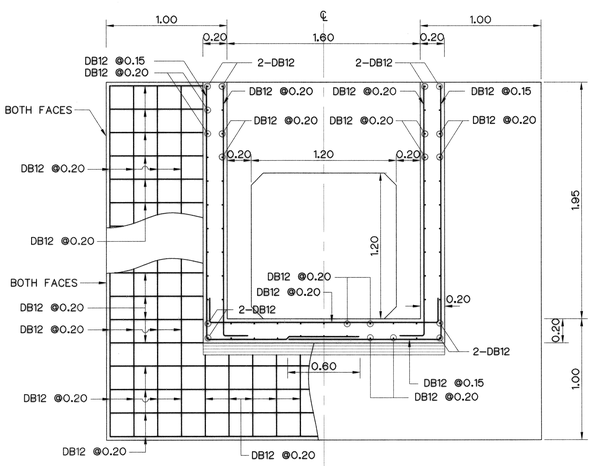
SECTION A–A

SCALE 1:25



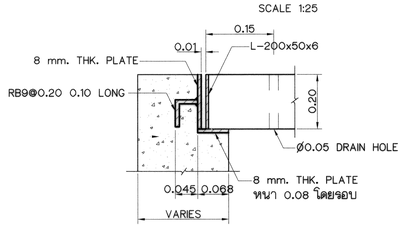
SECTION C–C

SCALE 1:25



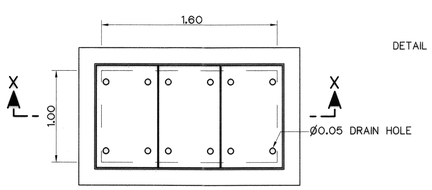
SECTION D–D

SCALE 1:25



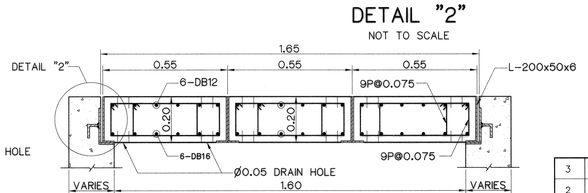
DETAIL "2"

NOT TO SCALE



CONCRETE COVER

NOT TO SCALE



SECTION X–X

NOT TO SCALE

SCALE 1:25

0 0.5 1.0 1.5 2.0

METERS

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MH-GN-03
3. CONCRETE DESIGN BASED ON THE COMPRESSIVE STRENGTH OF 210 KSC, STANDARD CYLINDER Ø0.15x0.30 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. DRAIN CULVERT STA. 1+320.961, PLAN AND SECTION MH-HR-18

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

MAE HAT HYDROPOWER PROJECT

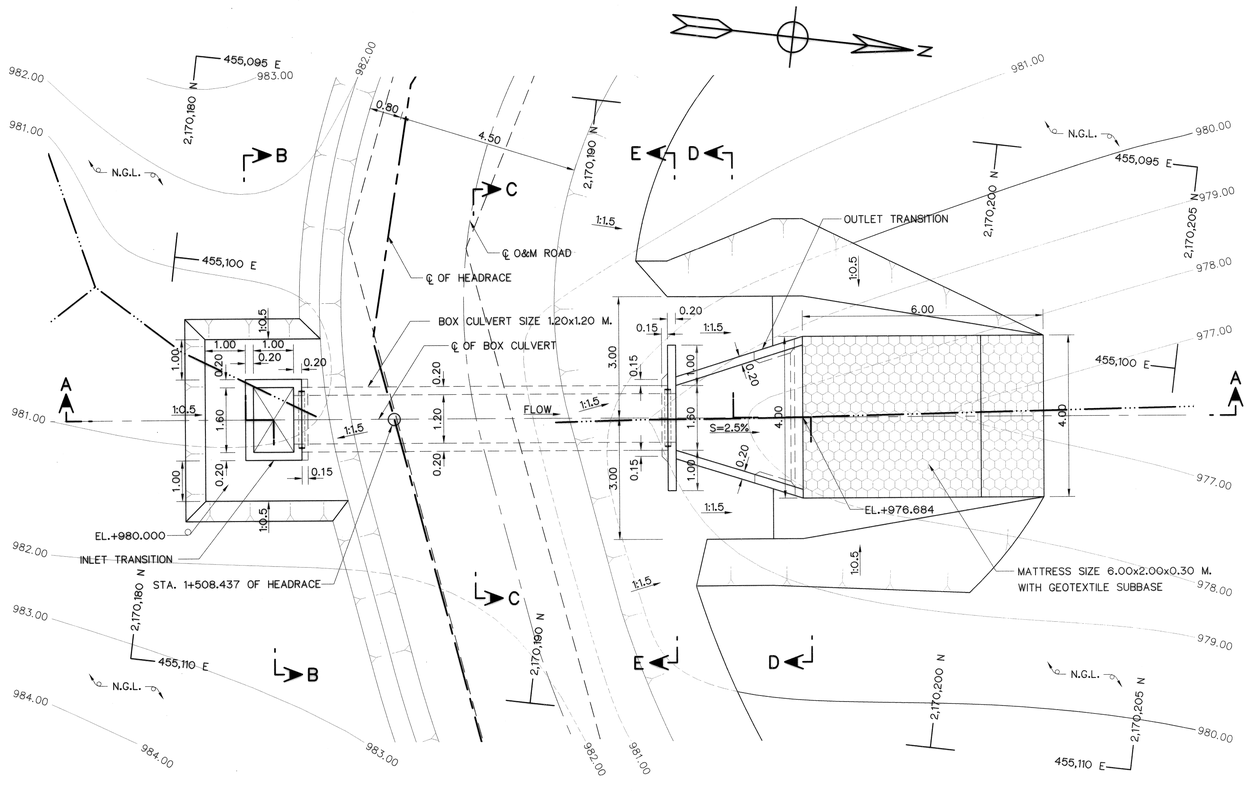
CIVIL WORKS AND TRANSMISSION LINE
HEADRACE
DRAIN CULVERT STA. 1+320.961 REINFORCEMENT DETAILS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

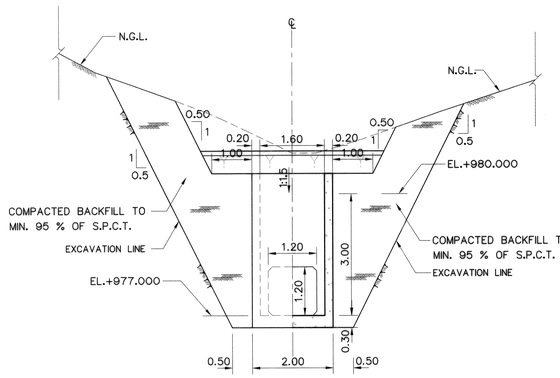
P&C MANAGEMENT CO.,LTD.

Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

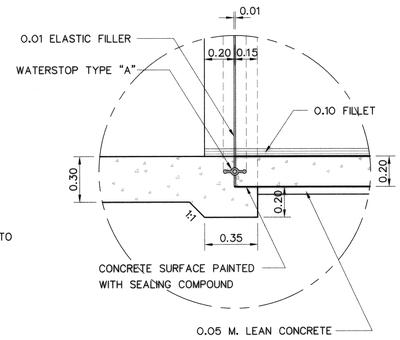
DESIGNED	วิศ.64624	REVIEWED	
DRAWN		SUBMITTED	วิศ.6226
CHECKED	วิศ.6226	RECOMMENDED	
PROJECT MANAGER	01/08/2559 DATE	APPROVED	
		DRAWING NO.	MH-HR-19
		SHEET NO.	43 OF 130



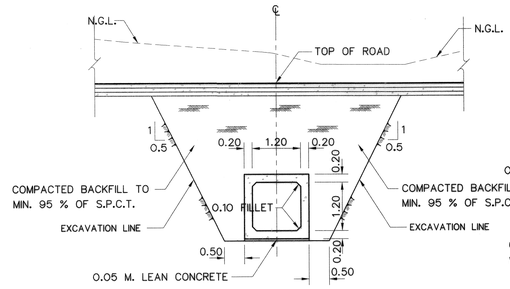
PLAN
SCALE 1:75



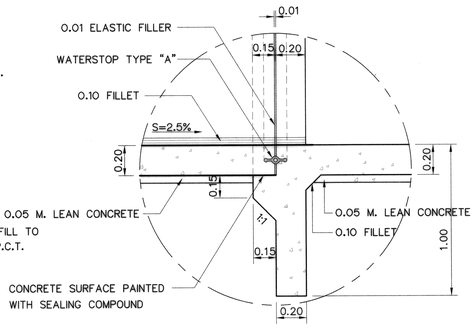
SECTION B–B
SCALE 1:75



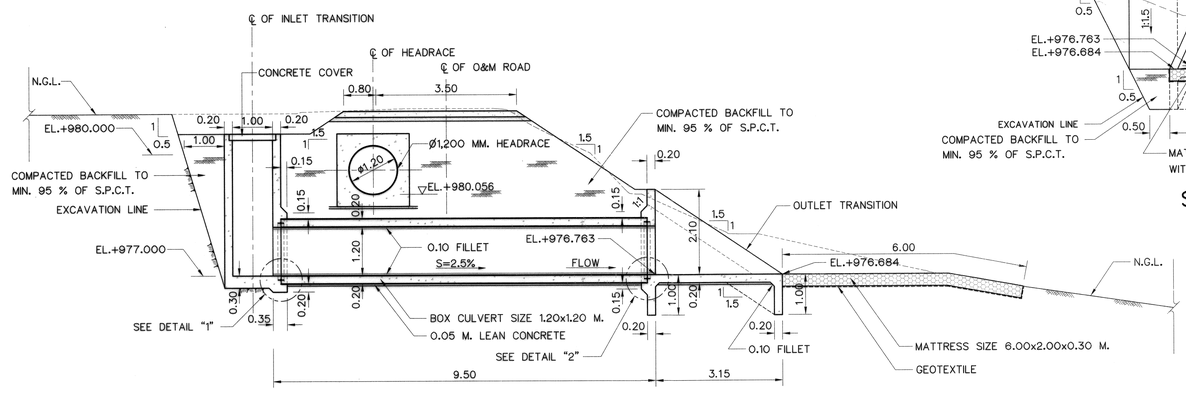
DETAIL "1"
SCALE 1:20



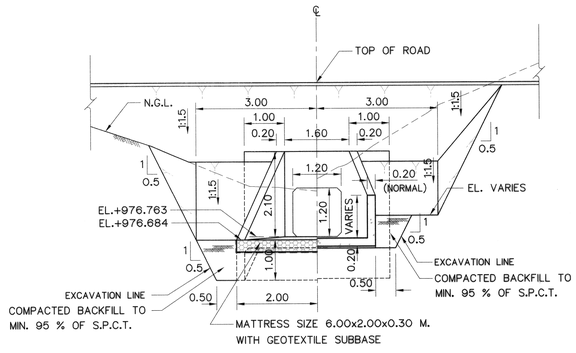
SECTION C–C
SCALE 1:75



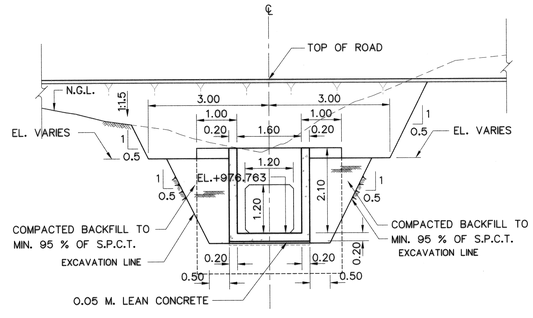
DETAIL "2"
SCALE 1:20



SECTION A–A
SCALE 1:75



SECTION D–D
SCALE 1:75



SECTION E–E
SCALE 1:75

NOTES :

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

REFERENCE DRAWING :

1. HEADRACE PLAN AND PROFILE, STA. 1+500 TO STA. 2+000	MH–HR–04
2. DRAIN CULVERT STA. 1+508.437, REINFORCEMENT DETAILS	MH–HR–21

0 0.5 1.0 1.5
SCALE 1:20 METERS

0 0.5 1 2 3 4 5 6
SCALE 1:75 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

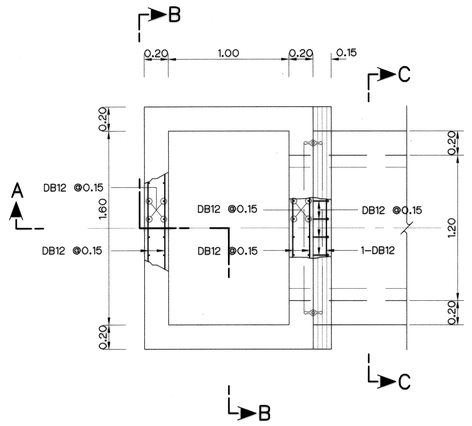
CIVIL WORKS AND TRANSMISSION LINE
HEADRACE
DRAIN CULVERT STA. 1+508.437 , PLAN AND SECTION

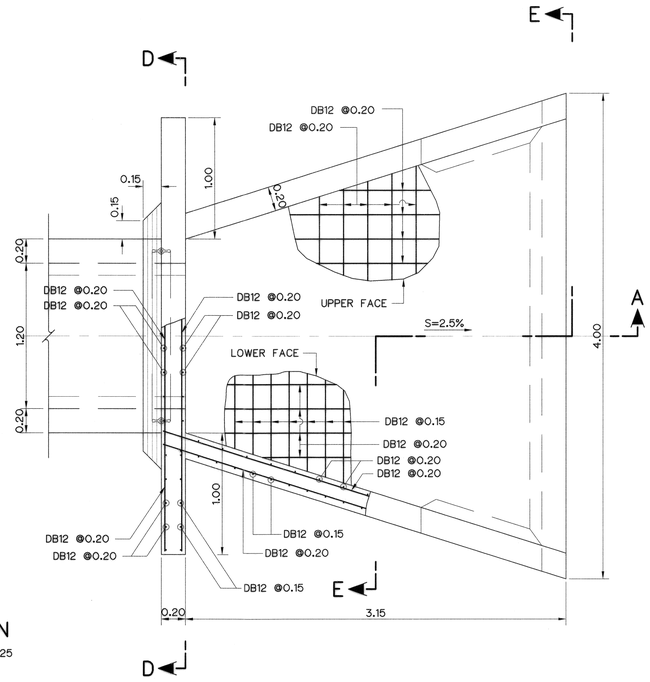
P&C MANAGEMENT CO.,LTD.

DESIGNED	วิชัย.64624 วิชัย.6226	SUBMITTED
DRAWN		RECOMMENDED
CHECKED	วิชัย.6226	APPROVED
PROJECT MANAGER	08/03/2564 DATE	

Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY
REVIEWED

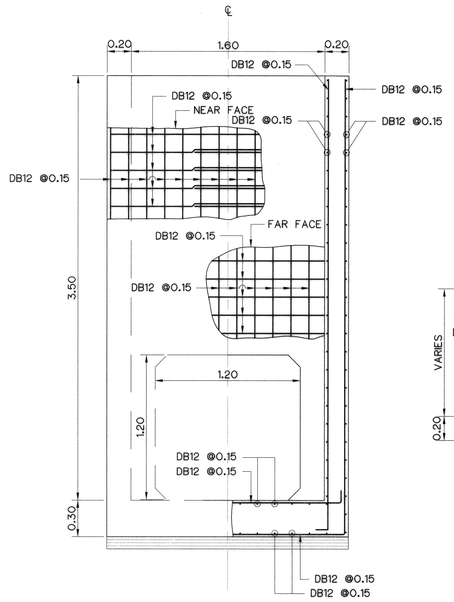
DRAWING NO. MH–HR–20
SHEET NO. 44 OF 130





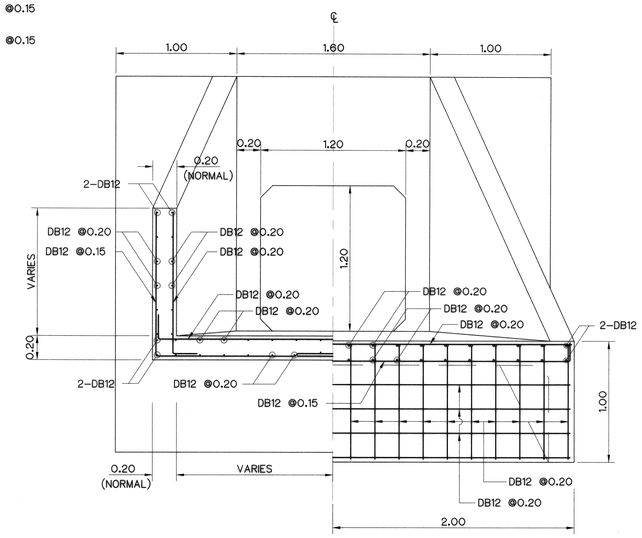
PLAN

SCALE 1:25



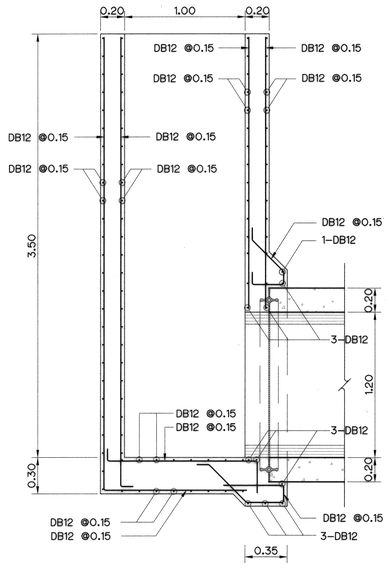
SECTION B–B

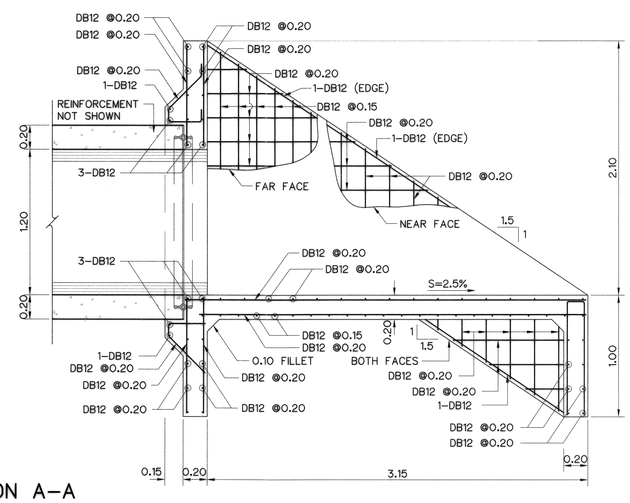
SCALE 1:25



SECTION E–E

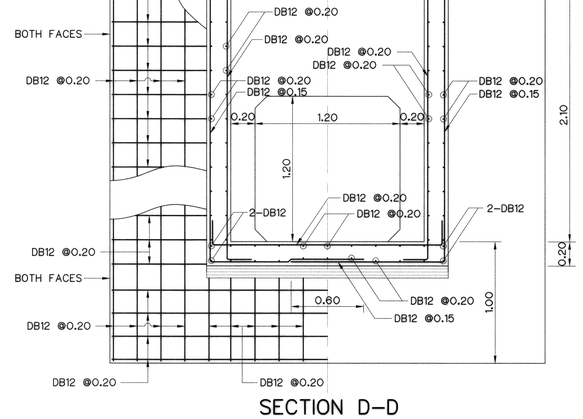
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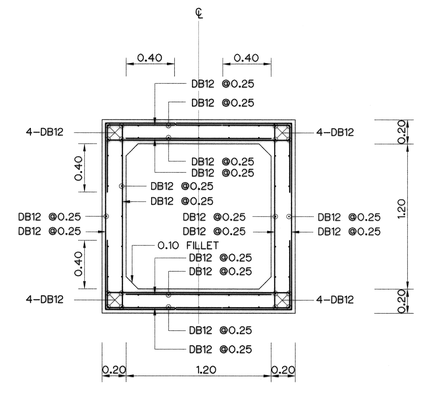
SECTION A–A

SCALE 1:25



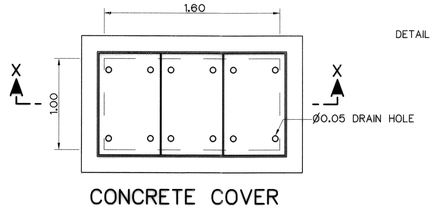
SECTION D–D

SCALE 1:25



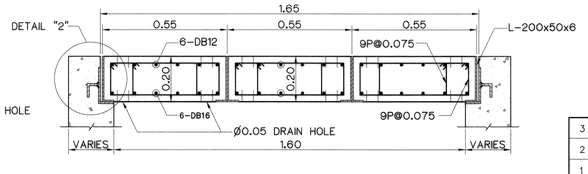
SECTION C–C

SCALE 1:25



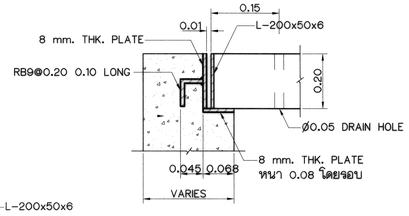
CONCRETE COVER

NOT TO SCALE



SECTION X–X

NOT TO SCALE



DETAIL "2"

NOT TO SCALE

0 0.5 1.0 1.5 2.0

SCALE 1:25 METERS

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MH-GN-03
3. CONCRETE DESIGN BASED ON THE COMPRESSIVE STRENGTH OF 210 KSC, STANDARD CYLINDER Ø0.15x0.30 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. DRAIN CULVERT STA. 1+508.437, PLAN AND SECTION MH-HR-20

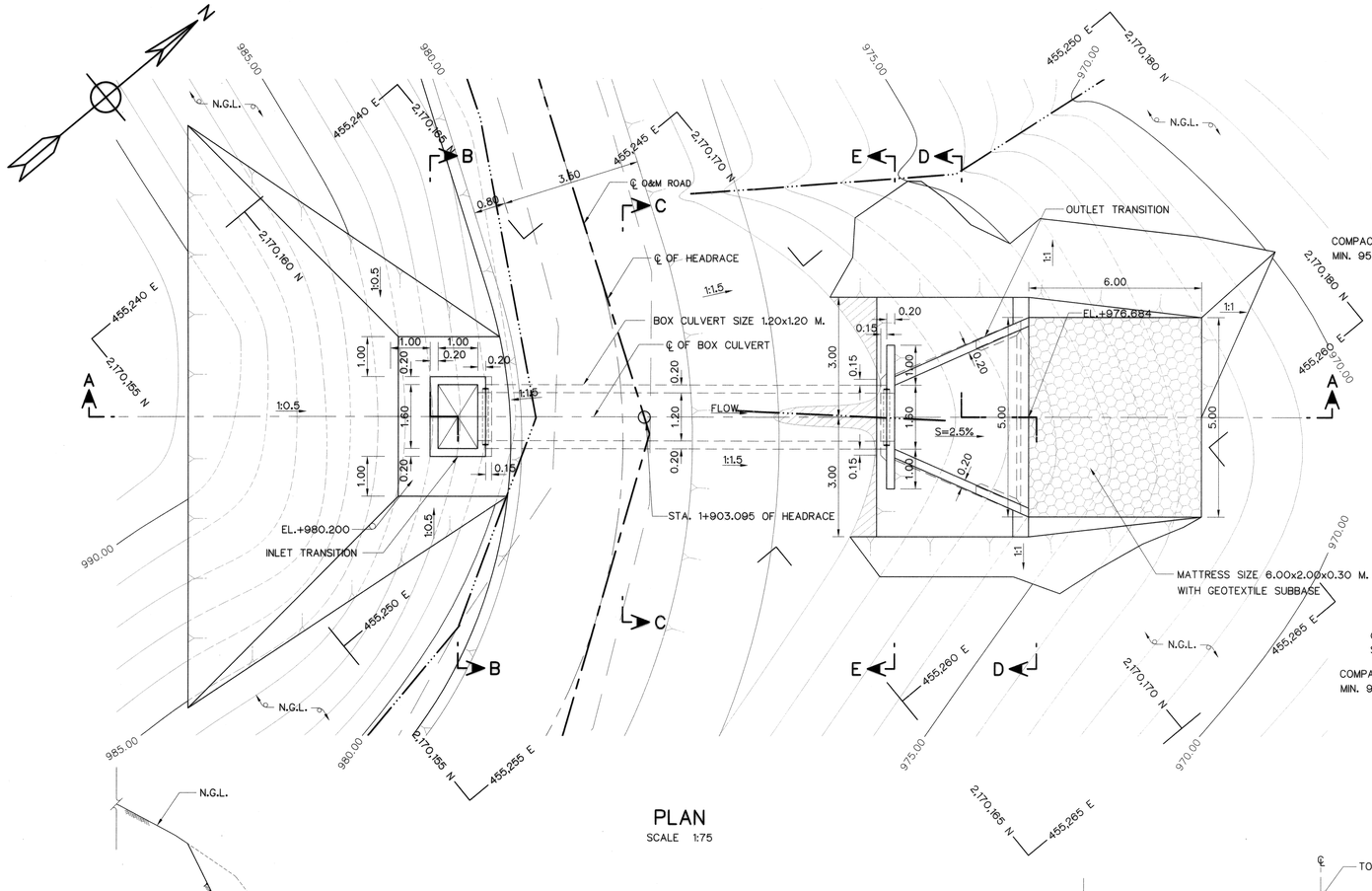
NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

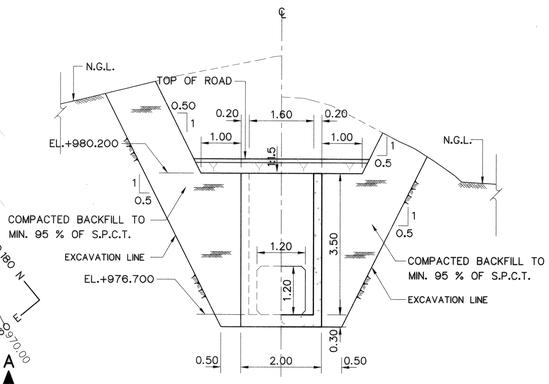
MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
HEADRACE
DRAIN CULVERT STA. 1+508.437 REINFORCEMENT DETAILS

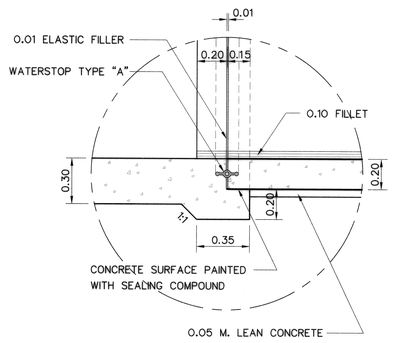
P&C MANAGEMENT CO.,LTD.	Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY
DESIGNED . พ.ย.64624 พ.ย.6226	REVIEWED
DRAWN	SUBMITTED
CHECKED พ.ย.6226	RECOMMENDED
PROJECT MANAGER 08/03/2564 DATE	APPROVED
DRAWING NO. MH-HR-21	SHEET NO. 45 OF 130



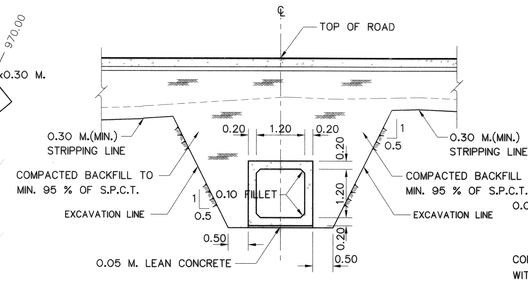
PLAN
SCALE 1:75



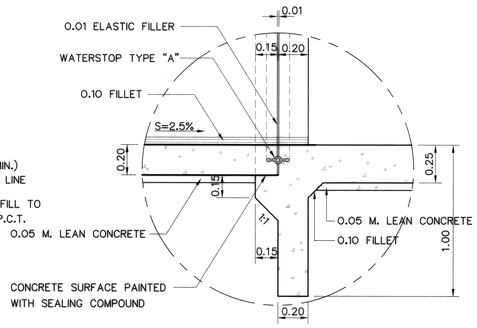
SECTION B–B
SCALE 1:75



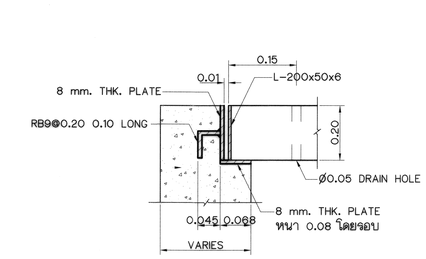
DETAIL "1"
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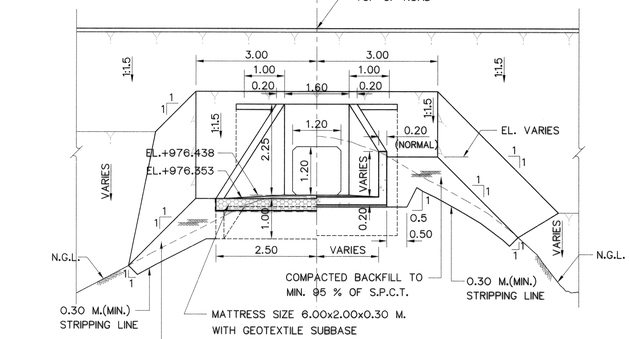
SECTION C–C
SCALE 1:75



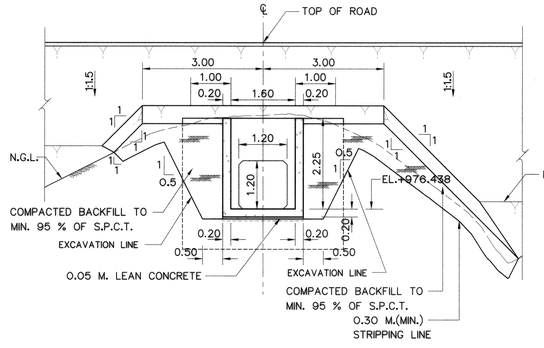
DETAIL "2"
SCALE 1:20



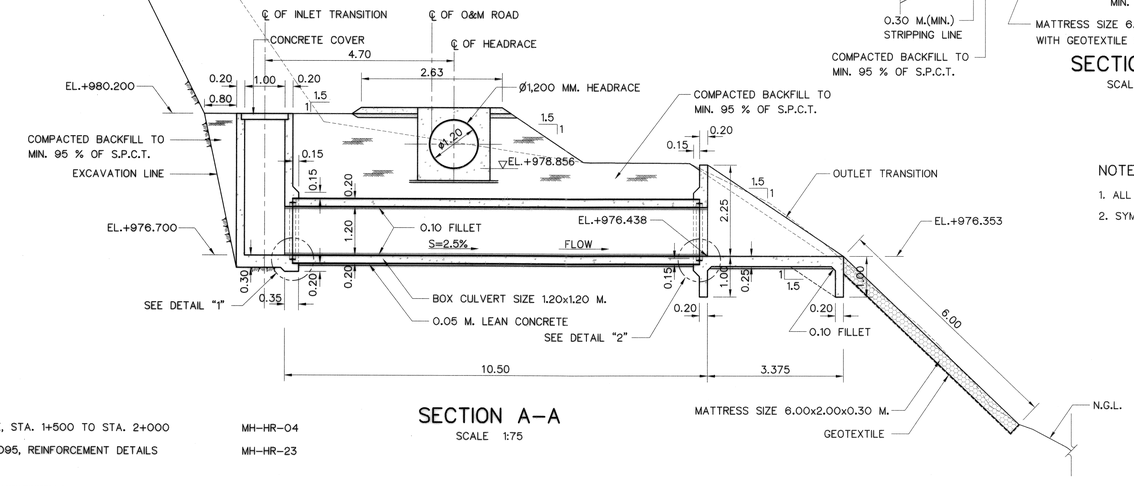
DETAIL "2"
NOT TO SCALE



SECTION D–D
SCALE 1:75



SECTION E–E
SCALE 1:75



SECTION A–A
SCALE 1:75

NOTES :

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

0 0.5 1.0 1.5
SCALE 1:20 METERS

0 0.5 1 2 3 4 5 6
SCALE 1:75 METERS

REFERENCE DRAWING :

1. HEADRACE PLAN AND PROFILE, STA. 1+500 TO STA. 2+000	MH-HR-04
2. DRAIN CULVERT STA. 1+903.095, REINFORCEMENT DETAILS	MH-HR-23

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

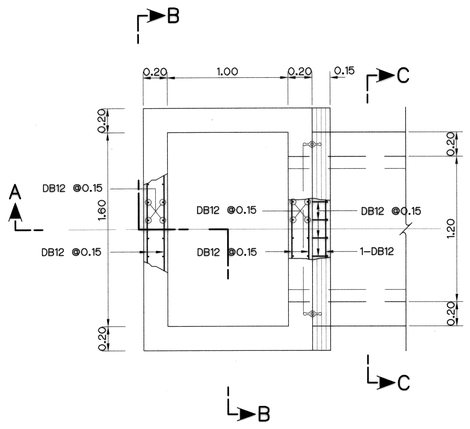
CIVIL WORKS AND TRANSMISSION LINE
HEADRACE
DRAIN CULVERT STA. 1+903.095 , PLAN AND SECTION

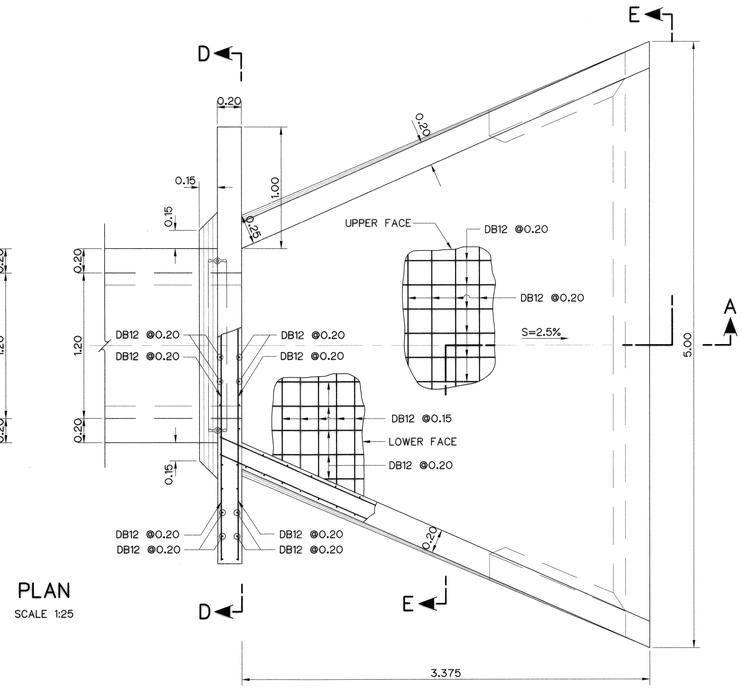
P&C MANAGEMENT CO.,LTD.

Department of Alternative Energy Development and Efficiency
MINISTRY OF ENERGY

DESIGNED	22.64624	22.6226	REVIEWED
DRAWN			SUBMITTED
CHECKED		22.6226	RECOMMENDED
PROJECT MANAGER		05/03/2564 DATE	APPROVED

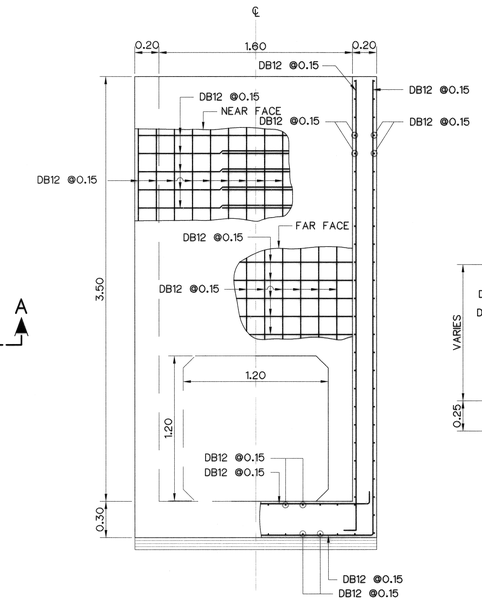
DRAWING NO. MH-HR-22
SHEET NO. 46 OF 130





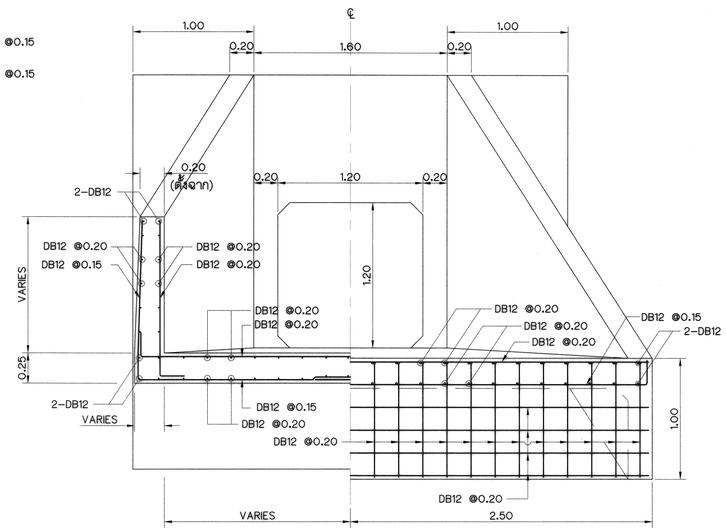
PLAN

SCALE 1:25



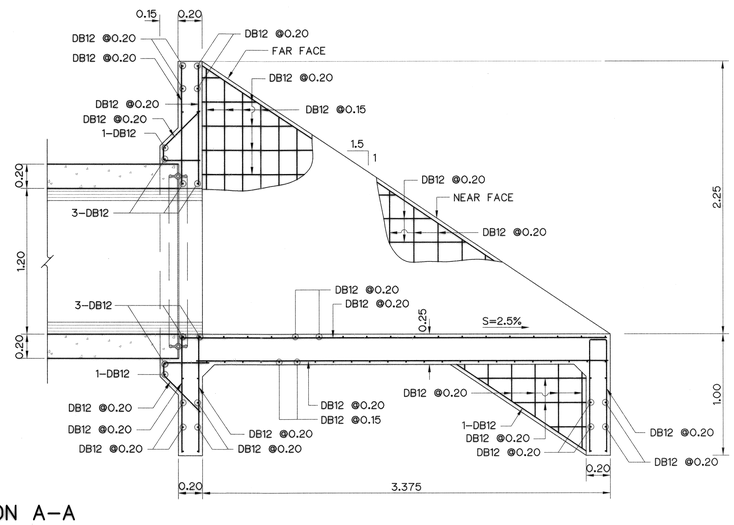
SECTION B-B

SCALE 1:25



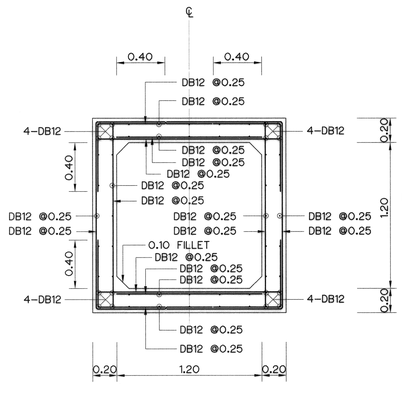
SECTION E-E

SCALE 1:25



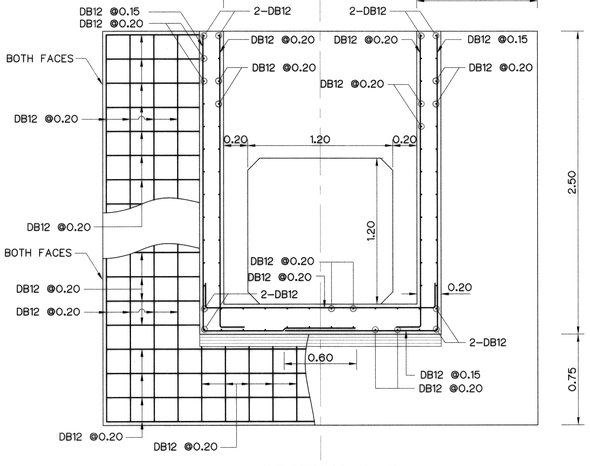
SECTION A-A

SCALE 1:25



SECTION C-C

SCALE 1:25



SECTION D-D

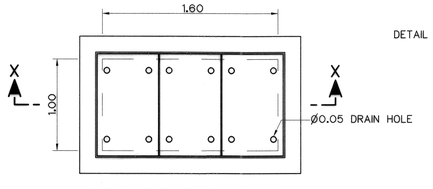
SCALE 1:25

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MH-GN-03
3. CONCRETE DESIGN BASED ON THE COMPRESSIVE STRENGTH OF 210 KSC, STANDARD CYLINDER Ø0.15x0.30 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.

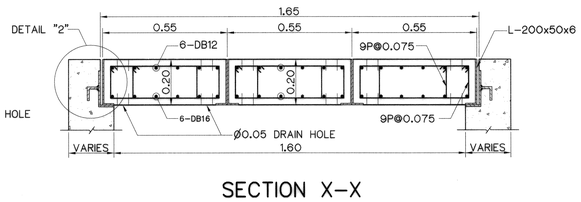
REFERENCE DRAWINGS :

1. DRAIN CULVERT STA. 1+903.095, PLAN AND SECTION MH-HR-22



CONCRETE COVER

NOT TO SCALE



SECTION X-X

NOT TO SCALE

SCALE 1:25 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				

CONSULTANTS | DEDE

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

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE

HEADRACE

DRAIN CULVERT STA. 1+903.095 REINFORCEMENT DETAILS

P&C MANAGEMENT CO.,LTD.

Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

DESIGNED วิชิต.64624 วิชิต.6226 — REVIEWED

DRAWN — SUBMITTED

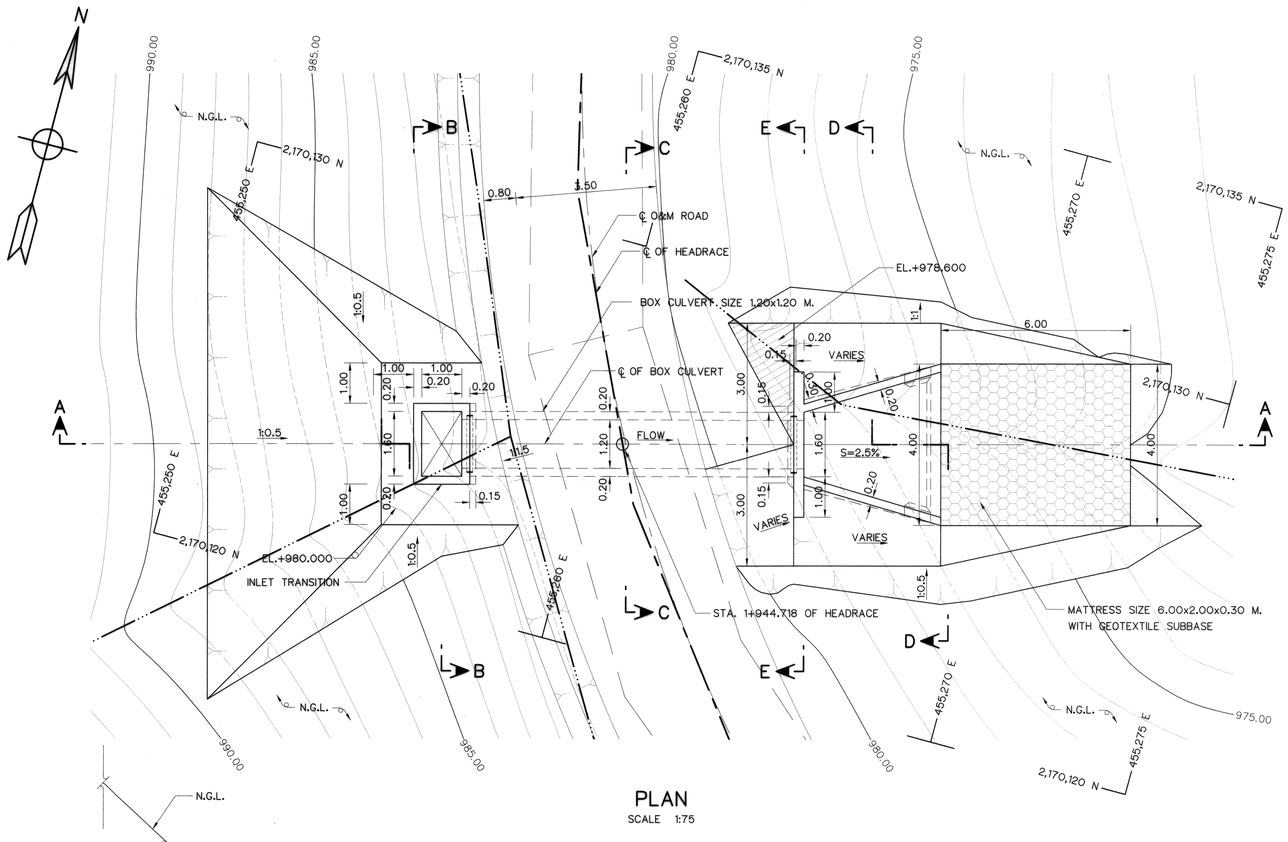
CHECKED วิชิต.6226 — RECOMMENDED

APPROVED P. Hamsa

PROJECT MANAGER 01/03/2559 DATE

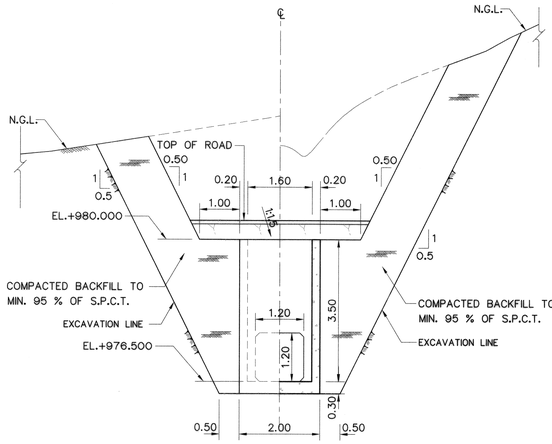
DRAWING NO. MH-HR-23

SHEET NO. 47 OF 130



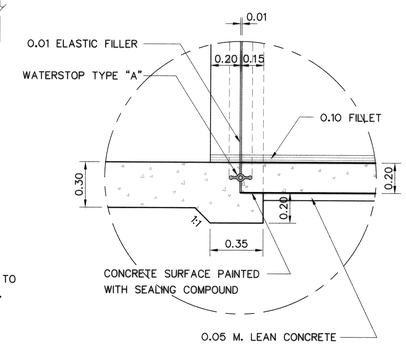
PLAN

SCALE 1:75



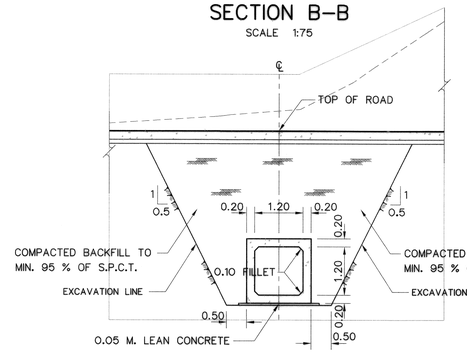
SECTION B-B

SCALE 1:75



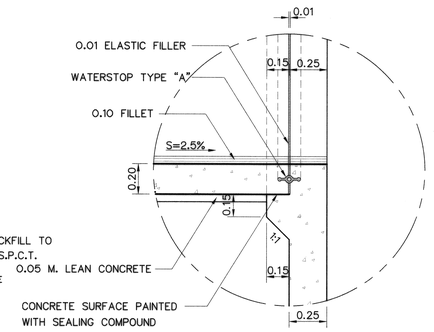
DETAIL "1"

SCALE 1:20



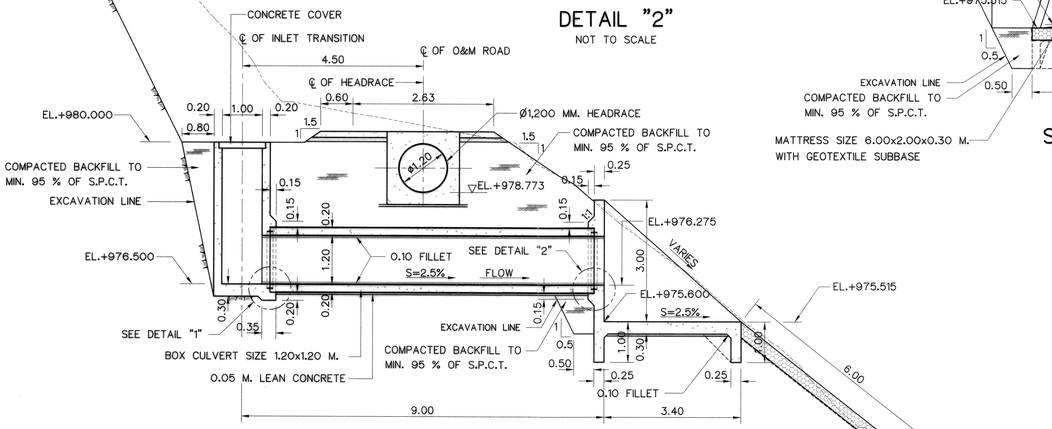
SECTION C-C

SCALE 1:75



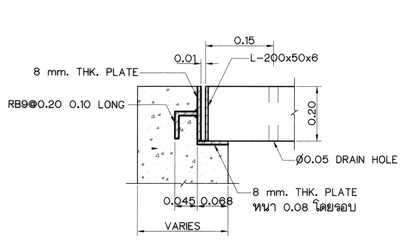
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SCALE 1:20



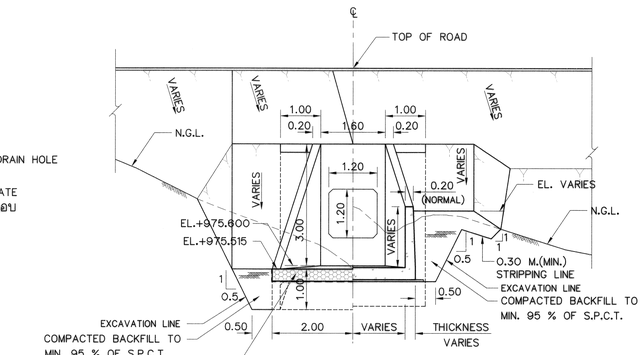
SECTION A-A

SCALE 1:75



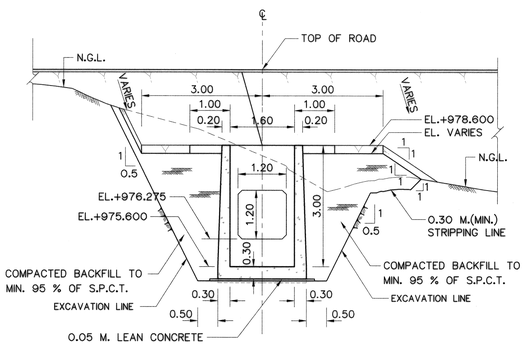
DETAIL "2"

NOT TO SCALE



SECTION D-D

SCALE 1:75



SECTION E-E

SCALE 1:75

NOTES :

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

0 0.5 1.0 1.5

SCALE 1:20 METERS

0 0.5 1 2 3 4 5 6

SCALE 1:75 METERS

REFERENCE DRAWING :

1. HEADRACE PLAN AND PROFILE, STA. 1+500 TO STA. 2+000	MH-HR-04
2. DRAIN CULVERT STA. 1+944.718, REINFORCEMENT DETAILS	MH-HR-25

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
HEADRACE
DRAIN CULVERT STA. 1+944.718 , PLAN AND SECTION

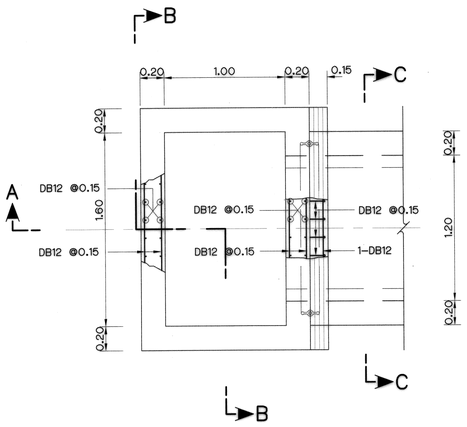
P&C MANAGEMENT CO.,LTD.

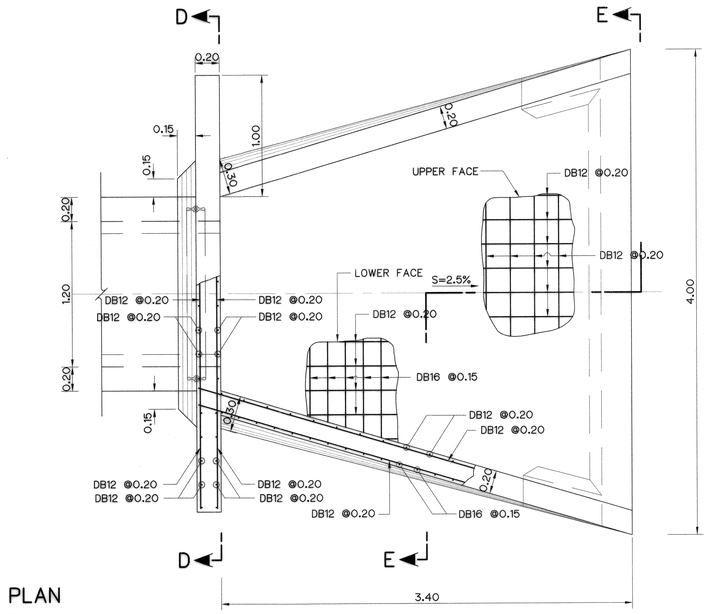
Department of Alternative Energy Development and Efficiency
MINISTRY OF ENERGY

DESIGNED	วิศ.64624	REVIEWED	
DRAWN		SUBMITTED	
CHECKED	วิศ.6226	RECOMMENDED	
PROJECT MANAGER	01/03/2569 DATE	APPROVED	

DRAWING NO. MH-HR-24

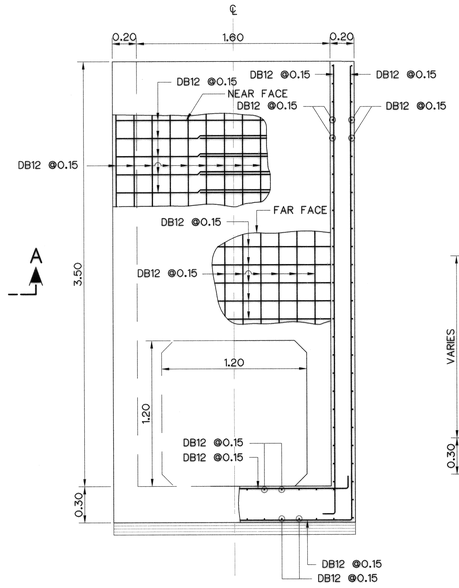
SHEET NO. 48 OF 130





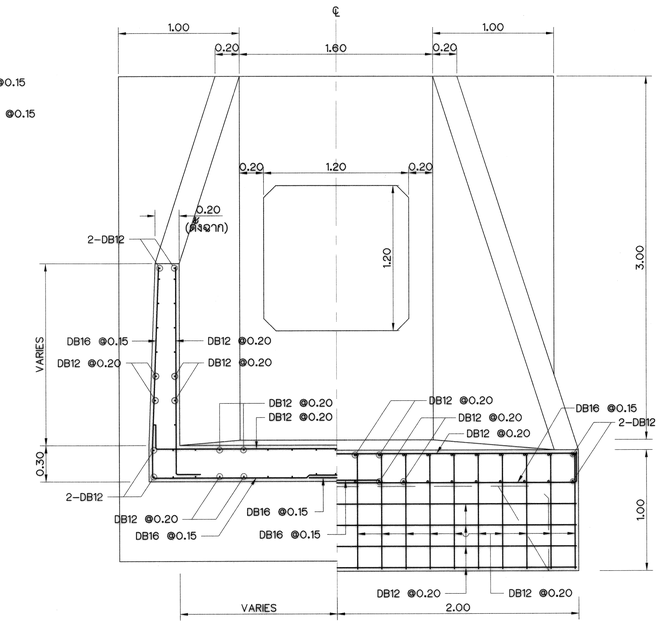
PLAN

SCALE 1:25



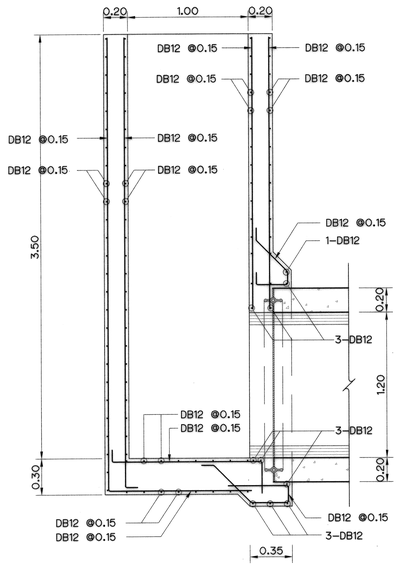
SECTION B–B

SCALE 1:25



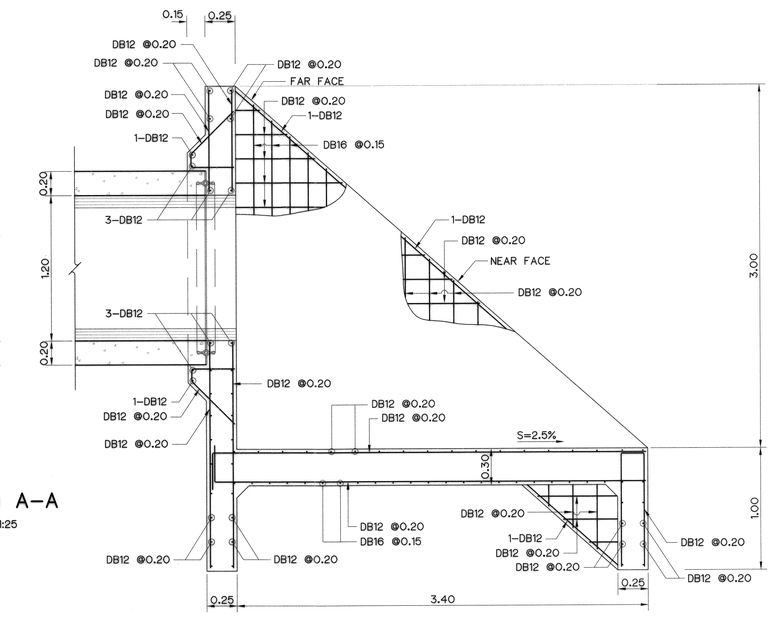
SECTION E–E

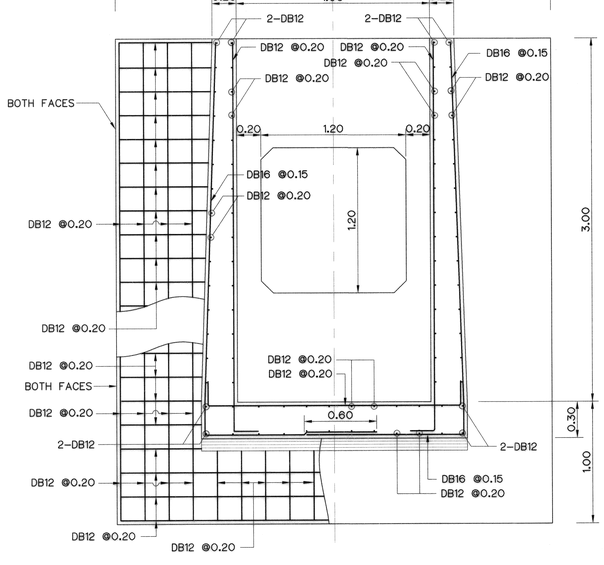
SCALE 1:25



SECTION A–A

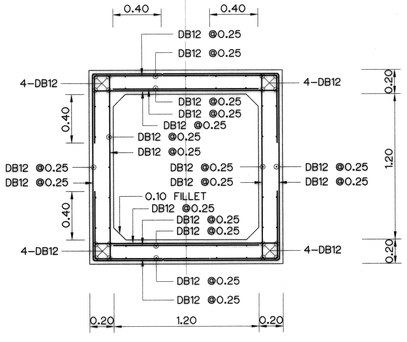
SCALE 1:25





SECTION D–D

SCALE 1:25



SECTION C–C

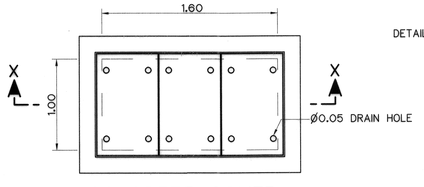
SCALE 1:25

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MH-GN-03
3. CONCRETE DESIGN BASED ON THE COMPRESSIVE STRENGTH OF 210 KSC, STANDARD CYLINDER Ø0.15x0.30 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.

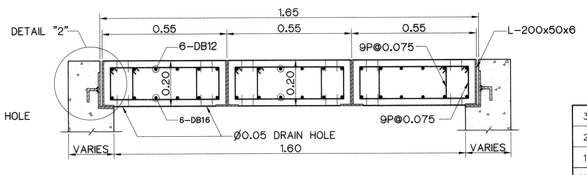
REFERENCE DRAWINGS :

1. DRAIN CULVERT STA. 1+944.718, PLAN AND SECTION MH-HR-24



CONCRETE COVER

NOT TO SCALE



SECTION X–X

NOT TO SCALE

SCALE 1:25 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

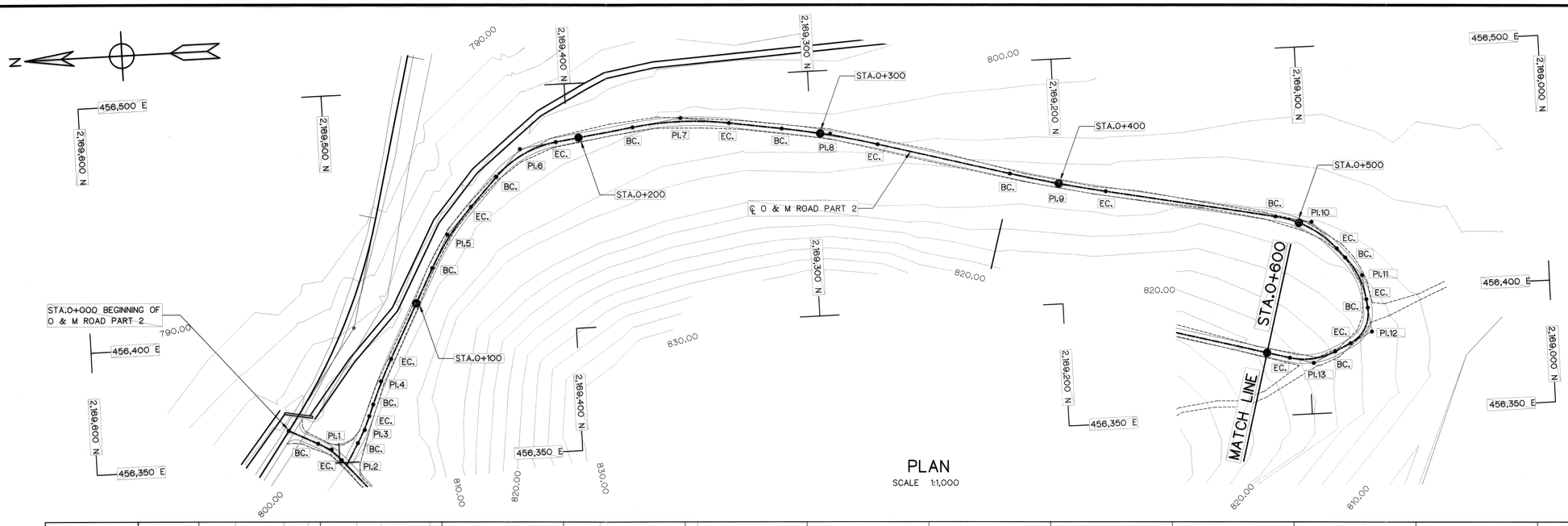
MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
HEADRACE
DRAIN CULVERT STA. 1+944.718 REINFORCEMENT DETAILS

P&C MANAGEMENT CO.,LTD.

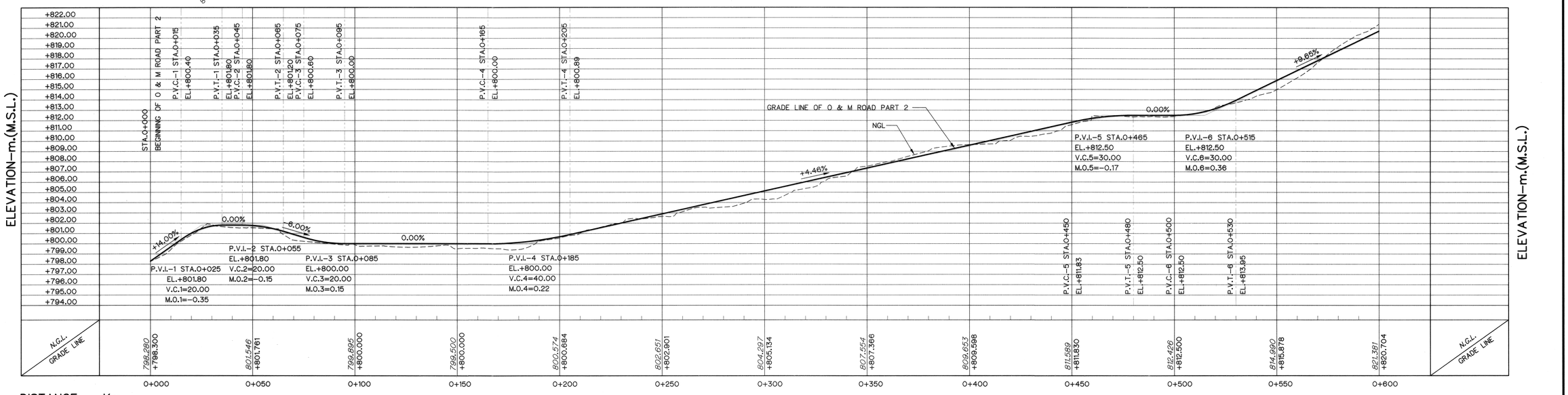
Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

DESIGNED	วิชิต.64624	SUBMITTED	วิชิต.6226
DRAWN		RECOMMENDED	
CHECKED	วิชิต.6226	APPROVED	
PROJECT MANAGER	08/03/2559 DATE	DRAWING NO.	MH-HR-25
		SHEET NO.	49 OF 130



PLAN

SCALE 1:1,000



PROFILE

VERTICAL SCALE 1:200

HORIZONTAL SCALE 1:1,000

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS UNLESS OTHERWISE SHOWN.
2. SYMBOL, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MH-GN-03
3. THE ALIGNMENT OF THE HEADRACE 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 PART 2 PLAN AND PROFILE, STA. 0+600 TO STA. 1+200	MH-OM-02
2. O&M ROAD TYPICAL SECTIONS AND DETAILS	MH-OM-10
3. HEADRACE TYPICAL SECTIONS	MH-HR-06

0 5 10 15 METERS

SCALE 1:200

0 10 20 40 50 80 METERS

SCALE 1:1,000

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				

CONSULTANTS | DEDE

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

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
O&M ROAD PART 2
PLAN AND PROFILE, STA. 0+000 TO STA. 0+600

P&C MANAGEMENT CO.,LTD.

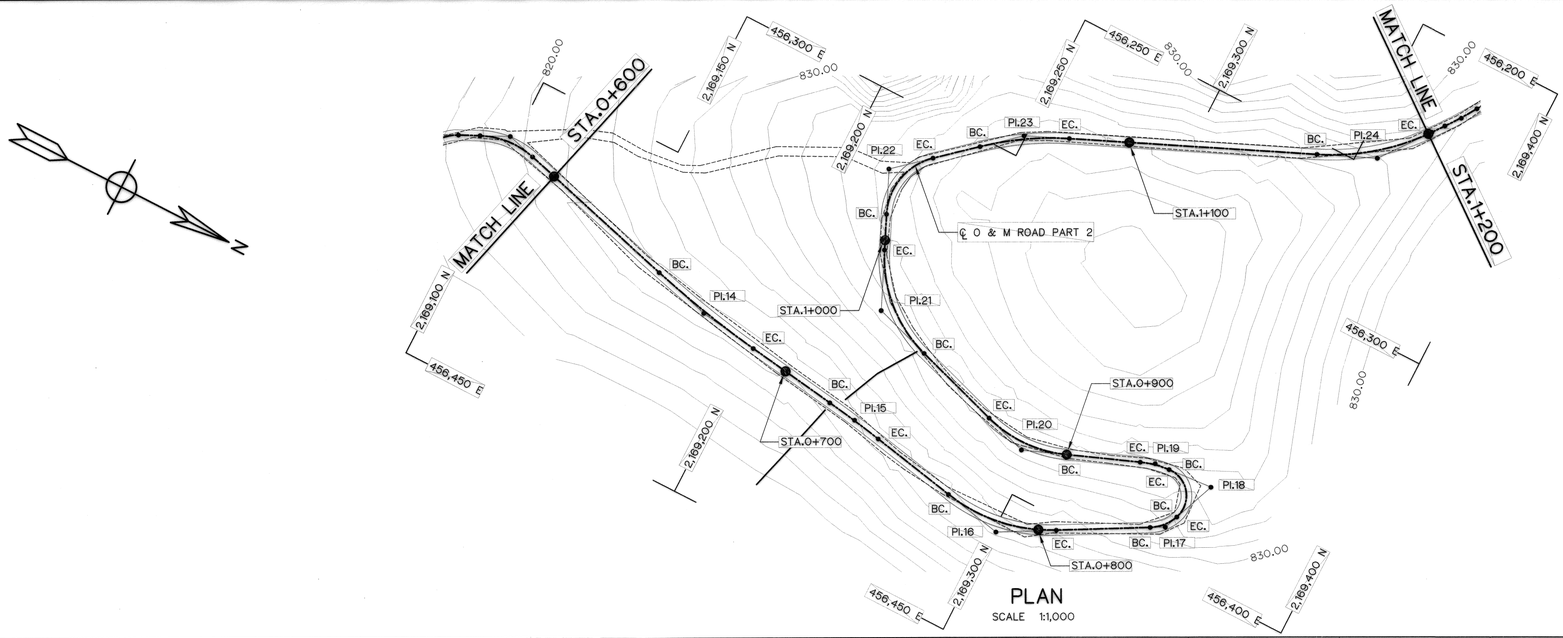
Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

DESIGNED	วิ.64624	วิ.6226	REVIEWED
DRAWN			SUBMITTED
CHECKED	วิ.6226		RECOMMENDED
			APPROVED

PROJECT MANAGER — 08/03/2564 DATE

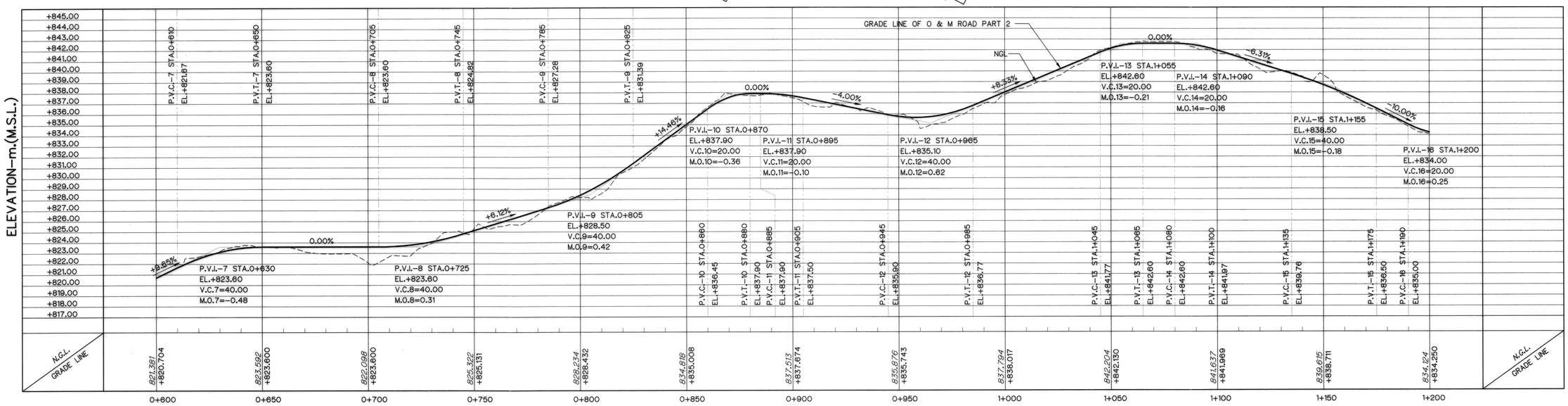
DRAWING NO. MH-OM-01

SHEET NO. 50 OF 130



PLAN

SCALE 1:1,000



PROFILE

VERTICAL SCALE 1:200

HORIZONTAL SCALE 1:1,000

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS UNLESS OTHERWISE SHOWN.
2. SYMBOL, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MH-GN-03
3. THE ALIGNMENT OF THE HEADRACE 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 PART 3 PLAN AND PROFILE, STA. 0+000 TO STA. 0+600	MH-OM-01
2. O&M ROAD PART 3 PLAN AND PROFILE, STA. 1+200 TO STA. 1+800	MH-OM-03
3. O&M ROAD TYPICAL SECTIONS AND DETAILS	MH-OM-10
4. HEADRACE TYPICAL SECTIONS	MH-HR-06

0 5 10 15
SCALE 1:200 METERS

0 10 20 40 50 80
SCALE 1:1,000 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE

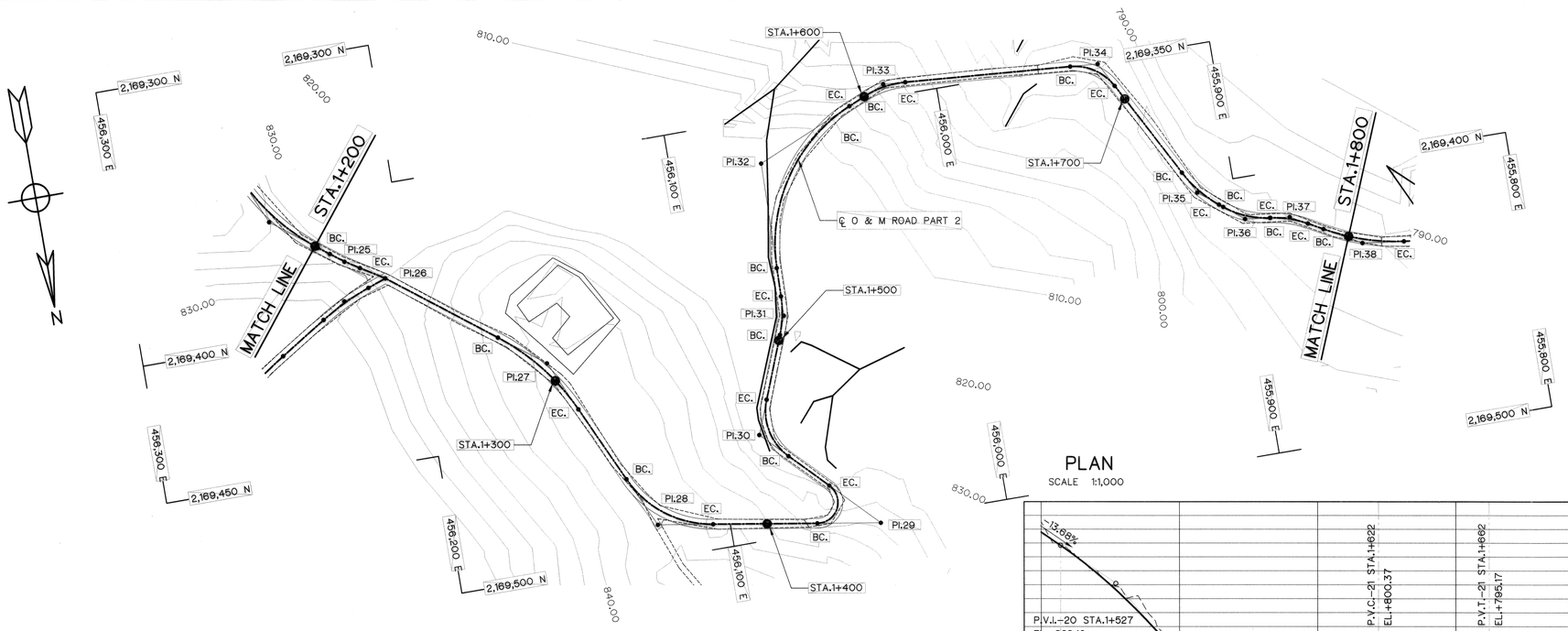
O&M ROAD PART 2

PLAN AND PROFILE, STA. 0+600 TO STA. 1+200

P&C MANAGEMENT CO.,LTD.

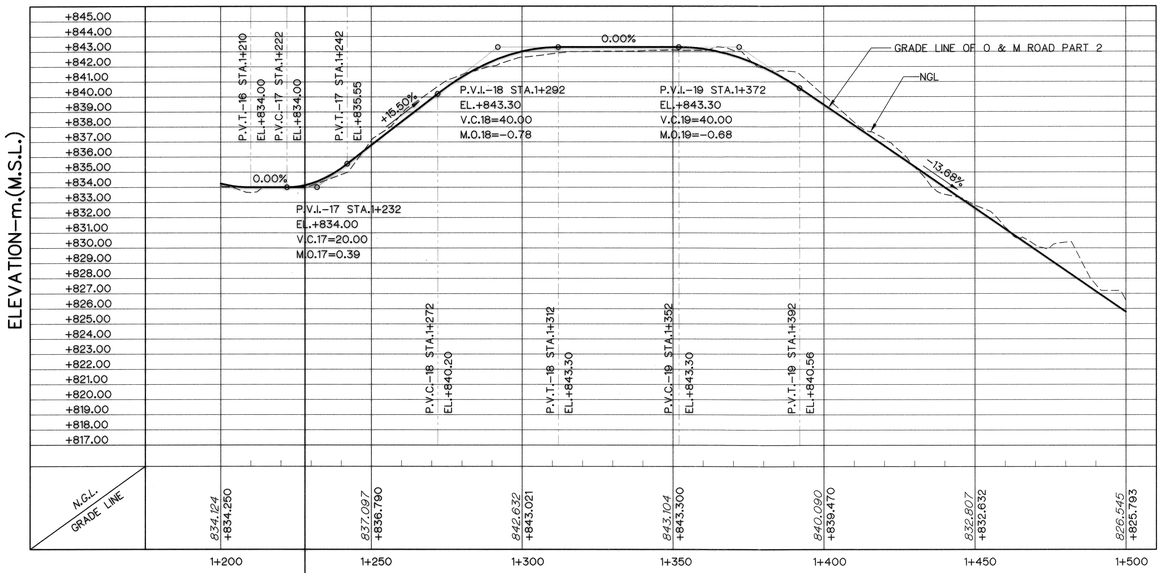
Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

DESIGNED	วิศ.64624	REVIEWED	
DRAWN		SUBMITTED	
CHECKED	วิศ.6226	RECOMMENDED	
PROJECT MANAGER		APPROVED	
	09/01/2564 DATE	DRAWING NO.	MH-OM-02
		SHEET NO.	51 OF 130



PLAN

SCALE 1:1,000



PROFILE

VERTICAL SCALE 1:200

HORIZONTAL SCALE 1:1,000

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS UNLESS OTHERWISE SHOWN.
2. SYMBOL, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MH-GN-03
3. THE ALIGNMENT OF THE HEADRACE 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 PART 3 PLAN AND PROFILE, STA. 0+600 TO STA. 1+200	MH-OM-02
2. O&M ROAD PART 3 PLAN AND PROFILE, STA. 1+800 TO STA. 2+400	MH-OM-04
3. O&M ROAD TYPICAL SECTIONS AND DETAILS	MH-OM-10
4. HEADRACE TYPICAL SECTIONS	MH-HR-06

0 5 10 15 METERS

SCALE 1:200

0 10 20 40 50 80 METERS

SCALE 1:1,000

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE

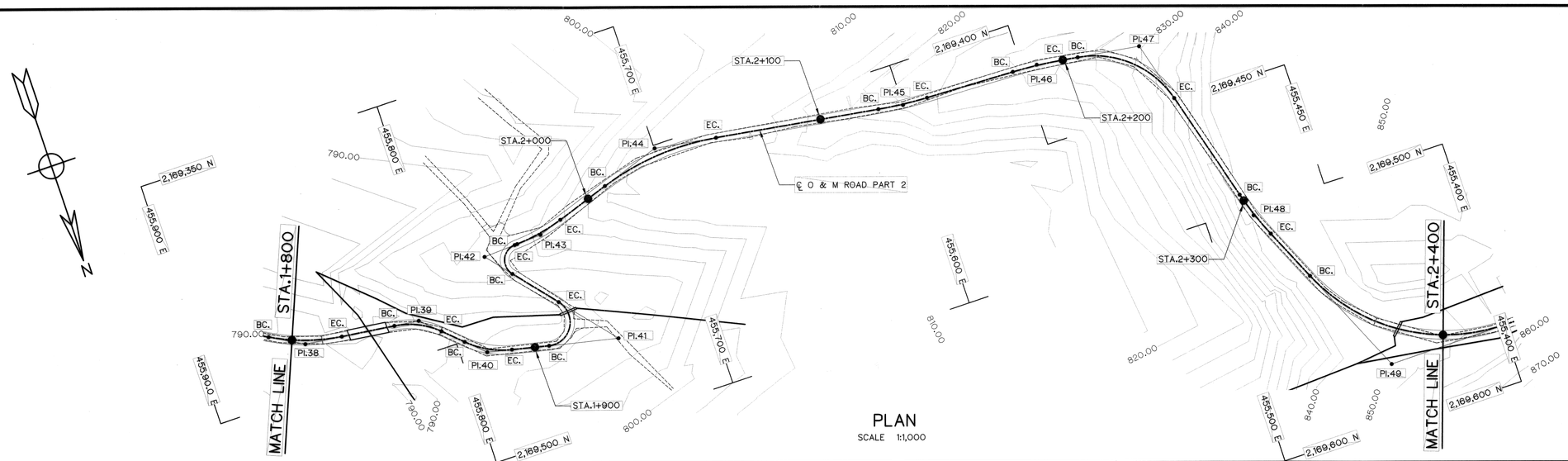
O&M ROAD PART 2

PLAN AND PROFILE, STA. 1+200 TO STA. 1+800

P&C MANAGEMENT CO.,LTD.

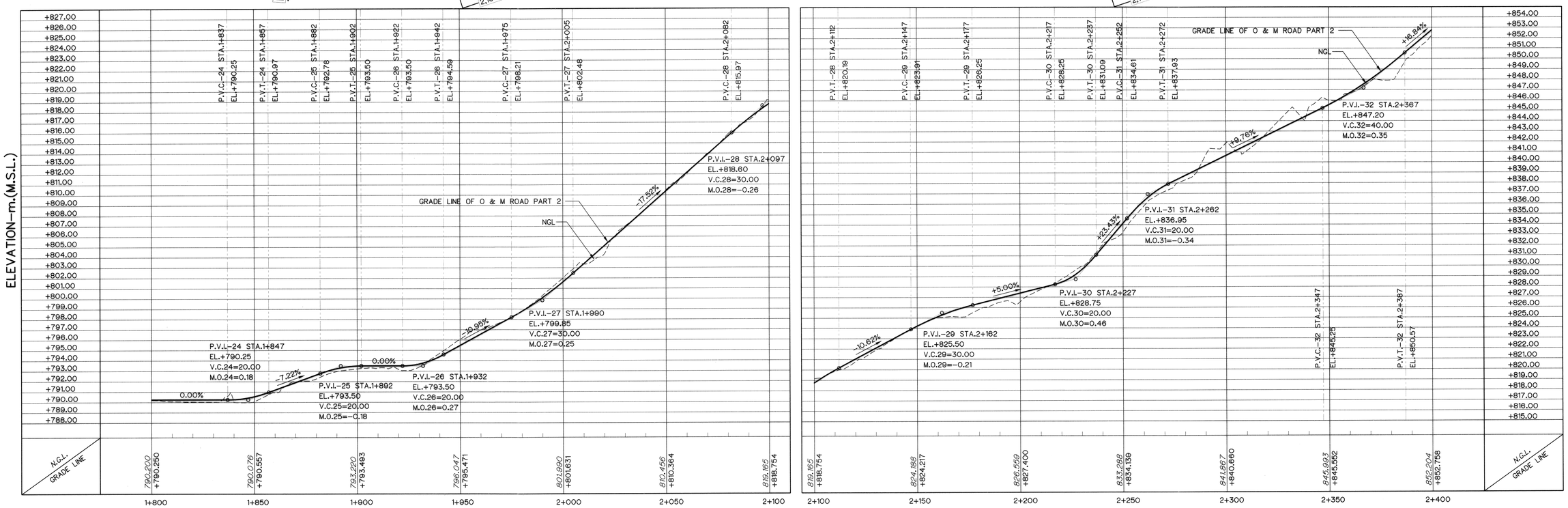
Department of Alternative Energy Development and Efficiency
MINISTRY OF ENERGY

DESIGNED	วิ.64624	REVIEWED	
DRAWN		SUBMITTED	
CHECKED	วิ.6226	RECOMMENDED	
PROJECT MANAGER		APPROVED	
	06/12/2564 DATE	DRAWING NO.	MH-OM-03
		SHEET NO.	52 OF 130



PLAN

SCALE 1:1,000



PROFILE

VERTICAL SCALE 1:200

HORIZONTAL SCALE 1:1,000

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS UNLESS OTHERWISE SHOWN.
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3. THE ALIGNMENT OF THE HEADRACE 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 PART 3 PLAN AND PROFILE, STA. 1+200 TO STA. 1+800	MH–OM–03
2. O&M ROAD PART 3 PLAN AND PROFILE, STA. 2+400 TO STA. 3+000	MH–OM–05
3. O&M ROAD TYPICAL SECTIONS AND DETAILS	MH–OM–10
4. HEADRACE TYPICAL SECTIONS	MH–HR–06

0 5 10 15
SCALE 1:200 METERS

0 10 20 40 50 80
SCALE 1:1,000 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
O&M ROAD PART 2
PLAN AND PROFILE, STA. 1+800 TO STA. 2+400

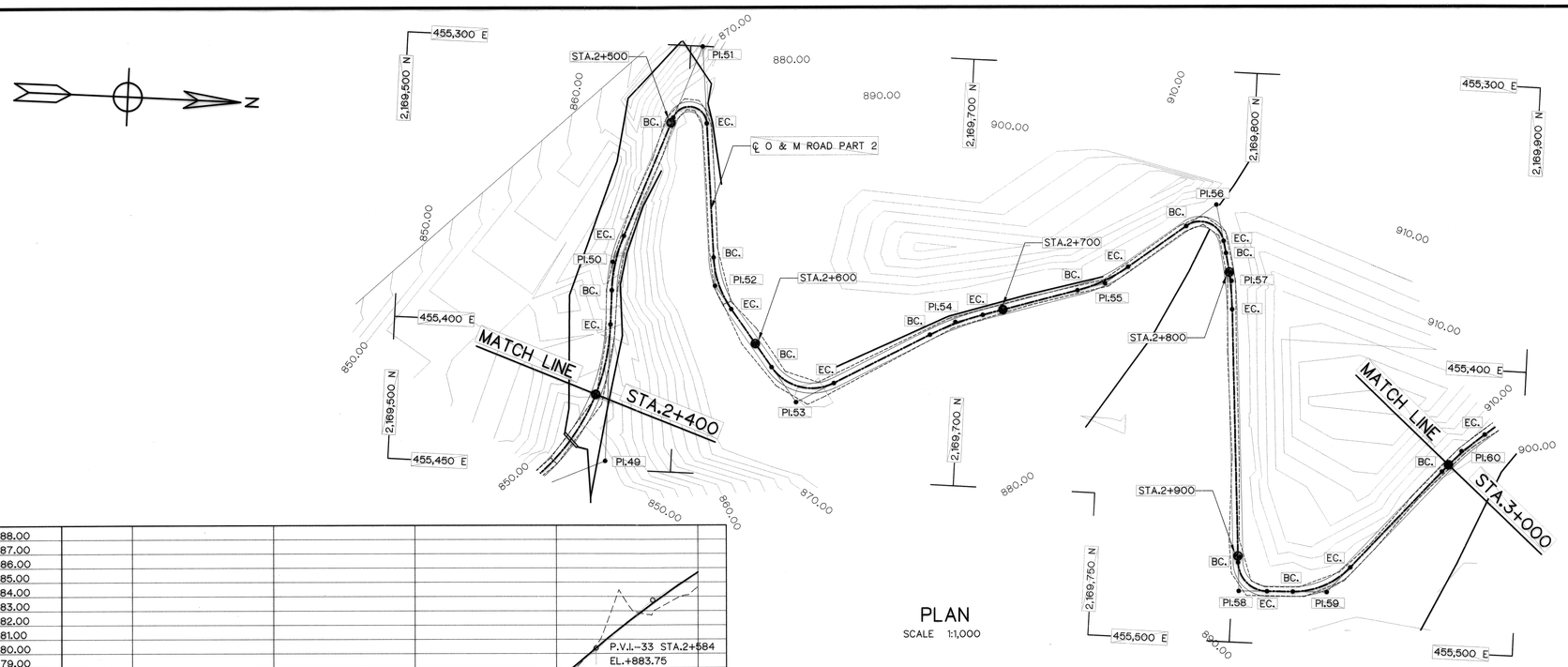
P&C MANAGEMENT CO.,LTD.

Department of Alternative Energy Development and Efficiency
MINISTRY OF ENERGY

DESIGNED	กิติ.64624	REVIEWED	
DRAWN		SUBMITTED	
CHECKED	สิน.6226	RECOMMENDED	
PROJECT MANAGER	08/03/2559 DATE	APPROVED	P. Hemsorn

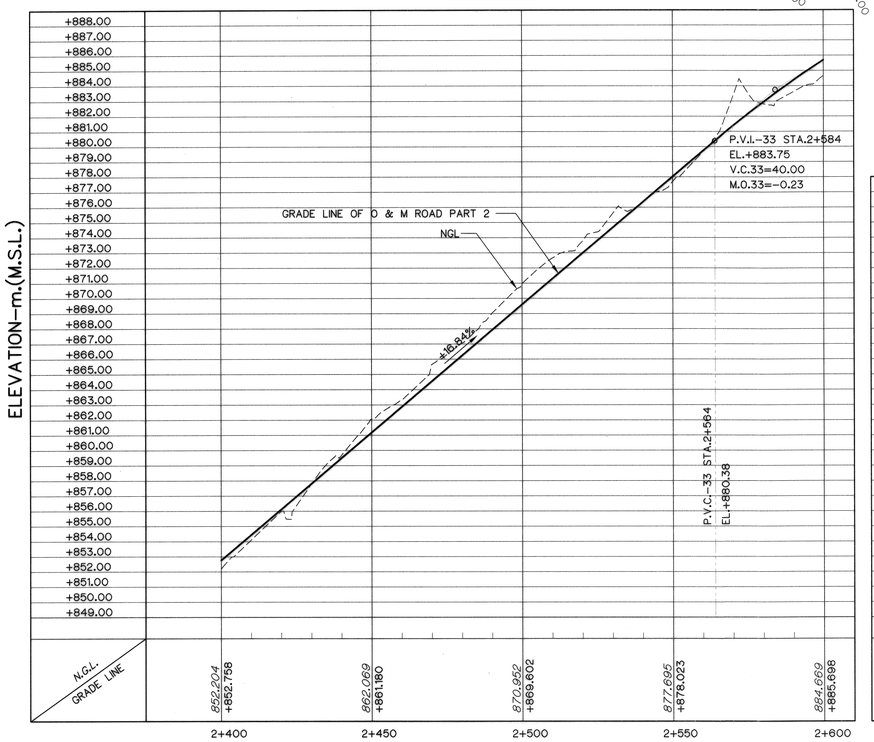
DRAWING NO. MH–OM–04

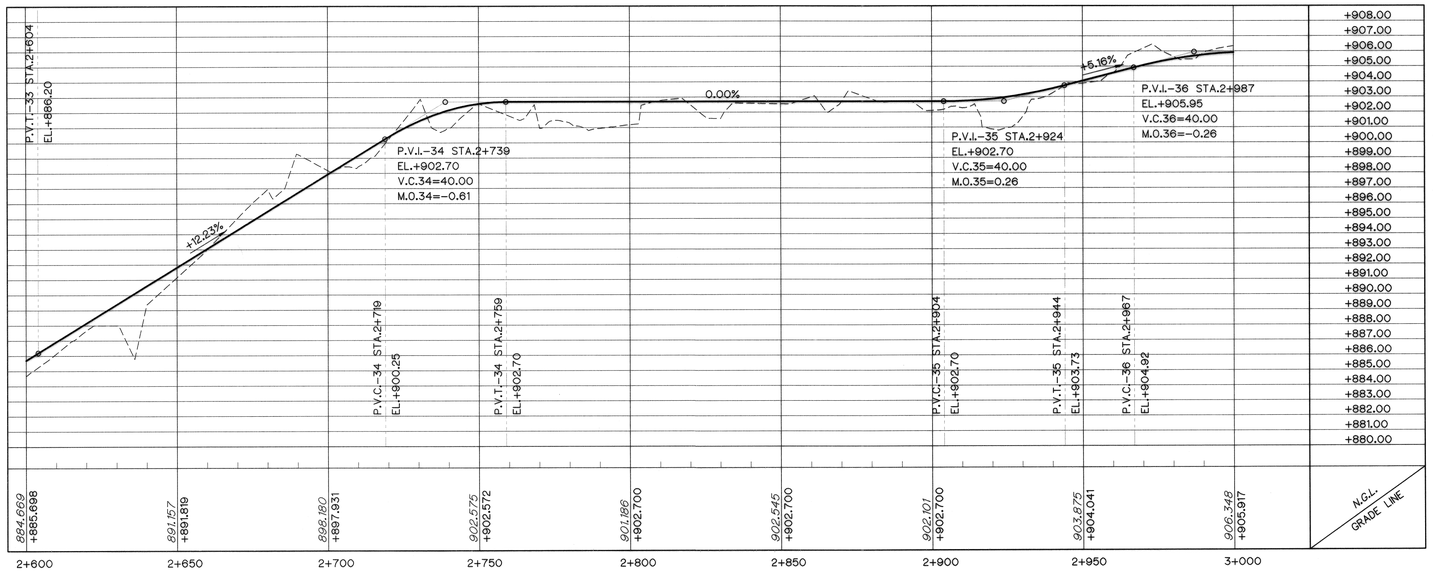
SHEET NO. 53 OF 130



PLAN

SCALE 1:1,000





DISTANCE – Km.

PROFILE

VERTICAL SCALE 1:200

HORIZONTAL SCALE 1:1,000

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS UNLESS OTHERWISE SHOWN.
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3. THE ALIGNMENT OF THE HEADRACE 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 PART 3 PLAN AND PROFILE, STA. 1+800 TO STA. 2+400	MH–OM–04
2. O&M ROAD PART 3 PLAN AND PROFILE, STA. 3+000 TO STA. 3+600	MH–OM–06
3. O&M ROAD TYPICAL SECTIONS AND DETAILS	MH–OM–10
4. HEADRACE TYPICAL SECTIONS	MH–HR–06

0 5 10 15
SCALE 1:200 METERS

0 10 20 40 50 80
SCALE 1:1,000 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
O&M ROAD PART 2
PLAN AND PROFILE, STA. 2+400 TO STA. 3+000

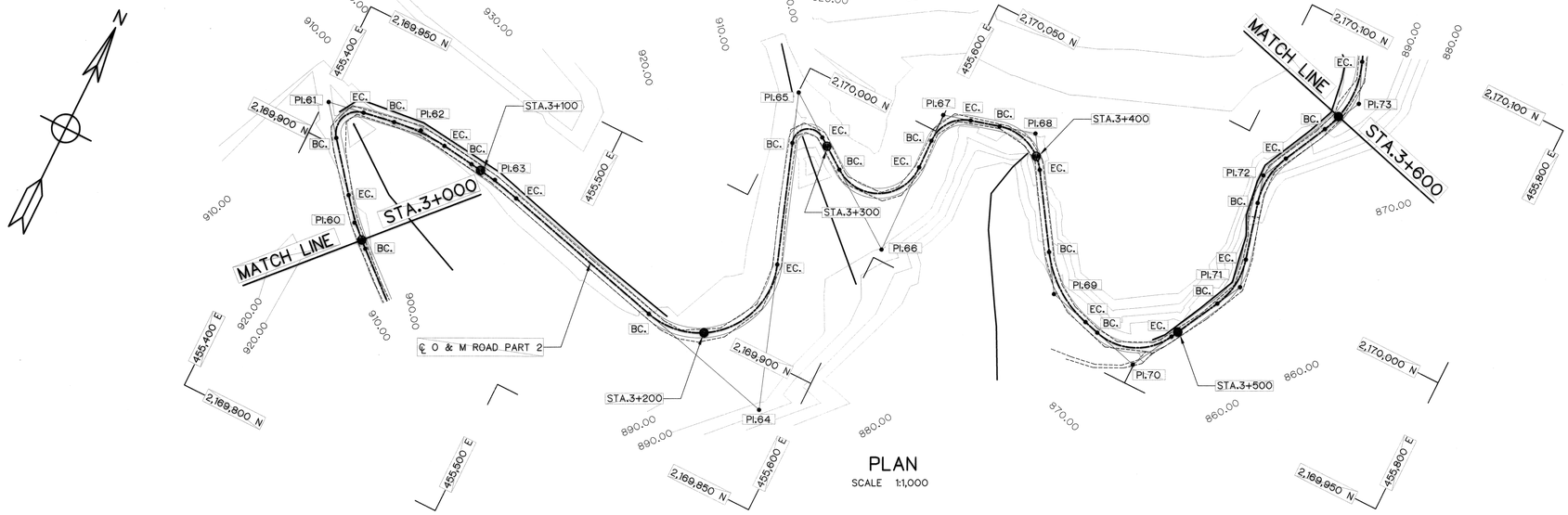
P&C MANAGEMENT CO.,LTD.

Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

DESIGNED	กิตติ์ 64624	REVIEWED	
DRAWN		SUBMITTED	
CHECKED	6226	RECOMMENDED	
PROJECT MANAGER	08/03/2559 DATE	APPROVED	

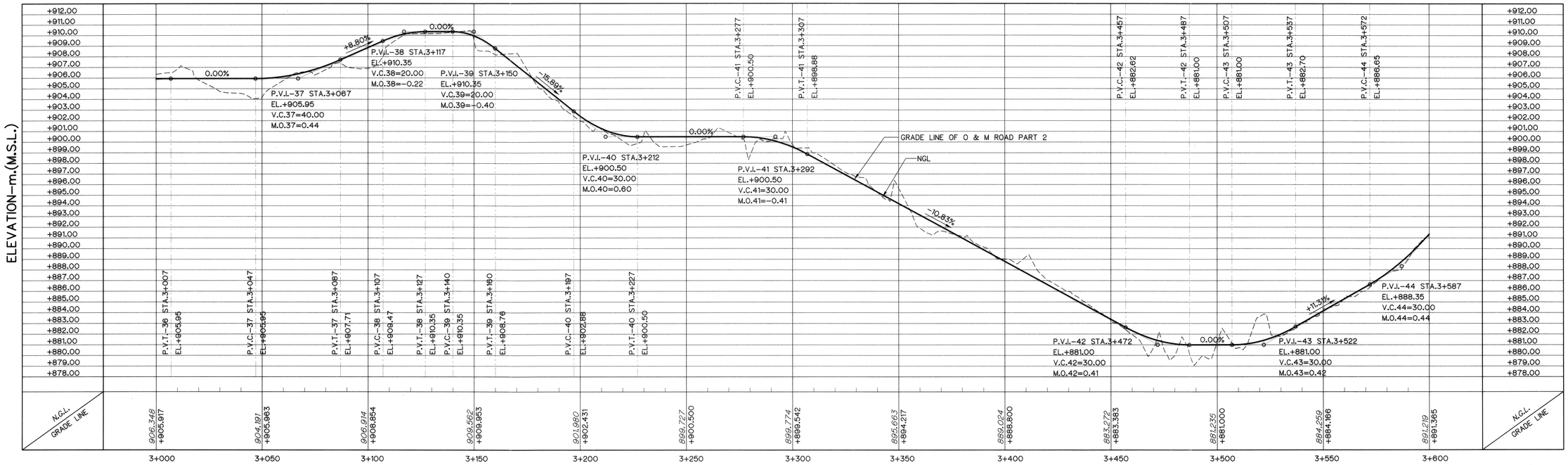
DRAWING NO. MH–OM–05

SHEET NO. 54 OF 130



PLAN

SCALE 1:1,000



PROFILE

VERTICAL SCALE 1:200

HORIZONTAL SCALE 1:1,000

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS UNLESS OTHERWISE SHOWN.
2. SYMBOL, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MH-GN-03
3. THE ALIGNMENT OF THE HEADRACE 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 PART 3 PLAN AND PROFILE, STA. 2+400 TO STA. 3+000	MH-OM-05
2. O&M ROAD PART 3 PLAN AND PROFILE, STA. 3+600 TO STA. 4+149.212	MH-OM-07
3. O&M ROAD TYPICAL SECTIONS AND DETAILS	MH-OM-10
4. HEADRACE TYPICAL SECTIONS	MH-HR-06

0 5 10 15
SCALE 1:200 METERS

0 10 20 40 50 80
SCALE 1:1,000 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				

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MINISTRY OF ENERGY

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE

O&M ROAD PART 2

PLAN AND PROFILE, STA. 3+000 TO STA. 3+600

P&C MANAGEMENT CO.,LTD.

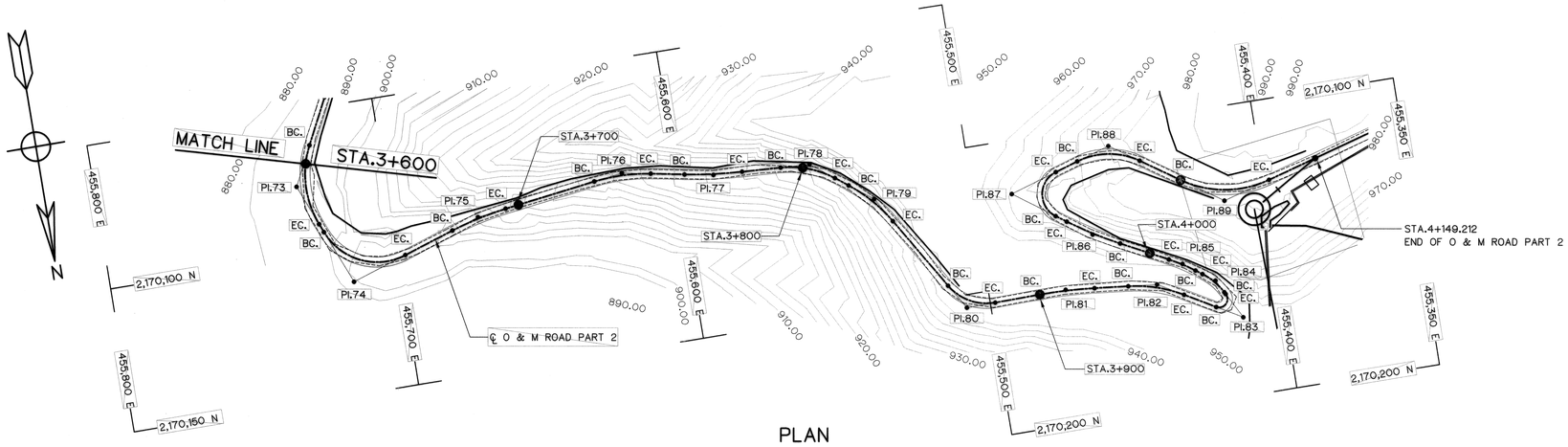
Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

REVIEWED			
DESIGNED	วิชัย	28/6/26	SUBMITTED
DRAWN			RECOMMENDED
CHECKED		28/6/26	APPROVED P.Hanmek

PROJECT MANAGER 08/08/2569 DATE

DRAWING NO. MH-OM-06

SHEET NO. 55 OF 130



PLAN

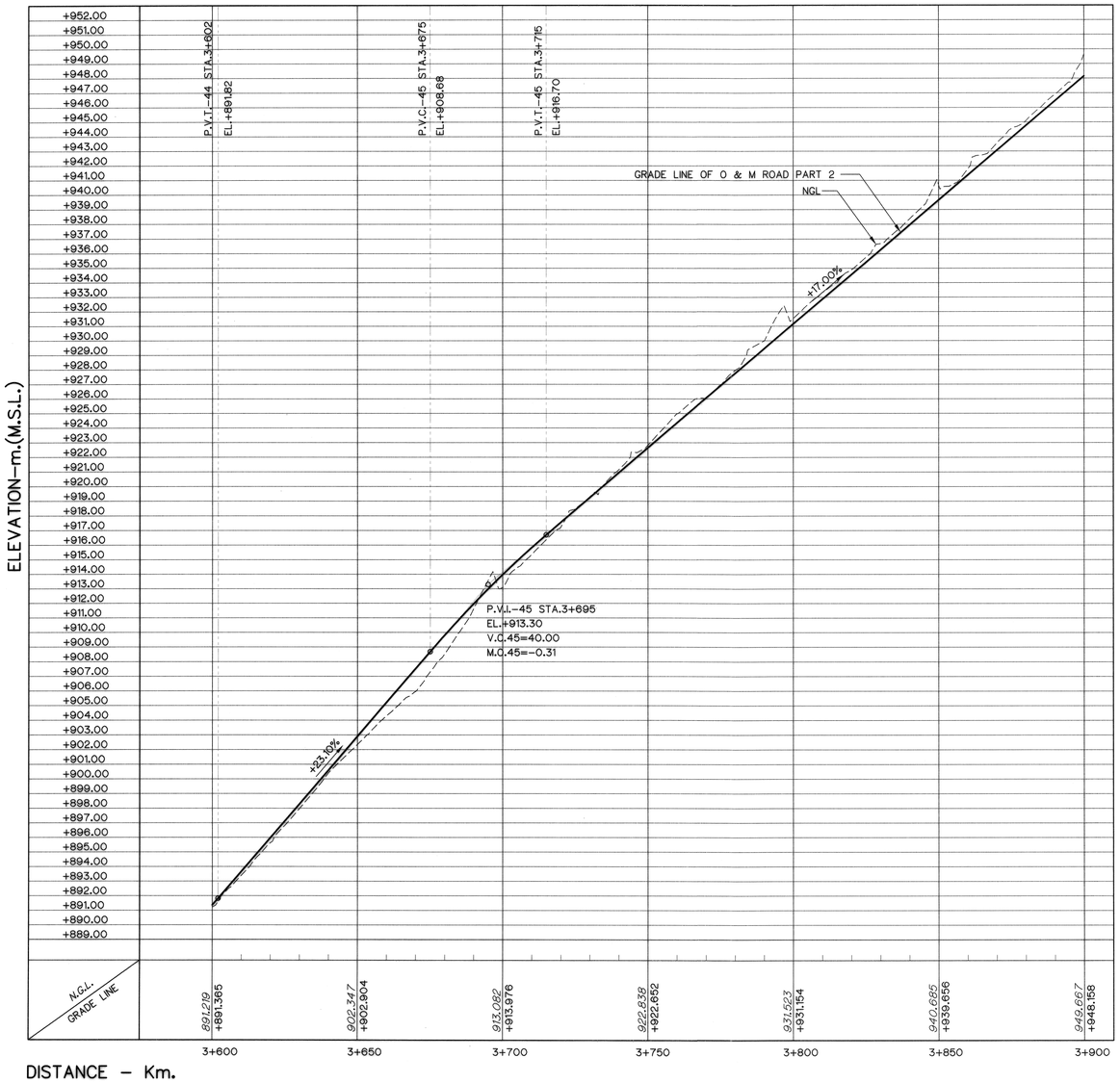
SCALE 1:1,000

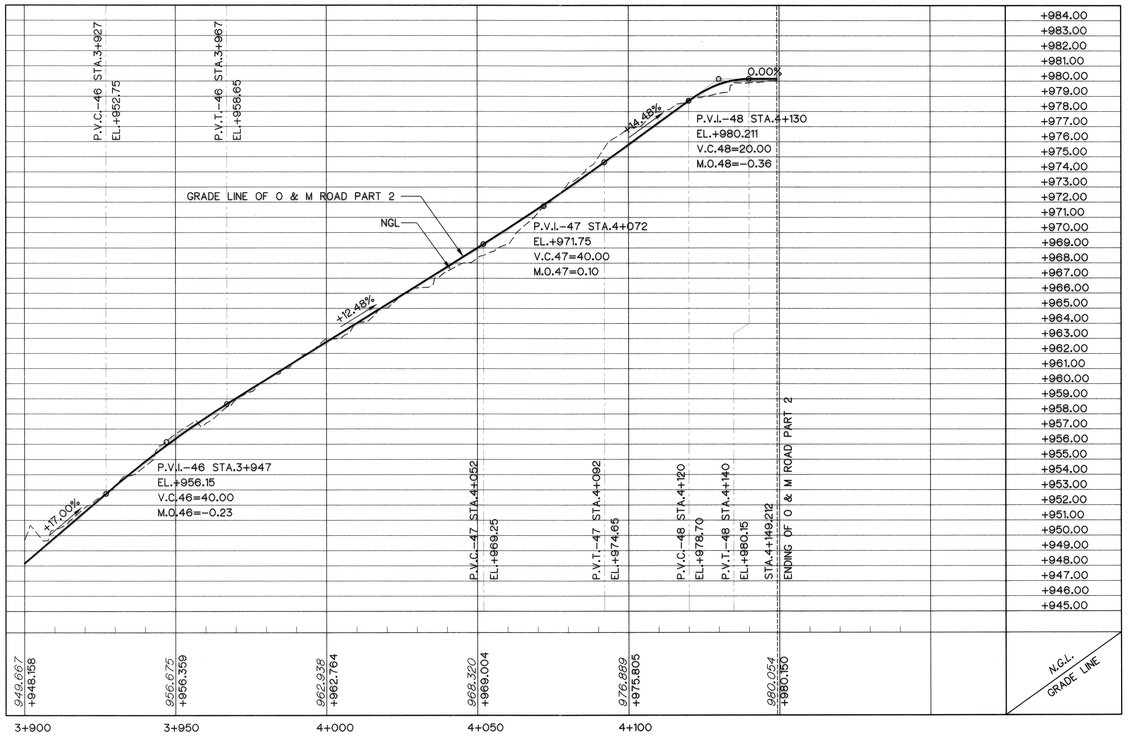
NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS UNLESS OTHERWISE SHOWN.
2. SYMBOL, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MH-GN-03
3. THE ALIGNMENT OF THE HEADRACE 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 PART 3 PLAN AND PROFILE, STA. 3+000 TO STA. 3+600	MH-OM-06
2. O&M ROAD TYPICAL SECTIONS AND DETAILS	MH-OM-10
3. HEADRACE TYPICAL SECTIONS	MH-HR-06





PROFILE

VERTICAL SCALE 1:200

HORIZONTAL SCALE 1:1,000

0 5 10 15
SCALE 1:200 METERS

0 10 20 40 50 80
SCALE 1:1,000 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				

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MINISTRY OF ENERGY

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
O&M ROAD PART 2
PLAN AND PROFILE, STA. 3+600 TO STA. 4+149.212

P&C MANAGEMENT CO.,LTD.

Department of Alternative Energy Development and Efficiency
MINISTRY OF ENERGY

DESIGNED	วิศ.64624	REVIEWED	
DRAWN		SUBMITTED	
CHECKED	วิศ.6226	RECOMMENDED	
PROJECT MANAGER	08/03/2559 DATE	APPROVED	วิศ.6226

DRAWING NO. MH-OM-07

SHEET NO. 56 OF 130

HORIZONTAL CURVE OF O&M ROAD PART 2

NO. PI.	COORDINATE		PI. – PI.	DEFLECTION ANGLE (△)	TL.	R	LC.	BC. STA.	PI. STA.	EC. STA.	BEARING
	N	E	(m)	(° – ' – ")	(m)	(m)	(m)	(km)	(km)	(km)	(N/S ° – ' – " E/W)
BEG.	2,169,520.242	456,364.022	–	–	–	–	–	–	0+000.000	–	–
1	2,169,503.052	456,355.583	19.150	22°–45'–03.09"	6.000	29.823	11.842	0+013.150	0+019.150	0+024.992	S26°–08'–51.27"W
2	2,169,497.255	456,348.939	8.818	108°–29'–01.32"	–	–	–	–	0+027.809	–	S48°–53'–54.35"W
3	2,169,489.091	456,362.847	16.128	08°–49'–51.86"	6.000	77.702	11.976	0+037.937	0+043.937	0+049.913	S59°–35'–06.97"E
4	2,169,481.371	456,382.361	20.986	05°–45'–56.73"	10.000	198.577	19.983	0+054.899	0+064.899	0+074.882	S68°–24'–58.83"E
5	2,169,451.073	456,440.938	65.948	16°–05'–55.99"	15.000	106.066	29.802	0+115.830	0+130.830	0+145.633	S62°–39'–02.09"E
6	2,169,419.451	456,474.321	45.982	38°–31'–58.14"	15.000	42.914	28.861	0+161.615	0+176.615	0+190.476	S46°–33'–06.10"E
7	2,169,353.003	456,483.682	67.104	16°–54'–52.86"	20.000	134.508	39.709	0+222.580	0+242.580	0+262.289	S08°–01'–07.97"E
8	2,169,292.008	456,474.135	61.738	06°–24'–44.24"	20.000	357.038	39.958	0+284.027	0+304.027	0+323.985	S08°–53'–44.89"W
9	2,169,199.834	456,448.905	95.565	04°–09'–46.19"	20.000	550.304	39.982	0+379.550	0+399.550	0+419.532	S15°–18'–29.13"W
10	2,169,096.423	456,428.532	105.398	38°–02'–14.19"	15.000	43.517	28.890	0+489.931	0+504.931	0+518.821	S11°–08'–42.94"W
11	2,169,076.780	456,405.789	30.051	33°–41'–18.23"	10.000	33.029	19.420	0+523.872	0+533.872	0+543.292	S49°–10'–57.13"W
12	2,169,073.862	456,382.458	23.513	71°–37'–17.19"	10.000	13.860	17.325	0+546.805	0+556.805	0+564.130	S82°–52'–15.36"W
13	2,169,098.349	456,370.774	27.132	40°–38'–51.89"	10.000	26.999	19.154	0+571.262	0+581.262	0+590.416	N25°–30'–27.45"W
14	2,169,181.911	456,393.384	86.567	07°–05'–49.34"	20.000	322.515	39.949	0+646.983	0+666.983	0+686.932	N15°–08'–24.44"E
15	2,169,242.339	456,401.923	61.028	03°–05'–36.08"	10.000	370.354	19.995	0+717.960	0+727.960	0+737.955	N08°–02'–35.10"E
16	2,169,300.854	456,413.441	59.638	40°–02'–26.61"	20.000	54.889	38.359	0+767.593	0+787.593	0+805.951	N11°–08'–11.18"E
17	2,169,349.962	456,386.328	56.096	39°–18'–17.42"	5.000	14.001	9.605	0+837.047	0+842.047	0+846.652	N28°–54'–15.43"W
18	2,169,357.386	456,367.757	20.000	116°–07'–37.77"	15.000	9.350	18.950	0+846.652	0+861.652	0+865.602	N68°–12'–32.85"W
19	2,169,337.443	456,369.269	20.000	17°–00'–33.95"	5.000	33.437	9.926	0+865.602	0+870.602	0+875.529	S04°–20'–10.62"E
20	2,169,295.955	456,385.483	44.544	38°–54'–10.68"	15.000	42.473	28.838	0+900.072	0+915.072	0+928.911	S21°–20'–44.56"E
21	2,169,233.720	456,365.791	65.277	48°–25'–42.83"	20.000	44.472	37.590	0+959.187	0+979.187	0+996.777	S17°–33'–26.12"W
22	2,169,214.694	456,323.087	46.751	73°–03'–41.84"	15.000	20.249	25.820	1+008.528	1+023.528	1+034.348	S65°–59'–08.95"W
23	2,169,249.422	456,292.949	45.982	17°–22'–02.34"	15.000	98.213	29.770	1+050.330	1+065.330	1+080.100	N40°–57'–09.20"W
24	2,169,356.687	456,246.118	117.042	29°–01'–30.75"	20.000	77.264	39.141	1+162.143	1+182.143	1+201.284	N23°–35'–06.87"W
25	2,169,375.385	456,221.654	30.791	05°–36'–18.38"	6.000	122.567	11.990	1+206.075	1+212.075	1+218.065	N52°–36'–37.62"W
26	2,169,383.755	456,208.146	15.891	05°–27'–49.35"	–	–	–	–	1+227.956	–	N58°–12'–56.00"W
27	2,169,423.729	456,155.574	66.043	27°–47'–32.64"	20.000	80.839	39.213	1+274.000	1+294.000	1+313.213	N52°–45'–06.66"W
28	2,169,487.644	456,125.825	70.499	55°–46'–58.84"	20.000	37.787	36.789	1+343.712	1+363.712	1+380.501	N24°–57'–34.02"W
29	2,169,500.623	456,046.197	80.679	143°–44'–59.70"	23.000	7.529	18.889	1+418.180	1+441.180	1+437.069	N80°–44'–32.86"W
30	2,169,461.965	456,084.176	54.193	65°–52'–20.78"	13.000	20.067	23.071	1+455.261	1+468.261	1+478.332	S44°–29'–32.55"E
31	2,169,421.239	456,068.232	43.736	20°–10'–37.85"	7.000	39.343	13.855	1+502.068	1+509.068	1+515.923	S21°–22'–48.23"W
32	2,169,365.994	456,067.072	55.257	65°–36'–53.97"	38.000	58.948	67.507	1+526.180	1+564.180	1+593.687	S01°–12'–10.38"W
33	2,169,345.310	456,018.771	52.543	27°–28'–45.20"	8.000	32.719	15.692	1+600.230	1+608.230	1+615.922	S66°–49'–04.35"W
34	2,169,351.143	455,941.142	77.848	57°–28'–23.42"	10.000	18.238	18.294	1+675.770	1+685.770	1+694.064	N85°–42'–10.45"W
35	2,169,402.698	455,913.464	58.515	23°–13'–07.47"	9.000	43.808	17.753	1+733.579	1+742.579	1+751.332	N28°–13'–47.03"W
36	2,169,415.007	455,898.018	19.751	31°–28'–51.77"	9.000	31.932	17.545	1+753.083	1+762.083	1+770.628	N51°–26'–54.50"W
37	2,169,416.996	455,881.982	16.159	22°–09'–31.47"	7.000	35.747	13.825	1+770.787	1+777.787	1+784.612	N82°–55'–46.27"W
38	2,169,430.644	455,857.591	27.950	22°–05'–54.78"	15.000	76.816	29.627	1+790.561	1+805.561	1+820.189	N60°–46'–14.80"W
39	2,169,436.415	455,811.460	46.491	35°–53'–03.53"	10.000	30.883	19.342	1+841.679	1+851.679	1+861.021	N82°–52'–09.58"W
40	2,169,457.012	455,789.384	30.192	30°–27'–11.10"	10.000	36.739	19.527	1+871.214	1+881.214	1+890.741	N46°–59'–06.05"W
41	2,169,468.530	455,737.694	52.958	142°–52'–32.16"	28.000	9.402	23.446	1+905.698	1+933.698	1+929.145	N77°–26'–17.16"W
42	2,169,420.697	455,778.279	62.731	127°–30'–47.43"	13.000	6.409	14.263	1+950.876	1+963.876	1+965.139	S40°–18'–49.32"E
43	2,169,419.520	455,754.218	24.090	15°–41'–24.07"	10.000	72.578	19.875	1+966.229	1+976.229	1+986.104	S87°–11'–58.11"W
44	2,169,401.329	455,699.821	57.358	27°–12'–27.70"	25.000	103.307	49.057	2+008.462	2+033.462	2+057.519	S71°–30'–34.04"W
45	2,169,416.644	455,599.937	101.051	06°–51'–00.90"	10.000	167.082	19.976	2+123.570	2+133.570	2+143.546	N81°–16'–58.26"W

HORIZONTAL CURVE OF O&M ROAD PART 2(CONTINUED)

NO. PI.	COORDINATE		PI. – PI.	DEFLECTION ANGLE (△)	TL.	R	LC.	BC. STA.	PI. STA.	EC. STA.	BEARING
	N	E	(m)	(° – ' – ")	(m)	(m)	(m)	(km)	(km)	(km)	(N/S ° – ' – " E/W)
46	2,169,418.466	455,544.039	55.928	06°–28'–31.36"	10.000	176.777	19.979	2+179.474	2+189.474	2+199.452	N88°–07'–59.16"W
47	2,169,424.511	455,502.815	41.665	65°–56'–29.58"	25.000	38.540	44.355	2+206.117	2+231.117	2+250.472	N81°–39'–27.80"W
48	2,169,503.106	455,480.699	81.647	08°–46'–11.14"	10.000	130.411	19.961	2+297.120	2+307.120	2+317.081	N15°–42'–58.23"W
49	2,169,576.810	455,447.132	80.988	66°–02'–48.59"	48.000	73.847	85.126	2+340.069	2+388.069	2+425.195	N24°–29'–09.37"W
50	2,169,576.159	455,377.123	70.012	20°–33'–19.40"	10.000	55.148	19.785	2+437.207	2+447.207	2+456.992	S89°–28'–02.04"W
51	2,169,604.237	455,300.074	82.006	154°–18'–00.47"	27.000	6.159	16.586	2+501.998	2+528.998	2+518.584	N69°–58'–38.56"W
52	2,169,612.558	455,383.776	84.115	32°–02'–01.72"	10.000	34.835	19.476	2+565.699	2+575.699	2+585.175	N84°–19'–21.91"E
53	2,169,643.066	455,423.233	49.876	81°–36'–08.46"	15.000	17.377	24.749	2+610.051	2+625.051	2+634.800	N52°–17'–20.19"E
54	2,169,697.928	455,392.429	62.918	11°–57'–12.57"	10.000	95.517	19.927	2+672.718	2+682.718	2+692.645	N29°–18'–48.26"W
55	2,169,749.986	455,376.155	54.542	20°–36'–23.01"	10.000	55.009	19.784	2+727.188	2+737.188	2+746.972	N17°–21'–35.70"W
56	2,169,787.858	455,346.602	48.038	113°–47'–19.83"	13.000	8.476	16.834	2+772.010	2+785.010	2+788.844	N37°–57'–58.70"W
57	2,169,794.558	455,373.124	27.355	10°–01'–04.61"	10.000	114.095	19.949	2+793.199	2+803.199	2+813.148	N75°–49'–21.12"E
58	2,169,802.471	455,481.931	109.094	87°–58'–33.02"	10.000	10.360	15.907	2+902.243	2+912.243	2+918.150	N85°–50'–25.73"E
59	2,169,833.528	455,480.773	31.079	46°–50'–50.39"	12.000	27.699	22.648	2+927.228	2+939.228	2+949.876	NO2°–08'–07.29"W
60	2,169,878.675	455,428.869	68.792	10°–27'–49.51"	10.000	109.208	19.944	2+996.667	3+006.667	3+016.612	N48°–58'–57.68"W
61	2,169,912.867	455,401.653	43.701	119°–01'–35.51"	13.000	7.654	15.899	3+037.313	3+050.313	3+053.213	N38°–31'–08.17"W
62	2,169,918.547	455,435.623	34.442	16°–38'–56.87"	10.000	68.342	19.859	3+064.654	3+074.654	3+084.513	N80°–30'–27.34"E
63	2,169,914.610	455,466.978	31.601	07°–19'–33.38"	10.000	156.206	19.973	3+096.114	3+106.114	3+116.087	S82°–50'–35.79"E
64	2,169,883.455	455,587.596	124.577	123°–45'–27.66"	52.000	27.790	60.026	3+178.664	3+230.664	3+238.690	S75°–31'–02.41"E
65	2,169,990.465	455,550.174	113.365	144°–52'–57.55"	18.000	5.696	14.402	3+282.055	3+300.055	3+296.457	N19°–16'–30.07"W
66	2,169,953.822	455,601.342	62.935	127°–14'–14.54"	32.000	15.872	35.247	3+309.392	3+341.392	3+344.639	S54°–23'–32.53"E
67	2,170,006.226	455,599.851	52.425	76°–15'–57.23"	10.000	12.738	16.956	3+355.065	3+365.065	3+372.021	NO1°–37'–47.07"W
68	2,170,015.104	455,632.162	33.509	72°–16'–57.63"	13.000	17.800	22.457	3+382.529	3+395.529	3+404.986	N74°–38'–10.16"E
69	2,169,967.126	455,663.416	57.260	41°–33'–55.39"	15.000	39.524	28.673	3+434.246	3+449.246	3+462.918	S33°–04'–52.21"E
70	2,169,957.153	455,699.738	37.666	77°–37'–23.08"	17.000	21.135	28.633	3+468.584	3+485.584	3+497.218	S74°–38'–47.60"E
71	2,169,998.904	455,721.686	47.168	42°–18'–07.32"	10.000	25.847	19.083	3+517.386	3+527.386	3+536.469	N27°–43'–49.32"E
72	2,170,038.065	455,711.506	40.463	41°–21'–22.21"	10.000	26.495	19.124	3+556.932	3+566.932	3+576.056	N14°–34'–18.00"W
73	2,170,075.902	455,730.606	42.385	48°–49'–04.86"	15.000	33.054	28.163	3+593.440	3+608.440	3+621.603	N26°–47'–04.21"E
74	2,170,111.340	455,716.264	38.230	85°–58'–21.12"	20.000	21.458	32.197	3+624.833	3+644.833	3+657.031	N22°–02'–00.65"W
75	2,170,096.375	455,670.223	48.412	10°–22'–12.63"	10.000	110.199	19.945	3+675.443	3+685.443	3+695.388	S71°–59'–38.23"W
76	2,170,089.456	455,618.614	52.071	17°–58'–48.03"	10.000	63.209	19.836	3+727.459	3+737.459	3+747.294	S82°–21'–50.86"W
77	2,170,095.147	455,587.435	31.694	07°–08'–55.65"	10.000	160.087	19.974	3+758.988	3+768.988	3+778.963	N79°–39'–21.10"W
78	2,170,097.008	455,554.100	33.387	34°–02'–32.25"	10.000	32.665	19.408	3+792.349	3+802.349	3+811.758	N86°–48'–16.75"W
79	2,170,112.357	455,533.906	25.365	21°–24'–13.69"	10.000	52.914	19.767	3+817.123	3+827.123	3+836.890	N52°–45'–44.50"W
80	2,170,154.460	455,508.248	49.305	59°–35'–09.18"	10.000	17.466	18.164	3+866.195	3+876.195	3+884.359	N31°–21'–30.81"W
81	2,170,153.888	455,473.550	34.703	06°–52'–47.60"	10.000	166.360	19.976	3+899.062	3+909.062	3+919.037	S89°–03'–20.01"W
82	2,170,157.168	455,442.001	31.719	23°–52'–09.17"	10.000	47.312	19.710	3+930.757	3+940.757	3+950.466	N84°–03'–52.39"W
83	2,170,173.004	455,414.355	31.860	148°–07'–23.99"	10.000	2.856	7.383	3+962.327	3+972.327	3+969.710	N60°–11'–43.22"W
84	2,170,159.084	455,421.856	15.812	25°–32'–04.54"	5.000	22.066	9.834	3+970.522	3+975.522	3+980.356	S28°–19'–07.22"E
85	2,170,151.569	455,432.144	12.740	08°–54'–55.80"	5.000	64.136	9.980	3+983.096	3+988.096	3+993.076	S53°–51'–11.76"E
86	2,170,136.591	455,461.249	32.733	08°–29'–19.04"	10.000	134.747	19.963	4+010.809	4+020.809	4+030.773	S62°–46'–07.56"E
87	2,170,118.341	455,486.628	31.259	127°–13'–46.72"	17.000	8.433	18.727	4+035.032	4+052.032	4+053.759	S54°–16'–48.53"E
88	2,170,107.415	455,451.003	37.263	51°–23'–36.04"	12.000	24.938	22.369	4+062.022	4+074.022	4+084.391	S72°–56'–58.20"W
89	2,170,132.424	455,414.400	44.331	50°–03'–51.10"	17.000	36.403	31.809	4+099.722	4+116.722	4+131.530	N55°–39'–25.77"W
END	2,170,123.027	455,381.016	34.682	–	–	–	–	–	4+149.212	–	S74°–16'–43.14"W

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
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	CONSULTANTS		DEDE	

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Department of Alternative Energy Development and Efficiency
MINISTRY OF ENERGY

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
O&M ROAD PART 2
HORIZONTAL CURVE

P&C MANAGEMENT CO.,LTD.

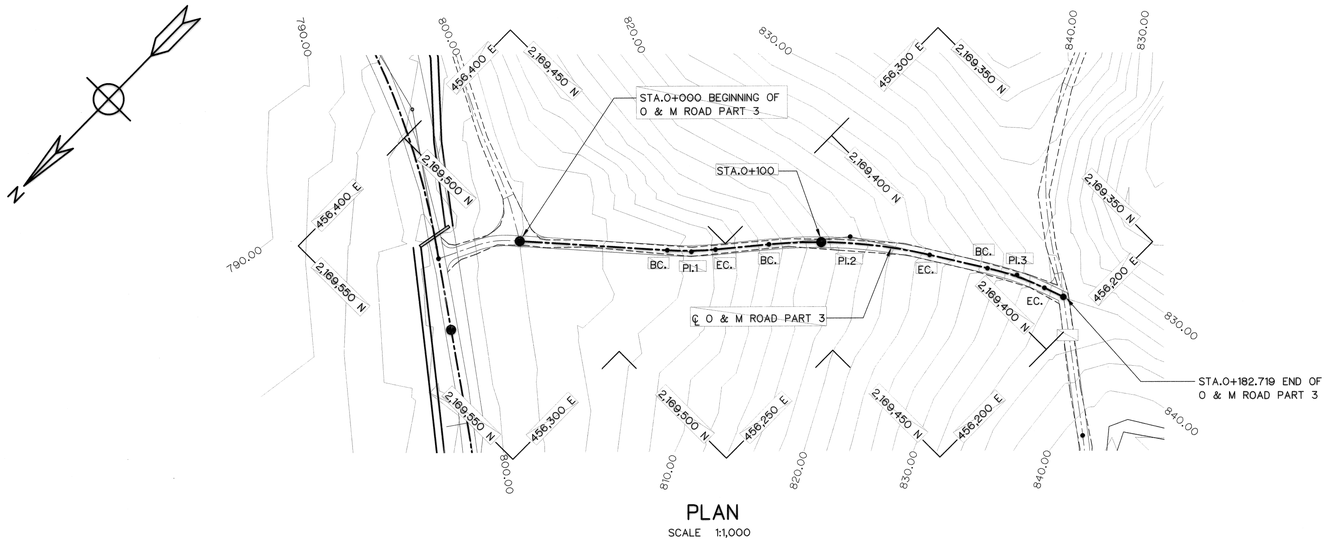
Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

REVIEWED
SUBMITTED
RECOMMENDED
APPROVED P. Hanchi M.

DESIGNED กิตติ. 28.64624 วิ.ท. 28.6226
DRAWN
CHECKED วิ.ท. 28.6226

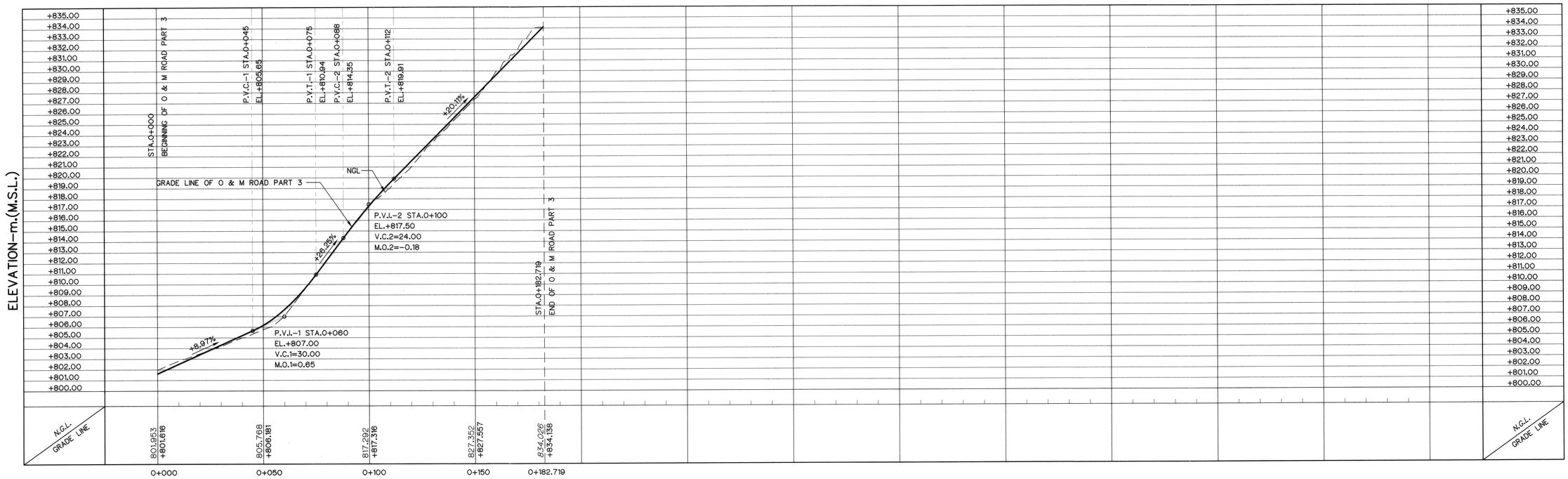
PROJECT MANAGER
02/03/2559 DATE

DRAWING NO. MH-OM-08
SHEET NO. 57 OF 130



PLAN

SCALE 1:1,000



PROFILE

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

HORIZONTAL CURVE OF O&M ROAD PART 3

NO. PI.	COORDINATE N	COORDINATE E	PI. - PI. (m)	DEFLECTION ANGLE (△) (° - ' - ")	TL. (m)	R (m)	LC. (m)	BC. STA. (km)	PI. STA. (km)	EC. STA. (km)	BEARING (N/S ° - ' - " E/W)
BEG.	2,169,497.256	456,348.939	-	-	-	-	-	-	0+000.000	-	-
1	2,169,459.822	456,306.030	56.943	09°-03'-08.29"	8.000	101.060	15.967	0+048.943	0+056.943	0+064.910	S48°-53'-54.80"W
2	2,169,419.324	456,272.233	52.748	18°-16'-59.79"	27.000	167.786	53.541	0+082.657	0+109.657	0+136.198	S39°-50'-46.50"W
3	2,169,389.417	456,224.130	56.642	12°-21'-54.58"	10.000	92.313	19.922	0+155.840	0+165.840	0+175.763	S58°-07'-46.29"W
END	2,169,383.755	456,208.146	16.957	-	-	-	-	-	0+182.719	-	S70°-29'-40.87"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.NMH-GN-03
3. THE ALIGNMENT OF THE HEADRACE 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 SECTION AND DETAILS MH-OM-10

0 5 10 15
SCALE 1:200 METERS

0 10 20 40 50 80
SCALE 1:1,000 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
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CONSULTANTS | DEDE

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

MAE HAT HYDROPOWER PROJECT

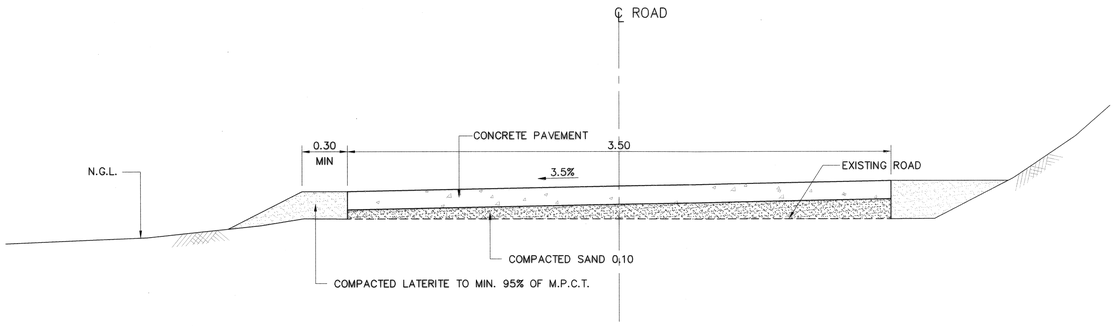
CIVIL WORKS AND TRANSMISSION LINE
O&M ROAD PART 3
PLAN AND PROFILE, STA. 0+000 TO STA. 0+182.719

P&C MANAGEMENT CO.,LTD.

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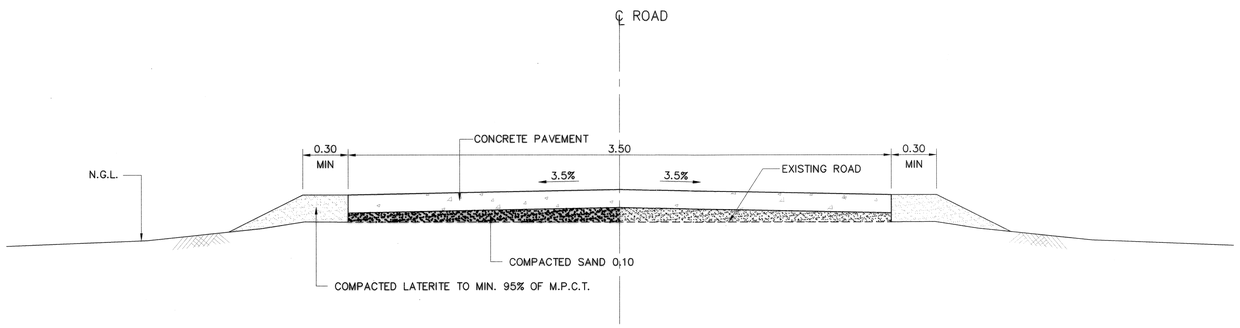
DESIGNED	วสิ.64624	วสิ.6226	REVIEWED
DRAWN			SUBMITTED
CHECKED	วสิ.6226		RECOMMENDED
PROJECT MANAGER	08/03/2559 DATE		APPROVED

DRAWING NO. MH-OM-09
SHEET NO. 58 OF 130



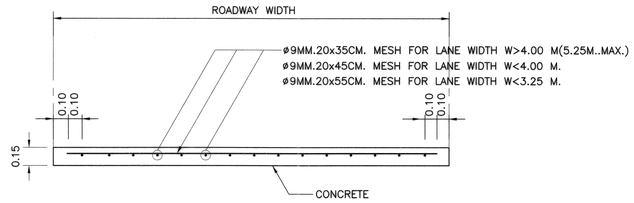
TYPICAL SECTION FOR HILLSIDE

NOT TO SCALE



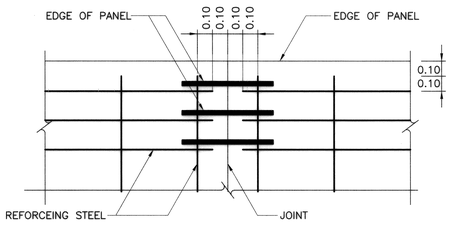
TYPICAL SECTION FOR FLAT AREA

NOT TO SCALE



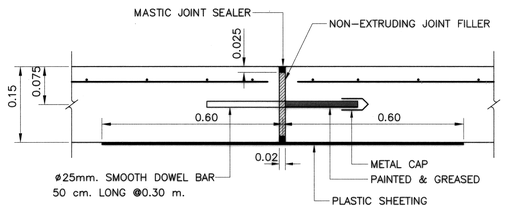
REINFORCEMENT DETAIL OF CONCRETE PAVEMENT CROSS-SECTION

NOT TO SCALE



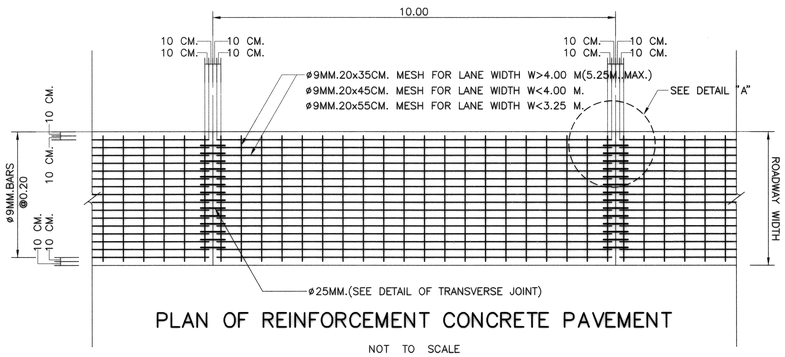
DETAIL "A"

NOT TO SCALE



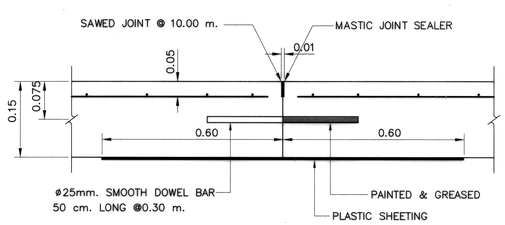
DETAIL OF EXPANSION JOINT

NOT TO SCALE



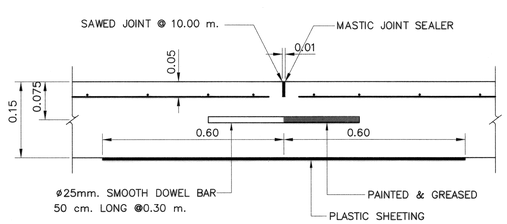
PLAN OF REINFORCEMENT CONCRETE PAVEMENT

NOT TO SCALE



DETAIL OF CONSTRUCTION JOINT

NOT TO SCALE



DETAIL OF CONTRACTION JOINT

NOT TO SCALE

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.

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
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	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
O&M ROAD
TYPICAL SECTION AND DETAILS

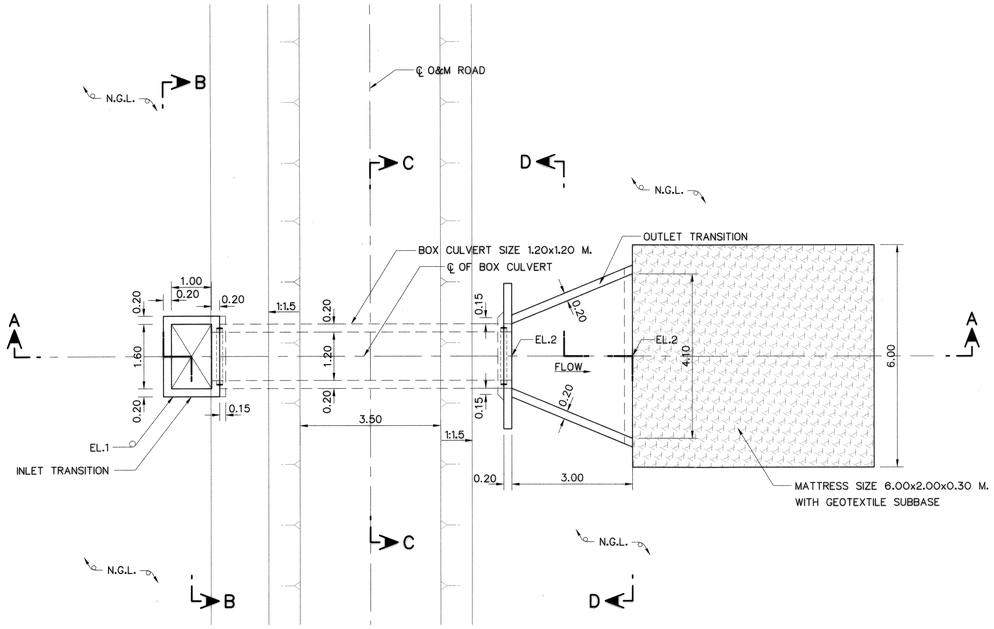
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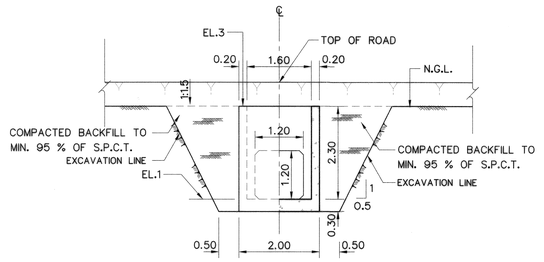
DESIGNED	วย.64624	วย.6226	REVIEWED
DRAWN			SUBMITTED
CHECKED		วย.6226	RECOMMENDED
PROJECT MANAGER		DATE 08/03/2564	APPROVED

DRAWING NO. MH-OM-10

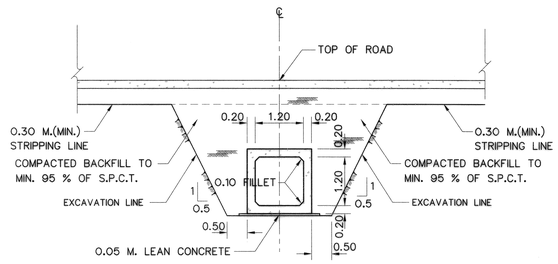
SHEET NO. 59 OF 130



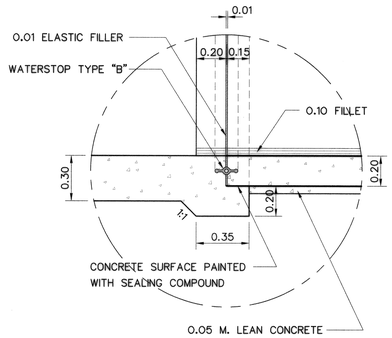
PLAN
SCALE 1:75



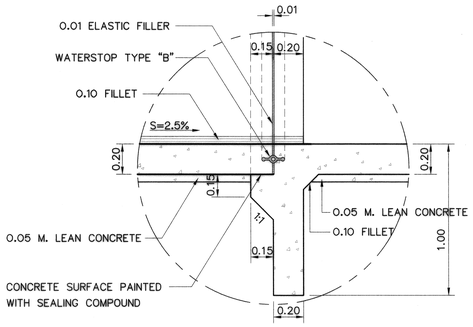
SECTION B–B
SCALE 1:75



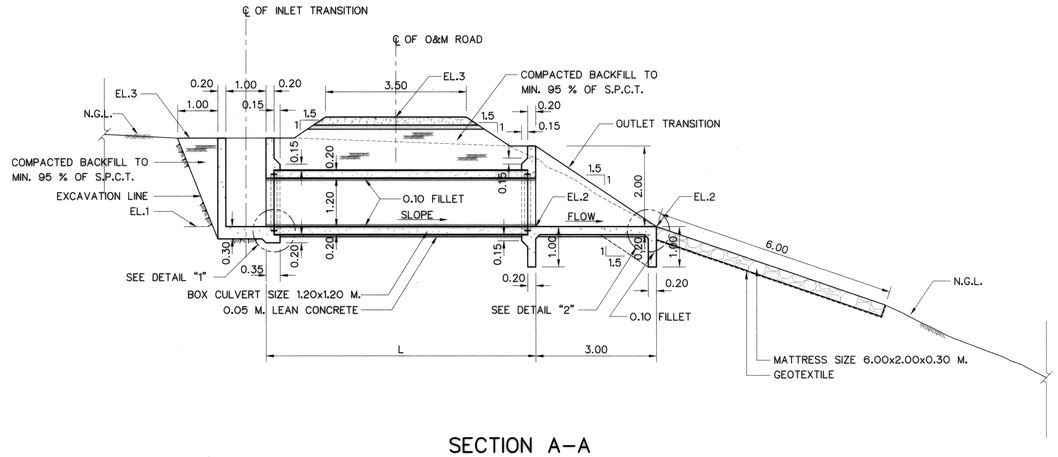
SECTION C–C
SCALE 1:75



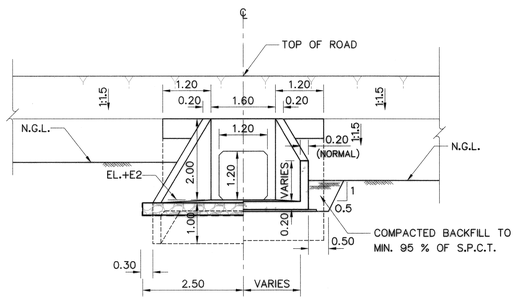
DETAIL "1"
SCALE 1:20



DETAIL "2"
SCALE 1:20



SECTION A–A
SCALE 1:75



SECTION D–D
SCALE 1:75

NOTES :

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

REFERENCE DRAWING :

1. O&M ROAD PLAN AND PROFILE, STA. 0+000 TO STA. 4+149.212	MH–OM–01 TO 07
2. O&M ROAD DRAIN CULVERT REINFORCEMENT DETAILS	MH–OM–12

INSTALLATION TABLE OF O&M DRAIN CULVERT

No.	STA.	L (m.)	ELEVATION (m.MSL.)				
			EXISTING ROAD	N.G.L.	EL.1	EL.2	EL.3
1	2+781.442	7.00	+902.70	+902.00	+899.800	+899.625	+902.700
2	3+047.000	8.00	+905.95	+905.00	+902.800	+902.600	+905.950
3	3+287.649	6.00	+900.29	+900.00	+897.800	+897.650	+900.290

0 0.5 1.0 1.5
SCALE 1:20 METERS

0 0.5 1 2 3 4 5 6
SCALE 1:75 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

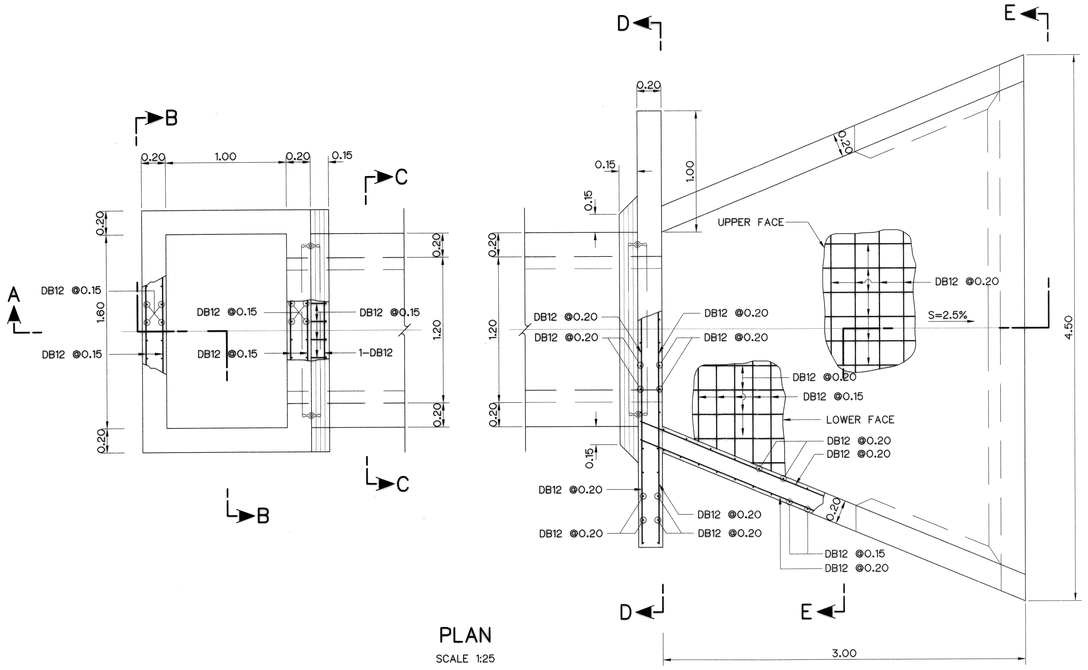
CIVIL WORKS AND TRANSMISSION LINE
O&M ROAD
DRAIN CULVERT, PLAN AND SECTION

P&C MANAGEMENT CO.,LTD.

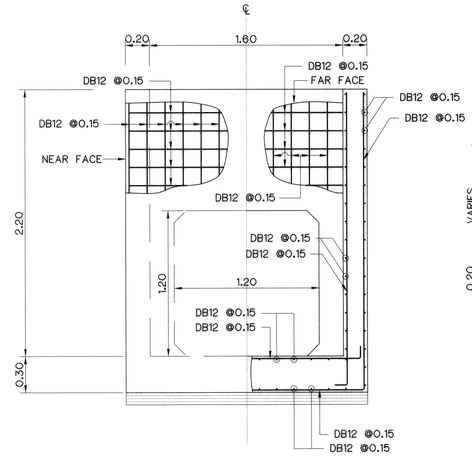
Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

DESIGNED	กิตติ.64624	กิตติ.6226	REVIEWED
DRAWN			SUBMITTED
CHECKED		กิตติ.6226	RECOMMENDED
PROJECT MANAGER		08/03/2564 DATE	APPROVED P.Hempull

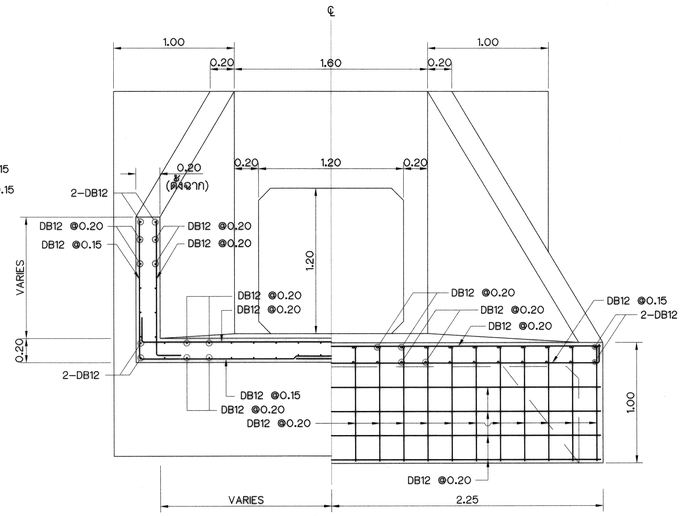
DRAWING NO. MH–OM–11
SHEET NO. 60 OF 130



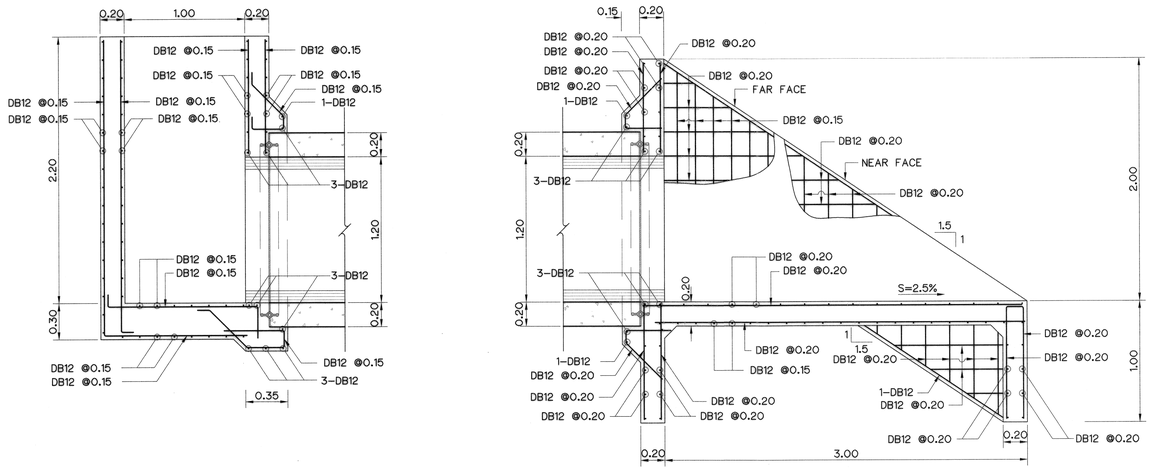
PLAN
SCALE 1:25



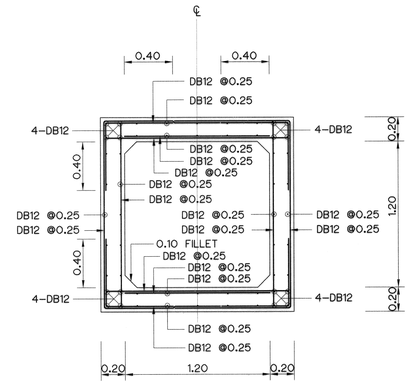
SECTION B–B
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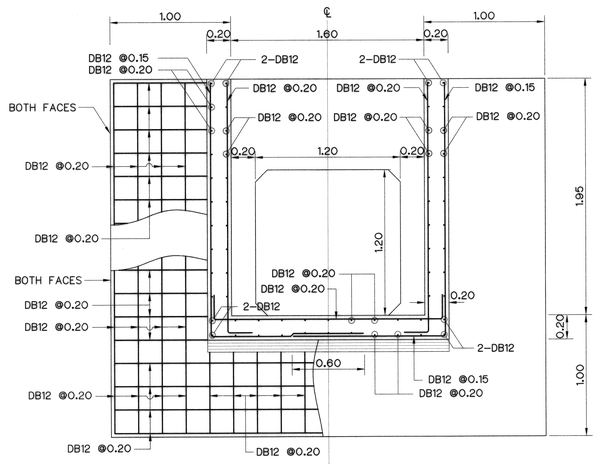
SECTION E–E
SCALE 1:25



SECTION A–A
SCALE 1:25



SECTION C–C
SCALE 1:25



SECTION D–D
SCALE 1:25

0 0.5 1.0 1.5 2.0
SCALE 1:25 METERS

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. NMH-GN-03
3. CONCRETE DESIGN BASED ON THE COMPRESSIVE STRENGTH OF 210 KSC, STANDARD CYLINDER Ø0.15x0.30 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 DRAWING :

1. O&M ROAD DRAIN CULVERT, PLAN AND SECTION MH-OM-11

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
O&M ROAD
DRAIN CULVERT REINFORCEMENT DETAILS

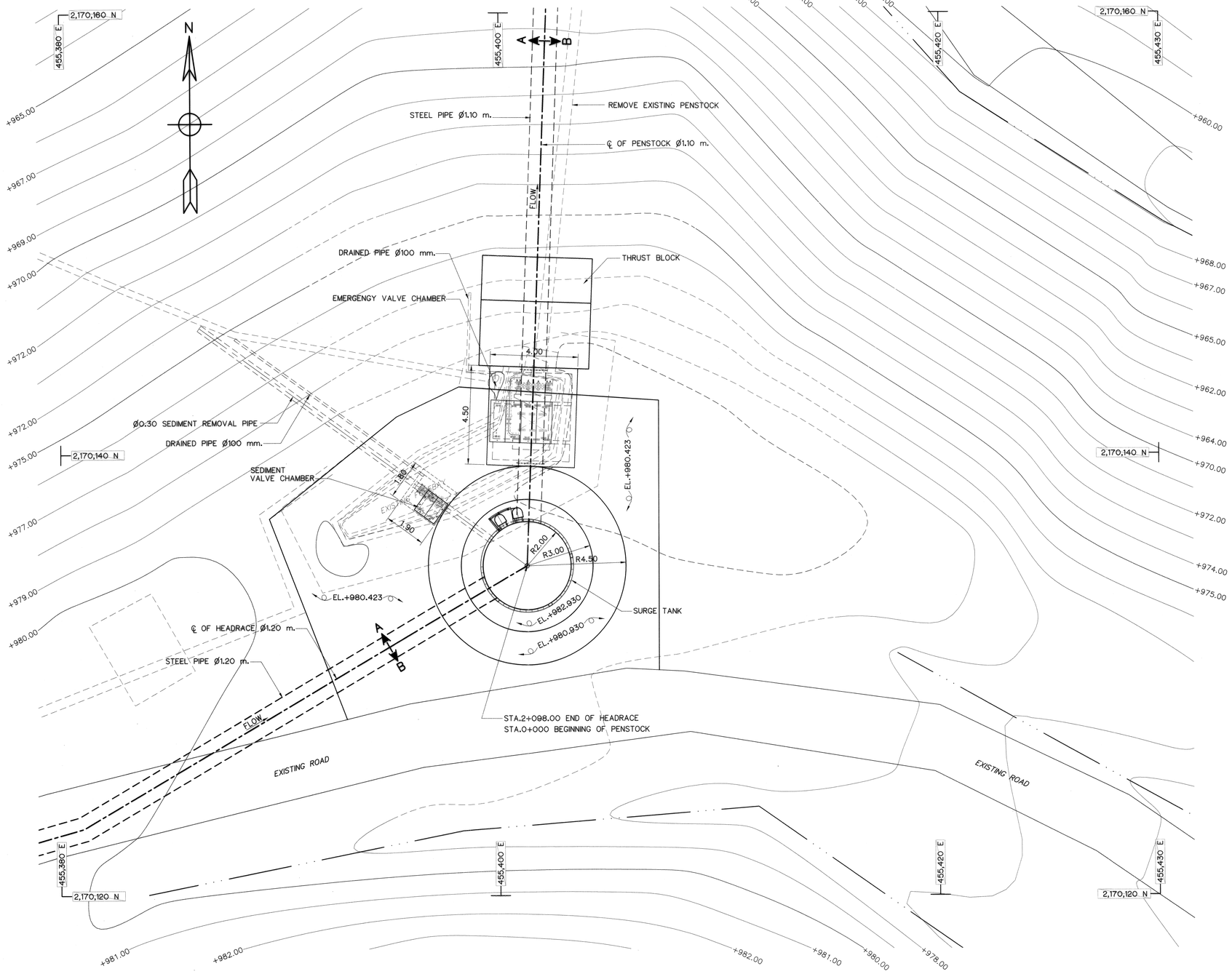
P&C MANAGEMENT CO.,LTD.

Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

DESIGNED	วิศ.64624	สถ.6226	REVIEWED
DRAWN			SUBMITTED
CHECKED		สถ.6226	RECOMMENDED
PROJECT MANAGER		DATE 01/02/2559	APPROVED

DRAWING NO. MH-OM-12

SHEET NO. 61 OF 130



GENERAL LAY-OUT

SCALE 1:100

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS, UNLESS OTHERWIRE SHOWN.
2. STEEL PIPE SHELL CONFORM TO JIS G 3101 SS34
3. BASE OF CONCRETE FOUNDATION SHALL BE DETERMINED IN FIELD BY EMBEDING TO STABLE ROCK FOUNDATION WITH A ALLOWABLE BEARING CAPACITY NOT LESS THAN 25 T/m^2
4. COROSINE PROTECTION OF STEEL PIPE OR GARDRAIL
   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	MH-ST-02
2.	EMERGENCY VALVE CHAMBER PLAN SECTIONS AND DETAILS	MH-ST-07
3.	SEDIMENT VALVE CHAMBER PLAN SECTIONS AND DETAILS	MH-ST-09

0 1 2 3 4 5 6 7 8

SCALE 1:100 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
SURGE TANK
GENERAL LAY-OUT

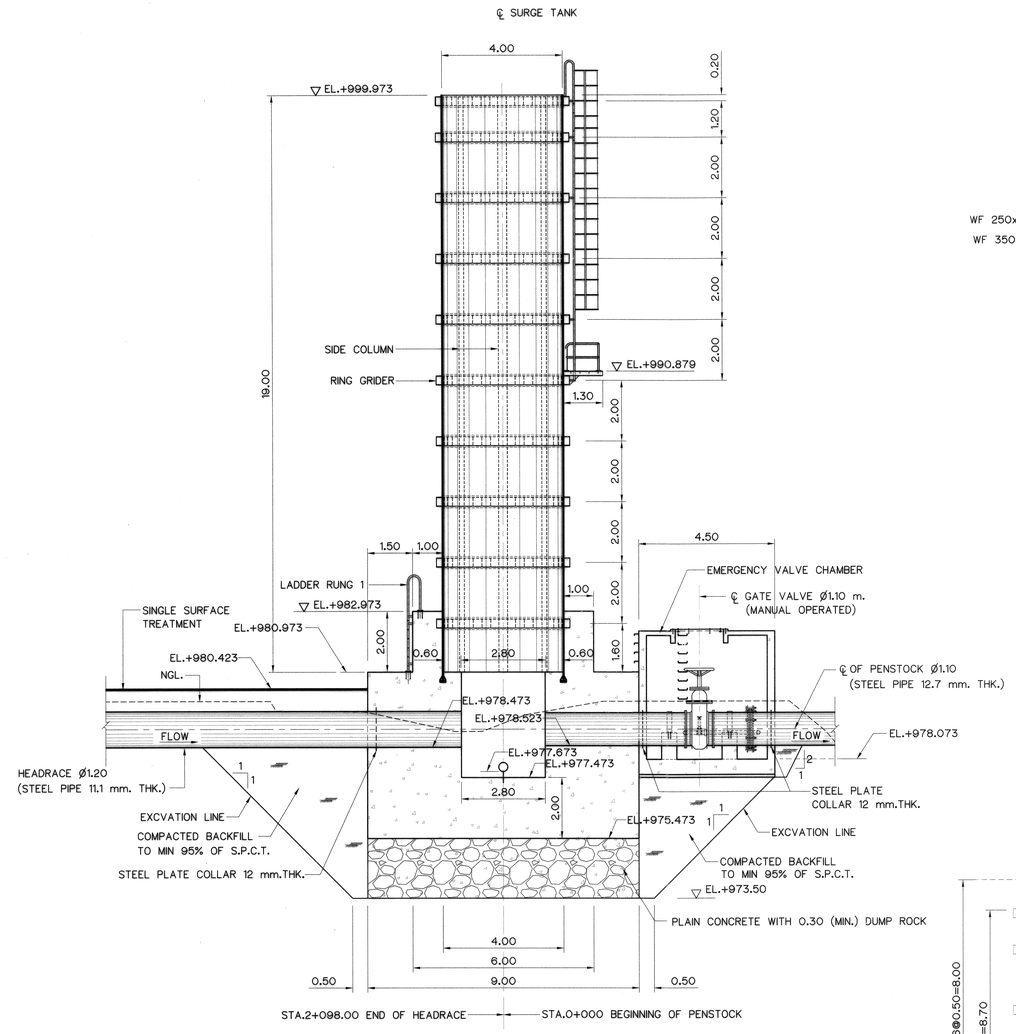
P&C MANAGEMENT CO.,LTD.

Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

DESIGNED	วิชิต.64624	วิ.6226	SUBMITTED
DRAWN			RECOMMENDED
CHECKED	วิ.6226		APPROVED
PROJECT MANAGER		08/03/2564 DATE	

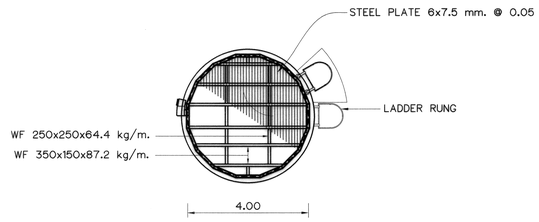
DRAWING NO. MH-ST-01

SHEET NO. 62 OF 130



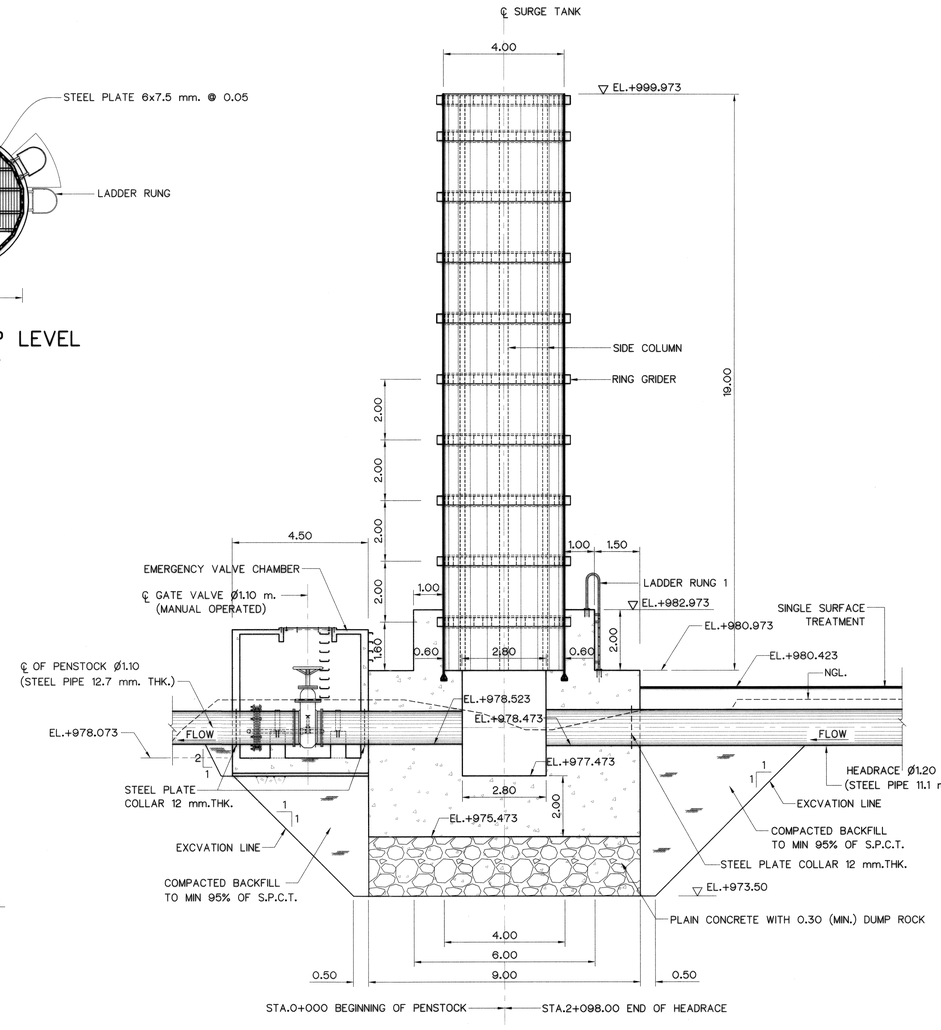
SECTION A–A

SCALE 1:100



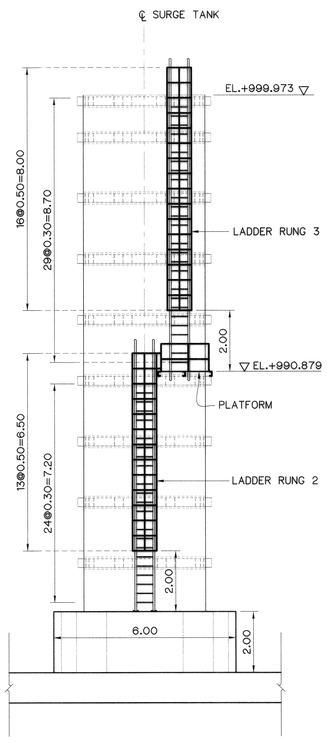
PLAN ON TOP LEVEL

SCALE 1:100



SECTION B–B

SCALE 1:100



LADDER RUNG 2&3 ELEVATION

SCALE 1:100

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS, UNLESS OTHERWIRE SHOWN.
2. STEEL PIPE SHELL CONFORM TO JIS G 3101 SS34
3. BASE OF CONCRETE FOUNDATION SHALL BE DETERMINED IN FIELD BY EMBEDING TO STABLE ROCK FOUNDATION WITH A ALLOWABLE BEARING CAPACITY NOT LESS THAN 25 T/m^2
4. COROSINE PROTECTION OF STEEL PIPE OR GARDRAIL 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 GENERAL LAY-OUT	MH-ST-01
2.	LADDER RUNG DETAILS	MH-ST-03
3.	PLATFORM DETAILS	MH-ST-04
4.	RING GRIDER AND HANDRAIL	MH-ST-05

0 1 2 3 4 5 6 7 8

SCALE 1:100 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

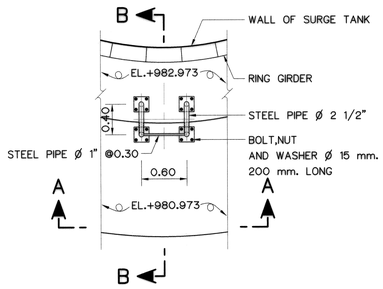
MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE

SURGE TANK

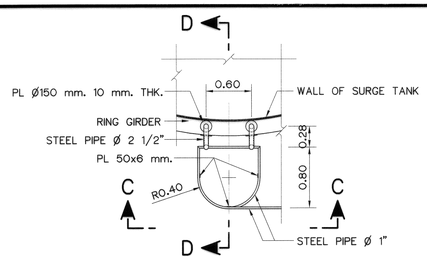
SECTIONS

P&C MANAGEMENT CO.,LTD.	Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY
	REVIEWED
DESIGNED วิชัย 28.6.64 วิชัย 28.6.26	SUBMITTED
DRAWN	RECOMMENDED
CHECKED 28.6.26	APPROVED
PROJECT MANAGER 08/03/2559 DATE	DRAWING NO. MH-ST-02 / SHEET NO. 63 OF 130



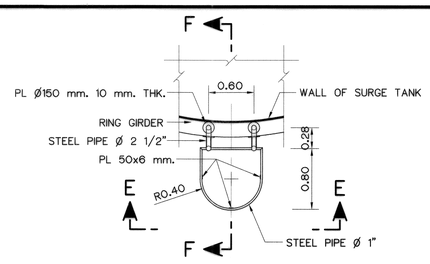
PLAN LADDER RUNG 1

SCALE 1:40



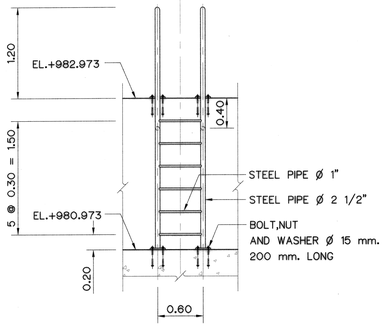
PLAN LADDER RUNG 2

SCALE 1:40



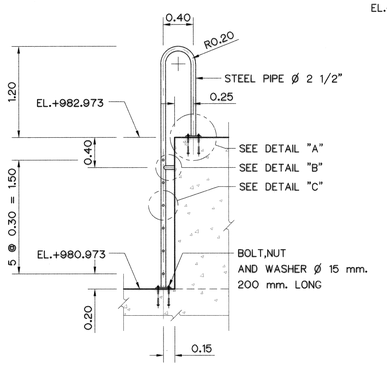
PLAN LADDER RUNG 3

SCALE 1:40



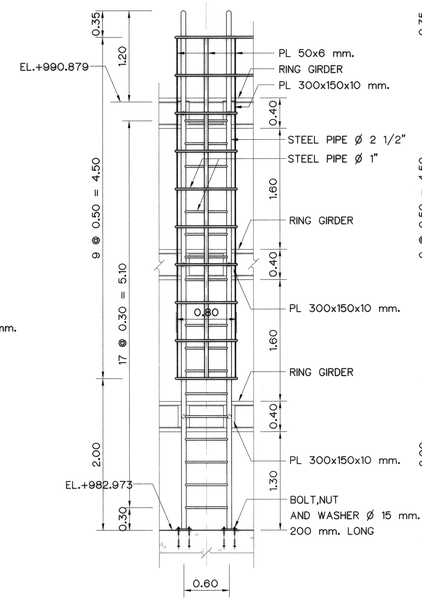
SECTION A–A

SCALE 1:40



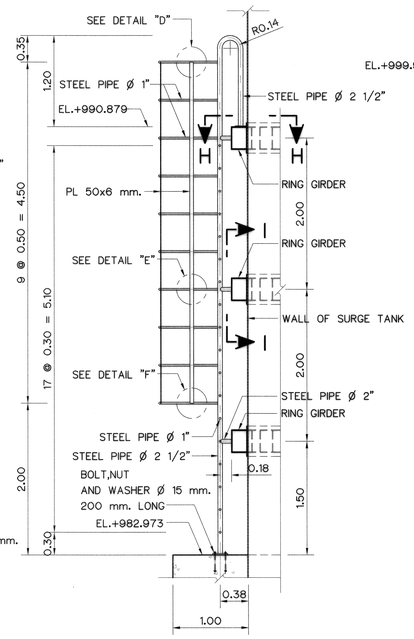
SECTION B–B

SCALE 1:40



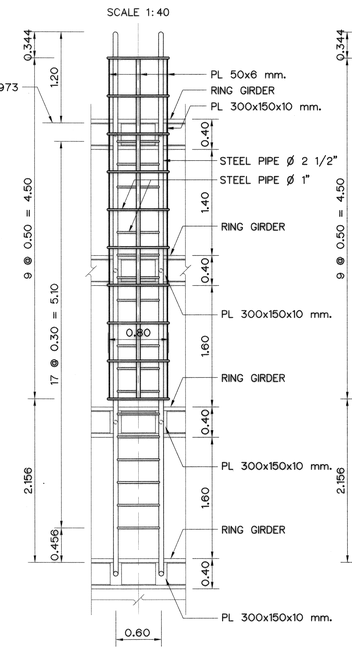
SECTION C–C

SCALE 1:40



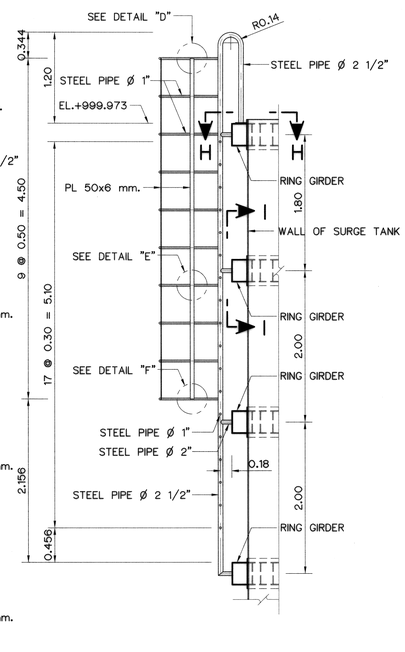
SECTION D–D

SCALE 1:40



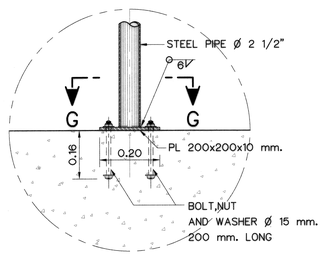
SECTION E–E

SCALE 1:40



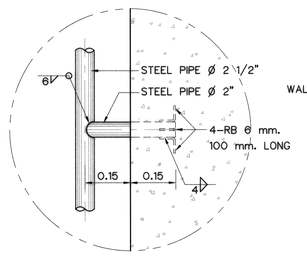
SECTION F–F

SCALE 1:40



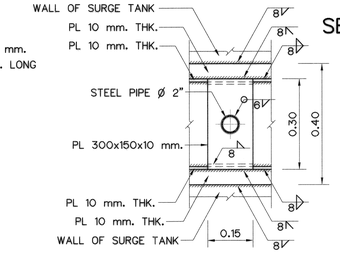
DETAIL "A"

SCALE 1:25



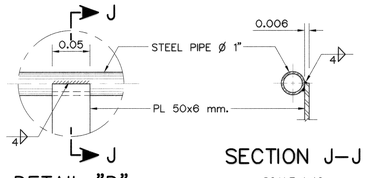
DETAIL "B"

SCALE 1:25



SECTION I–I

SCALE 1:25

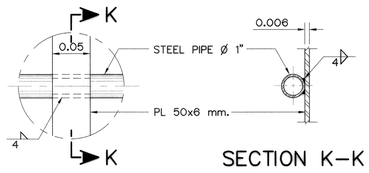


DETAIL "D"

SCALE 1:10

SECTION J–J

SCALE 1:10

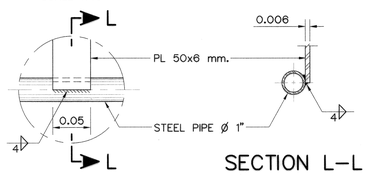


DETAIL "E"

SCALE 1:10

SECTION K–K

SCALE 1:10

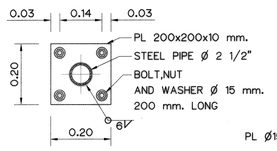


DETAIL "F"

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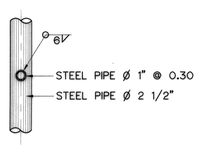
SECTION L–L

SCALE 1:10



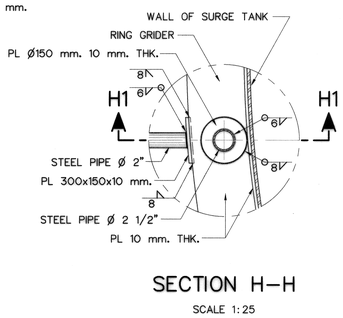
SECTION G–G

SCALE 1:25



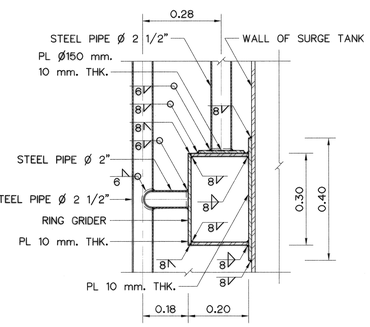
DETAIL "C"

SCALE 1:25



SECTION H–H

SCALE 1:25



SECTION H1–H1

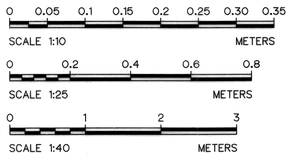
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NOTE :

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SHOWN
2. STEEL PIPE CONFORM TO JIS G 3101 SS34
3. COROSION PROTECTION OF STEEL PIPE OR GARDRAIL IS WARNED TO STRICTLY FOLLOW GALVANIZE SPECIFICATION
4. STEEL TANK , GIRDER AND STIFFENEL SHALL CONFORM TO JIS G 3101 SS34

REFERENCE DRAWING :

1.	SURGE TANK GENERAL LAY–OUT	MH–ST–01
2.	SURGE TANK SECTIONS	MH–ST–02
3.	SURGE TANK LADDER RUNG DETAILS 2	MH–ST–04
4.	SURGE TANK RING GRIDER AND RAILING FALL DETAILS	MH–ST–05



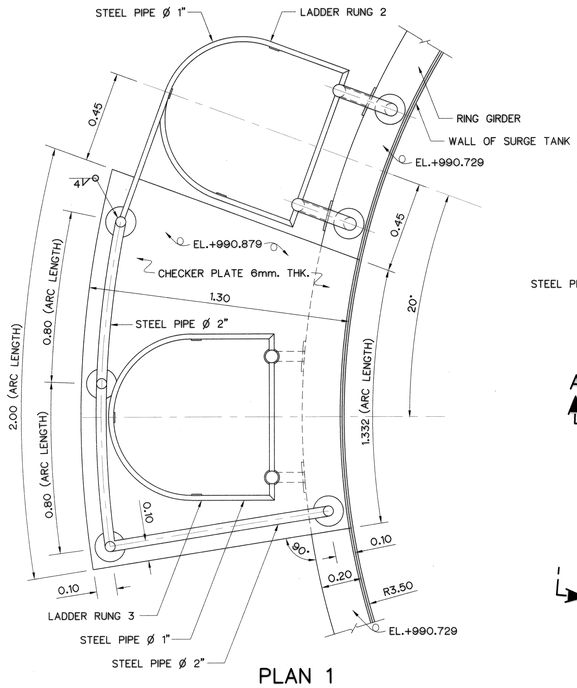
NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
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	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

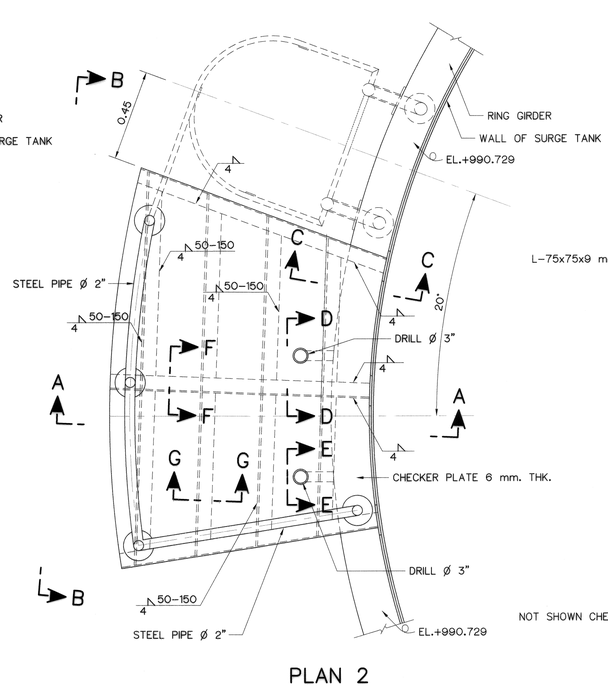
CIVIL WORKS AND TRANSMISSION LINE
SURGE TANK
LADDER RUNG DETAILS

P&C MANAGEMENT CO.,LTD.	Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY
DESIGNED สิริ.64624	REVIEWED
DRAWN	SUBMITTED
CHECKED สิริ.6226	RECOMMENDED
PROJECT MANAGER 08/03/2559 DATE	APPROVED สิริ.6226
DRAWING NO. MH–ST–03	SHEET NO. 64 OF 130



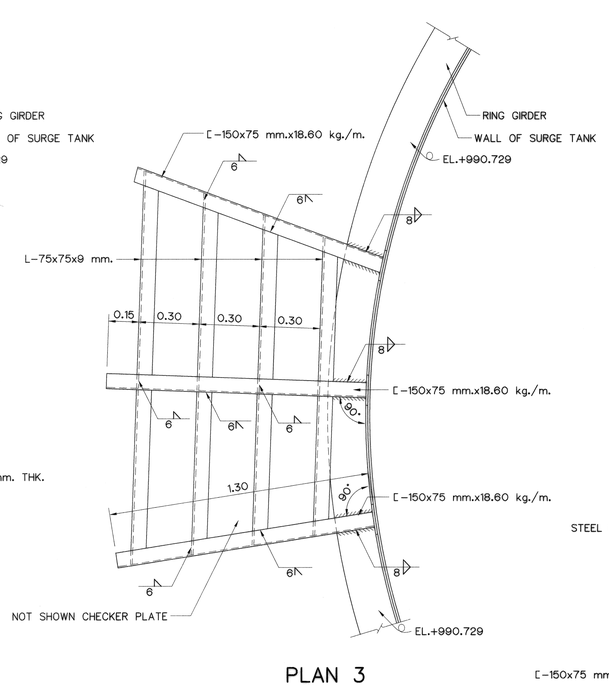
PLAN 1

SCALE 1:15



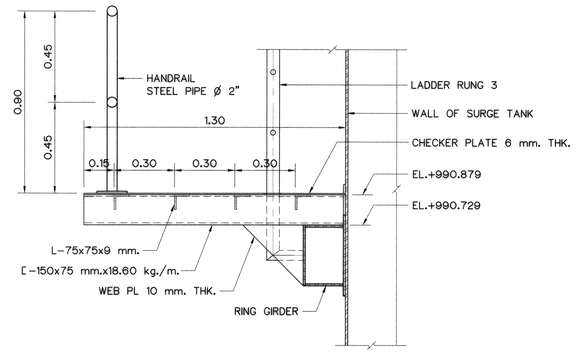
PLAN 2

SCALE 1:15



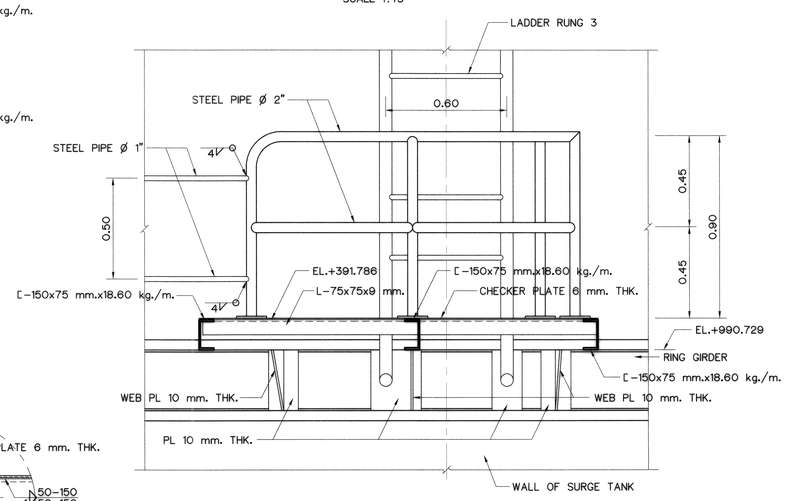
PLAN 3

SCALE 1:15



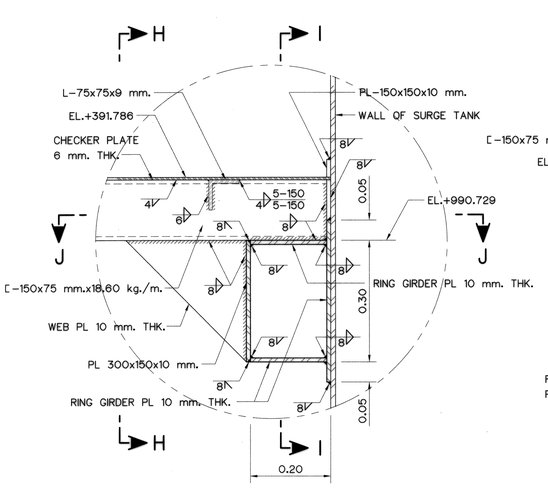
SECTION A-A

SCALE 1:15



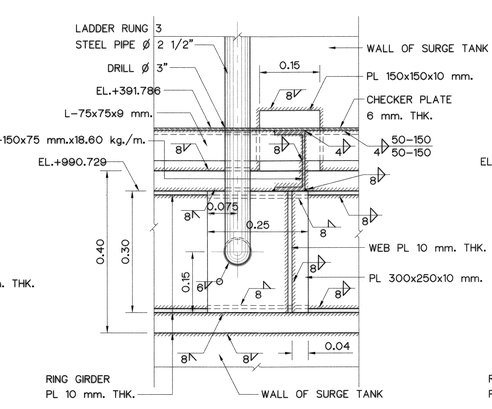
SECTION B-B

SCALE 1:15



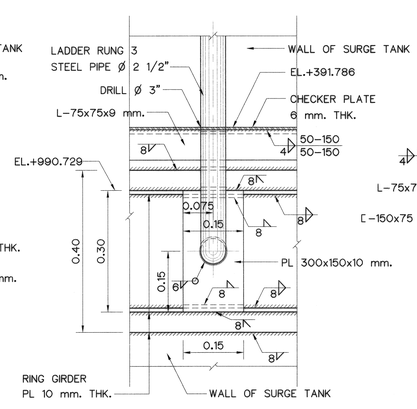
SECTION C-C

SCALE 1:7.5



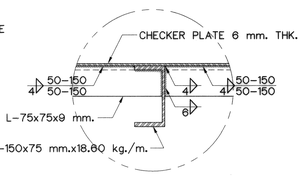
SECTION D-D

SCALE 1:7.5



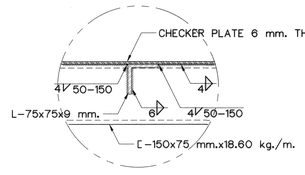
SECTION E-E

SCALE 1:7.5



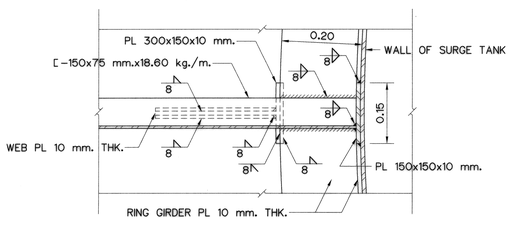
SECTION F-F

SCALE 1:7.5



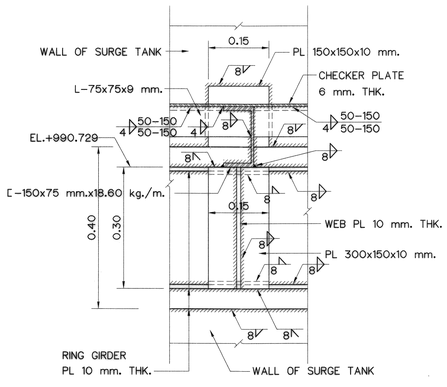
SECTION G-G

SCALE 1:7.5



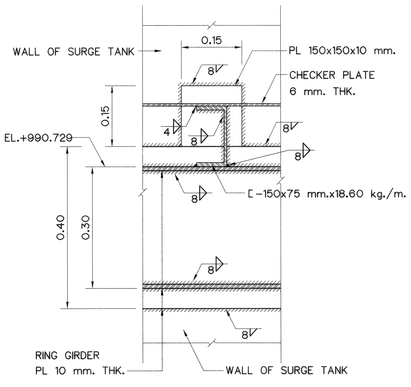
SECTION J-J

SCALE 1:7.5



SECTION H-H

SCALE 1:7.5



SECTION I-I

SCALE 1:7.5

NOTE :

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SHOWN
2. STEEL PIPE CONFORM TO JIS G 3101 SS34
3. COROSION PROTECTION OF STEEL PIPE OR GARDRAIL IS WARNED TO STRICTLY FOLLOW GALVANIZE SPECIFICATION
4. STEEL TANK , GIRDER AND STIFFENEL SHALL CONFORM TO JIS G 3101 SS34

REFERENCE DRAWING :

1.	SURGE TANK GENERAL LAY-OUT	MH-ST-01
2.	SURGE TANK SECTIONS	MH-ST-02
3.	SURGE TANK LADDER RUNG DETAILS 1	MH-ST-03
4	SURGE TANK RING GRIDER AND RAILING FALL DETAILS	MH-ST-05

0 0.075 0.15 0.30 0.45 0.60
SCALE 1:7.5 METERS

0 0.15 0.3 0.6 0.9 1.2
SCALE 1:15 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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Department of Alternative Energy Development and Efficiency
MINISTRY OF ENERGY

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE

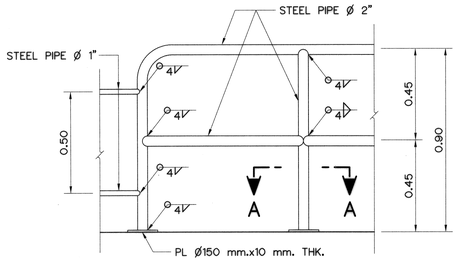
SURGE TANK
PLATFORM DETAILS

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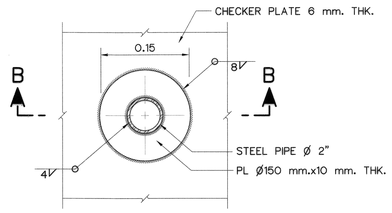
DESIGNED	วิศ.64624	วิศ.6226	REVIEWED
DRAWN			SUBMITTED
CHECKED	วิศ.6226		RECOMMENDED
PROJECT MANAGER	09/03/2559 DATE		APPROVED

DRAWING NO. MH-ST-04
SHEET NO. 65 OF 130



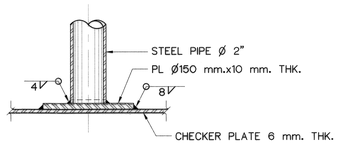
GUARDRAIL DETAILS

SCALE 1:15



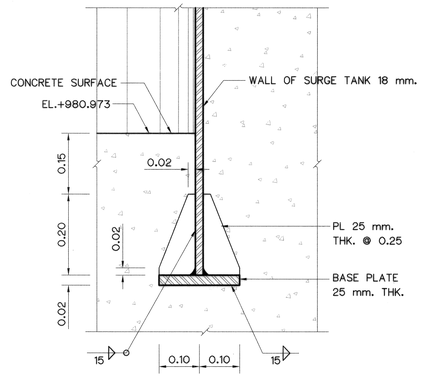
SECTION A–A

SCALE 1:5



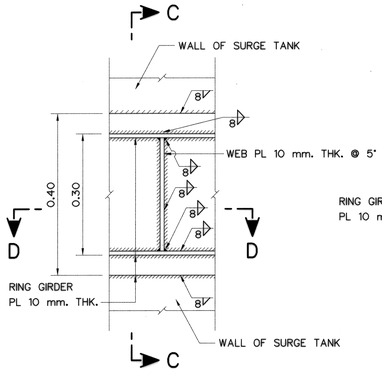
SECTION B–B

SCALE 1:5



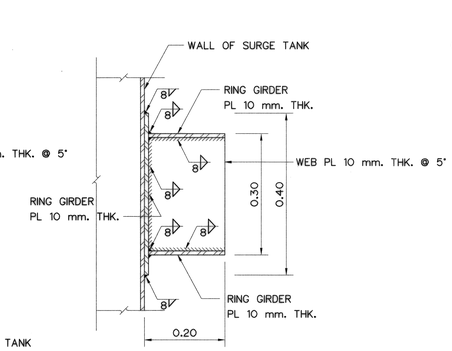
DETAIL "A"

SCALE 1:10



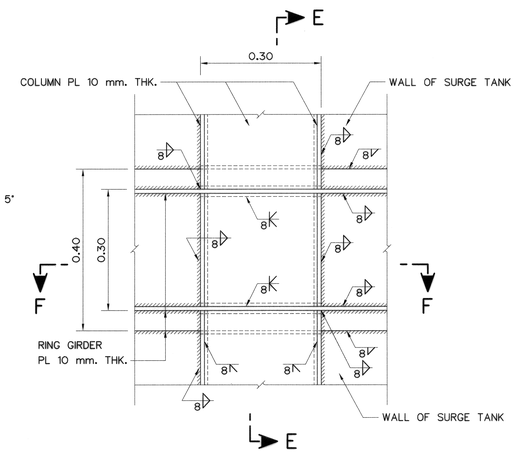
SIDE VIEW OF RING GIRDER

SCALE 1:7.5



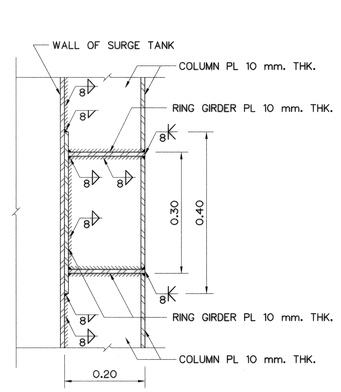
SECTION C–C

SCALE 1:7.5



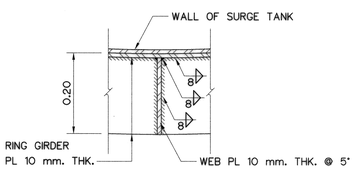
SIDE VIEW OF COLUMN AND RING GIRDER

SCALE 1:7.5



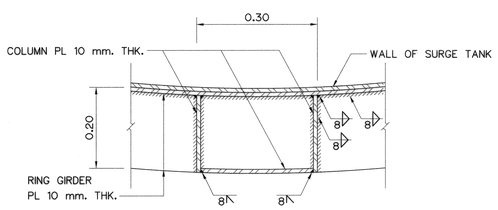
SECTION E–E

SCALE 1:7.5



SECTION D–D

SCALE 1:7.5



SECTION F–F

SCALE 1:7.5

RING GRIDER DETAILS

NOTE :

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SHOWN
2. STEEL PIPE CONFORM TO JIS G 3101 SS34
3. COROSION PROTECTION OF STEEL PIPE OR GARDRAIL IS WARNED TO STRICTLY FOLLOW GALVANIZE SPECIFICATION
4. STEEL TANK , GIRDER AND STIFFENEL SHALL CONFORM TO JIS G 3101 SS34

REFERENCE DRAWING :

1.	SURGE TANK GENERAL LAY–OUT	MH–ST–01
2.	SURGE TANK SECTIONS	MH–ST–02
3.	SURGE TANK LADDER RUNG DETAILS 1	MH–ST–03
4	SURGE TANK LADDER RUNG DETAILS 2	MH–ST–04

0 0.05 0.1 0.2 0.3 0.4
SCALE 1:5 METERS

0 0.075 0.15 0.30 0.45 0.60
SCALE 1:7.5 METERS

0 0.1 0.2 0.4 0.6 0.8
SCALE 1:10 METERS

0 0.15 0.3 0.6 0.9 1.2
SCALE 1:15 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
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	CONSULTANTS		DEDE	

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Department of Alternative Energy Development and Efficiency
MINISTRY OF ENERGY

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
SURGE TANK
RING GRIDER AND HANDRAIL

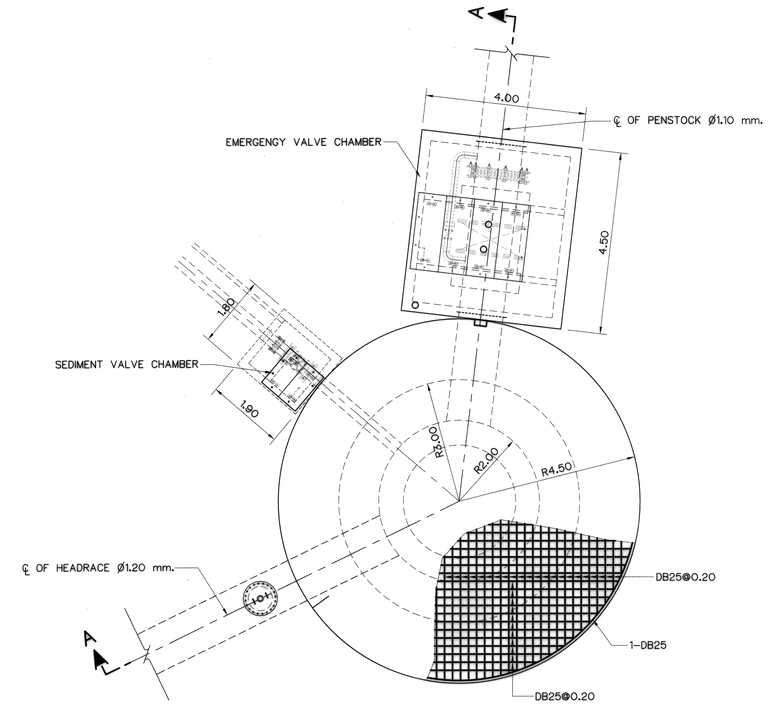
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MINISTRY OF ENERGY

DESIGNED	วิ.64624	วิ.6226
DRAWN		
CHECKED		วิ.6226
PROJECT MANAGER		08/03/2564 DATE

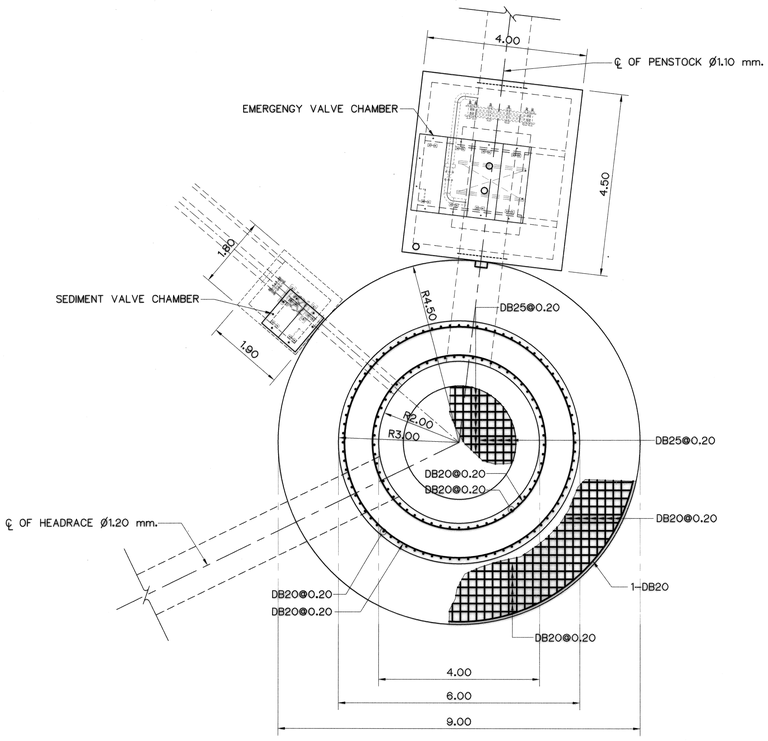
REVIEWED
SUBMITTED
RECOMMENDED
APPROVED

DRAWING NO. MH–ST–05
SHEET NO. 66 OF 130



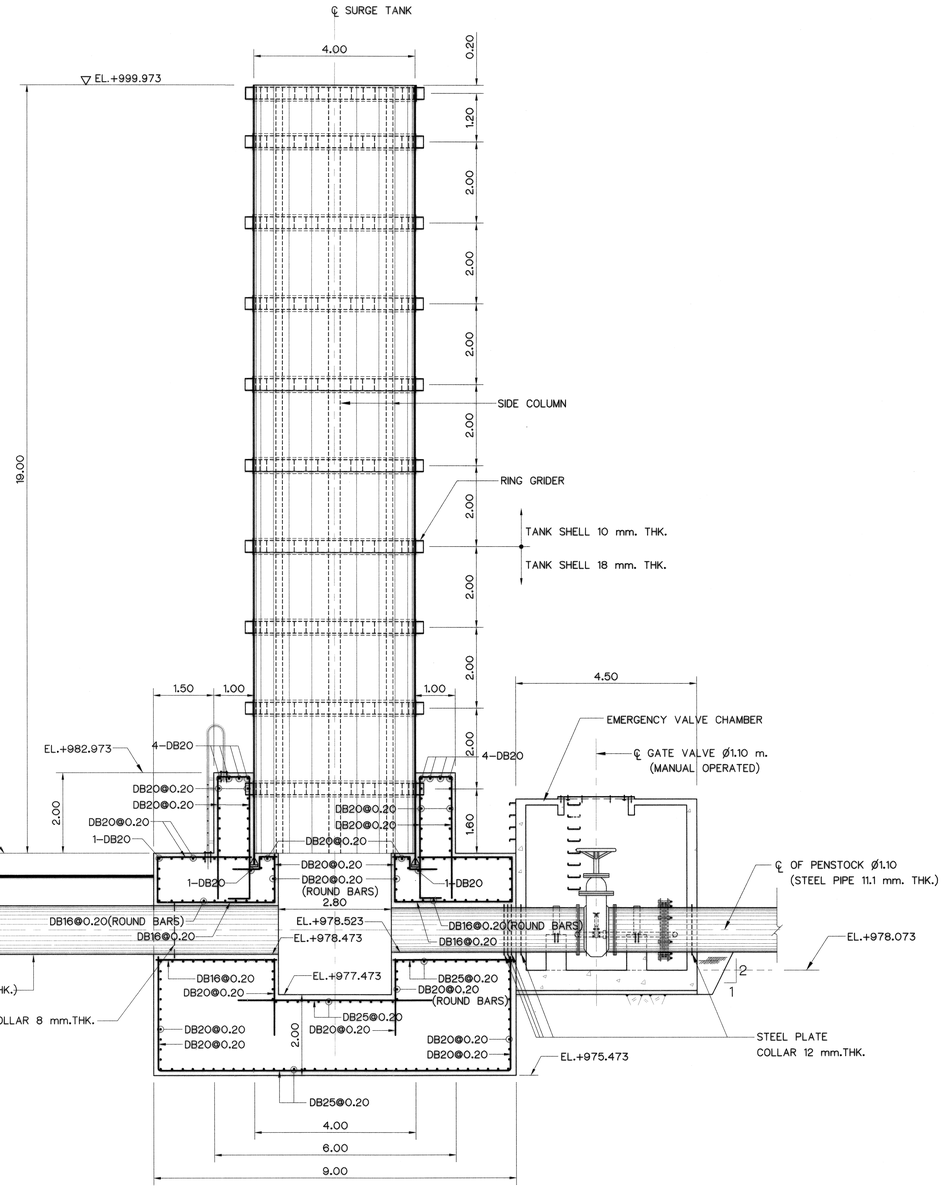
LOWER STEEL PLAN

SCALE 1:75



UPPER STEEL PLAN

SCALE 1:75



SECTION A–A

SCALE 1:75

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SHOWN
2. STEEL PIPE CONFORM TO JIS G 3101 SS34
3. BASE OF CONCRETE FOUNDATION SHALL BE DETERMINED IN FIELD BY EMBEDING TO STABLE ROCK FOUNDATION WITH A ALLOWABLE BEARING CAPACITY NOT LESS THAN 25 T/m^2
4. COROSINE PROTECTION OF STEEL PIPE OR GARDRAIL 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, GENERAL LAY-OUT	MH-ST-01
2.	SURGE TANK, PLAN AND SECTIONS	MH-ST-02

0 0.5 1 1.5 2
SCALE 1:25 METERS

0 1 2 3 4 5 6
SCALE 1:75 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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Department of Alternative Energy Development and Efficiency
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MAE HAT HYDROPOWER PROJECT

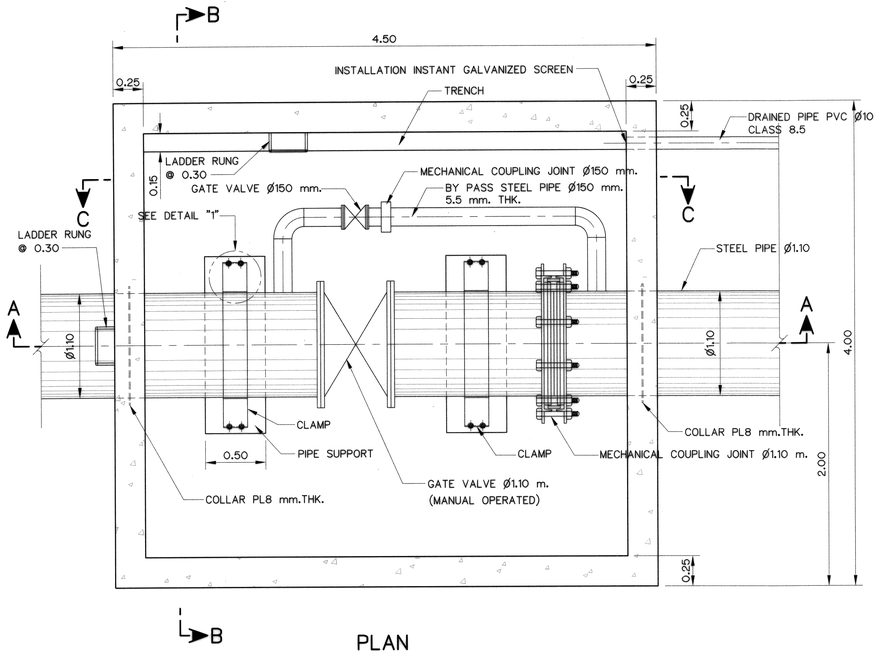
CIVIL WORKS AND TRANSMISSION LINE
SURGE TANK
REINFORCEMENT DETAILS

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MINISTRY OF ENERGY

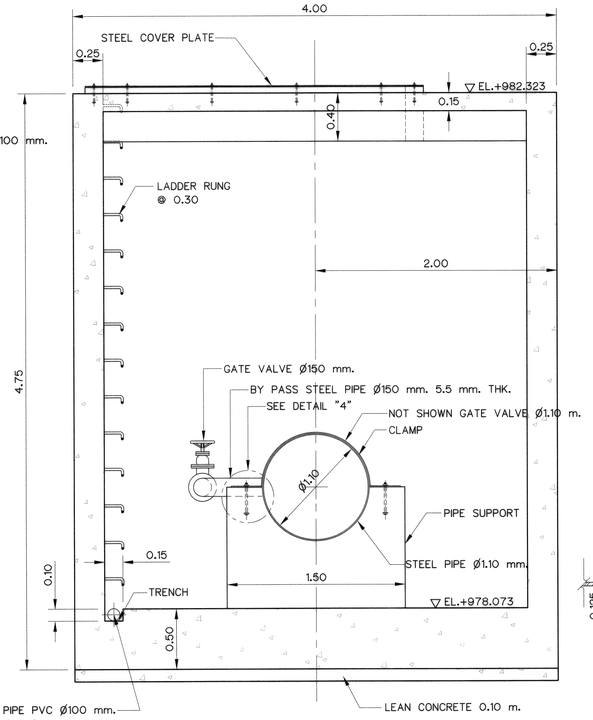
DESIGNED	วิศ.64624	REVIEWED	
DRAWN		SUBMITTED	
CHECKED	วิศ.6226	RECOMMENDED	
PROJECT MANAGER	09/02/2539 DATE	APPROVED	

DRAWING NO. MH-ST-06
SHEET NO. 67 OF 130



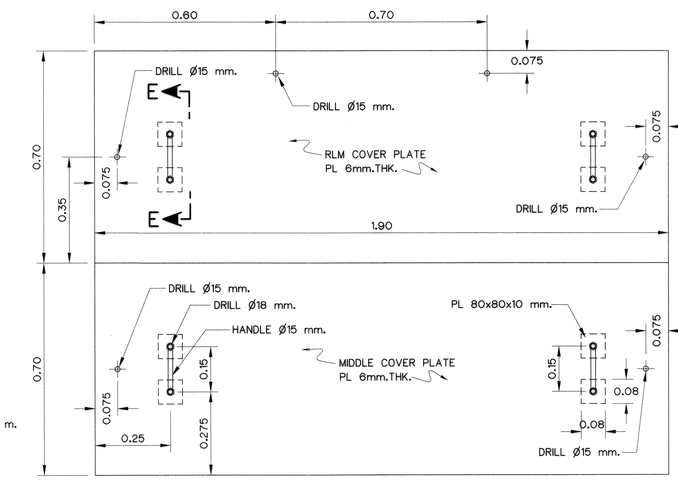
PLAN

SCALE 1:25



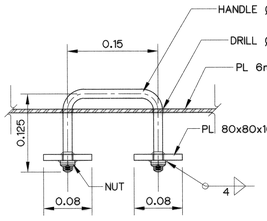
SECTION B–B

SCALE 1:25



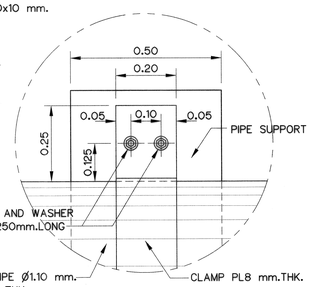
PLAN STEEL COVER PLATE

SCALE 1:10



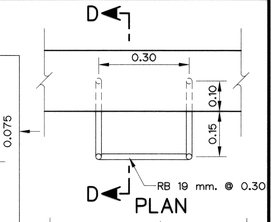
SECTION E–E

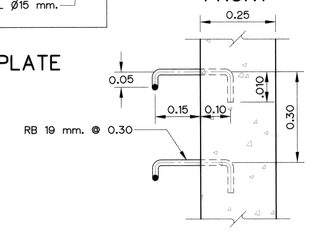
SCALE 1:5



SEE DETAIL "1"

SCALE 1:10

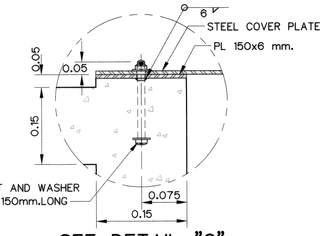




SECTION D–D

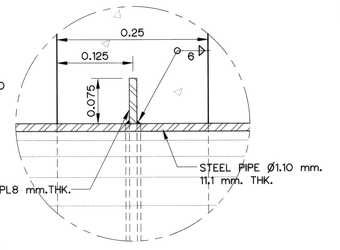
DETAIL OF LADDER RUNG

SCALE 1:10



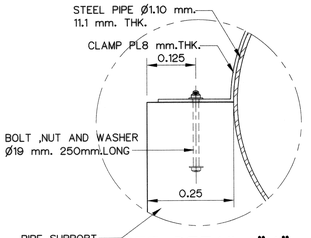
SEE DETAIL "2"

SCALE 1:5



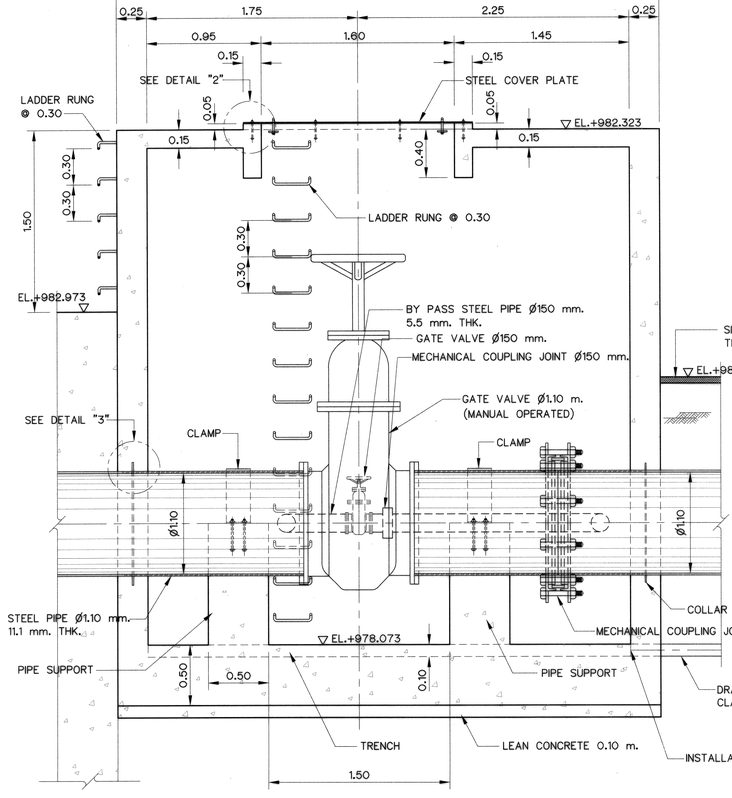
SEE DETAIL "3"

SCALE 1:10



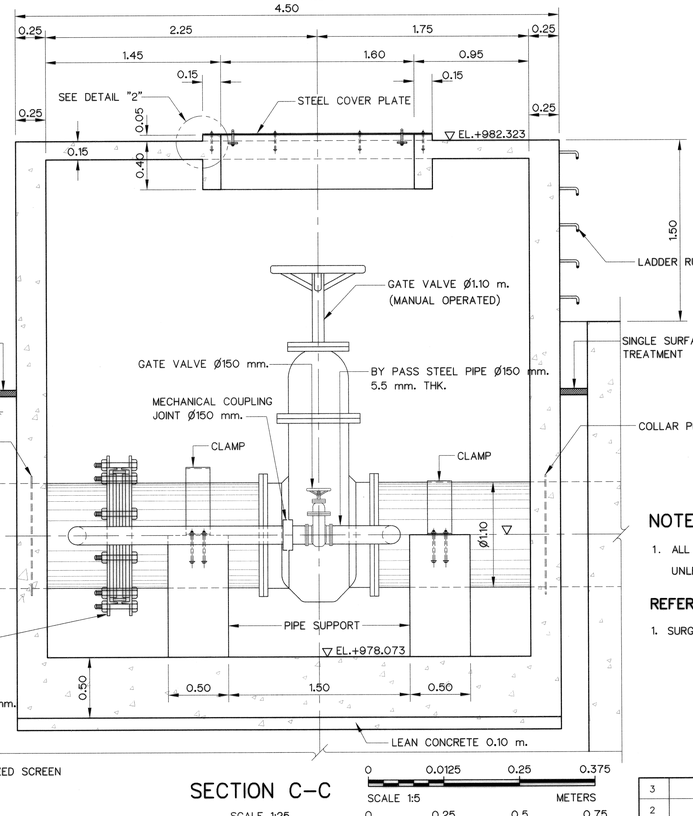
SEE DETAIL "4"

SCALE 1:10



SECTION A–A

SCALE 1:25



SECTION C–C

SCALE 1:25

0 0.0125 0.25 0.375
SCALE 1:5 METERS

0 0.25 0.5 0.75
SCALE 1:10 METERS

0 0.5 1 1.5 2
SCALE 1:25 METERS

NOTE :

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SHOWN

REFERENCE DRAWING :

1. SURGE TANK, GENERAL LAY–OUT MH–ST–01

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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MINISTRY OF ENERGY

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE

SURGE TANK

EMERGENCY VALVE CHAMBER PLAN SECTIONS AND DETAILS

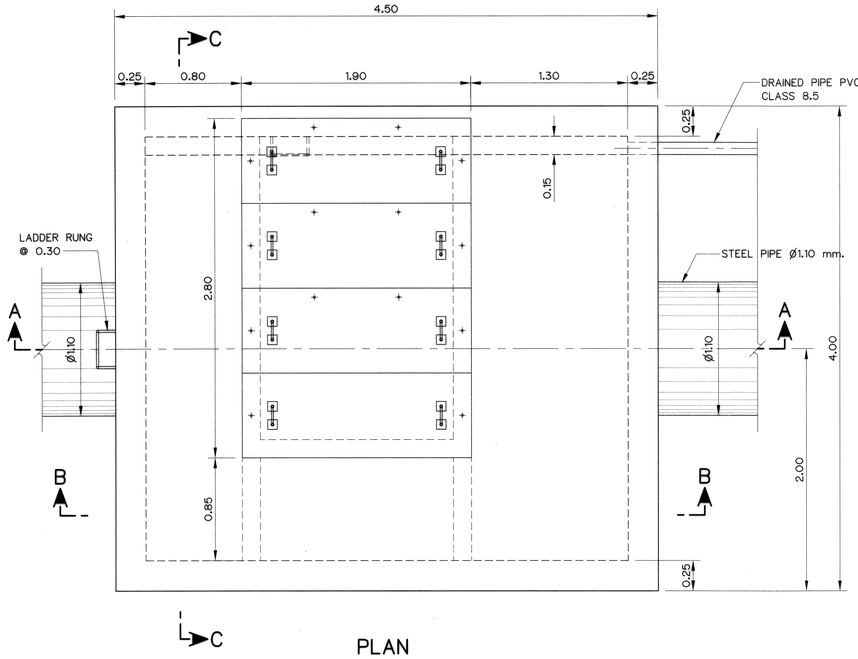
P&C MANAGEMENT CO.,LTD.

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DESIGNED	สมิ.64624	REVIEWED	
DRAWN		SUBMITTED	
CHECKED	สมิ.6226	RECOMMENDED	
PROJECT MANAGER	08/03/2559 DATE	APPROVED	

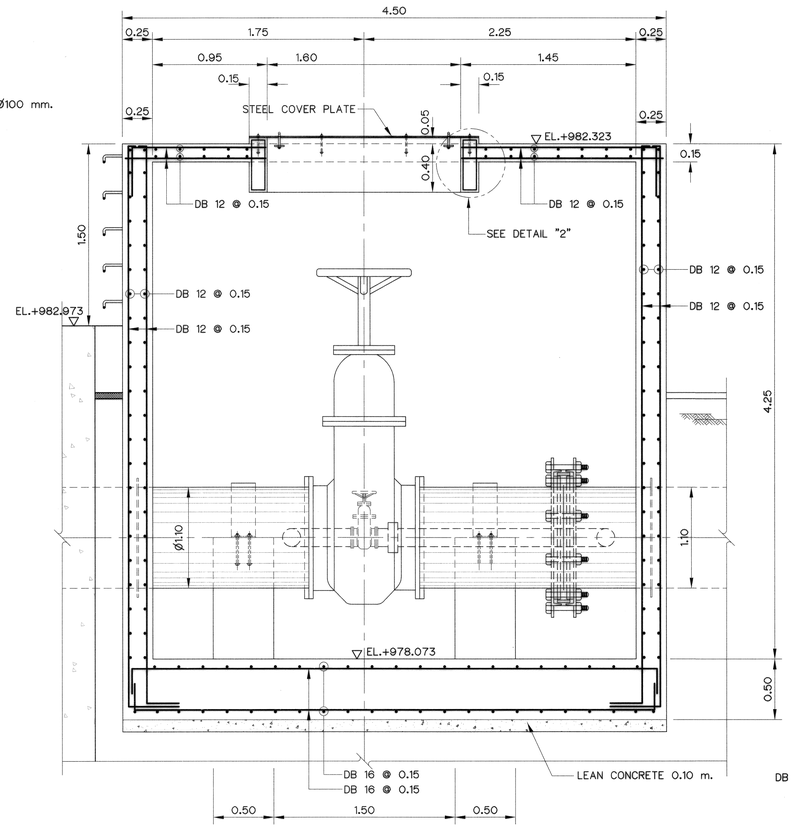
DRAWING NO. MH–ST–07

SHEET NO. 68 OF 130



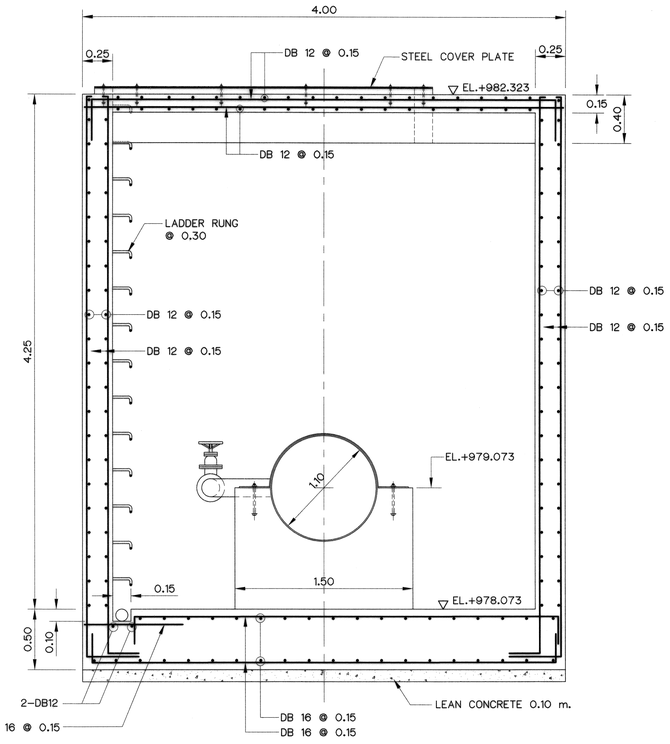
PLAN

SCALE 1:25



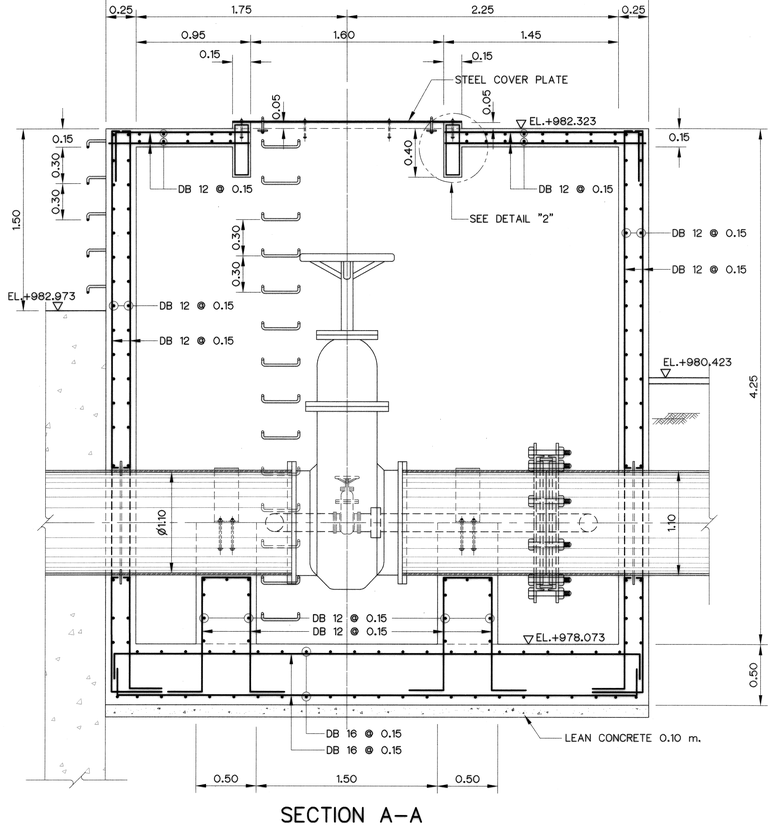
SECTION B–B

SCALE 1:25



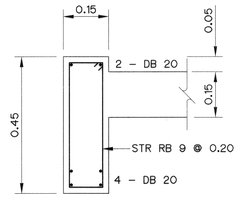
SECTION C–C

SCALE 1:25



SECTION A–A

SCALE 1:25



DETAIL "2"

SCALE 1:10

0 0.25 0.5 0.75

SCALE 1:10 METERS

0 0.5 1 1.5 2

SCALE 1:25 METERS

NOTE :

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SHOWN

REFERENCE DRAWING :

1. EMERGENCY VALVE CHAMBER PLAN SECTIONS AND DETAILS MH-ST-07

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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Department of Alternative Energy Development and Efficiency
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MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE

SURGE TANK

EMERGENCY VALVE CHAMBER REINFORCEMENT DETAILS

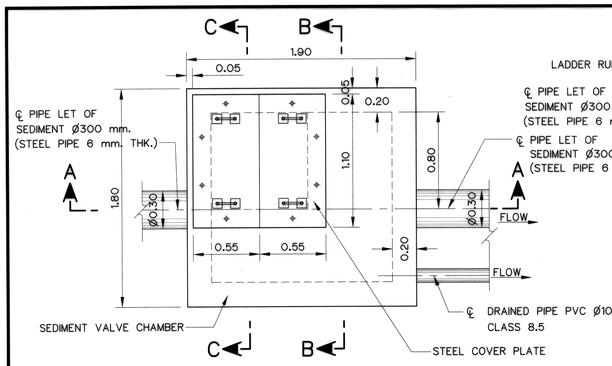
P&C MANAGEMENT CO.,LTD.

Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

DESIGNED	วิชิต.64624	วิชิต.6226	REVIEWED
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CHECKED		วิชิต.6226	RECOMMENDED
PROJECT MANAGER		08/03/2559 DATE	APPROVED

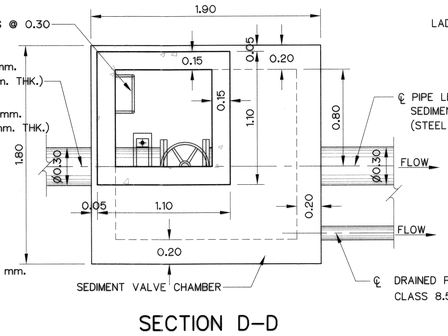
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SHEET NO. 69 OF 130



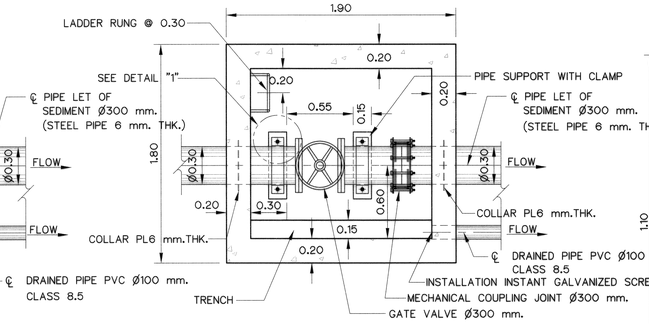
PLAN

SCALE 1:25



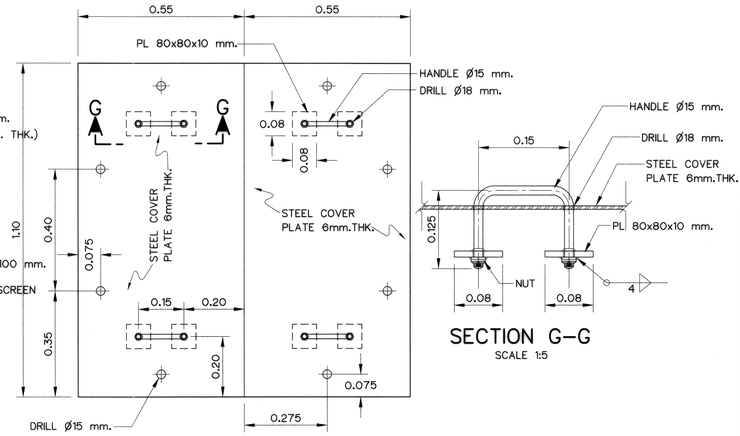
SECTION D–D

SCALE 1:25



SECTION E–E

SCALE 1:25

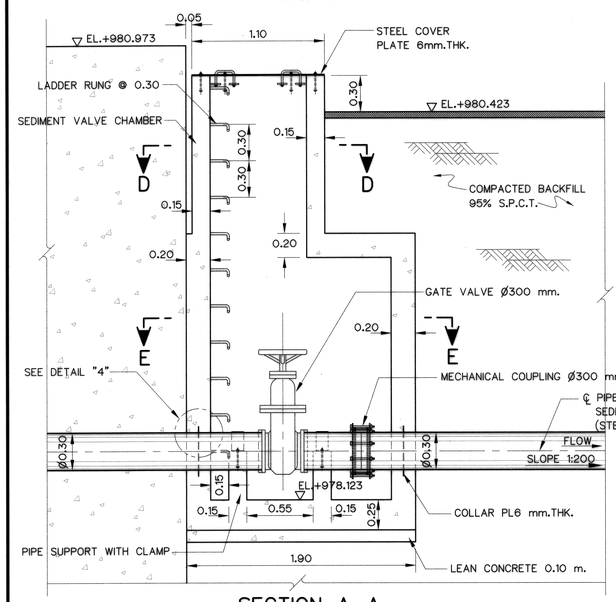


PLAN STEEL COVER PLATE

SCALE 1:10

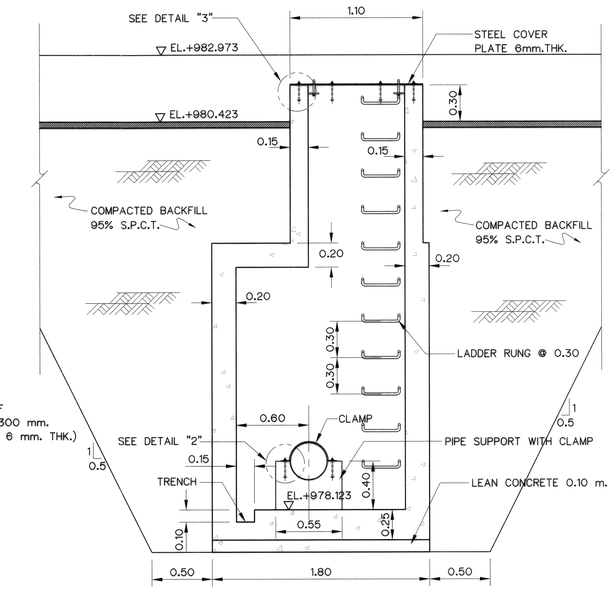
SECTION G–G

SCALE 1:5



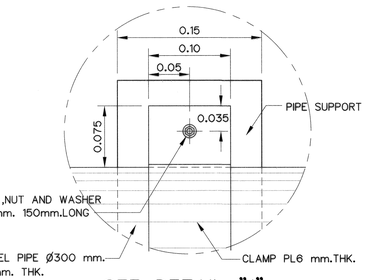
SECTION A–A

SCALE 1:25



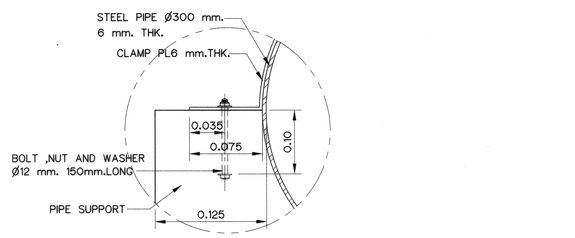
SECTION C–C

SCALE 1:25



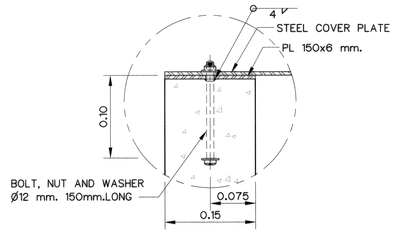
SEE DETAIL "1"

NOT TO SCALE



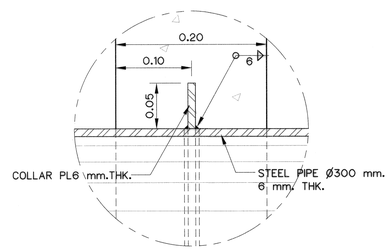
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NOT TO SCALE



SEE DETAIL "3"

NOT TO SCALE



SEE DETAIL "4"

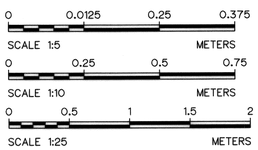
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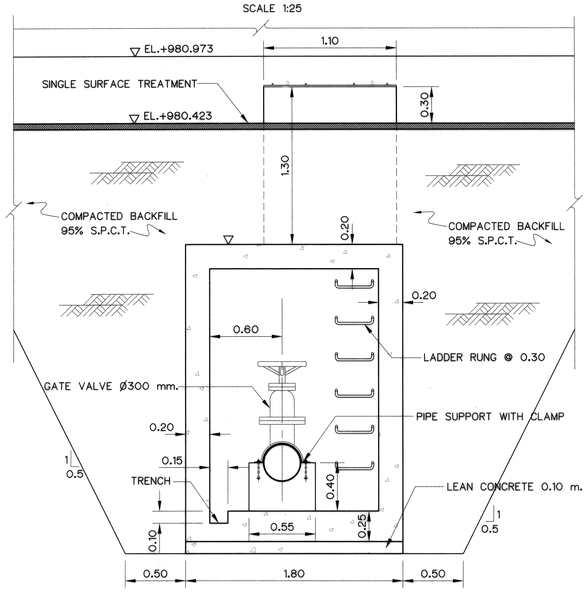
NOTE :

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SHOWN

REFERENCE DRAWING :

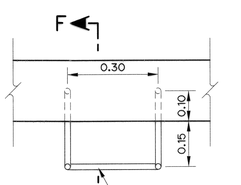
1. SURGE TANK, GENERAL LAY-OUT MH-ST-01

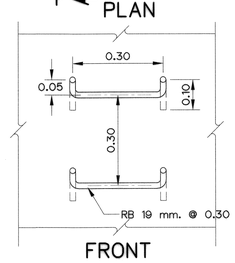




SECTION B–B

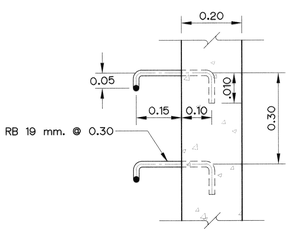
SCALE 1:25





DETAIL OF LADDER RUNG

SCALE 1:10



SECTION F–F

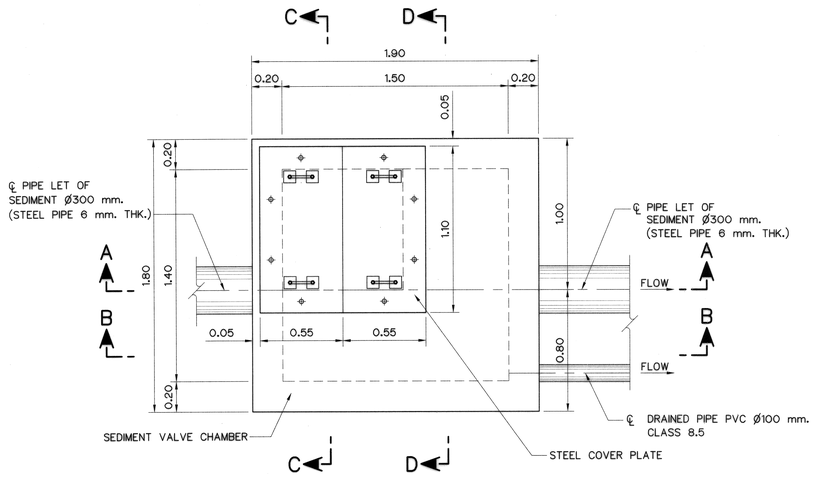
NO.	DATE	REVISIONS	CHECKED	APPROVED
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	CONSULTANTS		DEDE	

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MINISTRY OF ENERGY

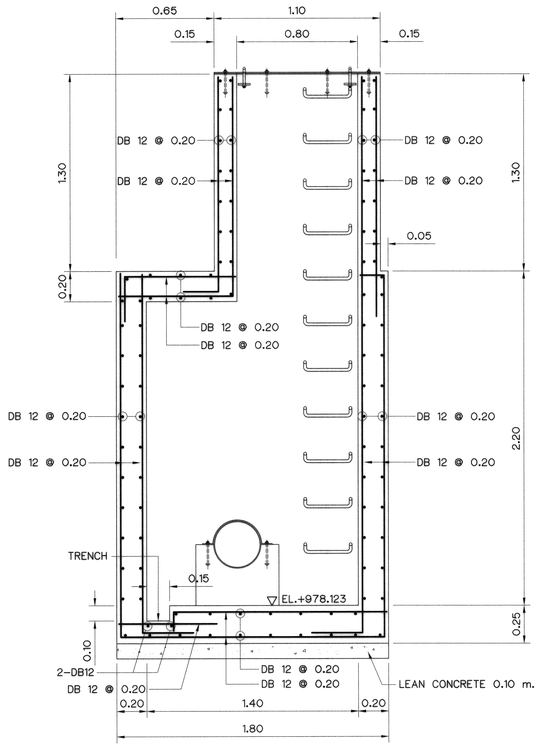
MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
SURGE TANK
SEDIMENT VALVE CHAMBER PLAN SECTIONS AND DETAILS

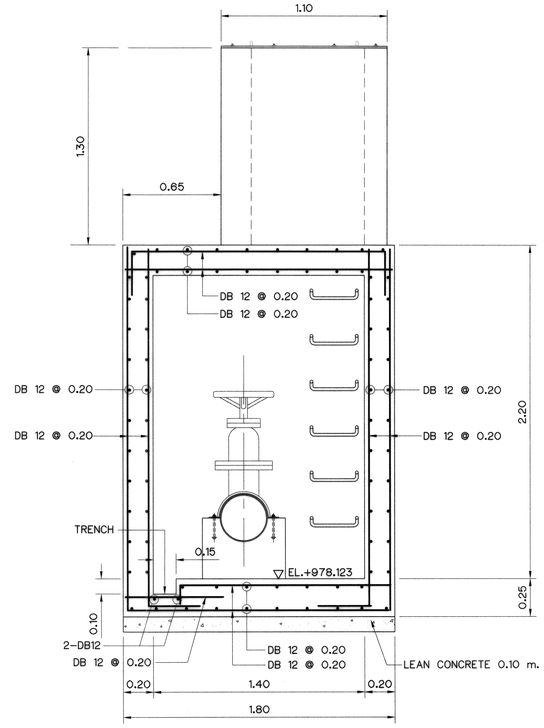
P&C MANAGEMENT CO.,LTD.	Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY
DESIGNED ณัฐ.64624 ณัฐ.6226	REVIEWED
DRAWN	SUBMITTED
CHECKED ณัฐ.6226	RECOMMENDED
PROJECT MANAGER 08/03/2559 DATE	APPROVED P. Hansali
	DRAWING NO. MH-ST-09
	SHEET NO. 70 OF 130



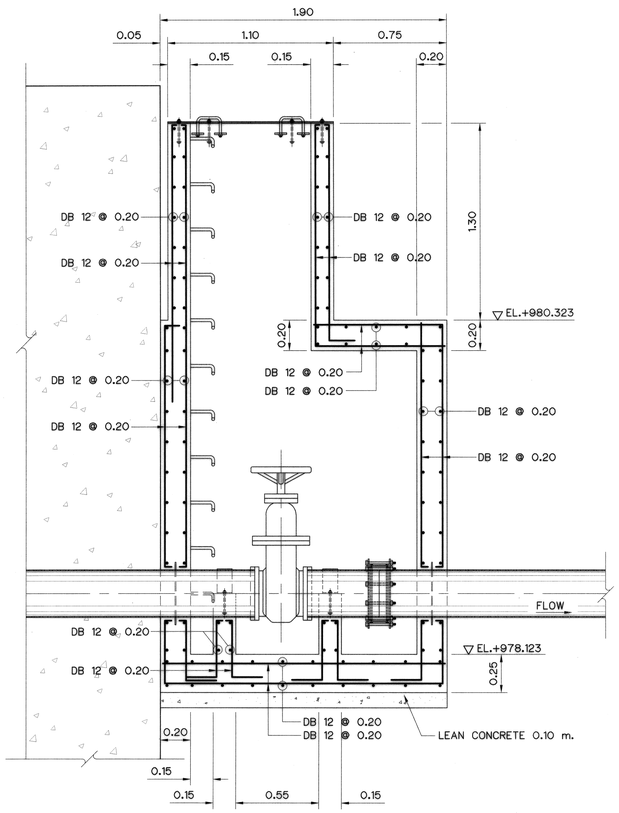
PLAN
SCALE 1:20



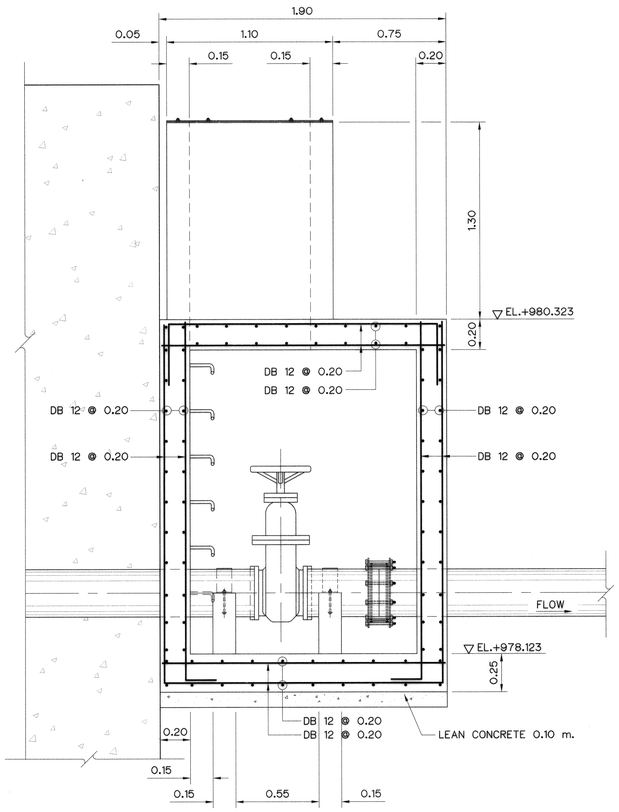
SECTION C–C
SCALE 1:20



SECTION D–D
SCALE 1:20



SECTION A–A
SCALE 1:20



SECTION B–B
SCALE 1:20

NOTE :

1. ALL DIMENSIONS AND ELEVATIONS ARE IN METERS, UNLESS OTHERWISE SHOWN

REFERENCE DRAWING :

1. SEDIMENT VALVE CHAMBER PLAN SECTIONS AND DETAILS MH–ST–09

0 0.5 1 1.5
SCALE 1:20 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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Department of Alternative Energy Development and Efficiency
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MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
SURGE TANK
SEDIMENT VALVE CHAMBER REINFORCEMENT DETAILS

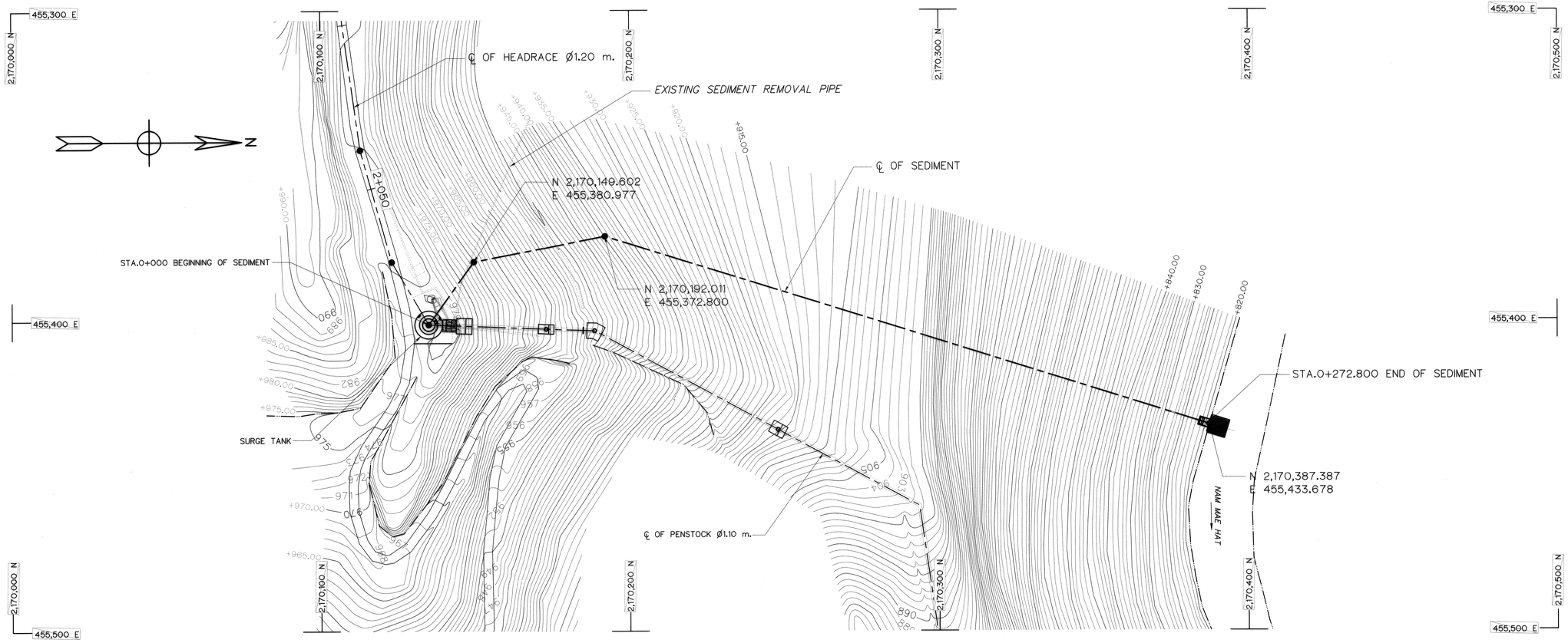
P&C MANAGEMENT CO.,LTD.

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MINISTRY OF ENERGY

DESIGNED นิติ.64624 สมิ.6226
DRAWN
CHECKED สมิ.6226
PROJECT MANAGER 01/03/2564 DATE

REVIEWED
SUBMITTED
RECOMMENDED
APPROVED

DRAWING NO. MH–ST–10
SHEET NO. 71 OF 130



PLAN
SCALE 1:750

NOTES :

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

REFERENCE DRAWINGS :

1. SURGE TANK SEDIMENT OUTLET PLAN SECTION AND DETAILS MH-PS-12

0 5 10 20 30 40 50 60
SCALE 1:750 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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Department of Alternative Energy Development and Efficiency
MINISTRY OF ENERGY

MAE HAT HYDROPOWER PROJECT

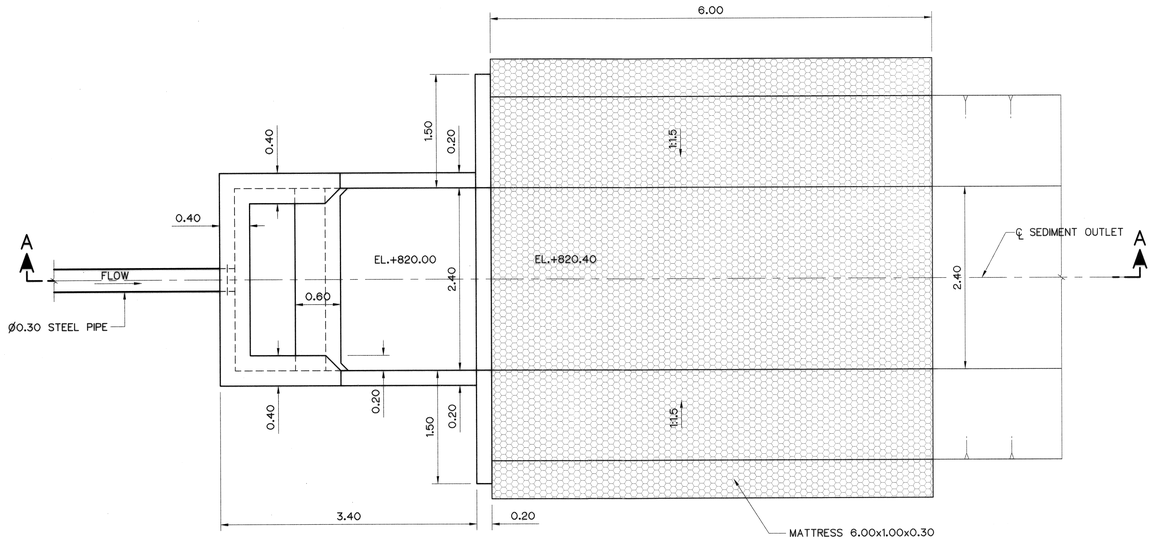
CIVIL WORKS AND TRANSMISSION LINE
SURGE TANK
PLAN, SEDIMENT STA. 0+000 TO STA. 0+272.800

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Department of Alternative Energy Development and Efficiency
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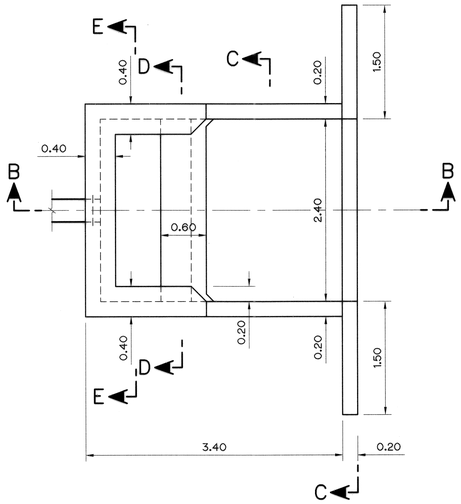
DESIGNED	วิชิ.64624	วิชิ.6226	REVIEWED
DRAWN			SUBMITTED
CHECKED		วิชิ.6226	RECOMMENDED
PROJECT MANAGER		01/03/2564 DATE	APPROVED

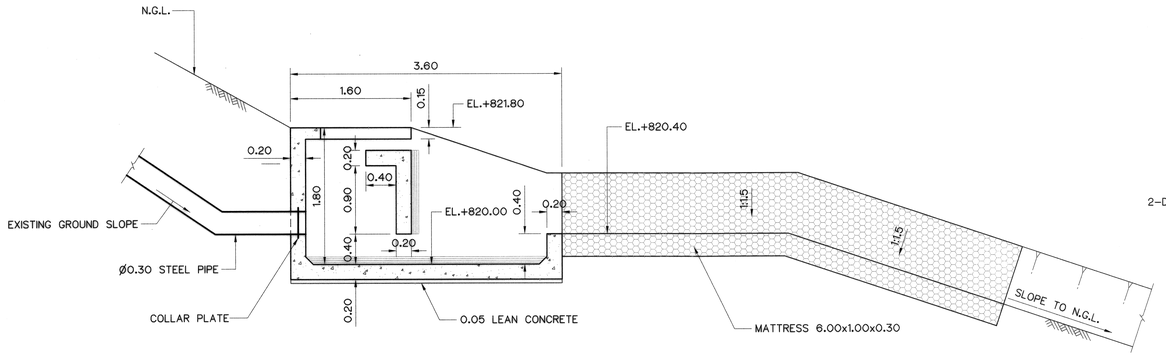
DRAWING NO. MH-ST-11
SHEET NO. 72 OF 130



PLAN

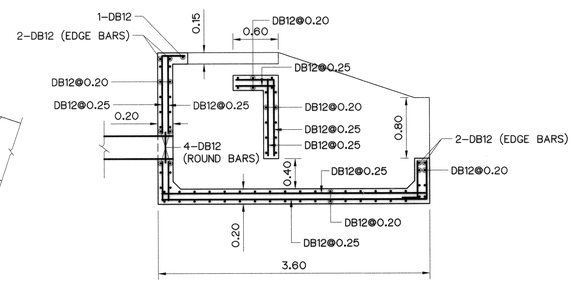
SCALE 1:40





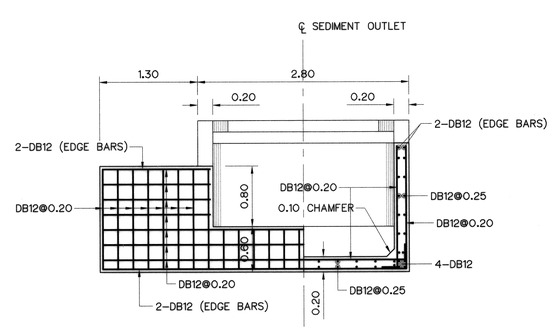
SECTION A–A

SCALE 1:40



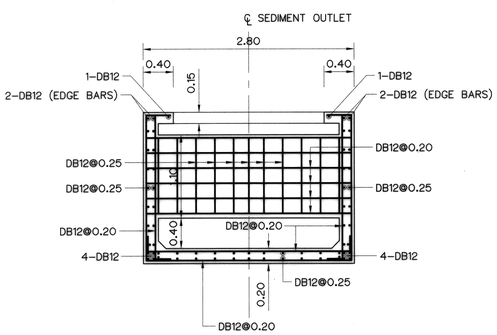
SECTION B–B

SCALE 1:40



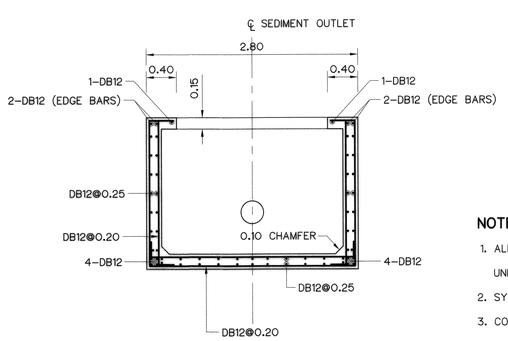
SECTION C–C

SCALE 1:40



SECTION D–D

SCALE 1:40



SECTION E–E

SCALE 1:40

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. NMH–GN–03
3. CONCRETE DESIGN BASED ON THE COMPRESSIVE STRENGTH OF 210 KSC, STANDARD CYLINDER Ø0.15x0.30 m. TEST AT AGE 28 DAYS. UNLESS OTHERWISE INDICATED IN SPECIFIC DRAWINGS.
4. BEARING CAPACITY NOT LESS THAN 5 T/sq m

REFERENCE DRAWINGS :

1. SURGE TANK PLAN, SEDIMENT STA. 0+000 TO STA. 0+272.800 NMH–ST–11

0 0.5 1 2 3

SCALE 1:40 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
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	CONSULTANTS		DEDE	

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MINISTRY OF ENERGY

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
SURGE TANK
SEDIMENT OUTLET PLAN SECTION AND DETAILS

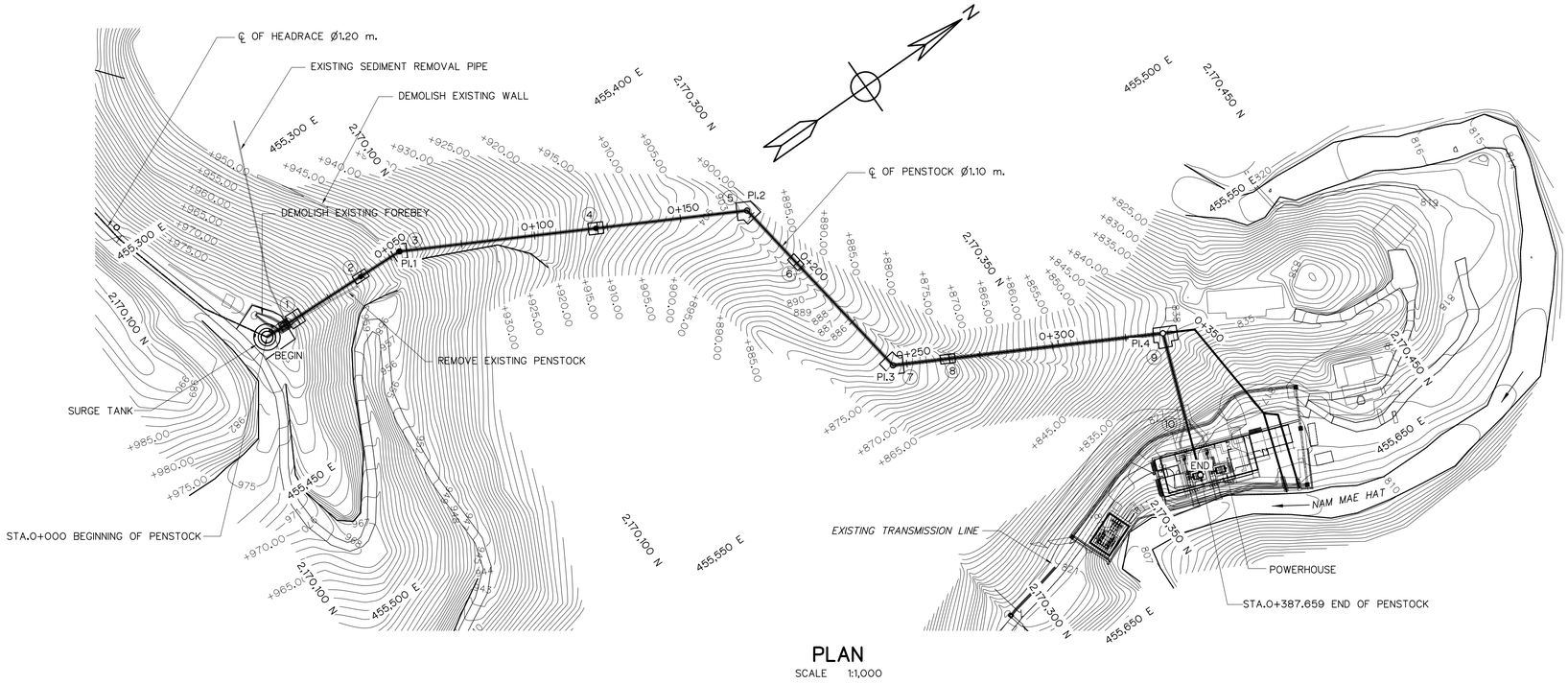
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MINISTRY OF ENERGY

DESIGNED	วิศ.64624	REVIEWED	
DRAWN		SUBMITTED	วิศ.6226
CHECKED	วิศ.6226	RECOMMENDED	
PROJECT MANAGER	08/03/2564 DATE	APPROVED	

DRAWING NO. MH–ST–12

SHEET NO. 73 OF 130

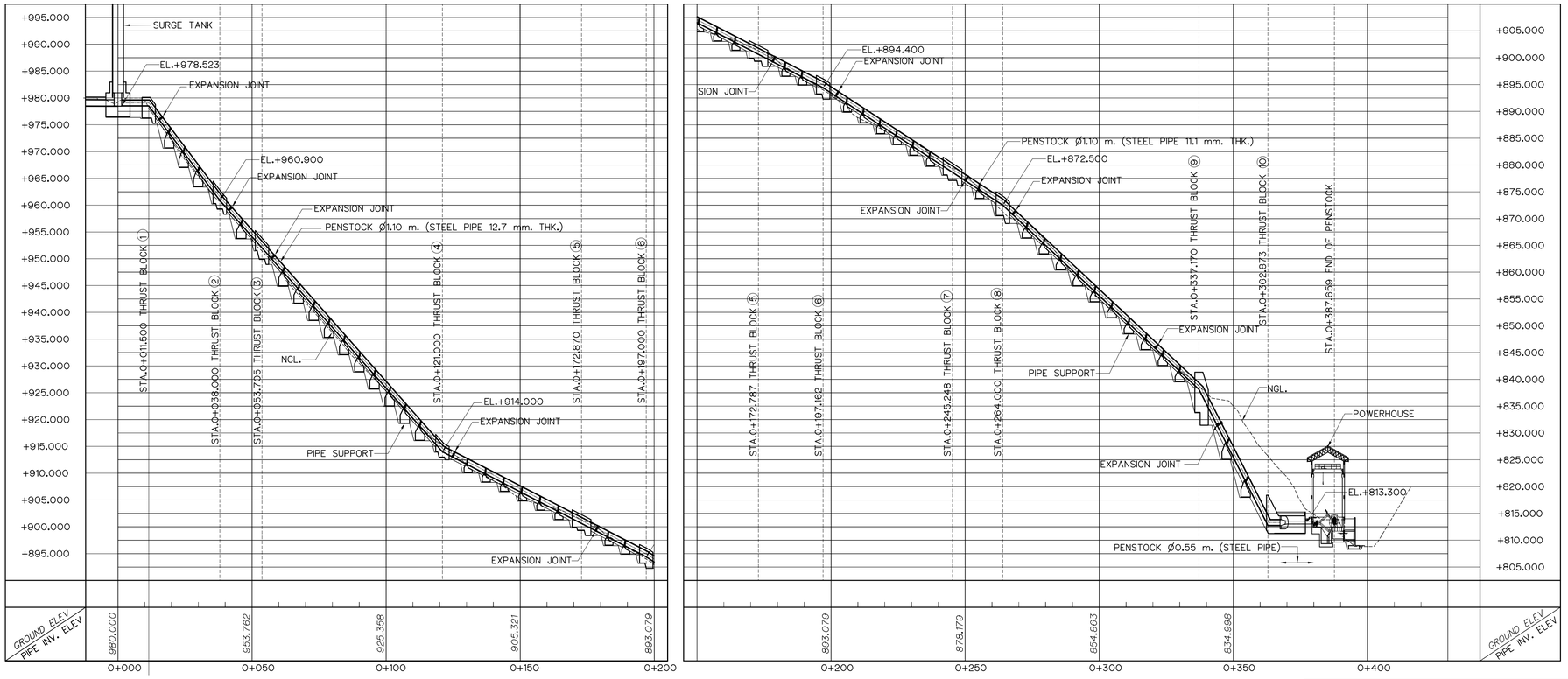


PLAN

SCALE 1:1,000

HORIZONTAL CURVE OF PENSTOCK

NO. OF CURVE	COORDINATE OF PI.		PI. TO PI.	DEFLECTION ANGLE (△)	PI. STA.	BEARING
	N	E	(m)	(° – ' – ")	(km)	(N/S ° – ' – " E/W)
BEGIN	2,170,134.951	455,401.241	–	–	0+000.000	–
PI.1	2,17,0188.62	455,403.218	53.705	2°– 11'– 18.03"	0+053.705	N 02°– 06'–34.72" E
PI.2	2,170,293.544	455,459.709	119.165	53°– 23'– 21.94"	0+172.870	N 28°– 17'– 52.76" E
PI.3	2,170,304.008	455,531.327	72.378	53°– 27'– 12.97"	0+245.248	N 81°– 41'– 14.70" E
PI.4	2,170,385.537	455,575.104	92.539	81°– 57'–32.70"	0+337.787	N 28°– 14'–1.42"
END	2,170,368.322	455,621.911	49.872	–	0+387.659	N 110°– 11'–34.12"



PROFILE

VERTICAL SCALE 1:500

HORIZONTAL SCALE 1:1,000

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS. UNLESS OTHERWISE SHOWN.
2. SYMBOLE, ABBREVIATIONS AND CENERAL NOTES SEE DWG. NO.MH-GN-03
3. 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 :

1. PENSTOCK THRUST BLOCK PLAN ,SECTIONS REINFORCEMENT DETAILS 1/4	MH–PS–02
2. PENSTOCK THRUST BLOCK PLAN ,SECTIONS REINFORCEMENT DETAILS 2/4	MH–PS–03
3. PENSTOCK THRUST BLOCK PLAN ,SECTIONS REINFORCEMENT DETAILS 3/4	MH–PS–04
4. PENSTOCK THRUST BLOCK PLAN ,SECTIONS REINFORCEMENT DETAILS 4/4	MH–PS–05
5. PENSTOCK PIPE SUPPORT SECTIONS AND DETAILS	MH–PS–06
6. PENSTOCK WYE, PLAN, SECTIONS AND DETAILS	MH–PS–07

0 5 10 20 30 40
SCALE 1:500 METERS

0 10 20 40 60 80
SCALE 1:1,000 METERS

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MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
PENSTOCK
PLAN AND PROFILE, STA. 0+000 TO STA. 0+387.659

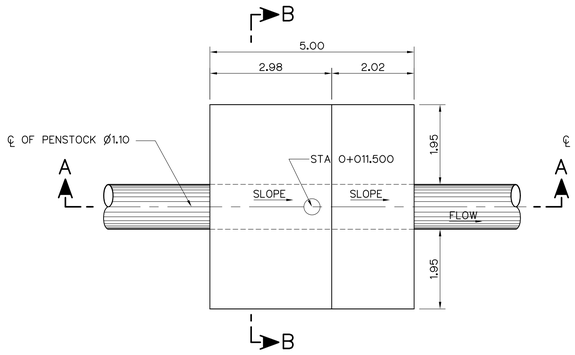
NO.	DATE	REVISIONS	CHECKED	APPROVED
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	CONSULTANTS		DEDE	

P&C MANAGEMENT CO.,LTD.

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CHECKED ณัฐ.6226
PROJECT MANAGER 08/03/2559 DATE

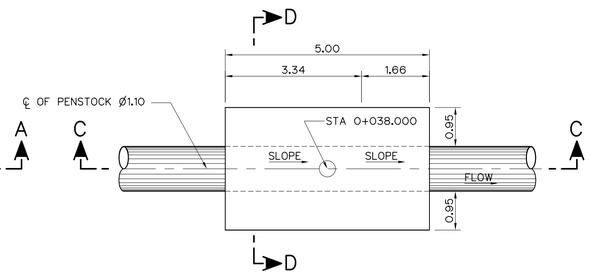
Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY
REVIEWED
SUBMITTED
RECOMMENDED
APPROVED

DRAWING NO. MH–PS–01
SHEET NO. 74 OF 130



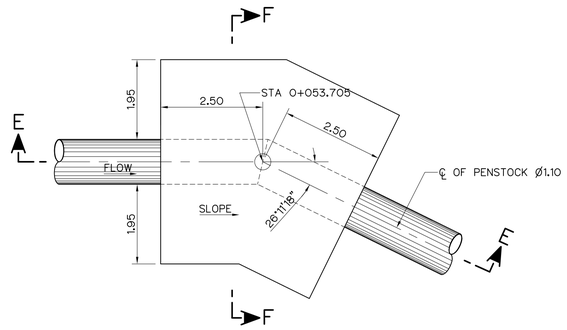
PLAN (THRUST BLOCK ①)

SCALE 1:75



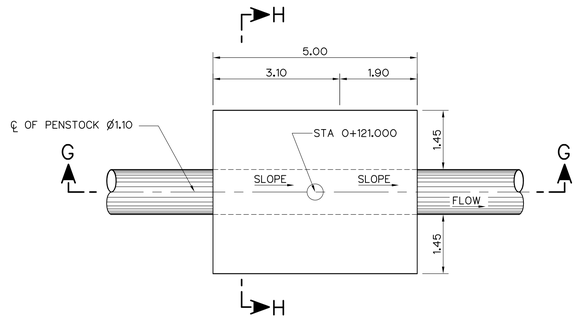
PLAN (THRUST BLOCK ②)

SCALE 1:75



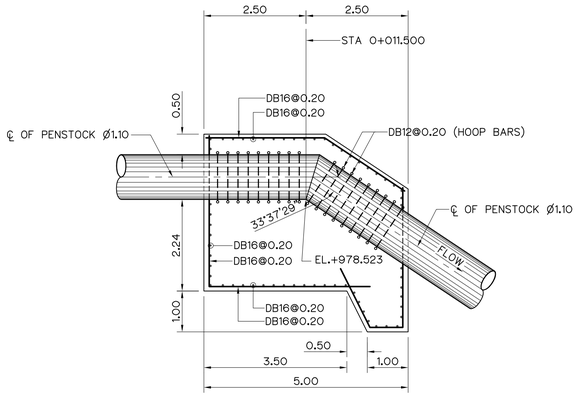
PLAN (THRUST BLOCK ③)

SCALE 1:75



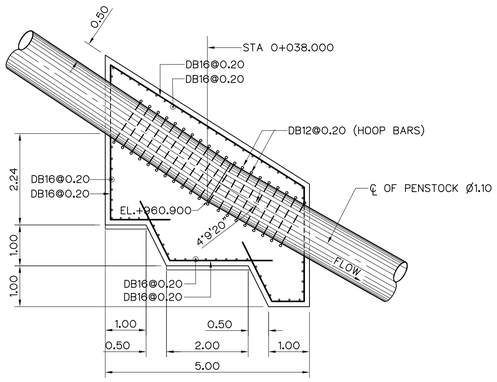
PLAN (THRUST BLOCK ④)

SCALE 1:75



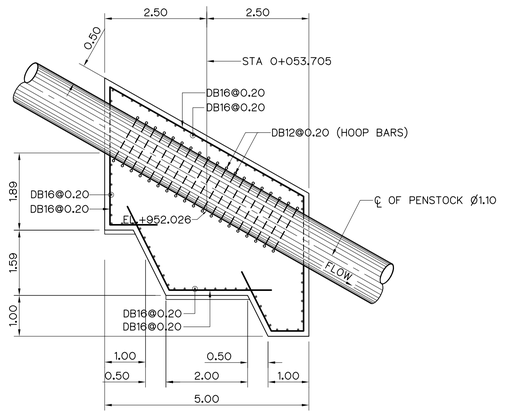
SECTION A–A

SCALE 1:75



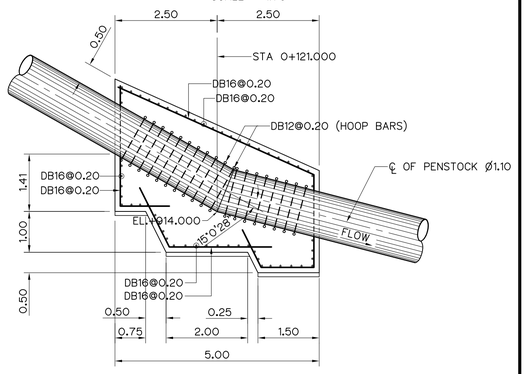
SECTION C–C

SCALE 1:75



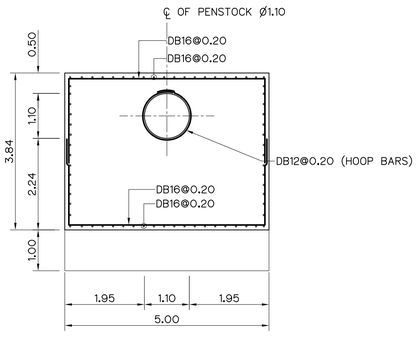
SECTION E–E

SCALE 1:75



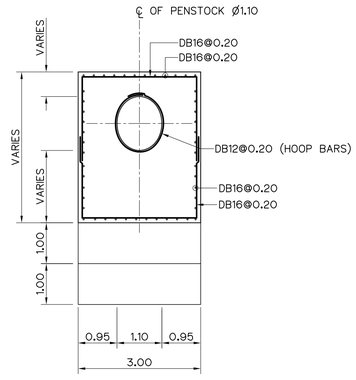
SECTION G–G

SCALE 1:75



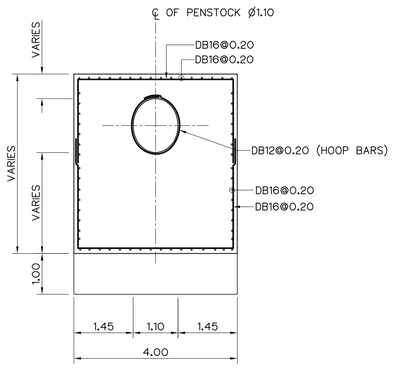
SECTION B–B

SCALE 1:75



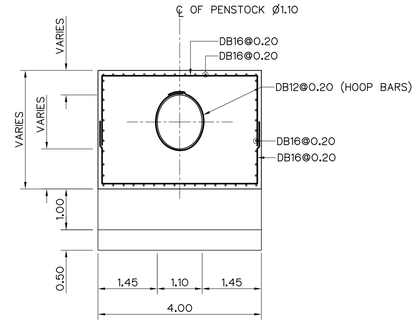
SECTION D–D

SCALE 1:75



SECTION F–F

SCALE 1:75



SECTION H–H

SCALE 1:75

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS. UNLESS OTHERWISE SHOWN.
2. SYMBOLE, ABBREVIATIONS AND CENERAL NOTES SEE DWG. NO. MH-GN-03
3. 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 :

1. PENSTOCK, PLAN AND PROFILE, STA. 0+000 TO STA. 0+387.659 MH-PS-01

0 1 2 3 4 5 6

SCALE 1:75 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE

PENSTOCK

THRUST BLOCK PLAN, SECTIONS REINFORCEMENT DETAILS 1/4

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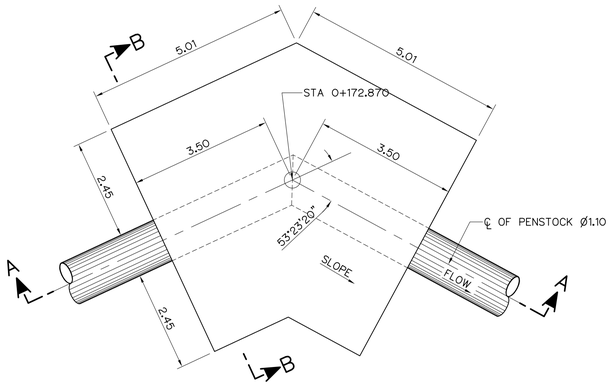
Department of Alternative Energy Development and Efficiency
MINISTRY OF ENERGY

DESIGNED	วสิ.64624	วสิ.6226	REVIEWED
DRAWN			SUBMITTED
CHECKED	วสิ.6226		RECOMMENDED
			APPROVED

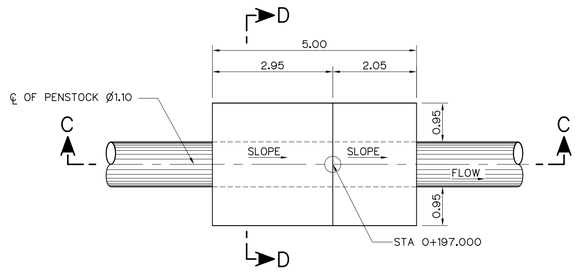
PROJECT MANAGER 08/03/2564 DATE

DRAWING NO. MH-PS-02

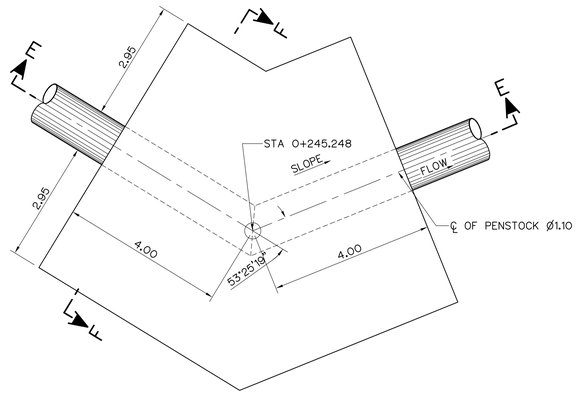
SHEET NO. 75 OF 130



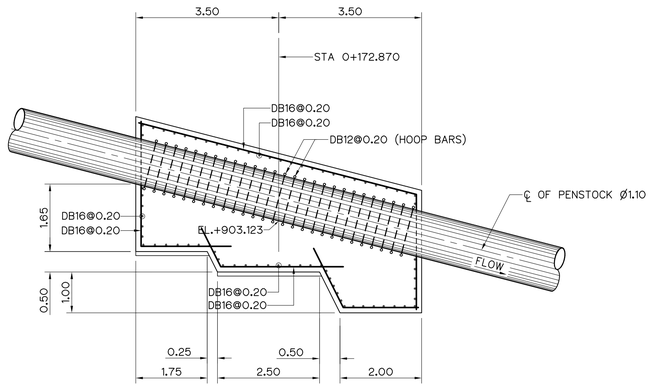
PLAN (THRUST BLOCK ⑤)
SCALE 1:75



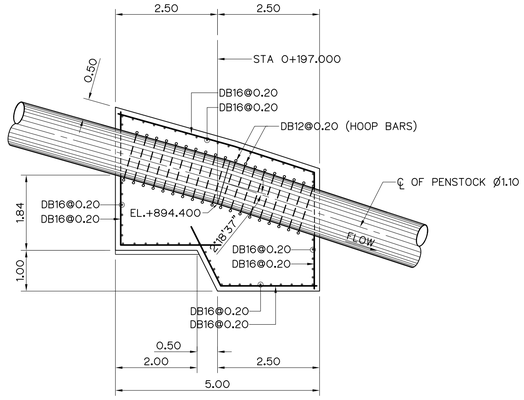
PLAN (THRUST BLOCK ⑥)
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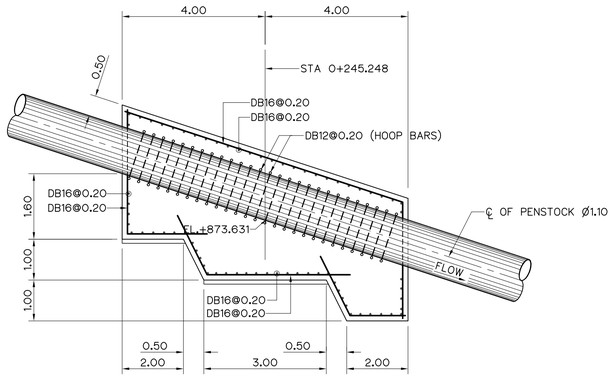
PLAN (THRUST BLOCK ⑦)
SCALE 1:75



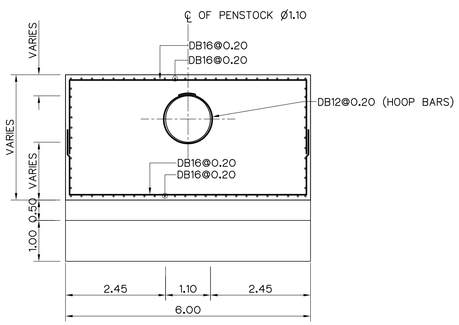
SECTION A–A
SCALE 1:75



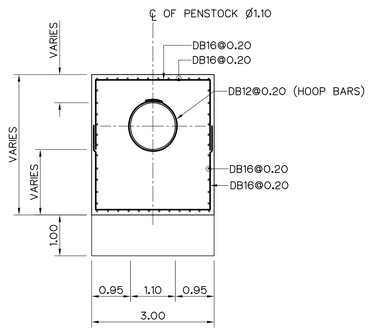
SECTION C–C
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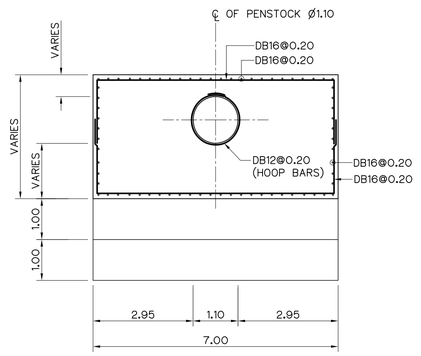
SECTION E–E
SCALE 1:75



SECTION B–B
SCALE 1:75



SECTION D–D
SCALE 1:75



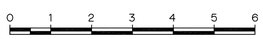
SECTION E–E
SCALE 1:75

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS. UNLESS OTHERWISE SHOWN.
2. SYMBOLE, ABBREVIATIONS AND CENERAL NOTES SEE DWG. NO. MH-GN-03
3. 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 :

1. PENSTOCK, PLAN AND PROFILE, STA. 0+000 TO STA. 0+387.659 MH-PS-01



NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE

PENSTOCK

THRUST BLOCK PLAN, SECTIONS REINFORCEMENT DETAILS 2/4

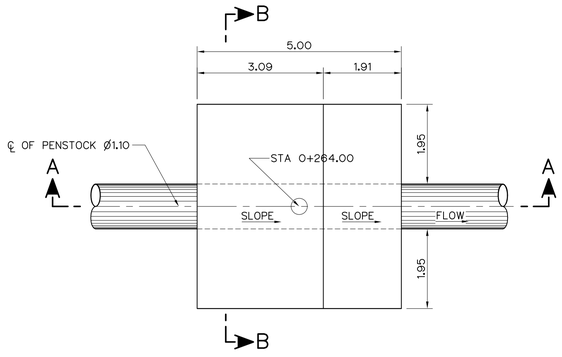
P&C MANAGEMENT CO.,LTD.

Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

DESIGNED วิศ.64624 วิศ.6226
DRAWN
CHECKED วิศ.6226
PROJECT MANAGER 08/03/2559 DATE

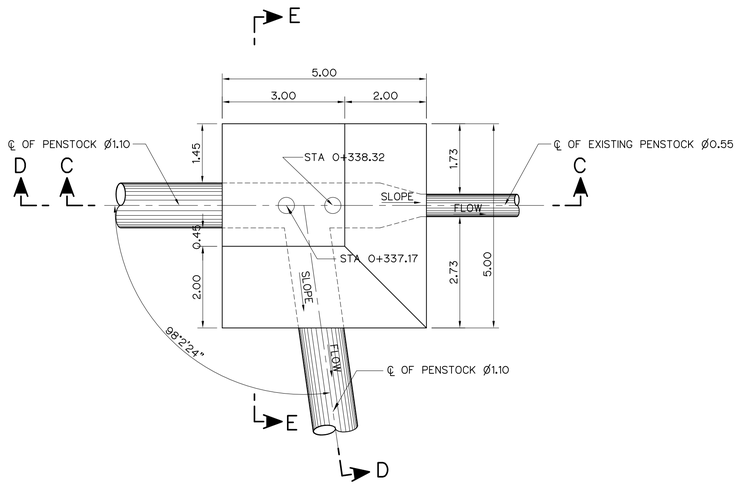
REVIEWED
SUBMITTED
RECOMMENDED
APPROVED

DRAWING NO. MH-PS-03
SHEET NO. 76 OF 130



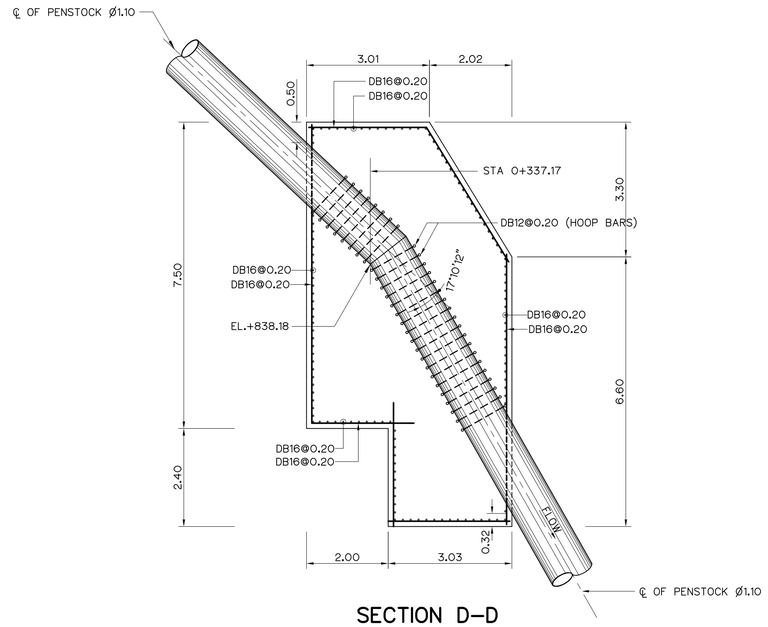
PLAN (THRUST BLOCK ⑧)

SCALE 1:75



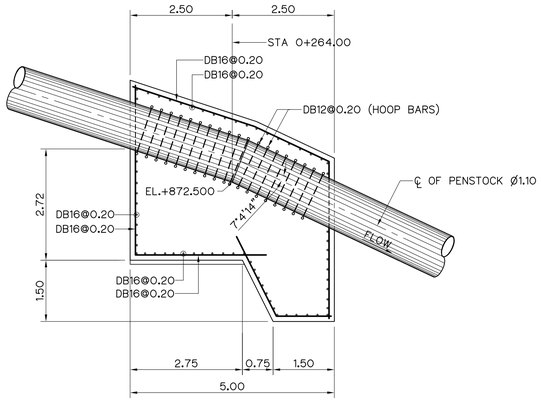
PLAN (THRUST BLOCK ⑨)

SCALE 1:75



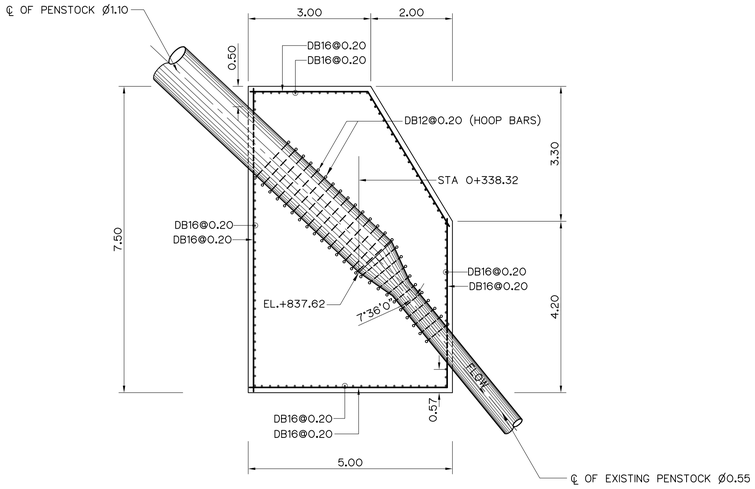
SECTION D–D

SCALE 1:75



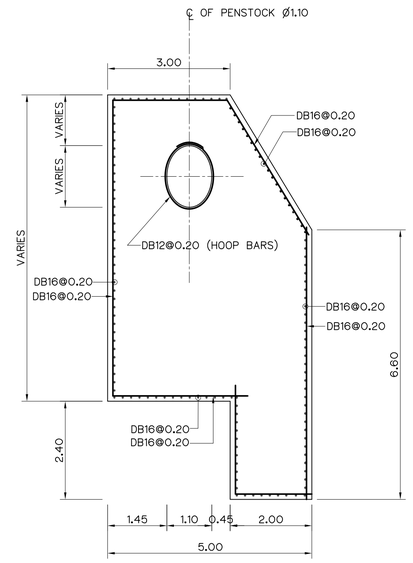
SECTION A–A

SCALE 1:75



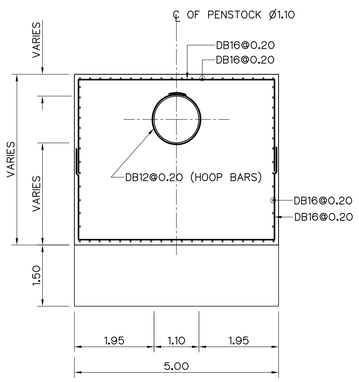
SECTION C–C

SCALE 1:75



SECTION E–E

SCALE 1:75



SECTION B–B

SCALE 1:75

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS. UNLESS OTHERWISE SHOWN.
2. SYMBOLE, ABBREVIATIONS AND CENERAL NOTES SEE DWG. NO. MH-GN-03
3. 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 :

1. PENSTOCK, PLAN AND PROFILE, STA. 0+000 TO STA. 0+387.659 MH-PS-01

0 1 2 3 4 5 6

SCALE 1:75 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE

PENSTOCK

THRUST BLOCK PLAN, SECTIONS REINFORCEMENT DETAILS 3/4

P&C MANAGEMENT CO.,LTD.

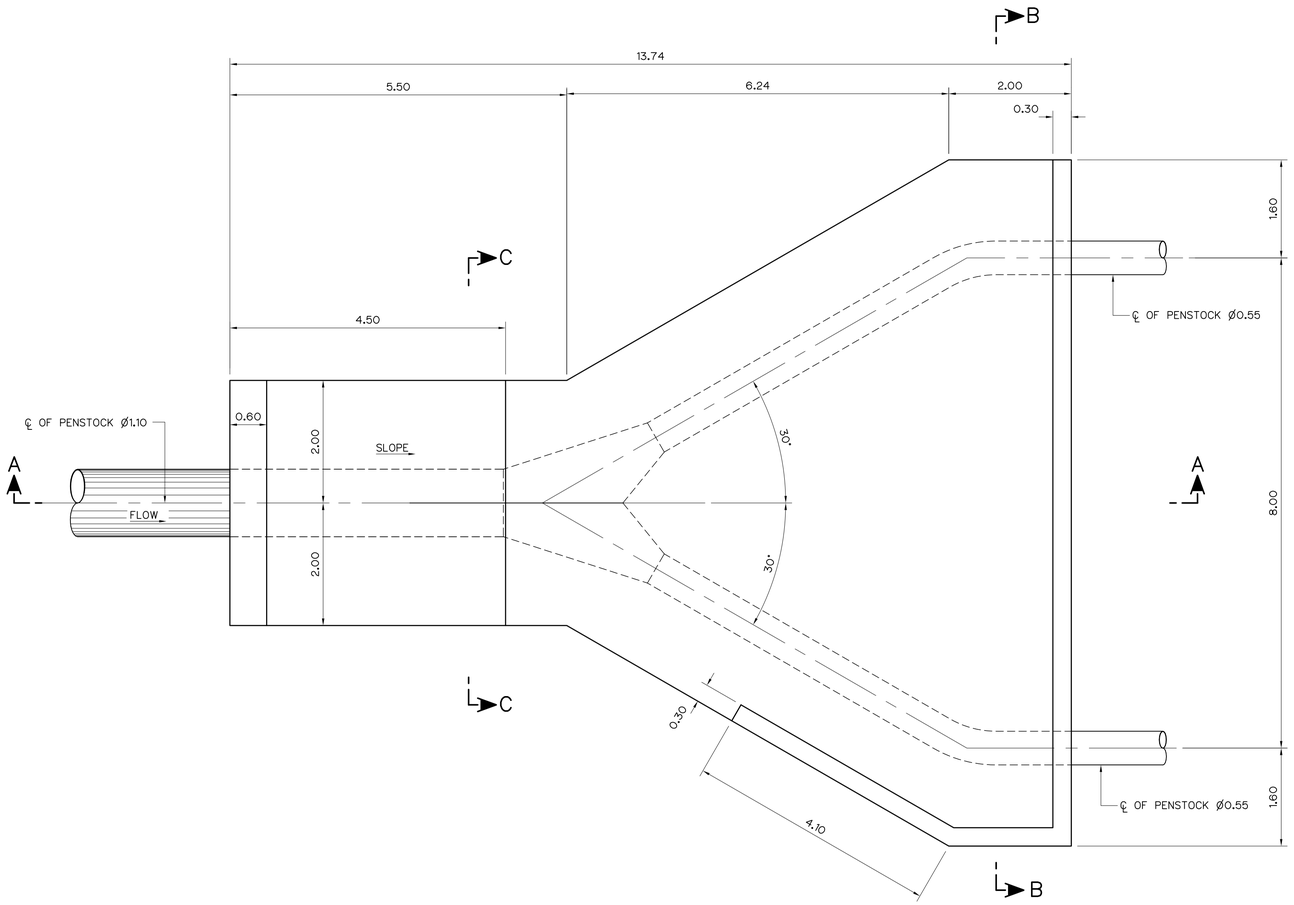
Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

DESIGNED	วศ.ภ.64624	วศ.6226	REVIEWED
DRAWN			SUBMITTED
CHECKED	วศ.6226		RECOMMENDED
			APPROVED

PROJECT MANAGER 08/03/2559 DATE

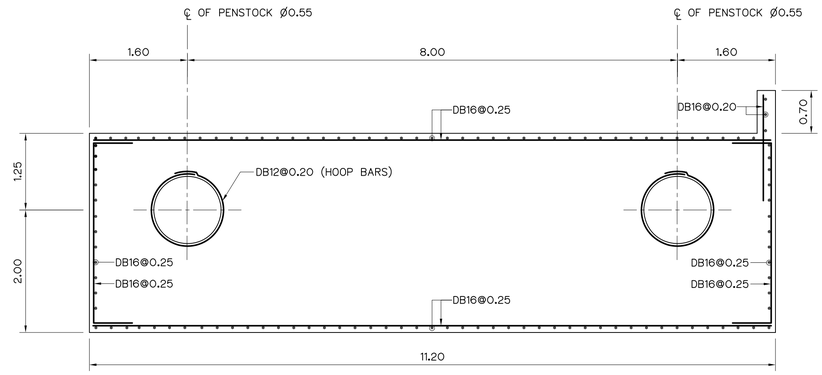
DRAWING NO. MH-PS-04

SHEET NO. 77 OF 130



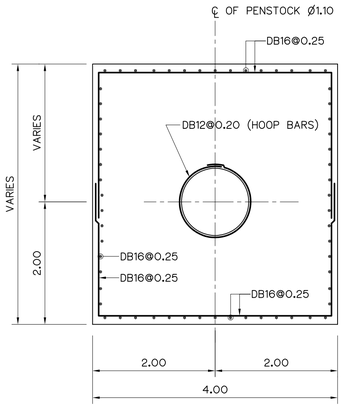
PLAN (THRUST BLOCK (10))

SCALE 1:50



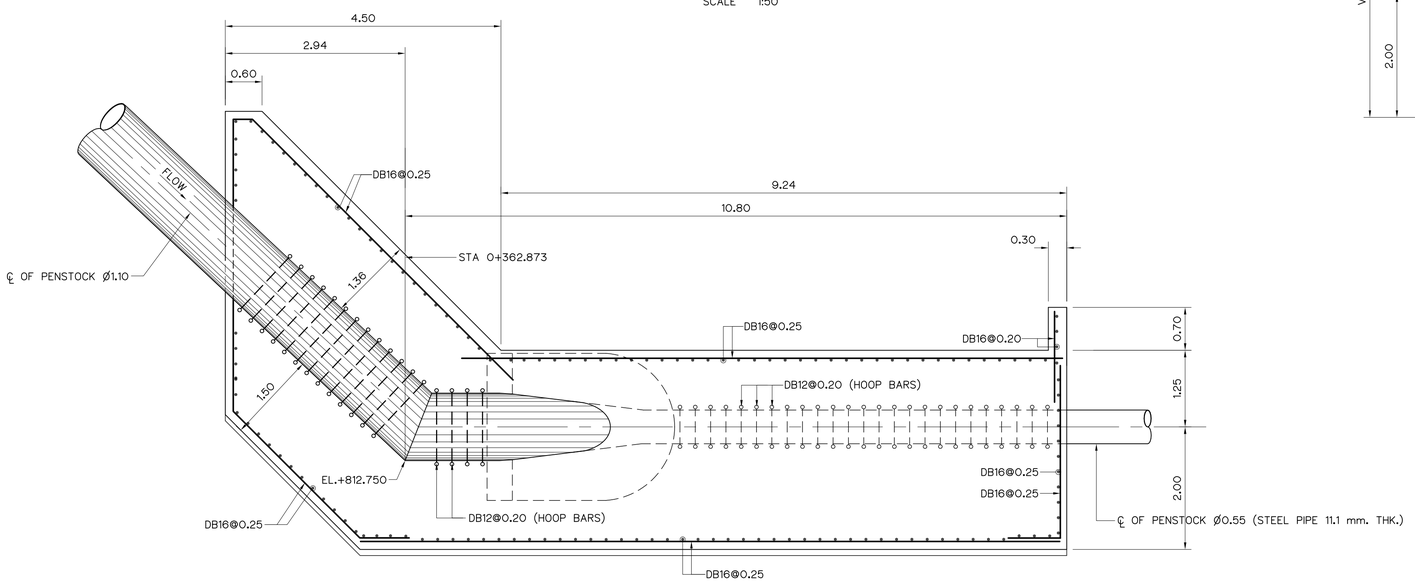
SECTION B–B

SCALE 1:50



SECTION C–C

SCALE 1:50



SECTION A–A

SCALE 1:50

NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS. UNLESS OTHERWISE SHOWN.
2. SYMBOLE, ABBREVIATIONS AND CENERAL NOTES SEE DWG. NO. MH-GN-03
3. 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 :

1. PENSTOCK, PLAN AND PROFILE, STA. 0+000 TO STA. 0+387.659	MH-PS-01
2. PENSTOCK, WYE PLAN, SECTIONS AND DETAILS	MH-PS-07

0 0.5 1.0 2.0 3.0 4.0

SCALE 1:50 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE

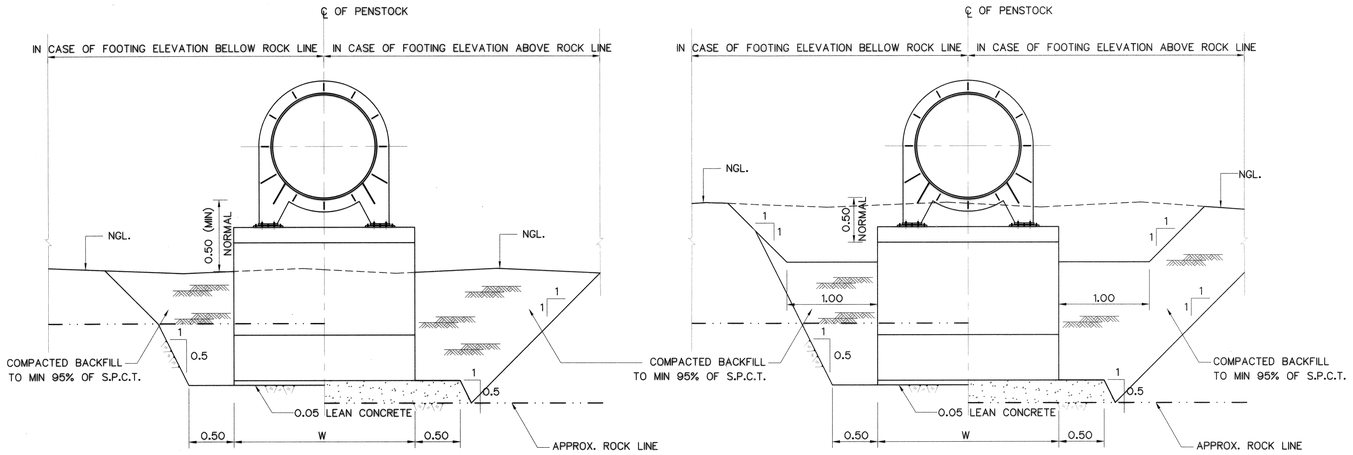
PENSTOCK

THRUST BLOCK PLAN, SECTIONS REINFORCEMENT DETAILS 4/4

P&C MANAGEMENT CO.,LTD.

Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

DESIGNED	ม.ล.64624 ส.ป.6226
DRAWN	
CHECKED	ส.ป.6226
PROJECT MANAGER	08/03/2559 DATE
REVIEWED	
SUBMITTED	
RECOMMENDED	
APPROVED	P. Hanwatt
DRAWING NO.	MH-PS-05
SHEET NO.	78 OF 130

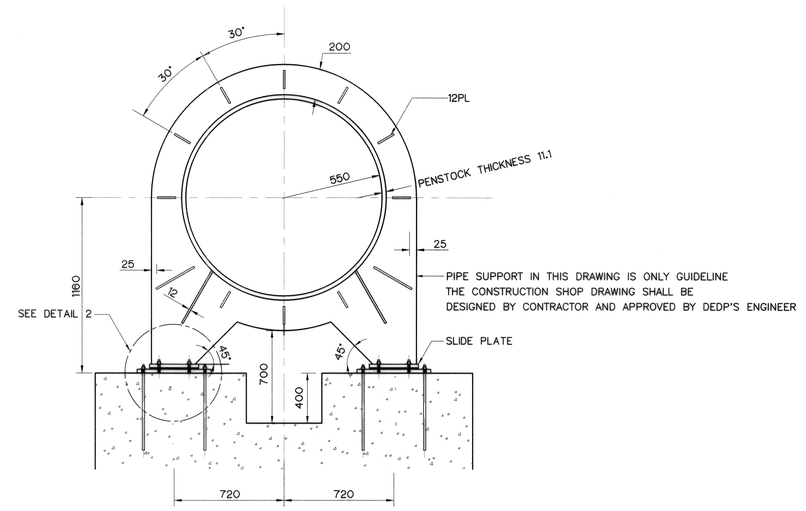


N.G.L. BELLOW INVERT ELEVATION

N.G.L. ABOVE INVERT ELEVATION

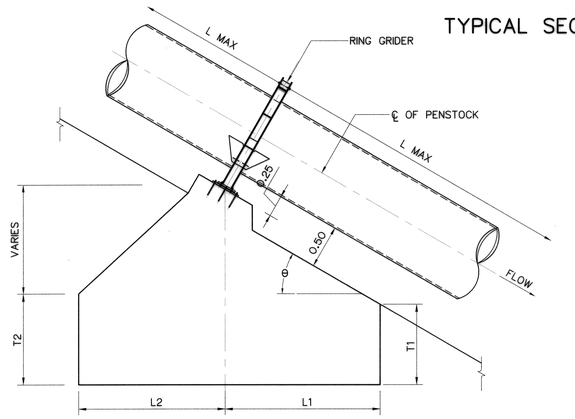
TYPICAL SECTION OF PENSTOCK

NOT TO SCALE



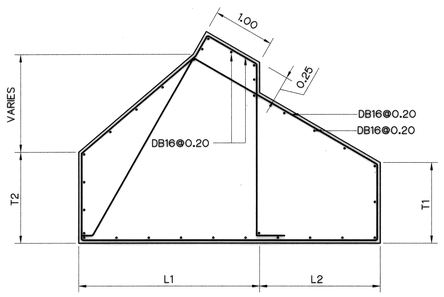
SECTION A – A

SCALE 1:20



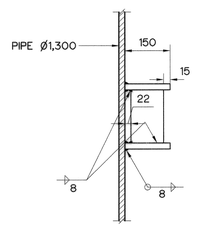
PIER

NOT TO SCALE



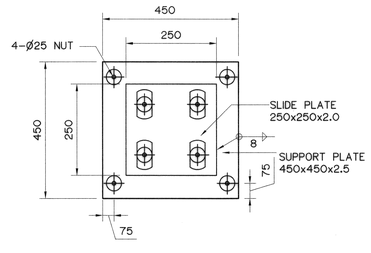
PIER (REINFORCEMENT DETAIL)

NOT TO SCALE



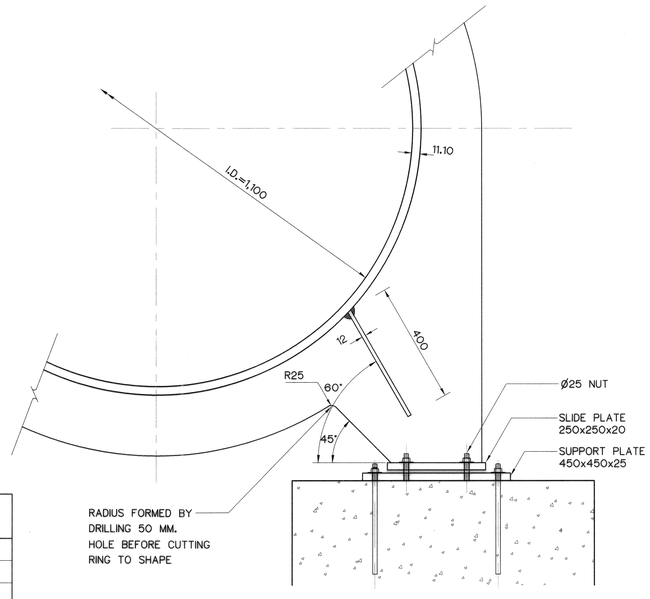
DETAIL "1"

SCALE 1:20

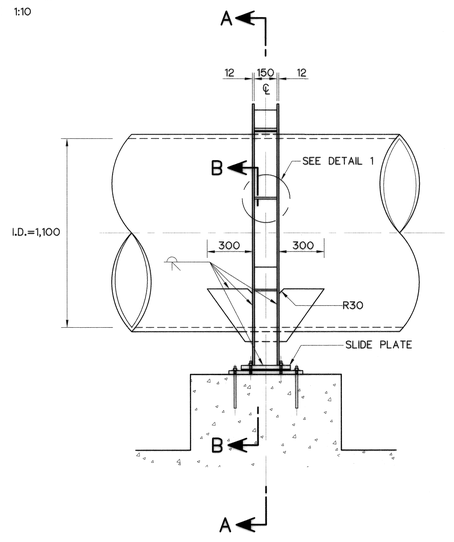


DETAIL "2"

SCALE 1:10



SECTION B – B



RING GIRDER FOR 1,100 I.D. PIPE

NOTES :

1. ALL DIMENSIONS ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MH-GN-03
3. CORROSIVE PROTECTION IS WARNED TO STRICTLY FLOW PAINTING SPECIFICATION

DIMENSIONS FOR PIER

STA.		SLOPE (θ)	L1	L2	T1	T2	W	LMAX
FROM	TO	DEGREE	(m.)	(m.)	(m.)	(m.)	(m.)	(m.)
0+011.500	0+038.000	33.69	2.00	1.50	1.00	1.40	3.00	8.00
0+038.000	0+121.000	29.47	2.00	1.50	1.00	1.50	3.00	8.00
0+121.000	0+197.000	14.46	2.00	1.00	0.50	0.90	3.00	8.00
0+197.000	0+264.000	18.10	2.00	1.00	0.50	1.05	3.00	8.00
0+264.000	0+362.000	25.17	2.00	1.00	0.50	0.90	3.00	8.00

0 0.5 1.0 1.5

SCALE 1:20 METERS

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				

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KINGDOM OF THAILAND
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MINISTRY OF ENERGY

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
PENSTOCK
PIPE SUPPORT SECTIONS AND DETAILS

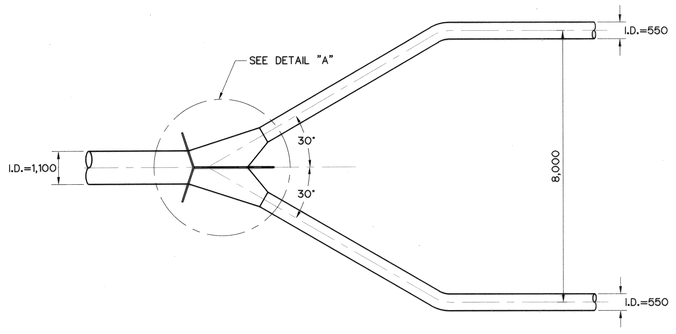
P&C MANAGEMENT CO.,LTD.

Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

DESIGNED	วิศ.64624	REVIEWED	
DRAWN		SUBMITTED	วิศ.6226
CHECKED	วิศ.6226	RECOMMENDED	
PROJECT MANAGER	08/03/2559 DATE	APPROVED	

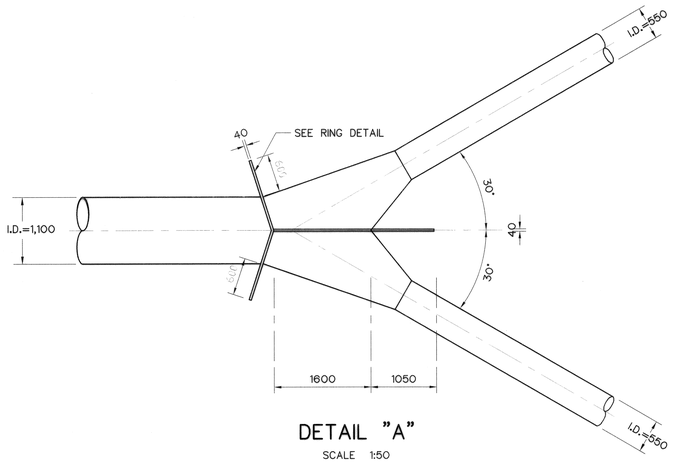
DRAWING NO. MH-PS-06

SHEET NO. 79 OF 130



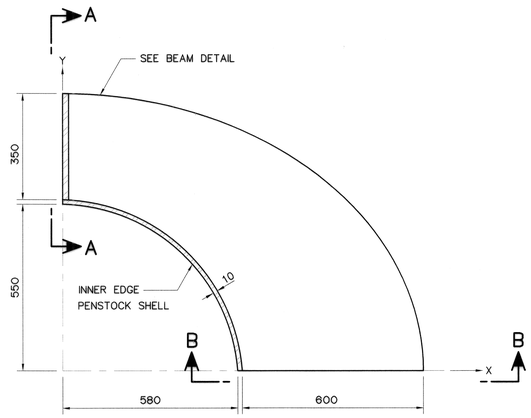
PLAN

SCALE 1:100



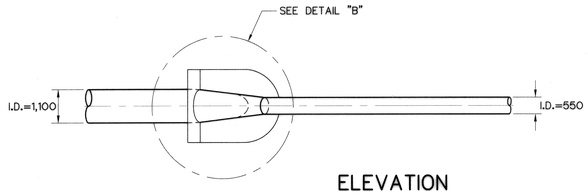
DETAIL "A"

SCALE 1:50



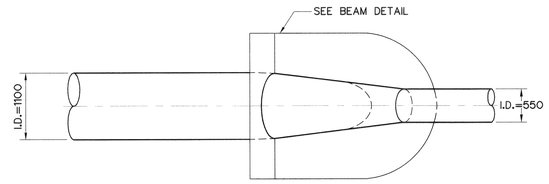
RING DETAIL

SCALE 1:10



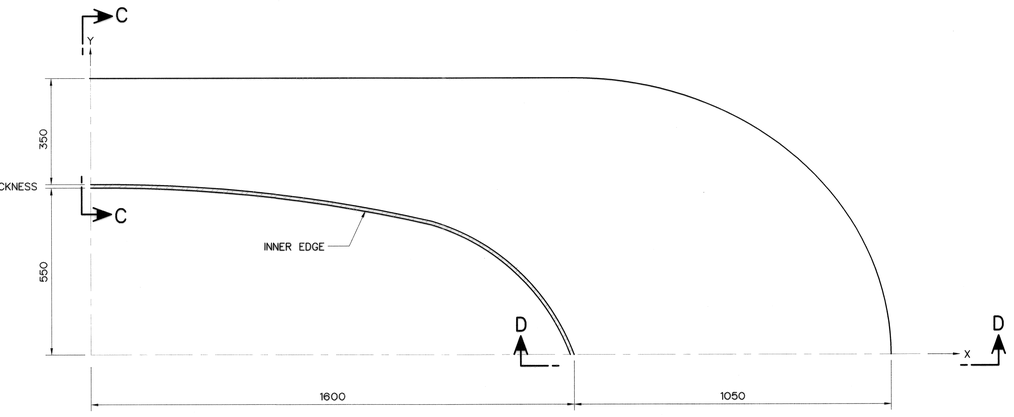
ELEVATION

SCALE 1:100



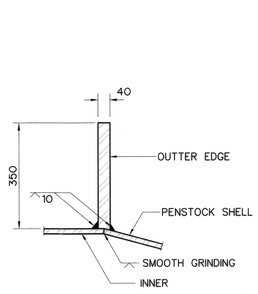
DETAIL "B"

SCALE 1:50



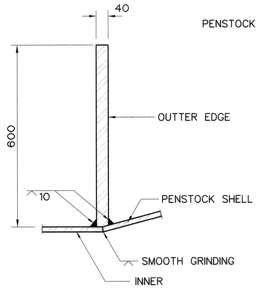
BEAM DETAIL

SCALE 1:10



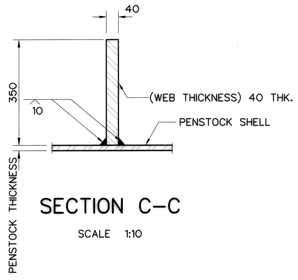
SECTION A–A

SCALE 1:10



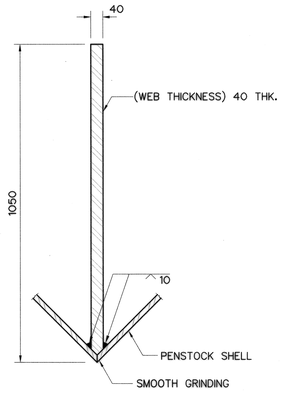
SECTION B–B

SCALE 1:10



SECTION C–C

SCALE 1:10

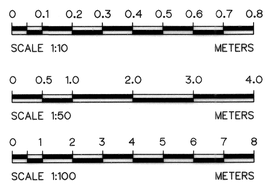


SECTION D–D

SCALE 1:10

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MH-GN-03



NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
PENSTOCK
WYE, PLAN, SECTIONS AND DETAILS

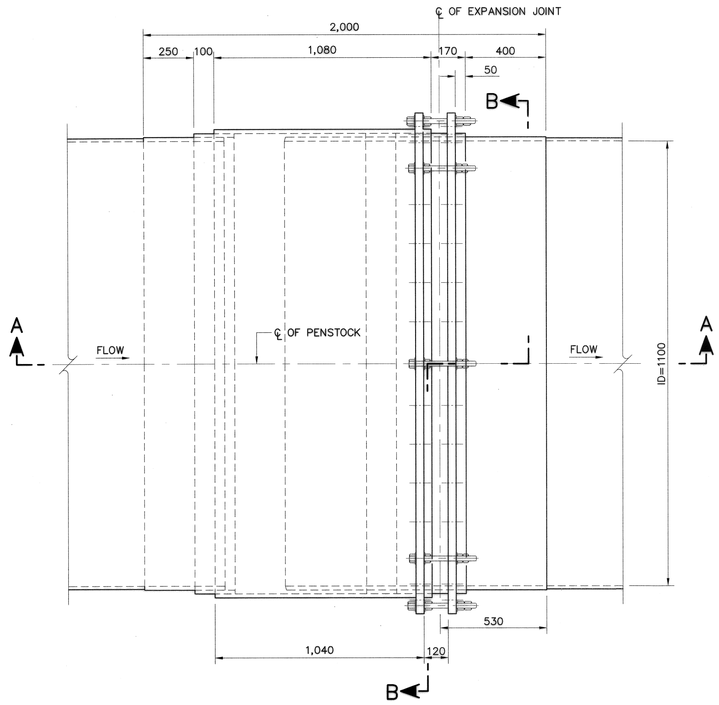
P&C MANAGEMENT CO.,LTD.

Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

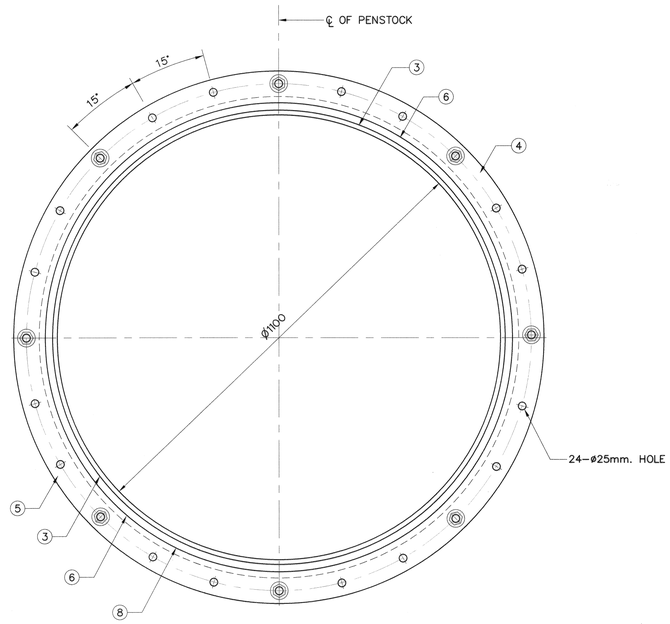
DESIGNED	ส.ต.64624	ส.ต.6226	REVIEWED
DRAWN			SUBMITTED
CHECKED	ส.ต.6226		RECOMMENDED
PROJECT MANAGER	05/09/2564 DATE		APPROVED

DRAWING NO. MH-PS-07

SHEET NO. 80 OF 130



ELEVATION
SCALE 1:7.5



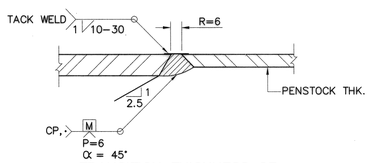
SECTION B–B
SCALE 1:7.5

TABLE OF DETAIL 1 SQUARE – GROOVE WELD , BUTT JOINT

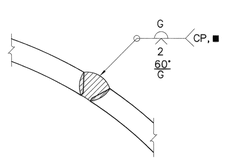
ITEM	DESCRIPTION	MATERIAL	QUANT.	REMARKS
1	PENSTOCK	ASTM A–283, GRADE D	–	––
2	PENSTOCK	ASTM A–283, GRADE D	1	NOTE 2 & 3
3	INNER SLEEVE	ASTM A–283, GRADE D	1	NOTE 2 & 4
4	GRAND RING	ASTM A–283, GRADE D	1	SEAMLESS, NOTE 3
5	OUTER RING	ASTM A–283, GRADE D	1	SEAMLESS, NOTE 3
6	STUFFING BOX	ASTM A–283, GRADE D	1	NOTE 2 & 3
7	DOUBLING PLATE	ASTM A–283, GRADE D	1	NOTE 2 & 3
8	OUTER SLEEVE	ASTM A–283, GRADE D	1	NOTE 2 & 3
9	PACKING STOPPER	ASTM A–283, GRADE D	1	NOTE 2 & 3
10	ø25 mm. BOLTS	ASTM A–325	24	––
11	ø25 mm. NUT	ASTM A–325	72	––
12	ø25 mm. WASHER	ASTM A–325	48	––
13	PACKING RINGS (16 mm. S.Q. RING)	ASBESTOS–GRAPHITE	6	NOTE 5

NOTES :

1. LONGITUDINAL SEAMS HAVE TO BE COMPLETE JOINT PENETRATION WELDS BY COMBINING SINGLE–V–GROOVE WITH BACKING WELDS AND GROUND FLUSH WELDING WITH BASE MATAL AS REQUIRED (SEE DETAIL "2")
2. GALVANIZED ALL SURFACES WITH 0.10 mm. THK.
3. NICKEL CLADDING ON OUTER SURFACE WITH 0.50 mm. THK. AND GALVANIZED INNER SURFACE WITH 0.10 mm. THK.
4. EACH JOINT OF EACH PACKING RING SHALL BE MIN. 25 cm. APART DO NOT LINE UP JOINTS
5. ALL DIMENSION ARE IN MILIMETER UNLESS OTHERWISE SHOWN
6. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MH–GN–03



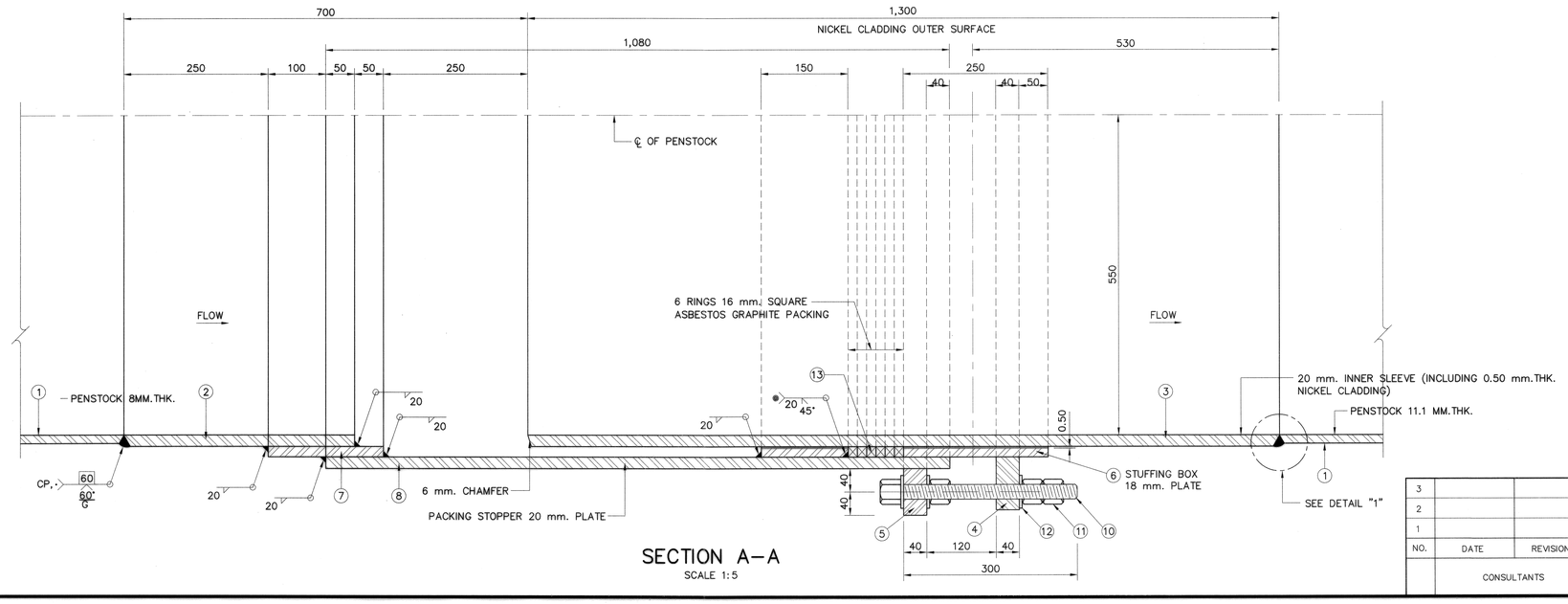
TRANSITION THICKNESS OF BUTT JOINT IN PARTS OF UNEQUAL THICKNESS
DETAIL "1"
NOT TO SCALE



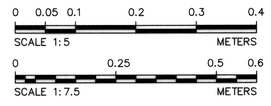
LONGITUDINAL WELD
NOT TO SCALE

WELDING NOTATION :

CP = COMPLETE JOINT PENETRATION GROOVE WELD
G = GRINDING WELD DEPOSITE FLUSH WITH BASE METAL
• = BACKING PLATE SIZE 0.10x1.50 mm. AND SAME METERIAL AS PENSTOCK
● = BEVEL PLATE 9 mm. BEFORE ROLLING CHIP SQUARE AFTER WELDING
▲ = ROOT OPENING R = 2.0 mm.
ROOT FACE t = 3.0 mm.
GROOVE ANGLE = 45°
■ = ROOT OPENING R = 2.0 mm.
ROOT FACE t = 2.0 mm.
GROOVE ANGLE = 60°



SECTION A–A
SCALE 1:5



NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
		CONSULTANTS	DEDE	

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

MAE HAT HYDROPOWER PROJECT

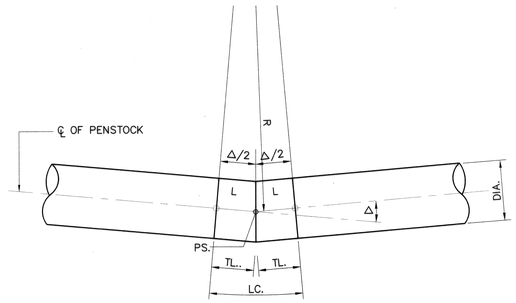
CIVIL WORKS AND TRANSMISSION LINE
PENSTOCK
EXPANSION JOINT, PLAN, SECTIONS AND DETAILS

P&C MANAGEMENT CO.,LTD.

Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

DESIGNED	วิ.ย.64624	ส.ค.6226	REVIEWED
DRAWN			SUBMITTED
CHECKED		ส.ค.6226	RECOMMENDED
PROJECT MANAGER		06/09/2564 DATE	APPROVED P. Hanwell

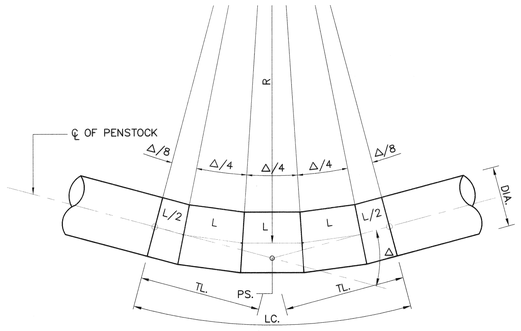
DRAWING NO. MH–PS–08
SHEET NO. 81 OF 130



BEND TYPE "1"

DELTA(Δ) 0°–5°

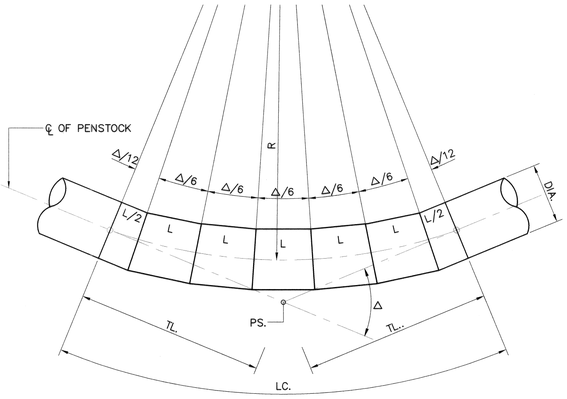
NOT TO SCALE



BEND TYPE "4"

DELTA(Δ) 25°–35°

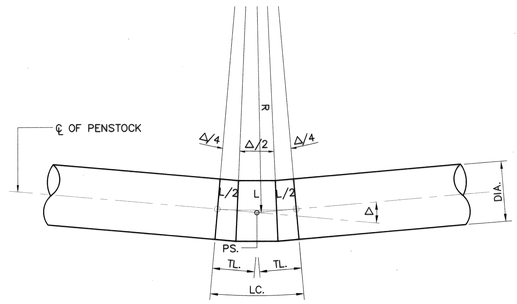
NOT TO SCALE



BEND TYPE "6"

DELTA(Δ) 55°–OVER

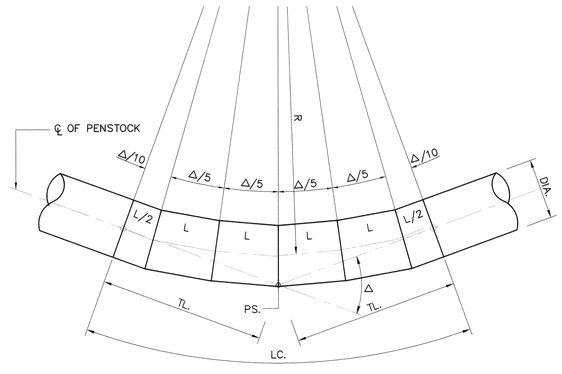
NOT TO SCALE



BEND TYPE "2"

DELTA(Δ) 5°–15°

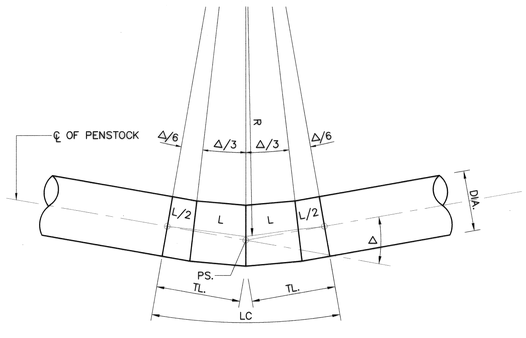
NOT TO SCALE



BEND TYPE "5"

DELTA(Δ) 35°–45°

NOT TO SCALE



BEND TYPE "3"

DELTA(Δ) 15°–25°

NOT TO SCALE

D	ELBOW							
	2–PIECE θ = 11.25°		3–PIECE θ = 22.25°		4–PIECE θ = 45°		5–PIECE θ = 45°	
	M	a	N	b	P	c	Q	d
150	100	250	175	225	275	225	375	250
200	100	250	200	225	300	225	450	250
250	100	250	225	200	350	225	500	250
300	125	275	250	275	400	275	575	300
400	150	350	300	325	500	325	700	350
500	175	350	350	325	550	325	825	350
600	200	350	400	350	650	350	650	350
700	225	400	450	400	725	400	950	375
800	225	475	500	450	800	450	1075	425
900	250	450	525	450	850	425	1175	475
1,000	250	525	550	500	875	500	1250	450
1,200	275	400	575	400	950	375	1300	525
1,500	300	475	675	475	1050	450	1375	400
1,800	325	450	700	425	1150	425	1575	550

NOTE :

1. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MH–GN–03

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE

PENSTOCK

BEND DETAILS

P&C MANAGEMENT CO.,LTD.

DESIGNED วิ.64624 สิ.6226

DRAWN

CHECKED สิ.6226

PROJECT MANAGER

01/03/2564
DATE

Department of Alternative Energy Development and Efficiency
MINISTRY OF ENERGY

REVIEWED

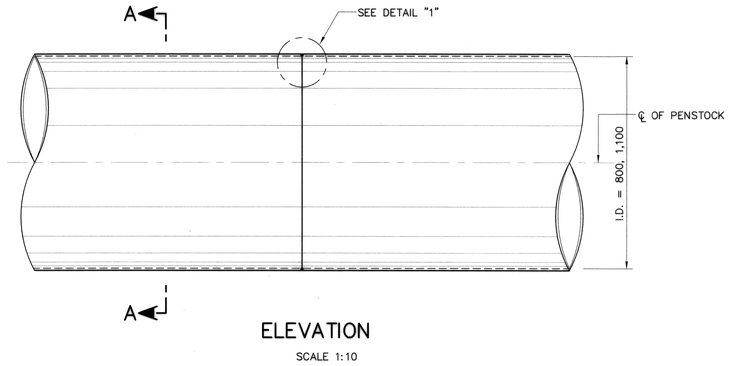
SUBMITTED

RECOMMENDED

APPROVED

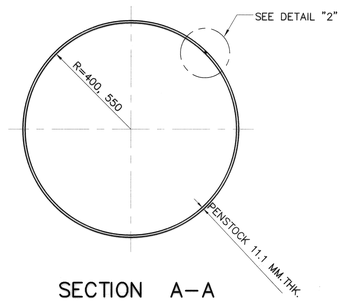
DRAWING NO. MH–PS–09

SHEET NO. 82 OF 130



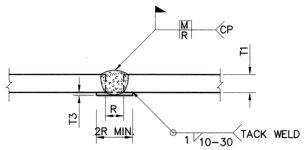
ELEVATION

SCALE 1:10



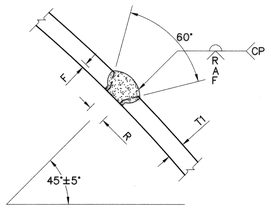
SECTION A–A

SCALE 1:10

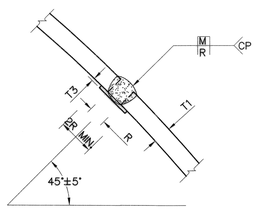


CIRCULAR BUTT JOINT

DETAIL "1"



LONGITUDINAL BUTT JOINT
TYPE "A"



LONGITUDINAL BUTT JOINT (ALTERNATIVE)
TYPE "B"

DETAIL "2"

TABLE OF DETAIL "1" SQUARE–GROOVE WELD, BUTT JOINT

WELDING PROCESS	DESIGNATION	BASE METAL THICKNESS		GROOVE PREPARATION		TOLERANCES		REMARKS
		T1	T3	ROOT OPENING	GROOVE ANGLE	ROOT OPENING	GROOVE ANGLE	
SMAW	B–L1a	11.1	1.0	R = T1	–	+1.5,–0	–	SINGLE–PASS WELD
GMAW FCAW	B–L1a–GF	11.1	1.0	R = T	–	+1.5,–0	–	SINGLE–PASS WELD

SMAW = SHIELD METAL ARC WELDING
GMAW = GAS METAL ARC WELDING
FCAW = FLUX CORED ARC WELDING

TABLE OF DETAIL "2" SINGLE–V–GROOVE WELD, BUTT JOINT

TYPE	WELDING PROCESS	DESIGNATION	BASE METAL THICKNESS		GROOVE PREPARATION			TOLERANCES			REMARKS
			T1	T3	ROOT OPENING	GROOVE ANGLE	ROOT FACE	R	A	F	
A	SMAW	B–U2	11.1	–	R = 2.0	A = 60°	F = 1.5	+15,–0	+10°,–0°	+15,–0	SINGLE–PASS WELD
	SMAW	B–U2	11.1	–	R = 2.0	A = 60°	F = 2.0	+15,–0	+10°,–0°	+15,–0	SINGLE–PASS WELD
B	SMAW	B–L1a–GF	11.1	1.0	R = 6.0	–	–	+15,–0	–	–	SINGLE–PASS WELD
	GMAW FCAW	B–L1a–GF	11.1	1.0	R = 9.0	–	–	+15,–0	–	–	SINGLE–PASS WELD

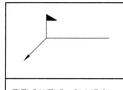
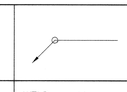
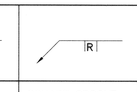
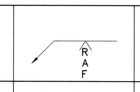
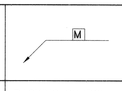
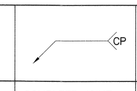
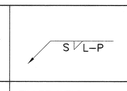
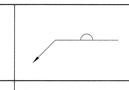
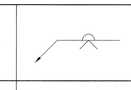
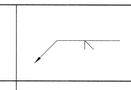
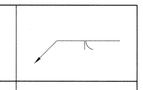
NOTES :

1. ALL DIMENSION ARE IN MILLIMETER, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. MH–GN–03
3. GROOVE WELD MADE AFTER WELDING OTHER SIDE
4. USE WELDING ELECTRODE TYPE "E" 70XX
5. MATERIAL OF BACKING IS THE SAME AS OF PIPE

0 0.1 0.2 0.4 0.6 0.8

SCALE 1:10 METERS

WELDING SYMBOLS

										
FIELDWELD SYMBOL	WELD – ALL – AROUND SYMBOL	SQUARE GROOVE WELDING SYMBOL R=ROOT OPENING	V–GROOVE WELDING SYMBOL R=ROOT OPENING A=GROOVE ANGLE F=ROOT FACE	BACKING SYMBOL (MATERIAL OF BACKING THE SAME AS OF PIPE)	COMPLETE JOINT PENETRATION WELD	FILLET WELD S=WELDING SIZE L=LENGTH OF WELD P=PITCH (CENTER TO CENTER OF WELD)	BACK OR BACKING WELD SYMBOL	COMBINED WELDS. BACKING WELD ON FAR SIDE AND V–GROOVE WELD ON NEAR SIDE	BEVEL GROOVE WELDING SYMBOL	FLARE–BEVEL GROOVE WELDING SYMBOL

NO.	DATE	REVISIONS	CHECKED	APPROVED
3				
2				
1				
	CONSULTANTS		DEDE	

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

MAE HAT HYDROPOWER PROJECT

CIVIL WORKS AND TRANSMISSION LINE
PENSTOCK
WELDING DETAILS

P&C MANAGEMENT CO.,LTD.

Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY

DESIGNED	วิชัย 28.6226	REVIEWED	
DRAWN		SUBMITTED	
CHECKED	28.6226	RECOMMENDED	
PROJECT MANAGER	08/03/2559 DATE	APPROVED	P. Hanpaff.

DRAWING NO. MH–PS–10

SHEET NO. 83 OF 130