



Department of Alternative
Energy Development and Efficiency
MINISTRY OF ENERGY

HUAI LAM SIN HYDROPOWER PROJECT

AMPHOE KONGRA CHANGWAT PHATTHALUNG

CONTRACT C1

CIVIL WORKS – BRIDGE

VOLUME 4 DRAWINGS

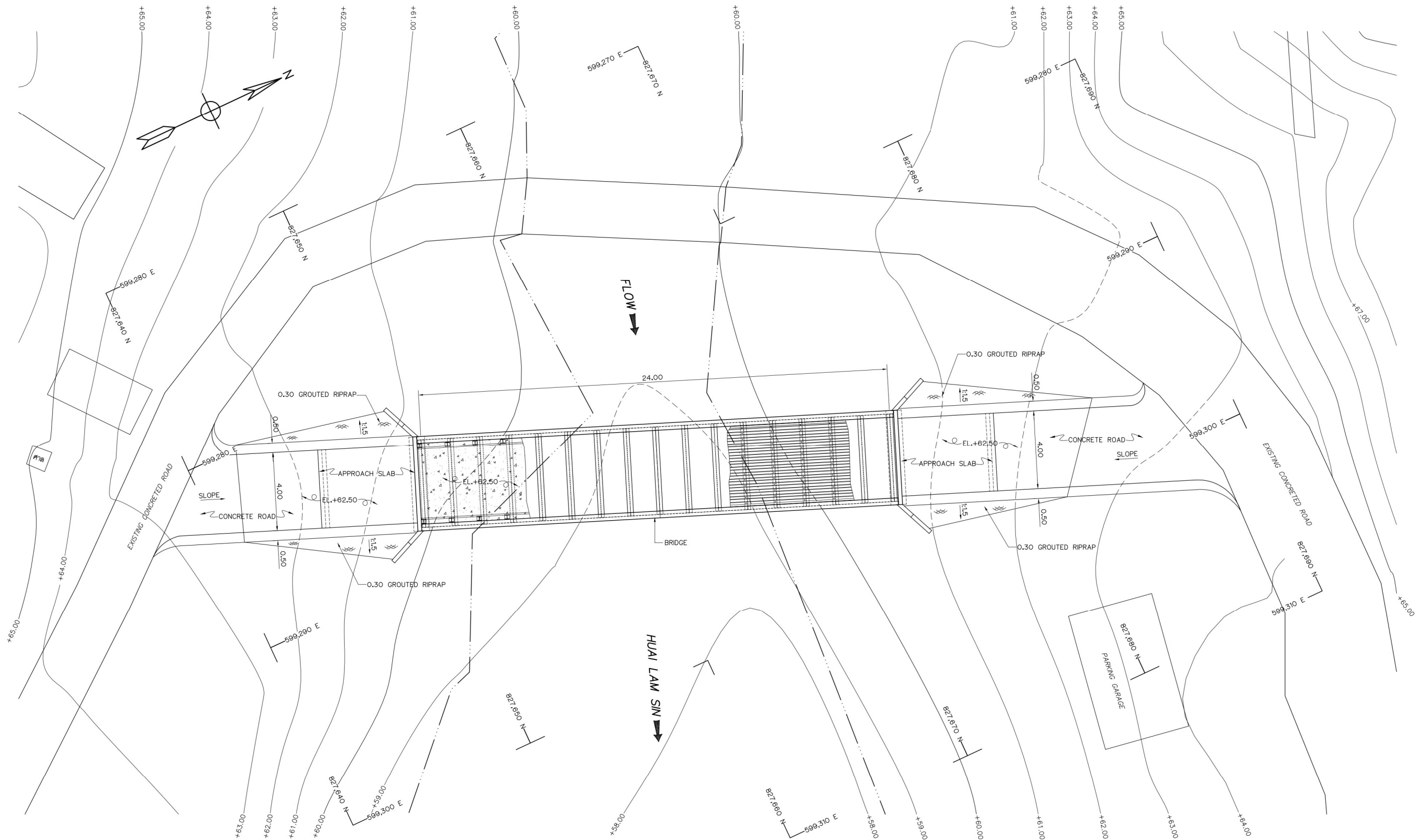


FRONTIER ENGINEERING CONSULTANTS CO.,LTD.

HUAI LAM SIN HYDROPOWER PROJECT

CONTRACT C1 CIVIL WORKS – BRIDGE : LIST OF DRAWINGS

SHEET NO.	DRAWING NO.	DRAWING DETAILS
BRIDGE		
1	HLS-BR-01	GENERAL LAY-OUT
2	HLS-BR-02	PLAN AND SECTIONS
3	HLS-BR-03	DETAILS (1/2)
4	HLS-BR-04	DETAILS (2/2)
5	HLS-BR-05	HANDRAIL AND DETAILS
6	HLS-BR-06	SLAB REINFORCEMENT DETAILS
7	HLS-BR-07	ABUTMENT REINFORCEMENT DETAILS



GENERAL LAY-OUT
SCALE 1:100

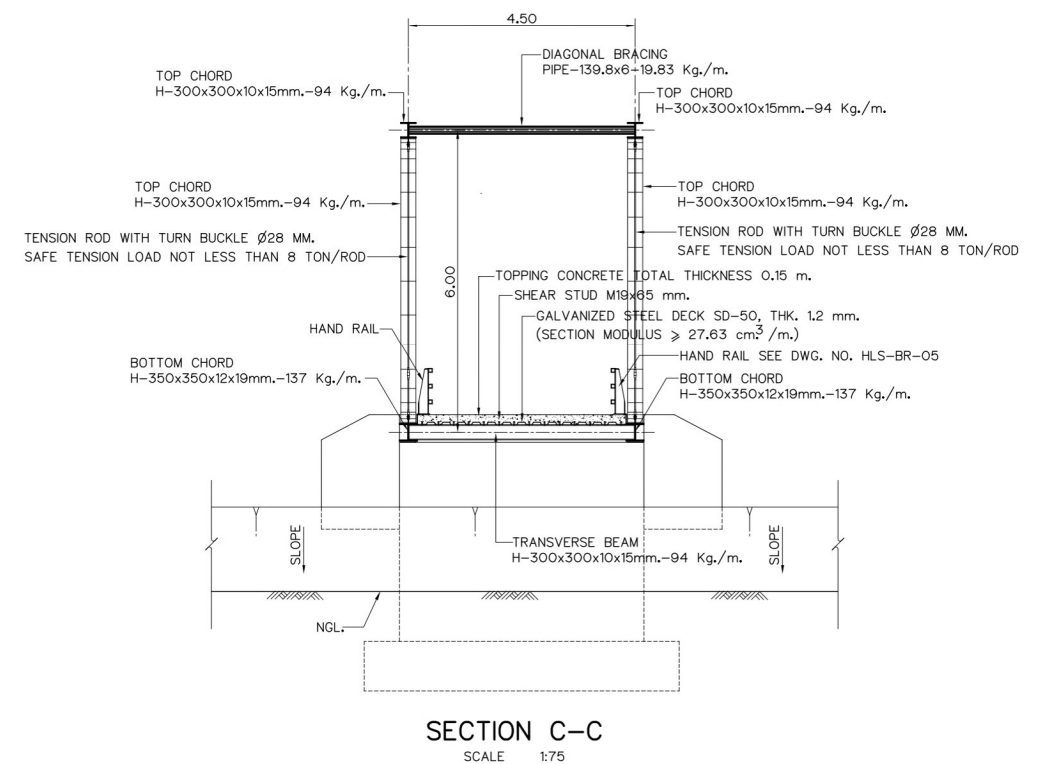
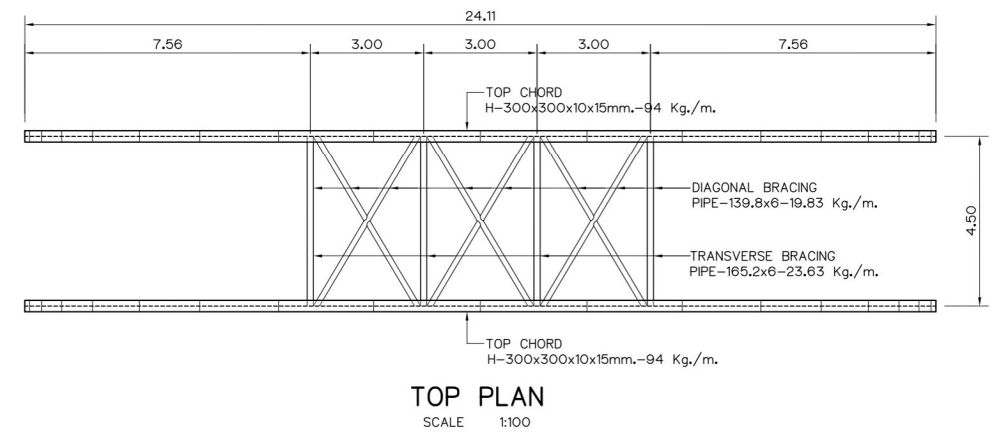
- NOTES :
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. HLS-GN-03

- REFERENCE DRAWINGS :
- | | |
|------------------------------|-----------|
| 1. BRIDGE, PLAN AND SECTIONS | HLS-BR-02 |
|------------------------------|-----------|



3				
2				
1				
NO.	DATE	REVISIONS	CHECKED	APPROVED
		CONSULTANTS	DEDE	

 KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY			
HUA I LAM SIN HYDROPOWER PROJECT			
CIVIL WORKS BRIDGE GENERAL LAY-OUT			
FRONTIER ENGINEERING CONSULTANTS CO.,LTD.		Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
DESIGNED		REVIEWED S.KITICHAJ	
DRAWN		SUBMITTED	
CHECKED		RECOMMENDED	
APPROVED		APPROVED	
PROJECT MANAGER		14/01/62 DATE	DRAWING NO. HLS-BR-01
			SHEET NO. 1 OF 7

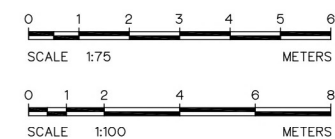


NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS,
UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. HLS-GN-03
3. ALLOWABLE BEARING CAPACITY OF SOIL FOUNDATION SHALL NOT BE LESS THAN $15T/m^2$
4. THE ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE OF STANDARD CYLINDER
($\phi 0.15 \times 0.30$ m.) TEST AT AGE 28 DAYS SHALL BE 240 KSC.

REFERENCE DRAWINGS :

1. BRIDGE, GENERAL LAY-OUT HLS-BR-01



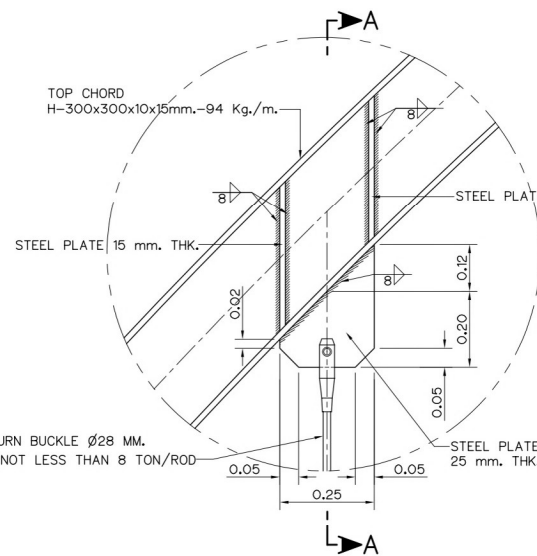
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2					DRAWN		RECOMMENDED	
1					CHECKED	201.7324	APPROVED	
NO.	DATE	REVISIONS	CHECKED	APPROVED	PROJECT MANAGER		DRAWING NO.	SHEET NO.
CONSULTANTS				DEDE	14/01/82 DATE		HLS-BR-02	2 OF 7



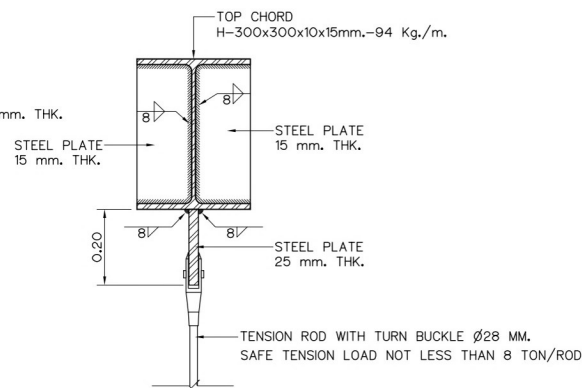
The figure displays three graphical scales used for map drawing, each labeled with its scale and unit (METERS).

- Scale 1:5:** A horizontal bar divided into five equal segments. The top is marked with 0, 0.05, 0.1, 0.2, 0.3, and 0.4. The text "SCALE 1:5" and "METERS" are below the bar.
- Scale 1:10:** A horizontal bar divided into ten equal segments. The top is marked with 0, 0.1, 0.2, 0.4, 0.6, and 0.8. The text "SCALE 1:10" and "METERS" are below the bar.
- Scale 1:20:** A horizontal bar divided into twenty equal segments. The top is marked with 0, 0.5, 1, and 1.5. The text "SCALE 1:20" and "METERS" are below the bar.

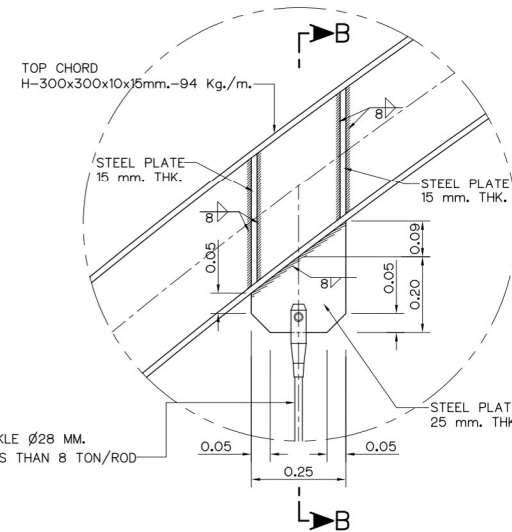
 KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
HUAI LAM SIN HYDROPOWER PROJECT	
CIVIL WORKS BRIDGE DETAILS (1/2)	
FRONTIER ENGINEERING CONSULTANTS CO.,LTD.	 Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY
DESIGNED <i>[Signature]</i> 221.6651	REVIEWED S.KH(CHA)
DRAWN <i>[Signature]</i>	SUBMITTED <i>[Signature]</i>
CHECKED <i>[Signature]</i> 221.7324	RECOMMENDED <i>[Signature]</i>
<i>[Signature]</i> 14/01/82 PROJECT MANAGER DATE	APPROVED <i>[Signature]</i> DRAWING NO. HLS-BR-03
	SHEET NO. 3 OF 7



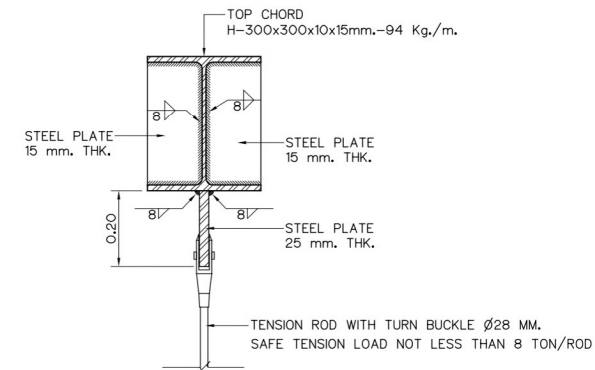
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SCALE 1:10



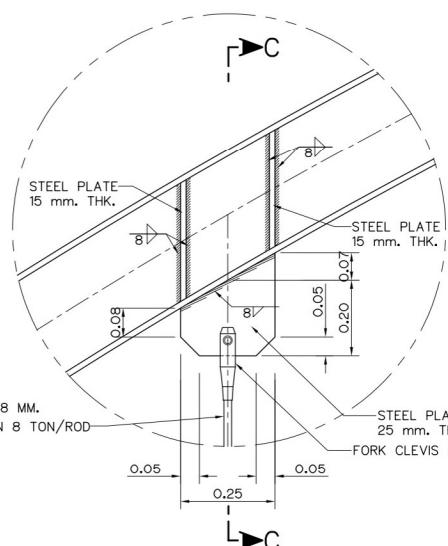
SECTION A-A
SCALE 1:10



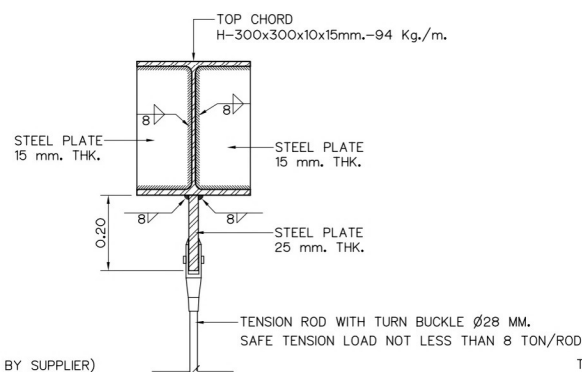
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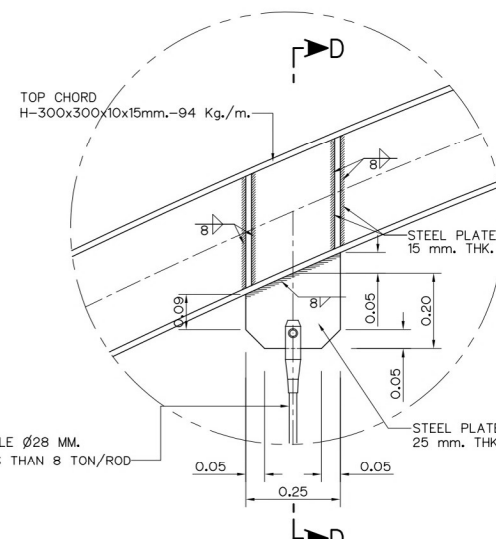
SECTION B-B
SCALE 1:10



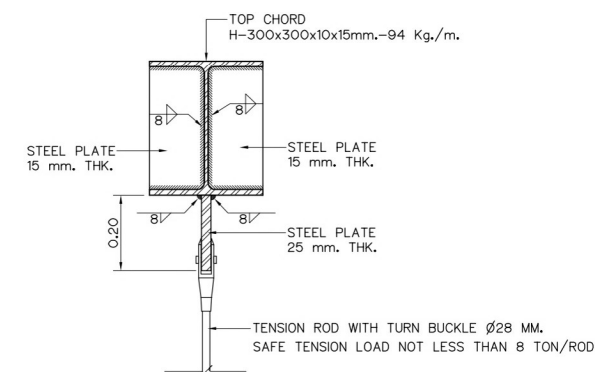
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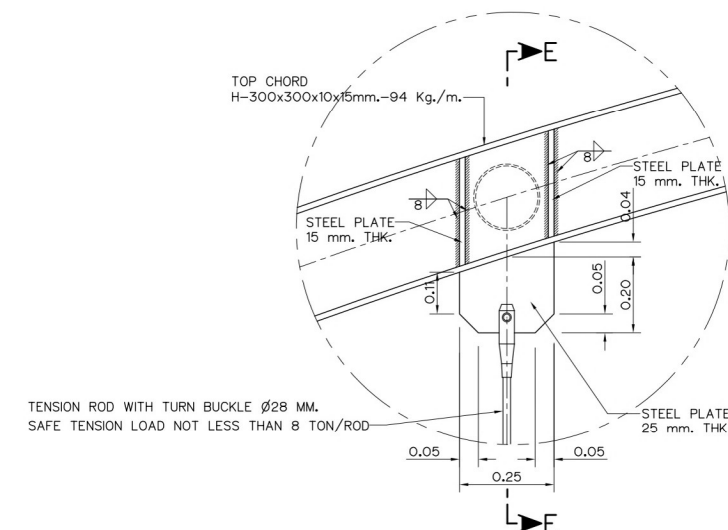
SECTION C-C
SCALE 1:10



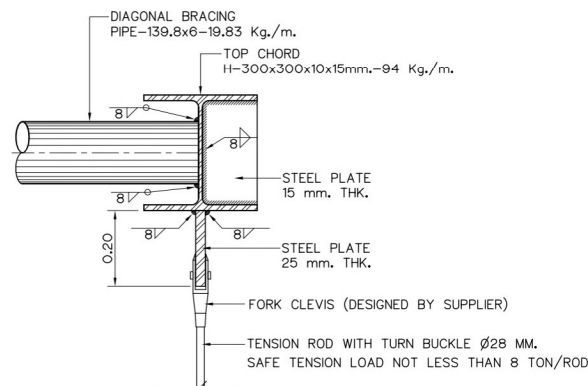
DETAIL "9"
SCALE 1:10



SECTION D-D
SCALE 1:10



DETAIL "10"
SCALE 1:10



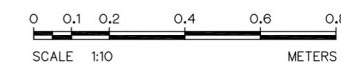
SECTION E-E
SCALE 1:10

NOTES :

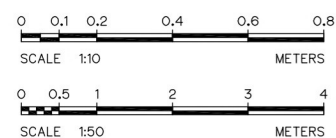
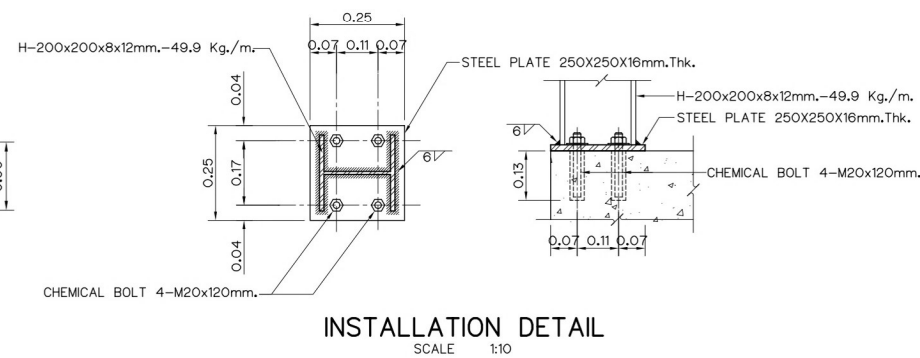
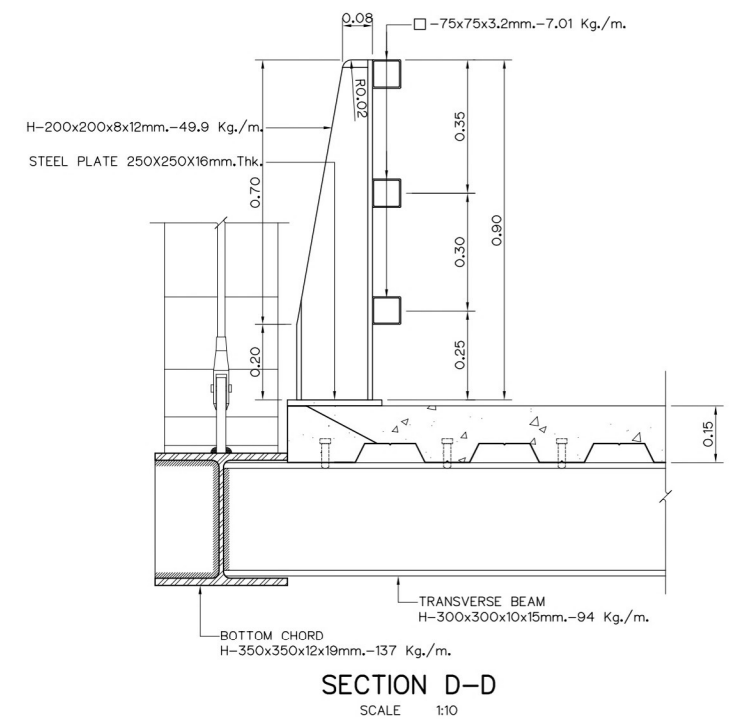
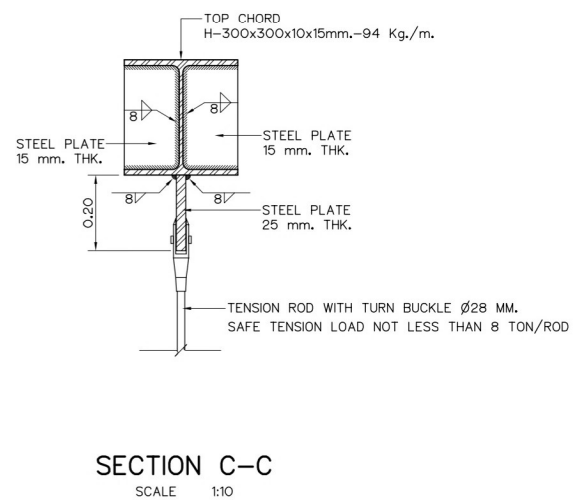
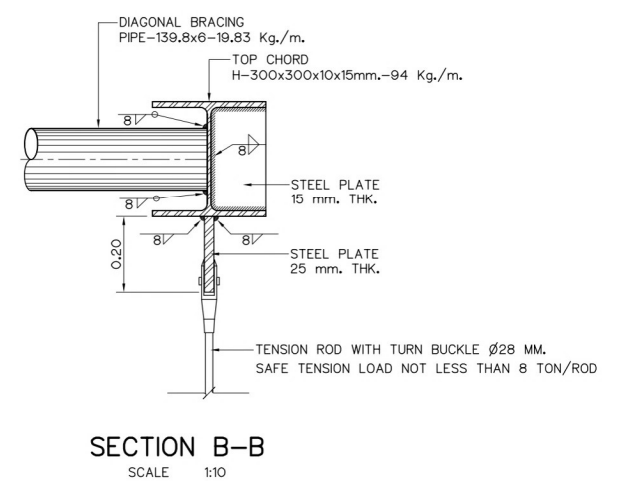
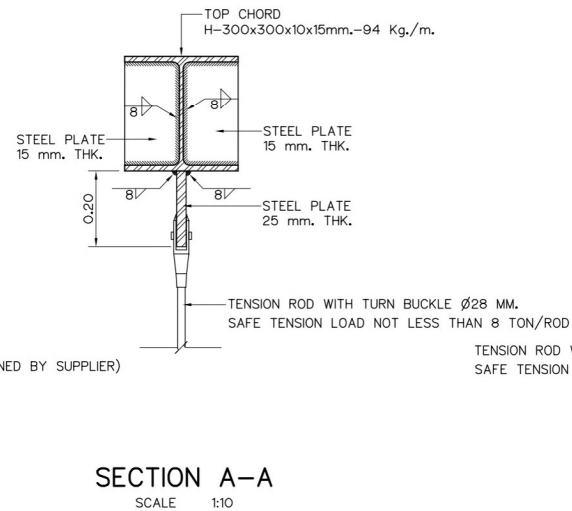
- ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
- SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. HLS-GN-03
- TENSION ROD ARE PRODUCED BY STEEL BAR CLASS SS400 CORROSION PROTECTION SHALL BE HOT-DIP-GALVANIZED. FORK CLEVIS, TURN BUCKLE AND PIN SHALL BE DESIGNED BY SUPPLIER
- WELDING ELECTRODE SHALL CONFORM TO ASTM STANDARD TYPE E70.

REFERENCE DRAWINGS :

- BRIDGE, PLAN AND SECTIONS HLS-BR-02



KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY			
HUAI LAM SIN HYDROPOWER PROJECT			
CIVIL WORKS BRIDGE DETAILS (2/2)			
FRONTIER ENGINEERING CONSULTANTS CO.,LTD.		Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
DESIGNED <i>[Signature]</i> 22.6.651		REVIEWED S.KITICHAJ	
DRAWN <i>[Signature]</i>		SUBMITTED <i>[Signature]</i>	
CHECKED <i>[Signature]</i> 22.7.324		RECOMMENDED <i>[Signature]</i>	
APPROVED <i>[Signature]</i> 14/01/62		APPROVED <i>[Signature]</i>	
CONSULTANTS		DEDE	
PROJECT MANAGER		DRAWING NO. HLS-BR-04	
DATE		SHEET NO. 4 OF 7	

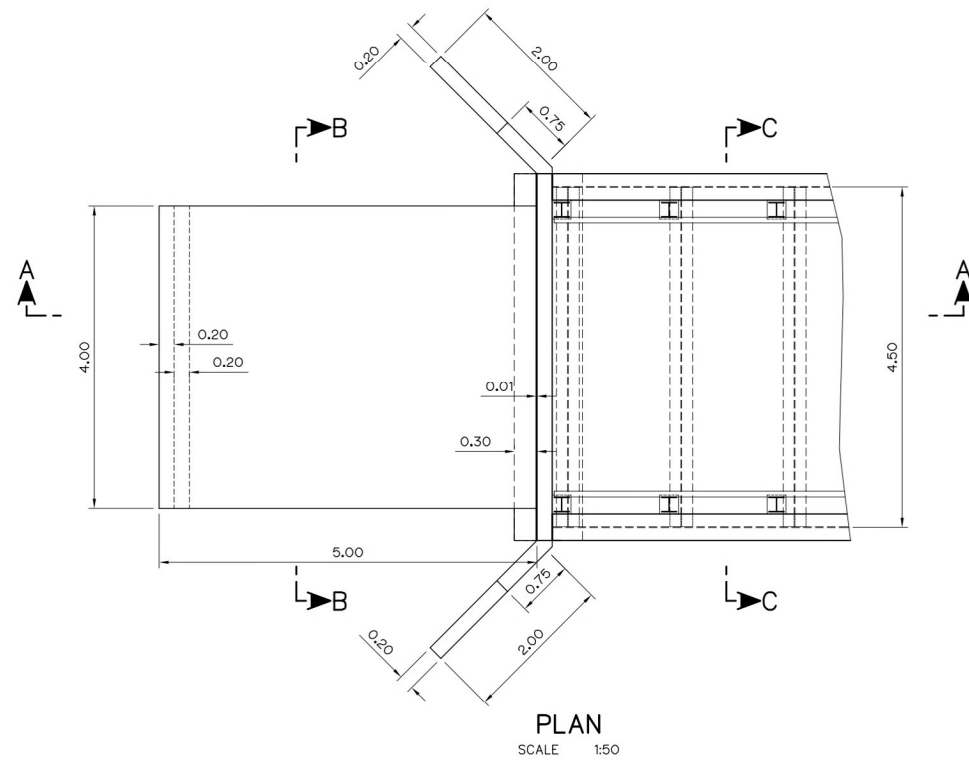


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1				
NO.	DATE	REVISIONS	CHECKED	APPROVED
	CONSULTANTS		DEDE	

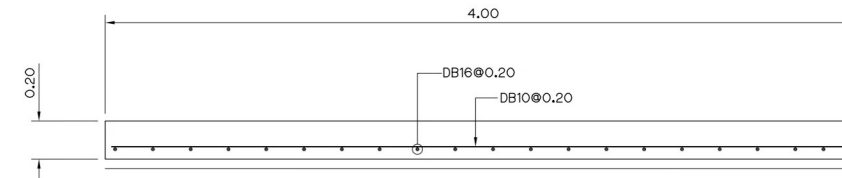
 FRONTIER ENGINEERING CONSULTANTS CO., LTD.		 Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
DESIGNED  22.6.651		REVIEWED S. KUTICHA	
DRAWN 		SUBMITTED 	
CHECKED  22.7.324		RECOMMENDED 	
		APPROVED 	
		DRAWING NO. HLS-BR-05	
PROJECT MANAGER		DATE 14/01/62	
		SHEET NO. 5 OF 7	

- NOTES :**
1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
 2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. HLS-GN-03
 3. TENSION ROD ARE PRODUCED BY STEEL BAR CLASS SS400 CORROSION PROTECTION SHALL BE HOT-DIP-GALVANIZED, FORK CLEVIS, TURN BUCKLE AND PIN SHALL BE DESIGNED BY SUPPLIER
 4. WELDING ELECTRODE SHALL CONFORM TO ASTM STANDARD TYPE E70.

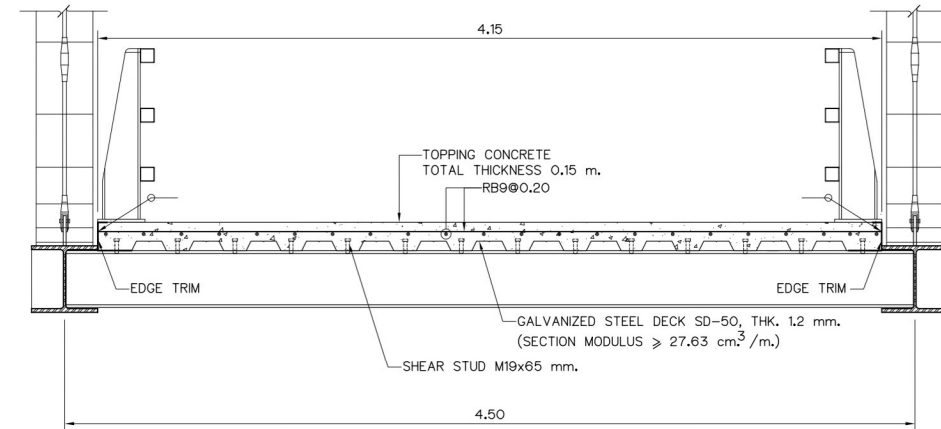
- REFERENCE DRAWINGS :
1. BRIDGE, PLAN AND SECTIONS
HLS-BR-02



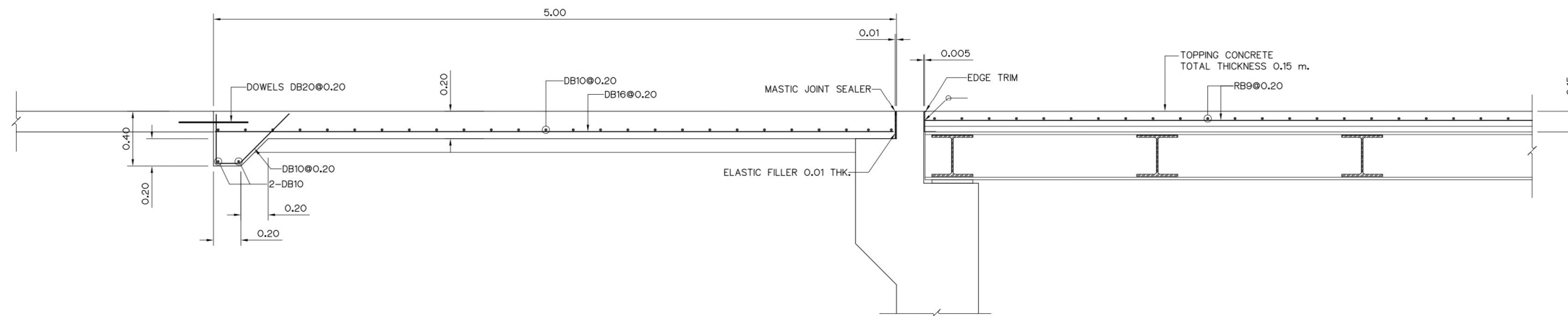
PLAN
SCALE 1:50



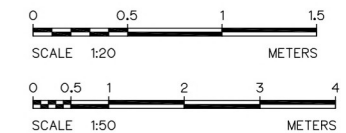
SECTION B-B
SCALE 1:20



SECTION C-C
SCALE 1:20



SECTION A-A
SCALE 1:20



NOTES :

1. ALL DIMENSIONS AND ELEVATIONS (M.S.L.) ARE IN METERS, UNLESS OTHERWISE SHOWN.
2. SYMBOLS, ABBREVIATIONS AND GENERAL NOTES SEE DWG. NO. HLS-GN-03
3. THE ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE OF STANDARD CYLINDER ($\phi 0.15 \times 0.30$ m.) TEST AT 28 DAYS SHALL BE 240 KSC.
4. REINFORCED STEEL BARS SHALL BE CONFORM TO T.I.S. AS FOLLOW:
 - DEFORMED BARS (SD30) - T.I.S. 24-2559
 - ROUND BARS (SD24) - T.I.S. 20-2559
5. GALVANIZED STEEL DECK SHALL CONFORM TO JIS G3352 (STANDARD FOR STEEL DECK) AND JIS G3302 (STANDARD FOR HOT DIP ZINC COATED STEEL SHEET IN COILS)

REFERENCE DRAWINGS :

1. BRIDGE, PLAN AND SECTIONS

HLS-BR-02

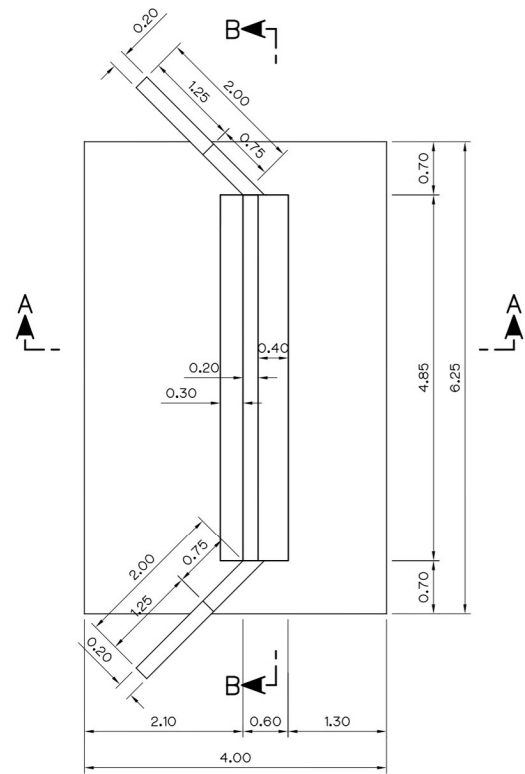
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NO.	DATE	REVISIONS	CHECKED	APPROVED

CONSULTANTS
DEDE

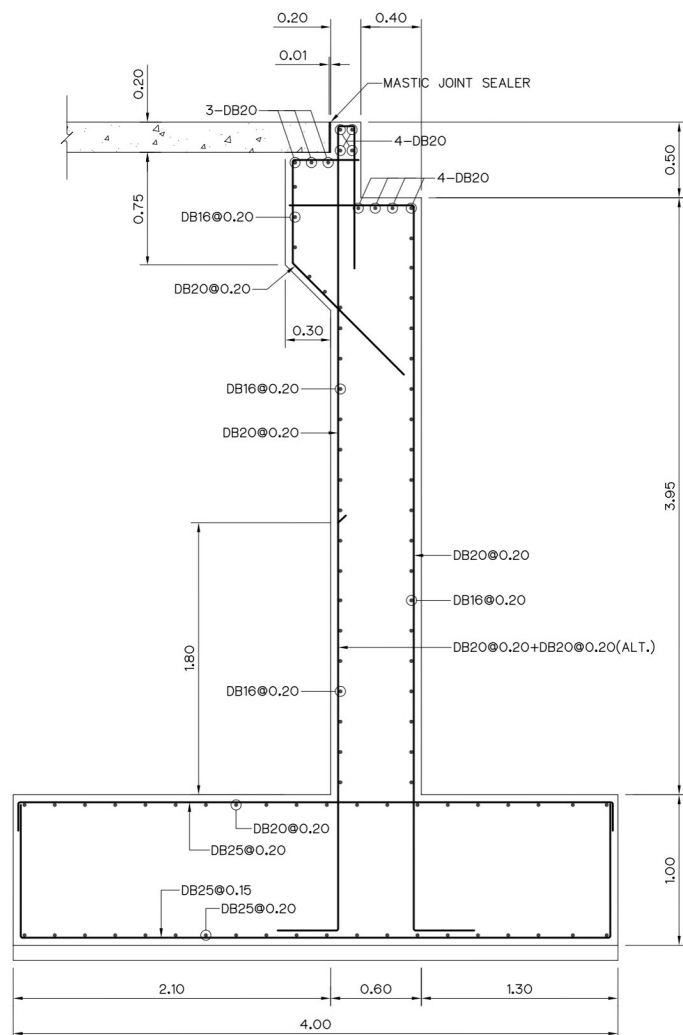
KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY			
HUIAI LAM SIN HYDROPOWER PROJECT			
CIVIL WORKS BRIDGE SLAB REINFORCEMENT DETAILS			
FRONTIER ENGINEERING CONSULTANTS CO.,LTD.		Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
DESIGNED		REVIEWED S.KITI(CHA)	
DRAWN		SUBMITTED	
CHECKED		RECOMMENDED	
APPROVED		APPROVED	
PROJECT MANAGER		DRAWING NO.	
DATE		SHEET NO.	

HLS-BR-06

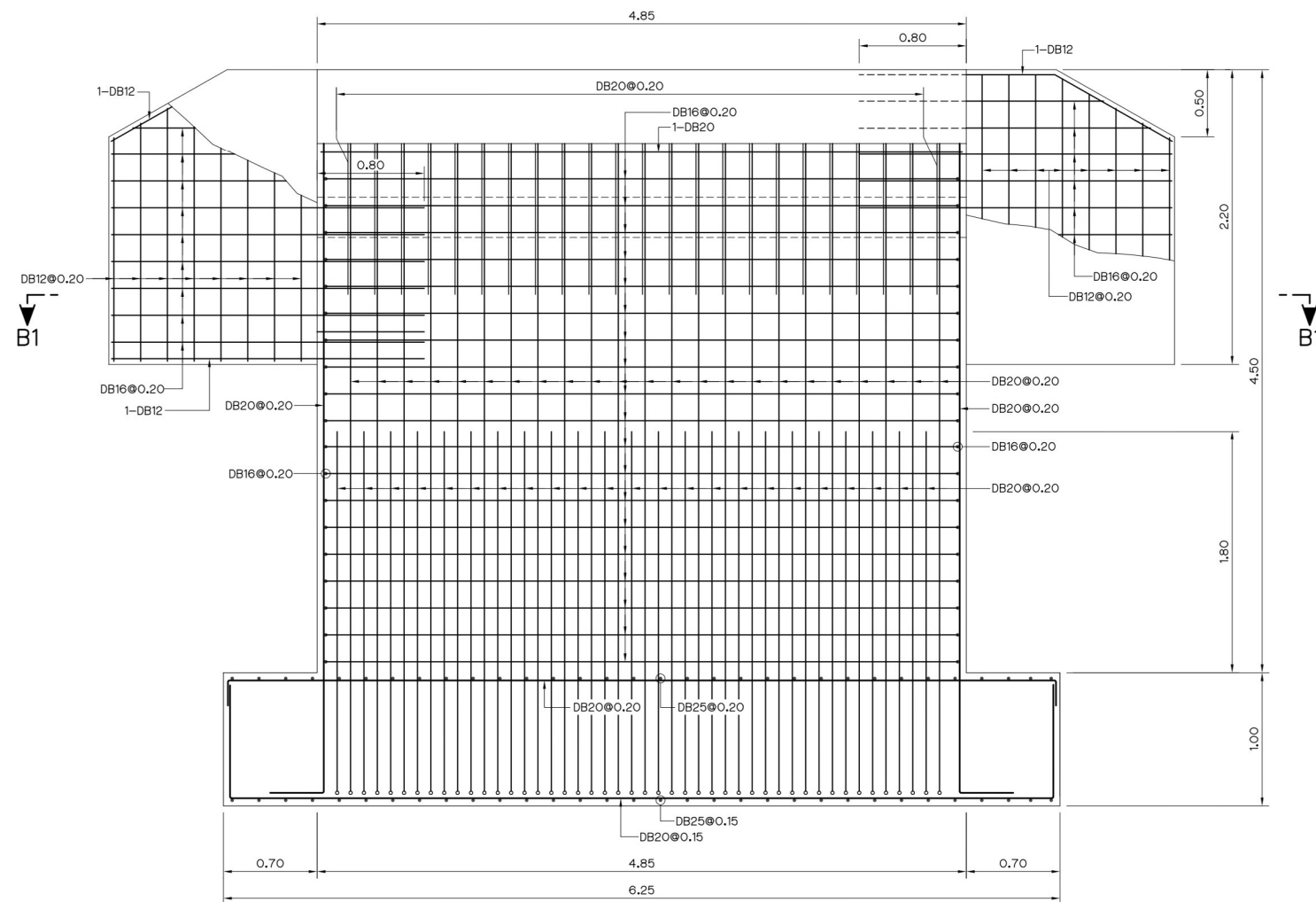
6 OF 7



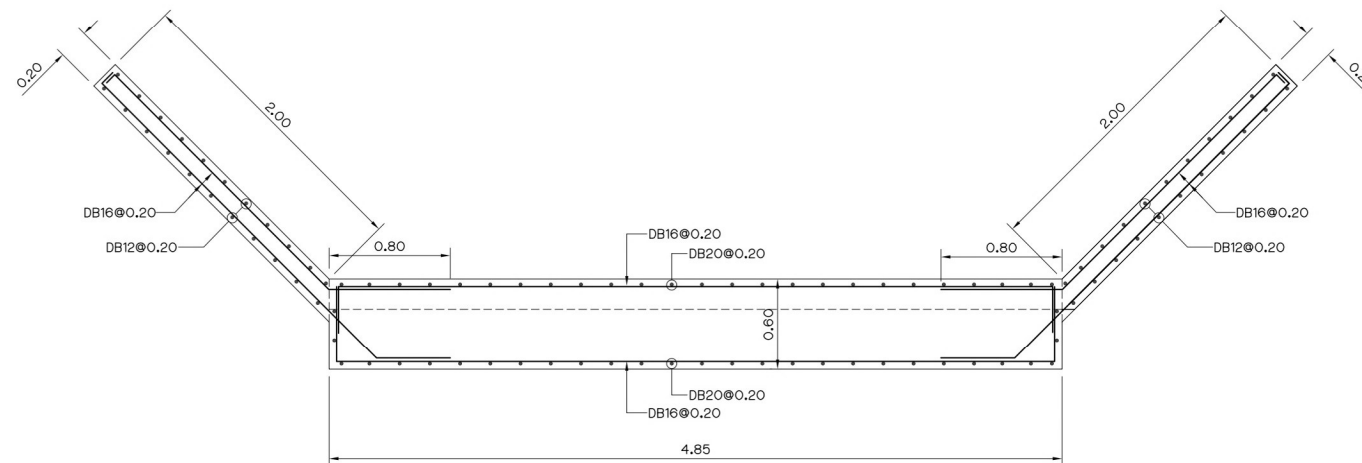
PLAN
SCALE 1:50



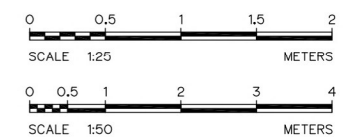
SECTION A-A
SCALE 1:25



SECTION B-B
SCALE 1:25



SECTION B1-B1
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. HLS-GN-03
3. ALLOWABLE BEARING CAPACITY OF SOIL FOUNDATION SHALL NOT BE LESS THAN 15 T/M²

REFERENCE DRAWINGS :

1. BRIDGE, PLAN AND SECTIONS

HLS-BR-02

3				
2				
1				
NO.	DATE	REVISIONS	CHECKED	APPROVED

CONSULTANTS

DEDE

KINGDOM OF THAILAND Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY			
HUAI LAM SIN HYDROPOWER PROJECT			
CIVIL WORKS BRIDGE ABUTMENT REINFORCEMENT DETAILS			
FRONTIER ENGINEERING CONSULTANTS CO.,LTD.		Department of Alternative Energy Development and Efficiency MINISTRY OF ENERGY	
DESIGNED <i>[Signature]</i> 22.6651		REVIEWED S.KITICHAJ	
DRAWN <i>[Signature]</i>		SUBMITTED <i>[Signature]</i>	
CHECKED <i>[Signature]</i> 22.7324		RECOMMENDED <i>[Signature]</i>	
APPROVED <i>[Signature]</i> 14/01/62		APPROVED <i>[Signature]</i>	
PROJECT MANAGER		DRAWING NO. HLS-BR-07	
DATE		SHEET NO. 7 OF 7	