



**LAO PEOPLE'S DEMOCRATIC REPUBLIC**  
PEACE INDEPENDENCE DEMOCRACY UNITY PROSPERITY  
MINISTRY OF PUBLIC WORKS AND TRANSPORT (MPWT)  
**DEPARTMENT OF ROADS**

**NR 13 NORTH IMPROVEMENT AND MAINTENANCE PROJECT**  
**(SIKEUTH JUNCTION – PHONHONG)**  
**CONCEPTUAL DESIGN**

**CONTRACT 1**

Km 0+000 – 19+400, Length of 19.4 Km  
(SIKEUTH JUNCTION – BAN SONGPEUAY)

**VOLUME IV**

**DRAWINGS**  
**PART D: STRUCTURES**  
**(FINAL)**

PREPARED BY:



**ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ**  
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**VIENTIANE**  
**April, 2018**

**LTEC CODE: SD-262-17**

GENERAL

**LIST OF DRAWINGS**

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2-11	BAR ARRANGEMENT OF PRECAST SLAB	BBA-16
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2-19	BAR ARRANGEMENTS OF ABUTMENT A AND B (SHEET 1 OF 5)	BBA-24
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LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
LIST OF DRAWINGS (SHEET 1 OF 2)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. LDW-01
				APPROVED	Mr.Vandy VORASACK	SCALE: -

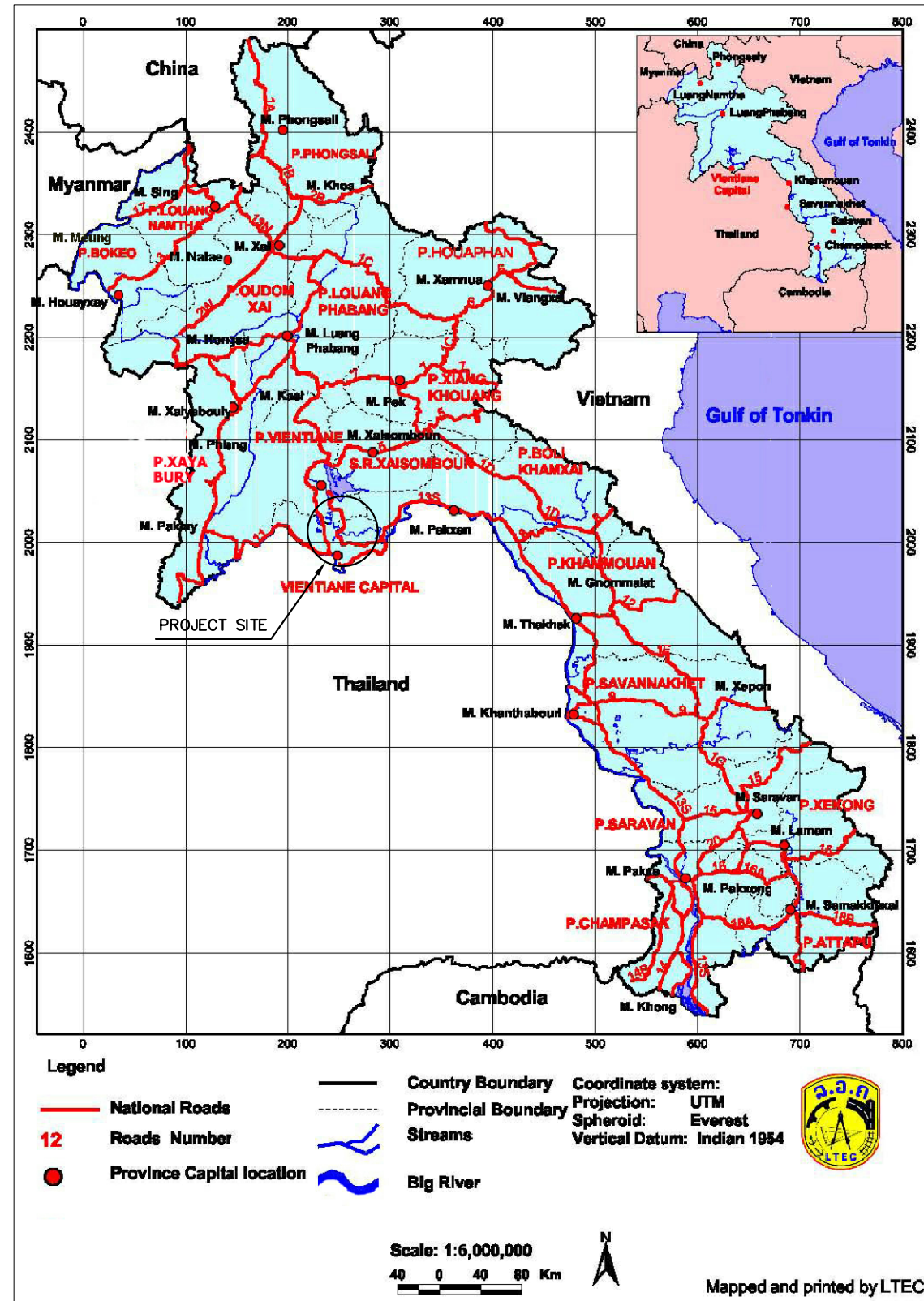
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3-01	SLOPE PROTECTION AROUND ABUTMENT A	BSP-33
3-02	SLOPE PROTECTION AROUND ABUTMENT B	BSP-34
3-03	GUARD RAIL	RGR-35
	<b>03.NAM HOUM BRIDGE</b>	
<b>I</b>	<b>GENERAL DRAWINGS</b>	
1-01	GENERAL PLAN OF BRIDGE	BGP-01
1-02	ELEVATION OF BRIDGE	BAP-02
1-03	GENERAL ARRANGEMENT OF BRIDGE (SHEET 1 OF 2)	BGA-03
1-04	GENERAL ARRANGEMENT OF BRIDGE (SHEET 2 OF 2)	BGA-04
1-05	SUMMARY QUANTITIES OF MAIN MATERIALS FOR BRIDGE	BQM-05
<b>II</b>	<b>STRUCTURE DRAWINGS</b>	
2-01	DIMENSIONS OF SUPER STRUCTURE SPAN 22M	BDS-06
2-02	DIMENSIONS OF PRECAST CONCRETE GIRDER	BDG-07
2-03	ARRANGEMENT OF PC CABLE	BAC-08
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3-02	SLOPE PROTECTION AROUND ABUTMENT B	BSP-33
3-03	GUARD RAIL	RGR-34
	<b>PREDESTRIAN CROSSING BRIDGE</b>	
<b>I</b>	<b>GENERAL DRAWINGS</b>	
1-01	GENERAL ARRANGEMENT OF PREDESTRIAN CROSSING BRIDGE Km 1+800	BGA-01
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2-09	SUMMARY OF QUANTITIES FOR STAIR CASE	BTB-13
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2-11	SUMMARY OF QUANTITIES FOR GIRDER SPAN 12.00 m	BTB-15

<p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	LIST OF DRAWINGS (SHEET 2 OF 2)					CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. LDW-02
						APPROVED	Mr.Vandy VORASACK	SCALE: -

# GENERAL MAP

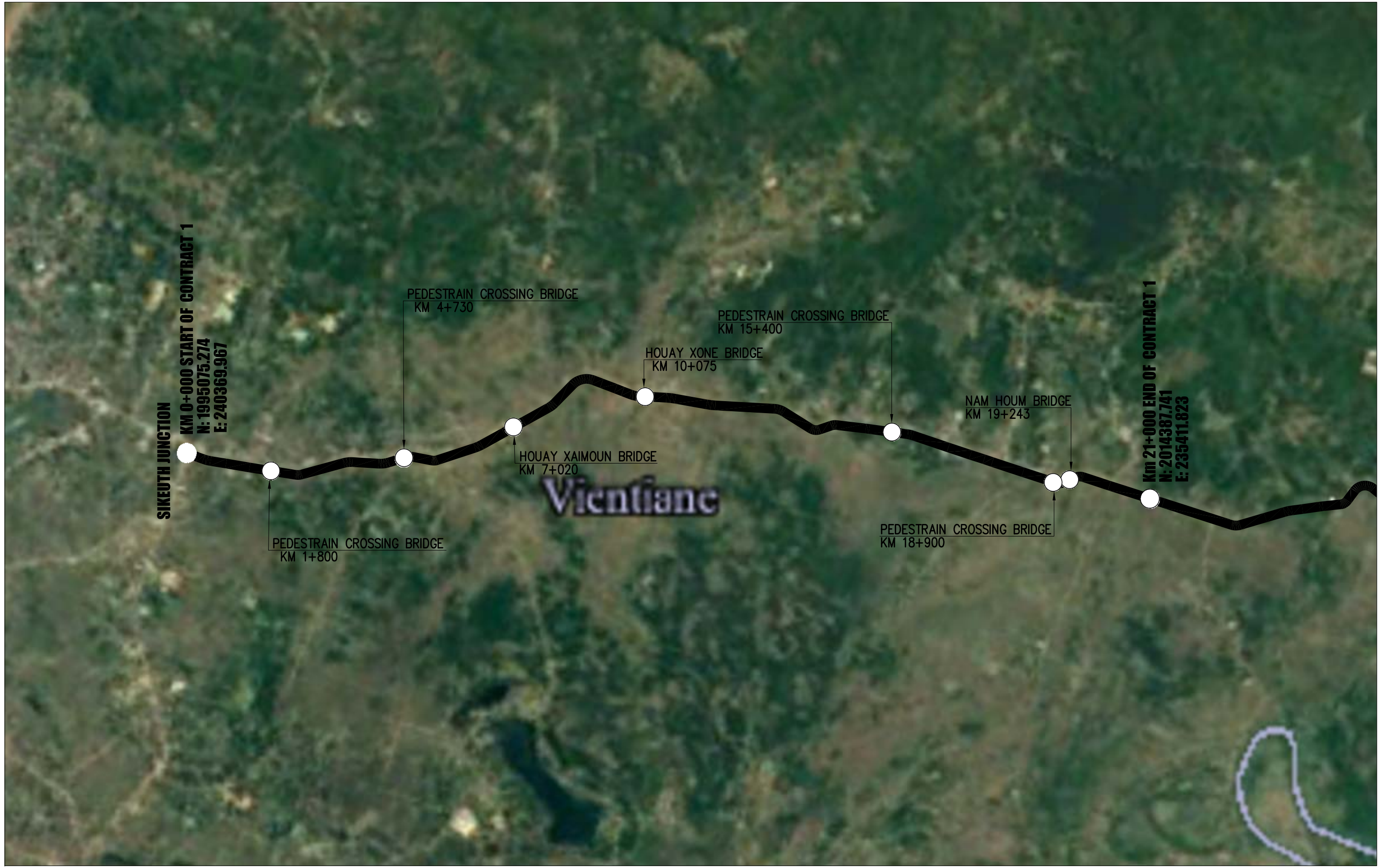



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NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
 CONTRACT 1 : SIKEUTH JUNCTION – BAN SONGPEUAY










GENERAL MAP

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BGM-03
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:6.000.000



 ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED		NAME	SIGNATURE	LTEC CODE: SD-262-17
	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY						DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	LOCATION MAP						CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BLM-04
							APPROVED	Mr.Vandy VORASACK	SCALE: 1: 75000

## SYMBOLS AND ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS	%	PERCENT	■	EDGE MARKER POST
BC	BEGINNING OF CURVE	PI	POINT OF INTERSECTION FOR HORIZONTAL ALIGNMENT	1W	HOUSE, ONE STOREY WOOD
BH	BORE HOLE	PSC	PRESTRESS STEEL CONCRETE	BW	HOUSE, TWO STOREY BRICK AND WOOD
BM	BENCH MARK	R	RADIUS OF HORIZONTAL CIRCULAR CURVE	2C	CONCRETE HOUSE WITH 2 FLOOR
$C_c$	CENTER LINE	RV	RADIUS OF VERTICAL CURVE	1C	CONCRETE HOUSE WITH 1 FLOOR
$m^3$	CUBIC METER	R.L	ROAD LEVEL	PO	PORCH (VERANDA)
PVT	POINT OF VERTICAL TANGENT	T	TANGENT LENGTH OF CIRCULAR CURVE	☒	TELEGRAPH POLE (CONCRETE)
PVC	POINT OF VERTICAL CURVE	B.G.L	BOTTOM OF GIRDER LEVEL	□	ELECTRIC POLE (CONCRETE)
PVI	POINT OF VERTICAL INTERSECTION	HC	HIGH OF CUTTING	→	TO BAN PAKKAGNOUNG
∅	DIAMETER	HF	HIGH OF FILLING	↕	SECTION A-A
L.W.L	LOWEST WATER LEVEL	PC	POINT OF TANGENT	0.00	ELEVATION
H.W.L	HIGH WATER LEVEL	X/E	EASTING COORDINATE IN METER	0.00	(LOW OR HIGH) WATER LEVEL
Pw	EXTRA WIDENING IN HORIZONTAL CURVE	Y/N	NORTHING COORDINATE IN METER	↕	REINFORCEMENT BARS IN NEAR OR TOP FACE.
E	EASTING COORDINATE IN METER	Z/LEV.	VERTICAL COORDINATE IN METER (OR LEVEL)	↕	REINFORCEMENT BARS IN FAR OR BOTTOM FACE.
EC	END OF CURVE		NORTH ARROW	↕	21∅25@200 A4
EP	END POINT		TREE	↕	21 : NUMBER OF BARS WITH IN MARKED AREA.
i	GRADIENT		BENCH MARK (BM)	↕	∅25 : BAR DIAMETER IN mm.
$m^2$	SQUARE METER		POINT INTERSECTIONS	↕	@200 : DISTANCE OF BARS CENTER TO BARS CENTER.
@	SPACING		ROAD	↕	A4 : BENDING TYPE AND REFERENCE NUMBER.
SP	START POINT		EXISTING ROAD	↕	
Se	SUPERELEVATION		CONTOUR LINE	↕	
KM	KILOMETER		FLOW DIRECTION	↕	
kN	KILONEWTON		OLD BRIDGE	↕	
Kg	KILOGRAM		SLOPE	↕	
mm	MILLIMETER		BOTTOM OF BANK	↕	
MPa	MEGAPASCAL		FENCE	↕	
m	METER		WELL	↕	
N	NORTHING COORDINATE IN METER		BORE HOLE (BH)	↕	
Lc	LENGTH OF CURVE		STATION POINT	↕	



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LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION – BAN SONGPEUAY

SYMBOLS AND ABBREVIATIONS

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BSA-05
				APPROVED	Mr.Vandy VORASACK	SCALE: —

## GENERAL NOTES

### I. LOAD SPECIFICATION:

THE LOADING SPECIFICATION USED FOR THE DESIGN OF STRUCTURE IS THE "AASHTO-LRFD 2007.

1. DEAD LOAD:

A. REINFORCED CONCRETE: 24.5 kN/m<sup>3</sup>.

B. EARTH PRESSURE.

EARTH PRESSURE WAS APPLIED IN ACCORDANCE WITH ARTICLE 3.11 OF AASHTO-LRFD 2007, USING RANKINE'S FORMULA FOR STRUCTURE RETAINING SOIL. BACKFILL WILL BE USED WITH ANGLE OF INTERNAL FRICTION GREATER THAN 30°; UNIT WEIGHTY =18kN/m<sup>3</sup>; COMPACTION 98% AND FREE DRAINAGE.

2. LIVE LOAD:

- LIVE LOAD: AASHTO HL-93 AND HS-20-44+25% (HS-25) TRUCK AND LAND LOADING.

3. IMPACT:

$$I = \frac{15.24}{L+38} \leq 0.3$$

WHERE: L=SPAN (m)

4. WIND LOAD

SHALL BE APPLIED IN ACCORDANCE WITH PARAGRAPH 3.15 AASHTO-LRFD 2007

5. BRAKE AND FRICTION (LONGITUDINAL FORCE)

=5% OF THE LANE LOAD.

6. EARTH QUAK:

EARTH QUAKE WAS APPLIED IN ACCORDANCE WITH ARTICLE 3.10 OF AASHTO-LRFD 2007, SEISMIC ZONE1, A=0.08.

7. STRUCTURE ANALYSIS:

- THE LOAD DISTRIBUTION FOR PSC I GIRDER BRIDGE SHALL BE CALCULATED FOLLOWING PART C-SECTION 3 OF AASHTO-LRFD
- FOR REQUIREMENTS OF STRUCTURE DESIGN USED "AASHTO-LRFD" SPECIFICATION.
- THE DESIGN USE "SI" UNIT.

### II. MATERIAL FOR STRUCTURE:

1. CONCRETE:

DESCRIPTION	STRENGTH f'c (AT 28 DAYS)
- PRECAST PRESTRESS CONCRETE I GIRDER AND PANEL	40 MPa
- DIAPHRAGMS	35 MPa
- REINFORCED CONCRETE DECK SLAB	30 MPa
- ABUTMENT AND RETAINING WALL	25 MPa
- APPROACH SLAB	25 MPa
- BLINDING CONCRETE	10 MPa

2. REINFORCING STEEL BAR:

- YIELD STRENGTH OF ROUND BAR: 240 MPa. (FOR BARS WITH DIAMETER ø6 AND ø8)
- YIELD STRENGTH OF DEFORMED BAR: 414 MPa (FOR BARS WITH DIAMETER ø>10, UNLESS OTHERWISE SHOWN ON DRAWING)

3. PRESTRESSING STEEL

UTILIZATION	NOMINAL DIAMETER (mm)	YIELD STRENGTH (MPa)	BREAKING STRENGTH (MPa)
PC I GIRDER	12.7-7 WIRE STRAND	1670	1860
DIAPHRAGM	ø29	850	1070

### III. ALLOWABLE STRESSES:

STRUCTURE	COMPRESSION (MPa)	TENSION (MPa)
1. PRESTRESSING CONCRETE.		
1.1 TEMPORARY STRESS BEFORE LOSSES DUE TO CREEP AND SHRINKAGE	19.8	3.15
1.2 STRESS AT SERVICE LOAD AFTER LOSSES HAVE OCCURRED	16.0	3.15
2. REINFORCING CONCRETE	12.0	-
3. PRESTRESSING STEEL		
3.1 STRESS AFTER IMMEDIATE LOSS		1386
3.2 STRESS AT SERVICE LOAD AFTER LOSS		1336

### IV. CONSTRUCTION:

- FORM WORK SHALL BE CONSTRUCTED TO PROVIDE A 20x20 mm SMOOTH (UNLESS OTHERWISE SHOWN ON DRAWING) STRAIGHT ON ALL EXPOSED FACES OF STRUCTURE.
- MINIMUM COVER OF REINFORCING BAR IN SUBSTRUCTURE SHALL BE 40 mm. UNLESS NOTED OTHERWISE.
- NORMAL POSITION FOR TOP OF FOOTING IS 50 cm BELOW GROUND LEVEL EXCEPT AT RIVER SIDE.

### V. OTHER DESIGN CONDITION:

- SPLICING OF REINFORCING BAR:  
BASIC DEVELOPMENT OF LAP LENGTH Ld SHALL NOT BE LESS THAN 24Db OR 300 mm, WHERE Db: NOMINAL DIAMETER OF INDIVIDUAL BAR IN mm.
- PRESTRESSING FORCE: OF PC STRAND: 150 KN.  
OF PRESTRESS BAR: 480KN.
- MINIMUM N-VALUE FROM STANDARD PENETRATION TEST (SPT) OF BEARING STRATUM: 30

### VI. OTHER:

- THE DIMENSIONS ARE SHOWN IN MILLIMETERS. EVERY ITEM OF SUBSTRUCTURE AND PROTECTION AROUND ABUTMENT SHALL BE REQUIRED TO COMPLETED BEFORE RAINY SEASON.
- EXISTING BRIDGE SHALL BE REMOVED BEFORE CONSTRUCTION OF NEW BRIDGE.
- THE QUANTITIES FOR BRIDGE AND STRUCTURE SHOWN ON THE DRAWINGS ARE APPROXIMATE AND FOR REFERENCE PURPOSES ONLY.  
ANY DISCREPANCIES BETWEEN THESE ESTIMATED QUANTITIES AND THE FINALLY ACCEPTED SHALL NOT BE A REASON FOR CLAIMS OR DISPUTE.
- 1. ALL DIMENSIONS ARE IN mm, LEVELS ARE IN METERS.
- 2. ALL CONCRETE EDGES SHALL BE CHAMFER 20X20 mm.



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GENERAL NOTES

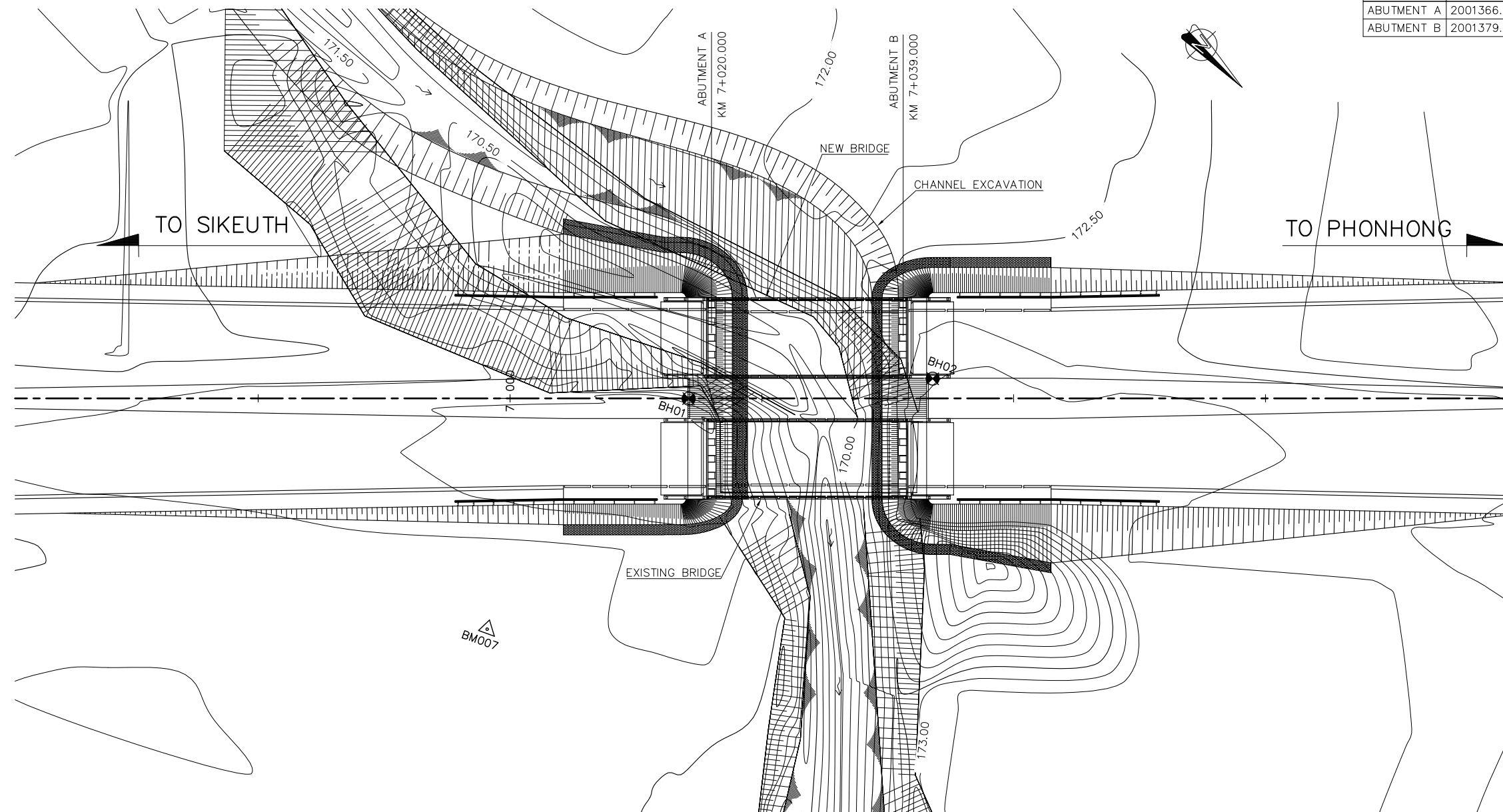
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				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BGN-06
				APPROVED	Mr.Vandy VORASACK	SCALE: -

# 01.HOUAY XAIMOUN BRIDGE

# I. GENERAL DRAWINGS

LIST OF COORDINATES

CODE	N (m)	E (m)	Z (m)
BM06	2001187.047	238057.142	172.497
BM07	2001371.965	237909.720	172.909
ABUTMENT A	2001366.393	237873.655	-
ABUTMENT B	2001379.505	237859.890	-



GENERAL PLAN OF BRIDGE

SCALE 1:500



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

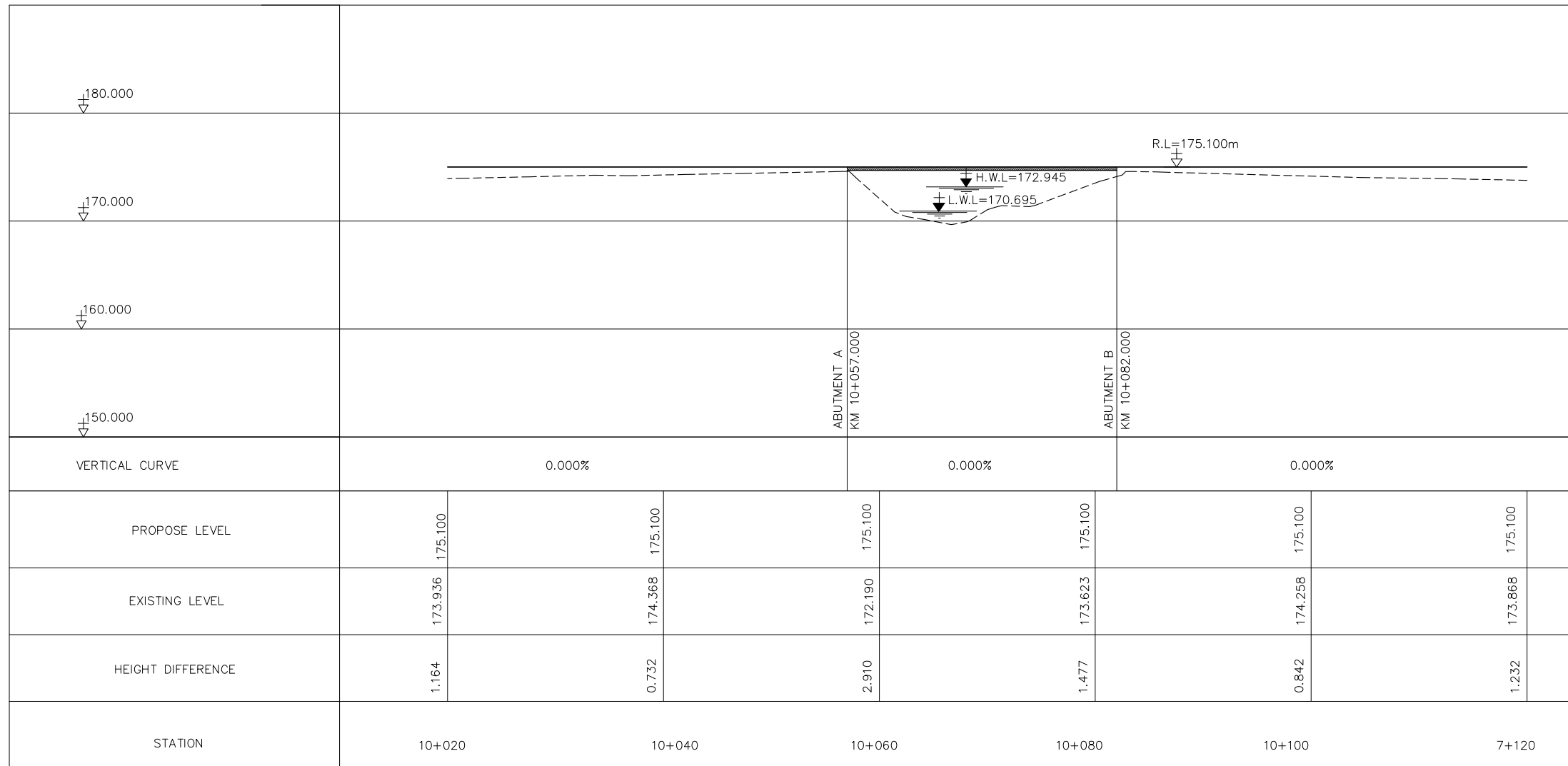
NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKETH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
GENERAL PLAN OF BRIDGE

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BGP-01
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:500

## ELEVATION OF BRIDGE

← TO SIKEUTH

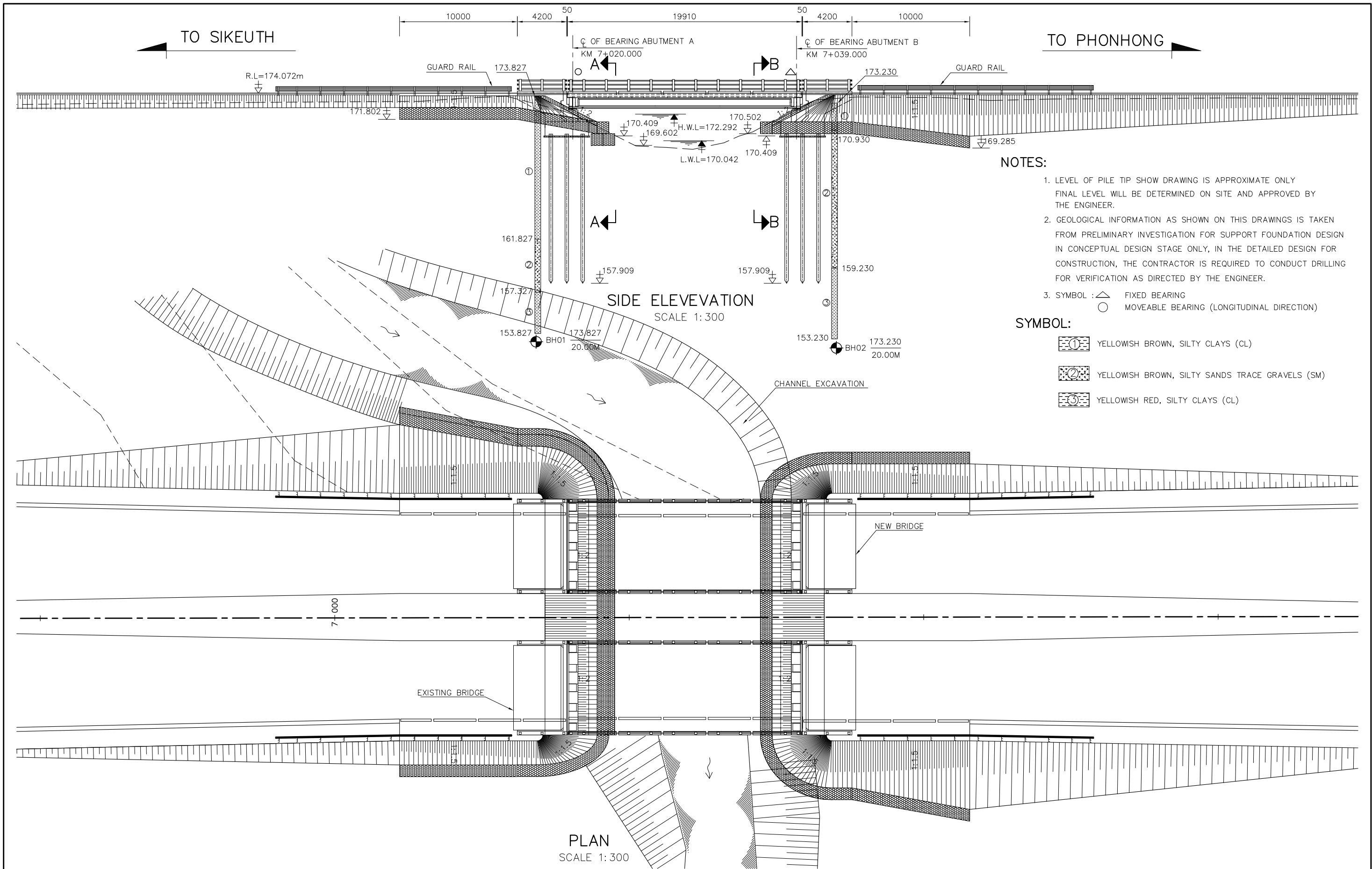
TO PHONHONG →



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
ELEVATION OF BRIDGE

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BAP-02
				APPROVED	Mr.Vandy VORASACK	SCALE: 1: 500



**NOTES:**

1. LEVEL OF PILE TIP SHOW DRAWING IS APPROXIMATE ONLY  
FINAL LEVEL WILL BE DETERMINED ON SITE AND APPROVED BY THE ENGINEER.
2. GEOLOGICAL INFORMATION AS SHOWN ON THIS DRAWINGS IS TAKEN FROM PRELIMINARY INVESTIGATION FOR SUPPORT FOUNDATION DESIGN IN CONCEPTUAL DESIGN STAGE ONLY, IN THE DETAILED DESIGN FOR CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO CONDUCT DRILLING FOR VERIFICATION AS DIRECTED BY THE ENGINEER.
3. SYMBOL : △ FIXED BEARING  
○ MOVEABLE BEARING (LONGITUDINAL DIRECTION)

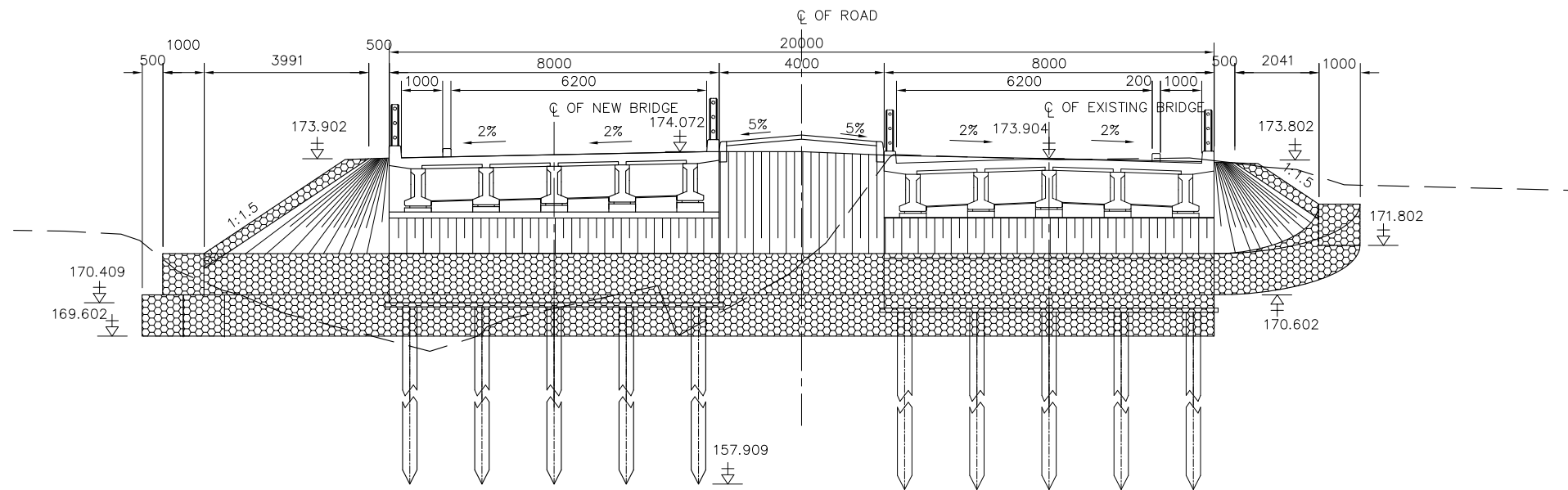
**SYMBOL:**

- ① YELLOWISH BROWN, SILTY CLAYS (CL)
- ② YELLOWISH BROWN, SILTY SANDS TRACE GRAVELS (SM)
- ③ YELLOWISH RED, SILTY CLAYS (CL)

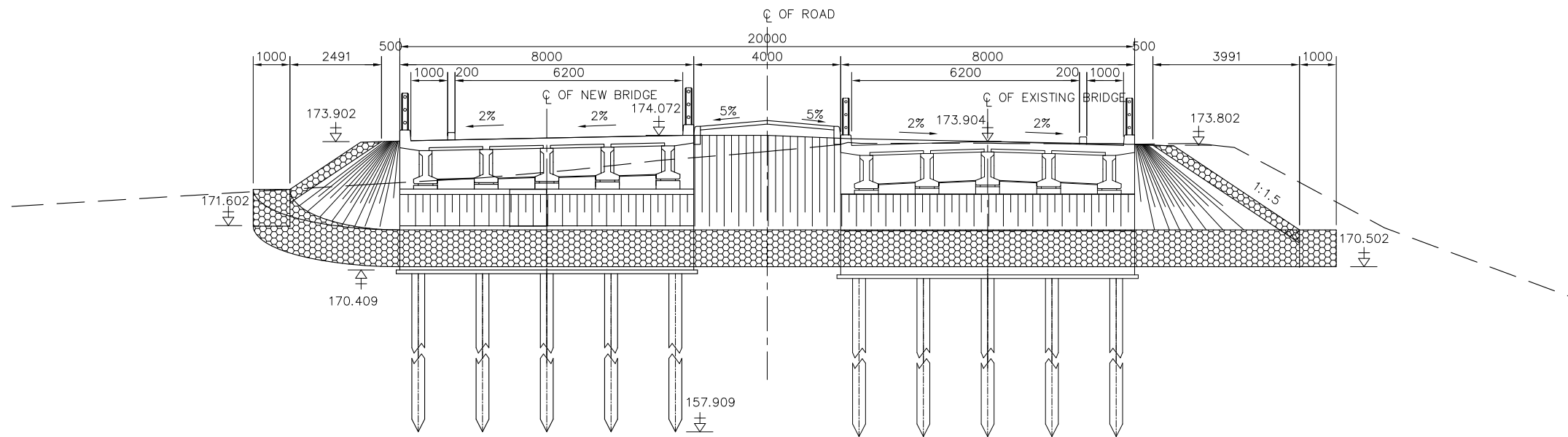
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
  
HOUAY XAIMOUN BRIDGE  
GENERAL ARRANGEMENT OF BRIDGE  
(SHEET 1 OF 2)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BGA-03
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:300



SECTION A-A  
SCALE 1:150



SECTION B-B  
SCALE 1:150

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS, LEVEL ARE IN METERS.
2. GEOLOGICAL INFORMATION SEE IN SEPARATE REPORT ON SUB SOIL INVESTIGATION.



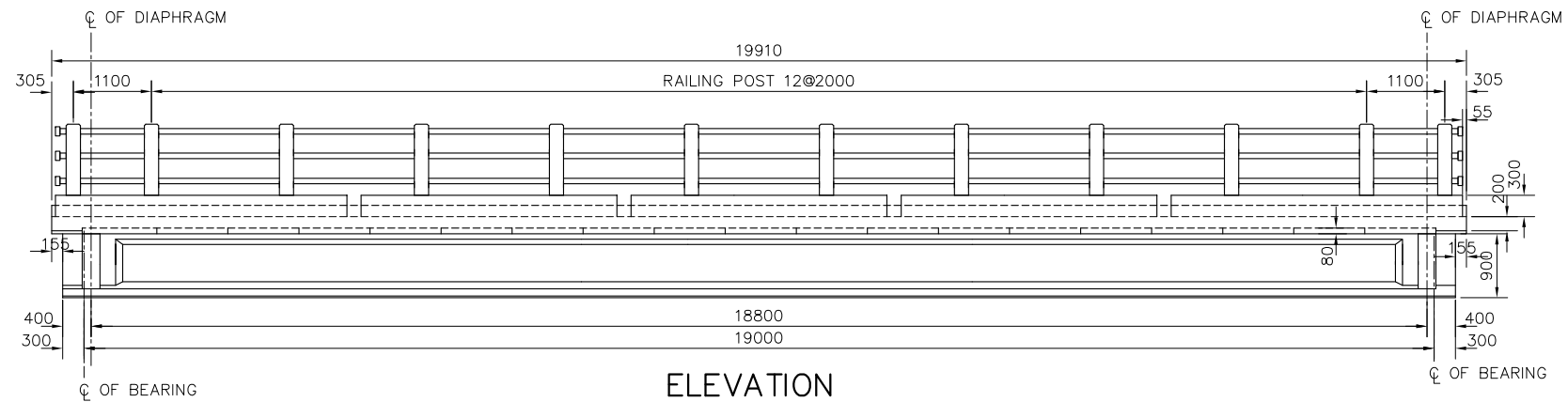
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LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
GENERAL ARRANGEMENT OF BRIDGE  
(SHEET 2 OF 2)

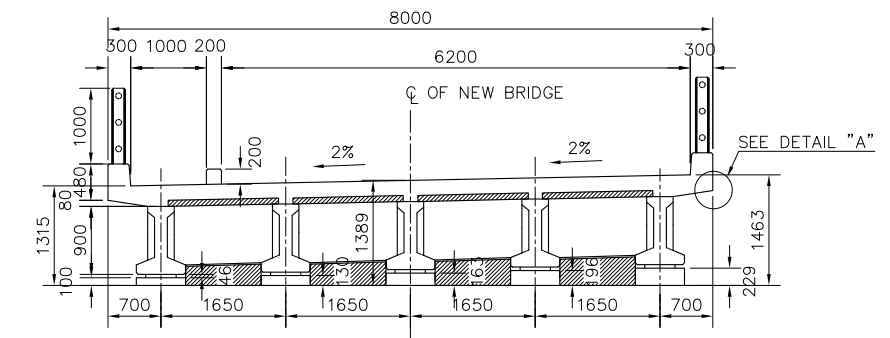
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
			DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
			CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BGA-04
			APPROVED	Mr.Vandy VORASACK		SCALE: 1:150



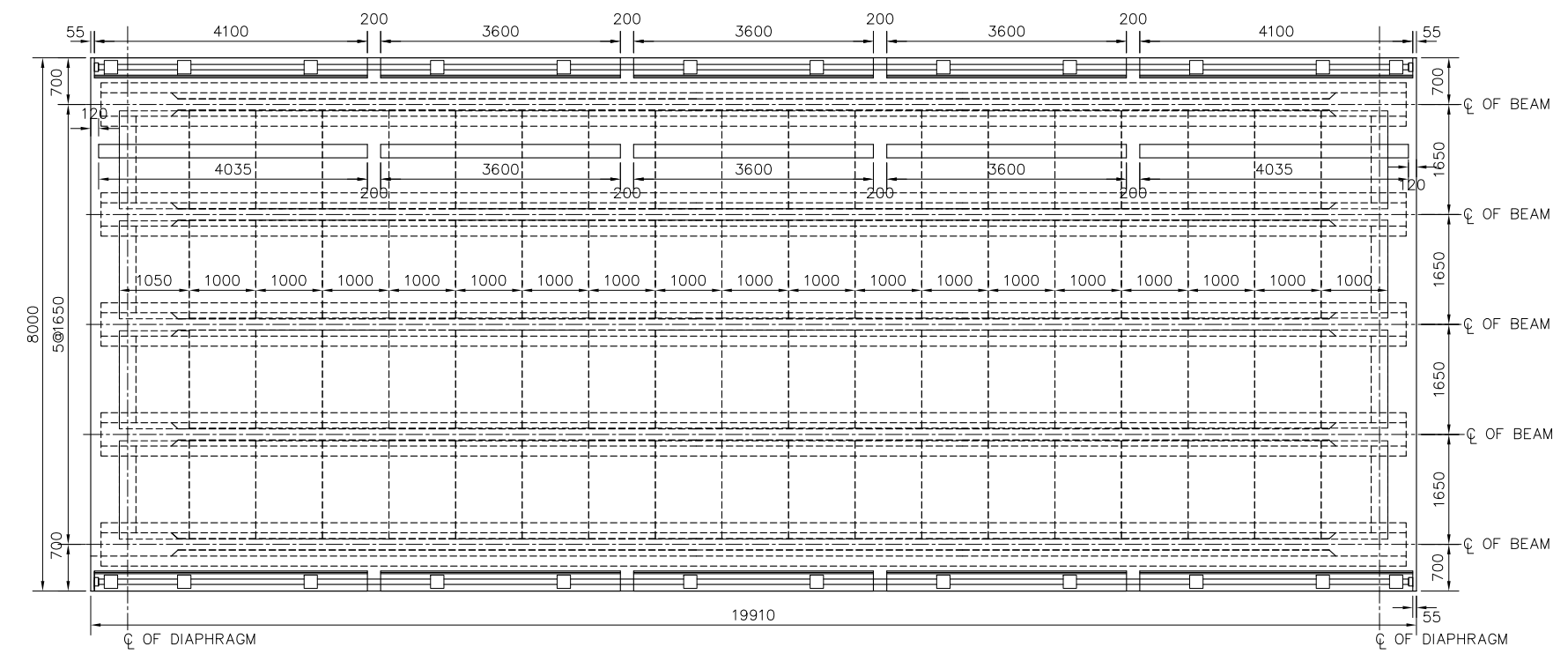
## II. STRUCTURE DRAWINGS



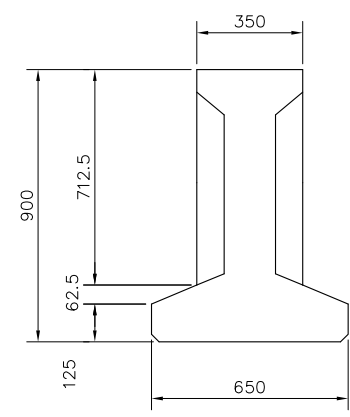
**ELEVATION**  
SCALE: 1:100



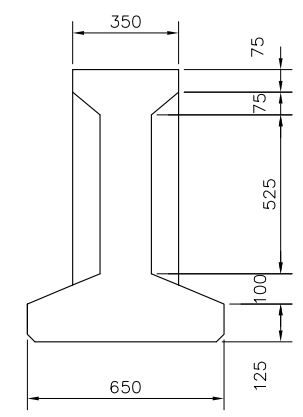
**CROSS-SECTION**  
SCALE: 1:100



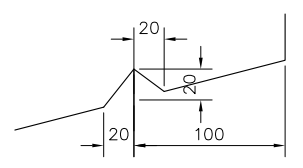
**PLAN**  
SCALE: 1:100



**THE END**  
SCALE: 1:25



**INTERNAL**  
SCALE: 1:25

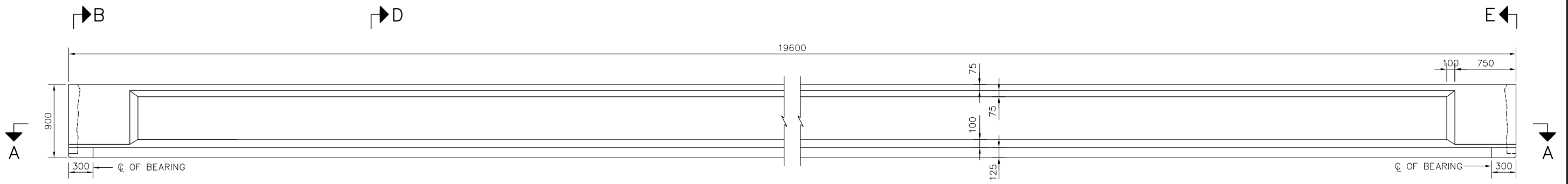


**DETAIL "A"**  
SCALE: 1:5

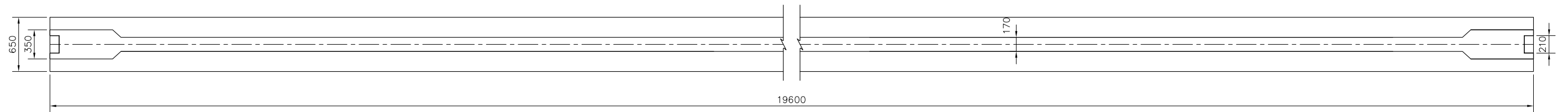
**NOTE:**

1. ALL DIMENSIONS ARE IN MILLIMETERS.

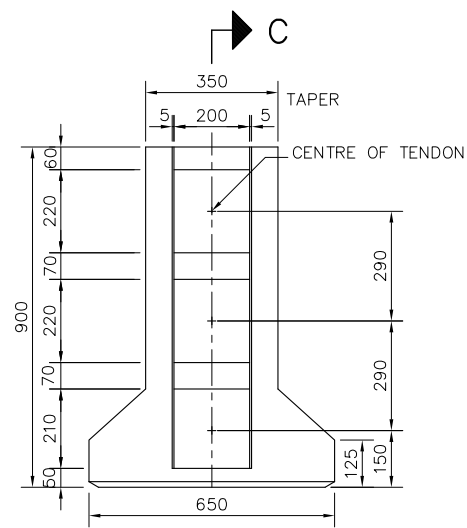
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	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	HOUAY XAIMOUN BRIDGE					CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BDS-06
	DIMENSION OF SUPERSTRUCTURE					APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN
	SPAN 19 m							



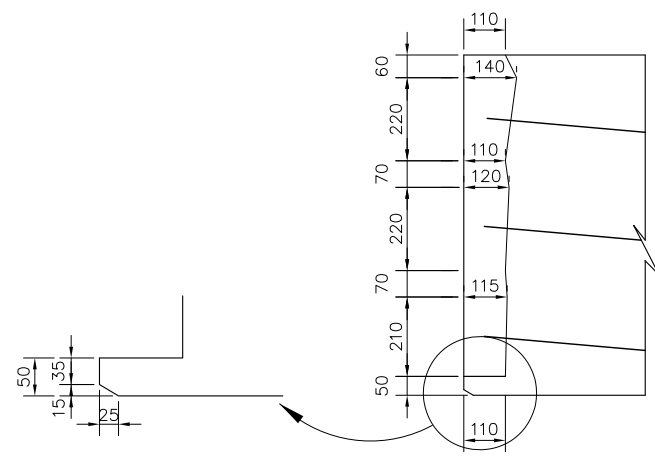
VIEW OF GIRDER  
SCALE 1: 50



SECTION A-A  
SCALE 1: 50

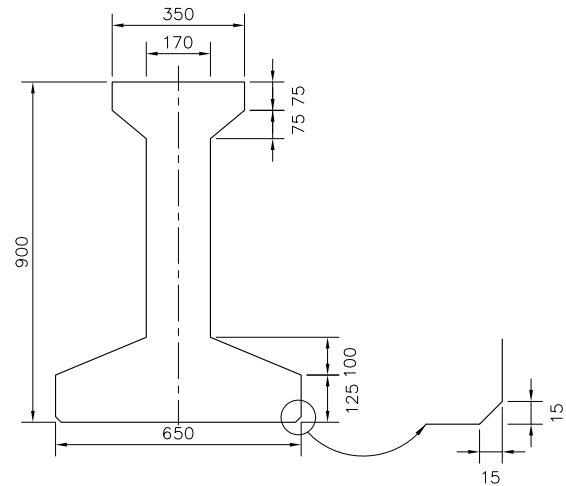


SECTION B-B  
SCALE 1: 20



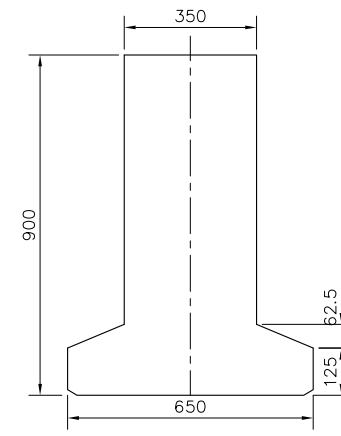
CHAMFER

SECTION C-C  
SCALE 1: 20



SECTION D-D  
SCALE 1: 20

CHAMFER



VIEW E-E  
SCALE 1: 20

NOTES:

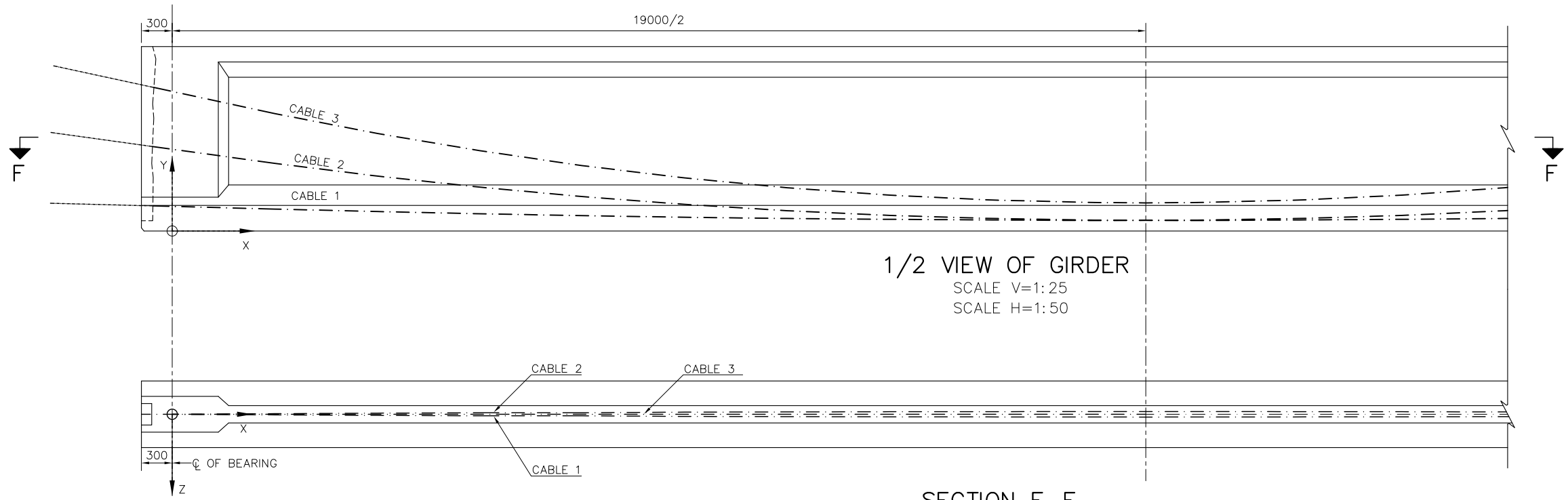
1. ALL DIMENSIONS ARE IN MILLIMETERS.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
DIMENSIONS OF PRECAST  
CONCRETE GIRDER

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BDG-07
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



1/2 VIEW OF GIRDER  
SCALE V=1:25  
SCALE H=1:50

SECTION F-F  
SCALE 1:50

TABLE OF CABLE CO-ORDINATES

	X	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	9500
CABLE 3	Y	681	573	476	392	319	259	211	175	151	139	137
	Z	0	0	0	0	0	0	0	0	0	0	0
CABLE 2	Y	399	330	268	214	168	130	99	76	61	53	52
	Z	-1	-6	-11	-15	-18	-21	-23	-25	-26	-27	-27
CABLE 1	Y	120	107	95	84	75	67	61	57	54	52	52
	Z	1	6	11	15	18	21	23	25	26	27	27

STRESSING SEQUENCE

CABLE 3	THIRD
CABLE 2	FIRST
CABLE 1	SECOND

NOTES:

X AND Z CO-ORDINATES ARE ON DUCT C  
Y CO-ORDINATE IS TO UNDERSIDE OF DUCT

- ALL DIMENSIONS ARE IN mm.
- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DWG. No. BDG-07
- CONCRETE
  - ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.
  - CONCRETE SHALL BE GRADE 40MPa. MAXIMUM SIZE OF AGGREGATE SHALL BE 20 mm. MAXIMUM SLUMP SHALL BE 80 mm. OR AS APPROVED BY THE ENGINEER.

- THE USE OF BLENDED CEMENTS OR CHEMICAL ADMIXTURES WILL NOT BE PERMITTED WITHOUT THE APPROVAL OF THE ENGINEER.
- THE TOP SURFACE OF ALL BEAMS SHALL BE ROUGHENED TRANSVERSELY WITH NAIL BRUSH OR AS APPROVED BY THE ENGINEER, 5 mm. INDENTATION.

- REINFORCEMENT
  - REINFORCEMENT SHALL BE DEFORMED HIGH TENSILE BARS WITH A GUARANTEED YIELD STRESS OF 400 MPa
  - CLEAR COVER SHALL BE 25 mm. TO THE WEB SURFACE AND 40 mm. TO ALL OTHER EXPOSED SURFACES UNLESS NOTED
  - LAP SPLICES SHALL BE MADE IN POSITION AND TO THE DIMENSIONS SHOWN. WHERE NOT SHOWN, SPLICES SHALL BE 40 BAR DIAMETERS. WELDING OF REINFORCEMENT WILL NOT BE PERMITTED.

- PRESTRESSING
  - REFER TO THE PRESTRESSING CONSTRUCTION MANUAL FOR DETAILS.
  - EACH CABLE SHALL COMPRISE 7No.12.7 mm. SUPER GRADE STRESS RELIEVED, LOW RELAXATION 7-WIRE STRAND ENCLOSED IN 48 mm. I.D. BRIGHT METAL THICK-WALLED FLEXIBLE DUCTS.
  - EACH STRAND SHALL HAVE A NOMINAL AREA OF 98.7 mm<sup>2</sup> AND A MINIMUM BREAKING LOAD OF 184 kN
  - THE CONCRETE SHALL HAVE A MINIMUM CYLINDER STRENGTH OF 35MPa AT TRANSFER OF FULL PRESTRESS
  - EACH STRAND SHALL BE STRESSED TO 150kN IMMEDIATELY PRIOR TO LOCKOFF.
  - ON COMPLETION OF STRESSING AND GROUTING THE LIVE END ANCHORAGES SHALL BE COVERED WITH GRADE 30 MPa CONCRETE CONSISTING OF 20 mm. MAXIMUM AGGREGATE AND HAVING A 80 mm. MAXIMUM SLUMP
  - EXPECTED ELONGATION OF STRAND AT 150kN WHEN JACKED FROM ONE END OF 161 ±8 mm. WHEN JACKING FROM BOTH END HALF OF THIS ELONGATION IS EXPECTED AT EACH END.
  - ELONGATION OF STRAND IS UP TO CABLE MODULE ELASTIC USING ON SITE

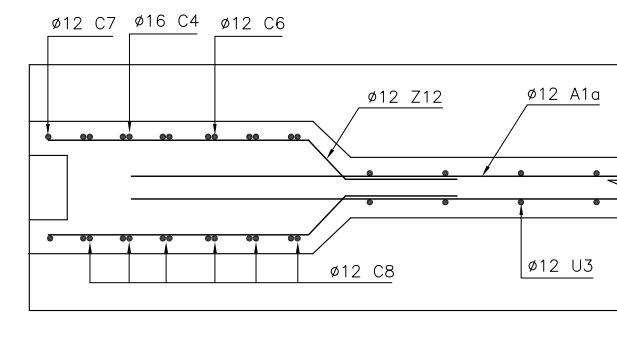
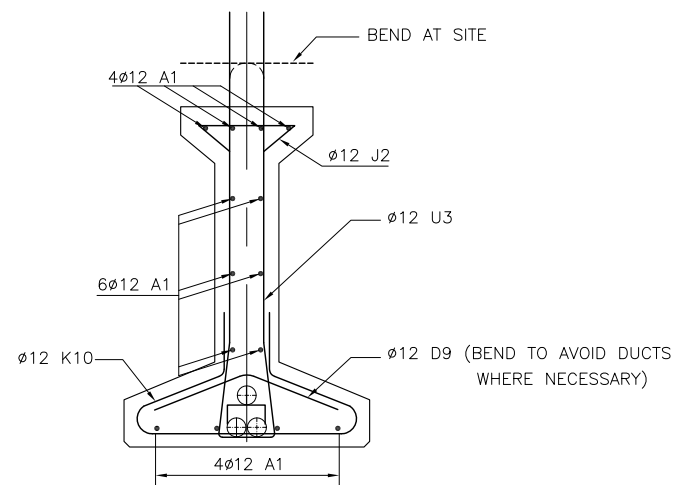
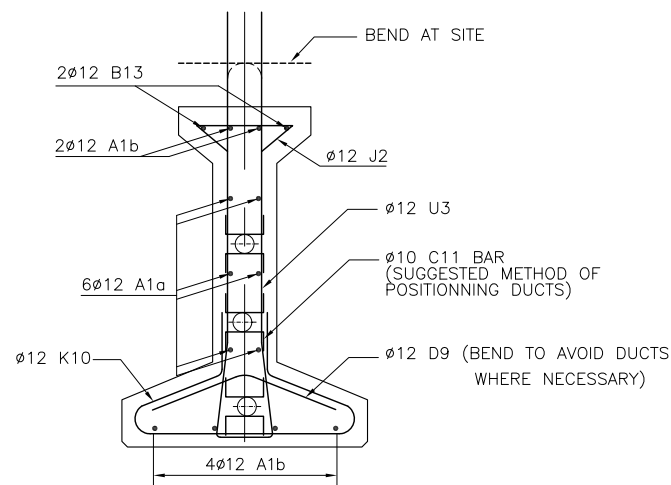
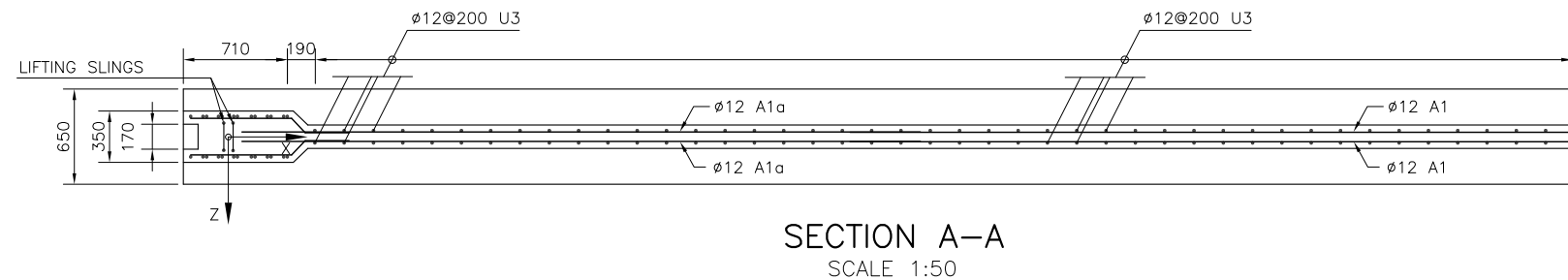
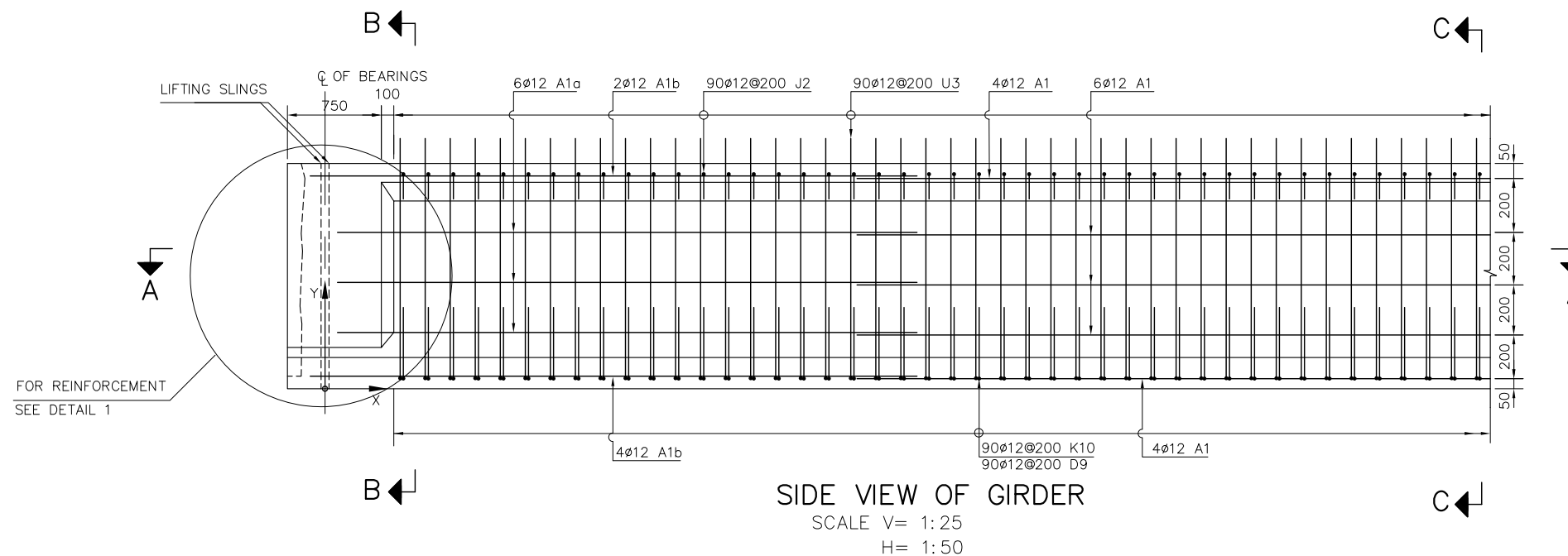
- HANDLING AND ERECTION
  - BEAMS SHALL ONLY BE LIFTED BY THE CAST-IN SLINGS PROVIDED.
  - BEAMS SHALL AT ALL TIMES REMAIN IN THE UP-RIGHT POSITION WITH THE SOFFITS NO MORE THAN 5° OFF HORIZONTAL.
  - THE BEAMS SHALL ONLY BE SUPPORTED WITHIN 300 mm. OF THE BEARING CENTERLINE.
  - CARE SHALL BE TAKEN TO AVOID EXCESSIVE VIBRATIONS DURING LIFTING, HANDLING AND TRANSPORTING.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
ARRANGEMENT OF PC CABLE

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE:
				DESIGNED	Mr.Phonepasong SENSONGKHAM	SD-262-17
				CHECKED	Mr.Khamphone SORPHABMIXAY	DATE: April, 2018
				APPROVED	Mr.Vandy VORASACK	DRW No. BAC-08
						SCALE: AS SHOWN



**NOTES:**

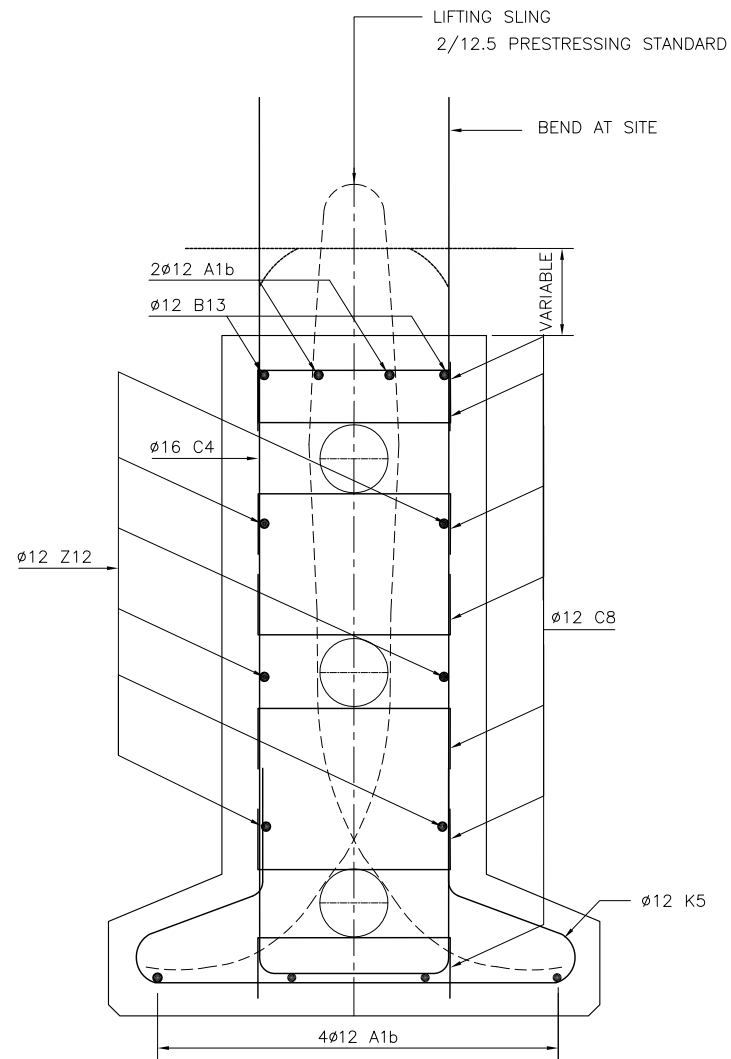
1. ALL DIMENSIONS ARE IN MILLIMETER.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DWG. No. BBA-10.



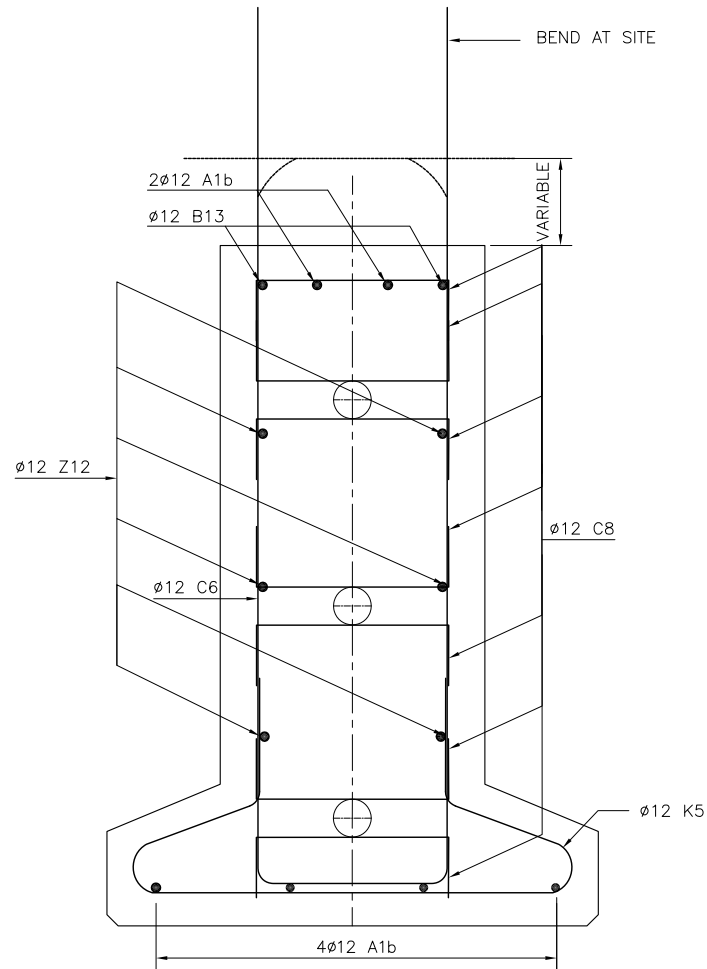
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
BAR ARRANGEMENT OF GIRDER  
(SHEET 1 OF 2)

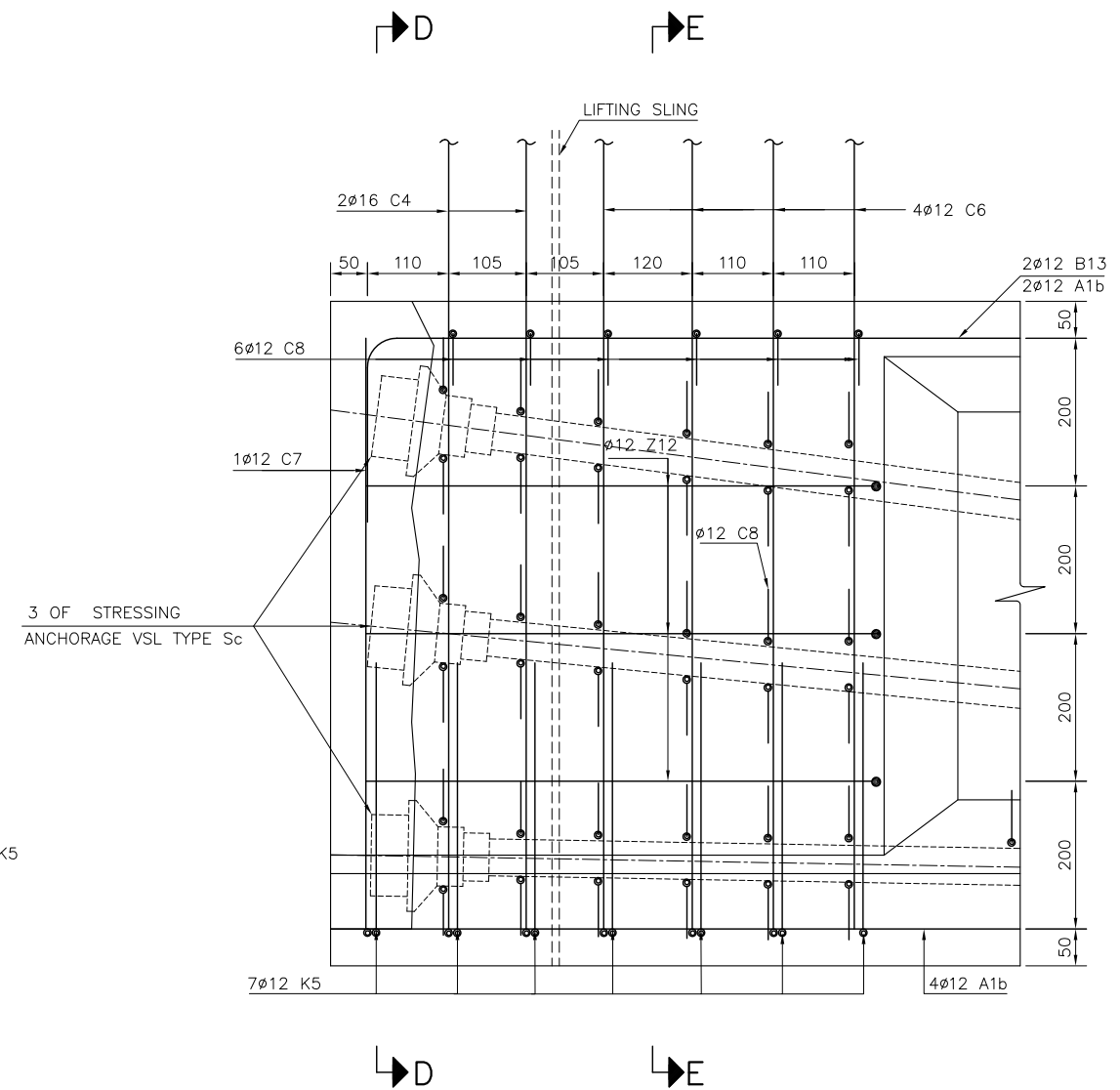
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBA-09
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



SECTION D-D  
SCALE 1:10



SECTION E-E  
SCALE 1:10



DETAIL 1  
SCALE 1:10

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETER.
2. ALL REINFORCEMENT BARS SHALL BE GRADE 60.
3. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS = 50mm.



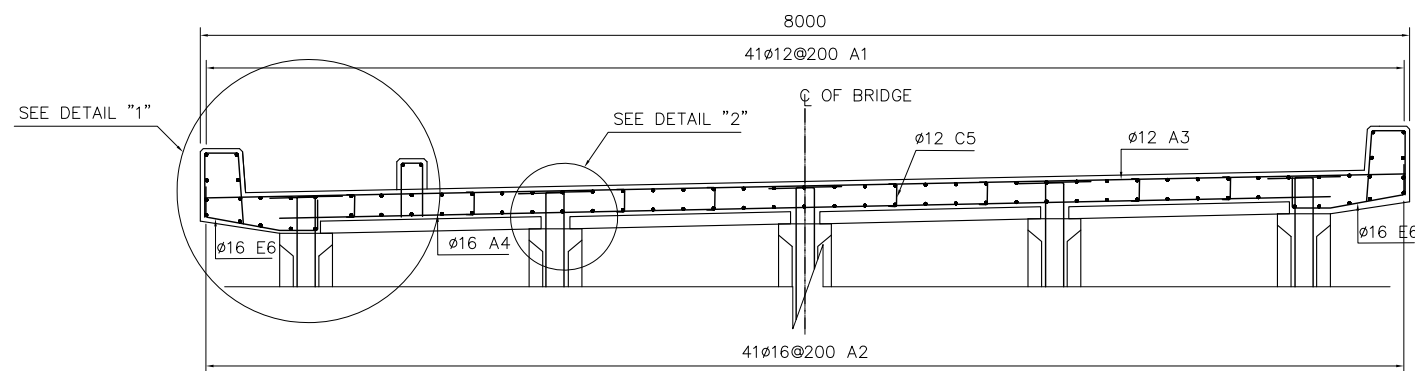
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY

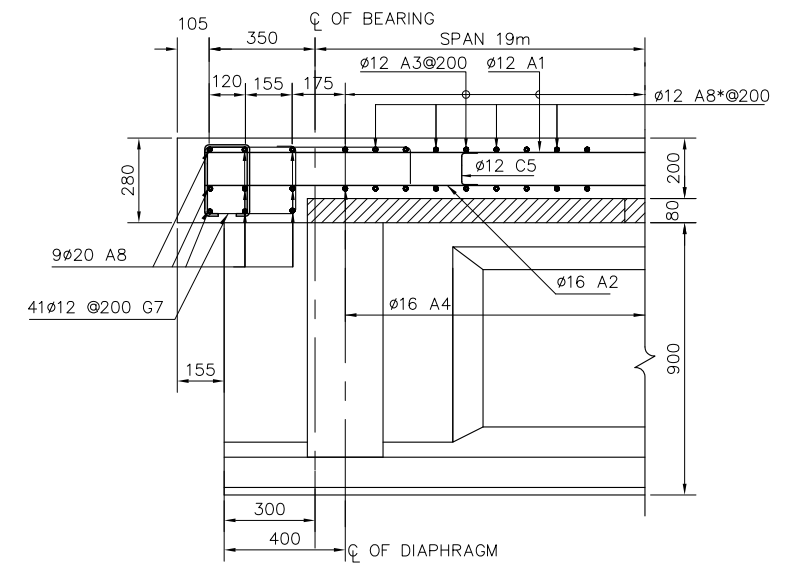
HOUAY XAIMOUN BRIDGE  
BAR ARRANGEMENT OF GIRDER  
(SHEET 2 OF 2)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBA-10
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:10

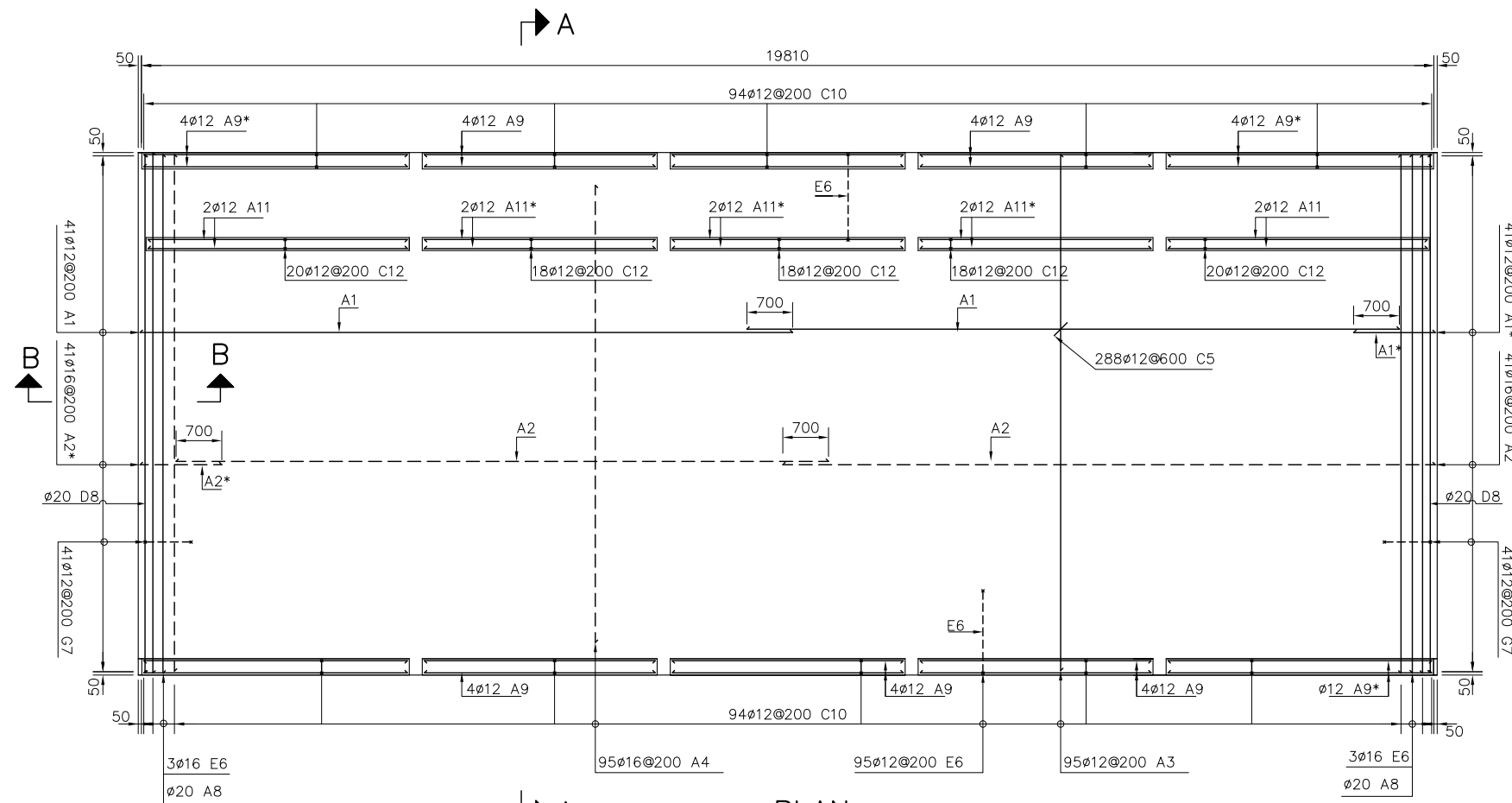




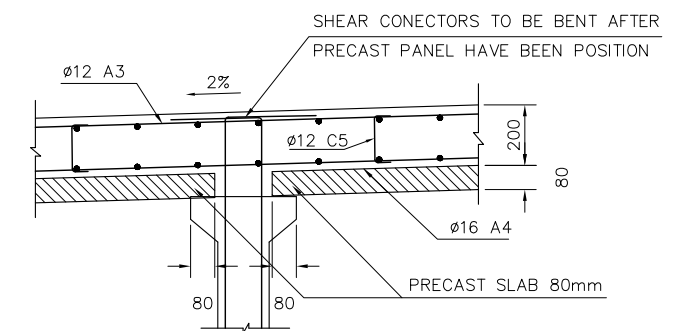
SECTION A-A  
SCALE: 1:50



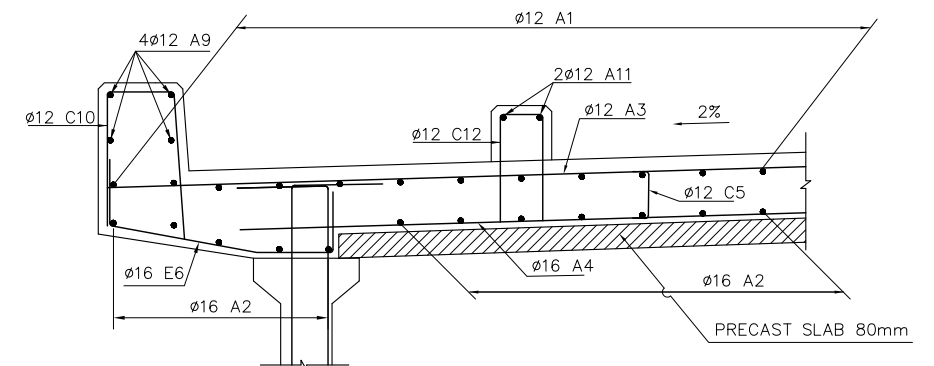
SECTION B-B  
SCALE: 1:25



PLAN  
SCALE: 1:100



SEE DETAIL "2"  
SCALE: 1:25



SEE DETAIL "1"  
SCALE: 1:25

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS  
- FOR TOP OF DECK 30 mm  
- FOR BOTTOM OF DECK 25 mm
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No. BDS-06.

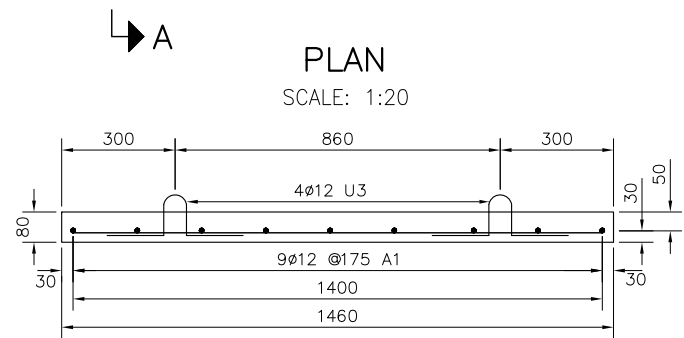
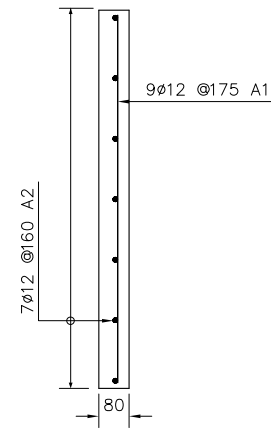
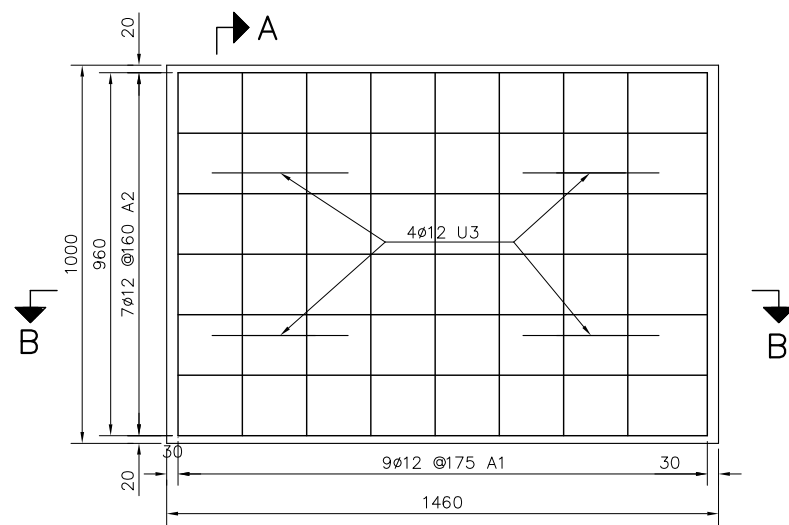


ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
BAR ARRANGEMENT OF  
DECK SLAB, CURB AND PARAPET

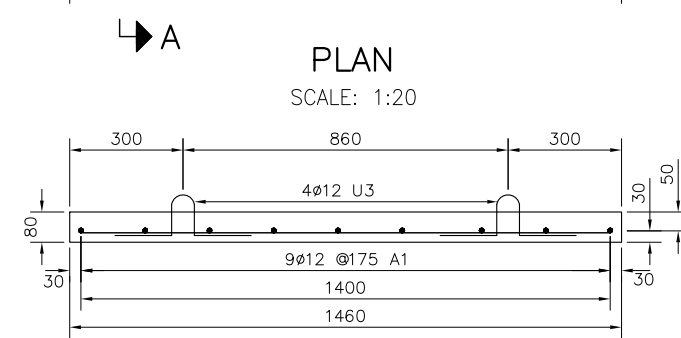
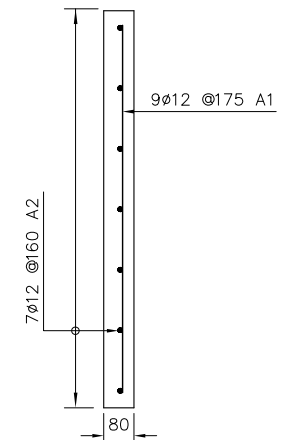
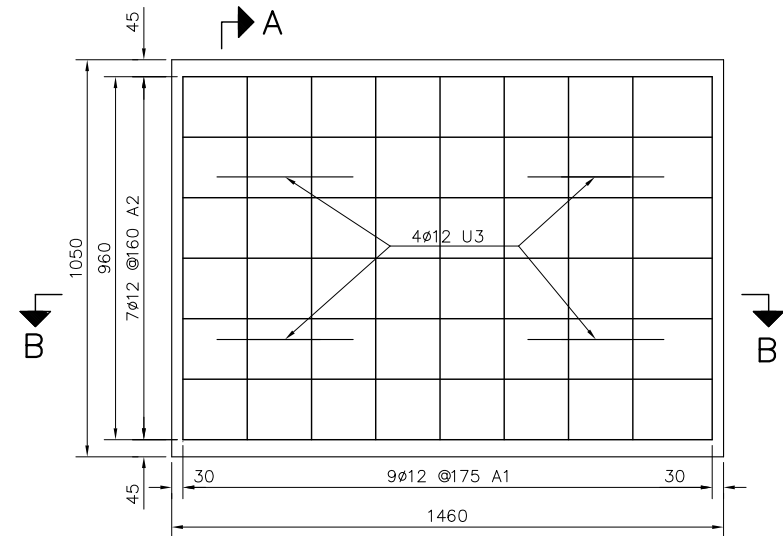
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBA-12
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN





SECTION B-B  
SCALE 1:20

SECTION A-A  
SCALE 1:20



SECTION B-B  
SCALE 1:20

SECTION A-A  
SCALE 1:20

TABLE OF BAR REINFORCEMENT FOR PRECAST SLAB (ONE SIDE)

SHAPE OF BAR	No.	DIAMETER (mm)	LENGTH OF BAR (mm)	QUANTITY	TOTAL LENGTH (m)	SIZE OF BENDING (mm)			SPACE @ (mm)	REMARK	A 
						a	b	c			
A	1	12	960	9x4x19=684	656.64	960			175		
A	2	12	1400	7x4x19=532	744.8	1400			160		
U	3	12	560	4x4x19=304	139.8	100x2	60	150x2			U 

SUMMARY OF QUANTITIES FOR PRECAST SLAB (ONE SIDE)

No.	NAME OF STRUCTURE	ITEMS	QUANTITIES		CONCRETE 30 MPa (m <sup>3</sup> )
			φ12	φ16	
1	PRECAST SLAB	LENGTH OF BARS (m)	1541.28	-	9.30
		WEIGHT OF BARS (Kg)	1,368.37	-	

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
BAR ARRANGEMENT OF  
PRECAST SLAB

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBA-14
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN

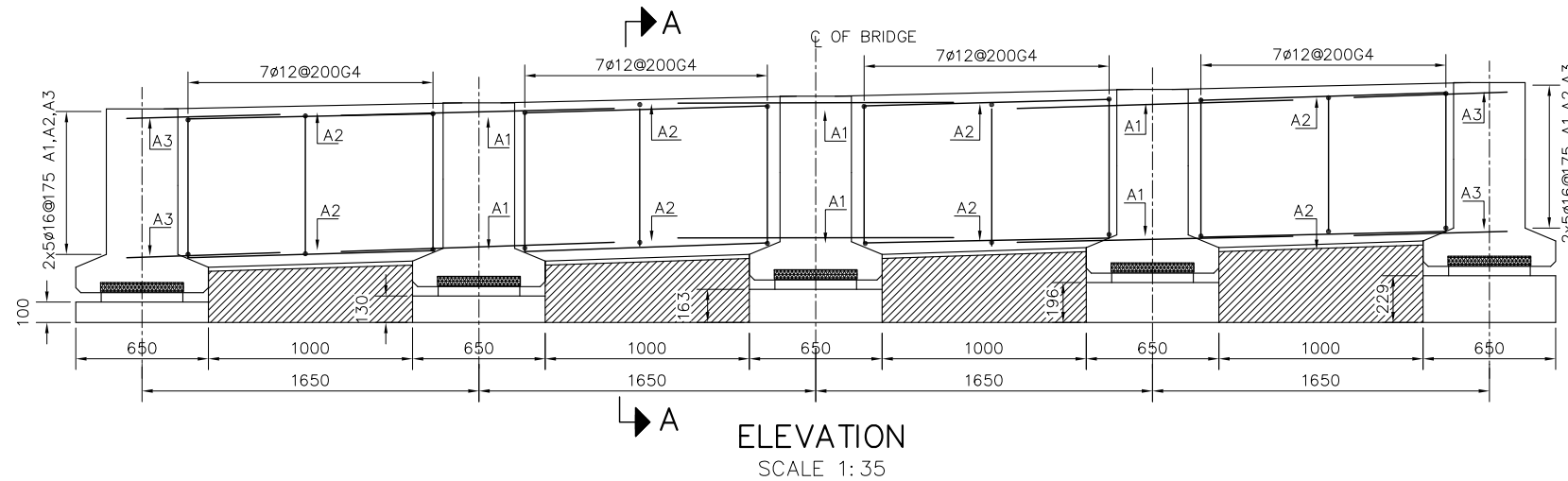
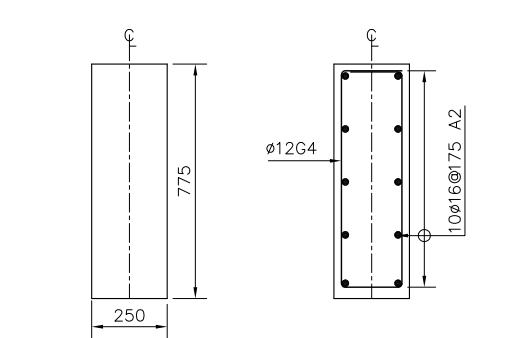
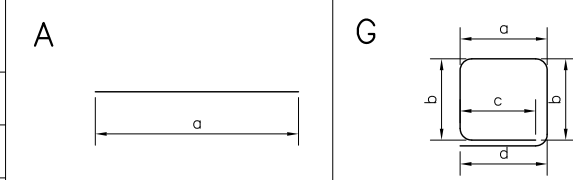


TABLE OF BAR REINFORCEMENT FOR DIAPHRAGM (ONE SIDE)

SHAPE OF BAR	DIAMETER (mm)	LENGTH OF BAR (mm)	QUANTITIES	TOTAL LENGTH (m)	SIZE OF BENDING (mm)				SPACE @ (mm)	REMARK
					a	b	c	d		
A1	16	1350	10x3x2=60	81.00	1350				175	
A2	16	1200	10x4x2=80	96.00	1200				175	
A3	16	750	10x2x2=40	30.00	750				175	
G4	12	1970	7x4x2=56	110.32	190	715x2=1430	160	190	200	



DIAPHRAGM SCALE 1:25 SECTION A-A SCALE 1:25

SUMMARY OF QUANTITIES FOR DIAPHRAGM (ONE SIDE)

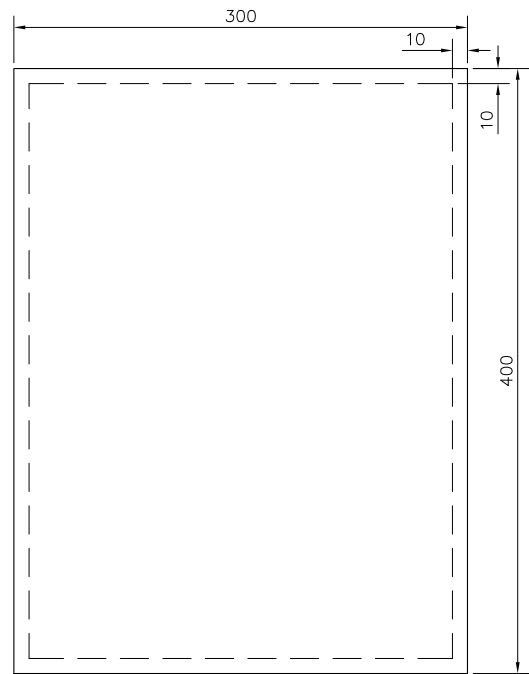
No	NAME OF STRUCTURE	ITEM	UNITS	QUANTITIES		
				ø12	ø16	TOTAL
1	DIAPHRAGM	LENGTH OF BARS	m	110.32	207.00	317.32
		WEIGHT OF BARS	Kg	97.944	326.716	424.66
		CONCRETE GRADE 35 MPa	m <sup>3</sup>	2.00		

RADIUS FOR BENDING OF BAR	
DIAMETER OF BARS (mm)	RADIUS (mm)
10	35
12	42
16	56
20	100
25	125
32	224

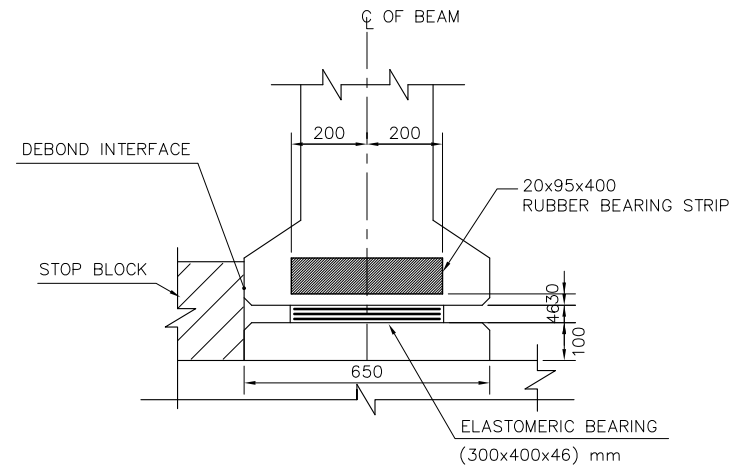
NOTES:

1. ALL DIMENSION ARE IN MILLIMETERS.

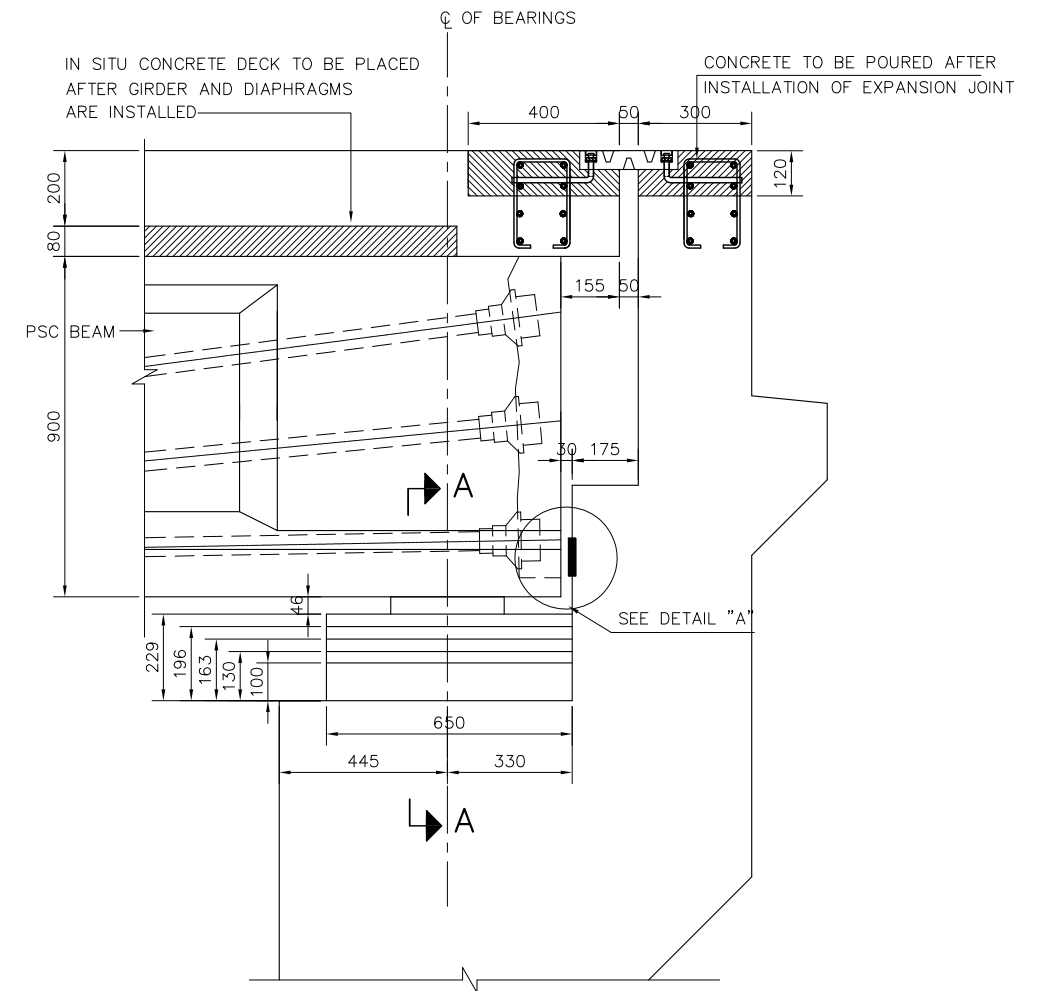
<p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	HOUAY XAIMOUN BRIDGE					CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BDD-15
	DETAIL OF DIAPHRAGM					APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



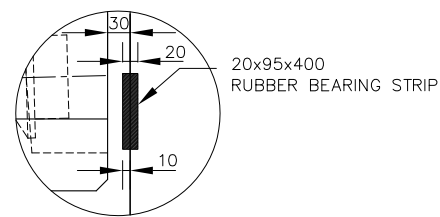
SECTION B-B  
SCALE 1:5



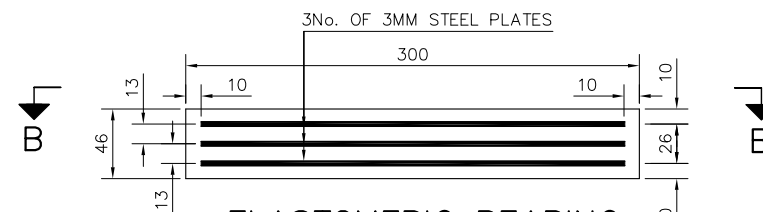
SECTION A-A  
SCALE 1:20



JOINT DETAIL AT ABUTMENT  
SCALE 1:20



DETAIL "A"  
SCALE 1:10



ELASTOMERIC BEARING  
SCALE 1:5

NOTES:

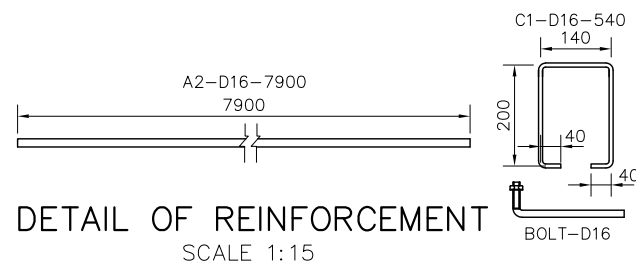
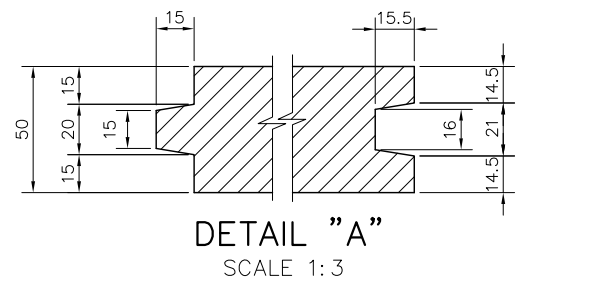
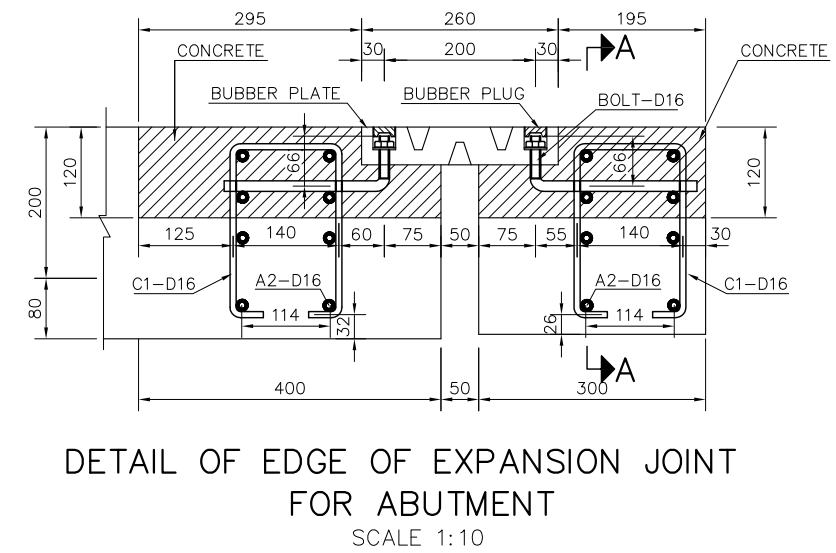
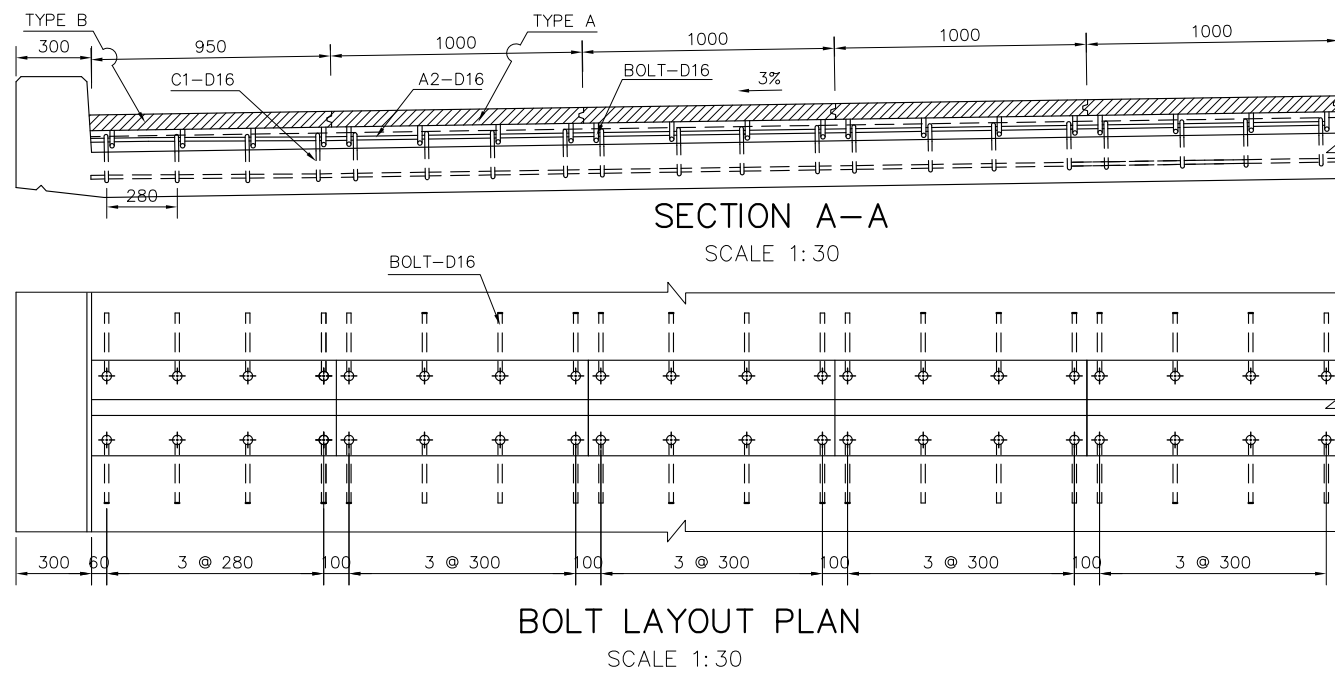
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No. BBD-17.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
DETAIL OF BEARING AND  
DECK JOINT (SHEET 1 OF 2)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBD-16
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



MATERIAL FOR ONE EXPANSION JOINT AT ABUTMENT

FOR ONE EXPANSION JOINT							
BAR MARK	DAI	QUANTITY	LENGTH	TOTAL LENGTH	WEIGHT UNIT	TOTAL WEIGHT	CONCRETE
	mm	pcs	mm	m	kg/m	kg	30 MPa (m3)
C1	16	80	620	49.60	1.578	78.27	0.69
A2	16	8	7900	45.82	1.578	72.30	
BOLT	16	80	300	24.00	1.578	37.87	
TOTAL OF REINFORCEMENT (kg)						188.44	
RUBBER PLATE: 50x260x1000 (mm) OR SIMILAR = 7.9 m							
RUBBER PLATE: 50x260x950 (mm) OR SIMILAR = 1.90 m							

NOTES:

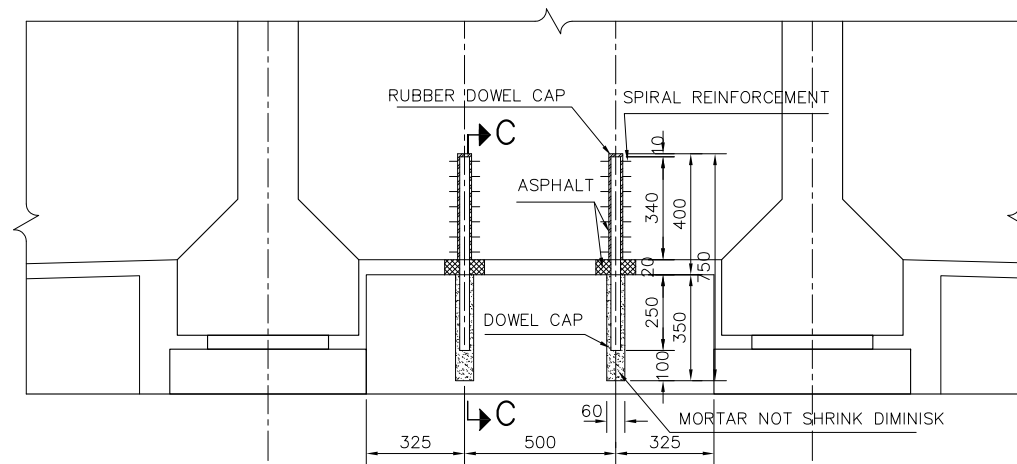
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No. BBD-16.



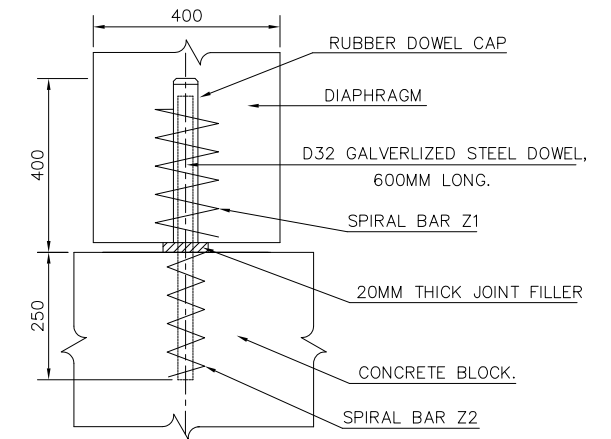
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
DETAIL OF BEARING AND  
DECK JOINT (SHEET 2 OF 2)

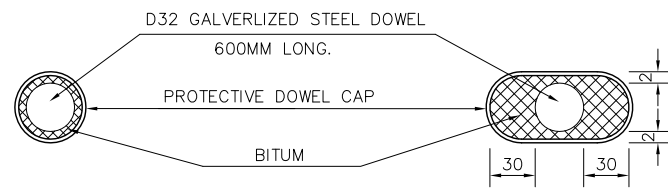
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBD-17
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



DETAIL OF DOWEL  
SCALE 1:25

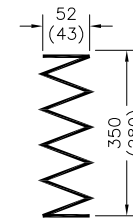


SECTION C-C  
SCALE 1:25



AT FIXED BEARING  
SCALE 1:5

AT MOVABLE BEARING  
SCALE 1:25



SPIRAL BAR 2  
SCALE 1:20



SPIRAL BAR 1  
SCALE 1:20

TABLE OF CONCRETE AND BAR REINFORCEMENT FOR DOWEL (ONE SPAN)

ITEM	UNIT	AT MOVABLE BEARING				AT FIXED BEARING			
		DIA (mm)	LENGTH OF BAR (mm)	QUANTITY	WEIGHT (Kg)	DIA (mm)	LENGTH OF BAR (mm)	QUANTITY	WEIGHT (Kg)
D32 GALVERLIZED STEEL DOWEL	Bar	32	600	8	30.34	32	600	8	30.34
SPIRAL REINFORCEMENT	Fiber	10	1000	8	4.04	10	1300	8	6.42
TOTAL					35.28				36.76
RUBBER DOWEL CAP	Each	65Ax450		8		65Ax450		8	

NOTES:

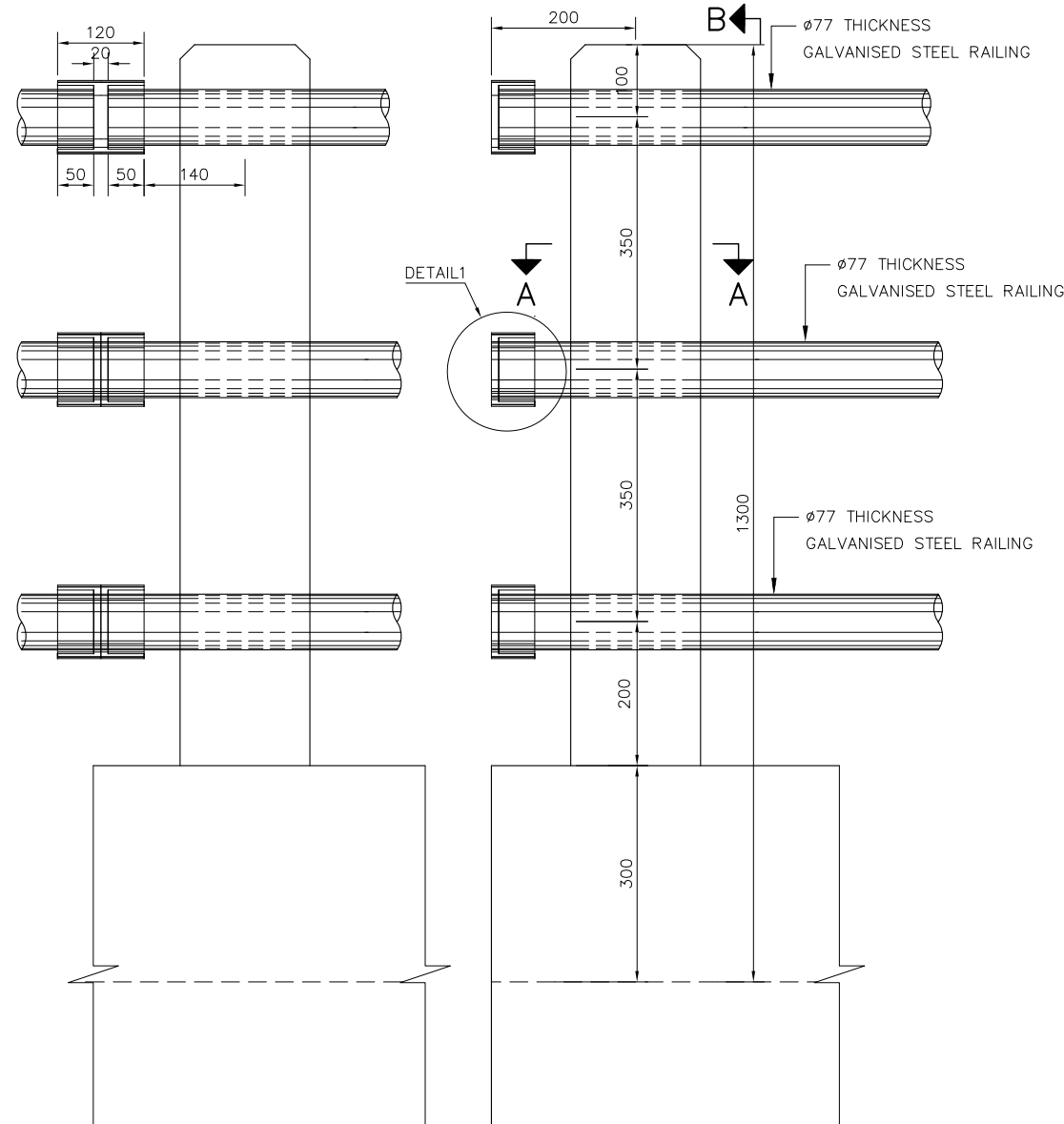
1. BEARINGS: GJZ LAMINATED ELASTOMERIC BEARING WITH MAXIMUM WORKING LOAD 1200 kN.
2. HORIZONTAL GRADIENT OF BEARING PAD WILL BE ADOPTED FOR BEARING'S NORMAL PERFORMANCE.
3. ALL DIMENSIONS ARE IN MILLIMETERS.



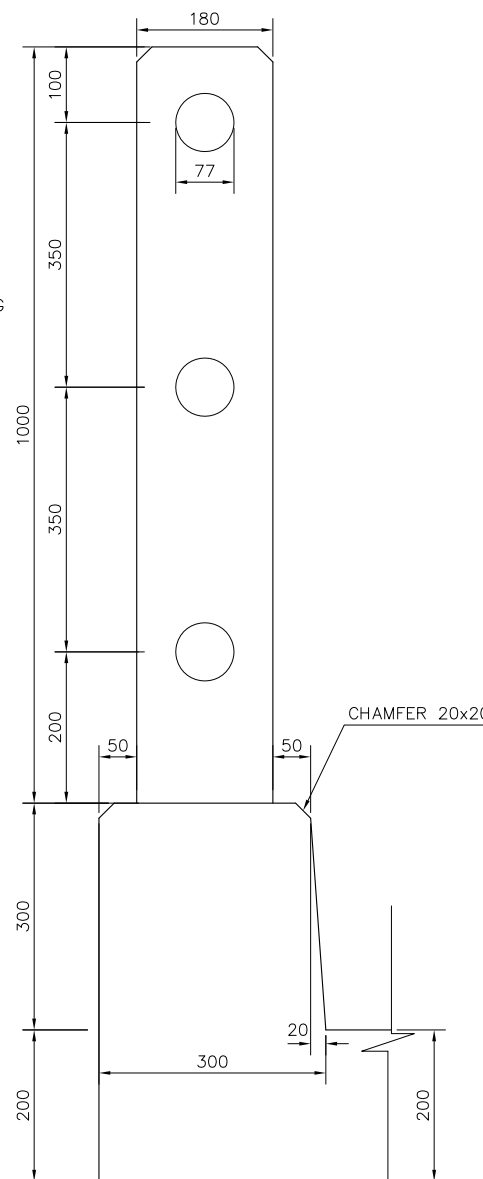
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
DETAIL OF STEEL DOWEL

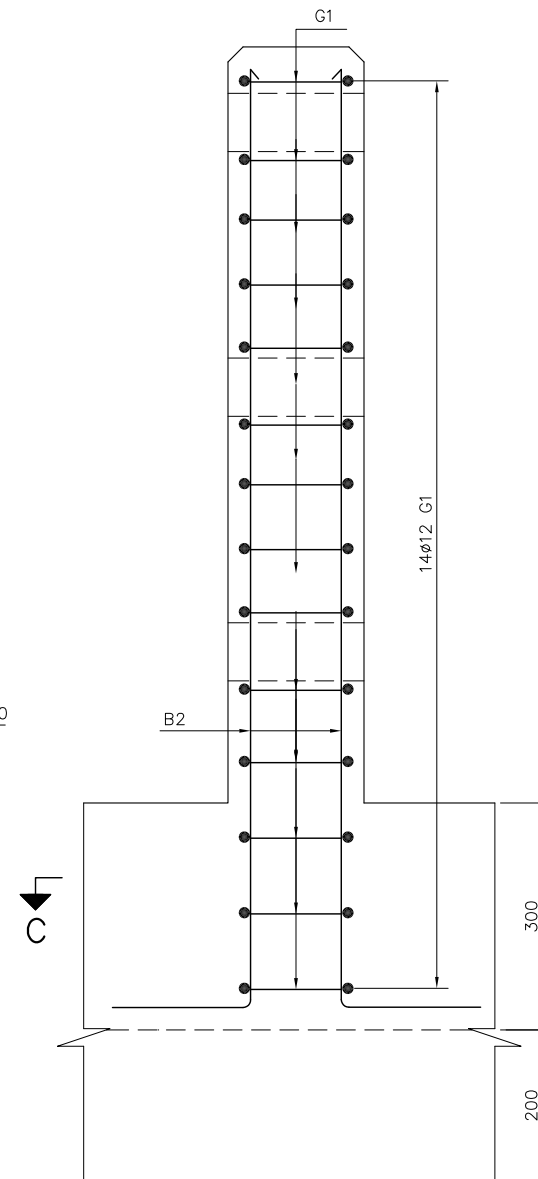
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BSD-18
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



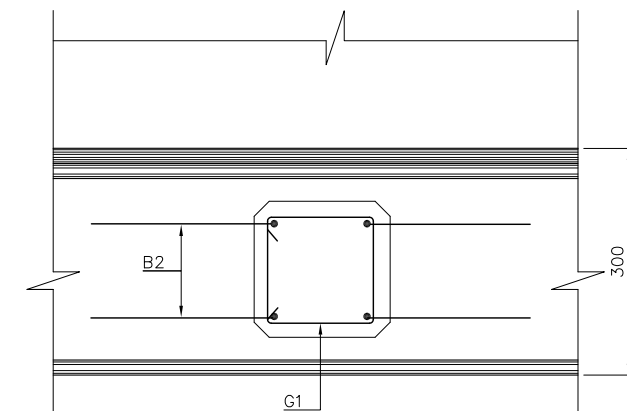
POST DIMENSIONS  
SCALE 1:10



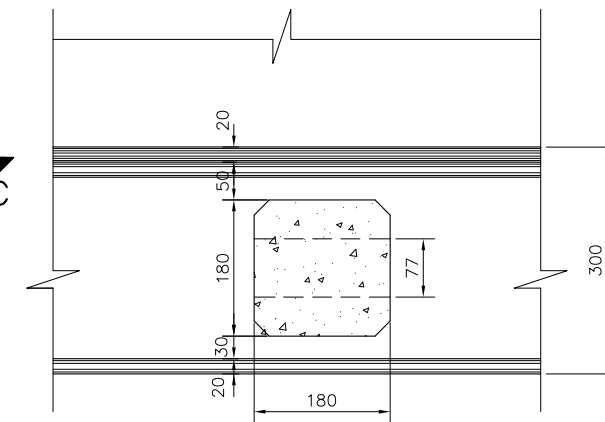
VIEW B-B  
SCALE 1:10



POST REINFORCEMENT  
SCALE 1:10



SECTION C-C  
SCALE 1:10



SECTION A-A  
SCALE 1:10

TABLE OF REINFORCEMENT FOR ONE SIDE

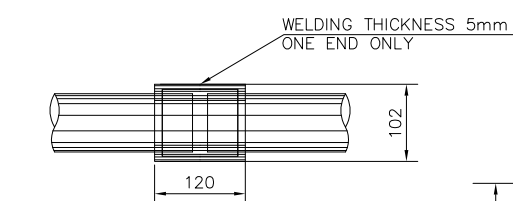
SHAPE OF BAR	No.	DIAMETER (mm)	LENGTH OF BAR (mm)	QUANTITY	TOTAL LENGTH (m)	SIZE OF BENDING (mm)						SPACE @ (mm)	REMARK
						a	b	c	d	e	f		
G	1	12	650	14x36=504	327.60	130	130	130	130	130		100	
B	2	16	1540	4x36=144	221.76	1240	300						

TABLE OF CONCRETE AND BAR REINFORCEMENT FOR ONE SIDE

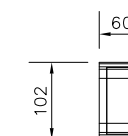
No	NAME OF STRUCTURE	ITEM	UNITS	QUANTITIES		
				Ø12	Ø16	TOTAL
1	RAILING	LENGTH OF BARS	m	327.60	221.76	549.36
		WEIGHT OF BARS	kg	290.85	350.01	640.86
		CONCRETE GRADE 25MPa	m <sup>3</sup>	36x0.026=0.94		0.94
		ROUND PIPE	m			169.20

FORM OF BENDING

RADIUS FOR BENDING OF BAR	
DIAMETER OF BARS (mm)	RADIUS (mm)
12	12x35 = 420
16	16x35 = 560



CONNECTION OF PIPE  
SCALE 1:10



DETAIL 1  
SCALE 1:10

NOTES:

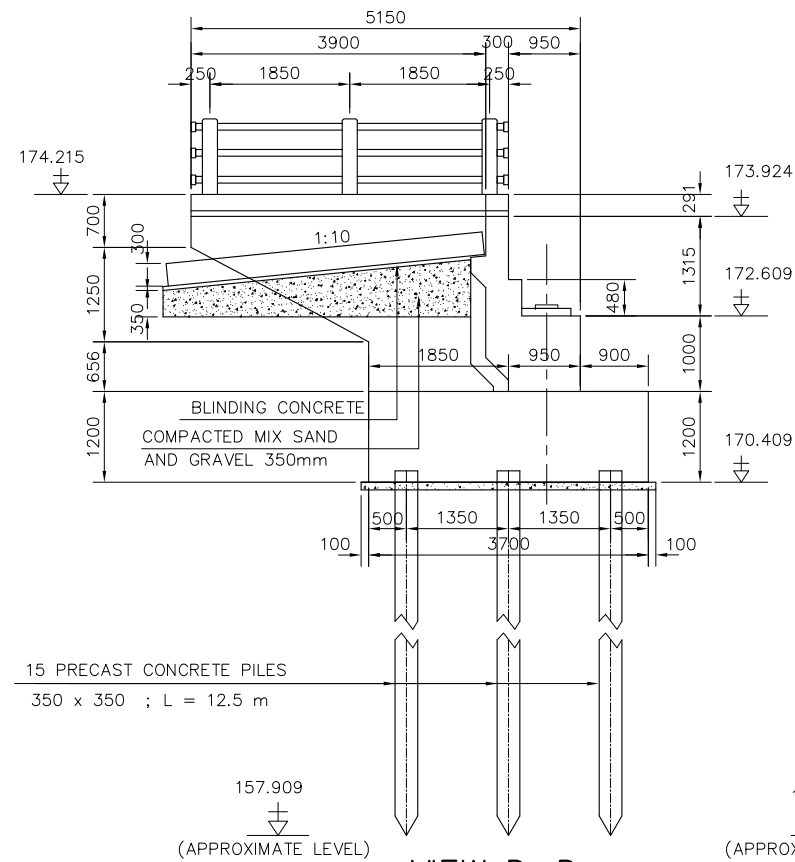
- ALL DIMENSIONS ARE IN MILLIMETERS.
- CLEAR COVER TO REINFORCEMENT TO BE 30 mm.
- STEEL RAILING SHALL BE STRUCTURAL CARBON STEEL IN ACCORDANCE WITH AASHTO M270 GRADE 36.
- RAILINGS SHALL BE HOT-DIP GALVANISED IN ACCORDANCE WITH AASHTO M111.
- ENDS RAILING PANELS SHALL BE SEALED WITH CAPPING PLATES.



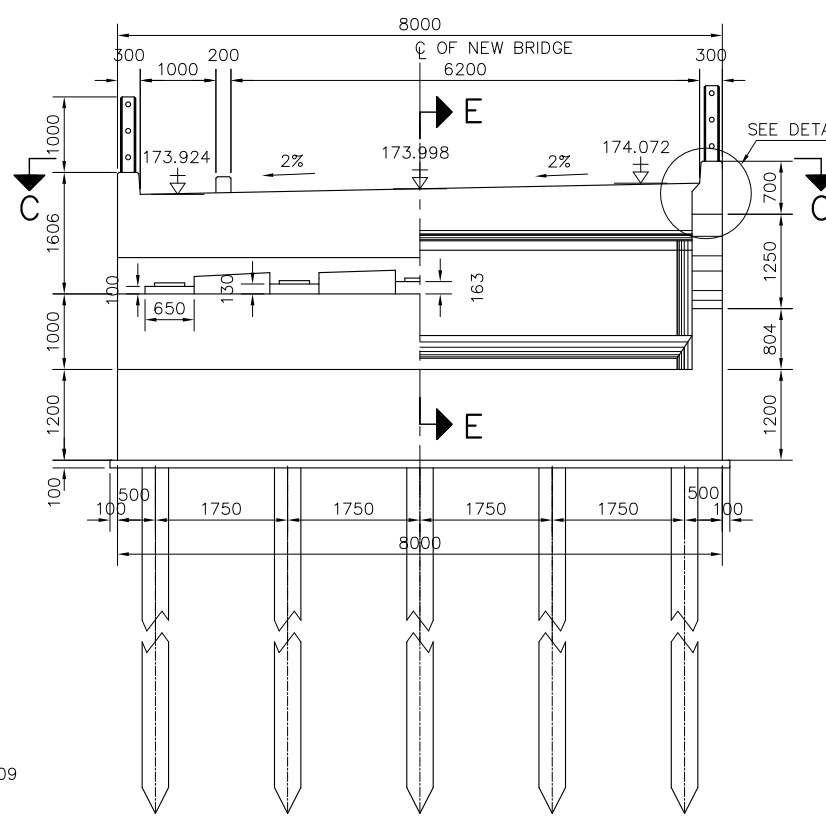
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
DETAIL OF BRIDGE RAILING

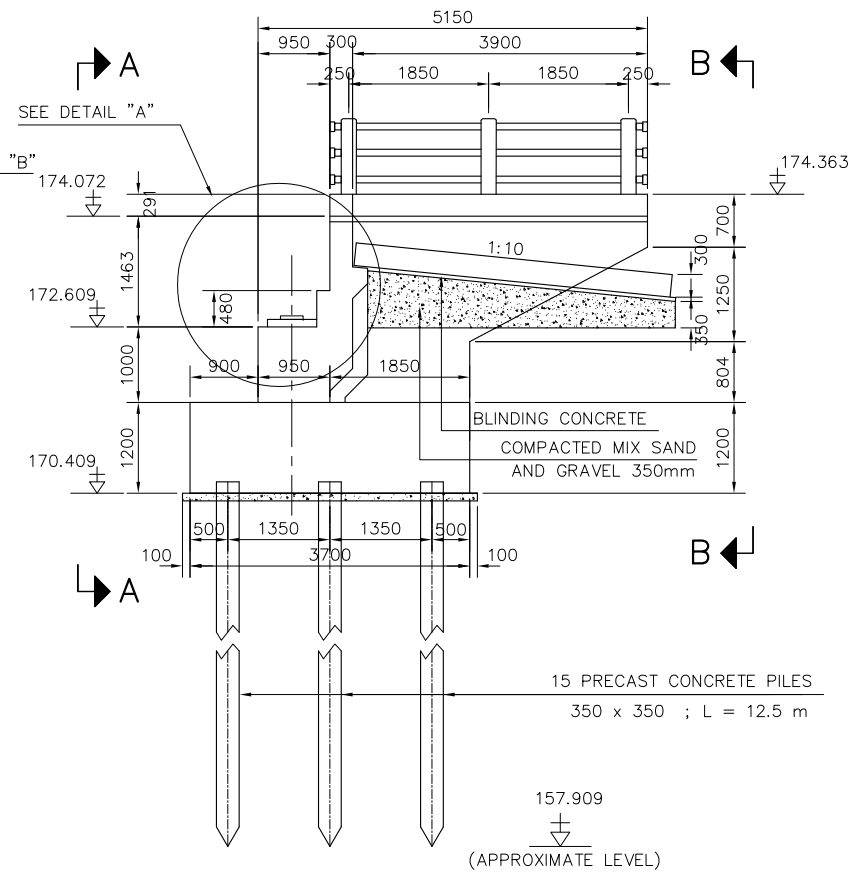
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BDR-19
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



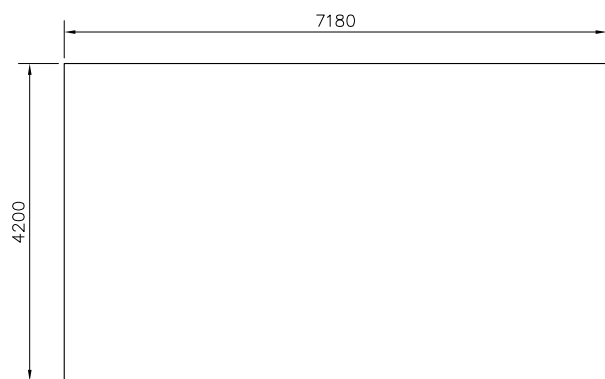
VIEW D-D  
SCALE 1:100



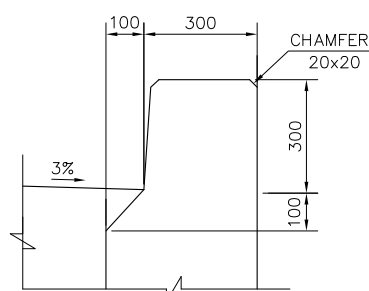
1/2 FRONT VIEW A-A 1/2 BACK VIEW B-B  
SCALE 1:100



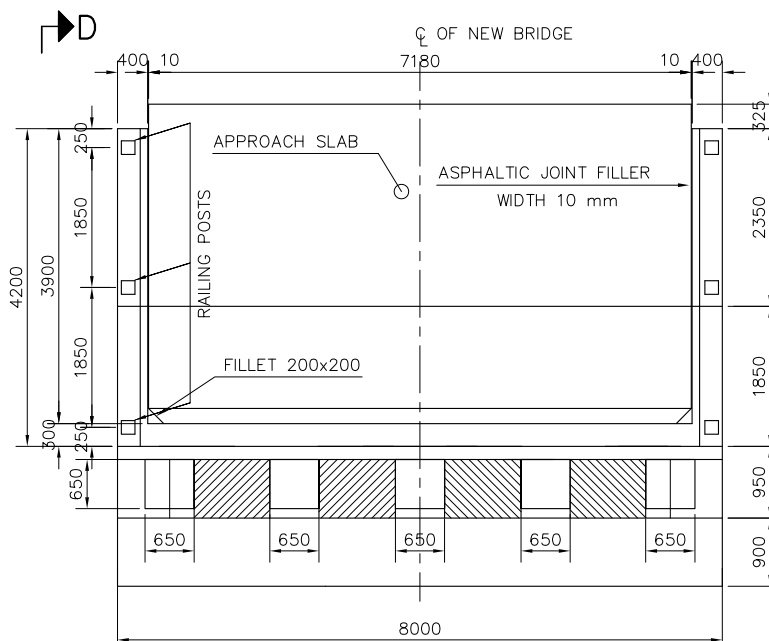
VIEW D'-D'  
SCALE 1:100



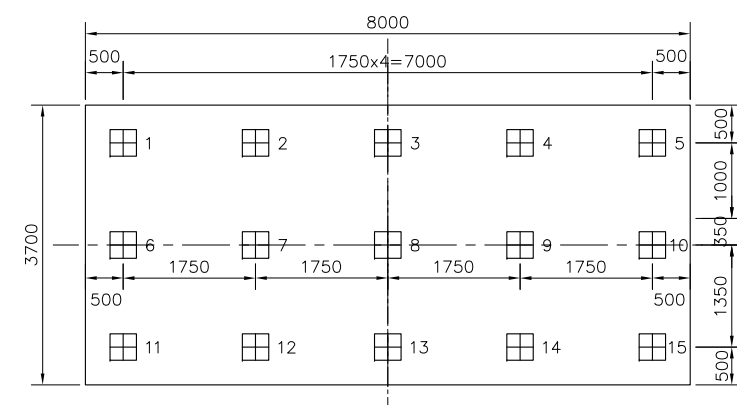
APPROACH SLAB  
SCALE 1:100



DETAIL "B"  
SCALE 1:20



PLAN C-C  
SCALE 1:100



PILE CAP PLAN  
SCALE 1:100

NOTES:

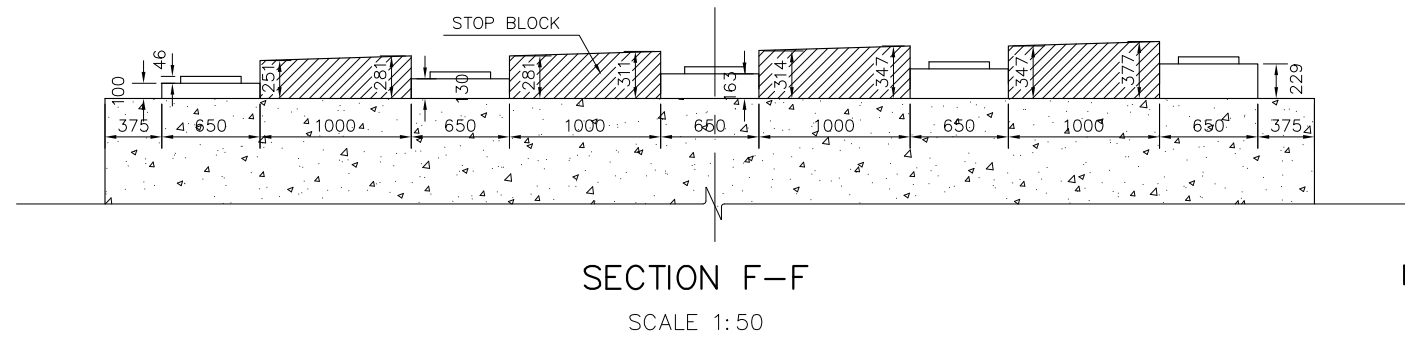
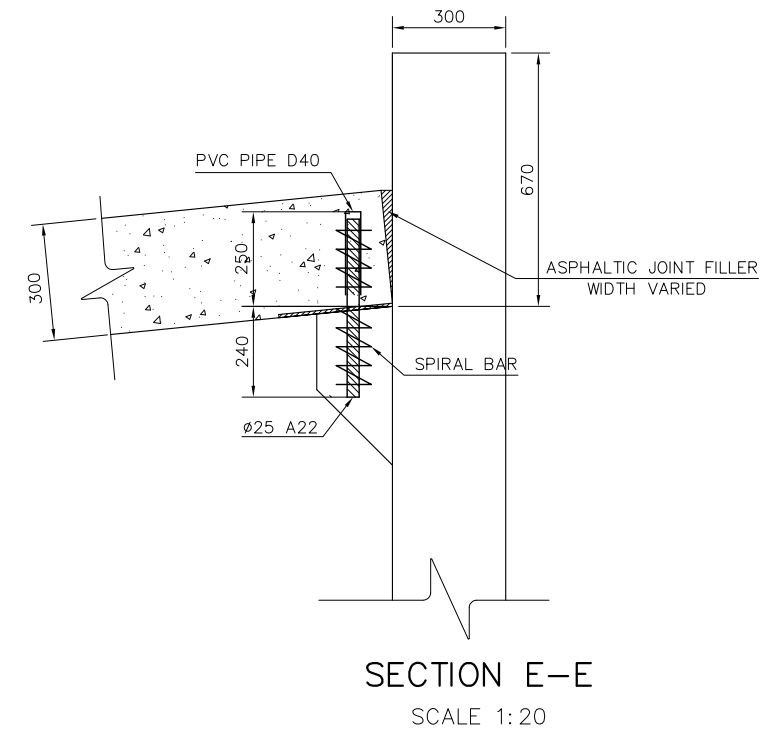
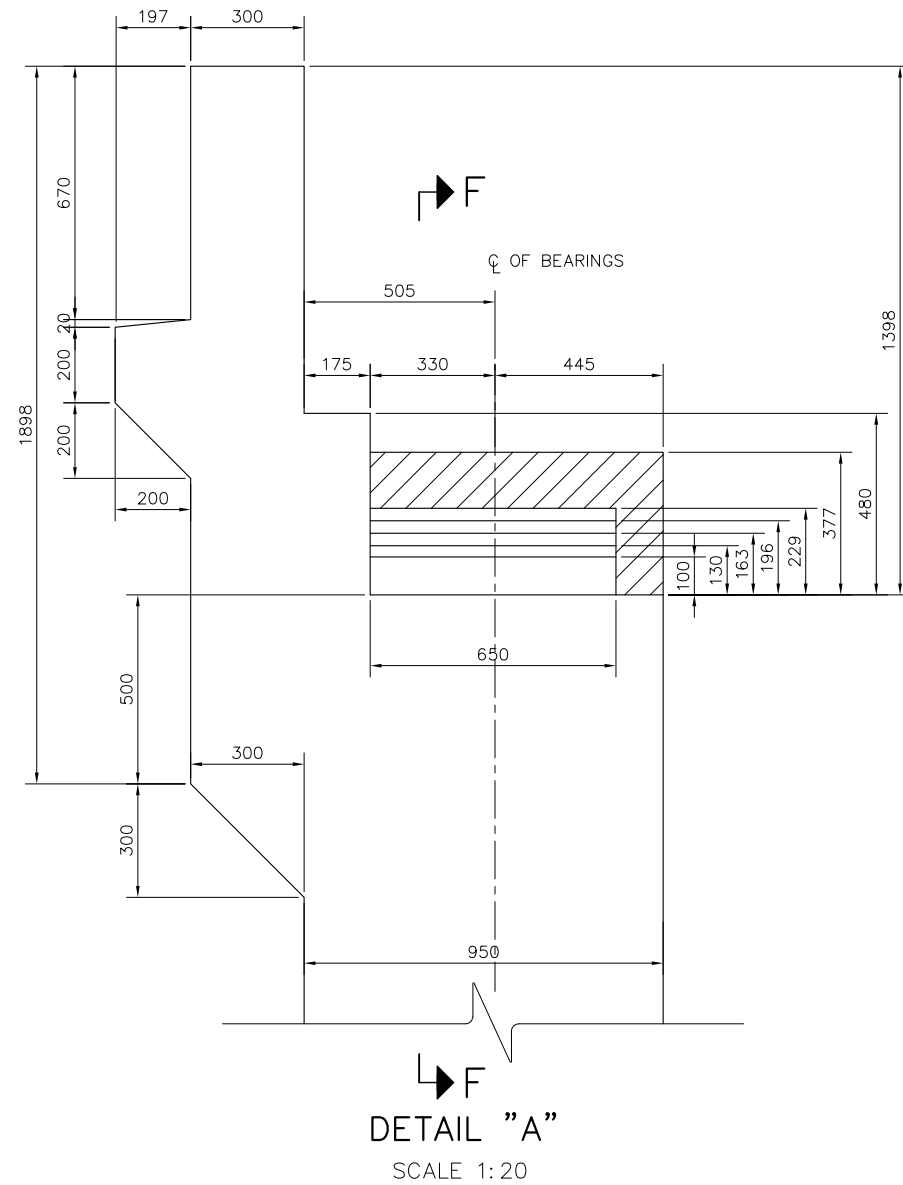
1. ALL DIMENSIONS ARE IN MILLIMETERS; LEVELS ARE IN METERS.
2. LENGTH OF PILES ARE GIVEN AS A GUIDE ONLY  
ACTUAL LENGTH OF PILES WILL BE DETERMINED  
AT SITE AFTER TEST PILE DRIVING BY THE ENGINEER.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH  
DRAWINGS No. BDA-21, BBA-22, BBA-23, BBA-24, BBA-25 AND BBA-26.
4. PRESTRESSED CONCRETE PILE SHALL BE CONFIRMED TO AASHTO "LRFD BRIDGE  
DESIGN SPECIFICATION" CURRENT EDITION, DIMENSION 350x350 mm AND  
SAFETY LOAD 60 TONS.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
DETAIL OF ABUTMENT A AND B  
(SHEET 1 OF 2)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
			DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
			CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BDA-20
			APPROVED	Mr.Vandy VORASACK		SCALE: AS SHOWN



**NOTES:**

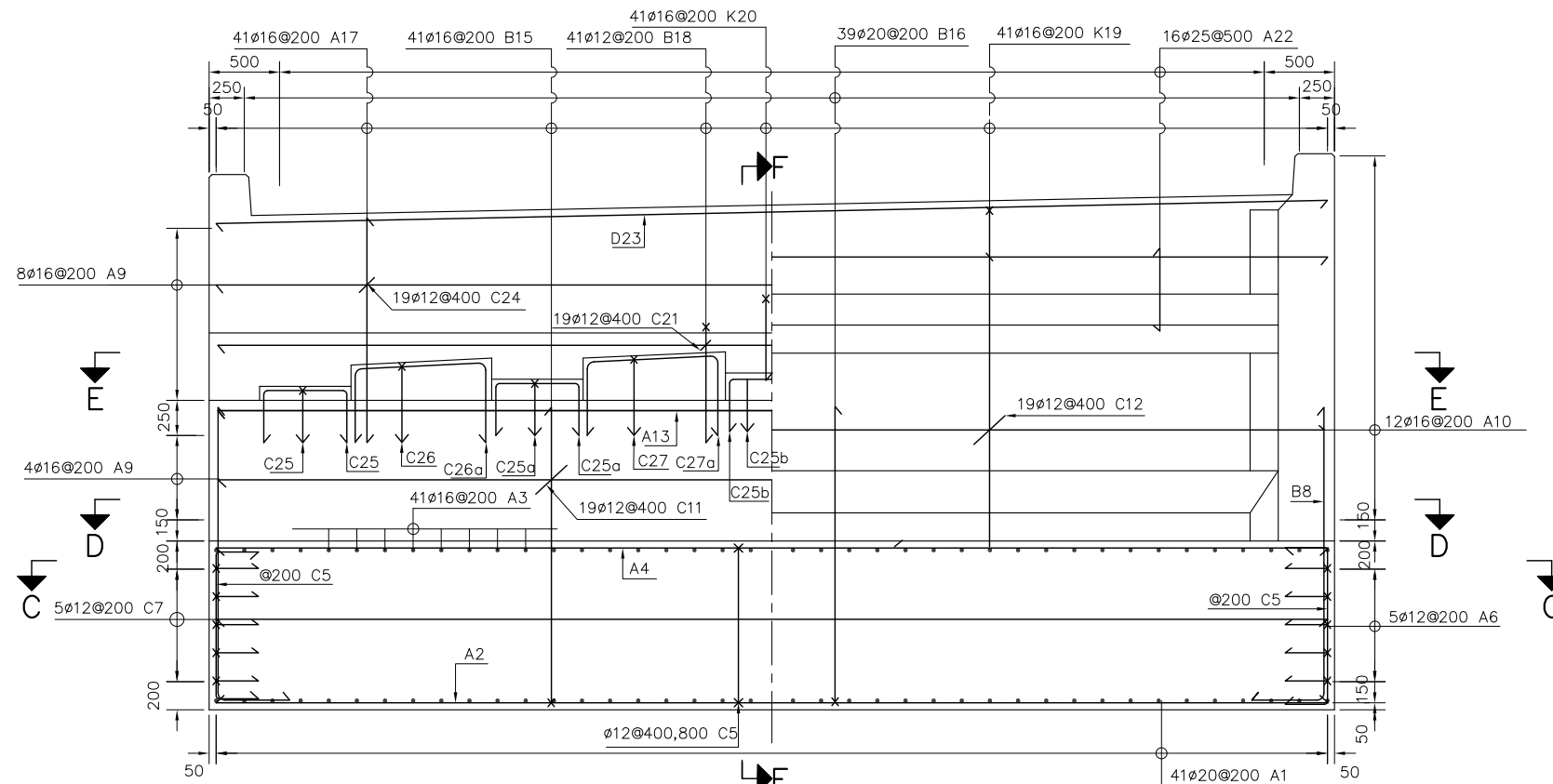
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-20, BBA-22, BBA-23, BBA-24, BBA-25 AND BBA-26.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
DETAIL OF ABUTMENT A AND B  
(SHEET 2 OF 2)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BDA-21
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:20

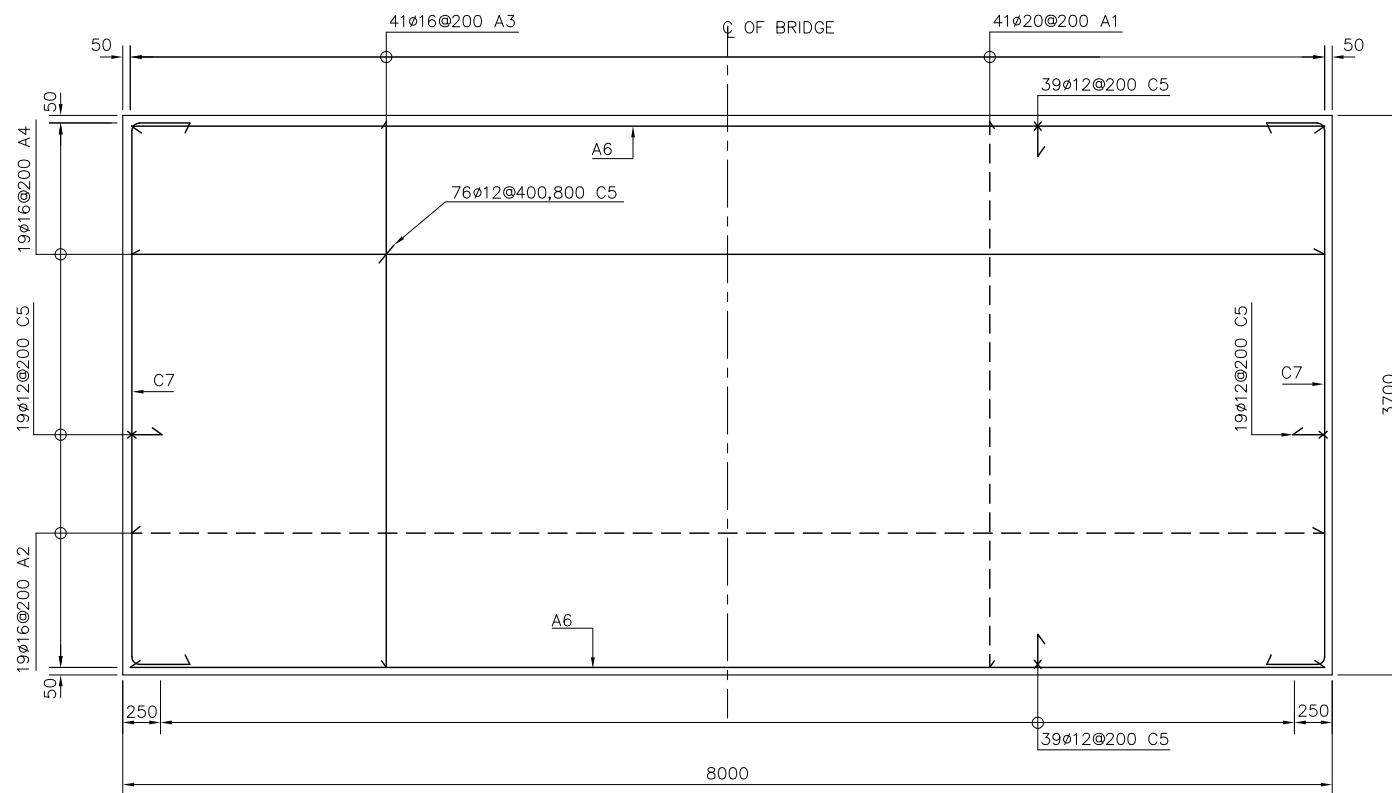


1/2 SECTION A-A

SCALE 1:50

1/2 SECTION B-B

SCALE 1:50



SECTION C-C

SCALE 1:50

NOTES:

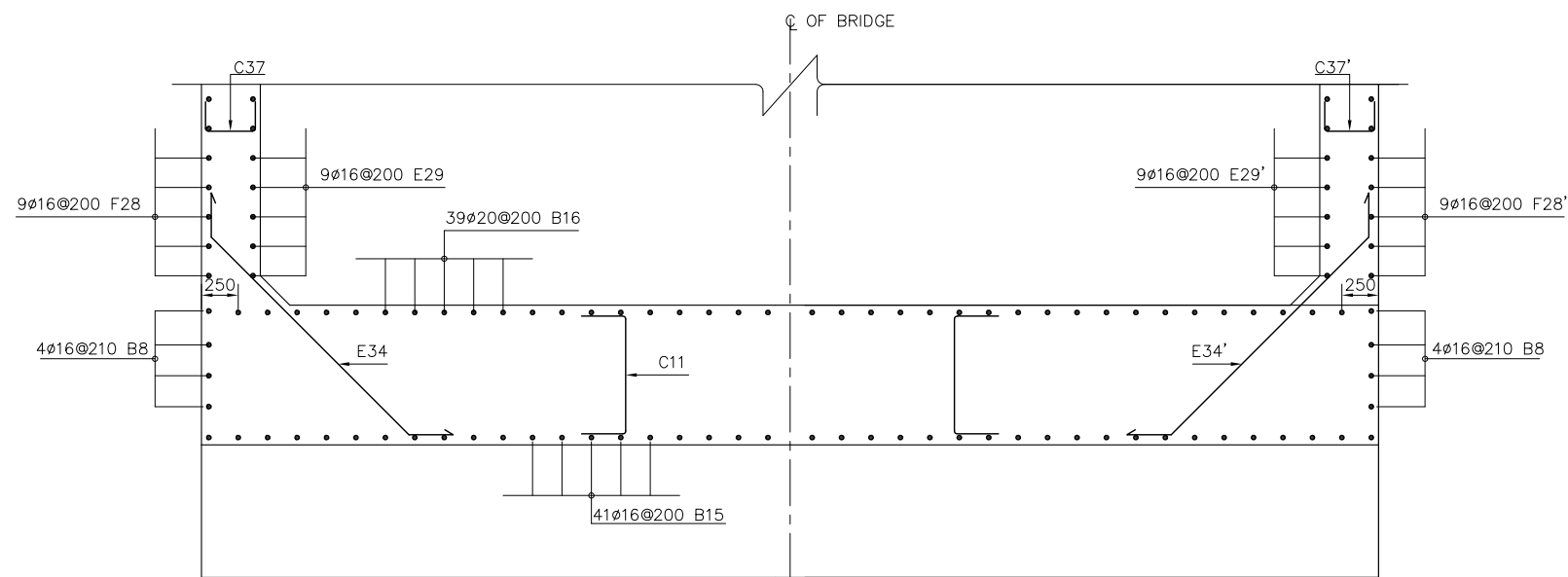
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS=50 mm.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-20, BDA-21, BBA-23, BBA-24, BBA-25 AND BBA-26



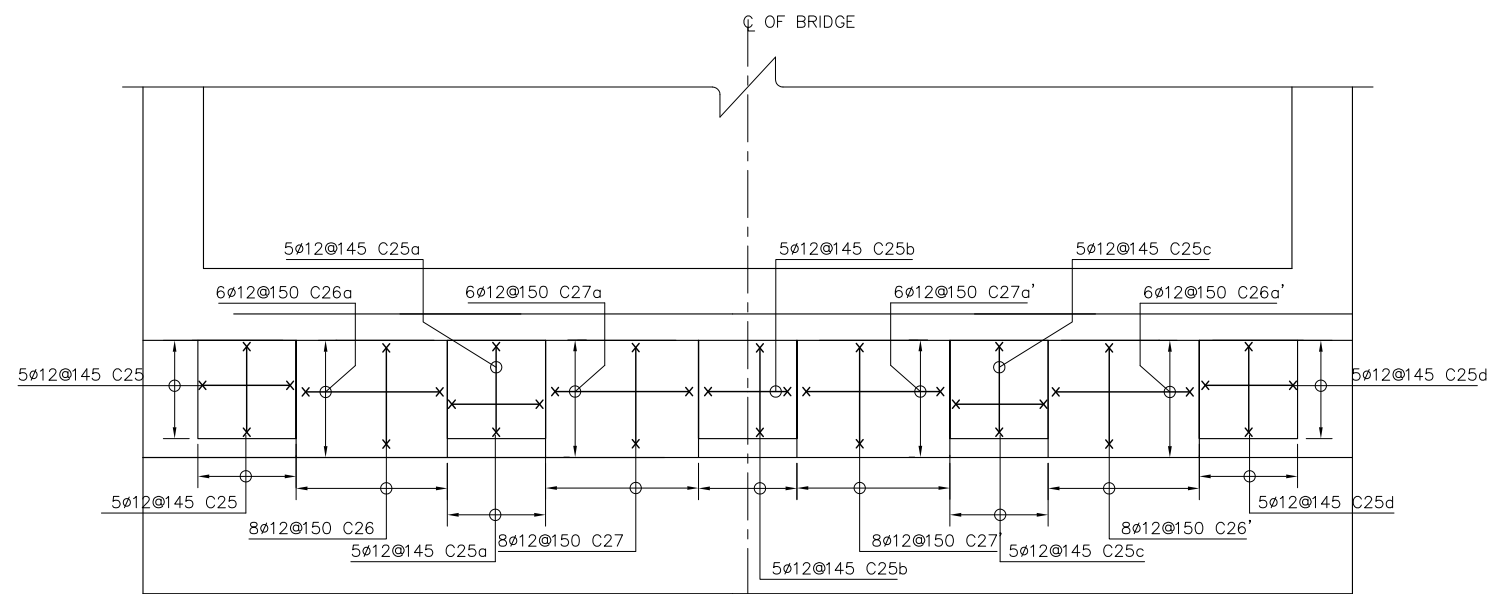
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKETH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
BAR ARRANGEMENT OF ABUTMENT  
A AND B (SHEET 1 OF 5)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
			DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
			CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BBA-22
			APPROVED	Mr.Vandy VORASACK		SCALE: 1:50



SECTION D-D  
SCALE 1:50



SECTION E-E  
SCALE 1:50

NOTES:

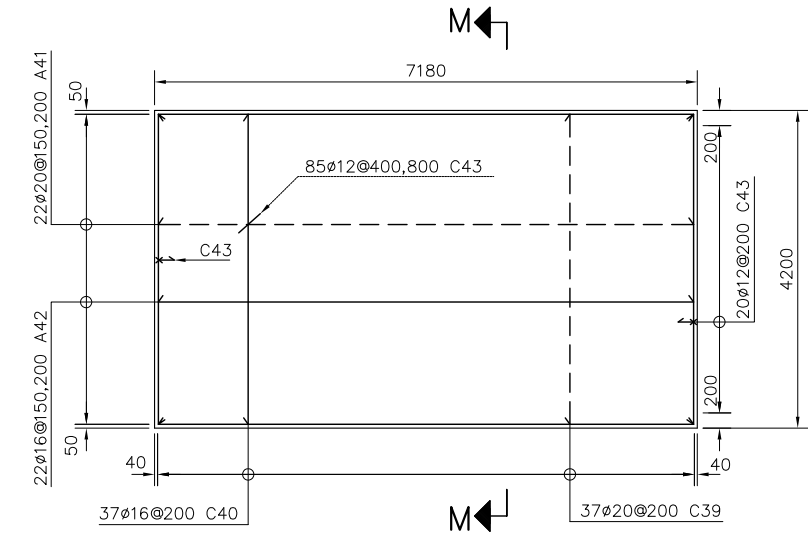
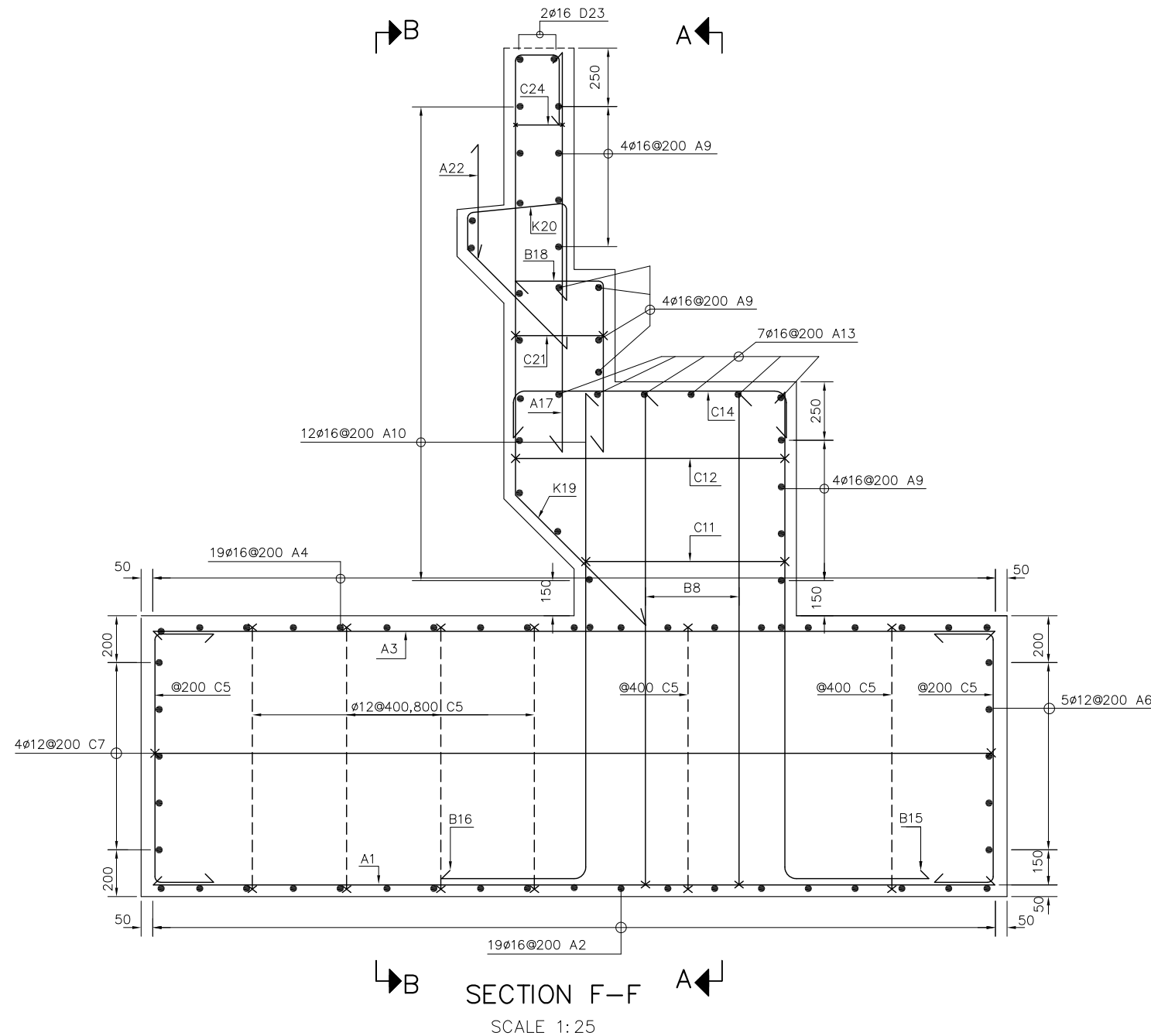
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS=50 mm.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-20, BDA-21, BBA-22, BBA-24, BBA-25 AND BBA-26



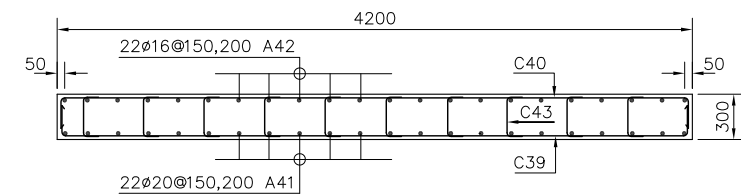
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
BAR ARRANGEMENT OF ABUTMENT  
A AND B (SHEET 2 OF 5)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBA-23
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:50



**APPROACH SLAB**  
SCALE 1:100



**SECTION M-M**  
SCALE 1:50

**NOTES:**

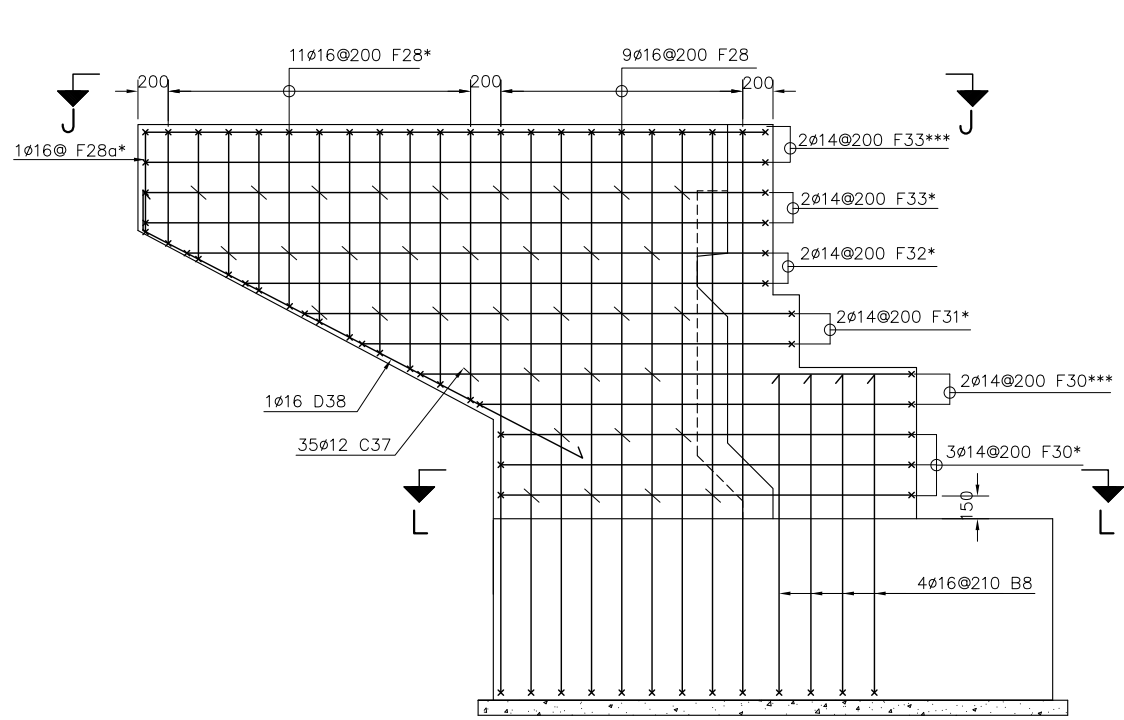
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS=50 mm.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-20, BDA-21, BBA-22, BBA-23, BBA-25 AND BBA-26.



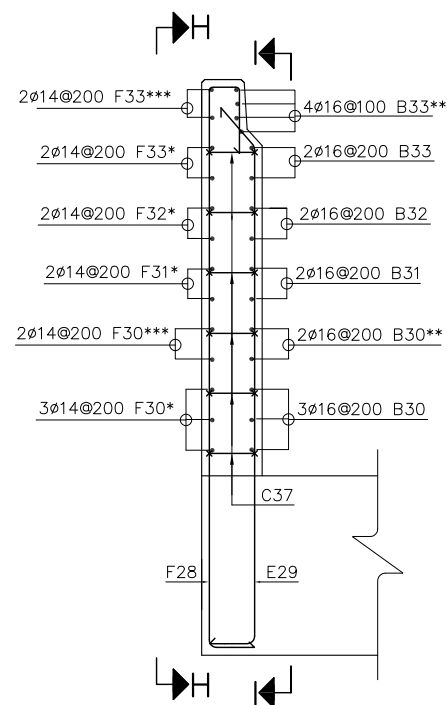
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LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
BAR ARRANGEMENT OF ABUTMENT  
A AND B (SHEET 3 OF 5)

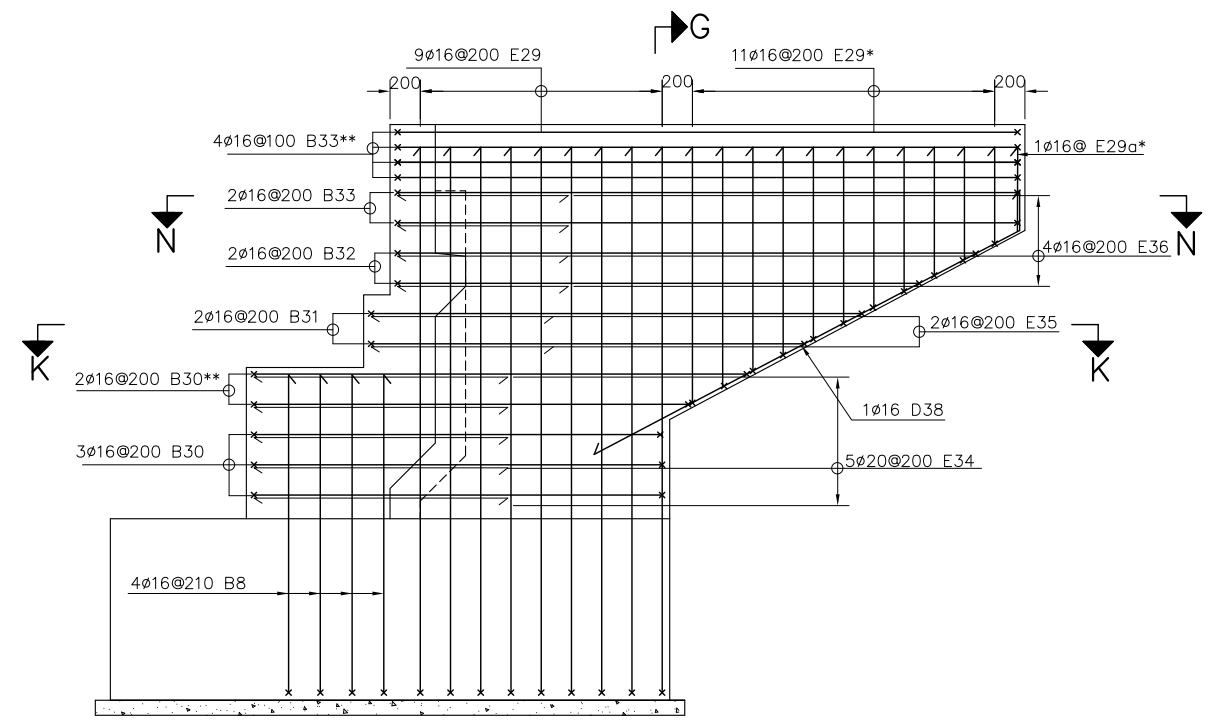
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBA-24
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



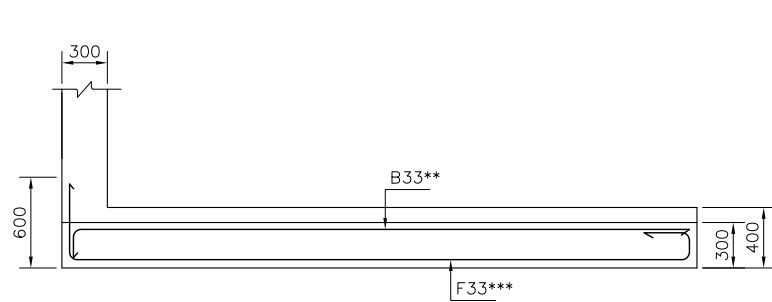
SECTION H-H  
SCALE 1:50



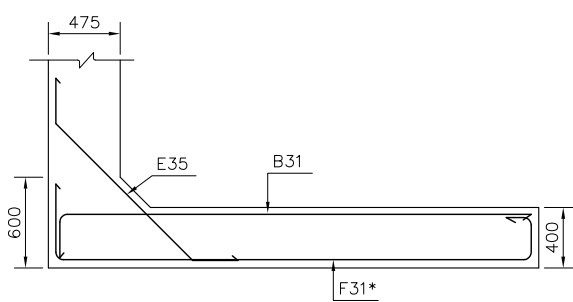
SECTION G-G  
SCALE 1:50



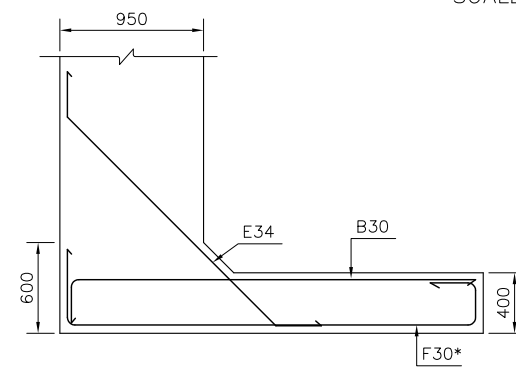
SECTION I-I  
SCALE 1:50



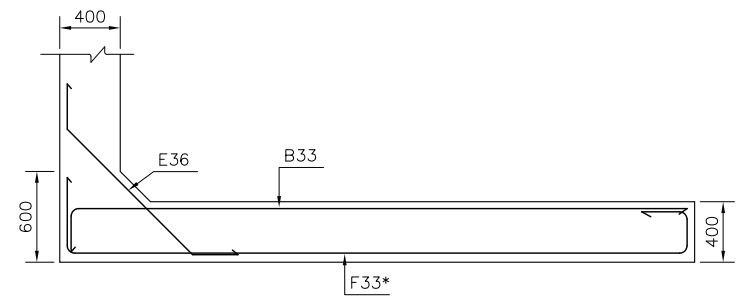
SECTION J-J  
SCALE 1:50



SECTION K-K  
SCALE 1:50



SECTION L-L  
SCALE 1:50



SECTION N-N  
SCALE 1:50

NOTES:

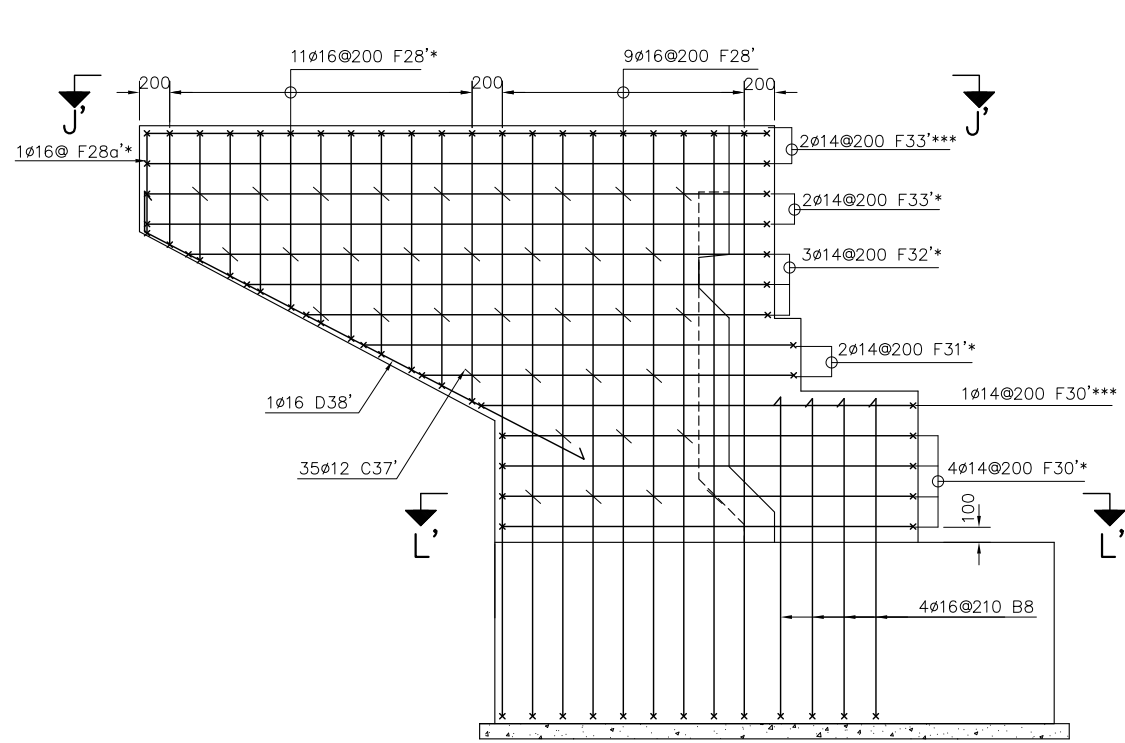
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS=50 mm.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-20, BDA-21, BBA-22, BBA-23, BBA-24 AND BBA-26



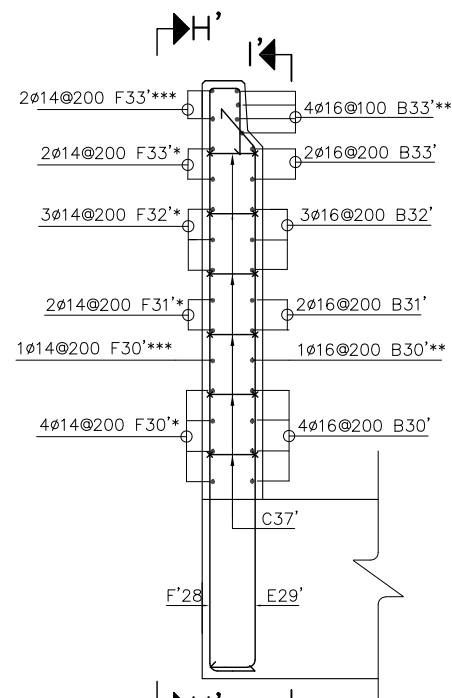
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
BAR ARRANGEMENT OF ABUTMENT  
A AND B (SHEET 4 OF 5)

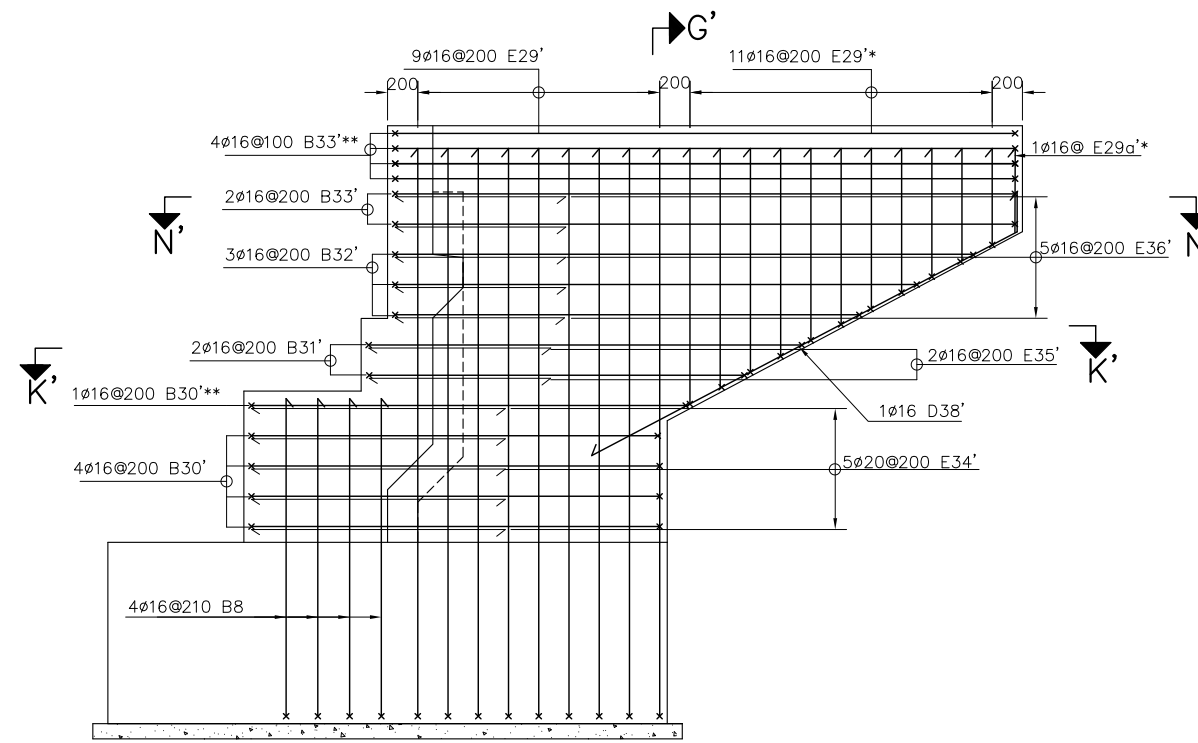
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
			DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
			CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BBA-25
			APPROVED	Mr.Vandy VORASACK		SCALE: 1:50



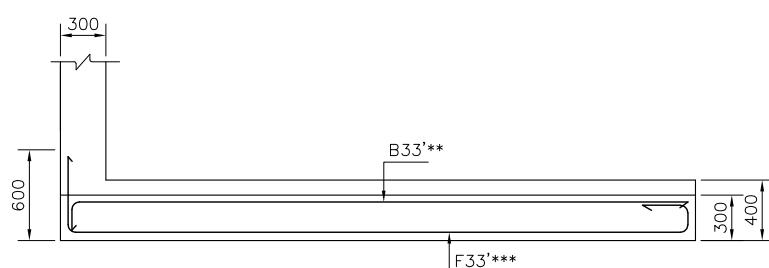
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SCALE 1:50



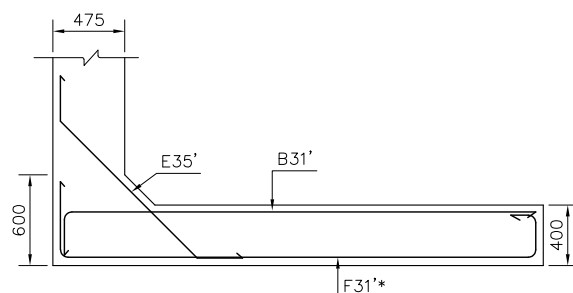
SECTION G'-G'  
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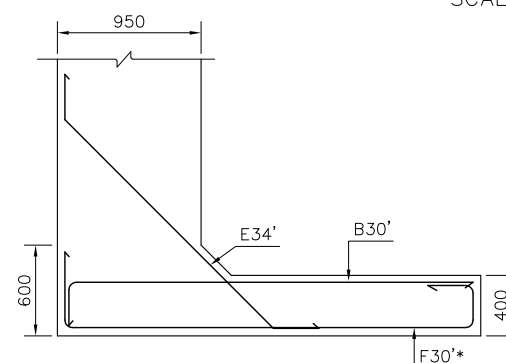
SECTION I'-I'  
SCALE 1:50



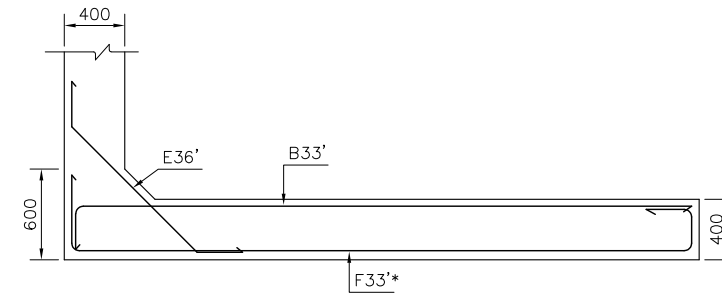
SECTION J'-J'  
SCALE 1:50



SECTION K'-K'  
SCALE 1:50



SECTION L'-L'  
SCALE 1:50



SECTION N'-N'  
SCALE 1:50

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS=50 mm.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-20, BDA-21, BBA-22, BBA-23, BBA-24 AND BBA-25.



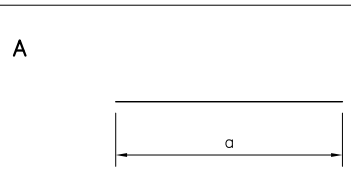
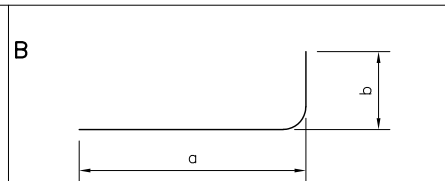
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
BAR ARRANGEMENT OF ABUTMENT  
A AND B (SHEET 5 OF 5)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
			DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
			CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BBA-26
			APPROVED	Mr.Vandy VORASACK		SCALE: 1:50



TABLE OF BAR ARRANGEMENT FOR ONE ABUTMENT A OR B

SHAPE OF BAR	No.	DIAMETER (mm)	LENGTH OF BAR (mm)	QUANTITY	TOTAL LENGTH (m)	SIZE OF BENDING (mm)						SPACE @ (mm)	REMARK	A 	B 
						a	b	c	d	e	f				
C	26'	12	2415	8	19.32	850	715	850				150			
C	26a	12	2040	6	12.24	550	940	550				150			
C	26a'	12	2540	6	15.24	800	940	800				150			
C	27	12	1915	16	30.64	600	715	600				150			
C	27'	12	2215	16	35.44	750	715	750				150			
C	27a	12	2240	12	26.88	650	940	650				150			
C	27a'	12	2340	12	28.08	700	940	700				150			
F	28	16	4900	9	44.1	300	300	3700	600			200			
F	28'	16	5050	9	45.45	300	300	3850	600			200			
F	28*	16	$\frac{2975}{1935}$	11	27.01	300	300	$\frac{1775}{735}$	600			200	△ = 102		
F	28'*	16	$\frac{2975}{1935}$	11	27.01	300	300	$\frac{1775}{735}$	600			200	△ = 102		
F	28a*	16	1800	1	1.8	300	300	600	600			200			
F	28a'*	16	1800	1	1.8	300	300	600	600			200			
E	29	16	3900	9	35.1	300	3300	300				200			
E	29'	16	4050	9	36.45	300	3450	300				200			
E	29*	16	$\frac{1875}{835}$	11	14.91	200	$\frac{1375}{335}$	300				200	△ = 102		
E	29'*	16	$\frac{1875}{835}$	11	14.91	200	$\frac{1375}{335}$	300				200	△ = 102		
E	29a*	16	900	1	0.9	300	300	300				200			
E	29a'*	16	900	1	0.9	300	300	300				200			
B	30	16	3000	3	9	300	2700					200			
B	30'	16	3000	4	12	300	2700					200			
F	30*	14	3900	3	11.7	300	300	2700	600			200			
F	30'*	14	3900	4	15.6	300	300	2700	600			200			
B	30**	16	$\frac{3560}{3180}$	2	6.74	$\frac{3260}{2880}$	300					200	△ = 380		
B	30'**	16	3180	1	3.18	300	2880					200			
F	30***	14	$\frac{4460}{4080}$	2	8.54	300	300	$\frac{3260}{2880}$	600			200	△ = 380		
F	30'***	14	4080	1	4.08	300	300	2880	600			200			
B	31	16	$\frac{3545}{3165}$	2	6.71	$\frac{3245}{2865}$	300					200	△ = 380		
B	31'	16	$\frac{3140}{2760}$	2	5.9	$\frac{2840}{2460}$	300					200	△ = 380		
F	31*	14	$\frac{4445}{4065}$	2	8.51	300	300	$\frac{3245}{2865}$	600			200	△ = 380		

RADIUS OF BAR BENDING	
DIAMETER OF BARS (mm)	RADIUS (mm)
10	35
12	42
16	56
20	100
25	125
32	224

NOTES:

- △ IS DIFFERENT LENGTH OF BAR WITH THE SAME NUMBER.
- THE TABLE OF QUANTITY OF REINFORCEMENT IS FOR ONE ABUTMENT ONLY.


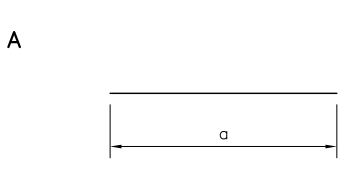
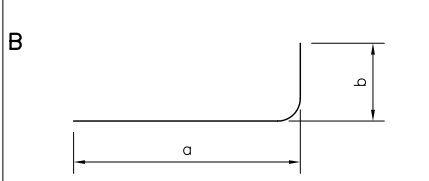
 <p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED		NAME	SIGNATURE	LTEC CODE: SD-262-17
	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY						DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	HOUAY XAIMOUN BRIDGE						CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BTB-28
	SUMMARY OF QUANTITIES FOR ABUTMENT A OR B (SHEET 2 OF 4)						APPROVED	Mr.Vandy VORASACK	SCALE: -

TABLE OF BAR ARRANGEMENT FOR ONE ABUTMENT A OR B

SHAPE OF BAR	No.	DIAMETER (mm)	LENGTH OF BAR (mm)	QUANTITY	TOTAL LENGTH (m)	SIZE OF BENDING (mm)						SPACE @ (mm)	REMARK	A 	B 
						a	b	c	d	e	f				
F	31*	14	4445 4065	2	8.51	300	300	3245 2865	600			200	△ = 380		
B	32	16	4130 3750	2	7.88	3830 3450	300					200	△ = 380		
B	32'	16	4130 3370	3	11.25	3830 3070	300					200	△ = 380		
F	32*	14	5030 4650	2	9.68	300	300	3830 3450	600			200	△ = 380		
F	32*	14	5030 4270	3	13.95	300	300	3830 3070	600			200	△ = 380		
B	33	16	4400	2	8.8	4100	300					200			
B	33'	16	4400	2	8.8	4100	300					200			
F	33*	14	5300	2	10.6	300	300	4100	600			200			
F	33*	14	5300	2	10.6	300	300	4100	600			200			
B	33**	16	4400	4	17.6	4100	300					100			
B	33**	16	4400	4	17.6	4100	300					100			
F	33***	14	5300	2	10.6	300	300	4100	600			200			
F	33***	14	5300	2	10.6	300	300	4100	600			200			
E	34	20	2550	5	12.75	300	1950	300				200			
E	34'	20	2550	5	12.75	300	1950	300				200			
E	35	20	1875	2	3.75	300	1275	300				200			
E	35'	20	1875	2	3.75	300	1275	300				200			
E	36	20	1775	4	7.1	300	1175	300				200			
E	36'	20	1775	5	8.88	300	1175	300				200			
C	37	12	700	35	24.5	200	300	200				400			
C	37'	12	700	35	24.5	200	300	200				400			
D	38	16	3600	2	7.2	300	3300					-			
D	38'	16	3600	2	7.2	300	3300					-			
C	39	20	4500	37	166.5	200	4100	200				200			
C	40	16	4500	37	166.5	200	4100	200				200			
A	41	16	7080	22	155.76	7080						200			
A	42	16	7080	22	155.76	7080						200			
C	43	12	500	129	64.5	150	200	150	0			400,800			

RADIUS OF BAR BENDING	
DIAMETER OF BARS (mm)	RADIUS (mm)
10	35
12	42
16	56
20	100
25	125
32	224

NOTES:

- △ IS DIFFERENT LENGTH OF BAR WITH THE SAME NUMBER.
- THE TABLE OF QUANTITY OF REINFORCEMENT IS FOR ONE ABUTMENT ONLY.




ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
SUMMARY OF QUANTITIES FOR  
ABUTMENT A OR B (SHEET 3 OF 4)

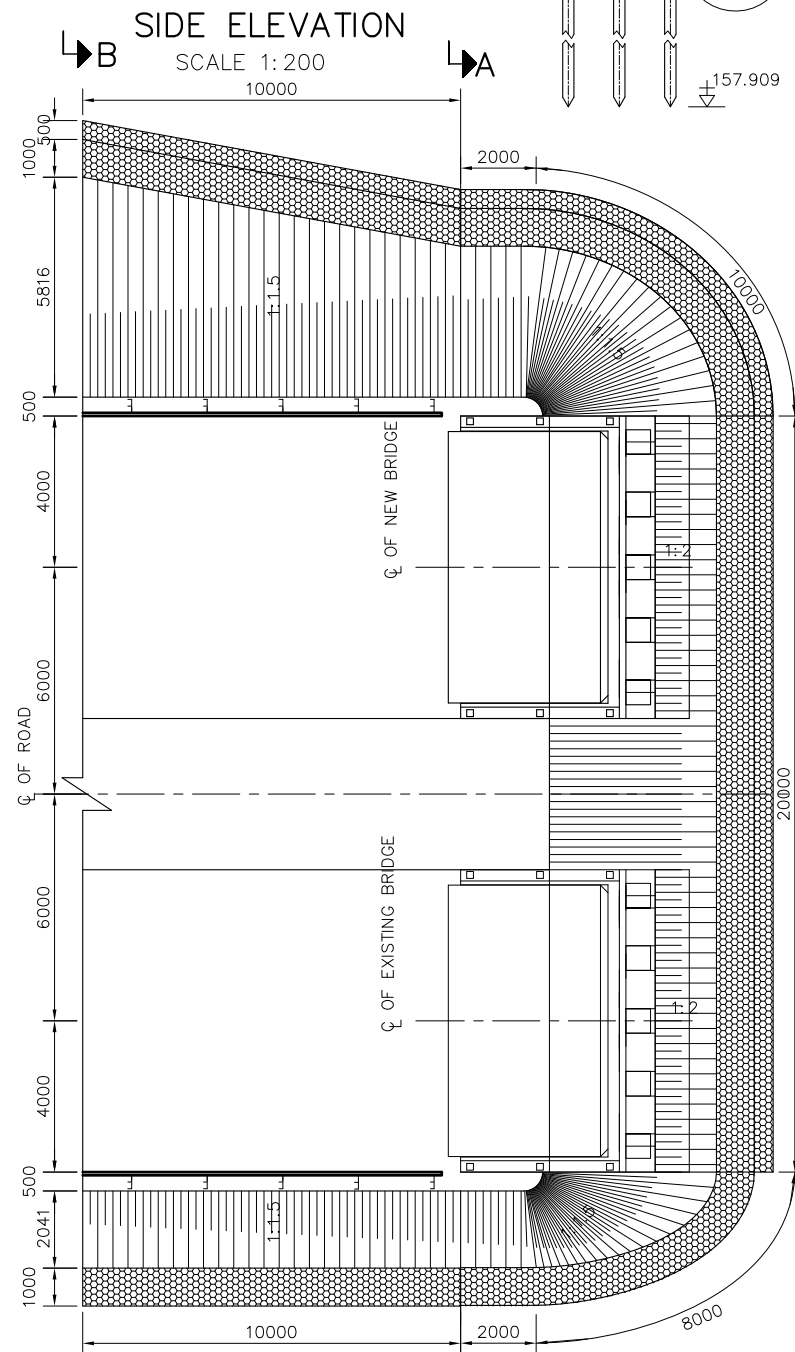
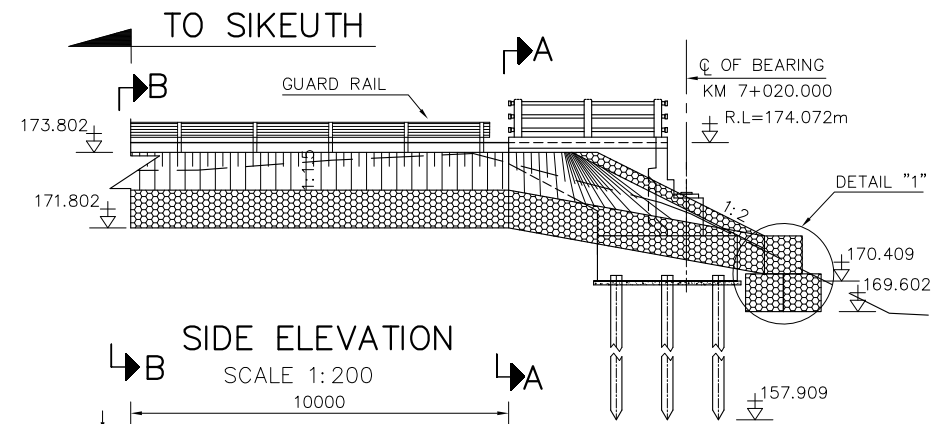
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
			DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
			CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BTB-29
			APPROVED	Mr.Vandy VORASACK		SCALE: -

SUMMARY OF QUANTITIES FOR ONE ABUTMENT A OR B

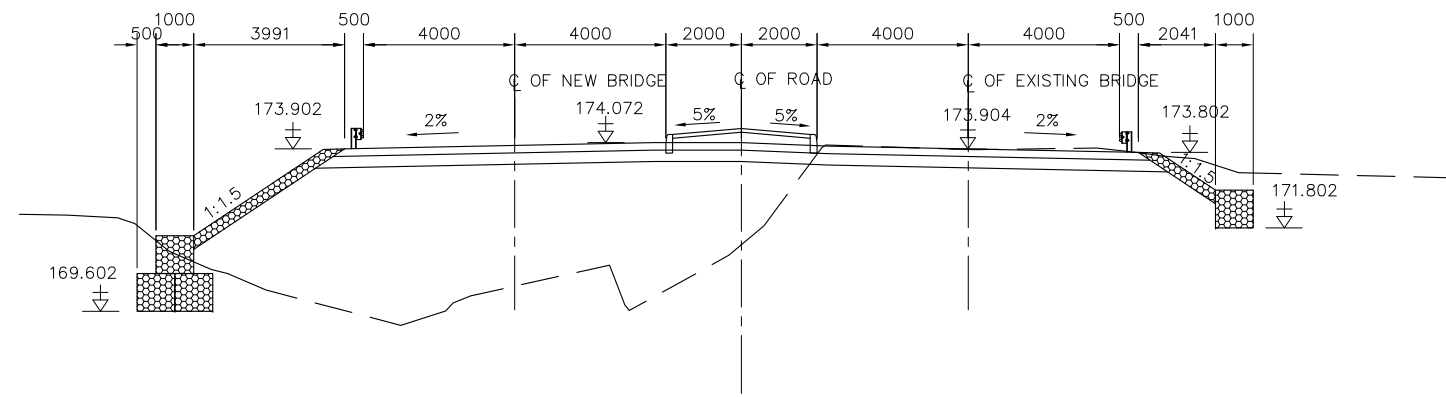
ITEM	CONCRETE (m <sup>3</sup> )			REINFORCEMENT (Kg)						MIX SAND AND GRAVEL (m <sup>3</sup> )	PRECAST CONCRETE PILE 350x350 mm (m)
	GRADE 10MPa.	GRADE 25MPa.	GRADE 30MPa.	Ø12	Ø14	Ø16	Ø20	Ø25	TOTAL		
1. ABUTMENT	3.03	57.41	0.38	712.52	148.60	2028.53	1452.71	30.83		15.98	FOR ABUT.A = 187.50
2. APPROACH SLAB	1.51	9.05	-	57.26	-	754.48	410.61	-			FOR ABUT.B = 187.50
TOTAL	4.54	66.46	0.38	769.79	148.60	2783.00	1863.32	30.83	5595.54	15.98	375.00

 <p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	HOUAY XAIMOUN BRIDGE					CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BTB-30
	SUMMARY OF QUANTITIES FOR ABUTMENT A OR B (SHEET 4 OF 4)					APPROVED	Mr.Vandy VORASACK	SCALE: -

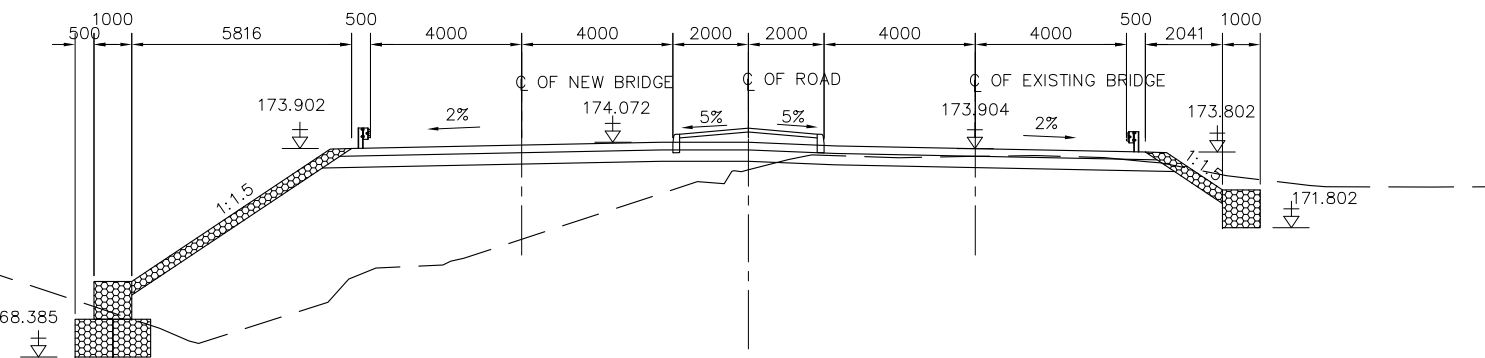
# III. MISCELLANEOUS DRAWINGS



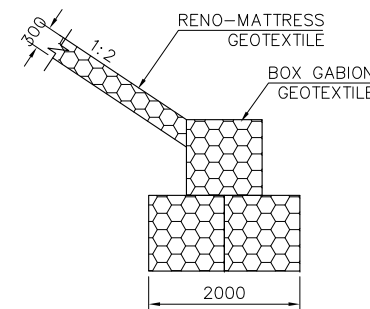
PLAN  
SCALE 1: 200



SECTION A-A  
SCALE 1: 200



SECTION B-B  
SCALE 1: 200



DETAIL "1"  
SCALE 1: 100

TABLE OF QUANTITIES OF SLOPE PROTECTION

ITEMS	DESCRIPTIONS	UNIT	QUANTITIES
1	GABION BOX	m <sup>3</sup>	126.00
2	GEOTEXTILE	m <sup>2</sup>	430.89
3	RENO-MATTRESS	m <sup>3</sup>	72.87
4	EMBANKMENT	m <sup>3</sup>	877.64
5	STRUCTURE EXCAVATION (COMMON)	m <sup>3</sup>	308.46
6	CHANNEL EXCAVATION	m <sup>3</sup>	1427.59

NOTE:

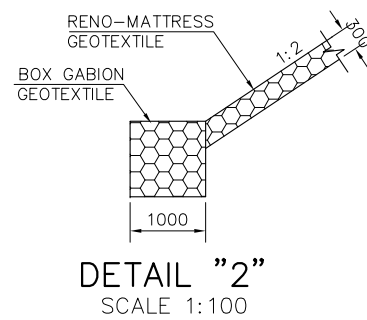
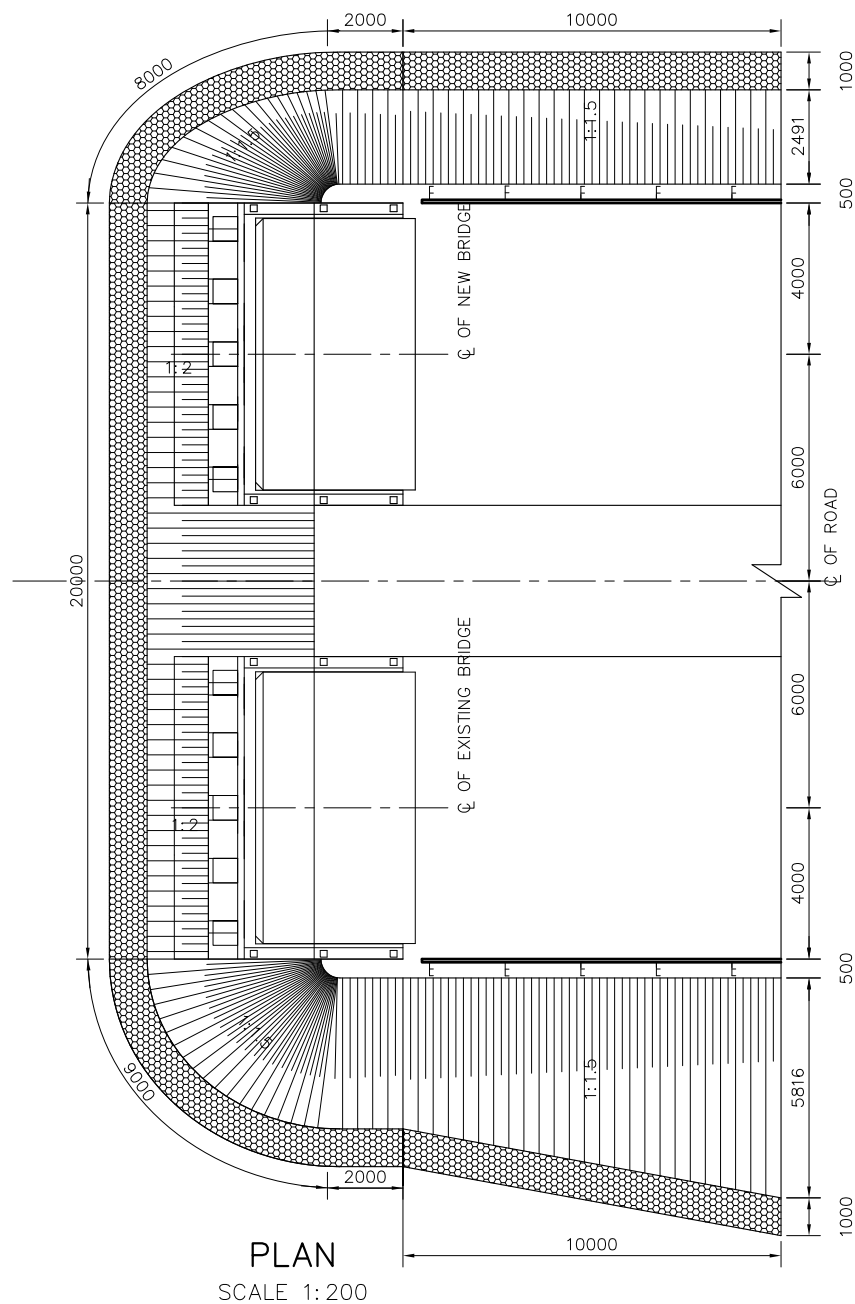
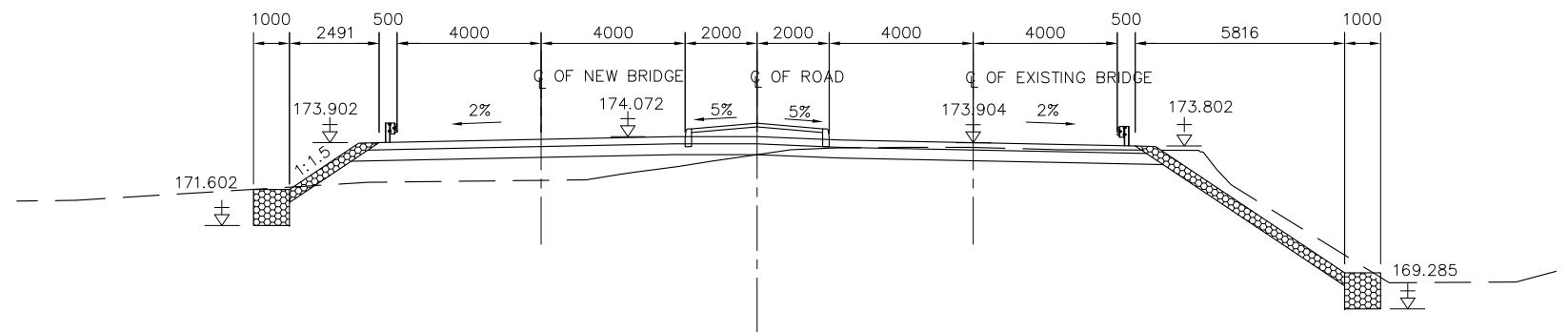
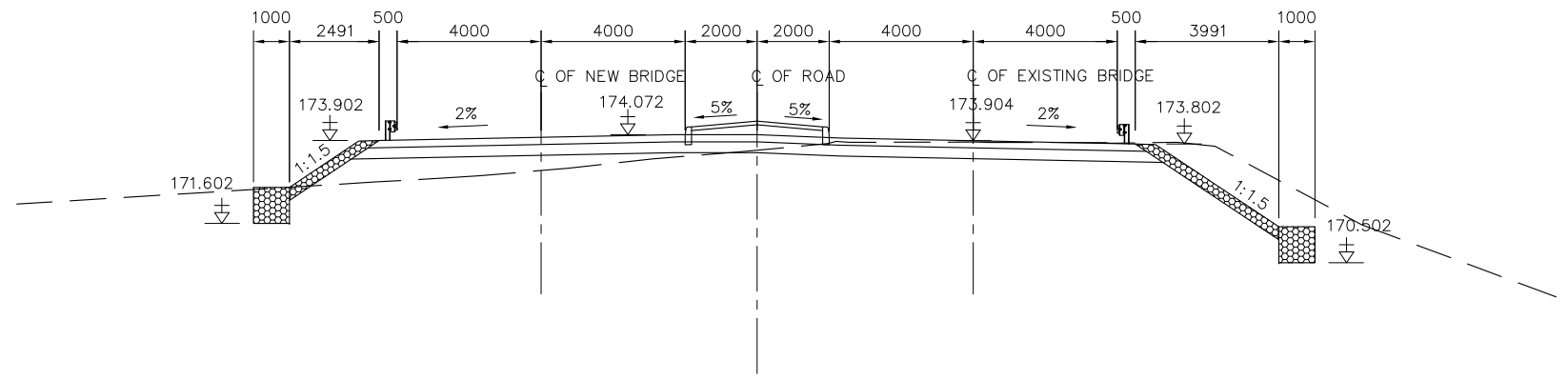
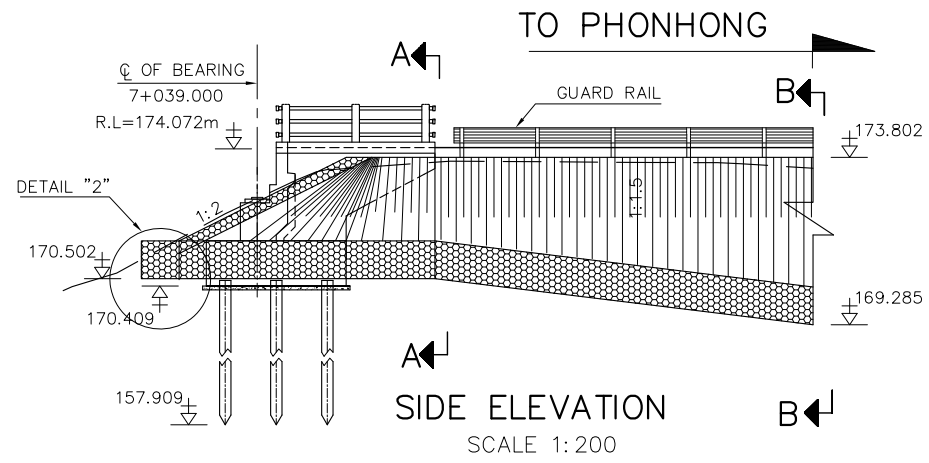
1. ALL DIMENSIONS ARE IN MILLIMETERS, LEVELS ARE IN METERS.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
SLOPE PROTECTION  
AROUND ABUTMENT A

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BSP-31
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



SECTION A-A  
SCALE 1:200

SECTION B-B  
SCALE 1:200

TABLE OF QUANTITIES OF SLOPE PROTECTION

ITEMS	DESCRIPTIONS	UNIT	QUANTITIES
1	GABION BOX	m <sup>3</sup>	61.00
2	GEOTEXTILE	m <sup>2</sup>	367.39
3	RENO-MATTRESS	m <sup>3</sup>	73.62
4	EMBANKMENT	m <sup>3</sup>	121.26
5	STRUCTURE EXCAVATION (COMMON)	m <sup>3</sup>	170.24

NOTE:

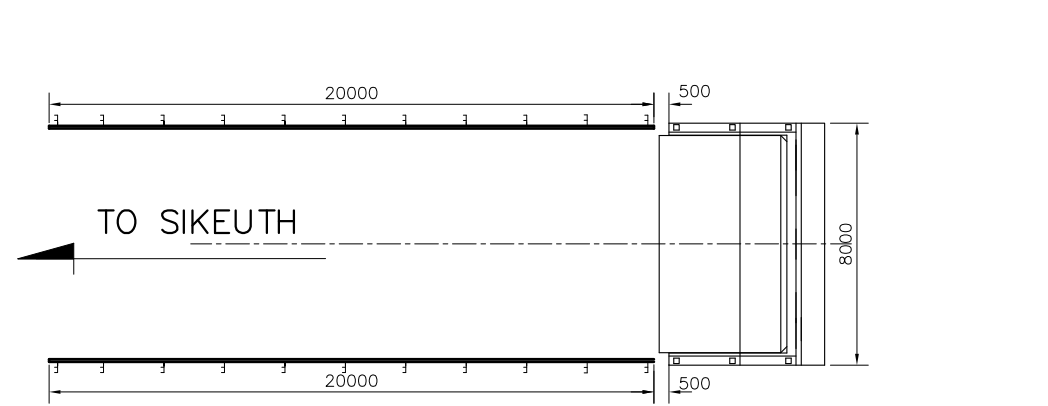
1. ALL DIMENSIONS ARE IN MILLIMETERS, LEVELS ARE IN METERS.



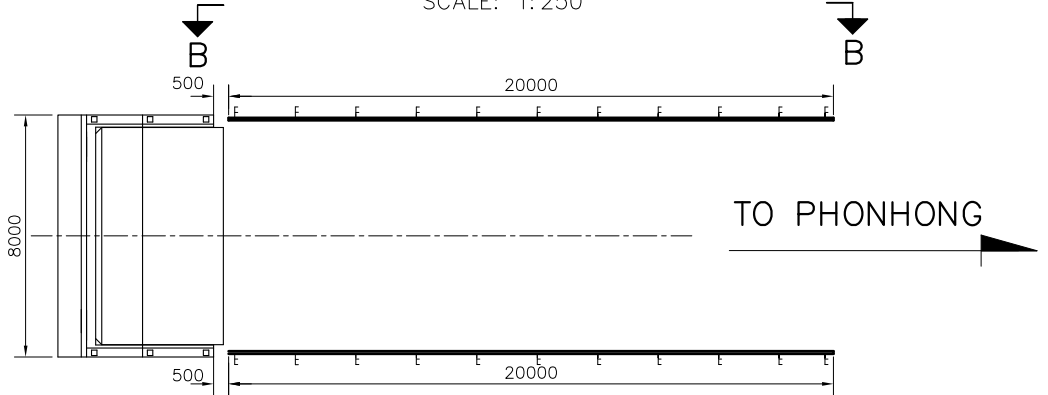
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LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
SLOPE PROTECTION  
AROUND ABUTMENT B

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BSP-32
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



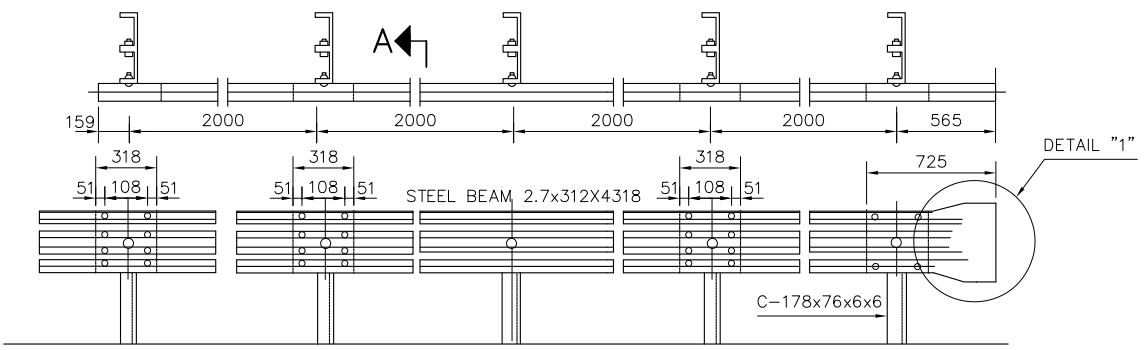
GENERAL PLAN SIDE SIKEUTH  
SCALE: 1:250



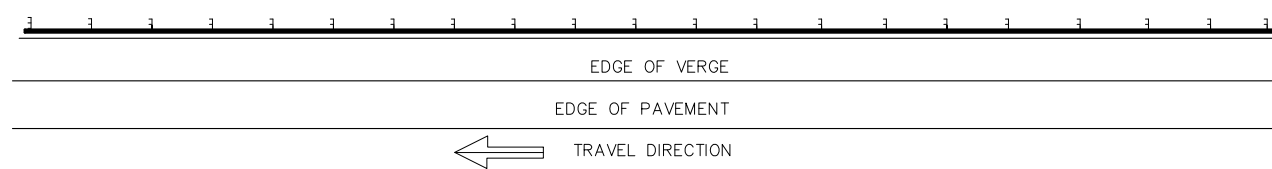
GENERAL PLAN SIDE PHONHONG  
SCALE: 1:250



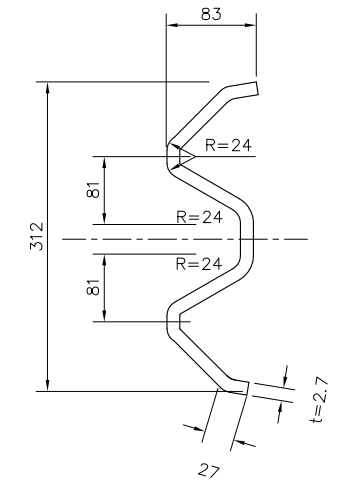
SIDE ELEVATION B-B  
NOT TO SCALE



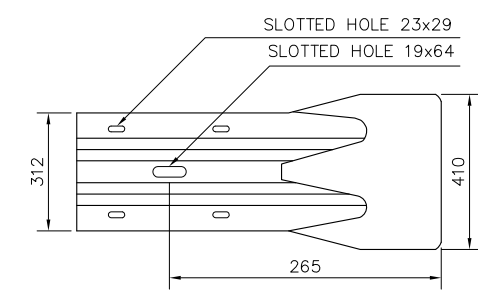
FRONT VIEW  
NOT TO SCALE



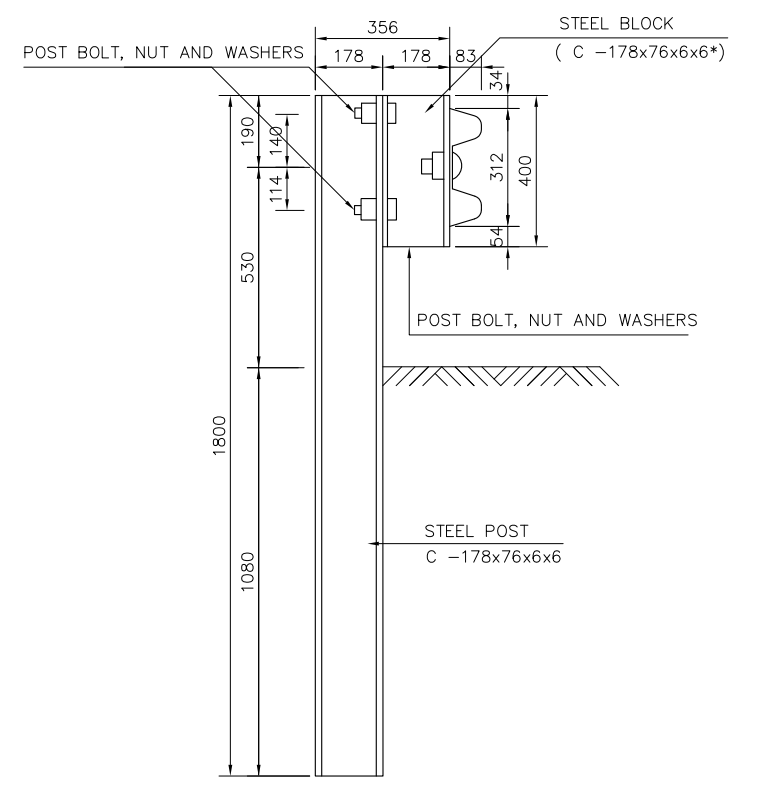
PLAN  
NOT TO SCALE



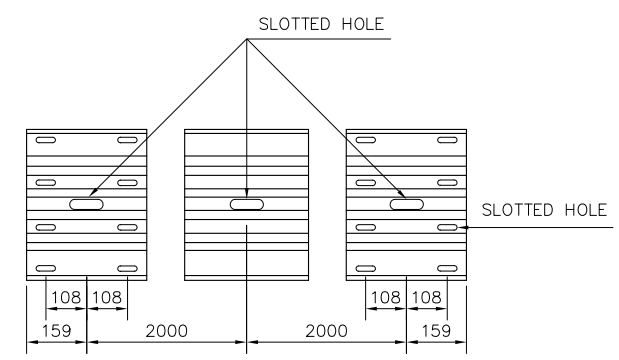
SECTION A-A  
NOT TO SCALE



DETAIL "1"  
SCAL 1:20



SECTION A-A  
VERTICAL TRANSPORTION  
SCAL 1:20



STEEL BEAM  
NOT TO SCALE

TABLE OF QUANTITIES

ITEMS	DESCRIPTIONS	UNIT	QUANTITIES
1	GUARDRAILL (ABUTMENT A SIDE)	m	40.00
2	GUARDRAILL (ABUTMENT B SIDE)	m	40.00
	TOTAL	m	80.00

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. GUARD RAIL STANDARD SHALL MEET THE REQUIREMENTS OF AASHTO M 180, TYPE I CLASS A, W-BEAM.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XAIMOUN BRIDGE  
GUARD RAIL

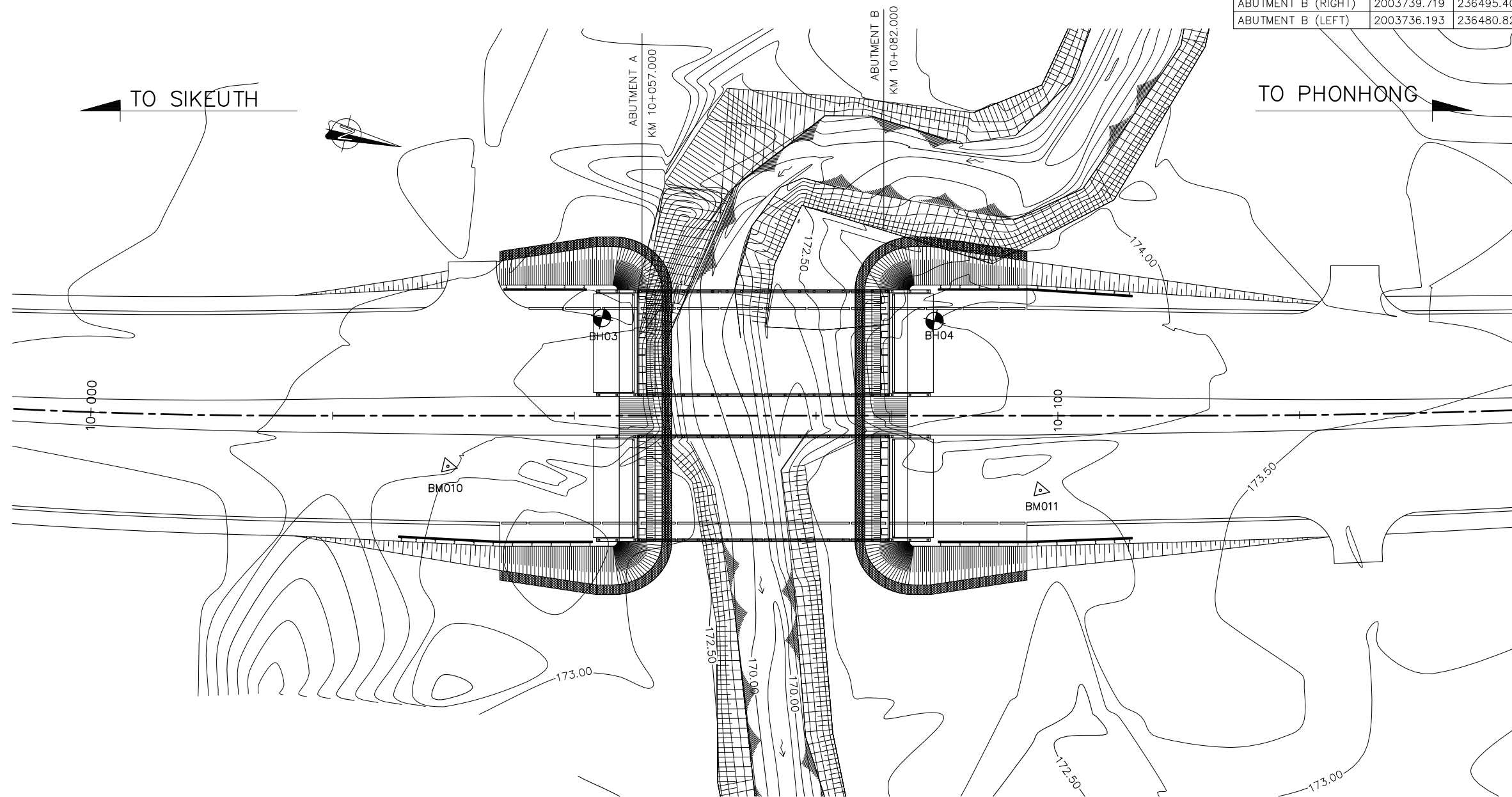
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. RGR-33
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN

# 02.HOUAY XONE BRIDGE

# I. GENERAL DRAWINGS

LIST OF COORDINATES

CODE	N (m)	E (m)	Z (m)
BM10	2003695.374	236503.794	174.318
BM11	2003755.503	236491.809	173.416
ABUTMENT A (RIGHT)	2003715.419	236501.284	-
ABUTMENT A (LEFT)	2003711.894	236486.704	-
ABUTMENT B (RIGHT)	2003739.719	236495.409	-
ABUTMENT B (LEFT)	2003736.193	236480.829	-



GENERAL PLAN OF BRIDGE

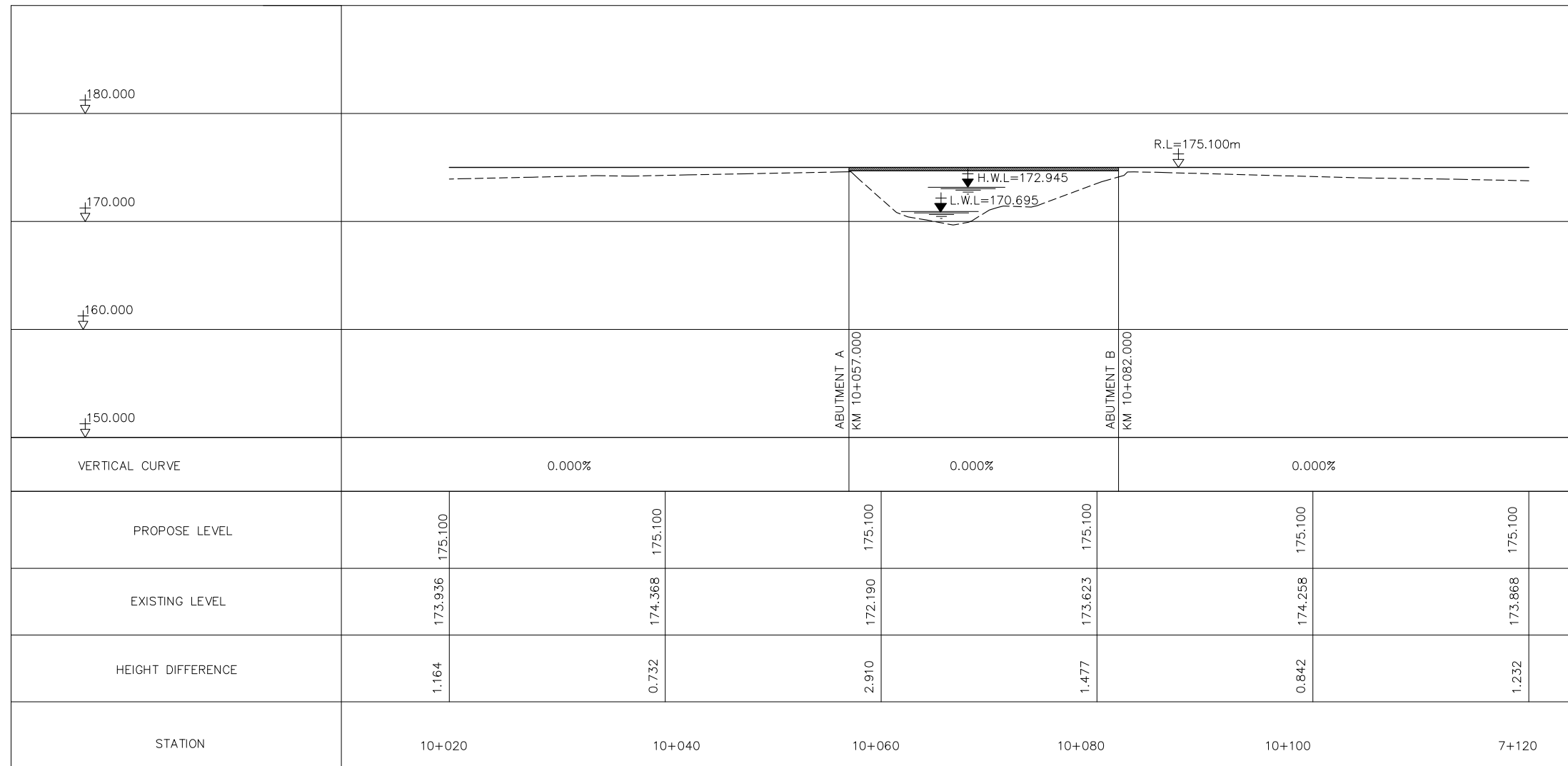
SCALE 1:500

<p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT		REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17	
	CONTRACT 1 : SIKOUTH JUNCTION - BAN SONGPEUAY						DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
	HOUAY XONE BRIDGE						CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BGP-01
	GENERAL PLAN OF BRIDGE						APPROVED	Mr.Vandy VORASACK		SCALE: 1:500

### ELEVATION OF BRIDGE

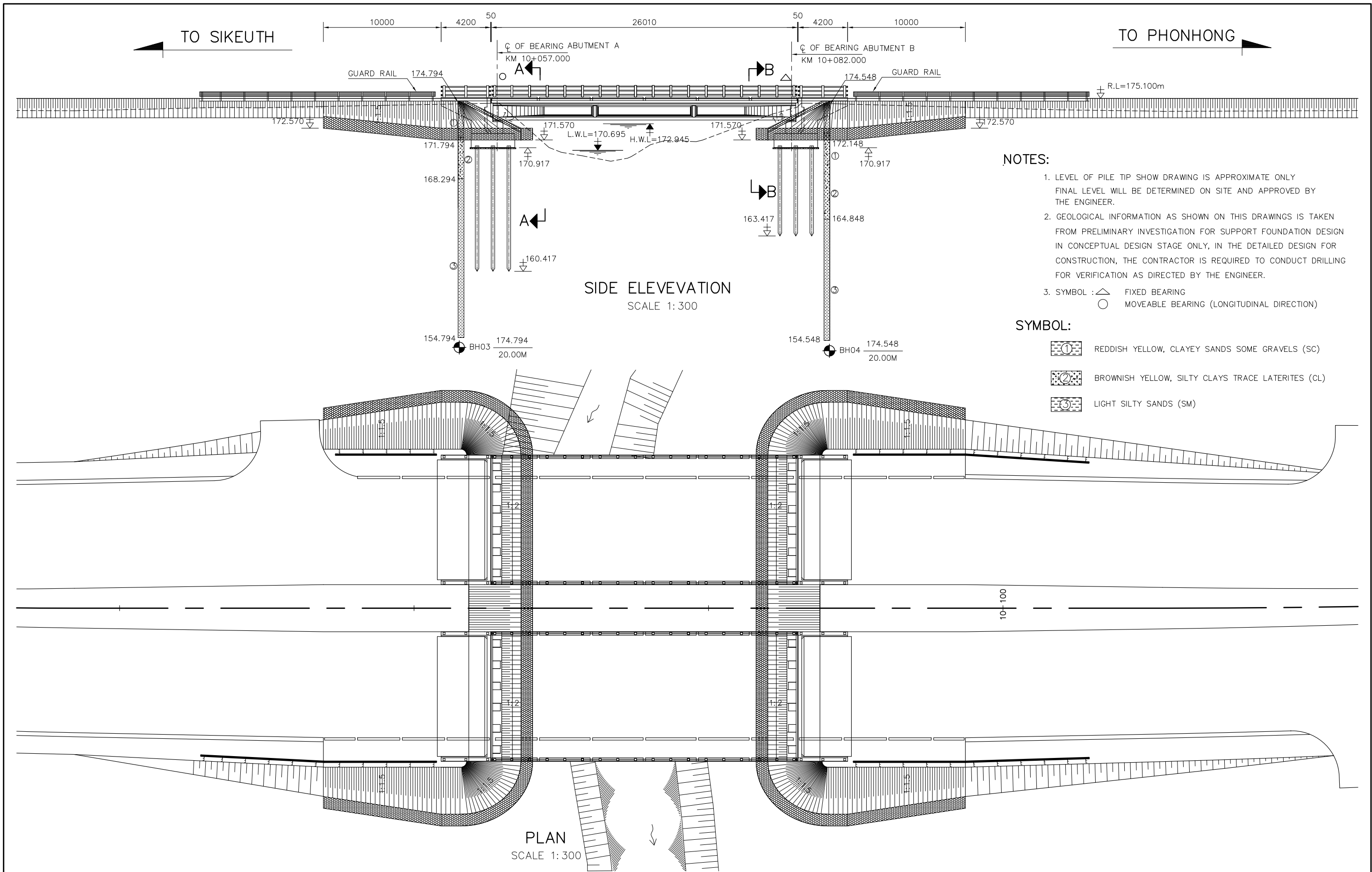
← TO SIKEUTH

TO PHONHONG →

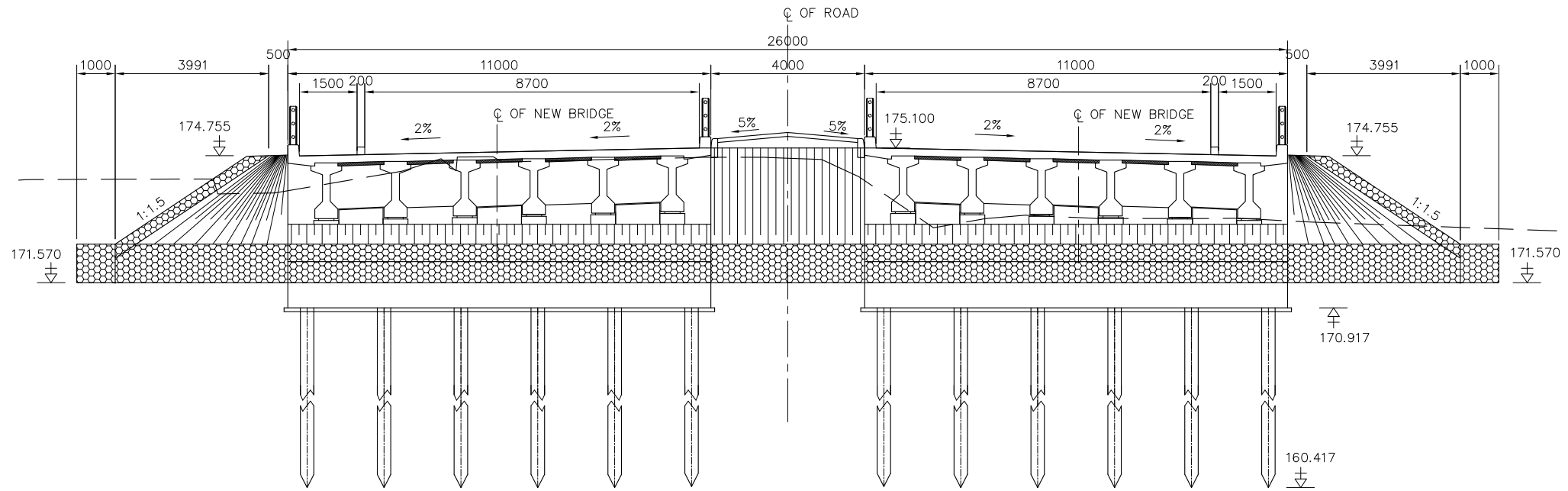


	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
	HOUAY XONE BRIDGE					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	ELEVATION OF BRIDGE					CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BAP-02
						APPROVED	Mr.Vandy VORASACK	SCALE: 1:500

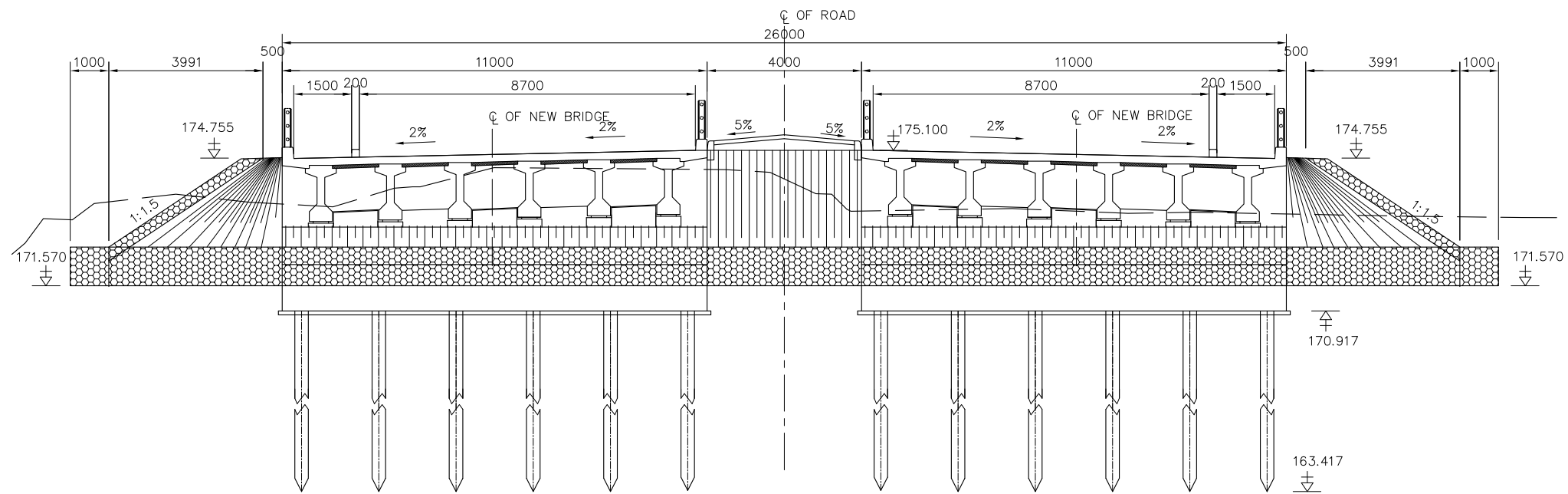
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT



<p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	HOUAY XONE BRIDGE					CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BGA-03
	GENERAL ARRANGEMENT OF BRIDGE (SHEET 1 OF 2)					APPROVED	Mr.Vandy VORASACK	SCALE: 1:300



SECTION A-A  
SCALE 1:150



SECTION B-B  
SCALE 1:150

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS, LEVEL ARE IN METERS.
2. GEOLOGICAL INFORMATION SEE IN SEPARATE REPORT ON SUB SOIL INVESTIGATION.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
GENERAL ARRANGEMENT OF BRIDGE  
(SHEET 2 OF 2)

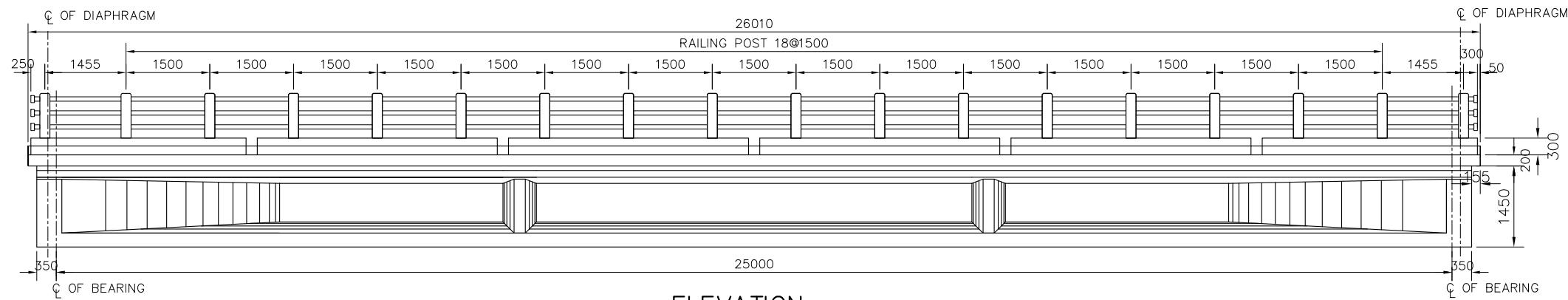
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
			DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
			CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BGA-04
			APPROVED	Mr.Vandy VORASACK		SCALE: AS SHOWN

**SUMMARY QUANTITIES OF MAIN MATERIALS FOR BRIDGE**

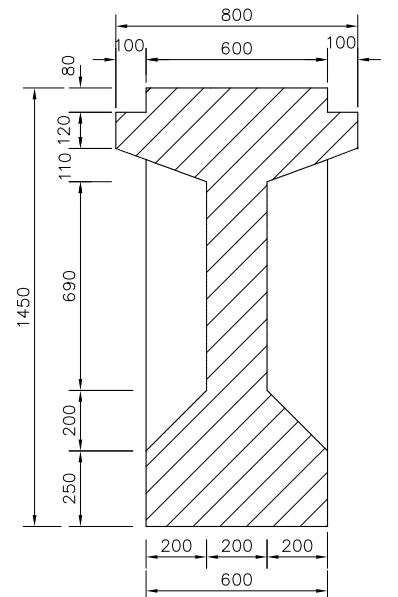
CATEGORIES	MATERIAL	STEEL(t)		HAND-RAIL (m)	CONCRETE (m3)						CEMENT GROUT 40MPa (m3)	ELASTOMERIC BEARINGS TYPE1 (No)	RUBBER BEARINGS STRIP (No)	EXPAN-SION JOINT (m)	GUARD RAIL (m)	PC PILE 350x350 Cm (m)	RENO MAT-TRESS	GABION BOX (m3)	GEO-TEXTILE		STRUC.EX		EM-BANK MENT (m3)	ROCK FILL (m3)	CHANNEL EXCA VATION (m3 )	MIX SAND AND GRAVEL (m3)
		PRES-TRESS STEEL	REIN. BARS		40	35	30	25	15	10									ROCK (m3)	SOIL (m3)	ROCK (m3)	SOIL (m3)				
<b>I- SUPERSTRUCTURE</b>																										
1	GIRDERS L=25m	9.00	31.80		198.00						4.00															
2	DAIPHAGMS		1.80			20.00																				
3	DECK SLABS +PRECAST SLABS		21.90			153.08																				
4	HAND RAILS			138.00																						
5	ELASTOMERIC BEARINGS										24.00	24.00														
6	EXPANSION JOINTS												44.00													
7	BRIDGE GUARD RAIL													80.00												
	<b>SUB TOTAL</b>	9.00	55.62	138.00	198.00	20.00	153.08	0.00	0.00	0.00	4.00	24.00	24.00	44.00	80.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>II- SUBSTRUCTURE</b>																										
1	ABUTMENTS AND APPROACH SLABS		29.64			2.56	366.00		26.00						648.00											88.00
2	SLOPE PROTECTION AND EMBANKMENT															200.00	140.00	946.00		862.00	301.00					
3	CHANNEL EXCAVATION																									
	<b>SUB TOTAL</b>	0.00	29.64	0.00	0.00	0.00	2.56	366.00	0.00	26.00	0.00	0.00	0.00	0.00	648.00	200.00	140.00	946.00	0.00	862.00	301.00	0.00	0.00	0.00	0.00	88.00
	<b>TOTAL</b>	9.00	85.00	138.00	198.00	20.00	156.00	366.00	0.00	26.00	4.00	24.00	24.00	44.00	80.00	648.00	200.00	140.00	946.00	0.00	862.00	301.00	0.00	0.00	0.00	88.00

<p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	<p align="center"><b>HOUAY XONE BRIDGE SUMMARY QUANTITIES OF MAIN MATTERIALS FOR BRIDGE</b></p>					CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BQM-05
						APPROVED	Mr.Vandy VORASACK	SCALE: -

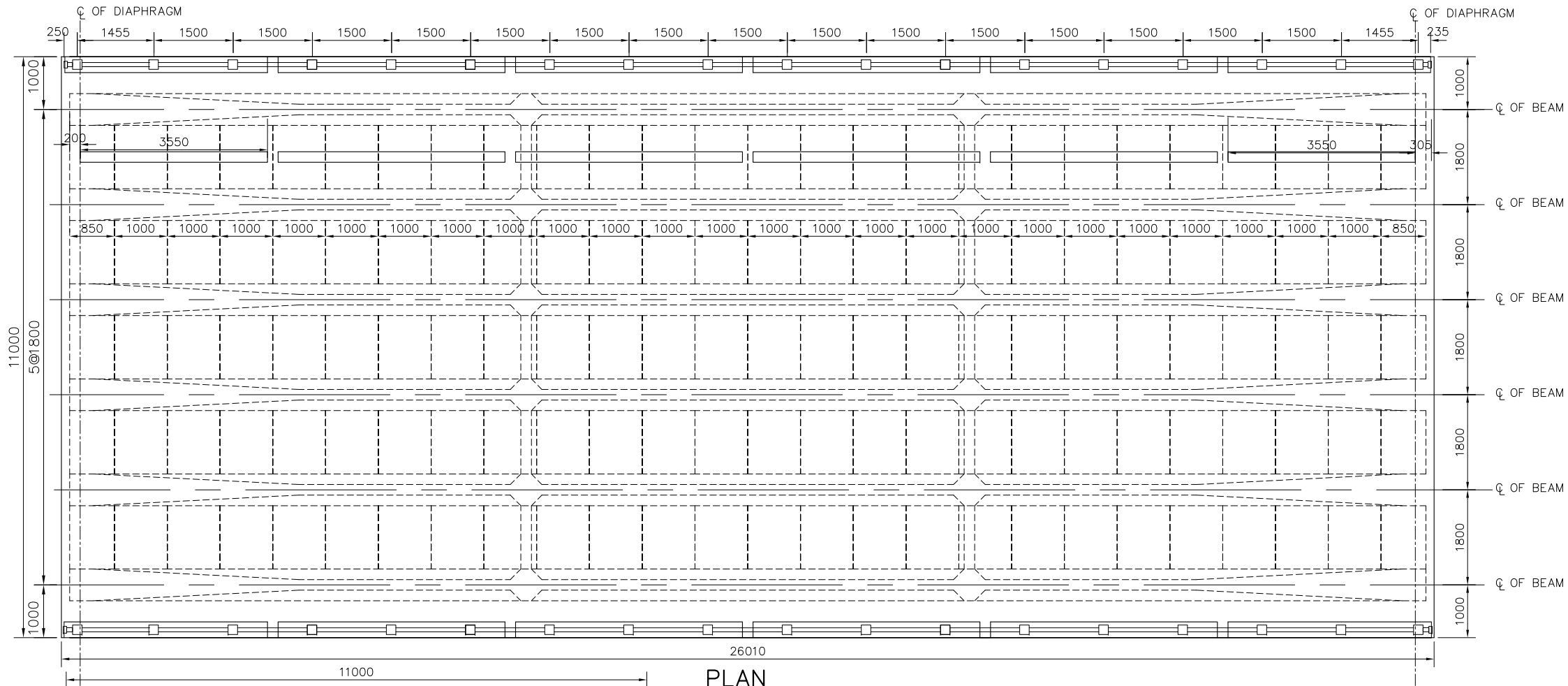
## II. STRUCTURE DRAWINGS



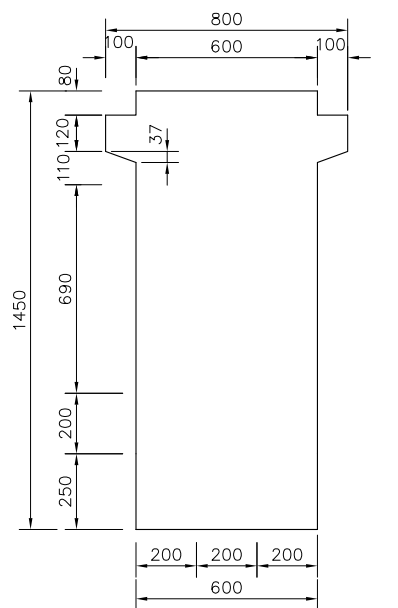
ELEVATION  
SCALE: 1:100



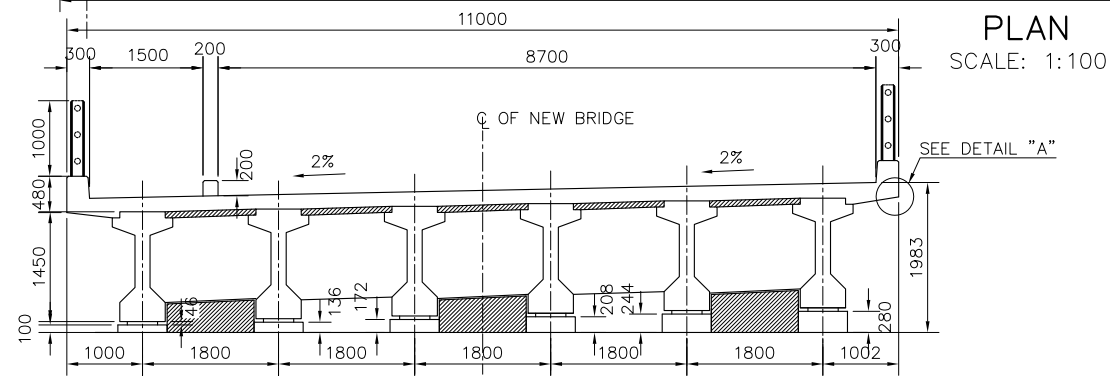
INTERNAL  
SCALE 1:25



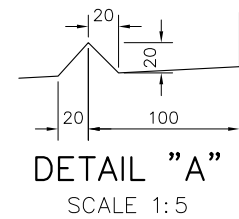
PLAN  
SCALE: 1:100



THE END  
SCALE 1:25



CROSS-SECTION  
SCALE: 1:100



DETAIL "A"  
SCALE 1:5

NOTE:

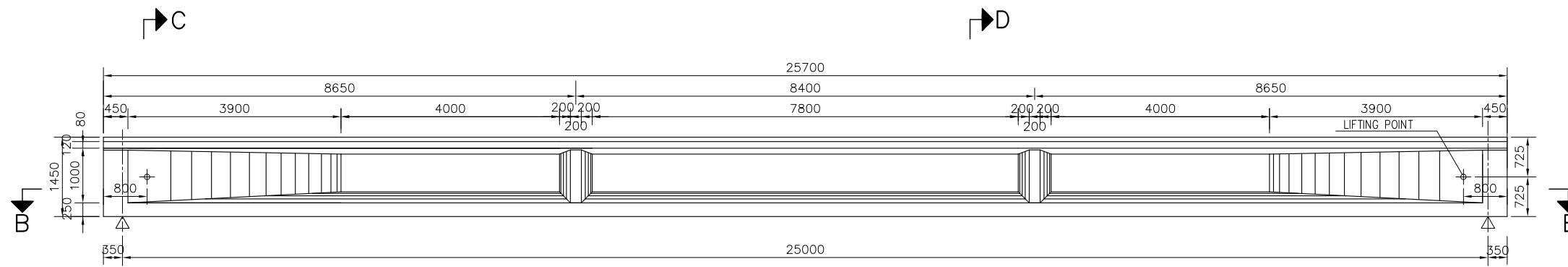
1. ALL DIMENSIONS ARE IN MILLIMETERS.



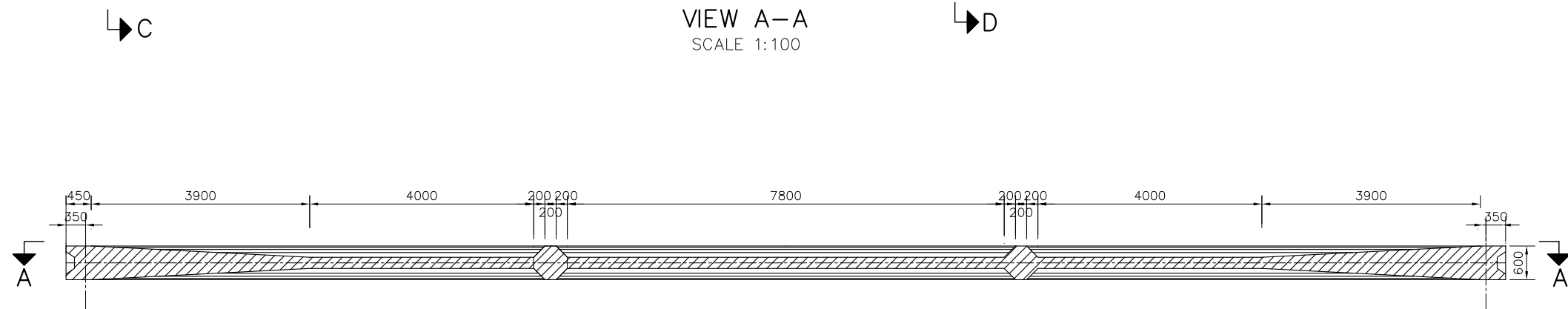
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
DIMENSIONS OF SUPERSTRUCTURE  
SPAN 25 m

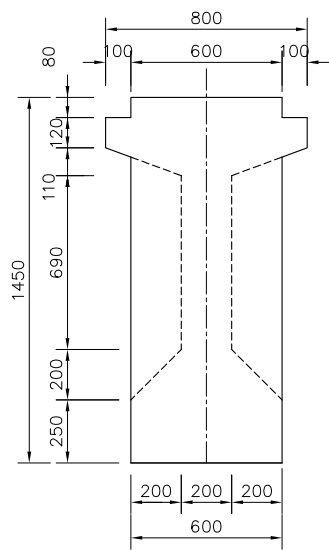
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BDS-06
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



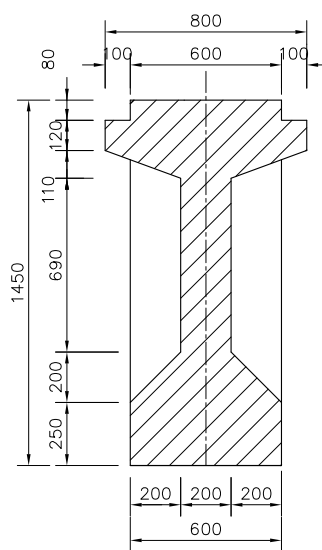
VIEW A-A  
SCALE 1:100



SECTION B-B  
SCALE 1:100



SECTION C-C  
SCALE 1:30



SECTION D-D  
SCALE 1:30

QUANTITY TABLE OF GIRDER

ITEM	UNIT	EXTERNAL GIRDER	INTERNAL GIRDER
REINFORCEMENT	Kg	2594.94	2645.66
CONCRETE GRADE 40 Mpa	m <sup>3</sup>	16.45	16.45
CEMENT MORTAR	m <sup>3</sup>	0.325	0.325
STEEL DUCT $\phi$ 57/60	m	137.20	137.20
PC CABLE 7T 12.7	Kg	744.31	744.31
ANCHOR	SET	10	10

NOTES:

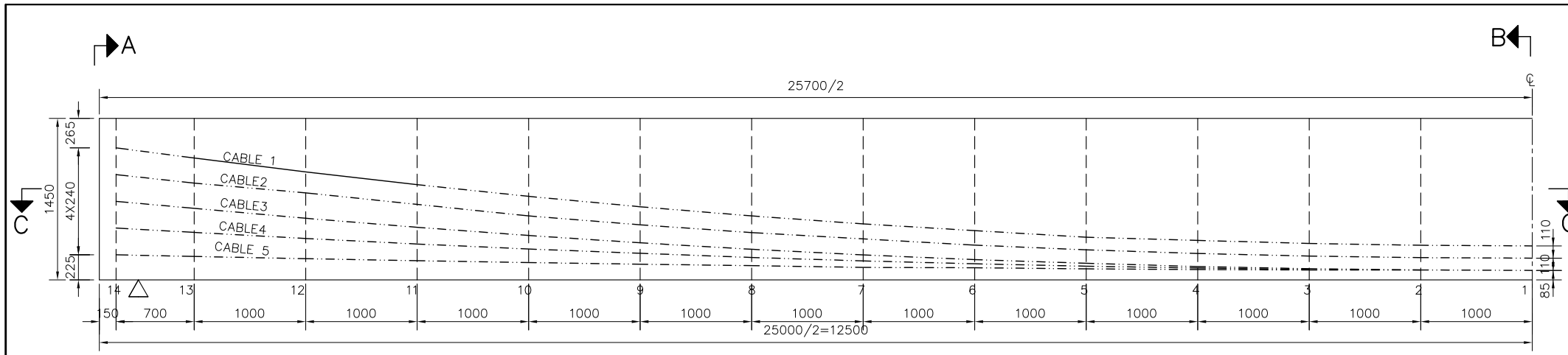
1. CONCRETE FOR PC GIRDER IS GRADE 40 MPa.
2. THIS DRAWING IS USED FOR EXTERNAL AND INTERNAL GIRDER.
3. ALL DIMENSIONS ARE IN MILLIMETERS.



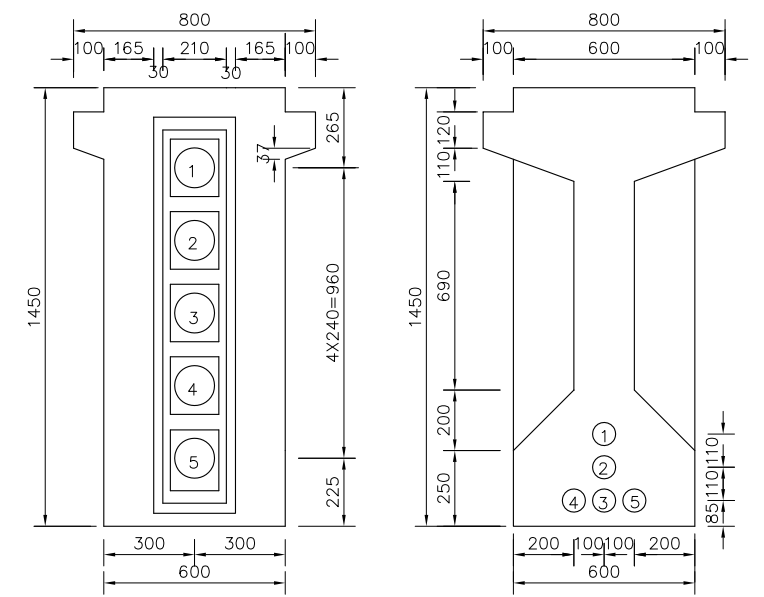
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
DIMENSIONS OF PRECAST  
CONCRETE GIRDER

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BDG-07
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN

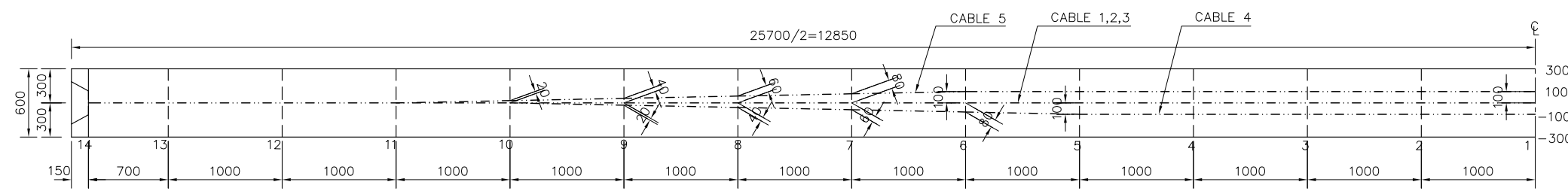


1/2 PC CABLE ARRANGEMENT OF GIRDER  
SCALE 1: 50



SECTION A-A  
SCALE 1: 25

SECTION B-B  
SCALE 1: 25



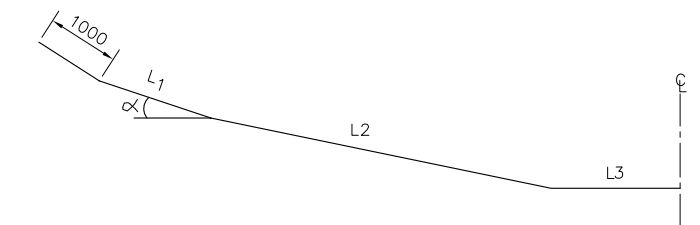
SECTION C-C  
SCALE 1: 50

POSITION OF CABLE'S CENTER FROM BOTTOM GIRDER

PC CABLE 5-7 (UNIT : mm)					
CABLE No.	L1	L2	L3	2X ∑L	α
①	1008	9732	2000	25481	7'16"
②	1006	9723	2000	25459	5'12"
③	1004	9716	2000	25440	5'7"
④	1001	9707	2000	25417	3'9"
⑤	1000	9701	2000	25402	1'12"

TOTAL LENGTH:  $\sum = 127199$  mm

TOTAL WEIGHT:  $= (127.199m + 10m) \times 5.425$  Kg/m = 744.305 Kg



- QUANTITY OF ANCHORS: 10 SETS
- QUANTITY OF CABLE: 744.305 Kg
- STEEL DUCT  $\phi 57/60$ : 137.2 m
- CEMENT MORTAR ( GRADE 40 MPa): 0.325 m<sup>3</sup>
- CONCRETE GRADE 40 MPa: 16.45 m<sup>3</sup>

NOTES:

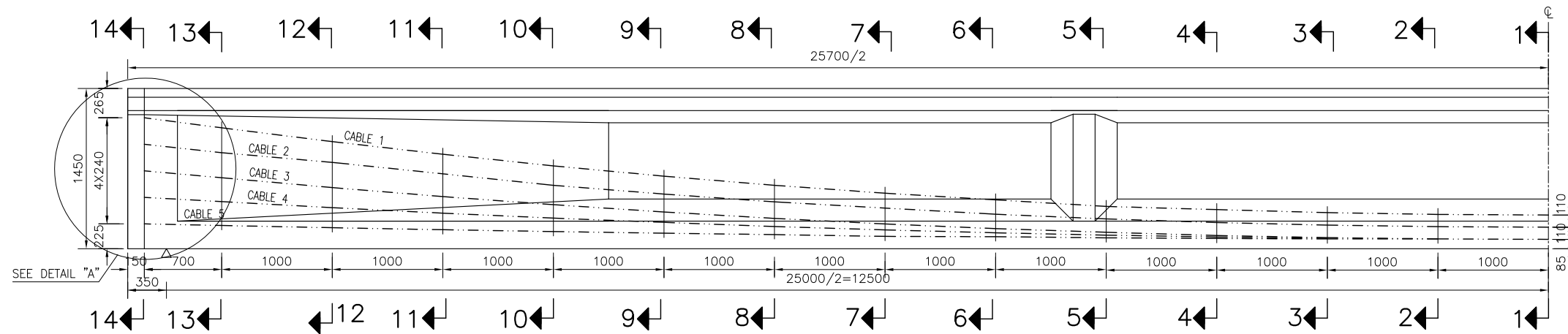
1. CABLE SHALL BE STESSED FROM BOTH ENDS.
2. JACKING FORCE : 964 kN.
3. STRESSING SEQUENCE TOBE CABLES 1, 2, 3, 4, 5.
4. ALL DIMENSIONS ARE IN MILLIMETERS.

CABLE No.	SECTION	14	13	12	11	10	9	8	7	6	5	4	3	2	1
	X	12700	12000	11000	10000	9000	8000	7000	6000	5000	4000	3000	2000	1000	0
①	Y	1185.0	1095.8	969.3	854.8	749.7	656.4	574.0	502.6	442.3	392.8	354.4	327.0	310.5	305
	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0
②	Y	945.0	868.9	761.3	663.0	574.7	494.5	424.3	383.5	312.0	269.9	237.1	213.7	199.7	195
	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0
③	Y	705.0	642.3	553.3	472.0	398.5	332.7	274.6	224.3	181.8	146.9	119.8	100.5	88.9	85
	Z	0	0	0	0	0	0	0	0	0	0	0	0	0	0
④	Y	485	426.3	371.8	322.0	277.0	236.7	201.1	170.3	144.3	122.9	106.3	94.5	87.4	85
	Z	0	0	0	0	0	20	40	60	80	100	100	100	100	100
⑤	Y	225.0	210.3	190.3	172.0	155.5	140.7	127.6	116.3	106.8	98.9	92.8	88.3	85.9	85
	Z	0	0	0	0	-20	-40	-60	-80	-100	-100	-100	-100	-100	-100

ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

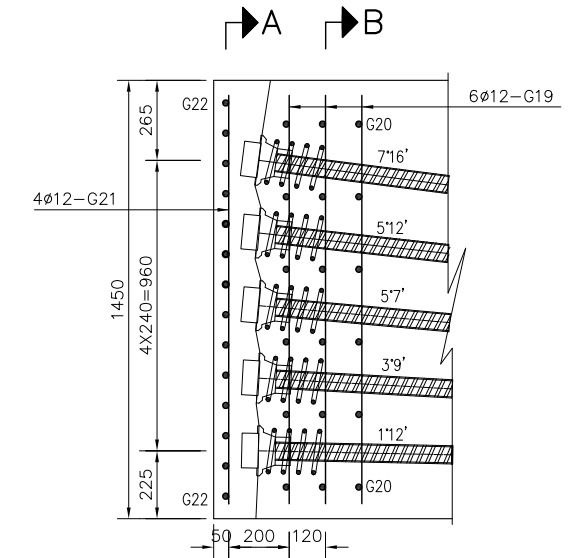
NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
ARRANGEMENT OF PC CABLE

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BAC-08
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN

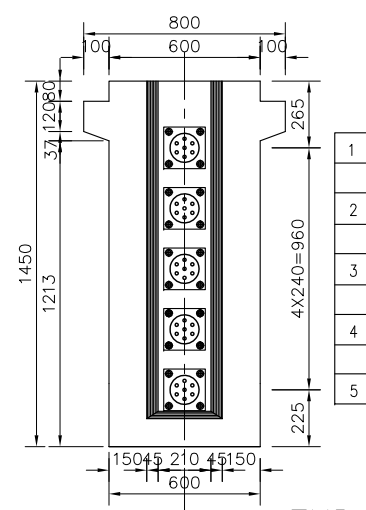


1/2 DETAILS OF LOCATION MESH FOR DUCT AND END GIRDER

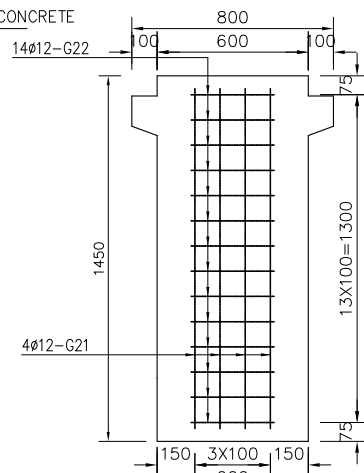
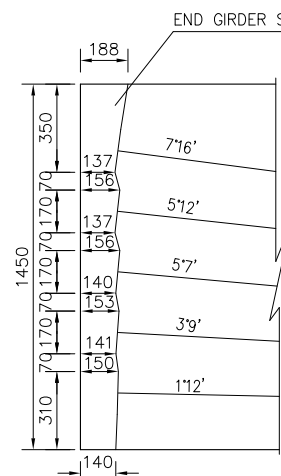
SCALE 1:50



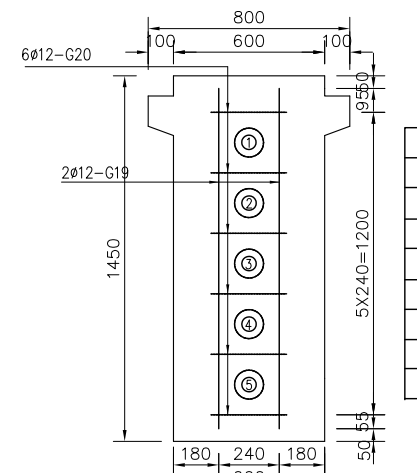
DETAIL "A"  
SCALE 1:25



END GIRDER  
SCALE 1:30



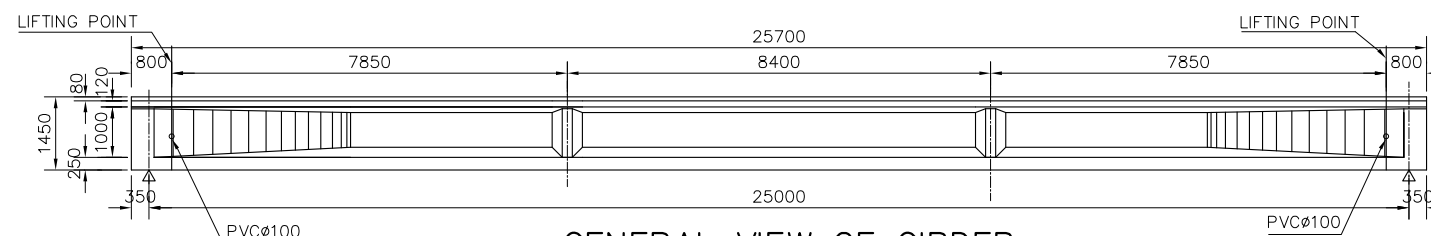
SECTION A-A  
SCALE 1:30



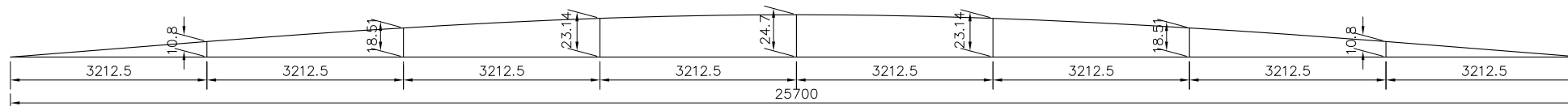
SECTION B-B  
SCALE 1:30

ELOMGATION OF GIRDER

PC CABLE 5-7		
CABLE No.	LENGTH (mm)	TOTAL ELOMGATION (mm)
①	25481	180
②	25459	179
③	25440	179
④	25417	179
⑤	25402	179



GENERAL VIEW OF GIRDER  
SCALE 1:150



CAMBER OF GIRDER

NOTES:

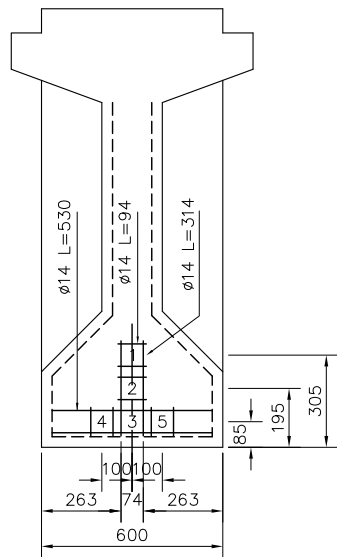
1. ANCHOR USE OF SINGLE ANCHOR HVM13-7.
2. GALVANISE STEEL DUCTS SHALL BE TYPE #57/60 mm.
3. ALL DIMENSIONS ARE IN MILLIMETERS.
4. ELOMGATION OF CABLES ARE UP TO MODULE ELASTIC OF CABLE.



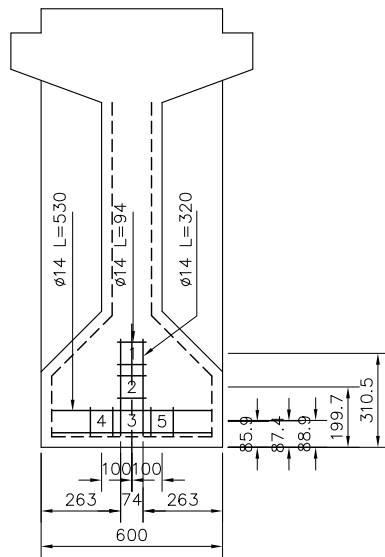
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
DETAIL OF LOCATION STEEL MESH  
(SHEET 1 OF 2)

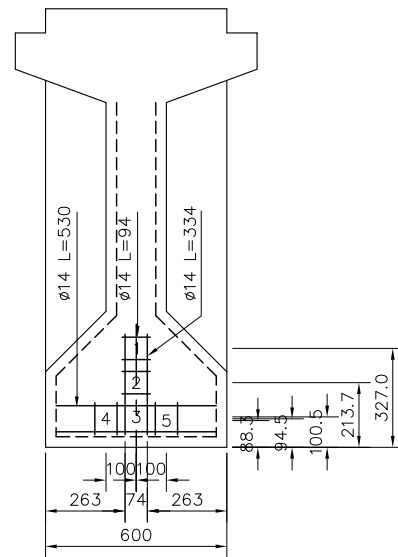
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BSM-09
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



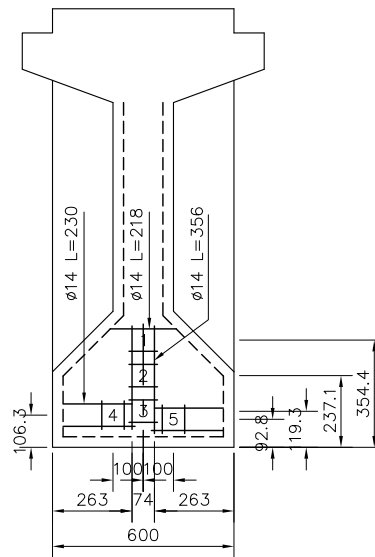
SECTION 1-1  
SCALE 1:25



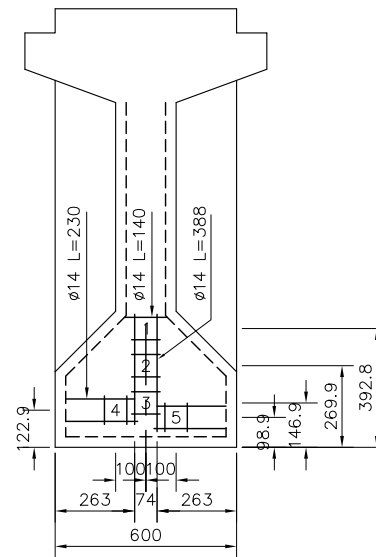
SECTION 2-2  
SCALE 1:25



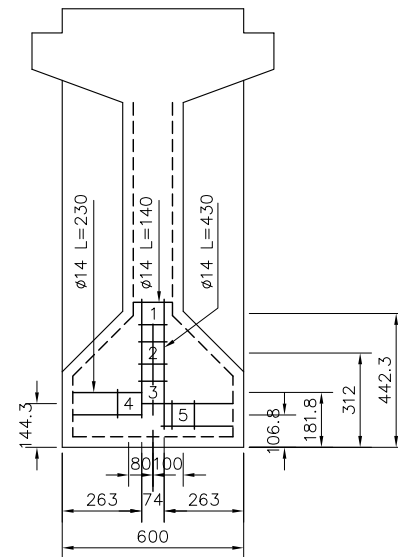
SECTION 3-3  
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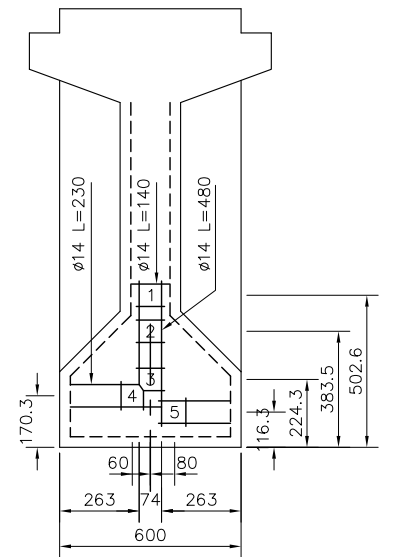
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SCALE 1:25



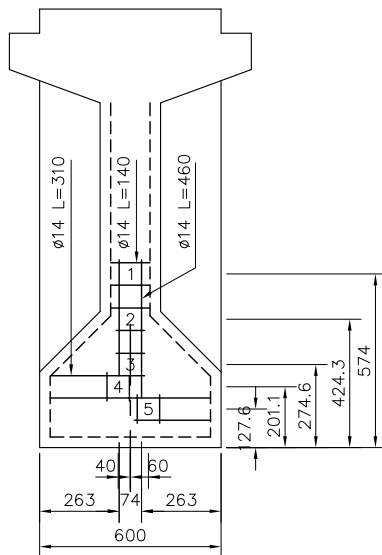
SECTION 5-5  
SCALE 1:25



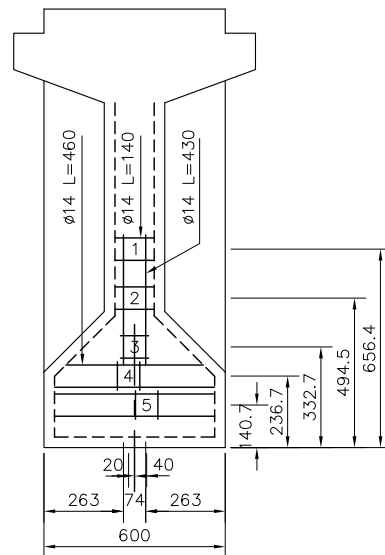
SECTION 6-6  
SCALE 1:25



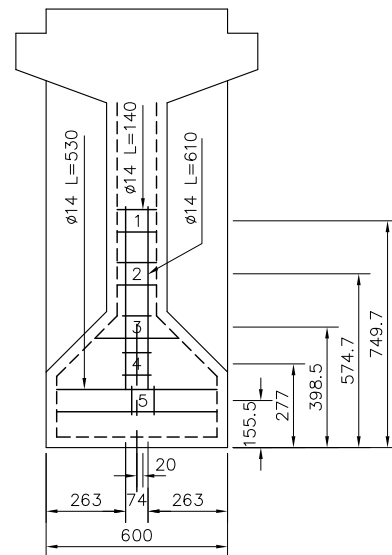
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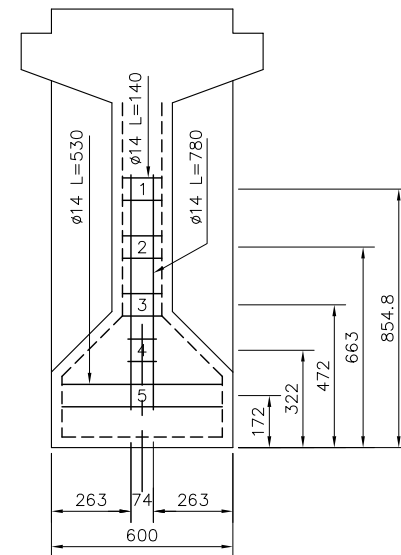
SECTION 8-8  
SCALE 1:25



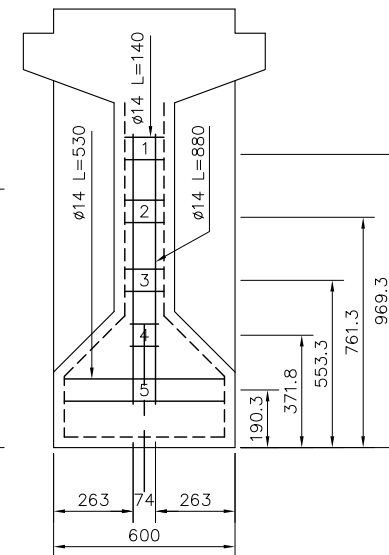
SECTION 9-9  
SCALE 1:25



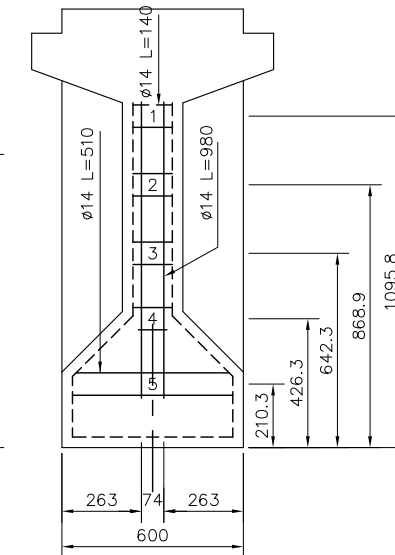
SECTION 10-10  
SCALE 1:25



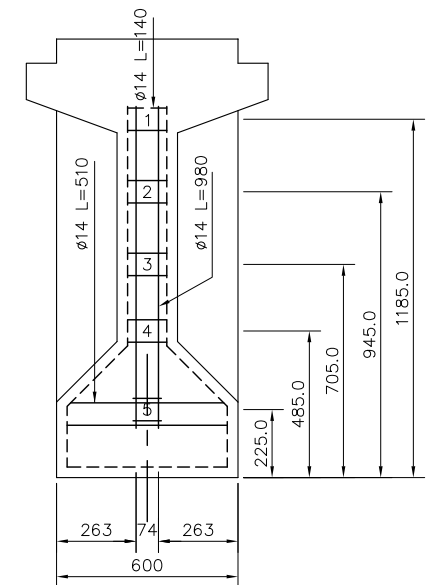
SECTION 11-11  
SCALE 1:25



SECTION 12-12  
SCALE 1:25



SECTION 13-13  
SCALE 1:25



SECTION 14-14  
SCALE 1:25

NOTES:

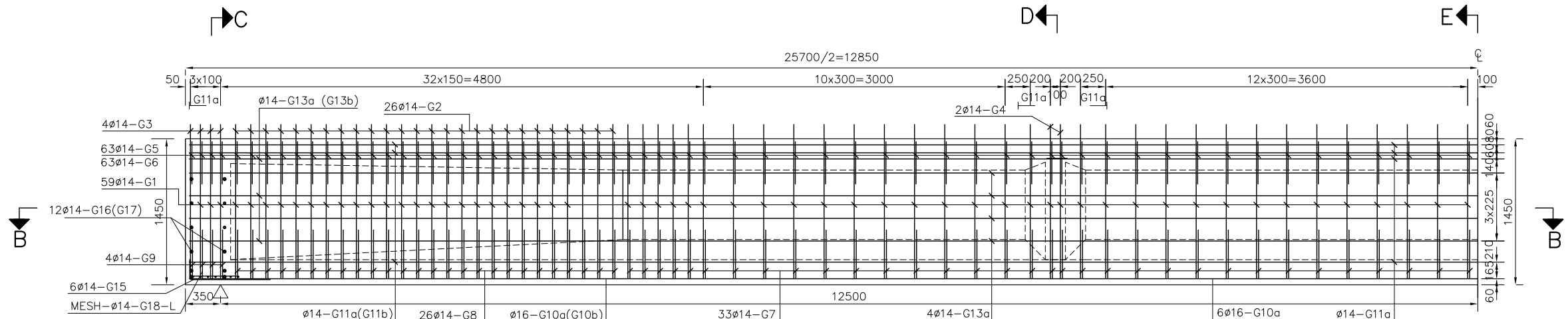
1. LOCATION OF REINFORCEMENT MESH SHOULD CONNECTED WITH TIES BY WELD.
2. ALL DIMENSIONS ARE IN MILLIMETERS.



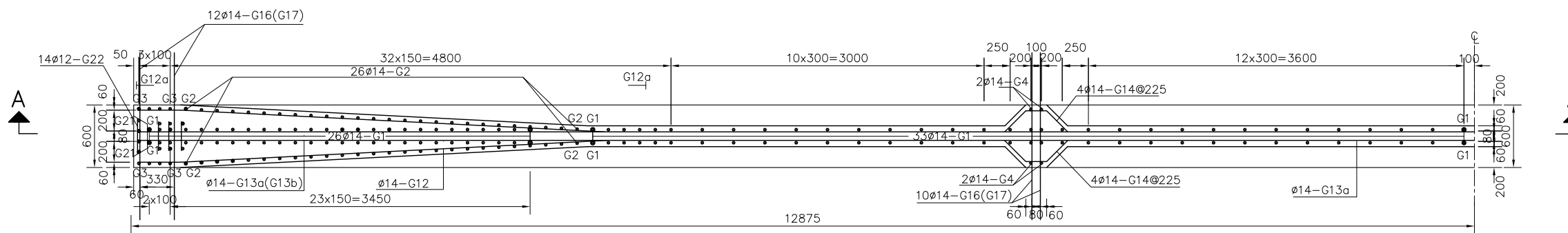
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
DETAIL OF LOCATION STEEL MESH  
(SHEET 2 OF 2)

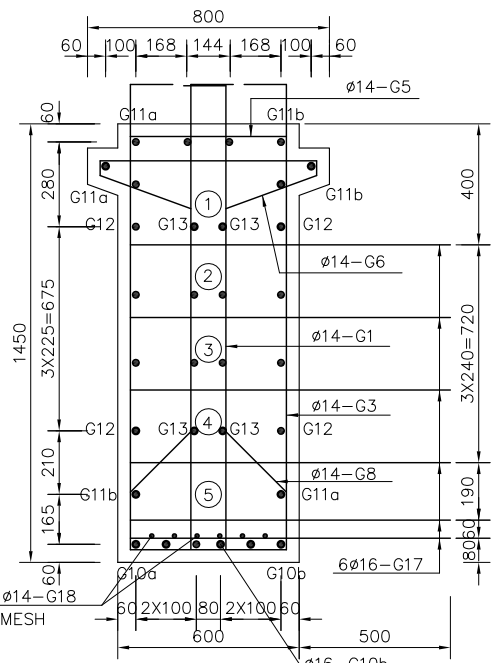
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BSM-10
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:25



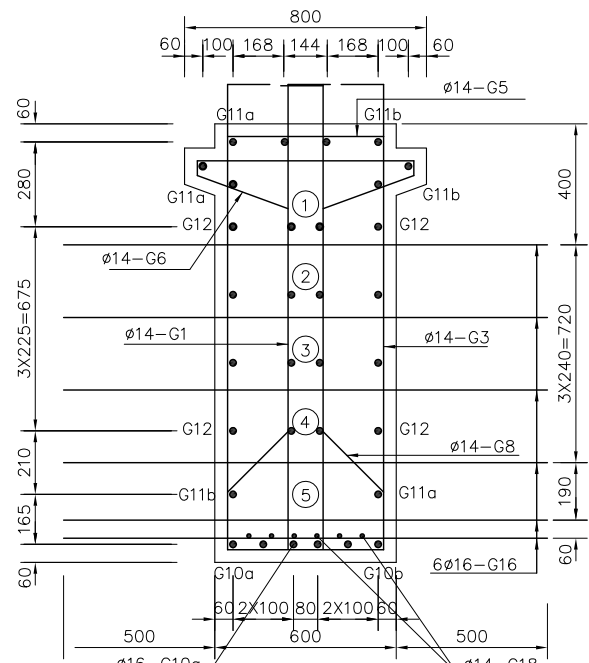
SECTION A-A  
SCALE 1: 50



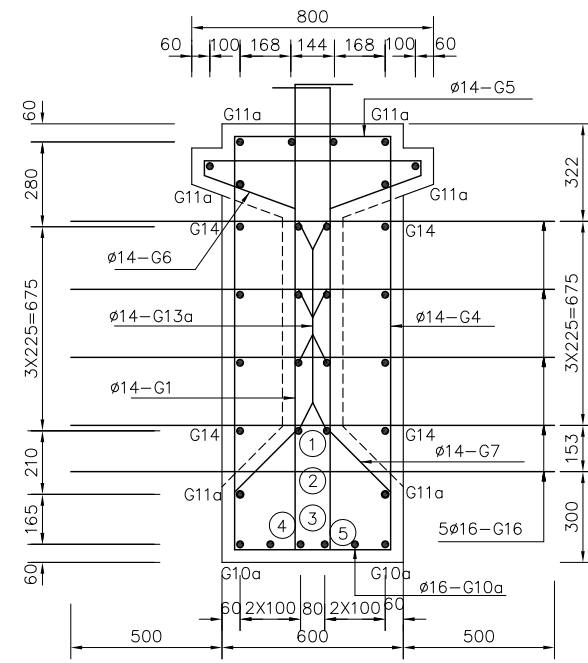
SECTION B-B  
SCALE 1: 50



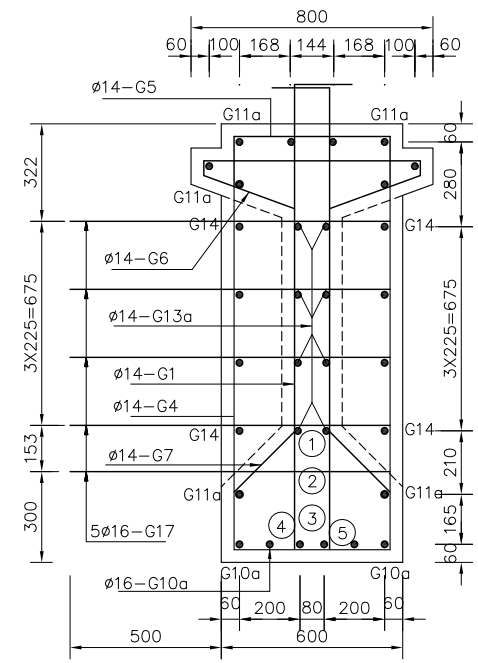
SECTION C-C  
EXTERNAL GIRDER  
SCALE 1: 25



SECTION C-C  
INTERNAL GIRDER  
SCALE 1: 25



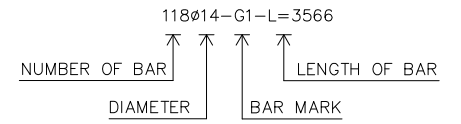
SECTION D-D  
INTERNAL GIRDER  
SCALE 1: 25



SECTION D-D  
EXTERNAL GIRDER  
SCALE 1: 25

NOTES:

1. COVER TO REINFORCEMENT: 35 mm.
2. CONCRETE FOR PC GIRDER IS GRADE 40 MPa.
3. REINFORCEMENT STEEL: ACCORDING TO ASTM A615.
4. REINFORCEMENT IS DESIGNATED ON THE DRAWING AS FOLLOWS:



5. THE VALUE IN (...) IS USED FOR EXTERNAL GIRDER.
6. ALL DIMENSIONS ARE IN MILLIMETERS.



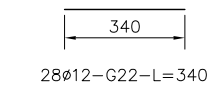
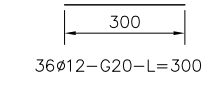
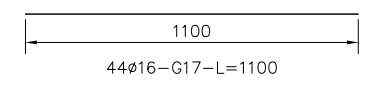
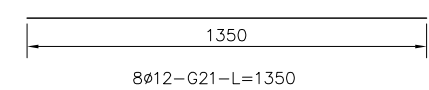
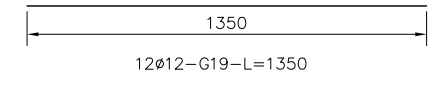
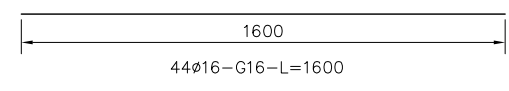
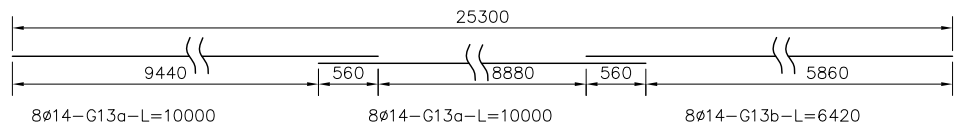
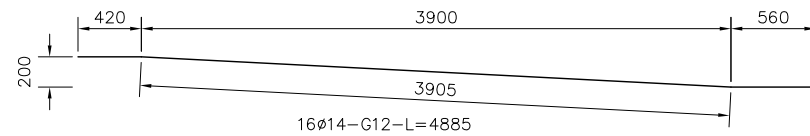
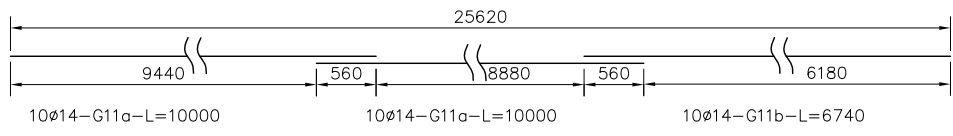
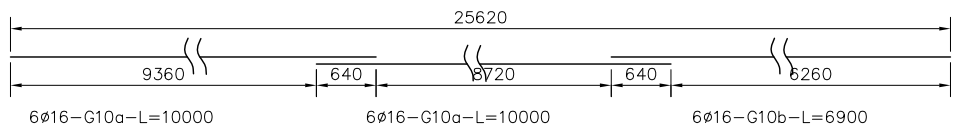
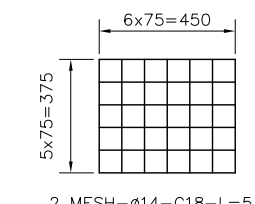
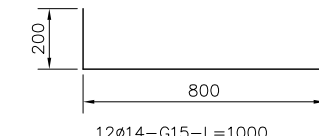
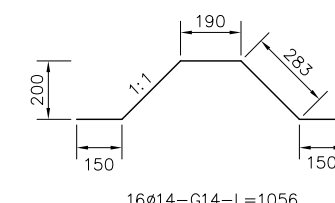
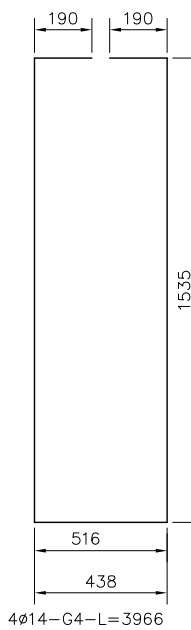
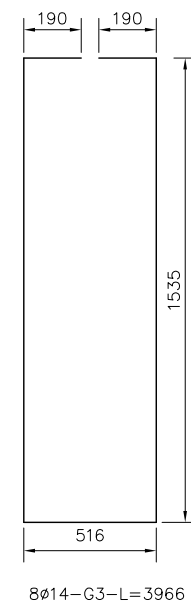
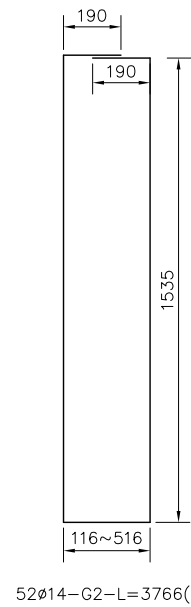
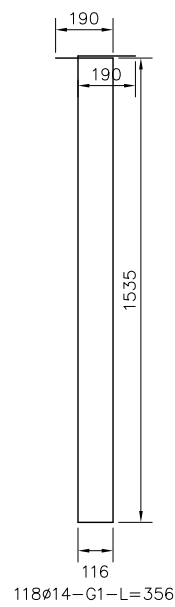
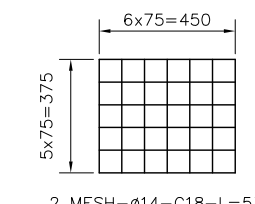
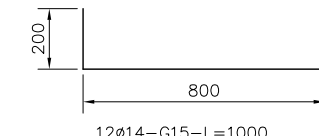
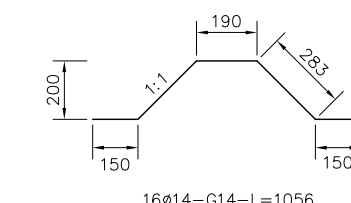
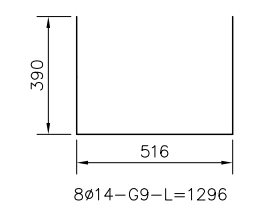
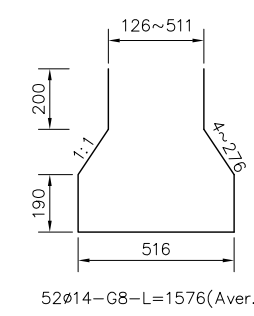
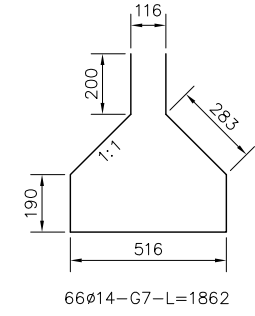
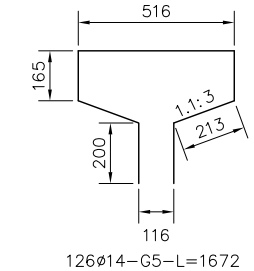
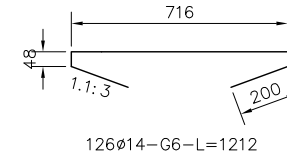
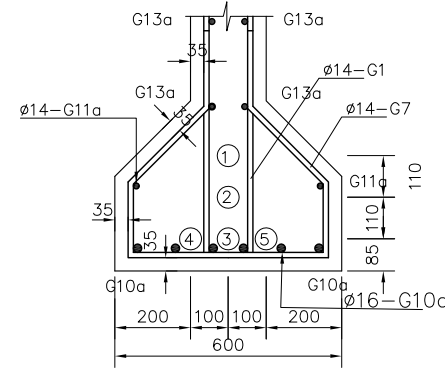
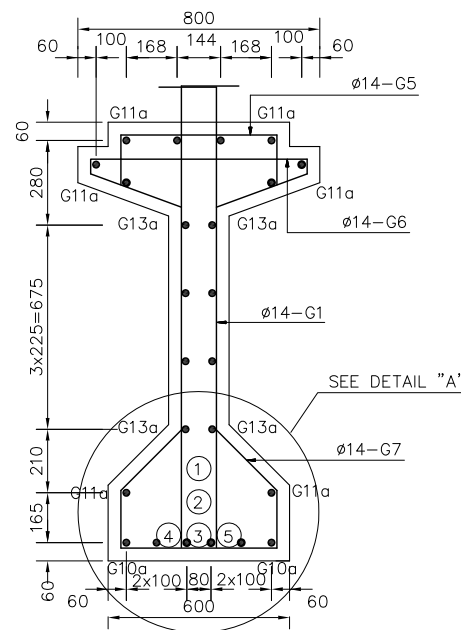
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
BAR ARRANGEMENT OF GIRDER  
(SHEET 1 OF 2)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBA-11
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN

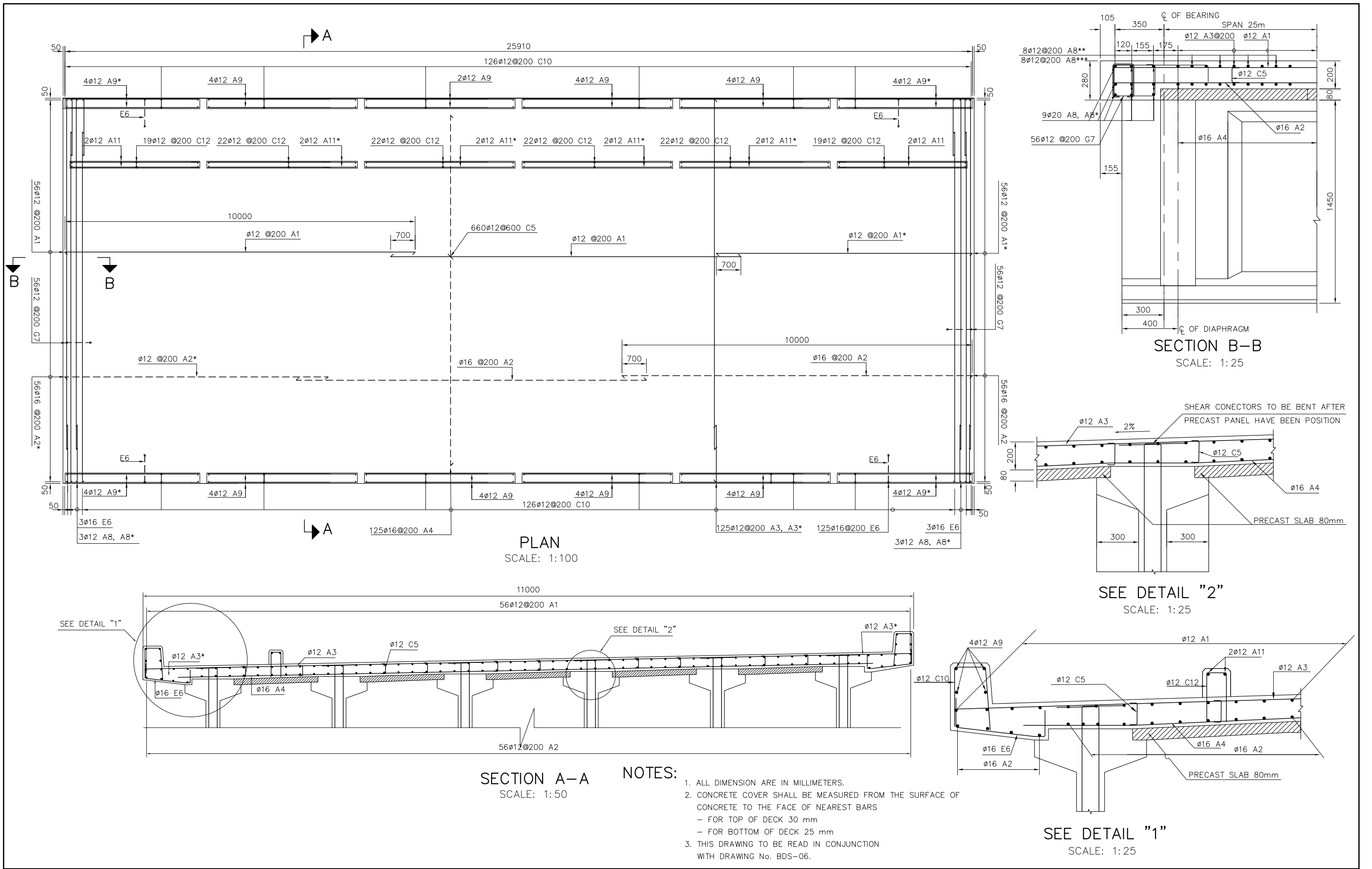
QUANTITY TABLE OF MATERIAL FOR ONE GIRDER

BAR MARK	DIAMETER (mm)	QUANTITY	LENGTH (mm)	UNIT WEIGHT (Kg/m)	WEIGHT (Kg)	REMARKS
G1	14	118	3566	1.208	508.31	
G2	14	52	3766	1.208	236.57	AVERAGE
G3	14	8	3966	1.208	38.33	
G4	14	4	3966	1.208	19.16	
G5	14	126	1672	1.208	254.49	
G6	14	126	1212	1.208	184.48	
G7	14	66	1862	1.208	148.45	
G8	14	52	1576	1.208	99.00	AVERAGE
G9	14	8	1296	1.208	12.52	
G10a	16	12	10000	1.578	189.36	
G10b	16	6	6900	1.578	65.33	
G11a	14	20	10000	1.208	241.60	
G11b	14	10	6740	1.208	81.42	
G12	14	16	4885	1.208	94.42	
G13a	14	16	10000	1.208	193.28	
G13b	14	8	6420	1.208	62.04	
G14	14	16	1056	1.208	20.41	
G15	14	12	1000	1.208	14.50	
G16	16	44	1600	1.578	111.10	INTERNAL
G17	16	44	1100	1.578	76.38	EXTERNAL
G18	14	2	5325	1.208	12.87	
G19	12	12	1350	0.888	14.39	
G20	12	36	300	0.888	9.59	
G21	12	8	1350	0.888	9.59	
G22	12	28	340	0.888	8.45	
TOTAL FOR INTERNAL GIRDER :						
REINFORCEMENT					2645.66	
$\phi$ 12					42.02	
$\phi$ 14					2221.85	
$\phi$ 16					381.79	
CONCRETE GRADE 40Mpa : 16.45 m <sup>3</sup> / GIRDER						
TOTAL FOR EXTERNAL GIRDER :						
REINFORCEMENT					2594.94	
$\phi$ 12					42.02	
$\phi$ 14					2221.85	
$\phi$ 16					331.07	
CONCRETE GRADE 40Mpa : 16.45 m <sup>3</sup> / GIRDER						



NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
 CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
**HOUAY XONE BRIDGE**  
**BAR ARRANGEMENT OF GIRDER**  
 (SHEET 2 OF 2)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBA-12
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



PLAN  
SCALE: 1:100

SECTION A-A  
SCALE: 1:50

SECTION B-B  
SCALE: 1:25

SEE DETAIL "2"  
SCALE: 1:25

SEE DETAIL "1"  
SCALE: 1:25

- NOTES:
1. ALL DIMENSION ARE IN MILLIMETERS.
  2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS  
 - FOR TOP OF DECK 30 mm  
 - FOR BOTTOM OF DECK 25 mm
  3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No. BDS-06.

<p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	HOUAY XONE BRIDGE					CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBA-13
	BAR ARRANGEMENT OF DECK SLAB, CURB AND PARAPET					APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN







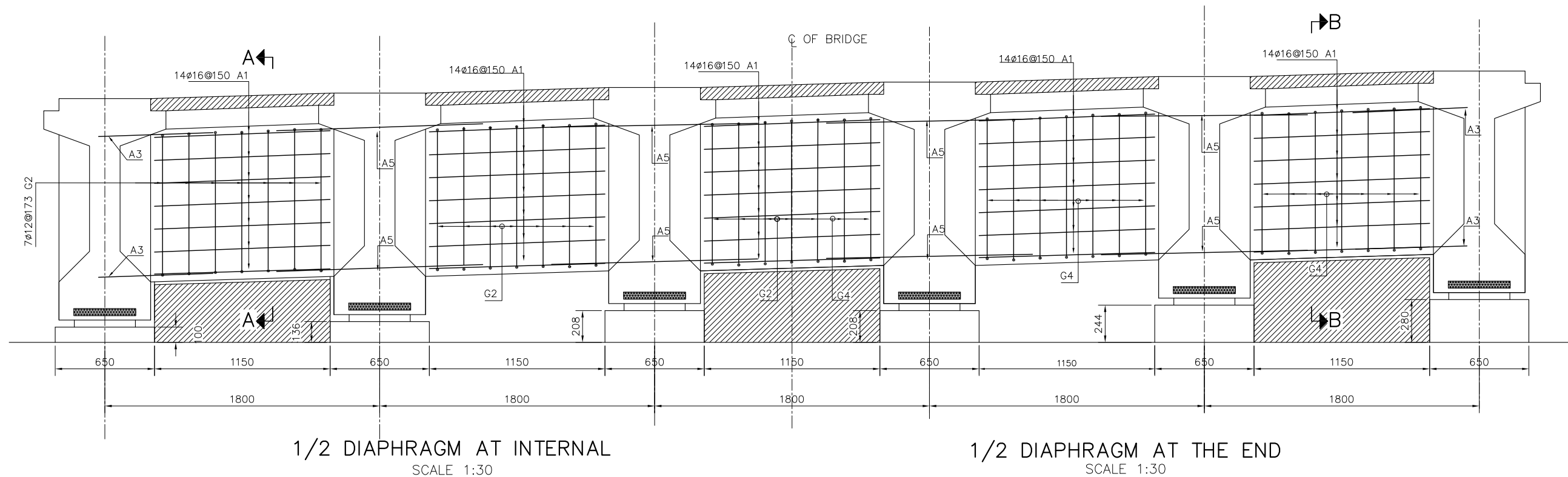
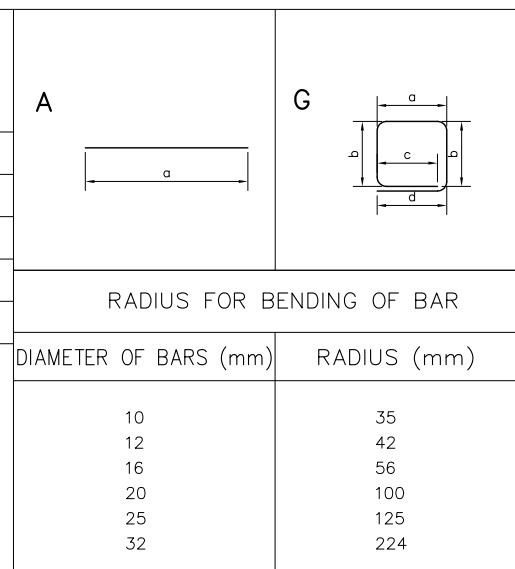


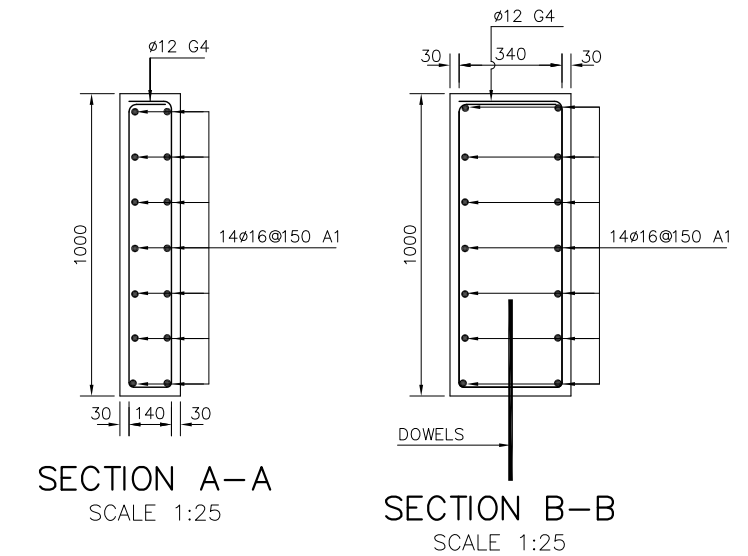
TABLE OF BAR REINFORCEMENT FOR DIAPHRAGM (ONE SIDE)

SHAPE OF BAR	DIAMETER (mm)	LENGTH OF BAR (mm)	QUANTITIES	TOTAL LENGTH (m)	SIZE OF BENDING (mm)				SPACE @ (mm)	REMARK
					a	b	c	d		
A1	16	1.16	14x5x2=140	162.40	1160					
G2	12	2.28	7x5x2=70	159.60	140	940x2=1880	140	120		
A3	16	0.75	14x2x4=112	84.00	750					
G4	12	2.68	7x5x2=70	187.60	340	940x2=1880	340	120		
A5	16	0.75	14x4x4=224	168.00	750					



SUMMARY OF QUANTITIES FOR DIAPHRAGM (ONE SIDE)

No	NAME OF STRUCTURE	ITEM	UNITS	QUANTITIES		
				Ø12	Ø16	TOTAL
1	DIAPHRAGM	LENGTH OF BARS	m	347.20	414.40	761.60
		WEIGHT OF BARS	Kg	308.249	654.063	962.31
		CONCRETE GRADE 35 MPa	m <sup>3</sup>			9.69



NOTES:

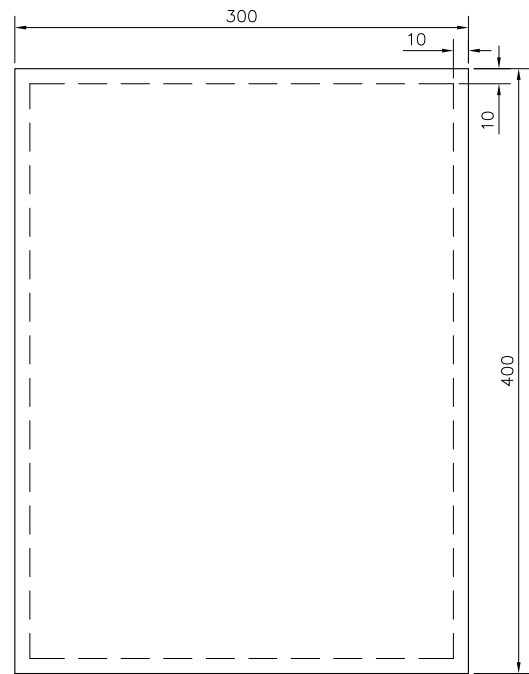
- ALL DIMENSIONS ARE IN MILLIMETERS.
- FOR DOWELS BAR SEE DRAWING No. BSD-20.



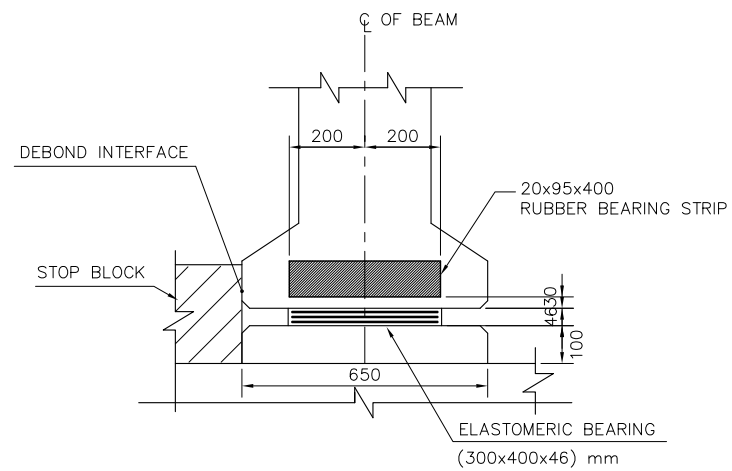
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
DETAIL OF DIAPHRAGM

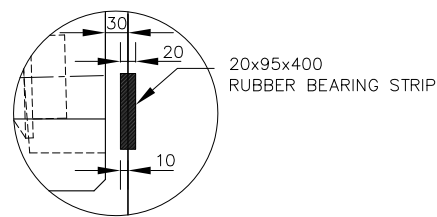
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				DESIGNED	Mr.Phonepasong SENSONGKHAM	SD-262-17
				CHECKED	Mr.Khamphone SORPHABMIXAY	DATE: April, 2018
				APPROVED	Mr.Vandy VORASACK	DRW No. BDD-17
						SCALE: AS SHOWN



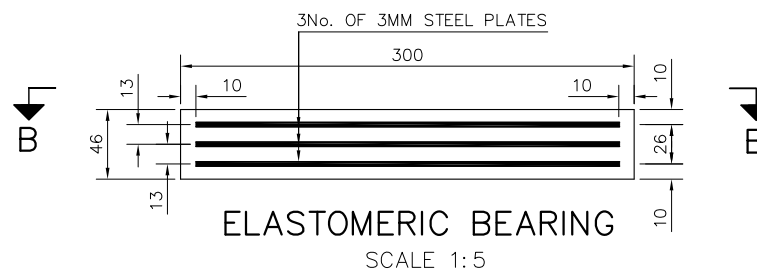
SECTION B-B  
SCALE 1:5



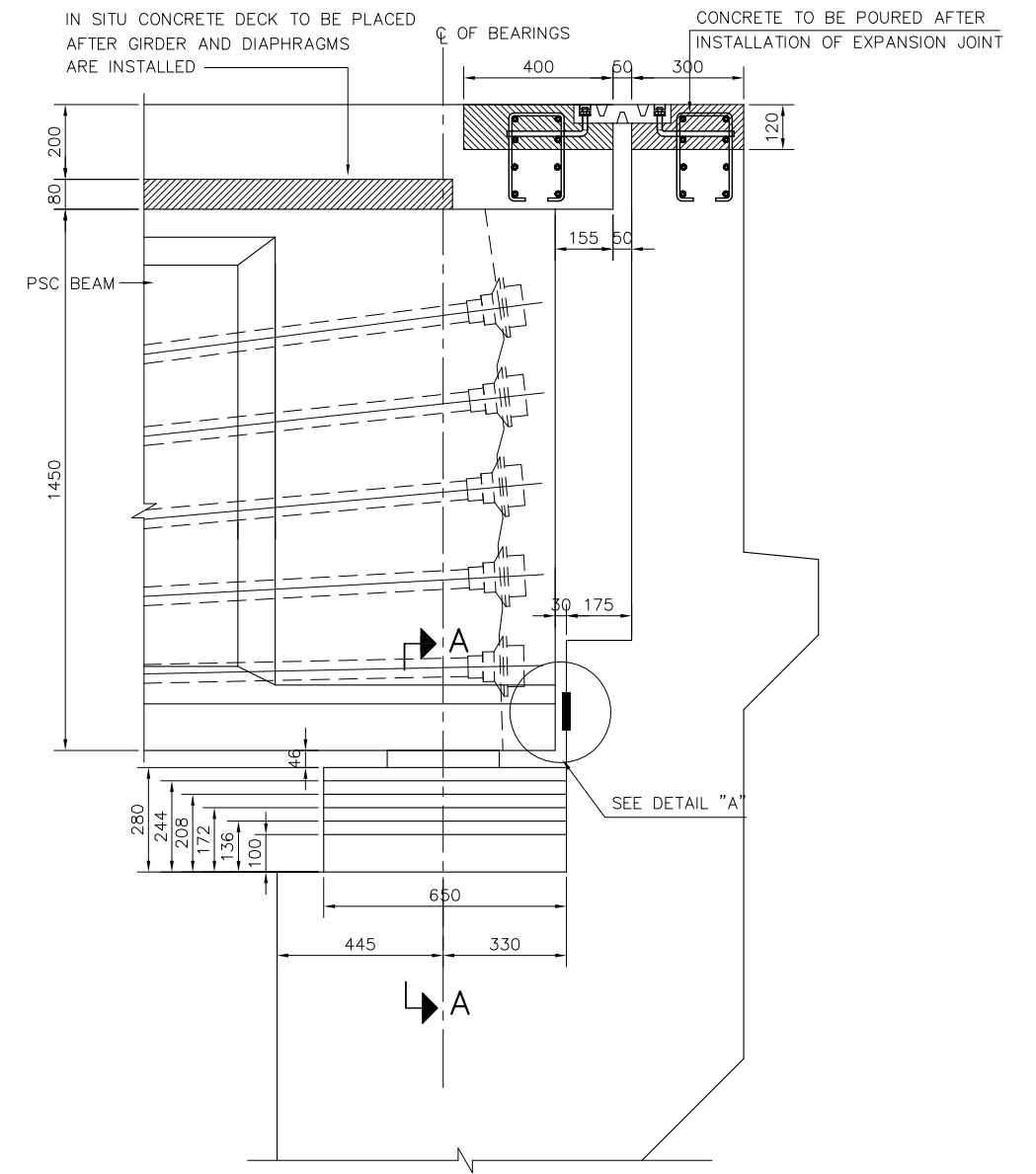
SECTION A-A  
SCALE 1:20



DETAIL "A"  
SCALE 1:10



ELASTOMERIC BEARING  
SCALE 1:5



JOINT DETAIL AT ABUTMENT  
SCALE 1:20

NOTES:

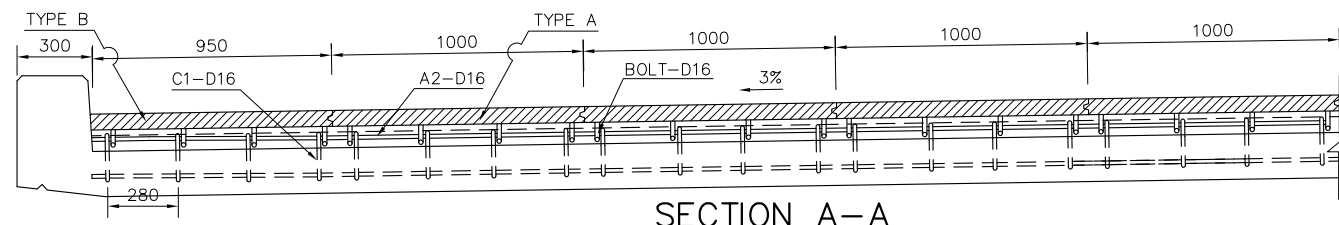
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No. BBD-19.



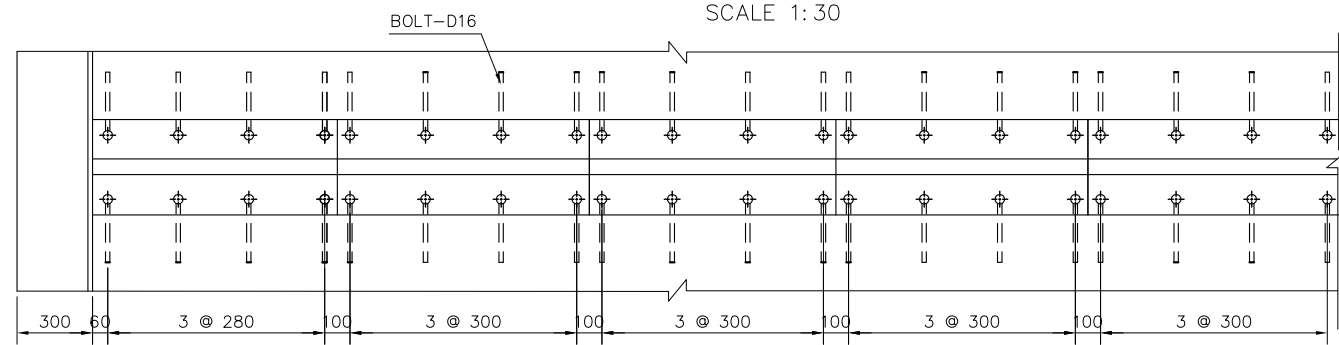
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LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
DETAIL OF BEARING AND  
DECK JOINT (SHEET 1 OF 2)

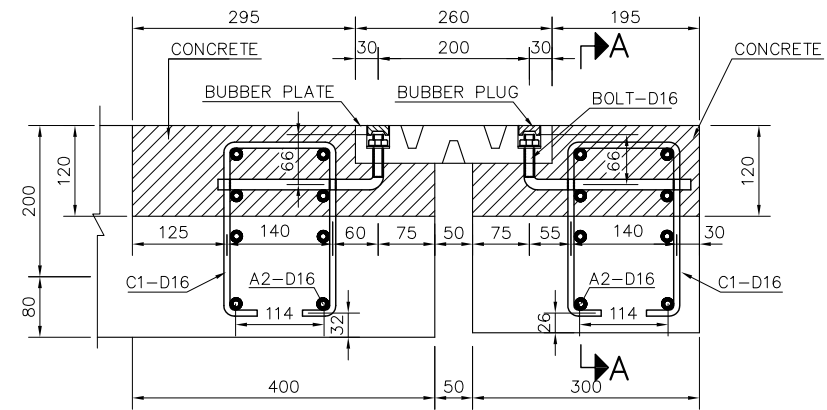
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				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBD-18
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



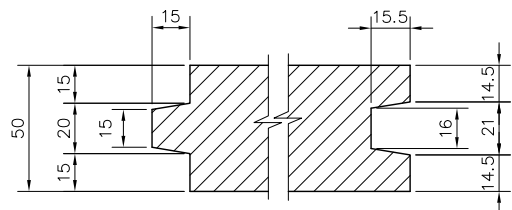
SECTION A-A  
SCALE 1:30



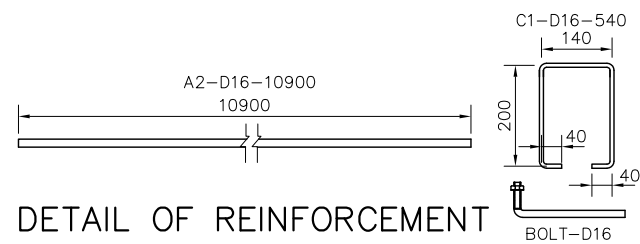
BOLT LAYOUT PLAN  
SCALE 1:30



DETAIL OF EDGE OF EXPANSION JOINT  
FOR ABUTMENT  
SCALE 1:10



DETAIL "A"  
SCALE 1:3



DETAIL OF REINFORCEMENT  
SCALE 1:15

MATERIAL FOR 1/2 EXPANSION JOINT AT ABUTMENT

FOR ONE EXPANSION JOINT							
BAR MARK	DAI	QUANTITY	LENGTH	TOTAL LENGTH	WEIGHT UNIT	TOTAL WEIGHT	CONCRETE
	mm	pcs	mm	m	kg/m	kg	30 MPa (m3)
C1	16	110	620	68.20	1.578	107.62	0.95
A2	16	8	10900	87.20	1.578	138.86	
BOLT	16	110	300	33.00	1.578	52.07	
TOTAL OF REINFORCEMENT (kg)						298.55	
RUBBER PLATE: 50x260x1000 (mm) OR SIMILAR = 10.9 m							
RUBBER PLATE: 50x260x950 (mm) OR SIMILAR = 1.90 m							

NOTES:

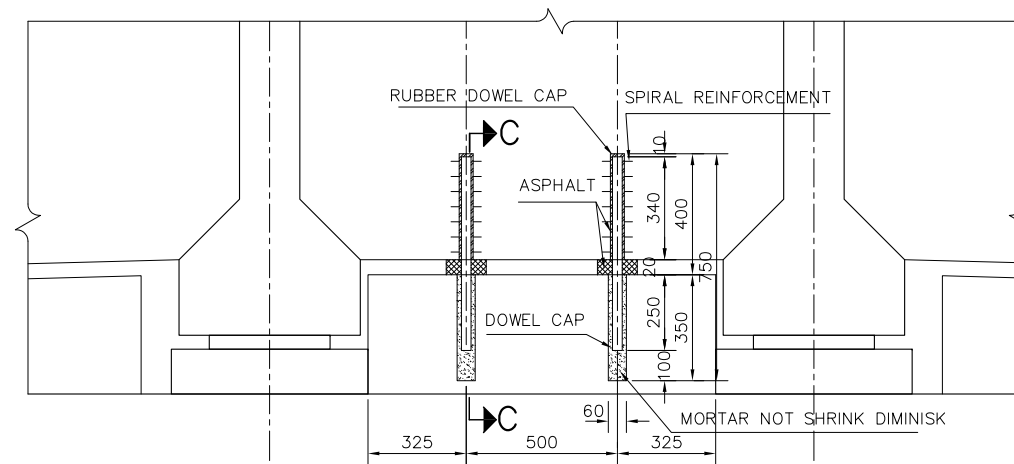
1. ALL DIMENSIONS ARE IN MILLIMETERS.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No. BBD-18.



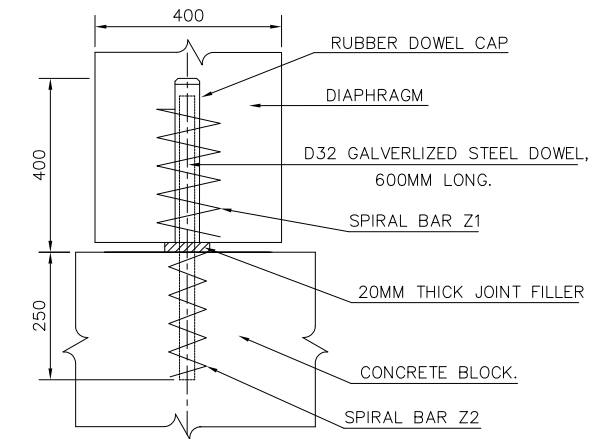
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
DETAIL OF BEARING AND  
DECK JOINT (SHEET 2 OF 2)

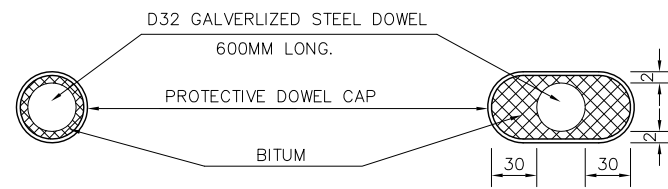
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBD-19
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



DETAIL OF DOWEL  
SCALE 1:25

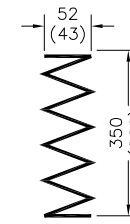


SECTION C-C  
SCALE 1:25

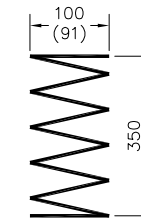


AT FIXED BEARING  
SCALE 1:5

AT MOVABLE BEARING  
SCALE 1:25



SPIRAL BAR 2  
SCALE 1:20



SPIRAL BAR 1  
SCALE 1:20

TABLE OF CONCRETE AND BAR REINFORCEMENT FOR DOWEL (1/2 SPAN)

ITEM	UNIT	AT MOVABLE BEARING				AT FIXED BEARING			
		DIA (mm)	LENGTH OF BAR (mm)	QUANTITY	WEIGHT (Kg)	DIA (mm)	LENGTH OF BAR (mm)	QUANTITY	WEIGHT (Kg)
D32 GALVERLIZED STEEL DOWEL	Bar	32	600	6	22.73	32	600	6	22.73
SPIRAL REINFORCEMENT	Fiber	10	1000	6	3.72	10	1300	6	4.84
TOTAL					26.45				27.57
RUBBER DOWEL CAP	Each	65Ax450		6		65Ax450		6	

NOTES:

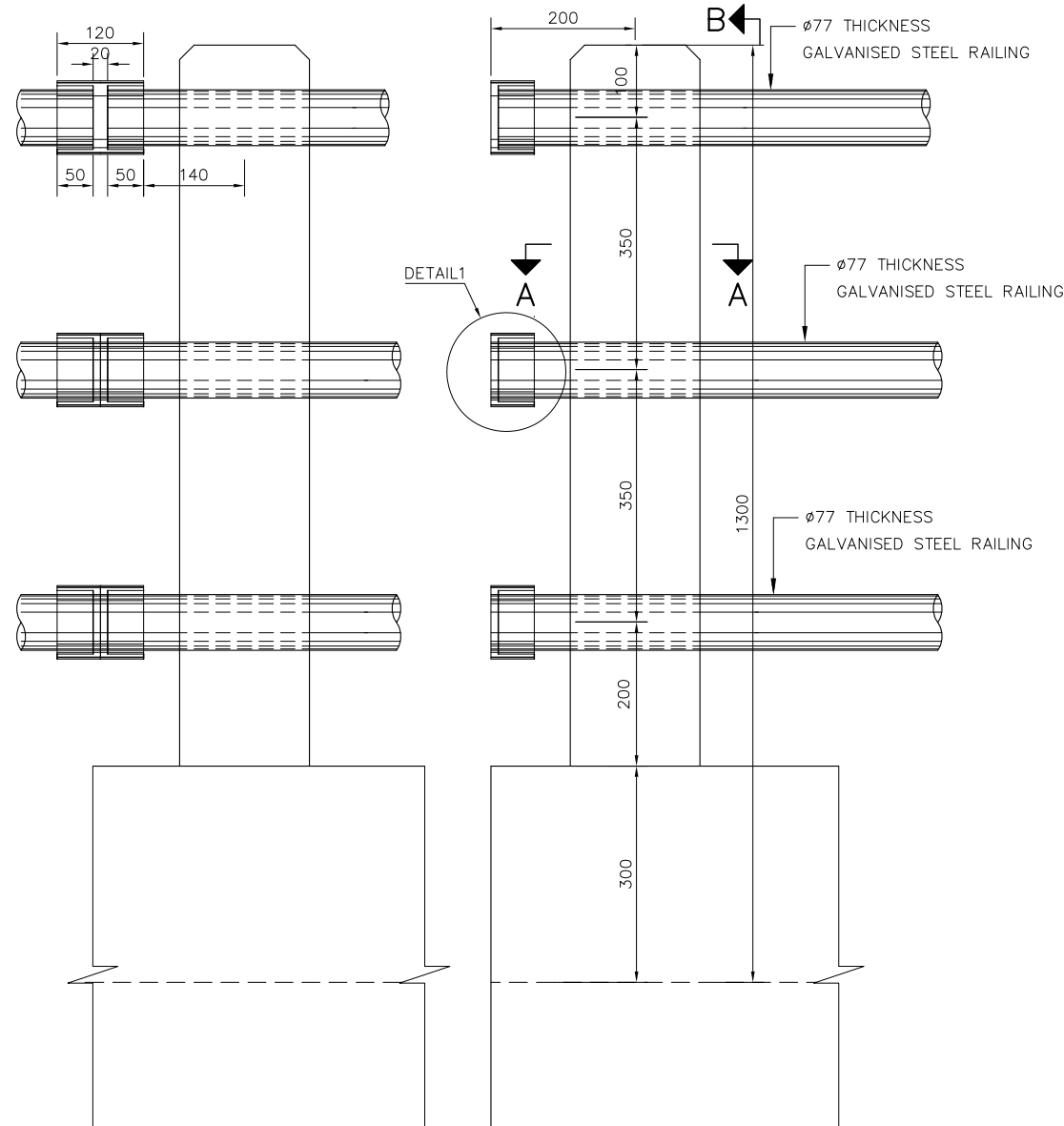
1. BEARINGS: GJZ LAMINATED ELASTOMERIC BEARING WITH MAXIMUMWORKING LOAD 1200 kN.
2. HORIZONTAL GRADIENT OF BEARING PAD WILL BE ADOPTED FOR BEARING'S NORMAL PERFORMANCE.
3. ALL DIMENSIONS ARE IN MILLIMETERS.



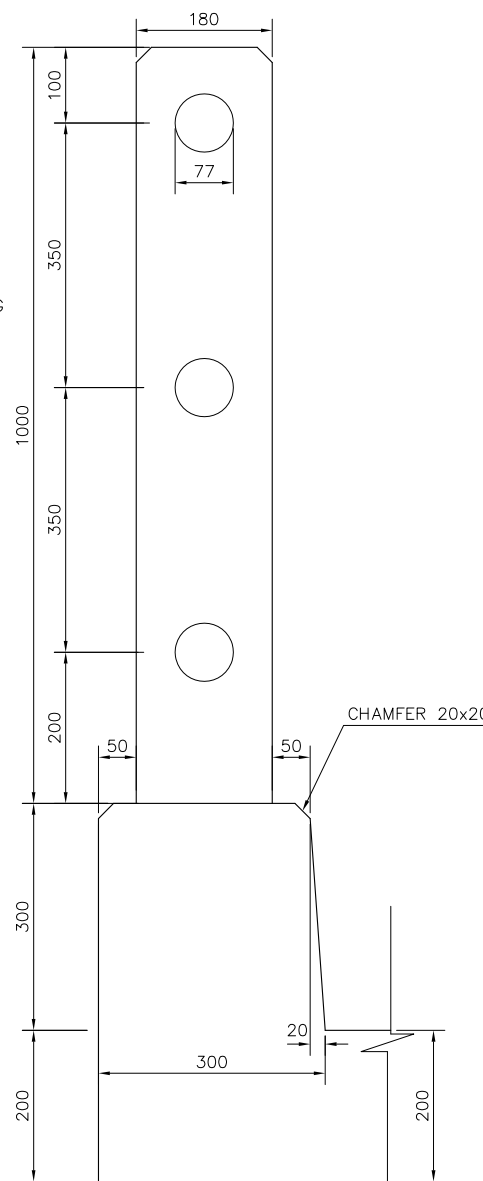
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
DETAIL OF STEEL DOWEL

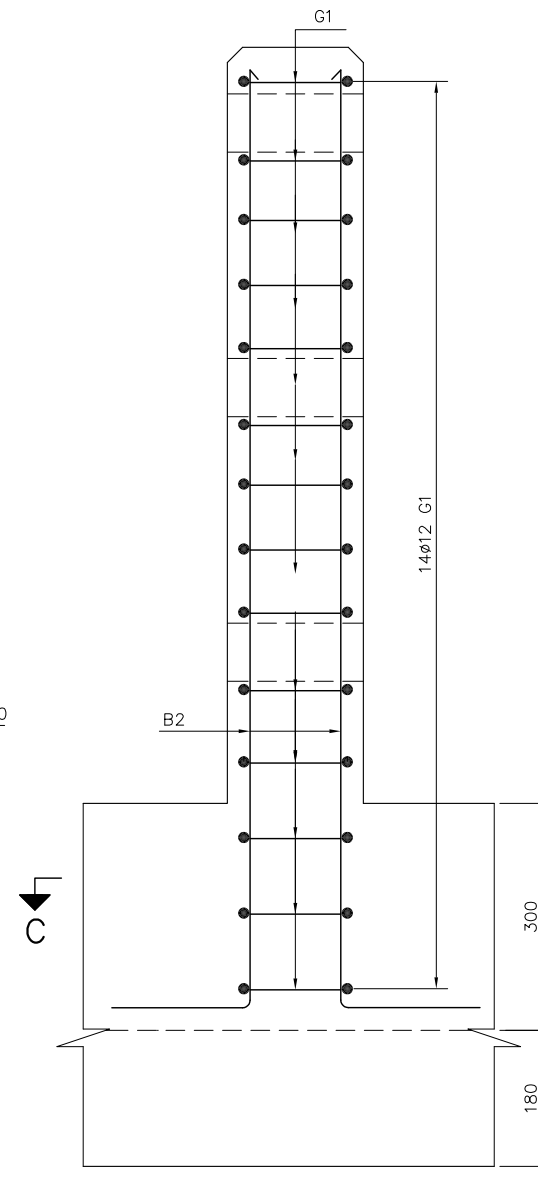
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE:
				DESIGNED	Mr.Phonepasong SENSONGKHAM	SD-262-17
				CHECKED	Mr.Khamphone SORPHABMIXAY	DATE: April, 2018
				APPROVED	Mr.Vandy VORASACK	DRW No. BSD-20
						SCALE: AS SHOWN



POST DIMENSIONS  
SCALE 1:10  
TABLE OF REINFORCEMENT FOR ONE SIDE

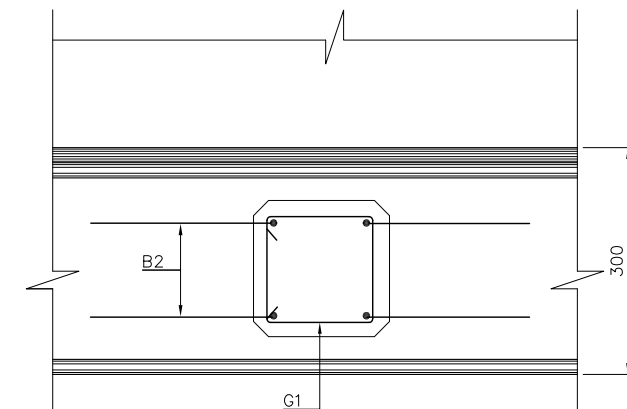


VIEW B-B  
SCALE 1:10

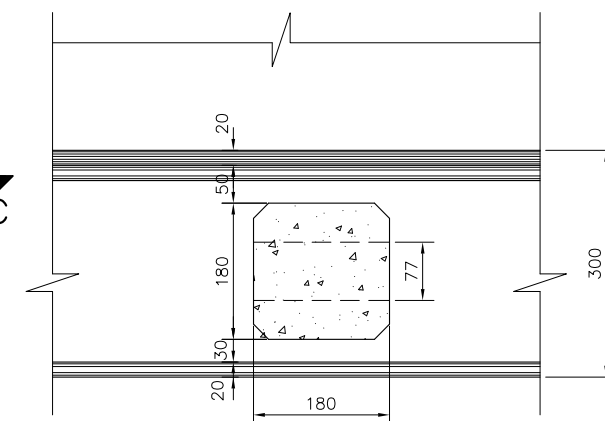


POST REINFORCEMENT  
SCALE 1:10  
FORM OF BENDING

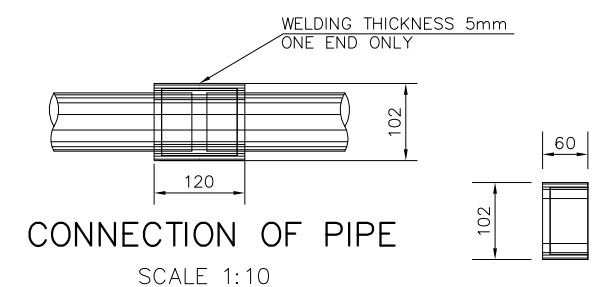
DIAMETER OF BARS (mm)	RADIUS (mm)
16	16x35 = 560



SECTION C-C  
SCALE 1:10



SECTION A-A  
SCALE 1:10



CONNECTION OF PIPE  
SCALE 1:10

DETAIL 1  
SCALE 1:10

TABLE OF CONCRETE AND BAR REINFORCEMENT FOR ONE SIDE

No	NAME OF STRUCTURE	ITEM	UNITS	QUANTITIES		
				ø12	ø16	TOTAL
1	RAILING	LENGTH OF BARS	m	436.8	295.68	732.48
		WEIGHT OF BARS	kg	387.80	466.68	854.48
		CONCRETE GRADE 25MPa.	m <sup>3</sup>	48x0.026=1.25		1.25
		ROUND PIPE	m			206.4

NOTES:

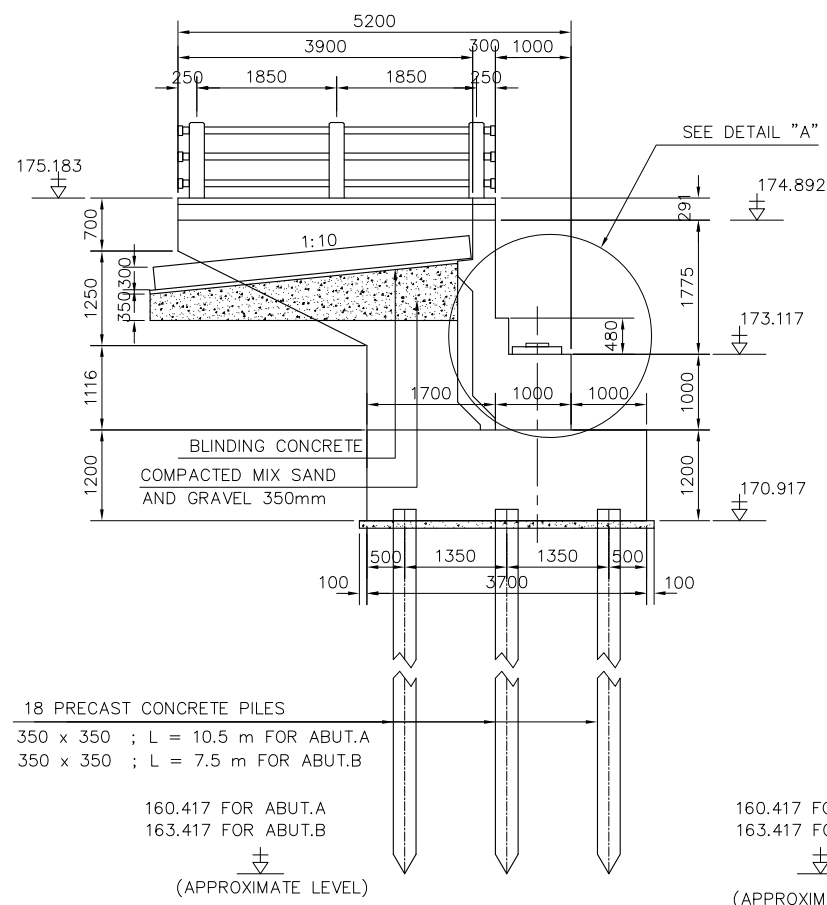
- ALL DIMENSIONS ARE IN MILLIMETERS.
- CLEAR COVER TO REINFORCEMENT TO BE 30 mm.
- STEEL RAILING SHALL BE STRUCTURAL CARBON STEEL IN ACCORDANCE WITH AASHTO M270 GRADE 36.
- RAILINGS SHALL BE HOT-DIP GALVANISED IN ACCORDANCE WITH AASHTO M111.
- ENDS RAILING PANELS SHALL BE SEALED WITH CAPPING PLATES.



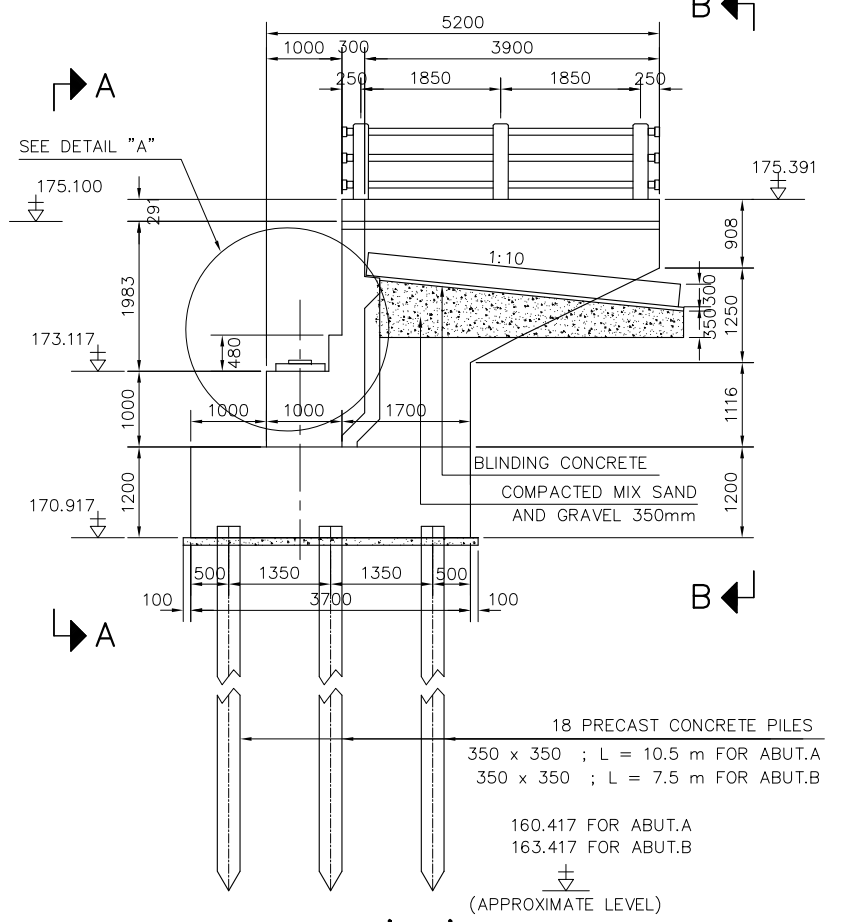
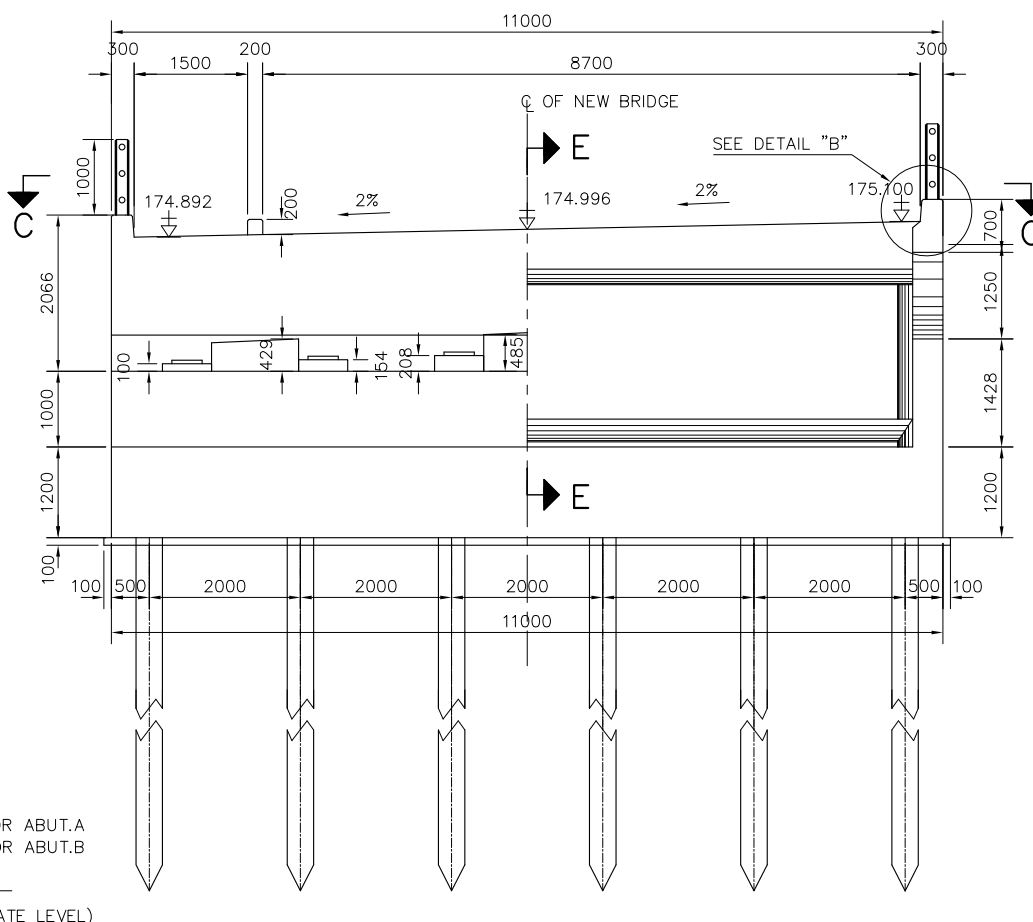
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
DETAIL OF BRIDGE RAILING

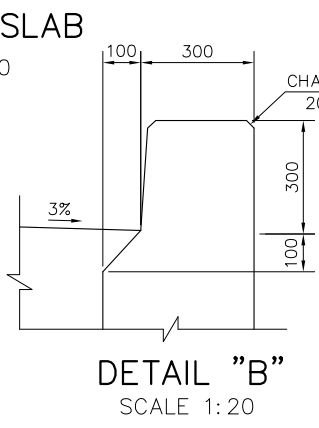
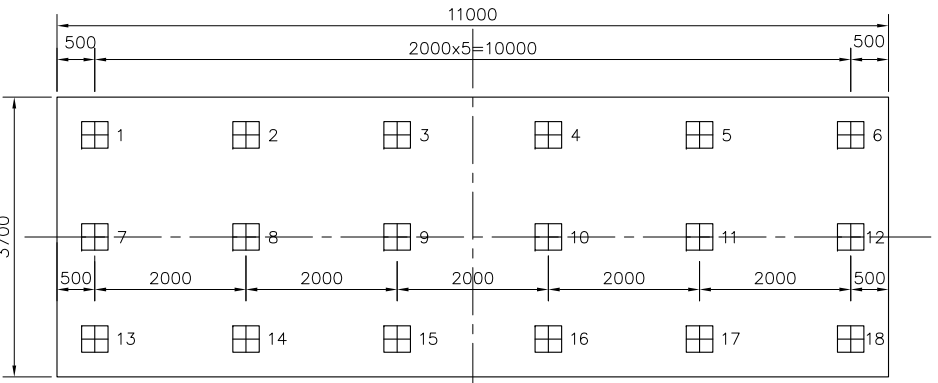
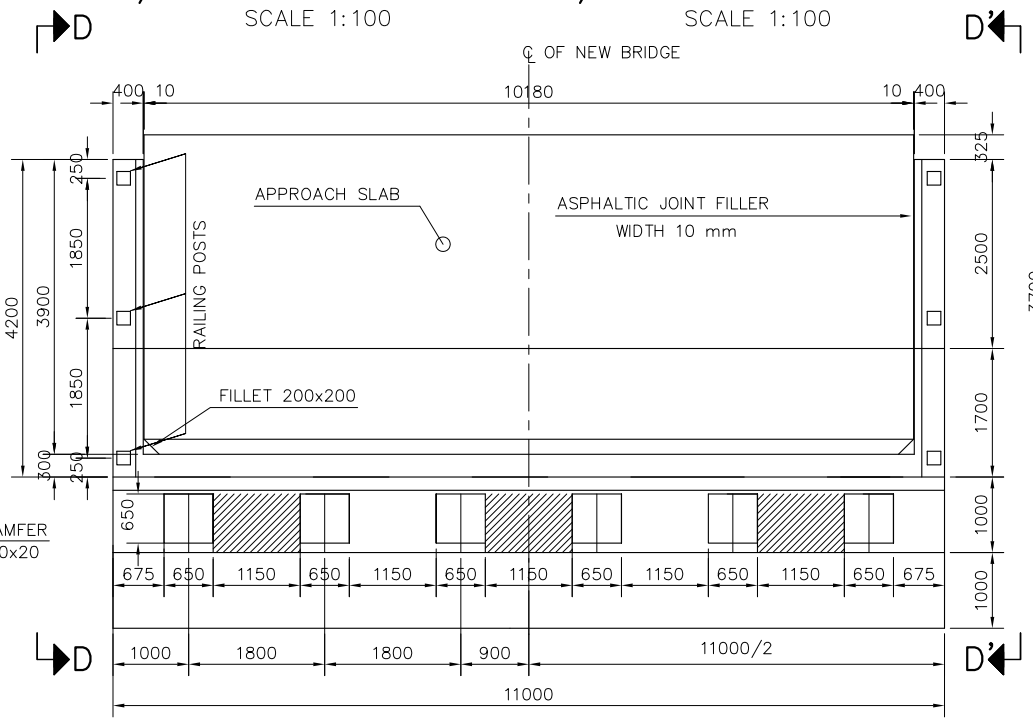
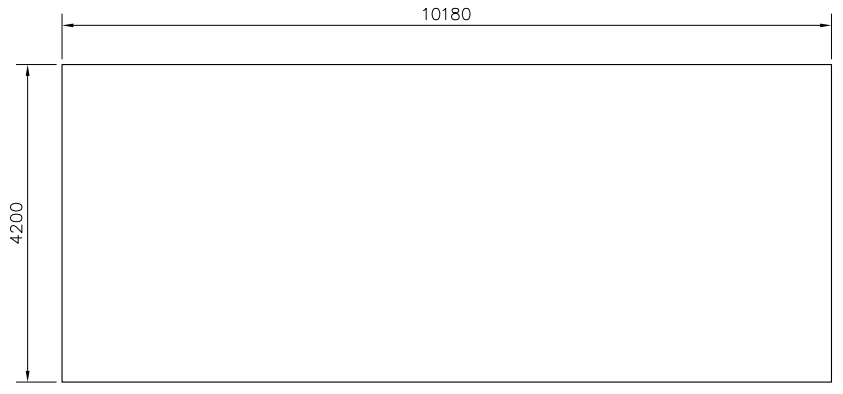
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BDR-21
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



VIEW D-D  
 SCALE 1:100



VIEW D'-D'  
 SCALE 1:100



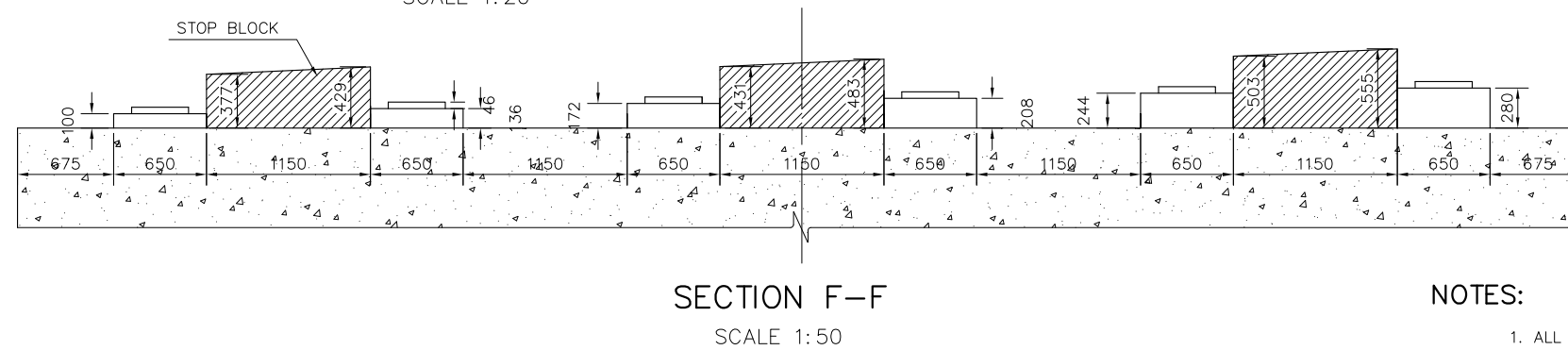
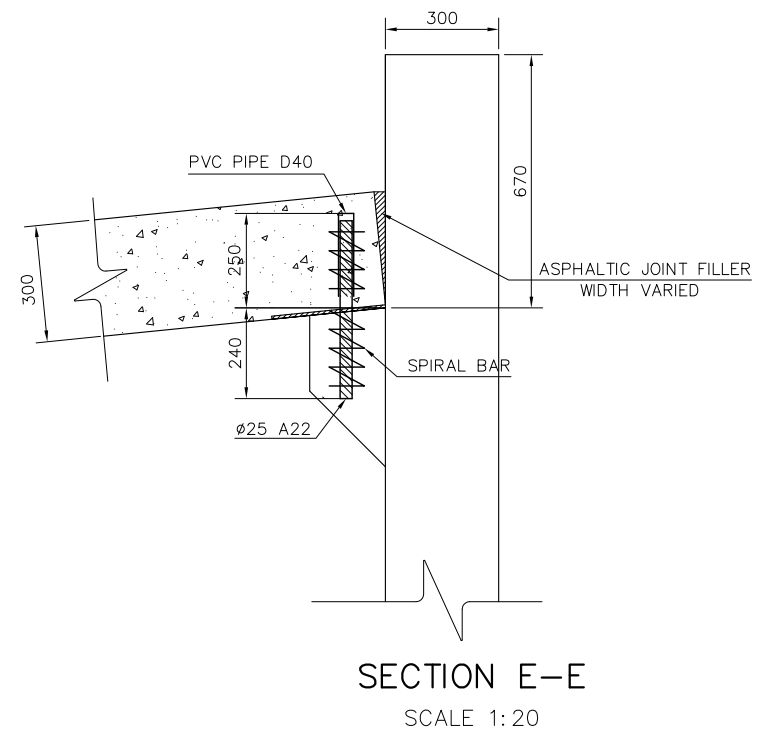
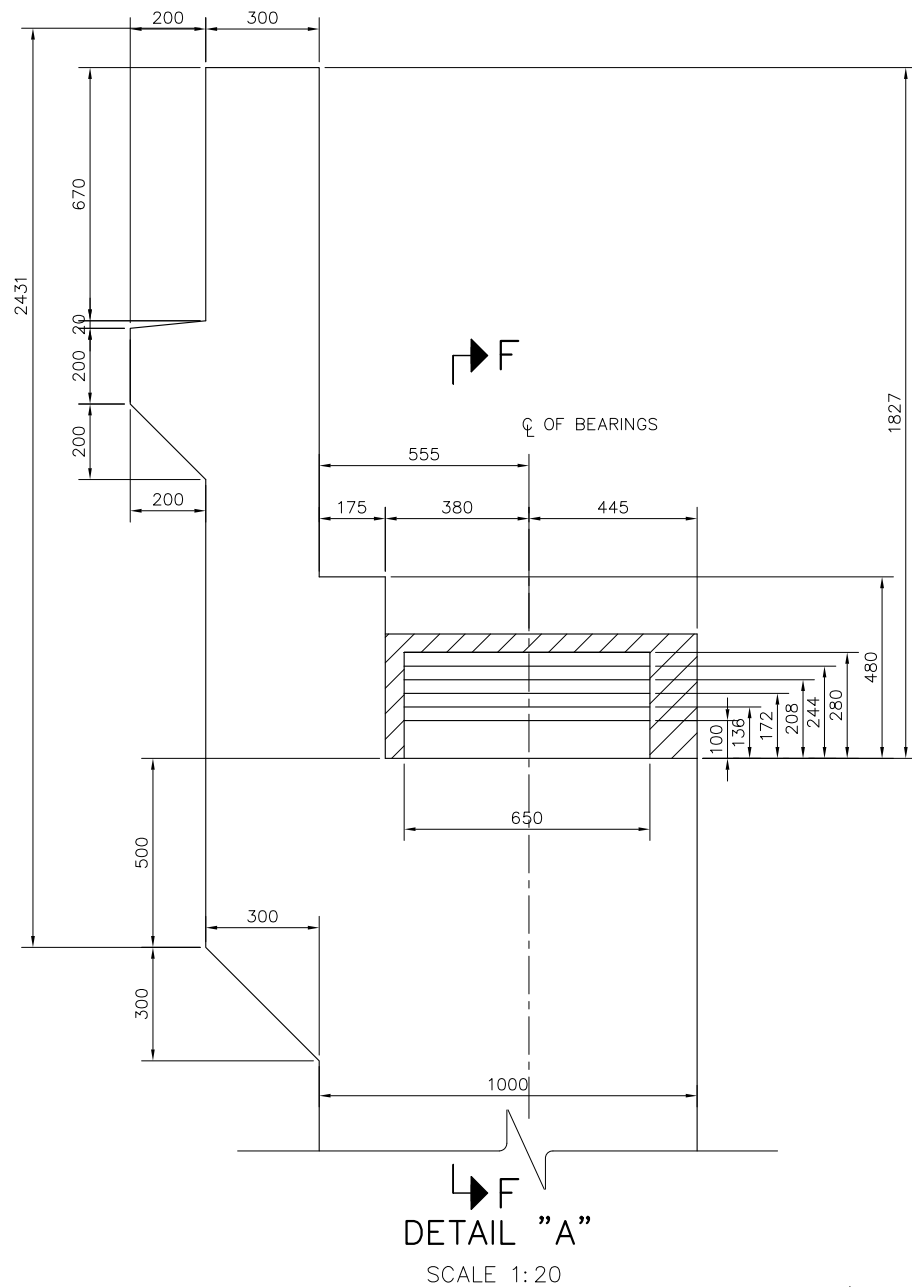
- NOTES:
- ALL DIMENSIONS ARE IN MILLIMETERS; LEVELS ARE IN METERS.
  - LENGTH OF PILES ARE GIVEN AS A GUIDE ONLY  
 ACTUAL LENGTH OF PILES WILL BE DETERMINED  
 AT SITE AFTER TEST PILE DRIVING BY THE ENGINEER.
  - THIS DRAWING TO BE READ IN CONJUNCTION WITH  
 DRAWINGS No. BDA-23, BBA-24, BBA-25, BBA-26, BBA-27 AND BBA-28.
  - PRESTRESSED CONCRETE PILE SHALL BE CONFIRMED TO AASHTO "LRFD BRIDGE  
 DESIGN SPECIFICATION" CURRENT EDITION, DIMENSION 350x350 mm AND  
 SAFETY LOAD 60 TONS.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
 LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
 CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
 HOUAY XONE BRIDGE  
 DETAIL OF ABUTMENT A AND B  
 (SHEET 1 OF 2)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BDA-22
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



NOTES:

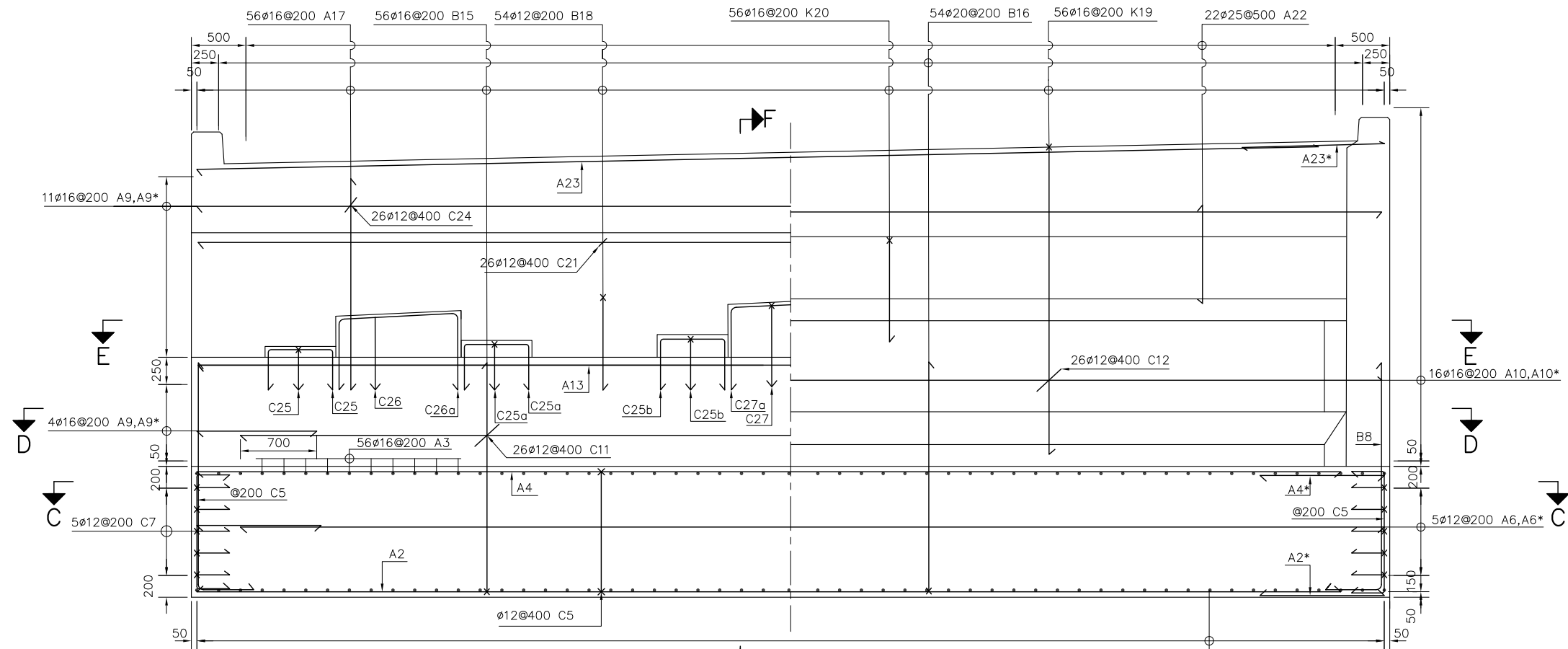
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-22, BBA-24, BBA-25, BBA-26, BBA-27 AND BBA-28.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

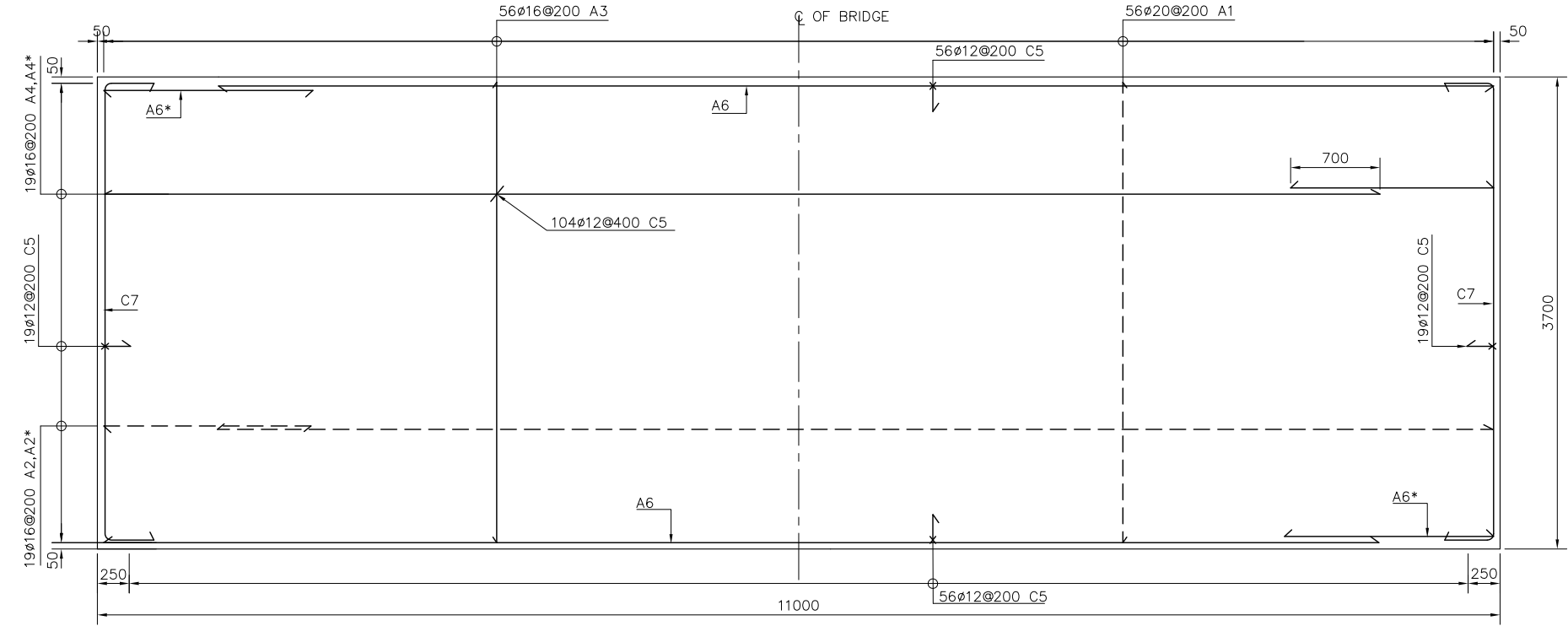
NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
DETAIL OF ABUTMENT A AND B  
(SHEET 2 OF 2)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BDA-23
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



1/2 SECTION A-A  
SCALE 1: 50

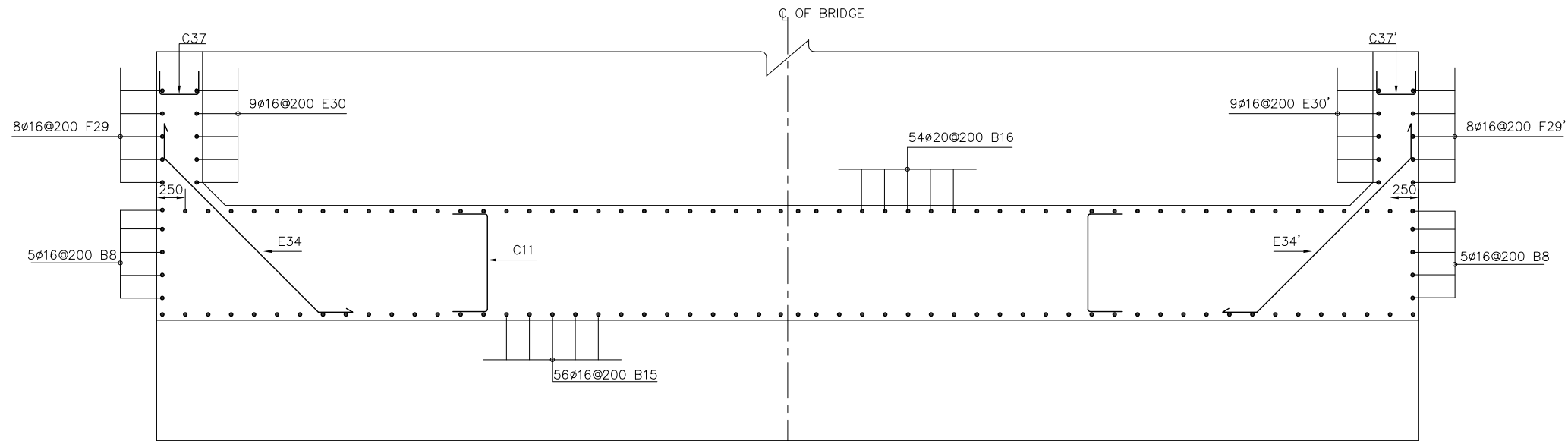
1/2 SECTION B-B  
SCALE 1: 50



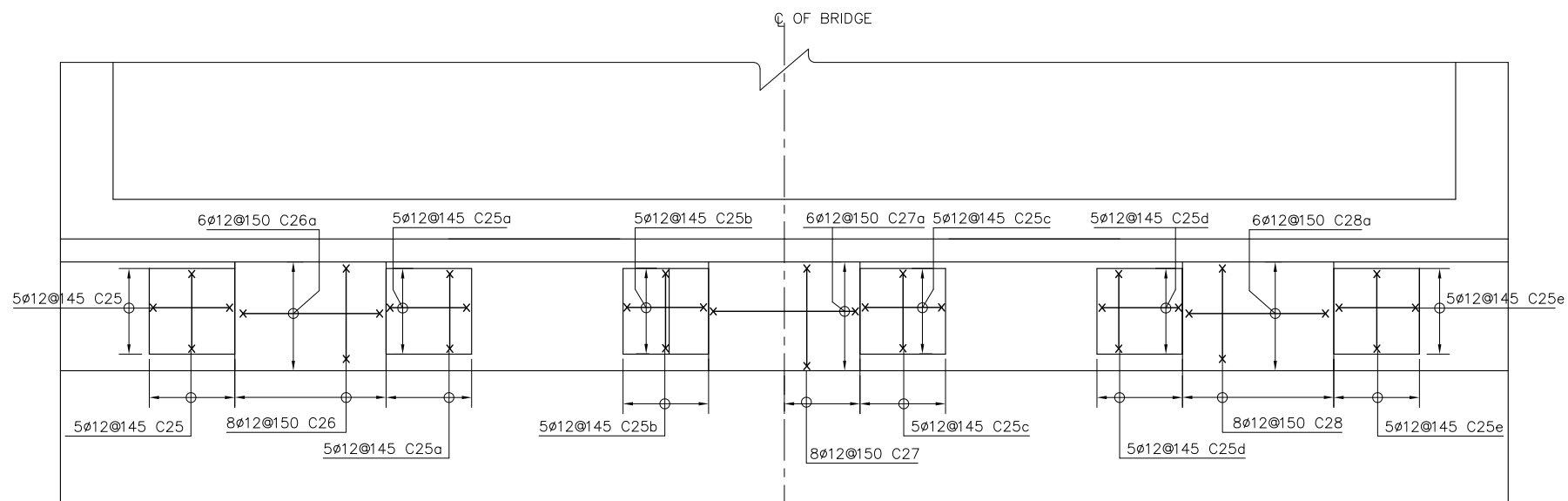
SECTION C-C  
SCALE 1: 50

- NOTES:**
- ALL DIMENSIONS ARE IN MILLIMETERS.
  - CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS=50 mm.
  - THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-22, BDA-23, BBA-25, BBA-26, BBA-27 AND BBA-28.

<p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
	<p>HOUAY XONE BRIDGE BAR ARRANGEMENT OF ABUTMENT A AND B (SHEET 1 OF 5)</p>					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
						CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBA-24
						APPROVED	Mr.Vandy VORASACK	SCALE: 1: 50



SECTION D-D  
SCALE 1:50



SECTION E-E  
SCALE 1:50

NOTES:

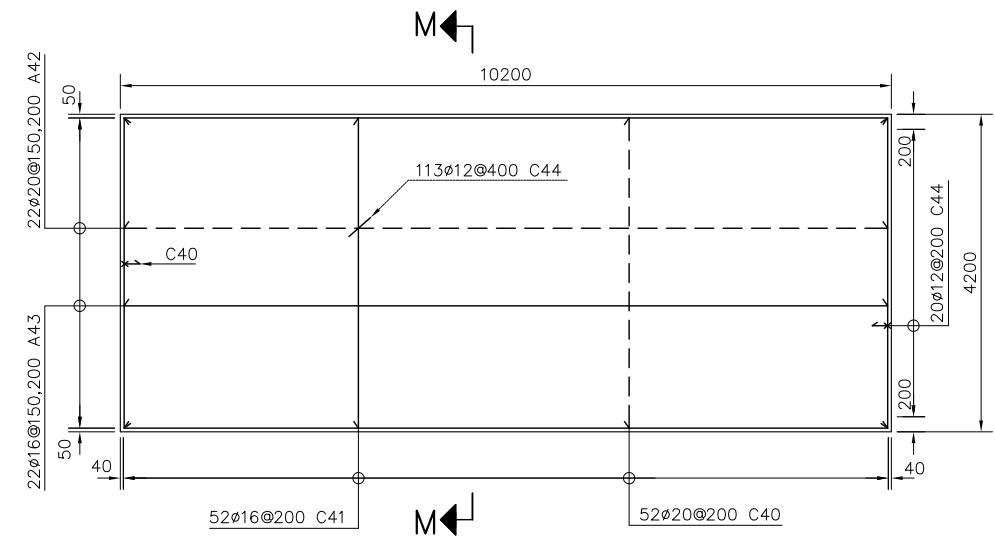
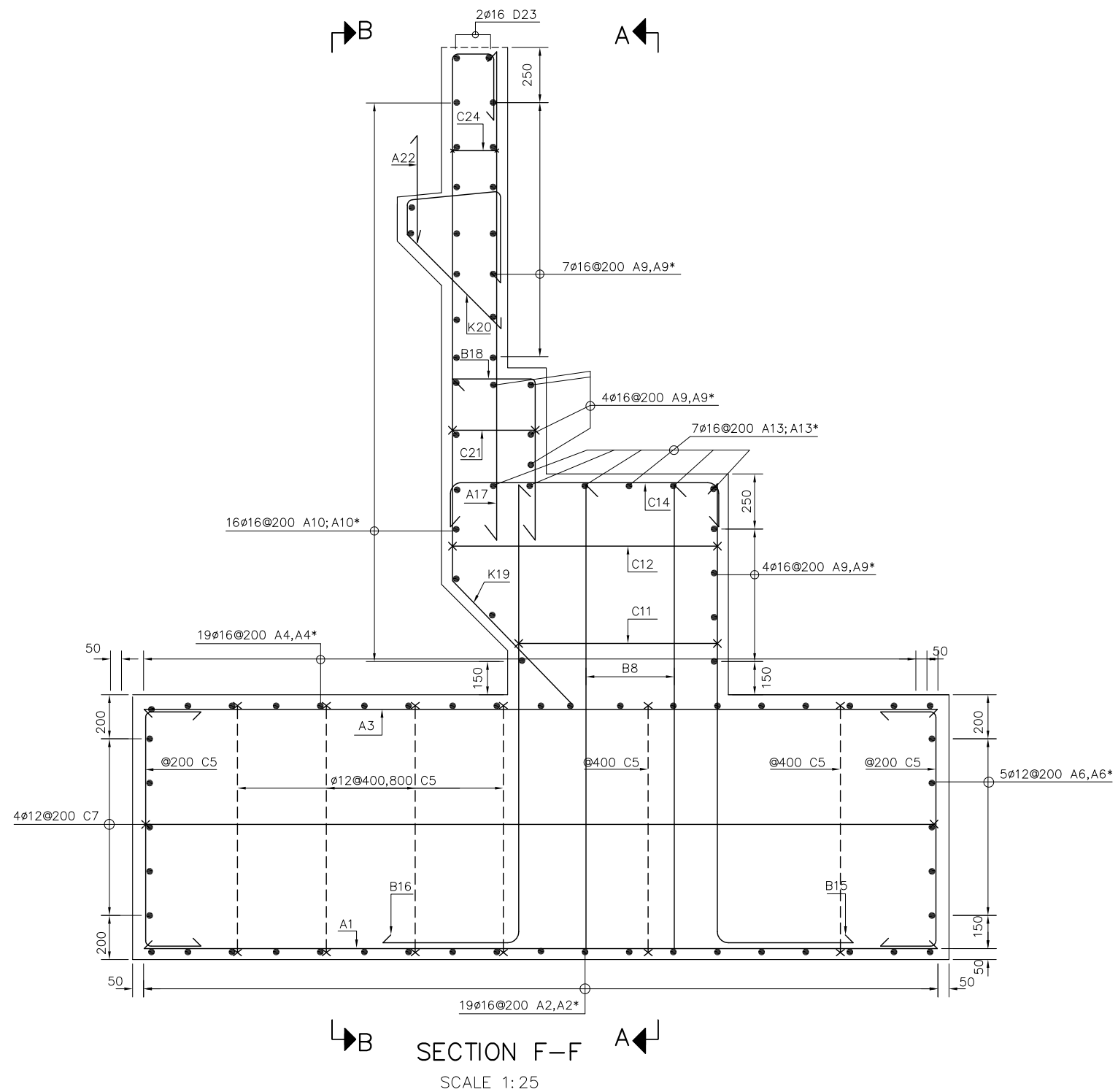
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS=50 mm.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-22, BDA-23, BBA-24, BBA-26, BBA-27 AND BBA-28.



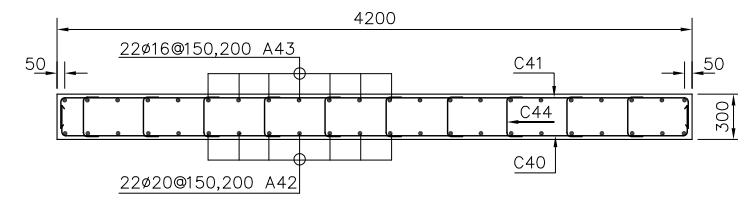
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
BAR ARRANGEMENT OF ABUTMENT  
A AND B (SHEET 2 OF 5)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBA-25
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:50



APPROACH SLAB  
SCALE 1:100



SECTION M-M  
SCALE 1:50

NOTES:

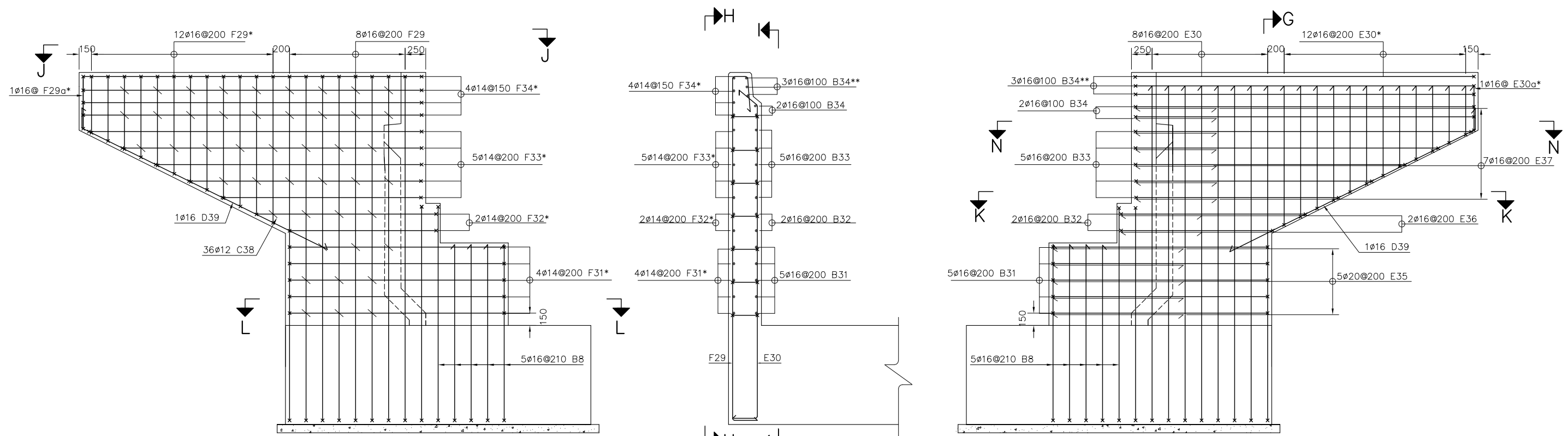
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS=50 mm.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-22, BDA-23, BBA-24, BBA-25, BBA-27 AND BBA-28.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
BAR ARRANGEMENT OF ABUTMENT  
A AND B (SHEET 3 OF 5)

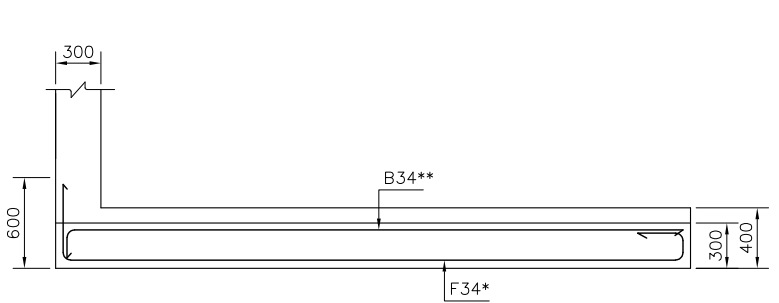
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
			DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
			CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BBA-26
			APPROVED	Mr.Vandy VORASACK		SCALE: AS SHOWN



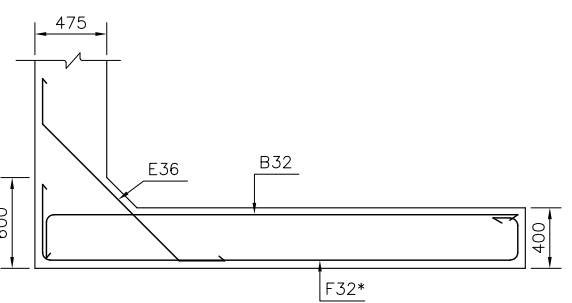
SECTION H-H  
SCALE 1:50

SECTION G-G  
SCALE 1:50

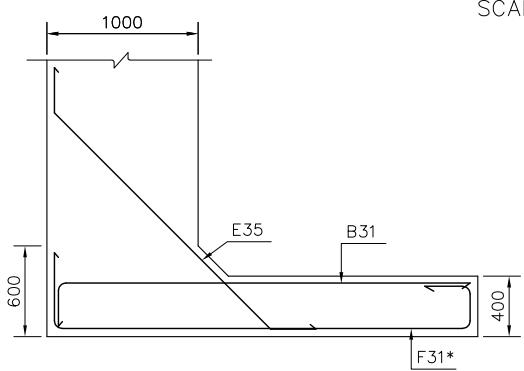
SECTION I-I  
SCALE 1:50



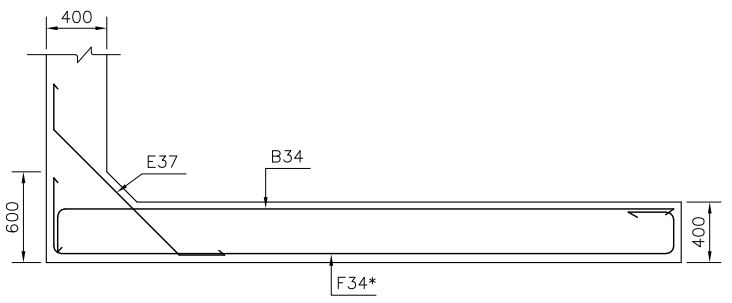
SECTION J-J  
SCALE 1:50



SECTION K-K  
SCALE 1:50



SECTION L-L  
SCALE 1:50



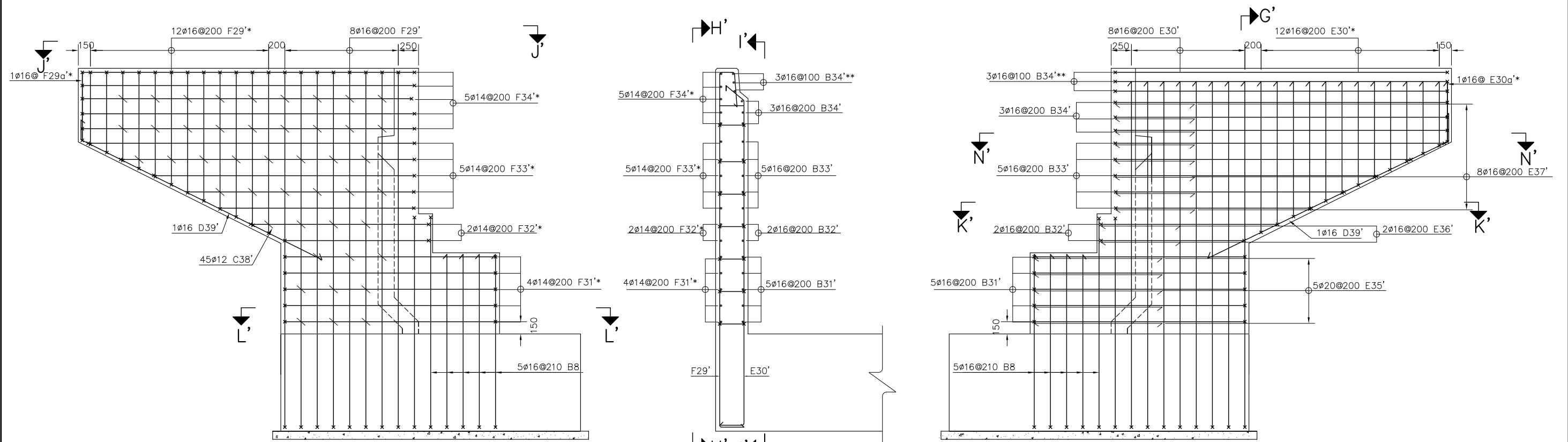
SECTION N-N  
SCALE 1:50

- NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS.
  2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS=50 mm.
  3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-22, BDA-23, BBA-24, BBA-25, BBA-26 AND BBA-28.

ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
BAR ARRANGEMENT OF ABUTMENT  
A AND B (SHEET 4 OF 5)

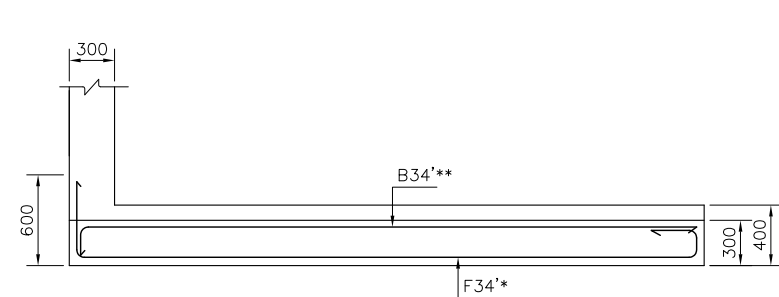
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
			DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
			CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BBA-27
			APPROVED	Mr.Vandy VORASACK		SCALE: 1:50



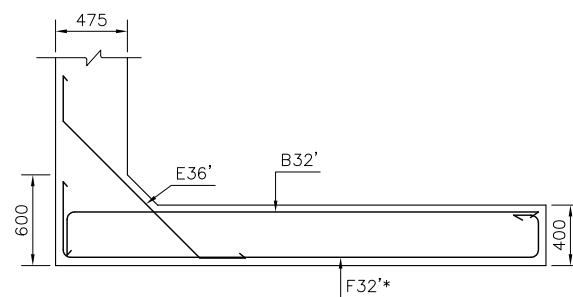
SECTION H'-H'  
SCALE 1:50

SECTION G'-G'  
SCALE 1:50

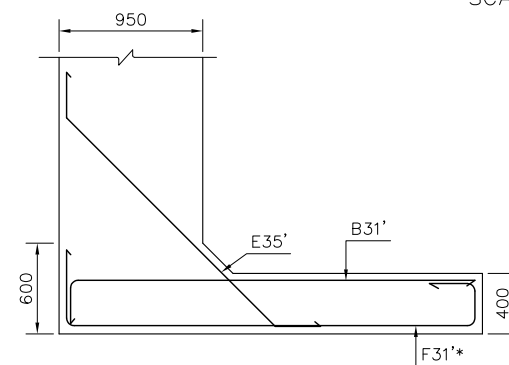
SECTION I'-I'  
SCALE 1:50



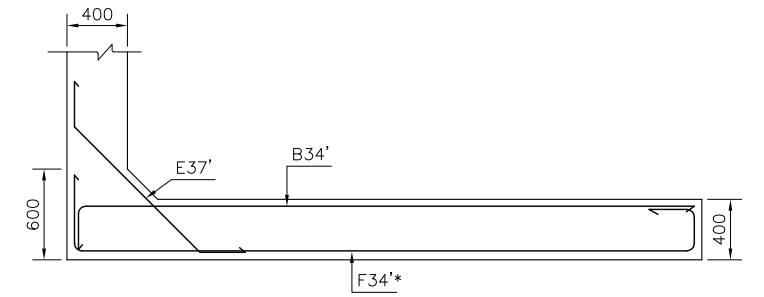
SECTION J'-J'  
SCALE 1:50



SECTION K'-K'  
SCALE 1:50



SECTION L'-L'  
SCALE 1:50



SECTION N'-N'  
SCALE 1:50

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS=50 mm.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-22, BDA-23, BBA-24, BBA-25, BBA-26 AND BBA-27.



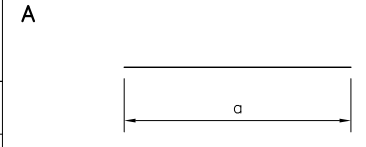
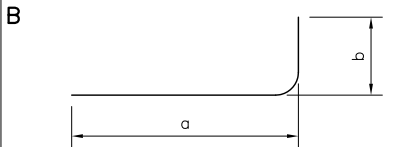
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
BAR ARRANGEMENT OF ABUTMENT  
A AND B (SHEET 5 OF 5)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBA-28
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:50



TABLE OF BAR ARRANGEMENT FOR 1/2 ABUTMENT A OR B

SHAPE OF BAR	No.	DIAMETER (mm)	LENGTH OF BAR (mm)	QUANTITY	TOTAL LENGTH (m)	SIZE OF BENDING (mm)						SPACE @ (mm)	REMARK	A 	B 
						a	b	c	d	e	f				
C	25	12	1390	10	13.9	400	590	400				145			
C	25a	12	1490	10	14.9	450	590	450				145			
C	25b	12	1590	10	15.9	500	590	500				145			
C	25c	12	1690	10	16.9	550	590	550				145			
C	25d	12	1790	10	17.9	600	590	600				145			
C	25e	12	1890	10	18.9	650	590	650				145			
C	26	12	1515	8	12.12	400	715	400				150			
C	26a	12	1990	6	11.94	450	1090	450				150			
C	27	12	2115	8	16.92	700	715	700				150			
C	27a	12	2590	6	15.54	750	1090	750				150			
C	28	12	2165	8	17.32	700	715	750				150			
C	28a	12	2590	6	15.54	750	1090	750				150			
F	29	16	5350	8	48.15	300	300	4150	600			200			
F	29'	16	5550	8	44.4	300	300	4350	600			200			
F	29*	16	$\frac{2370}{1880}$	12	25.5	300	300	$\frac{1170}{680}$	600			200	△ = 105		
F	29'*	16	$\frac{3280}{2200}$	12	32.88	300	300	$\frac{2080}{1000}$	600			200	△ = 105		
F	29a*	16	1840	1	1.84	300	300	640	600			-			
F	29a'*	16	2150	1	2.15	300	300	950	600			-			
E	30	16	4300	8	34.4	300	200	3800				200			
E	30'	16	4500	8	36	300	200	4000				200			
E	30*	16	$\frac{2200}{1080}$	12	19.68	400	$\frac{1400}{280}$	400				200	△ = 105		
E	30'*	16	$\frac{2500}{1380}$	12	23.28	400	$\frac{1700}{580}$	400				200	△ = 105		
E	30a*	16	1100	1	1.1	300	500	300				200			
E	30a'*	16	1400	1	1.4	300	800	300				200			
B	31	16	3000	5	15	300	2700					200			
B	31'	16	3000	5	15	300	2700					200			
F	31*	14	3900	5	19.5	300	300	2700	600			200			
F	31'*	14	3900	5	19.5	300	300	2700	600			200			
B	32	16	$\frac{2665}{2285}$	2	4.95	$\frac{2365}{1985}$	300					200	△ = 380		
B	32'	16	$\frac{2665}{2285}$	2	4.95	$\frac{2365}{1985}$	300					200	△ = 380		
F	32*	14	$\frac{3565}{3185}$	2	6.75	300	300	$\frac{2365}{1985}$	600			200	380		

RADIUS OF BAR BENDING	
DIAMETER OF BARS (mm)	RADIUS (mm)
10	35
12	42
16	56
20	100
25	125
32	224

NOTES:

- △ IS DIFFERENT LENGTH OF BAR WITH THE SAME NUMBER.
- THE TABLE OF QUANTITY OF REINFORCEMENT IS FOR ONE ABUTMENT ONLY.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT


NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
TABLES OF BAR ARRANGEMENTS  
FOR ABUTMENT A OR B (SHEET 2 OF 4)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BTB-30
				APPROVED	Mr.Vandy VORASACK	SCALE: -

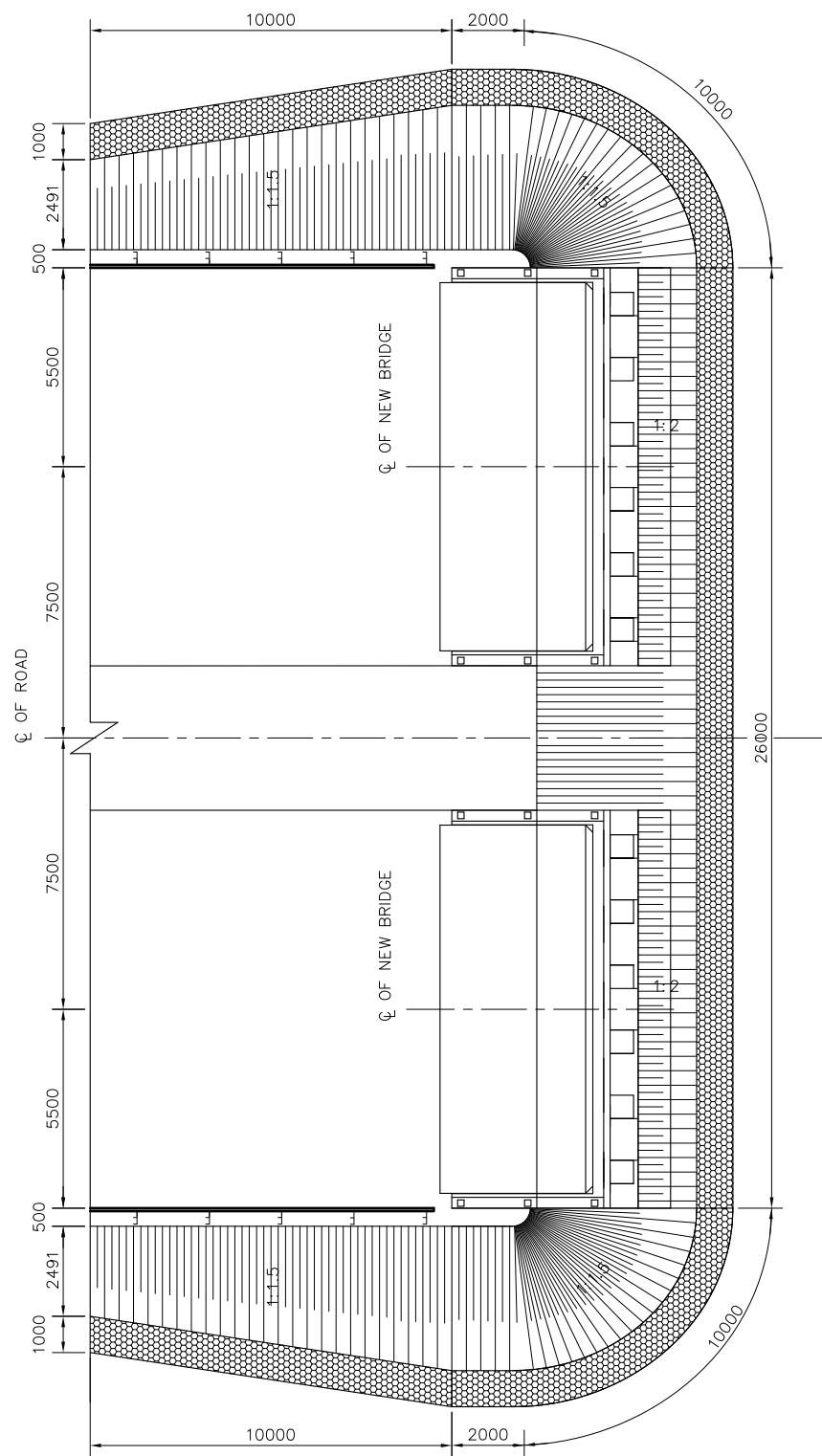


SUMMARY OF QUANTITIES FOR 1/2 ABUTMENT A OR B

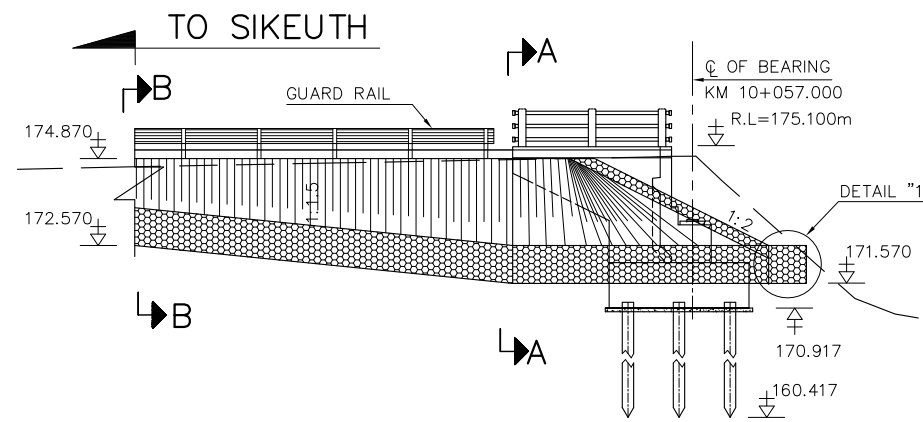
ITEM	CONCRETE (m <sup>3</sup> )			REINFORCEMENT (Kg)						MIX SAND AND GRAVEL (m <sup>3</sup> )	PRECAST CONCRETE PILE 350x350 mm (m)
	GRADE 10MPa.	GRADE 25MPa.	GRADE 30MPa.	Ø12	Ø14	Ø16	Ø20	Ø25	TOTAL		
1. ABUTMENT	4.37	78.75	0.64	874.57	170.12	3499.77	843.42	42.39		21.97	FOR ABUT.A = 189.00
2. APPROACH SLAB	2.14	12.83	-	67.92	-	744.34	1163.04	-			FOR ABUT.B = 135.00
TOTAL	6.51	91.58	0.64	942.49	170.12	4244.11	2006.46	42.39	7405.57	21.97	324.00

 <p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	HOUAY XONE BRIDGE					CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BTB-32
	TABLES OF BAR ARRANGEMENTS FOR ABUTMENT A OR B (SHEET 4 OF 4)					APPROVED	Mr.Vandy VORASACK	SCALE: -

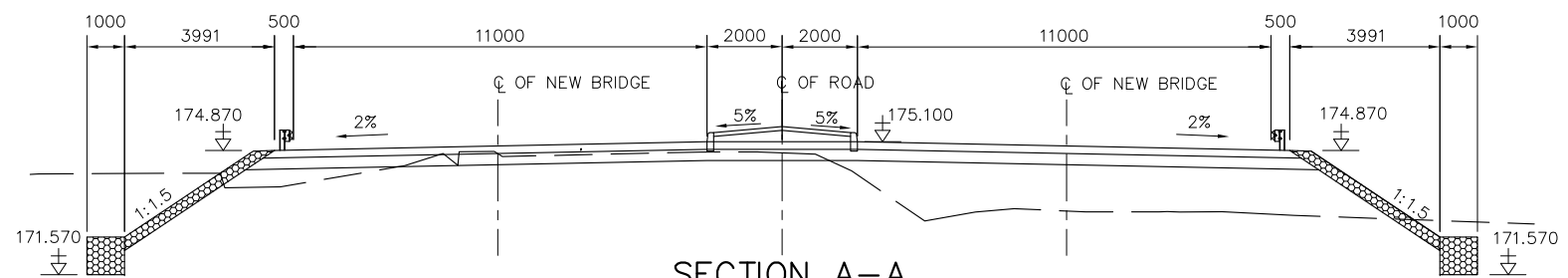
# III. MISCELLANEOUS DRAWINGS



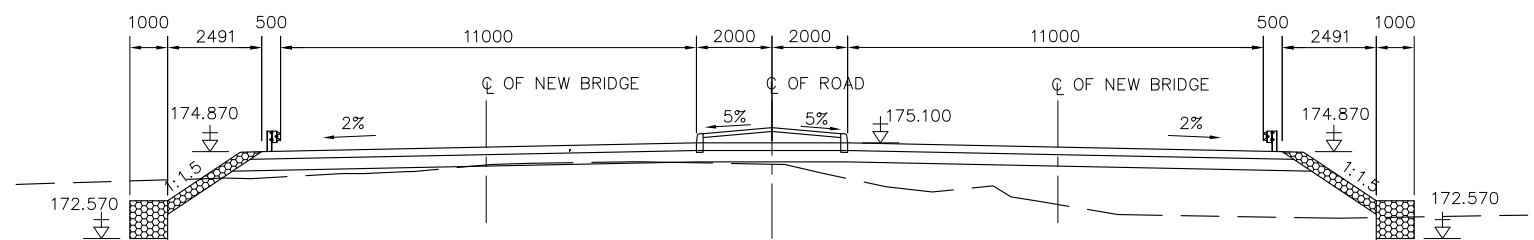
PLAN  
SCALE 1:200



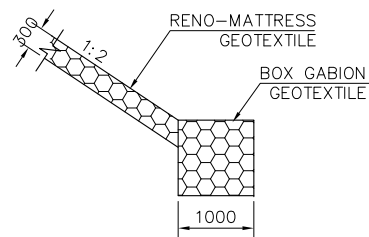
SIDE ELEVATION  
SCALE 1:200



SECTION A-A  
SCALE 1:200



SECTION B-B  
SCALE 1:200



DETAIL "1"  
SCALE 1:100

TABLE OF QUANTITIES OF SLOPE PROTECTION

ITEMS	DESCRIPTIONS	UNIT	QUANTITIES
1	GABION BOX	m <sup>3</sup>	70.00
2	GEOTEXTILE	m <sup>2</sup>	473.00
3	RENO-MATTRESS	m <sup>3</sup>	99.90
4	EMBANKMENT	m <sup>3</sup>	161.73
5	STRUCTURE EXCAVATION (COMMON)	m <sup>3</sup>	376.63

NOTE:

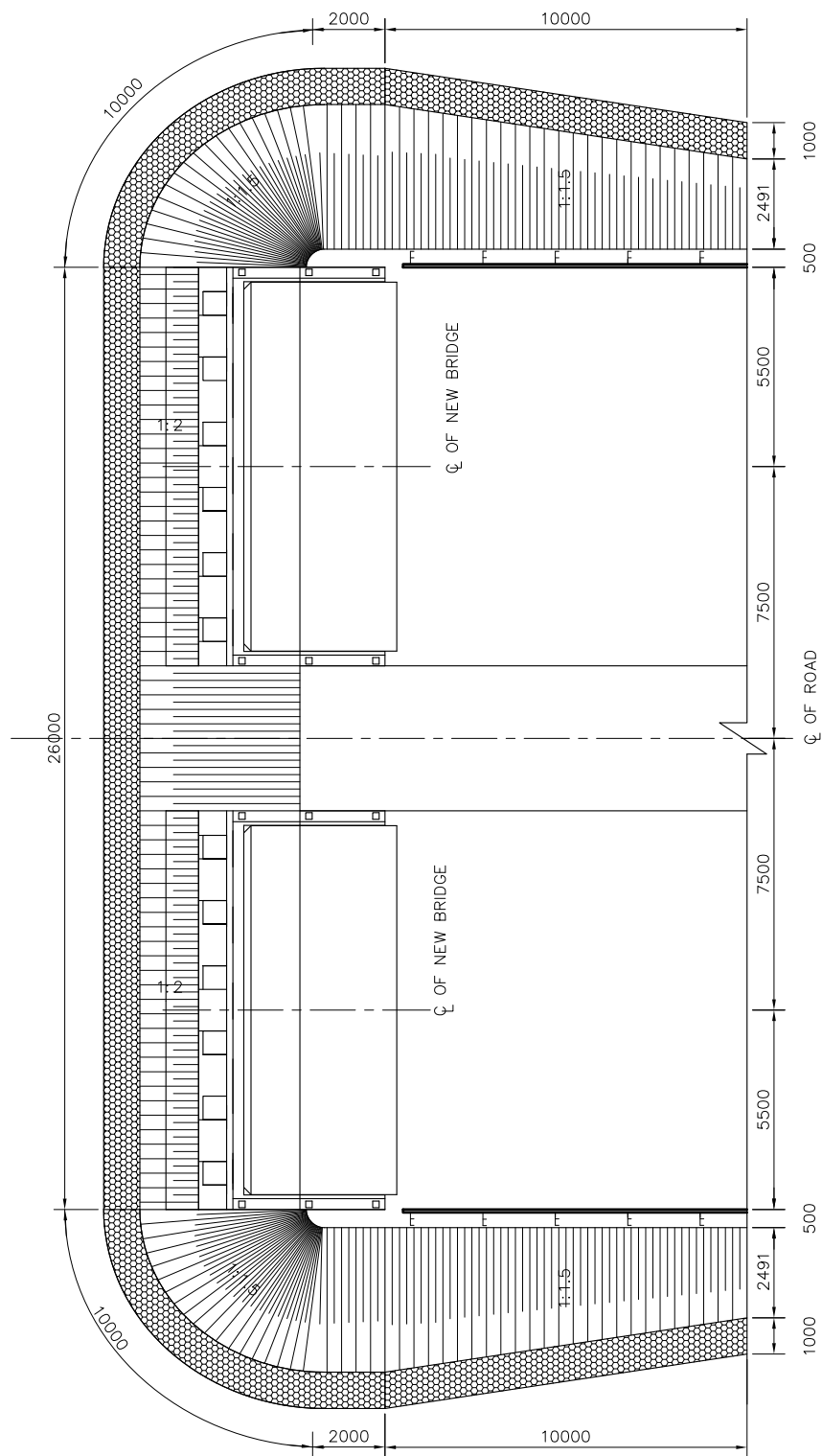
1. ALL DIMENSIONS ARE IN MILLIMETERS, LEVELS ARE IN METERS.



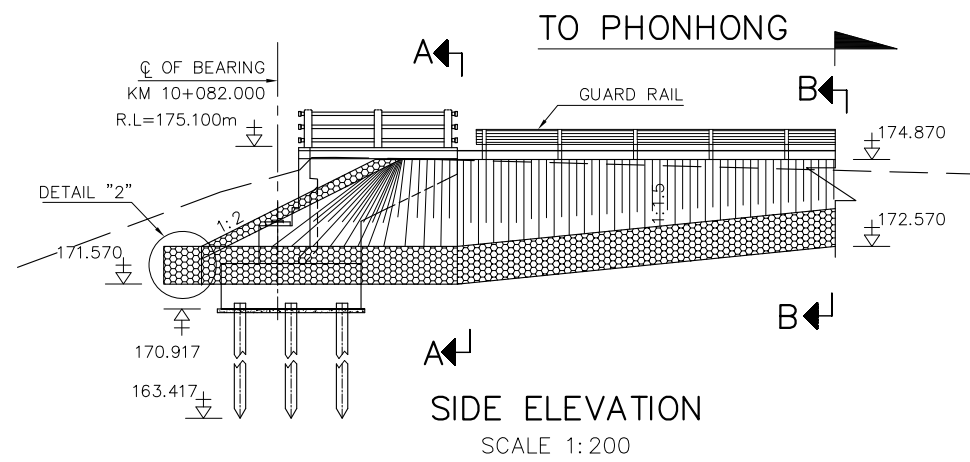
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
SLOPE PROTECTION  
AROUND ABUTMENT A

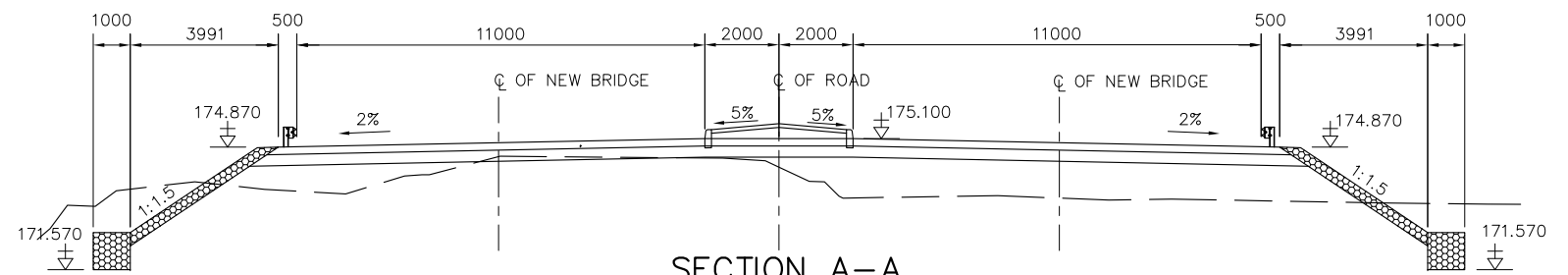
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BSP-33
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



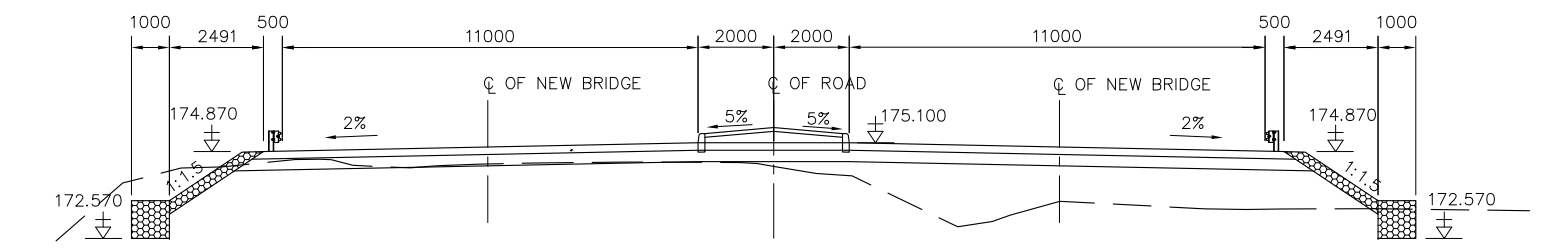
PLAN  
SCALE 1: 200



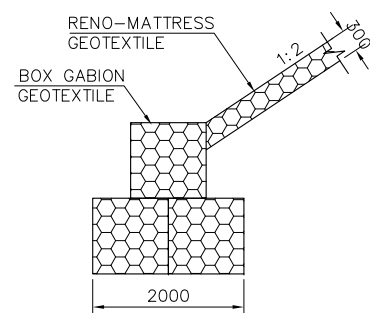
SIDE ELEVATION  
SCALE 1: 200



SECTION A-A  
SCALE 1: 200



SECTION B-B  
SCALE 1: 200



DETAIL "2"  
SCALE 1: 100

TABLE OF QUANTITIES OF SLOPE PROTECTION

ITEMS	DESCRIPTIONS	UNIT	QUANTITIES
1	GABION BOX	m <sup>3</sup>	70.00
2	GEOTEXTILE	m <sup>2</sup>	473.00
3	RENO-MATTRESS	m <sup>3</sup>	99.90
4	EMBANKMENT	m <sup>3</sup>	138.75
5	STRUCTURE EXCAVATION (COMMON)	m <sup>3</sup>	485.08

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS, LEVELS ARE IN METERS.

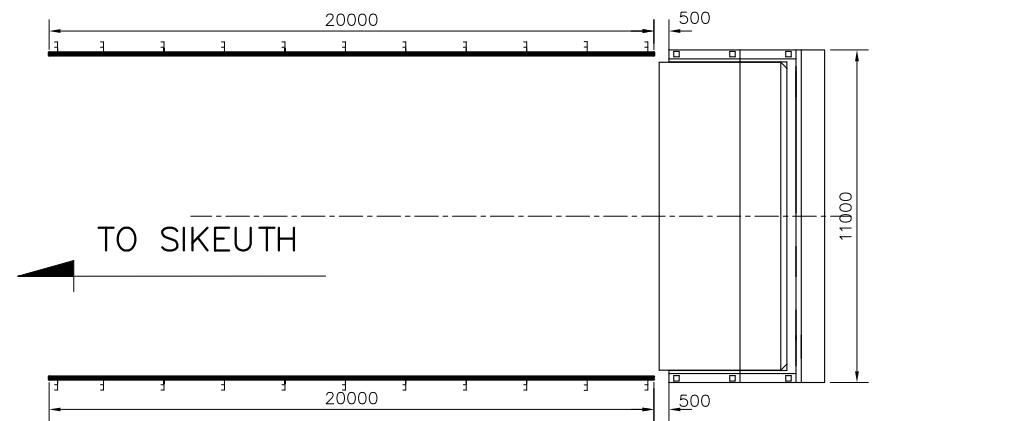


ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

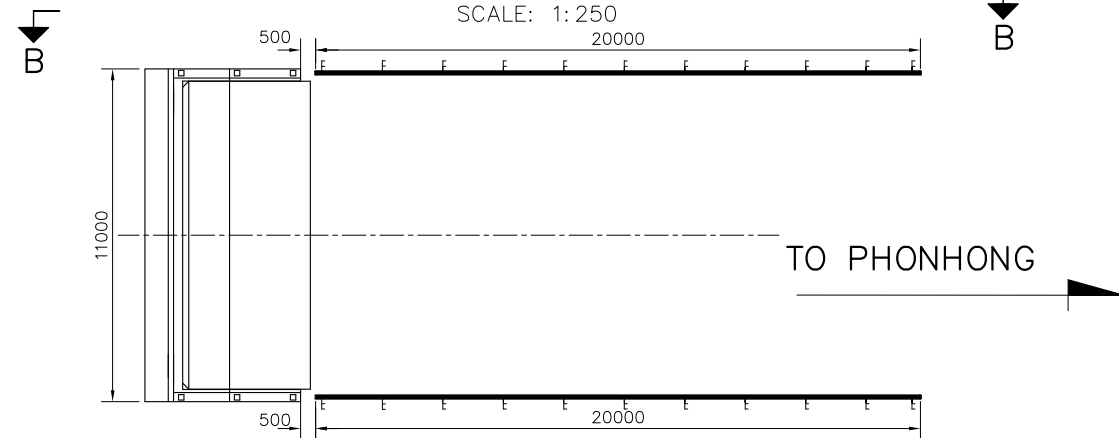
NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY

HOUAY XONE BRIDGE  
SLOPE PROTECTION  
AROUND ABUTMENT B

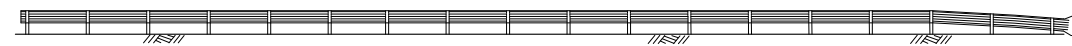
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BSP-34
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



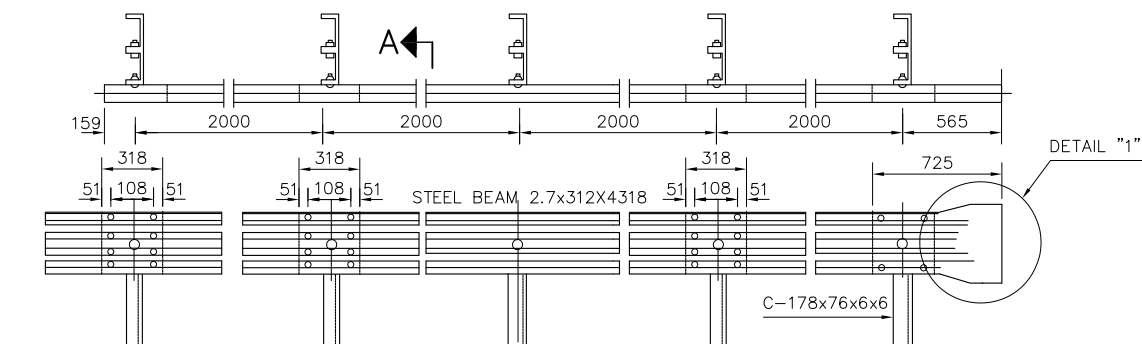
GENERAL PLAN SIDE SIKEUTH  
SCALE: 1:250



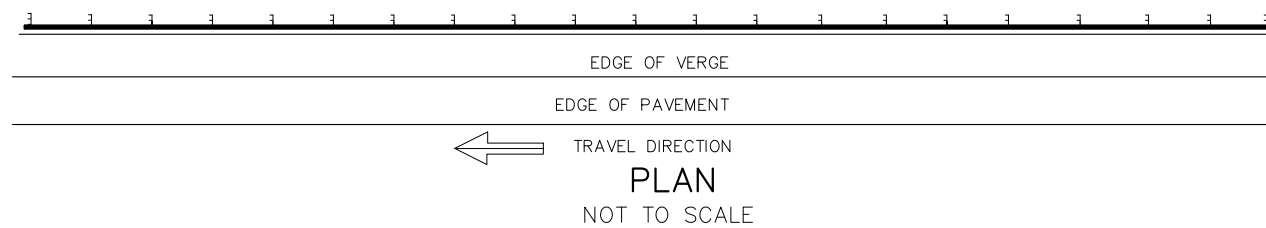
GENERAL PLAN SIDE PHONHONG  
SCALE: 1:250



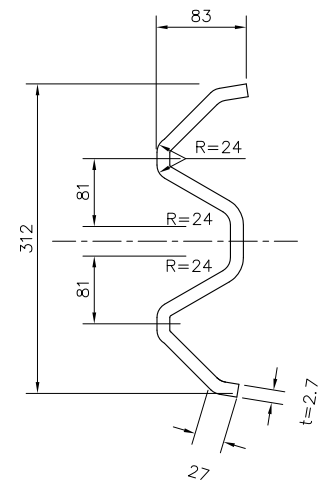
SIDE ELEVATION B-B  
NOT TO SCALE



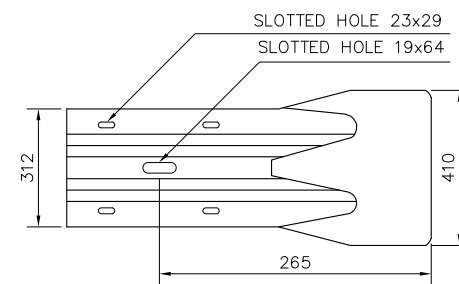
FRONT VIEW  
NOT TO SCALE



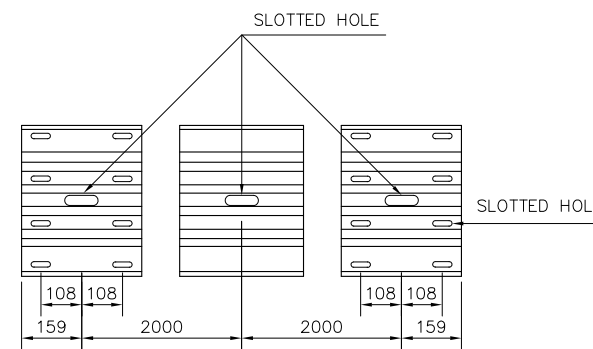
PLAN  
NOT TO SCALE



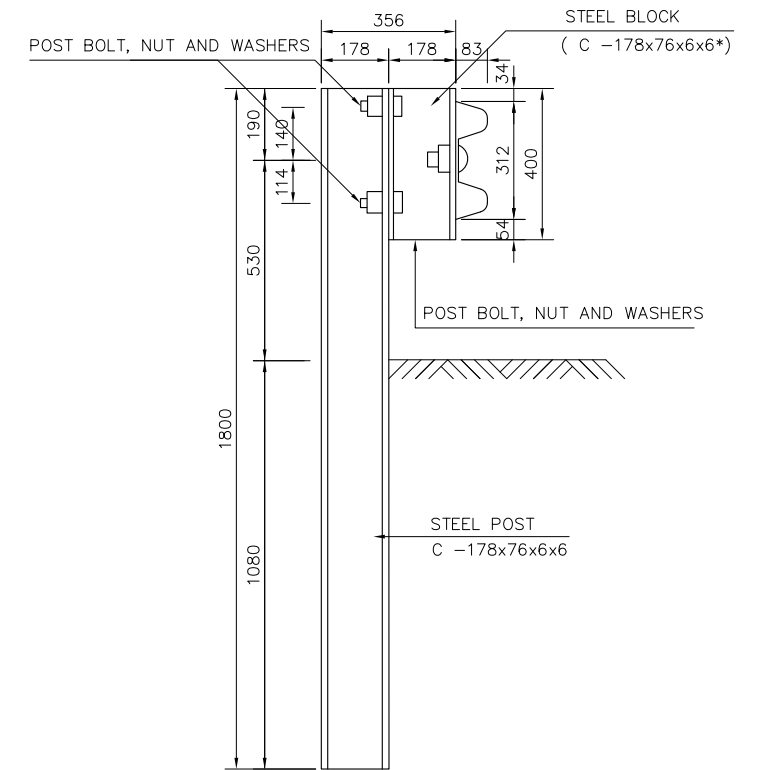
SECTION A-A  
NOT TO SCALE



DETAIL "1"  
SCAL 1:20



STEEL BEAM  
NOT TO SCALE



SECTION A-A  
VERTICAL TRANSPORTION  
SCAL 1:20

TABLE OF QUANTITIES

ITEMS	DESCRIPTIONS	UNIT	QUANTITIES
1	GUARDRAILL (ABUTMENT A SIDE)	m	40.00
2	GUARDRAILL (ABUTMENT B SIDE)	m	40.00
	TOTAL	m	80.00

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. GUARD RAIL STANDARD SHALL MEET THE REQUIREMENTS OF AASHTO M 180, TYPE I CLASS A, W-BEAM.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
HOUAY XONE BRIDGE  
GUARD RAIL

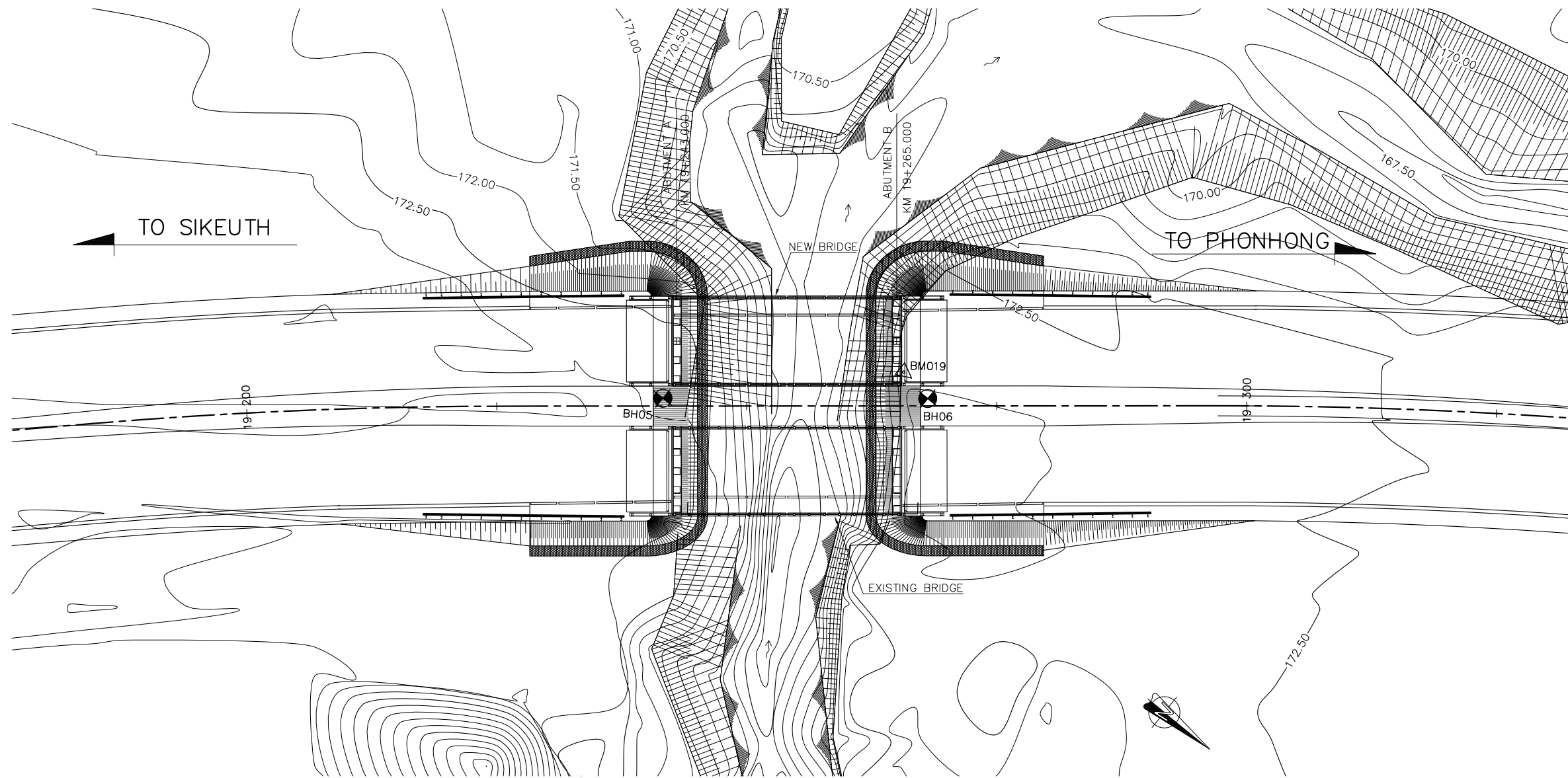
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. RGR-35
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN

# 03.NAM HOUM BRIDGE

# I. GENERAL DRAWINGS

LIST OF COORDINATES

CODE	N (m)	E (m)	Z (m)
BM18	2012519.066	235667.868	173.056
BM19	2012688.233	235515.624	172.891
ABUTMENT A	2012668.690	235527.573	-
ABUTMENT B	2012685.727	235513.655	-



GENERAL PLAN OF BRIDGE

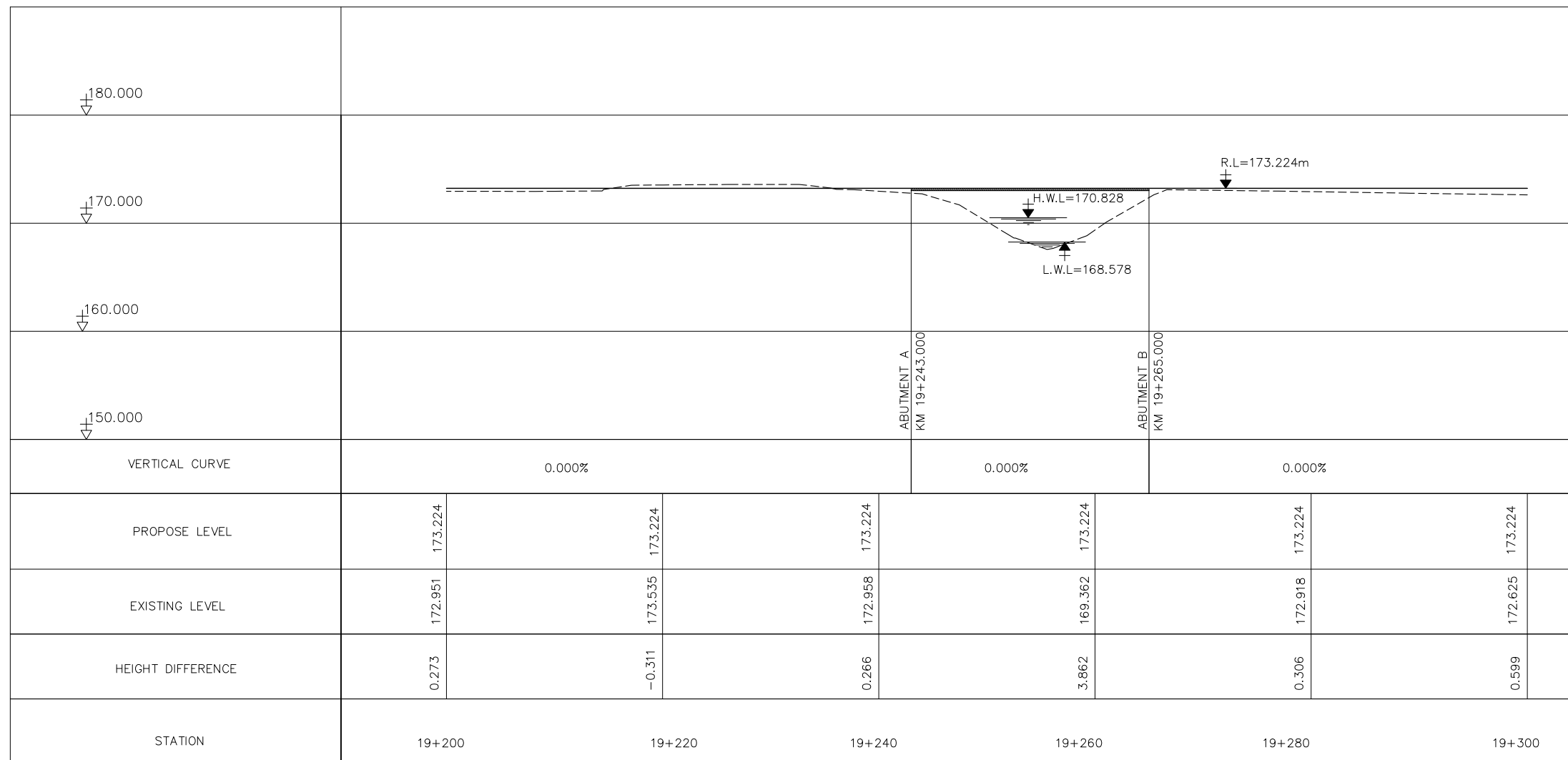
SCALE 1:500

<p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT		REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17	
	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY						DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
	NAM HOUM BRIDGE						CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BGP-01
	GENERAL PLAN OF BRIDGE						APPROVED	Mr.Vandy VORASACK		SCALE: 1:500

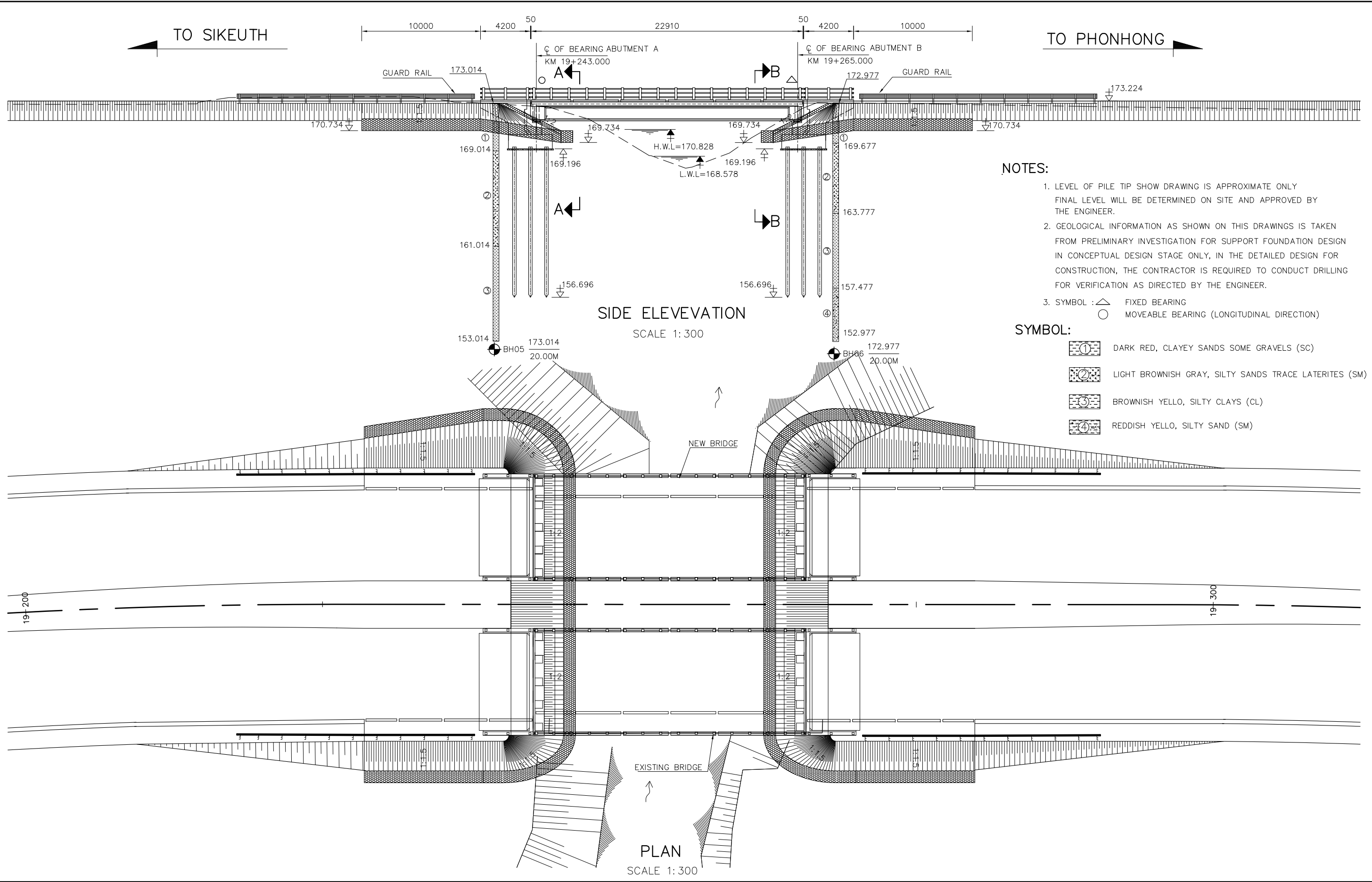
### ELEVATION OF BRIDGE

← TO SIKEUTH

TO PHONHONG →



	<b>NR 13N IMPROVEMENT AND MAINTENANCE PROJECT</b> <b>CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY</b>	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17	
	<b>NAM HOUM BRIDGE</b> <b>ELEVATION OF BRIDGE</b>					DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
						CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BAP-02
						APPROVED	Mr.Vandy VORASACK		SCALE: 1:500



**NOTES:**

1. LEVEL OF PILE TIP SHOW DRAWING IS APPROXIMATE ONLY  
FINAL LEVEL WILL BE DETERMINED ON SITE AND APPROVED BY  
THE ENGINEER.
2. GEOLOGICAL INFORMATION AS SHOWN ON THIS DRAWINGS IS TAKEN  
FROM PRELIMINARY INVESTIGATION FOR SUPPORT FOUNDATION DESIGN  
IN CONCEPTUAL DESIGN STAGE ONLY, IN THE DETAILED DESIGN FOR  
CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO CONDUCT DRILLING  
FOR VERIFICATION AS DIRECTED BY THE ENGINEER.
3. SYMBOL : △ FIXED BEARING  
○ MOVEABLE BEARING (LONGITUDINAL DIRECTION)

**SYMBOL:**

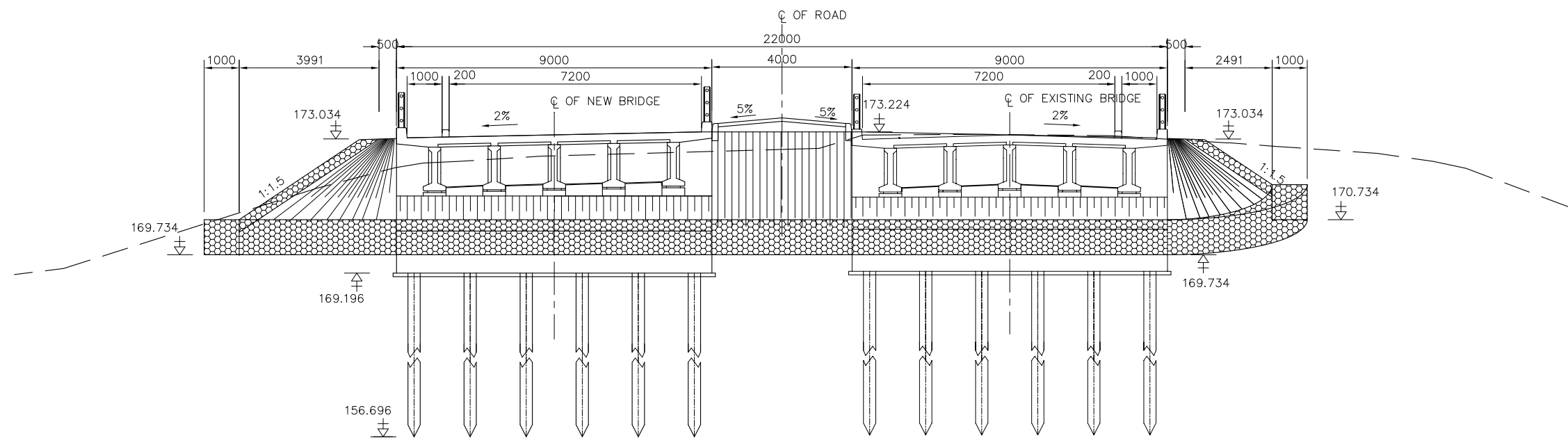
- ① DARK RED, CLAYEY SANDS SOME GRAVELS (SC)
- ② LIGHT BROWNISH GRAY, SILTY SANDS TRACE LATERITES (SM)
- ③ BROWNISH YELLO, SILTY CLAYS (CL)
- ④ REDDISH YELLO, SILTY SAND (SM)



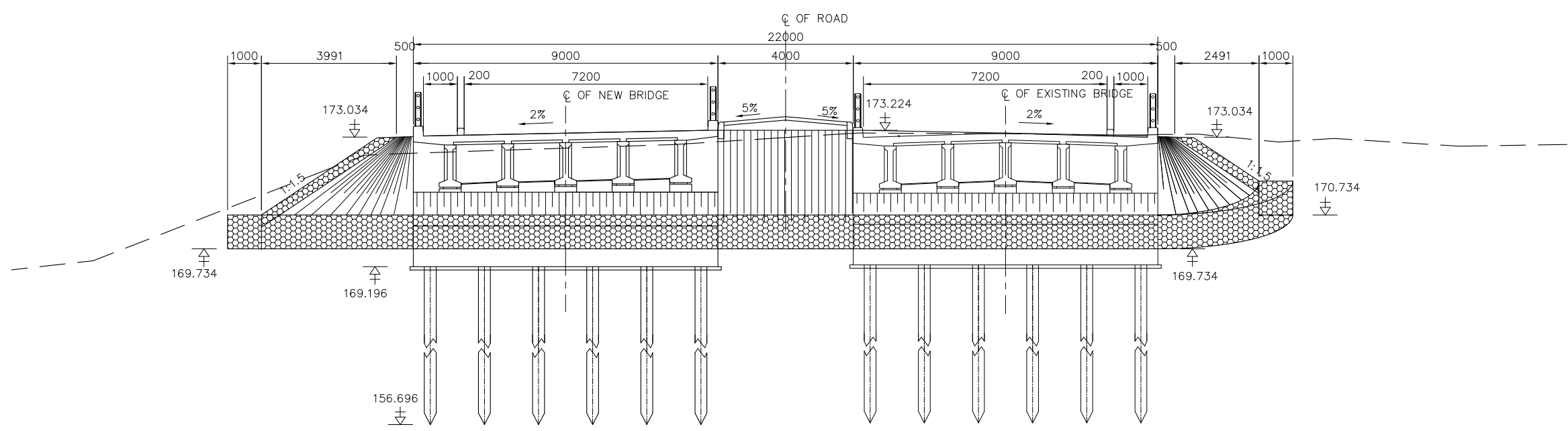
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
NAM HOUM BRIDGE  
GENERAL ARRANGEMENT OF BRIDGE  
(SHEET 1 OF 2)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BGA-03
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:300



SECTION A-A  
SCALE 1:150



SECTION B-B  
SCALE 1:150

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS, LEVEL ARE IN METERS.
2. GEOLOGICAL INFORMATION SEE IN SEPARATE REPORT ON SUB SOIL INVESTIGATION.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY

NAM HOUM BRIDGE  
GENERAL ARRANGEMENT OF  
BRIDGE (SHEET 2 OF 2)

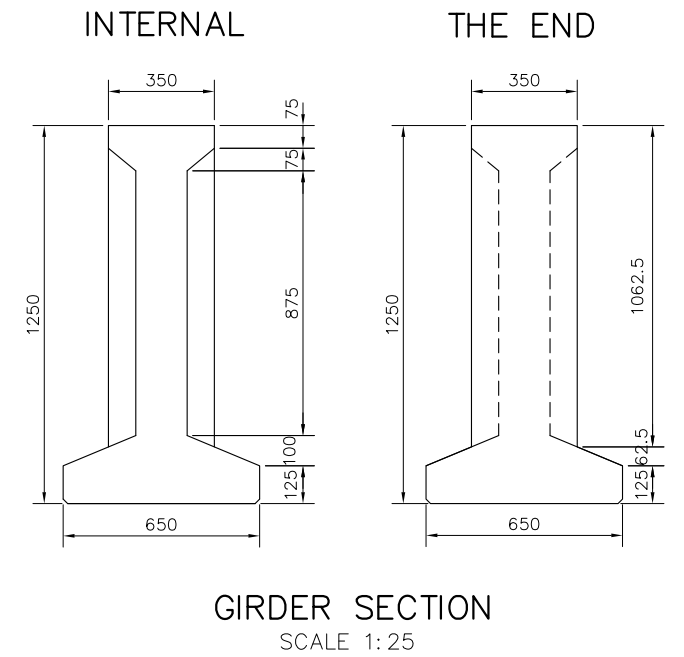
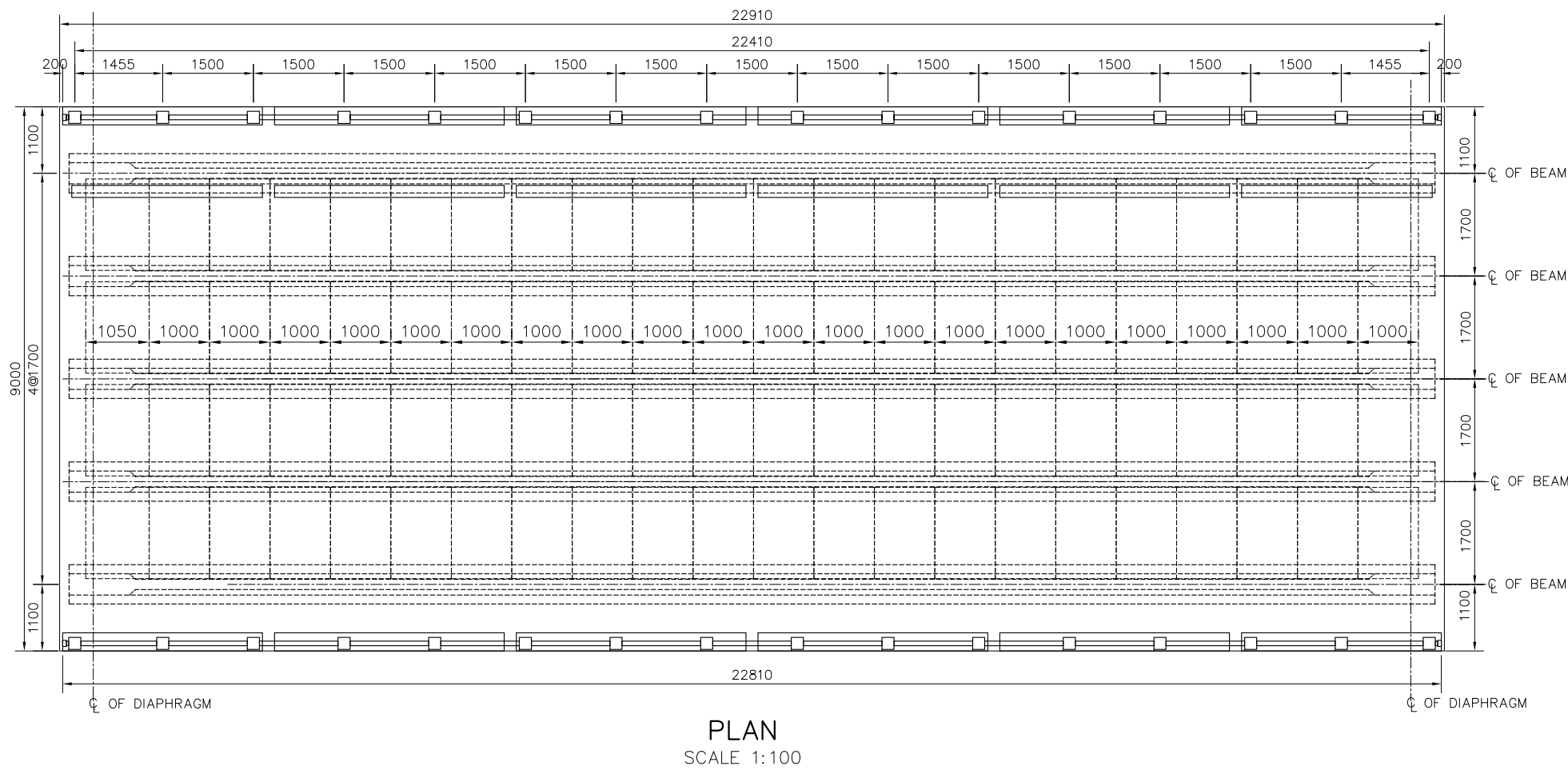
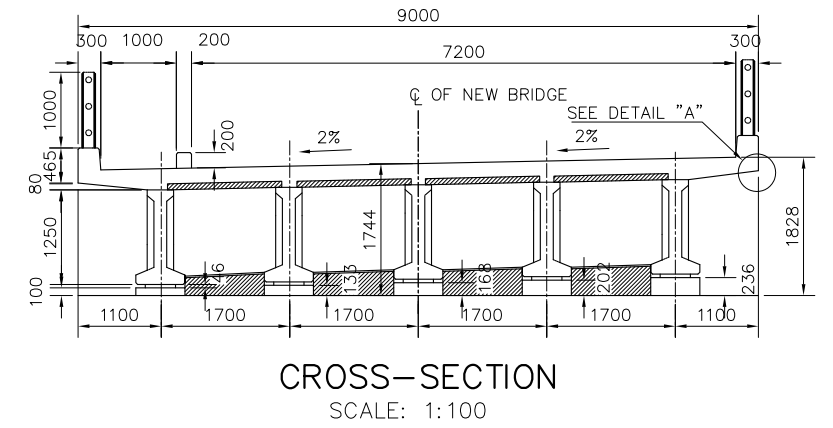
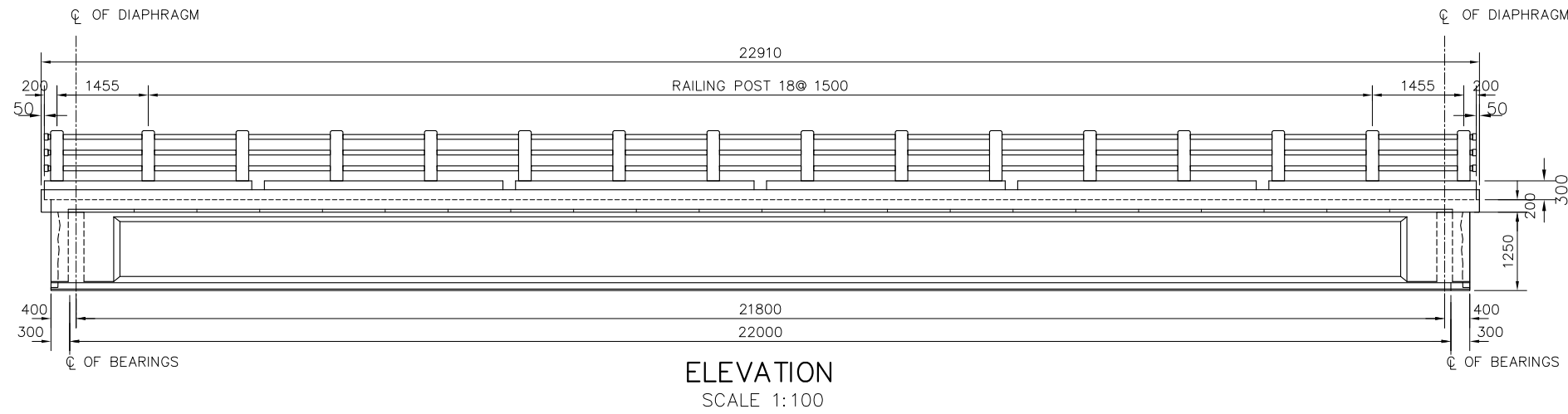
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BGA-04
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:150

**SUMMARY QUANTITIES OF MAIN MATERIALS FOR BRIDGE**

CATEGORIES	MATERIAL	STEEL(t)		HAND-RAIL (m)	CONCRETE (m3) GRADE (MPa)						CEMENT GROUT 40MPa (m3)	ELASTOMERIC BEARINGS TYPE1 (No)	RUBBER BEARINGS STRIP (No)	EXPAN-SION JOINT (m)	GUARD RAIL (m)	PC PILE 350x350 Cm (m)	RENO MAT-TRESS	GABION BOX (m3)	GEO-TEXTILE (m2 )	STRUC.EX		EM-BANK MENT (m3)	ROCK FILL (m3)	CHANNEL EXCA VATION (m3 )	MIX SAND AND GRAVEL (m3)	
		PRES-TRESS STEEL	REIN. BARS		40	35	30	25	15	10										ROCK (m3)	SOIL (m3)					
<b>I- SUPERSTRUCTURE</b>																										
1	GIRDERS L=22m	2.00	5.30		38.00						1.00															
2	DAIPHAGMS		0.47			3.00																				
3	DECK SLABS +PRECAST SLABS		8.38				59.73																			
4	HAND RAILS			63.00																						
5	ELASTOMERIC BEARINGS										10.00	10.00														
6	EXPANSION JOINTS												18.00													
7	BRIDGE GUARD RAIL													80.00												
	<b>SUB TOTAL</b>	2.00	14.15	63.00	38.00	3.00	59.73	0.00	0.00	0.00	1.00	10.00	10.00	18.00	80.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>II- SUBSTRUCTURE</b>																										
1	ABUTMENTS AND APPROACH SLABS		12.12				0.76	152.00		9.00					450.00											36.00
2	SLOPE PROTECTION AND EMBANKMENT															180.00	128.00	855.00		984.00	96.00					
3	CHANNEL EXCAVATION																									
	<b>SUB TOTAL</b>	0.00	12.12	0.00	0.00	0.00	0.76	152.00	0.00	9.00	0.00	0.00	0.00	0.00	450.00	180.00	128.00	855.00	0.00	984.00	96.00	0.00	0.00	0.00	0.00	36.00
	<b>TOTAL</b>	2.00	26.00	63.00	38.00	3.00	61.00	152.00	0.00	9.00	1.00	10.00	10.00	18.00	80.00	450.00	180.00	128.00	855.00	0.00	984.00	96.00	0.00	0.00	0.00	36.00

<p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17	
	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018	
	<p align="center"><b>NAM HOUM BRIDGE SUMMARY QUANTITIES OF MAIN MATTERIALS FOR BRIDGE</b></p>						CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BQM-05
							APPROVED	Mr.Vandy VORASACK	SCALE: -

## II. STRUCTURE DRAWINGS



**NOTE:**

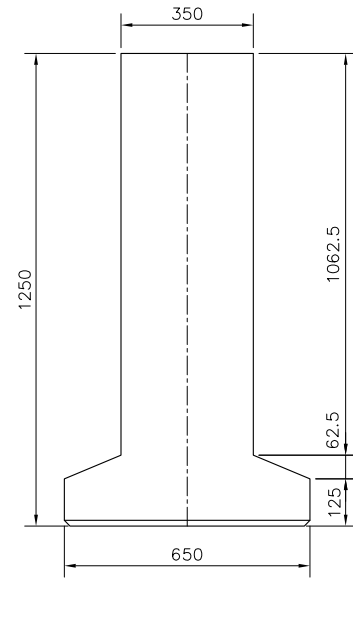
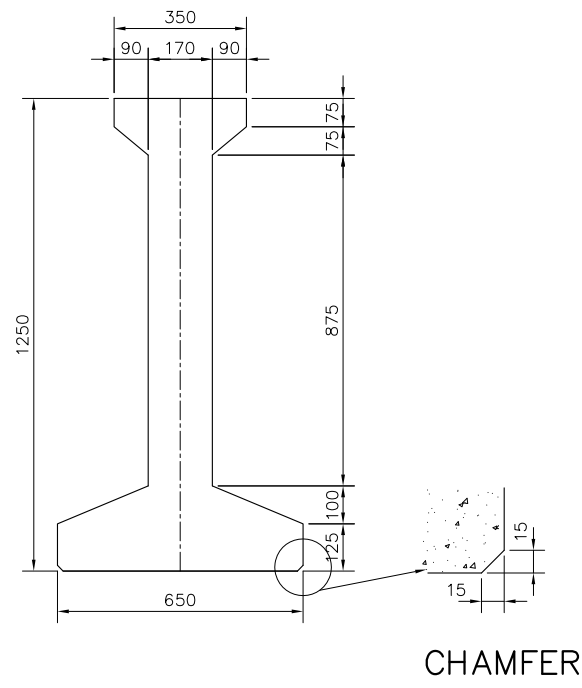
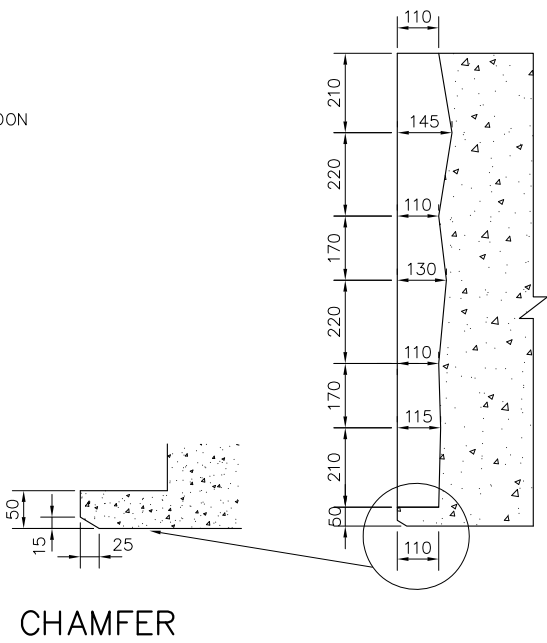
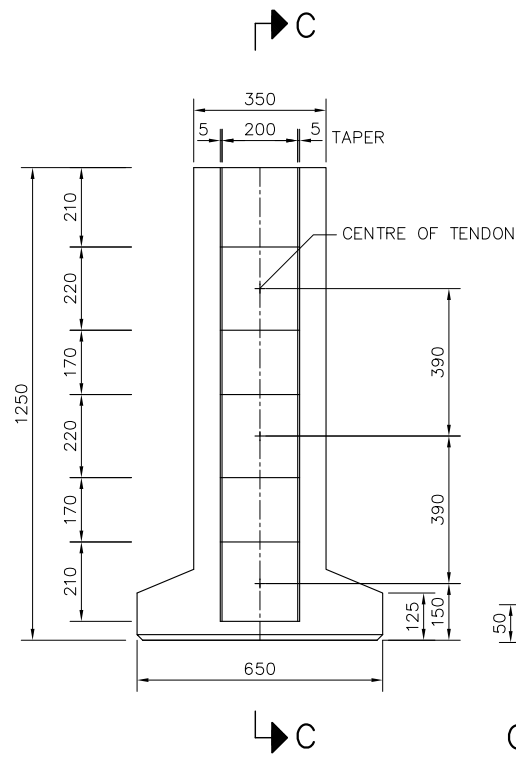
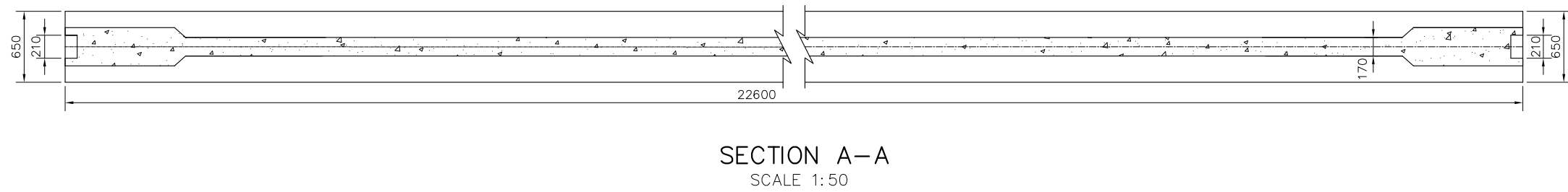
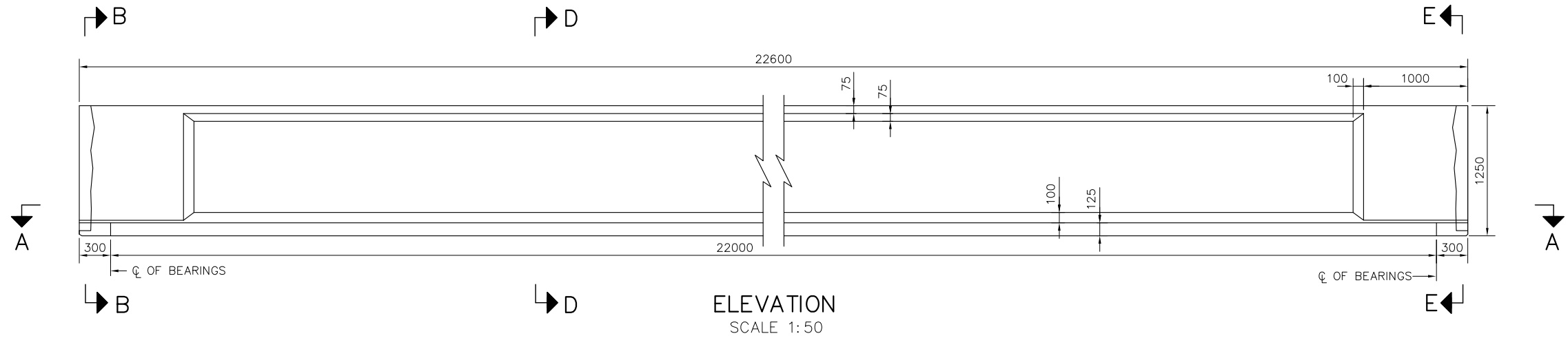
1. ALL DIMENSIONS ARE IN MILLIMETERS.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
**NAM HOUM BRIDGE**  
DIMENSIONS OF SUPERSTRUCTURE  
SPAN 22 m

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BDS-06
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
NAM HOUM BRIDGE  
DIMENSIONS OF PRECAST  
CONCRETE

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BDG-07
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN

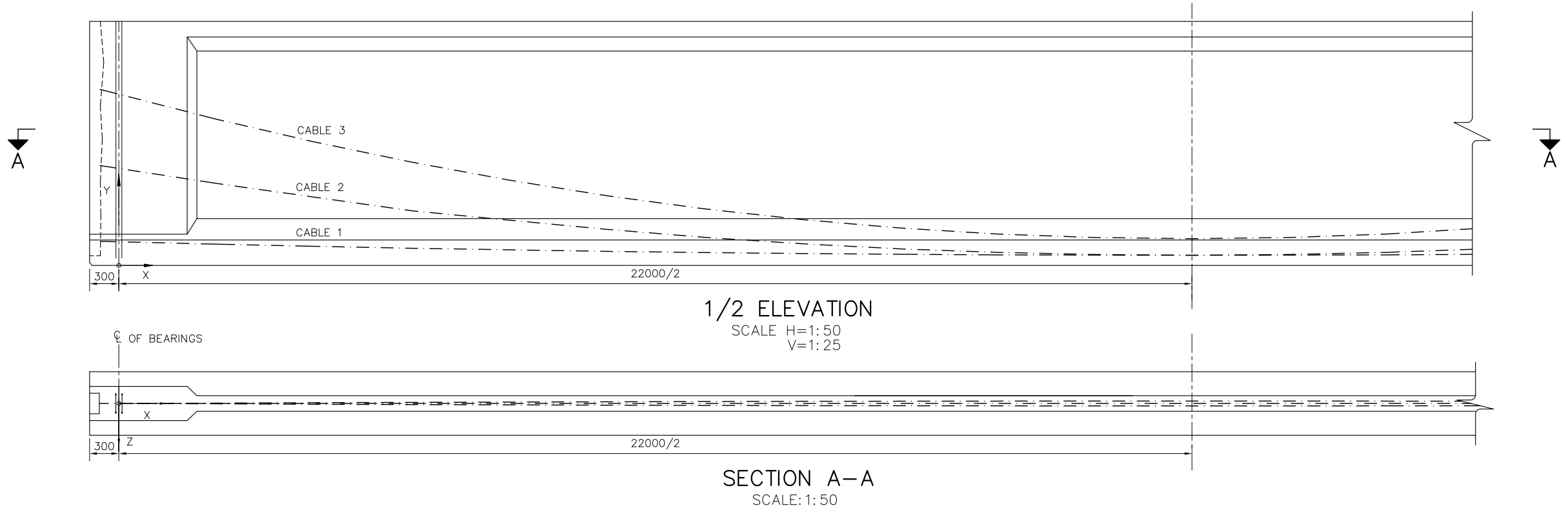


TABLE OF CABLE CO-ORDINATES

	X													STRESSING SEQUENCE	
		0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000	11000		
CABLE 3	Y	877	749	633	529	437	357	290	235	192	161	143	137	CABLE 3	THIRD
	Z	0	0	0	0	0	0	0	0	0	0	0	0		
	Y	497	420	350	288	232	185	144	111	85	67	56	52		
Z	-1	-5	-10	-13	-16	-19	-22	-24	-25	-26	-27	-27			
CABLE 1	Y	121	109	98	88	80	72	66	61	57	54	53	52	CABLE 1	SECOND
	Z	1	5	10	13	16	19	22	24	25	26	27	27		

NOTES:

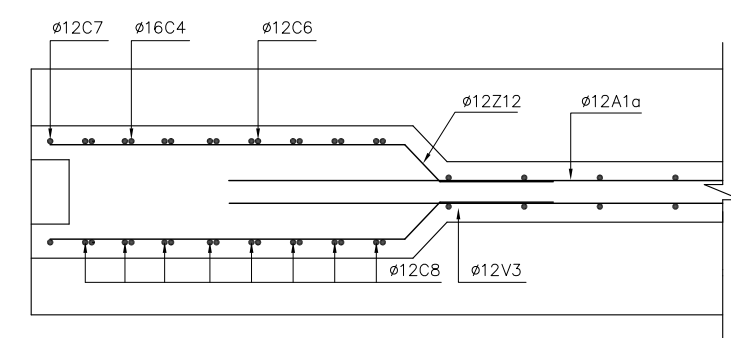
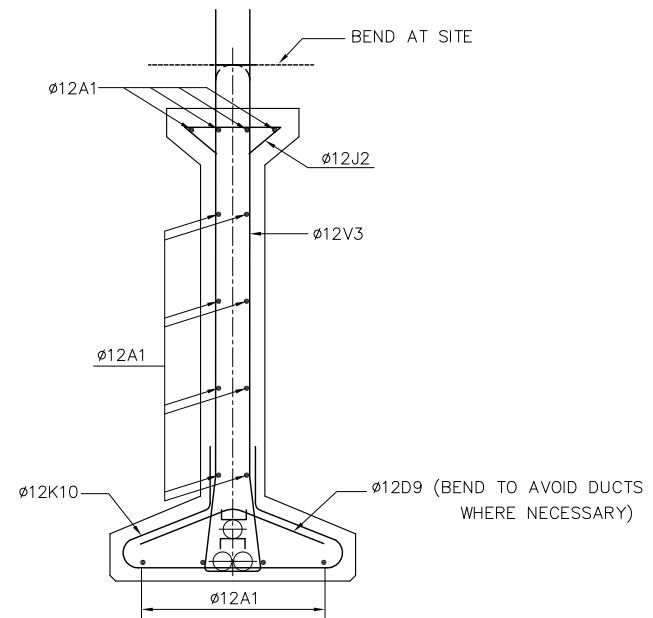
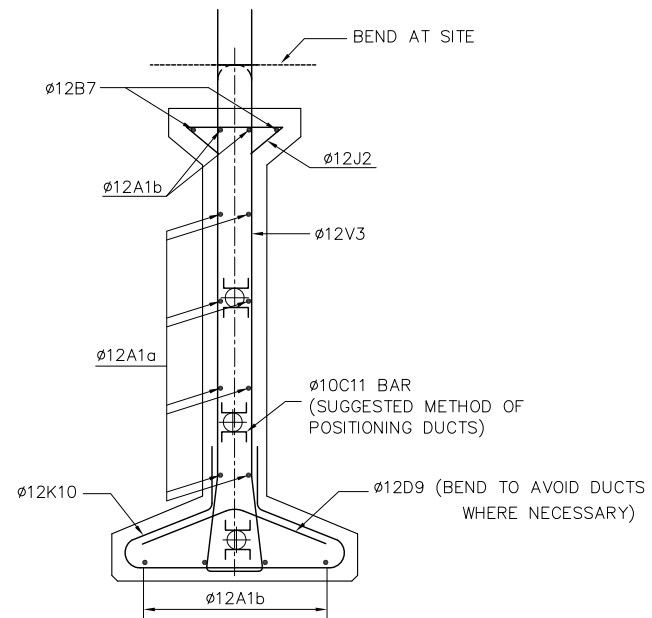
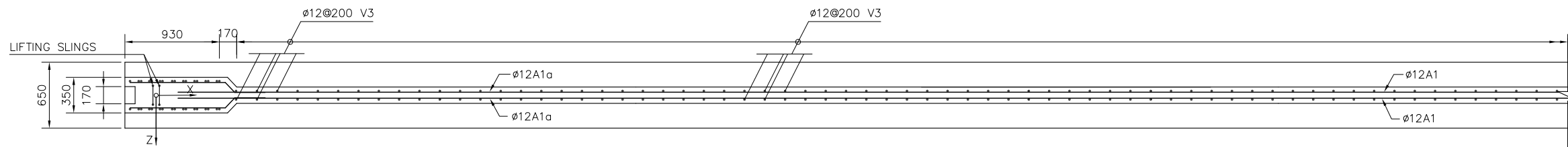
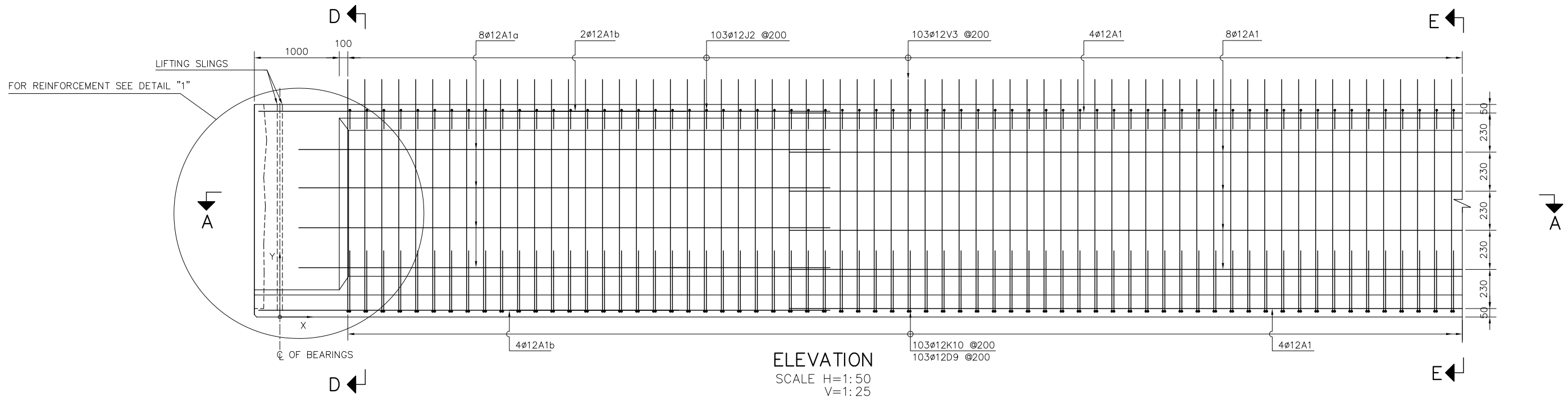
- X AND Z CO-ORDINATES ARE ON DUCT  $\phi$   
 Y CO-ORDINATE IS TO UNDERSIDE OF DUCT
- ALL DIMENSIONS ARE IN mm.
  - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRW.No. BDG-07
  - CONCRETE
    - ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITION OF AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.
    - CONCRETE SHALL BE GRADE 40MPa. MAXIMUM SIZE OF AGGREGATE SHALL BE 20 mm. MAXIMUM SLUMP SHALL BE 80 mm. OR AS APPROVED BY THE ENGINEER.
    - THE USE OF BLENDED CEMENTS OR CHEMICAL ADMIXTURES WILL NOT BE PERMITTED WITHOUT THE APPROVAL OF THE ENGINEER.
    - THE TOP SURFACE OF ALL BEAMS SHALL BE ROUGHENED TRANSVERSELY WITH NAIL BRUSH OR AS APPROVED BY THE ENGINEER, 5 mm. INDENTATION.
  - REINFORCEMENT
    - REINFORCEMENT SHALL BE DEFORMED HIGH TENSILE BARS WITH A GUARANTEED YIELD STRESS OF 420 MPa
    - CLEAR COVER SHALL BE 25 mm. TO THE WEB SURFACE AND 40 mm. TO ALL OTHER EXPOSED SURFACES UNLESS NOTED
    - LAP SPLICES SHALL BE MADE IN POSITION AND TO THE DIMENSIONS SHOWN. WHERE NOT SHOWN, SPLICES SHALL BE FOLLOW AASHTO LRFD BRIDGE DESIGN SPECIFICATION-THIRD EDITION 2004. WELDING OF REINFORCEMENT WILL NOT BE PERMITTED.
  - PRESTRESSING
    - REFER TO THE PRESTRESSING CONSTRUCTION MANUAL FOR DETAILS.
    - EACH CABLE SHALL COMPRISE 7No.12.7 mm. SUPER GRADE STRESS RELIEVED, LOW RELAXATION 7-WIRE STRAND ENCLOSED IN 48 mm. I.D. BRIGHT METAL THICK-WALLED FLEXIBLE DUCTS.
    - EACH STRAND SHALL HAVE A NOMINAL AREA OF 98.7 mm. AND A MINIMUM BREAKING LOAD OF 184 KN
    - MINIMUM COMPRESSIVE STRENGTH OF CONCRETE CYLINDER SHALL BE  $\geq 80\%$  FOR GRADE CONCRETE 40 MPa
    - EACH STRAND SHALL BE STRESSED TO 150KN IMMEDIATELY PRIOR TO LOCKOFF.
    - ON COMPLETION OF STRESSING AND GROUTING THE LIVE END ANCHORAGES SHALL BE COVERED WITH GRADE 30 MPa CONCRETE CONSISTING OF 20 MAXIMUM AGGREGATE AND HAVING A 80 mm. MAXIMUM SLUMP
  - EXPECTED ELONGATION OF STRAND AT 150KN WHEN JACKED FROM ONE END OF 161  $\pm 8$  mm. WHEN JACKING FROM BOTH ENDS HALF OF THIS ELONGATION IS EXPECTED AT EACH END.
  - HANDLING AND ERECTION
    - BEAMS SHALL ONLY BE LIFTED BY THE CAST-IN SLINGS PROVIDED.
    - BEAMS SHALL AT ALL TIMES REMAIN IN THE UP-RIGHT POSITION WITH THE SOFFITS NO MORE THAN 5' OFF HORIZONTAL.
    - THE BEAMS SHALL ONLY BE SUPPORTED WITHIN 300 mm. OF THE BEARING CENTRELINE.
    - CARE SHALL BE TAKEN TO AVOID EXCESSIVE VIBRATIONS DURING LIFTING. HANDLING AND TRANSPORTING.



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 LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
 CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
 NAM HOUM BRIDGE  
 ARRANGEMENT OF PC CABLE

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BAC-08
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



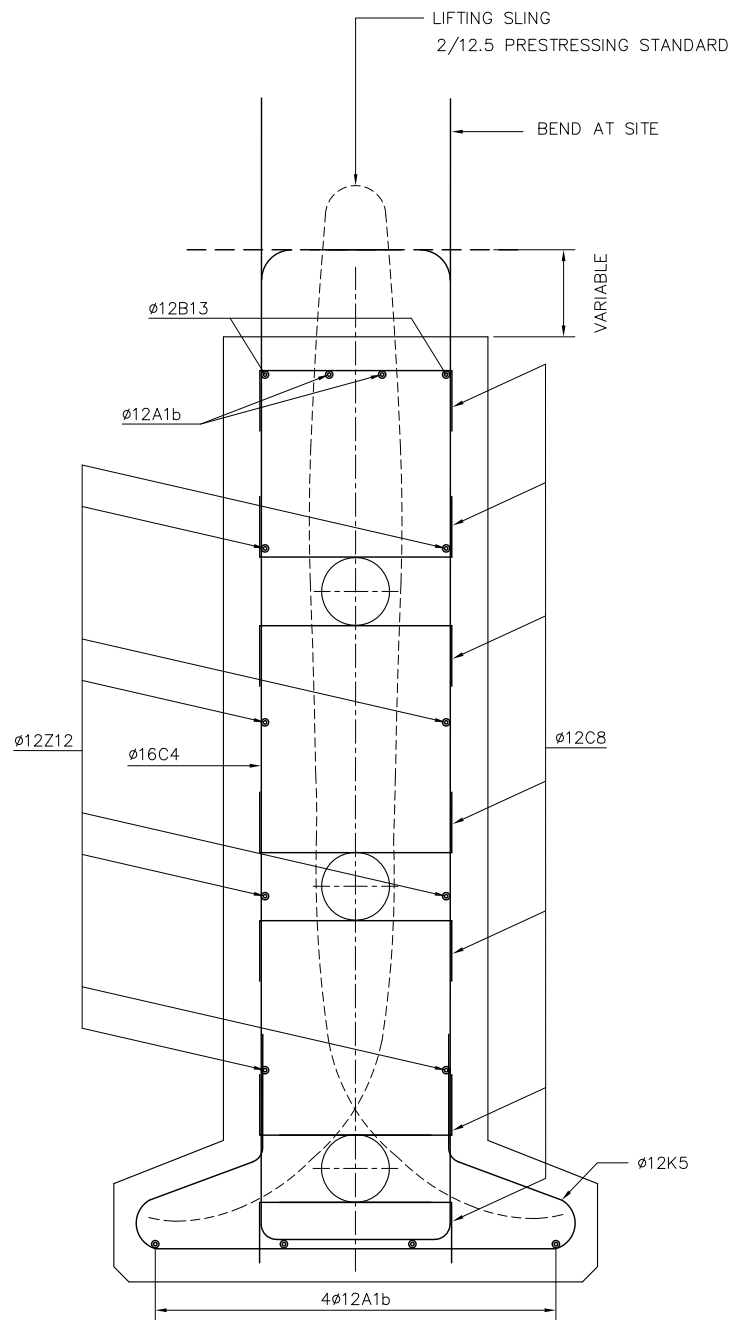
- NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS.
  2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DWG. No. BSM-10.



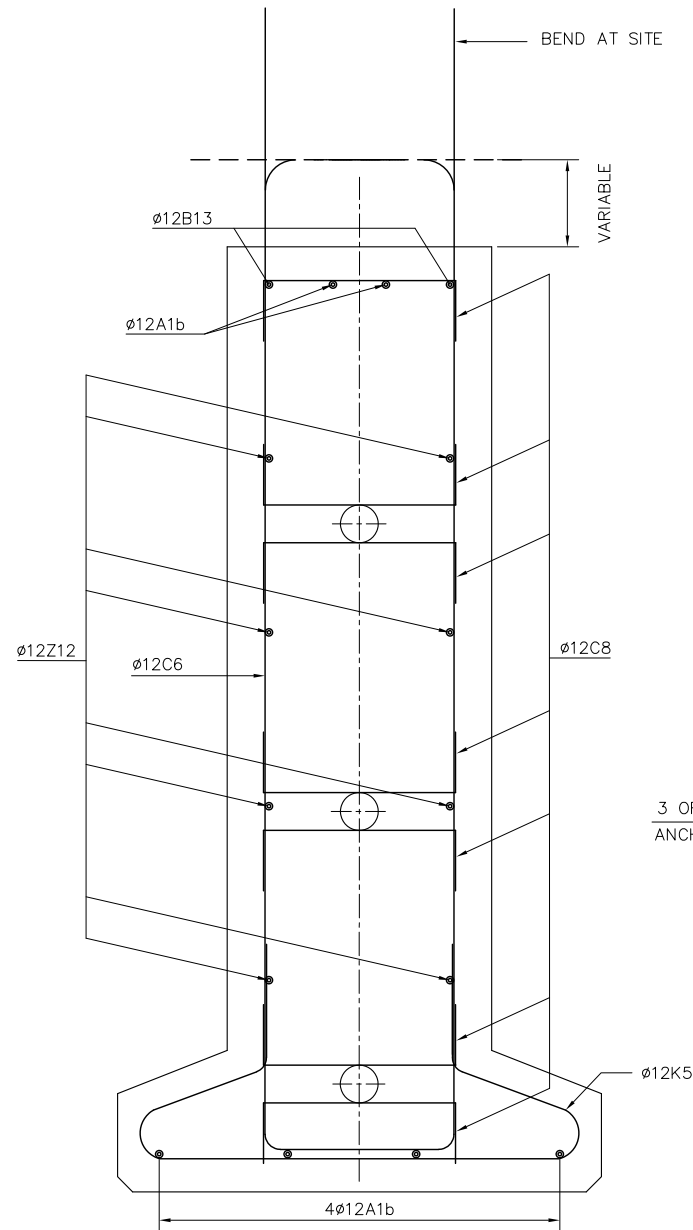
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LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
NAM HOUM BRIDGE  
DETAIL OF LOCATION STEEL MESH  
(SHEET 1 OF 2)

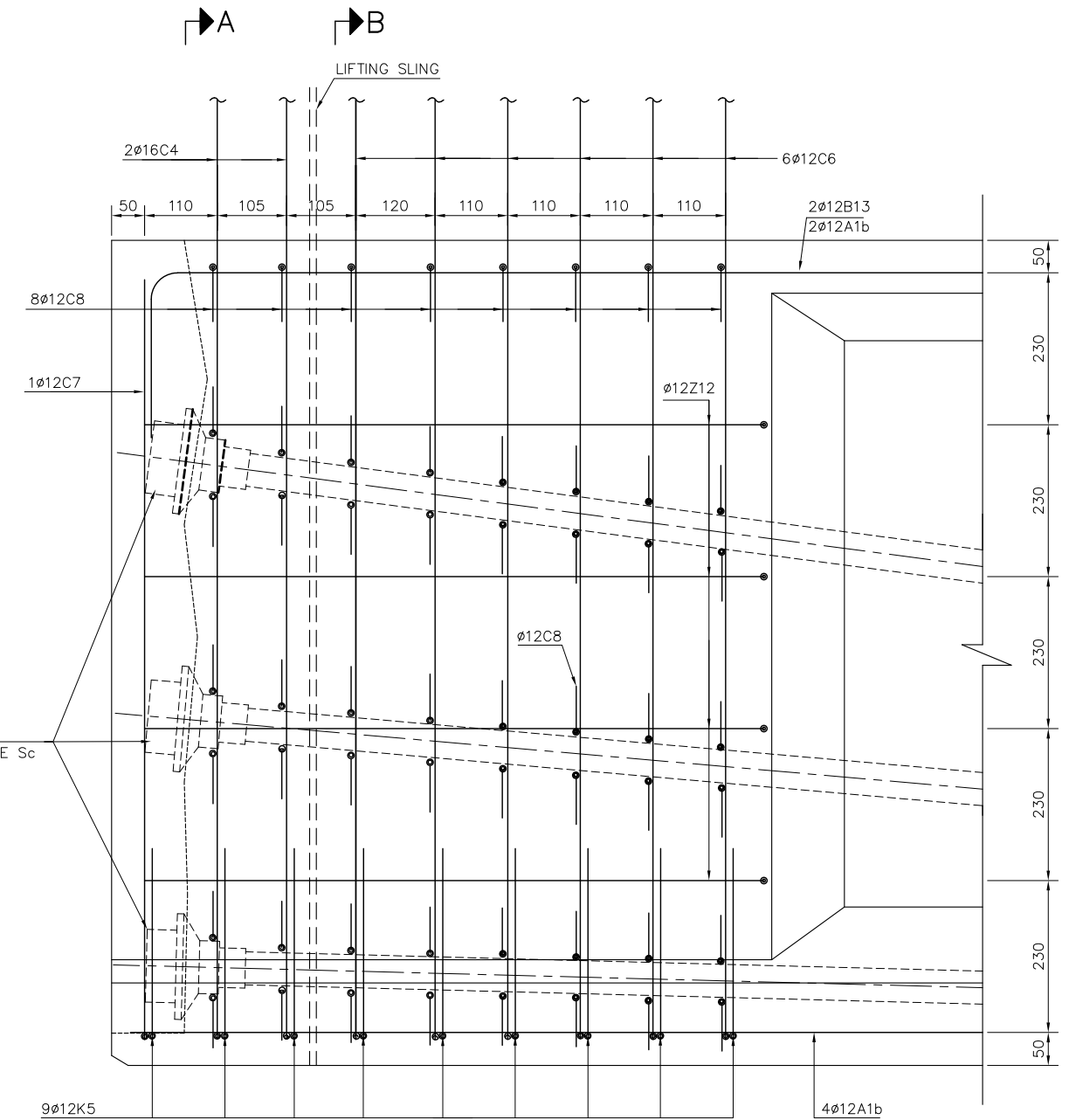
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				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BSM-09
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



SECTION A-A  
SCALE 1:10



SECTION B-B  
SCALE 1:10



DETAIL "1"  
SCALE 1:10

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. ALL REINFORCEMENT BARS SHALL BE GRADE 60 (GRADE 420) IN ACCORDANCE WITH AASHTO M31M/31M,  $f_y=420$  MPa.
3. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS = 50mm.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
NAM HOUM BRIDGE  
DETAIL OF LOCATION STEEL MESH  
(SHEET 2 OF 2)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
			DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
			CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BSM-10
			APPROVED	Mr.Vandy VORASACK		SCALE: 1:10

TABLE OF BAR ARRANGEMENT FOR ONE GIRDER

SHAPE OF BAR	DIAMETER (mm)	LENGTH OF BAR (mm)	QUANTITY	TOTAL LENGTH (m)	SIZE OF BENDING (mm)				SPACE (mm)	REMARK	A	B
					a	b	c	d				
A1	12	10000	16	160.00	10000				-			
A1a	12	6050	8x2=16	96.80	6050				230			
A1b	12	6750	6x2=12	81.00	6750				-			
J2	12	470	103	48.41	250	110x2			200			
V3	12	3450	103	355.35	150	250x2	1400x2		200			
C4	16	3550	2x2=4	14.20	1650	250	1650		105			
K5	12	1338	9x2=18	24.08	580	150x2	165x2	64x2	-			
C6	12	3550	6x2=12	42.60	1650	250	1650		-			
C7	12	2550	1x2=2	5.10	1150	250	1150		-			
C8	12	550	56x2=112	61.60	150	250	150		-			
D9	12	550	103	56.65	275	275			-			
K10	12	1538	103	158.41	580	150x2	265x2	64x2	200			
C11	10	300	126	37.80	100	100	100		-			
Z12	12	1380	8x2=16	22.08	940	140	300		230			
B13	12	7110	2x2=4	28.24	6750	360			-			

RADIUS OF BAR BENDING	
DIAMETRE OF BARS (mm)	RADIUS (mm)
10	35
12	42
16	56

SUMMARY QUANTITIES FOR ONE GIRDER

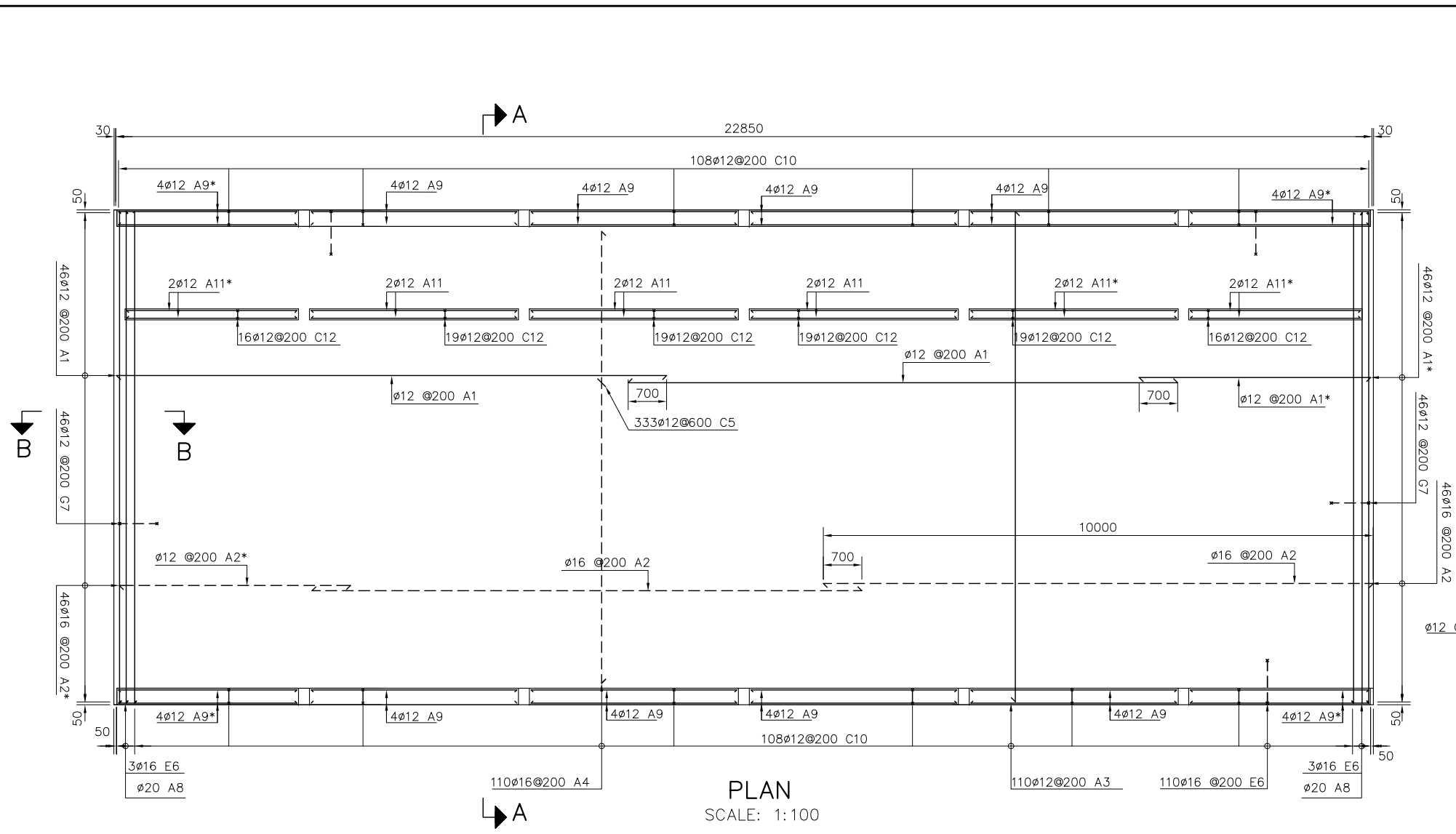
NAME OF STRUCTURE	ITEMS	UNITS	QUANTITIES			
			Ø10	Ø12	Ø16	TOTAL
GIRDER 22m SPAN	LENGTH OF BARS	m	37.80	1140.52	14.20	1192.52
	WEIGHT OF BARS	Kg	23.31	1012.57	22.41	1058.29
TOTAL	REINFORCEMENT OF GIRDER	Kg				1058.29
	CONCRETE GRADE 40 MPa	m3				7.50
	CABLES	Kg				368.33



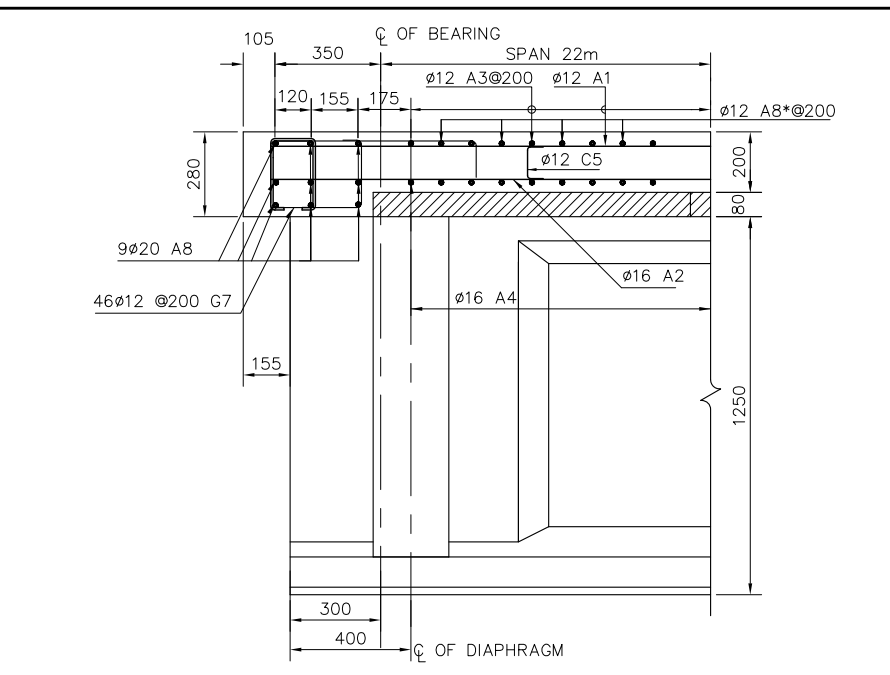
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LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
NAM HOUM BRIDGE  
BAR ARRANGEMENT OF GIRDER

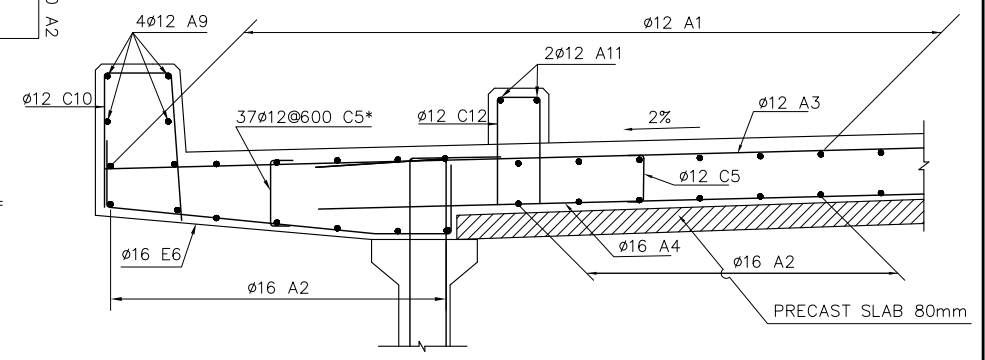
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE:
				DESIGNED	Mr.Phonepasong SENSONGKHAM	SD-262-17
				CHECKED	Mr.Khamphone SORPHABMIXAY	DATE: April, 2018
				APPROVED	Mr.Vandy VORASACK	DRW No. BBA-11
						SCALE: AS SHOWN



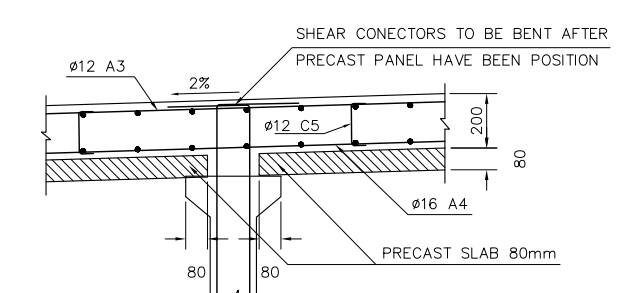
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SCALE: 1:100



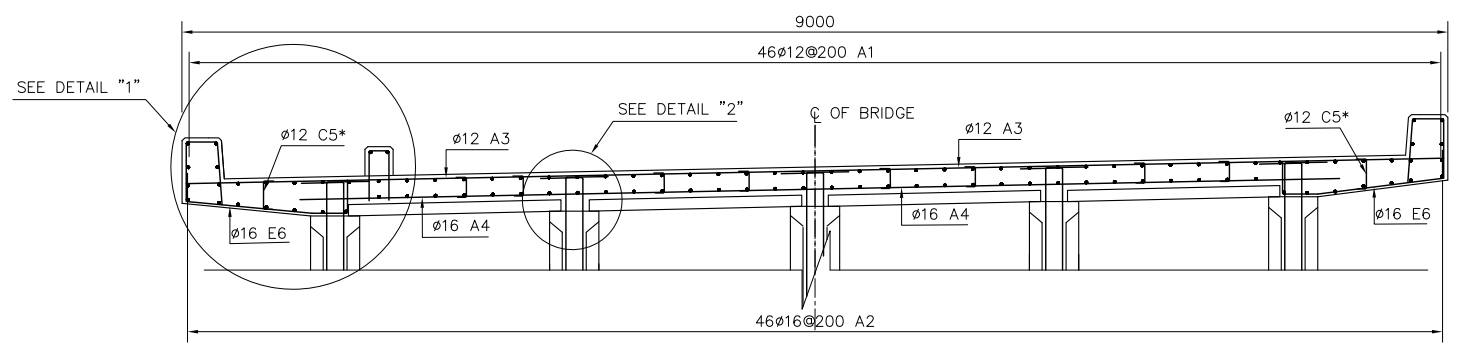
SECTION B-B  
SCALE: 1:25



SEE DETAIL "1"  
SCALE: 1:25



SEE DETAIL "2"  
SCALE: 1:25



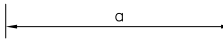
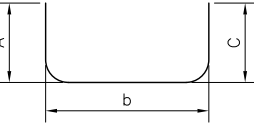
SECTION A-A  
SCALE: 1:50

NOTES:

1. ALL DIMENSION ARE IN MILLIMETERS.
2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS  
- FOR TOP OF DECK 30 mm  
- FOR BOTTOM OF DECK 25 mm
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No. BDS-06.

<p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	NAM HOUM BRIDGE					CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBA-12
	BAR ARRANGEMENT OF DECK SLAB, CURB AND PARAPET					APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN

TABLE OF REINFORCEMENT FOR SUPER STRCUTURE

	SHAPE OF BAR	No	DIAMETER (mm)	LENGTH OF BAR (mm)	QUANTITY	TOTAL LENGTH (m)	SIZE OF BENDING (mm)						SPACE @ (mm)	REMARK	A 	C 
							a	b	c	d	e	f				
DECK SLAB	A	1	12	10000	92	920.00	10000						200			
	A	1*	12	4250	46	195.50	4250						200			
	A	2	16	10000	92	920.00	10000						200			
	A	2*	16	4250	46	195.50	4250						200			
	A	3	12	8950	110	984.50	8950						200			
	A	4	16	7400	110	814.00	7400						200			
	C	5	12	450	333	149.85	150	150	150				600			
	C	5*	12	500	74	37	150	200	150				600			
	E	6	16	1350	220	297	250	850	250	250			200			
	G	7	12	1070	92	98.44	150	700	220	300	220	100	200			
	A	8	12	8950	18	161.1	8950						200			
	A	8*	20	8950	18	161.1	8950						200			
CURB	A	9	12	3800	32	121.6	3800									
	A	9*	12	3310	16	53.0	3310									
	C	10	12	1150	216	248.4	450	220	480			200				
PARAPET	A	11	12	3800	8	30.4	3800									
	A	11*	12	3110	4	12.4	3110									
	C	12	12	780	108	84.2	320	140	320			200				

RADIUS FOR BENDING OF BAR	
DIAMETRE OF BARS (mm)	RADIUS (mm)
10	35
12	42
16	56
20	100
25	125
32	224



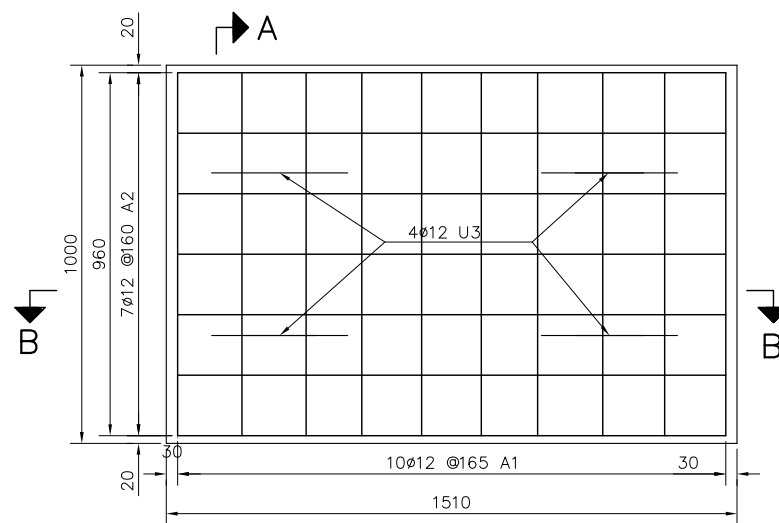
 ລາວ ຫົວໜ້າ ທາງສາຍພົວ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
	CONTRACT 1 : SIKETH JUNCTION - BAN SONGPEUAY					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	NAM HOUM BRIDGE					CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BTB-13
	TABLE OF BAR ARRANGEMENT FOR DECK SLAB, CURB AND PARAPET (SHEET 1 OF 2)					APPROVED	Mr.Vandy VORASACK	SCALE: -

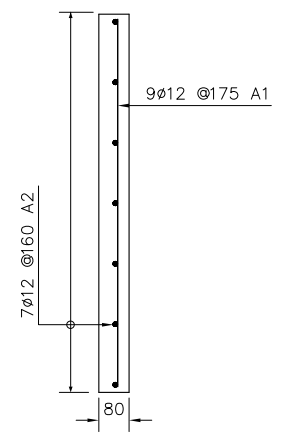
TABLE OF BAR ARRANGEMENT OF DECK SLAB, CURB AND PARAPET (ONE SIDE)

No.	NAME OF STRUCTURE	ITEM	UNITS	QUANTITIES			
				Ø12	Ø16	Ø16	TOTAL (Kg)
1	DECK SLAB	LENGTH OF BARS	m	2546.39	2226.50	161.10	4,933.99
		WEIGHT OF BARS	Kg	2260.721	3514.165	397.297	6,172.18
		CONCRETE GRADE 30 MPa.	m <sup>3</sup>	44.22			
2	CURB	LENGTH OF BARS	m	127.08	-	-	127.08
		WEIGHT OF BARS	Kg	112.82	-	-	112.82
		CONCRETE GRADE 30 MPa.	m <sup>3</sup>	0.92			
3	PARAPET	LENGTH OF BARS	m	422.96	-	-	422.96
		WEIGHT OF BARS	Kg	375.51	-	-	375.51
		CONCRETE GRADE 30 MPa.	m <sup>3</sup>	3.94			

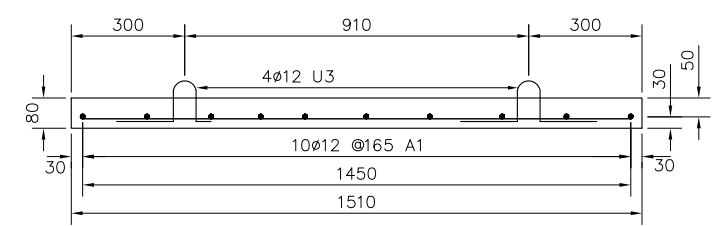
 <p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	NAM HOUM BRIDGE					CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BTB-14
	TABLE OF BAR ARRANGEMENT FOR DECK SLAB, CURB AND PARAPET (SHEET 2 OF 2)					APPROVED	Mr.Vandy VORASACK	SCALE: -



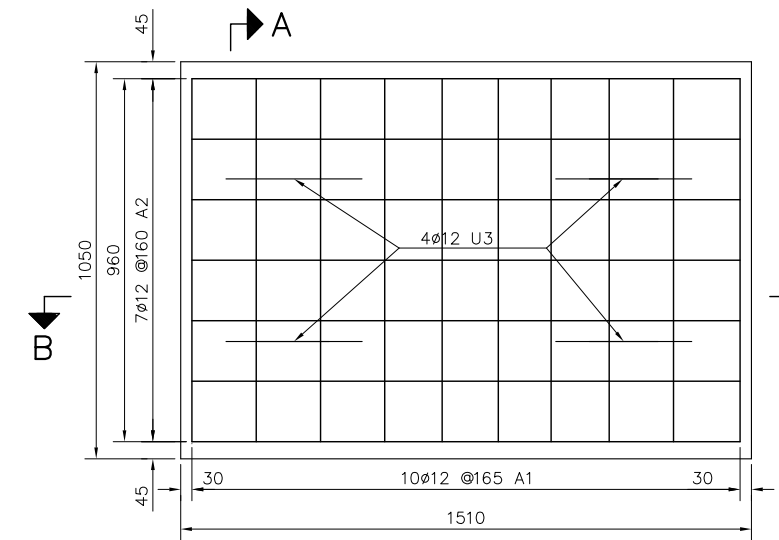
PLAN  
SCALE: 1:20



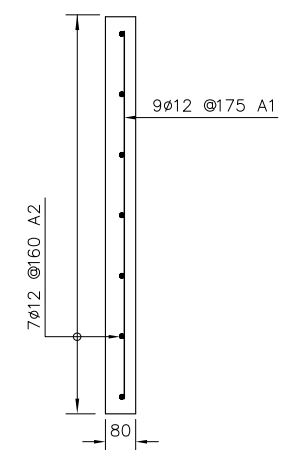
SECTION A-A  
SCALE 1:20



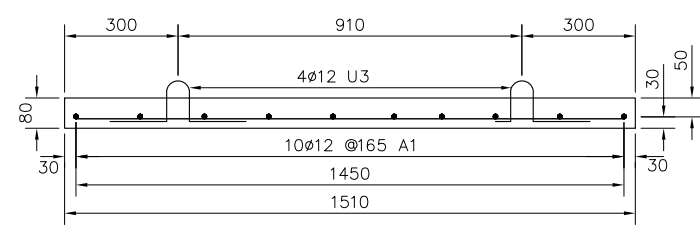
SECTION B-B  
SCALE 1:20



PLAN  
SCALE: 1:20



SECTION A-A  
SCALE 1:20



SECTION B-B  
SCALE 1:20

TABLE OF BAR REINFORCEMENT FOR PRECAST SLAB (ONE SIDE)

SHAPE OF BAR	No.	DIAMETER (mm)	LENGTH OF BAR (mm)	QUANTITY	TOTAL LENGTH (m)	SIZE OF BENDING (mm)			SPACE @ (mm)	REMARK
						a	b	c		
A	1	12	960	10x4x22=684	844.8	960			165	A
A	2	12	1450	7x4x22=532	893.2	1450			160	U
U	3	12	550	4x4x22=304	193.6	100x2	84	150x2		

SUMMARY OF QUANTITIES FOR PRECAST SLAB (ONE SIDE)

No.	NAME OF STRUCTURE	ITEMS	QUANTITIES		CONCRETE 30 MPa (m3)
			φ12	φ16	
1	PRECAST SLAB	LENGTH OF BARS (m)	1,931.60	-	10.65
		WEIGHT OF BARS (Kg)	1,714.90	-	

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS.

<p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	NAM HOUM BRIDGE					CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBA-15
	BAR ARRANGEMENT OF PRECAST SLAB					APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN

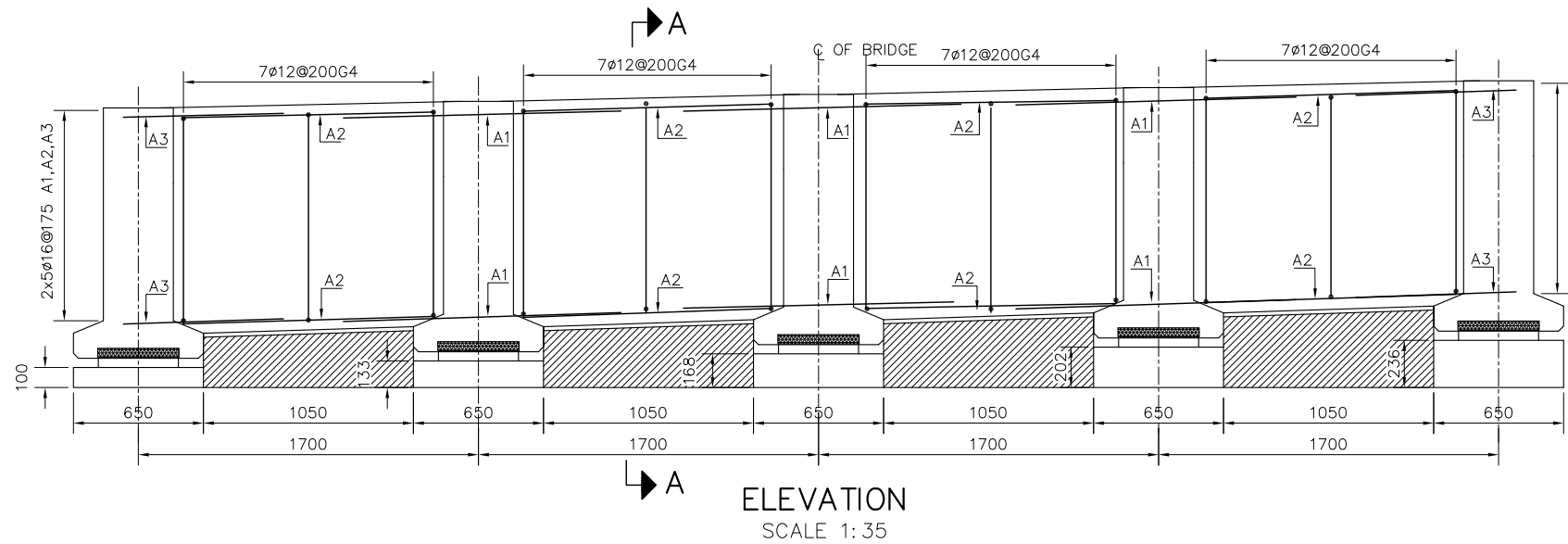
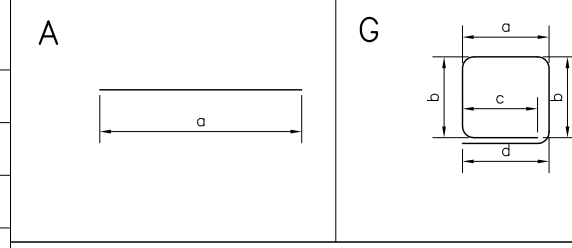


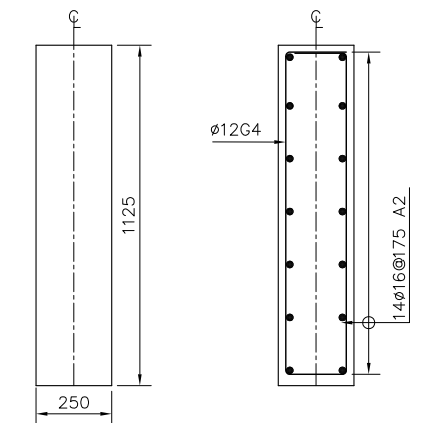
TABLE OF BAR REINFORCEMENT FOR DIAPHRAGM (ONE SIDE)

SHAPE OF BAR	DIAMETER (mm)	LENGTH OF BAR (mm)	QUANTITIES	TOTAL LENGTH (m)	SIZE OF BENDING (mm)				SPACE @ (mm)	REMARK
					a	b	c	d		
A1	16	1350	10x3x2=60	81.00	1350				175	
A2	16	1250	10x4x2=80	100.00	1250				175	
A3	16	750	10x2x2=40	30.00	750				175	
G4	12	2670	7x4x2=56	149.52	190	1065x2=2130	160	190	200	



RADIUS FOR BENDING OF BAR

DIAMETER OF BARS (mm)	RADIUS (mm)
10	35
12	42
16	56
20	100
25	125
32	224



DIAPHRAGM SECTION A-A  
SCALE 1:25

SUMMARY OF QUANTITIES FOR DIAPHRAGM (ONE SIDE)

No	NAME OF STRUCTURE	ITEM	UNITS	QUANTITIES		
				φ12	φ16	TOTAL
1	DIAPHRAGM	LENGTH OF BARS	m	149.52	211.00	360.52
		WEIGHT OF BARS	Kg	132.746	333.029	465.78
		CONCRETE GRADE 35 Mpa	m <sup>3</sup>	2.88		

NOTES:

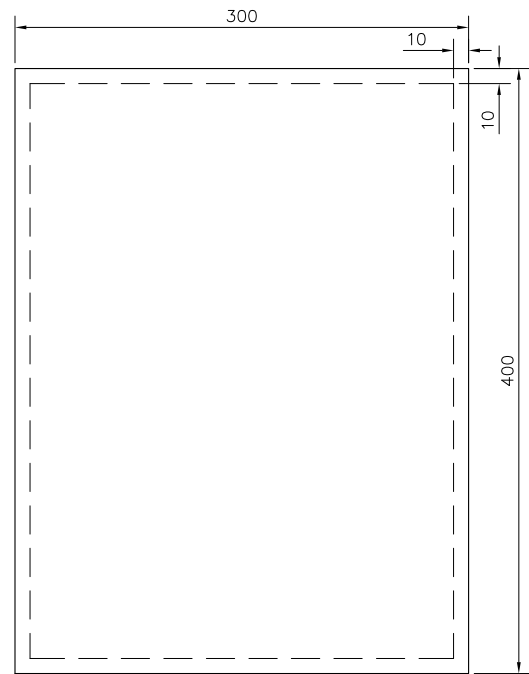
- ALL DIMENSIONS ARE IN MILLIMETERS.
- ALL REINFORCING BARS SHALL BE GRADE 60 (GRADE 420) IN ACCORDANCE WITH AASHTO M31M/M31,  $f_y=420$  MPa.
- CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS=50 mm.



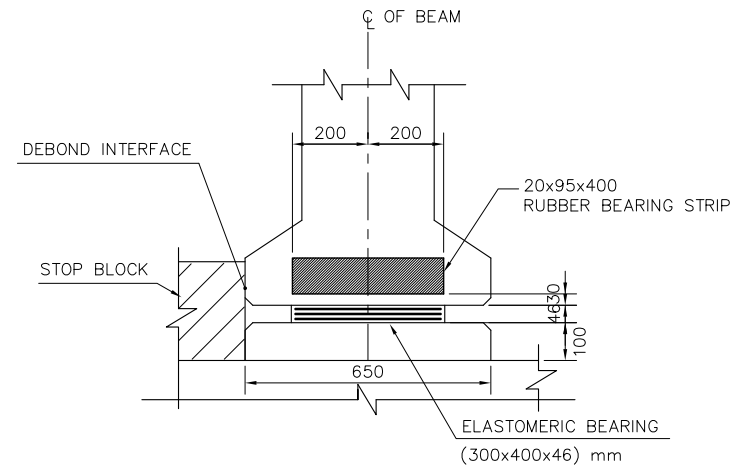
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LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
NAM HOUM BRIDGE  
DETAIL OF DIAPHRAGM

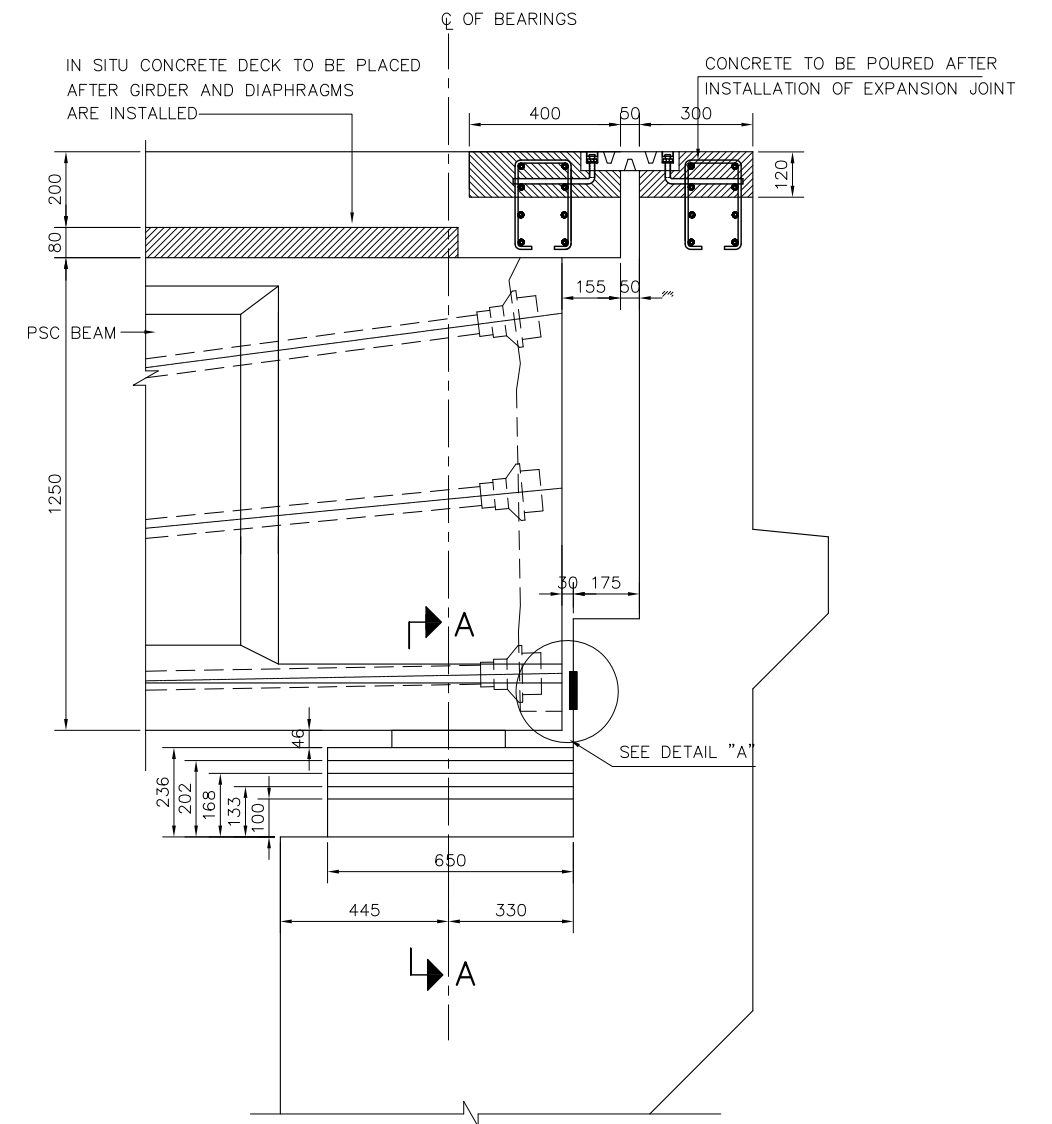
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BDD-16
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:25



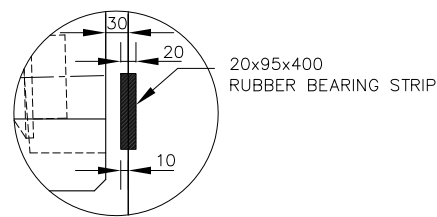
SECTION B-B  
SCALE 1:5



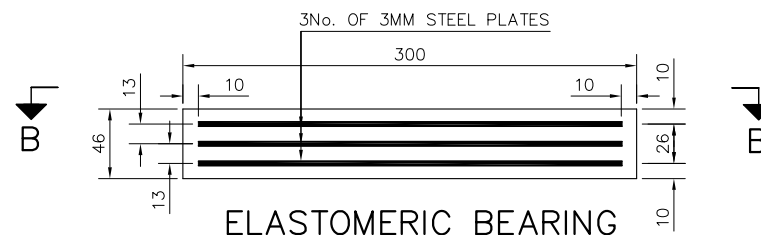
SECTION A-A  
SCALE 1:20



JOINT DETAIL AT ABUTMENT  
SCALE 1:20



DETAIL "A"  
SCALE 1:10



ELASTOMERIC BEARING  
SCALE 1:5

NOTES:

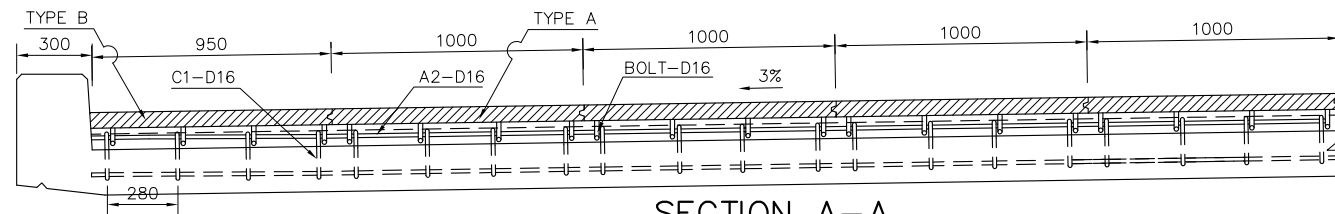
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No. BBD-18.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

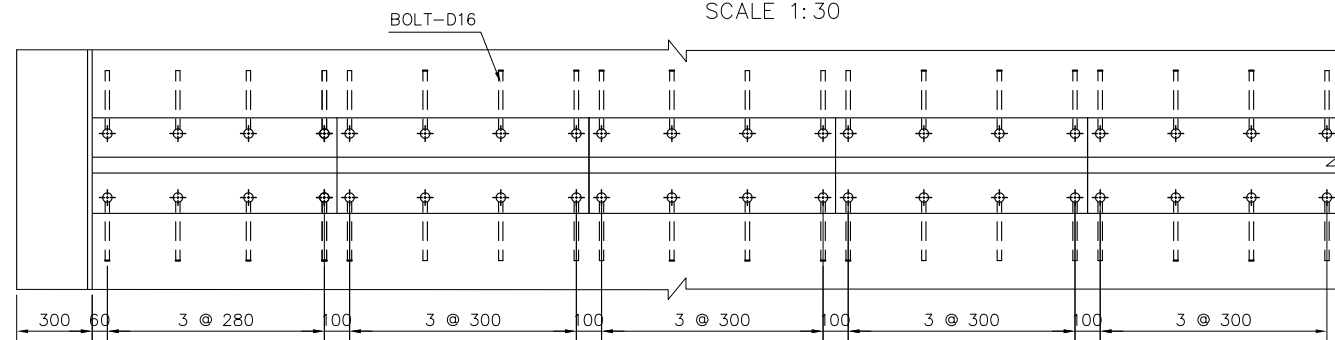
NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
NAM HOUM BRIDGE  
DETAIL OF BEARING AND  
DECK JOINT (SHEET 1 OF 2)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBD-17
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



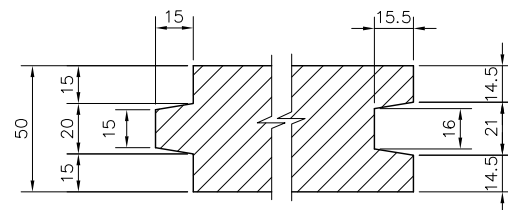
SECTION A-A

SCALE 1:30



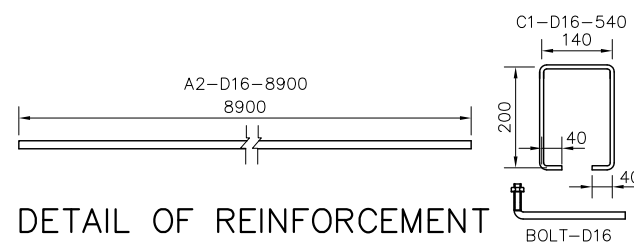
BOLT LAYOUT PLAN

SCALE 1:30



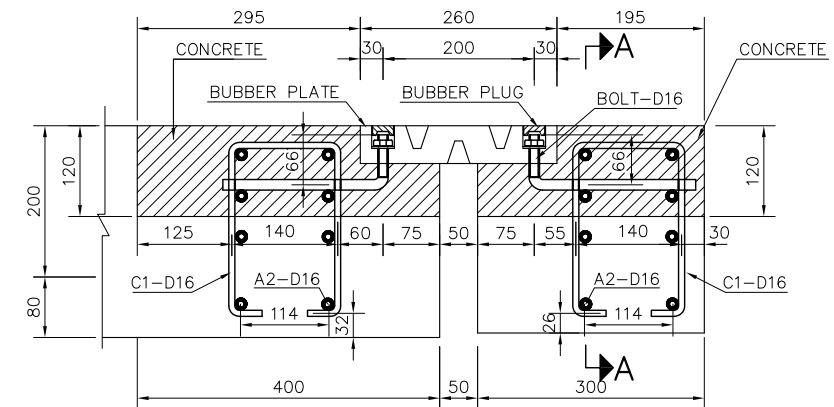
DETAIL "A"

SCALE 1:3



DETAIL OF REINFORCEMENT

SCALE 1:15



DETAIL OF EDGE OF EXPANSION JOINT FOR ABUTMENT

SCALE 1:10

MATERIAL FOR ONE EXPANSION JOINT AT ABUTMENT

FOR ONE EXPANSION JOINT							
BAR MARK	DAI	QUANTITY	LENGTH	TOTAL LENGTH	WEIGHT UNIT	TOTAL WEIGHT	CONCRETE
	mm	pcs	mm	m	kg/m	kg	30 MPa (m3)
C1	16	80	620	49.60	1.578	78.27	0.73
A2	16	8	8900	71.20	1.578	113.62	
BOLT	16	80	300	24.00	1.578	37.87	
TOTAL OF REINFORCEMENT (kg)						229.76	
RUBBER PLATE: 50x260x1000 (mm) OR SIMILAR = 8.9 m							
RUBBER PLATE: 50x260x950 (mm) OR SIMILAR = 1.90 m							

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETER.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING No. BBD-17.

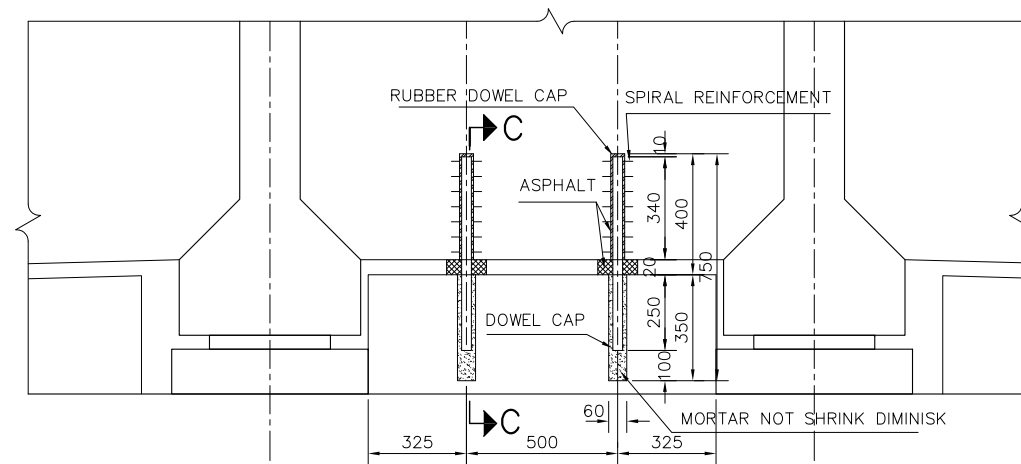


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LAO TRANSPORT ENGINEERING CONSULTANT

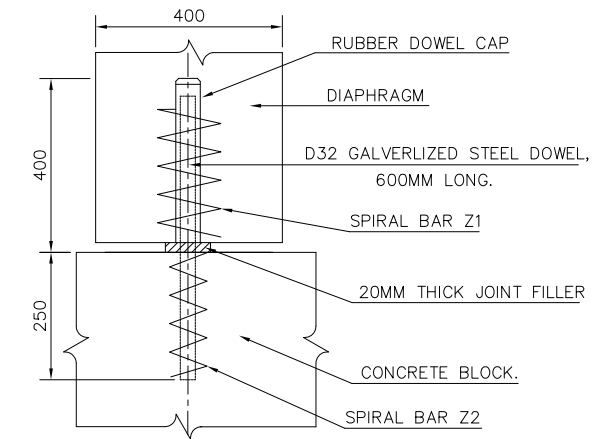
NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY

NAM HOUM BRIDGE  
DETAIL OF BEARING AND  
DECK JOINT (SHEET 2 OF 2)

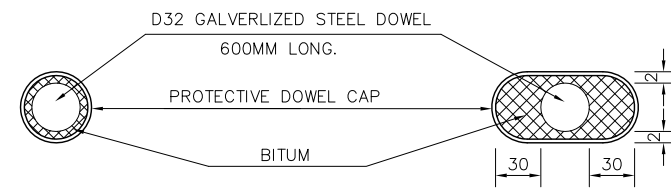
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE:
				DESIGNED	Mr.Phonepasong SENSONGKHAM	SD-262-17
				CHECKED	Mr.Khamphone SORPHABMIXAY	DATE: April, 2018
				APPROVED	Mr.Vandy VORASACK	DRW No. BBD-18
						SCALE: AS SHOWN



DETAIL OF DOWEL  
SCALE 1:25

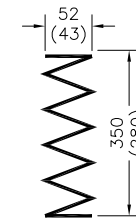


SECTION C-C  
SCALE 1:25

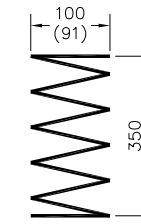


AT FIXED BEARING  
SCALE 1:5

AT MOVABLE BEARING  
SCALE 1:25



SPIRAL BAR 2  
SCALE 1:20



SPIRAL BAR 1  
SCALE 1:20

TABLE OF CONCRETE AND BAR REINFORCEMENT FOR DOWEL (1/2 SPAN)

ITEM	UNIT	AT MOVABLE BEARING				AT FIXED BEARING			
		DIA (mm)	LENGTH OF BAR (mm)	QUANTITY	WEIGHT (Kg)	DIA (mm)	LENGTH OF BAR (mm)	QUANTITY	WEIGHT (Kg)
D32 GALVERLIZED STEEL DOWEL	Bar	32	600	8	30.34	32	600	8	30.34
SPIRAL REINFORCEMENT	Fiber	10	1000	8	4.94	10	1300	8	6.42
TOTAL					35.28				36.76
RUBBER DOWEL CAP	Each	65Ax450		8		65Ax450		8	

NOTES:

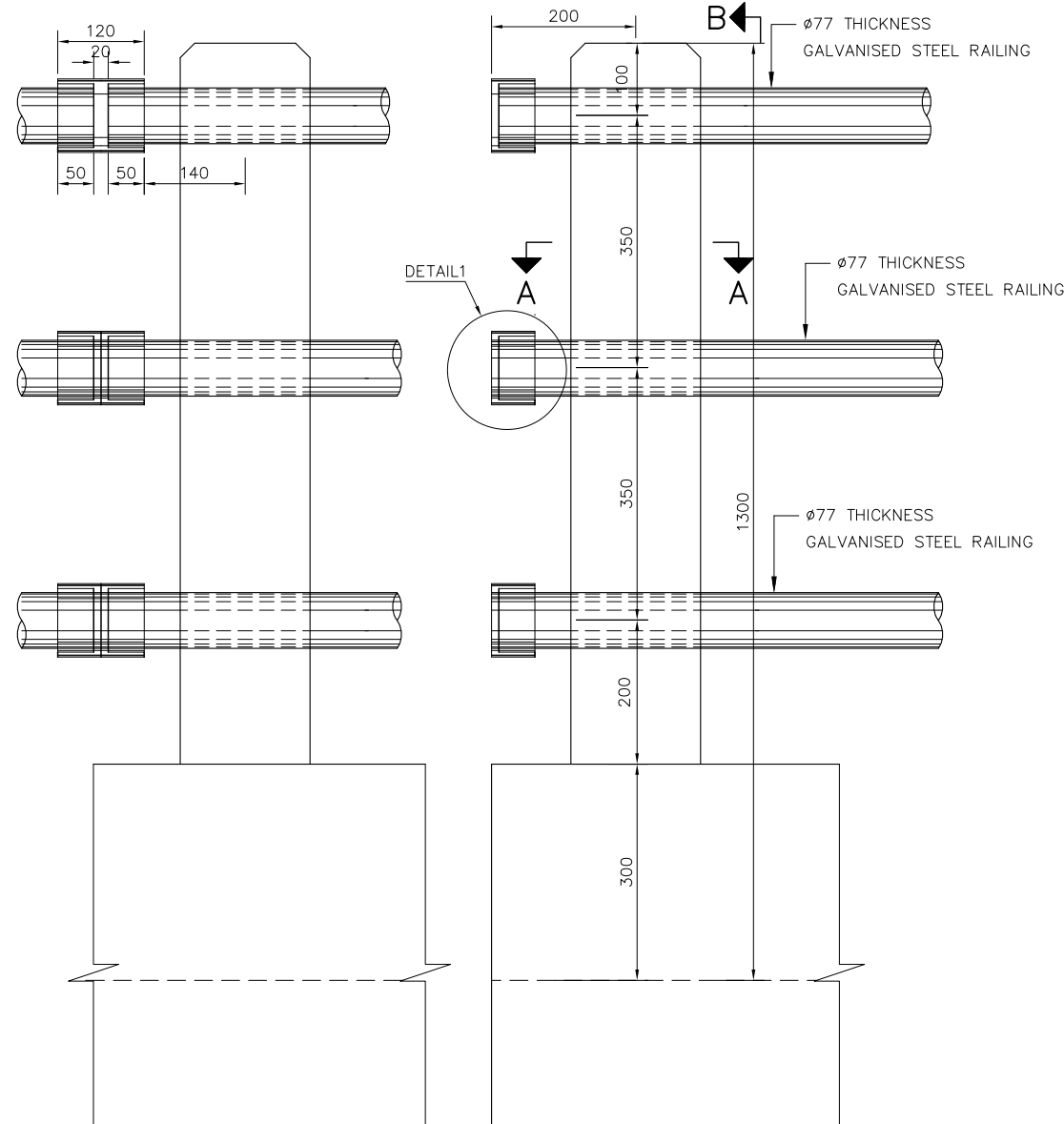
1. BEARINGS: GJZ LAMINATED ELASTOMERIC BEARING WITH MAXIMUMWORKING LOAD 1200 kN.
2. HORIZONTAL GRADIENT OF BEARING PAD WILL BE ADOPTED FOR BEARING'S NORMAL PERFORMANCE.
3. ALL DIMENSIONS ARE IN MILLIMETERS.



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LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
NAM HOUM BRIDGE  
DETAIL OF STEEL DOWEL

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BSD-19
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN

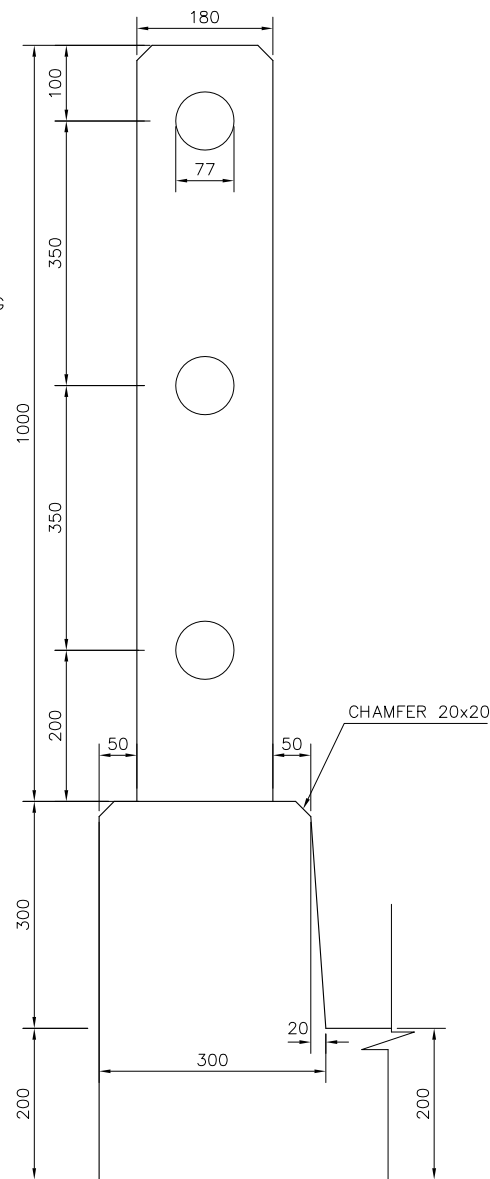


POST DIMENSIONS  
SCALE 1:10  
TABLE OF REINFORCEMENT FOR ONE SIDE

SHAPE OF BAR	No.	DIAMETER (mm)	LENGTH OF BAR (mm)	QUANTITY	TOTAL LENGTH (m)	SIZE OF BENDING (mm)						SPACE @ (mm)	REMARK
						a	b	c	d	e	f		
G	1	12	650	14x36=504	327.60	130	130	130	130	130		100	
B	2	16	1540	4x36=144	221.76	1240	300						

TABLE OF CONCRETE AND BAR REINFORCEMENT FOR ONE SIDE

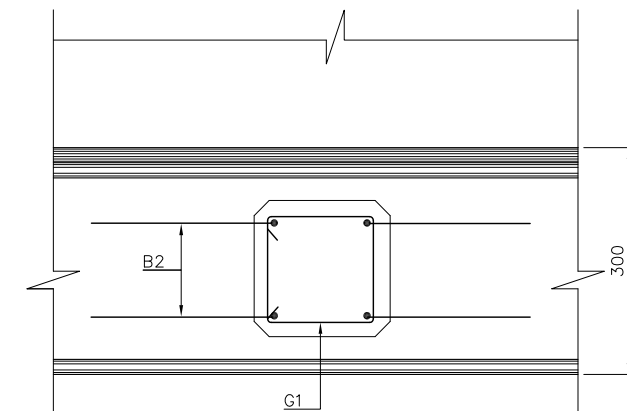
No	NAME OF STRUCTURE	ITEM	UNITS	QUANTITIES		
				ø12	ø16	TOTAL
1	RAILING	LENGTH OF BARS	m	327.60	221.76	549.36
		WEIGHT OF BARS	kg	290.85	350.01	640.86
		CONCRETE GRADE 25MPa.	m <sup>3</sup>	36x0.029=1.04		1.04
		ROUND PIPE	m			169.20



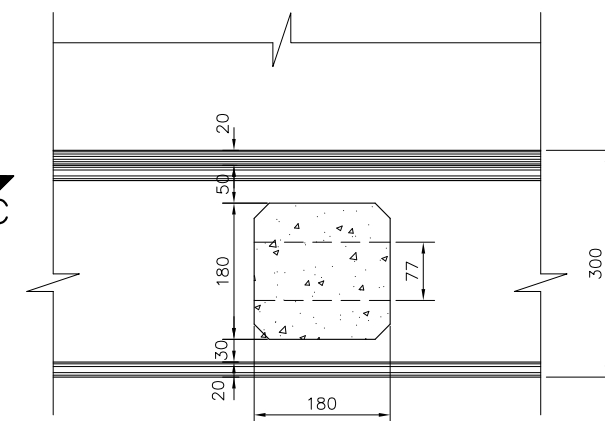
VIEW B-B  
SCALE 1:10

POST REINFORCEMENT  
SCALE 1:10  
FORM OF BENDING

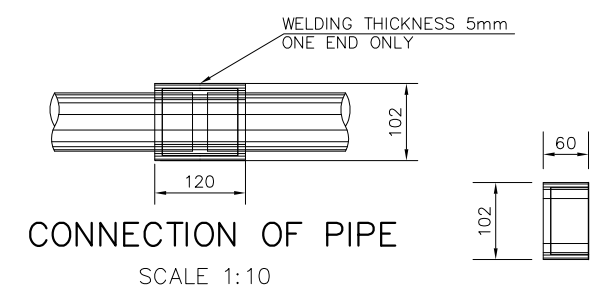
RADIUS FOR BENDING OF BAR	
DIAMETER OF BARS (mm)	RADIUS (mm)
12	12x35 = 420
16	16x35 = 560



SECTION C-C  
SCALE 1:10



SECTION A-A  
SCALE 1:10



CONNECTION OF PIPE  
SCALE 1:10

DETAIL 1  
SCALE 1:10

NOTES:

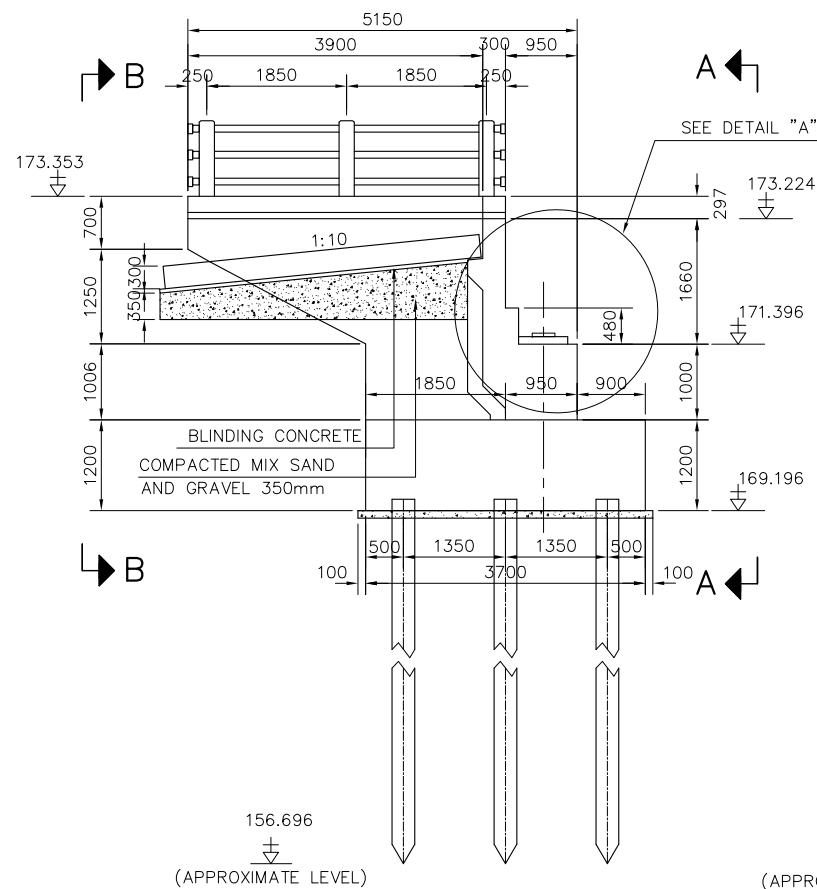
- ALL DIMENSIONS ARE IN MILLIMETERS.
- CLEAR COVER TO REINFORCEMENT TO BE 30 mm.
- STEEL RAILING SHALL BE STRUCTURAL CARBON STEEL IN ACCORDANCE WITH AASHTO M270 GRADE 36.
- RAILINGS SHALL BE HOT-DIP GALVANISED IN ACCORDANCE WITH AASHTO M111.
- ENDS RAILING PANELS SHALL BE SEALED WITH CAPPING PLATES.



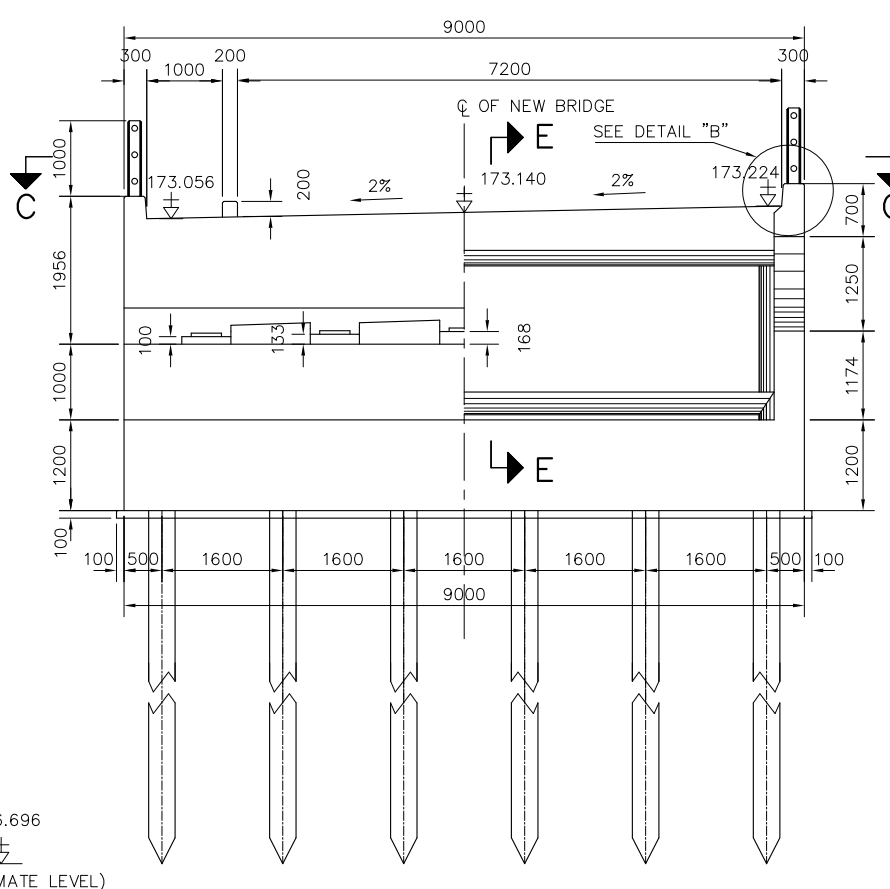
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
NAM HOUM BRIDGE  
DETAIL OF BRIDGE RAILING

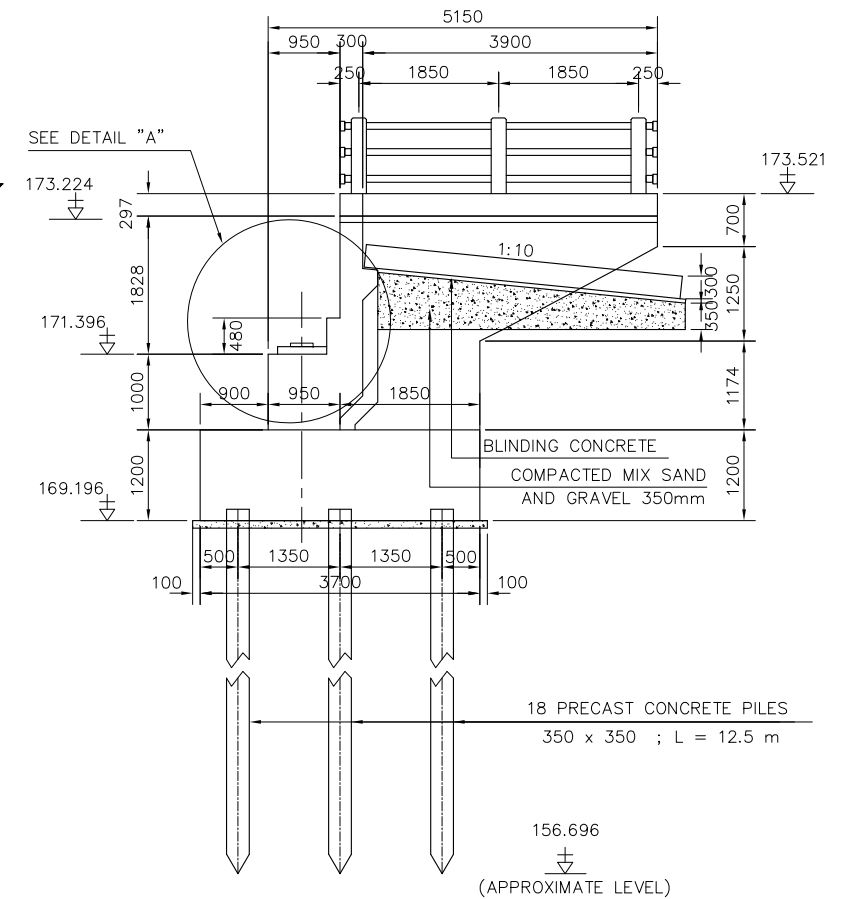
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BDR-20
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



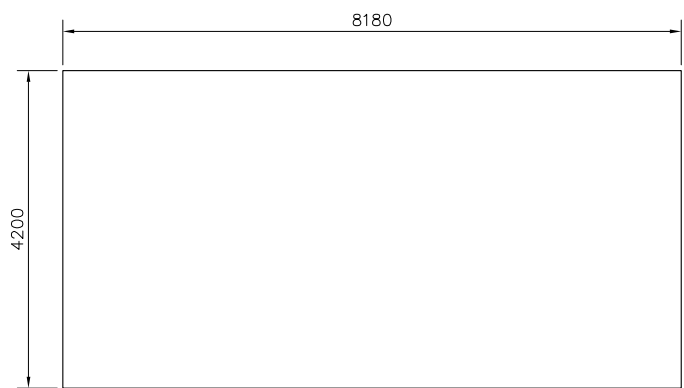
VIEW D-D  
SCALE 1:100



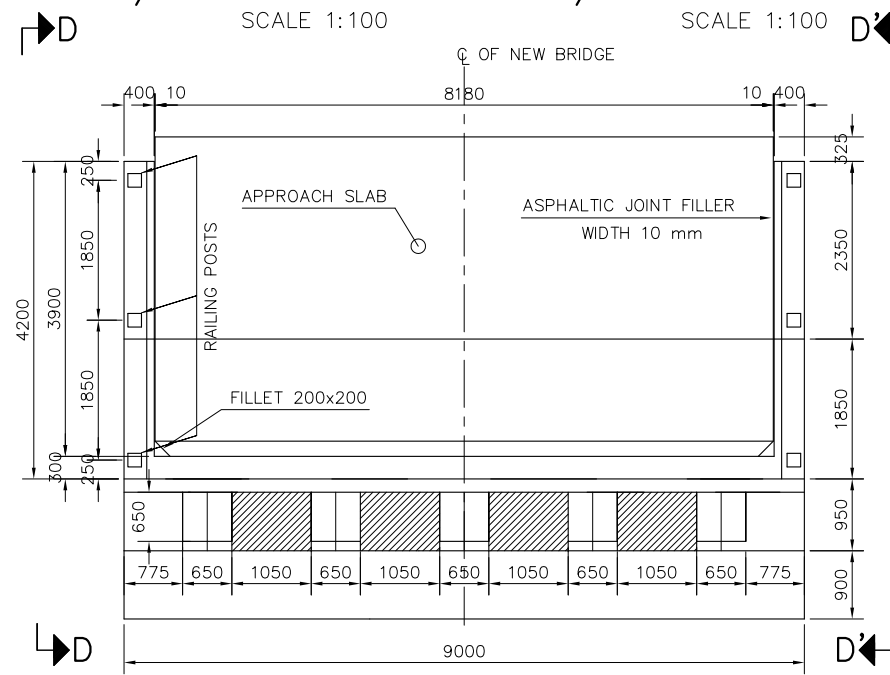
1/2 FRONT VIEW A-A 1/2 BACK VIEW B-B  
SCALE 1:100



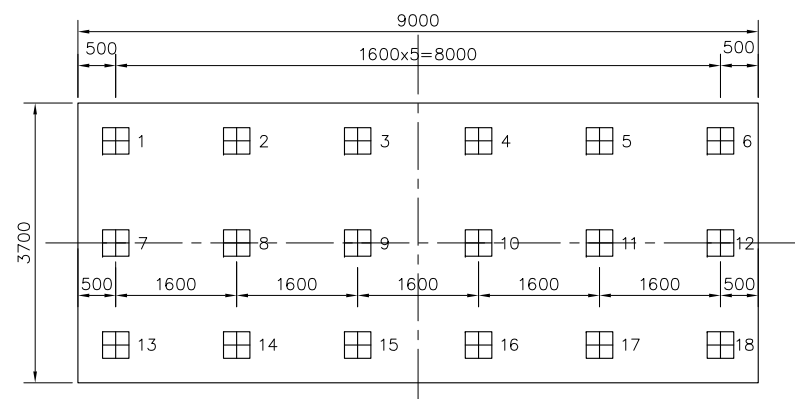
VIEW D'-D'  
SCALE 1:100



APPROACH SLAB  
SCALE 1:100



PLAN C-C  
SCALE 1:100



PILE CAP PLAN  
SCALE 1:100

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS; LEVELS ARE IN METERS.
2. LENGTH OF PILES ARE GIVEN AS A GUIDE ONLY  
ACTUAL LENGTH OF PILES WILL BE DETERMINED  
AT SITE AFTER TEST PILE DRIVING BY THE ENGINEER.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH  
DRAWINGS No. BDA-22, BBA-23, BBA-24, BBA-25, BBA-26 AND BBA-27.
4. PRESTRESSED CONCRETE PILE SHALL BE CONFIRMED TO AASHTO "LRFD BRIDGE  
DESIGN SPECIFICATION" CURRENT EDITION, DIMENSION 350x350 mm AND  
SAFETY LOAD 60 TONS.

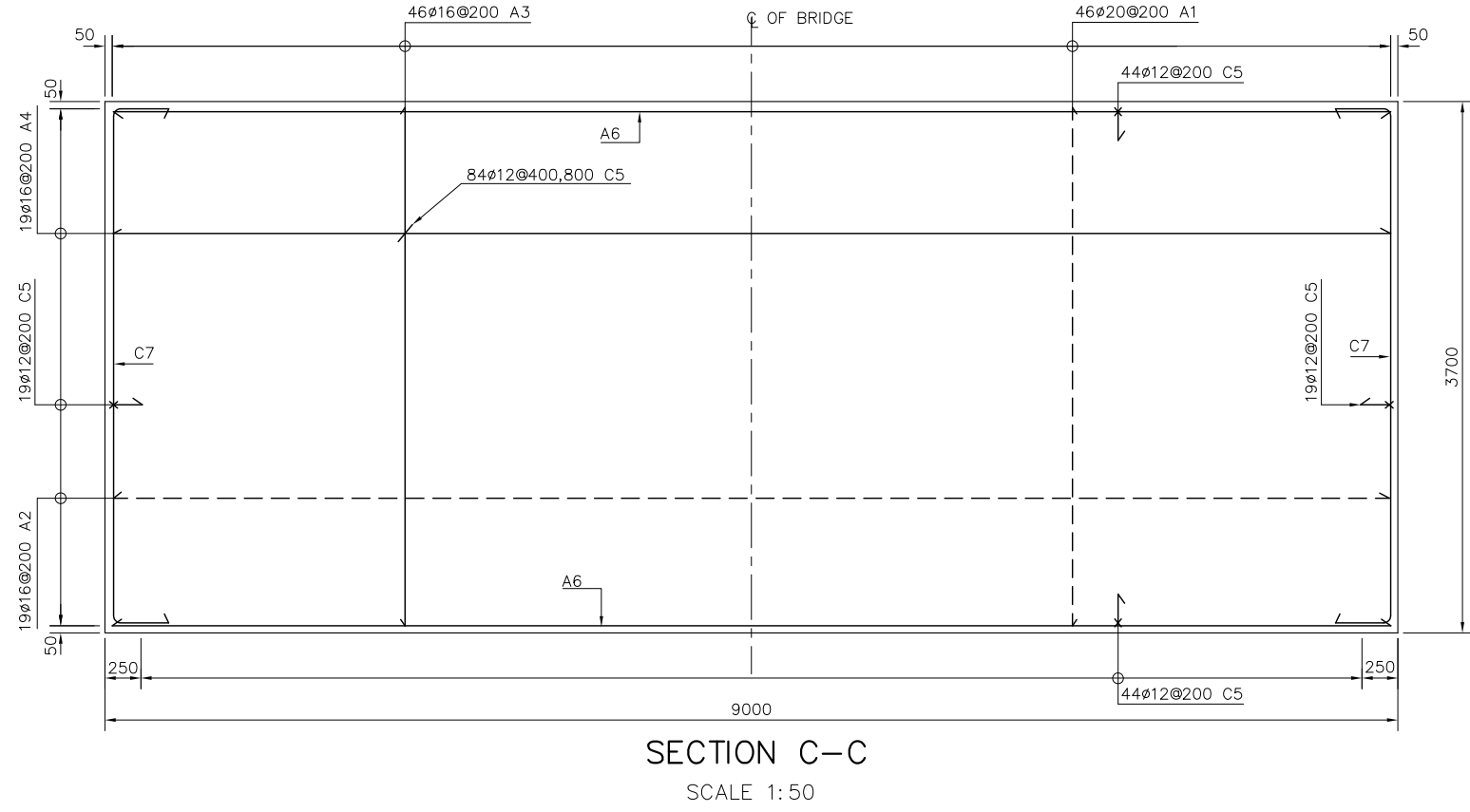
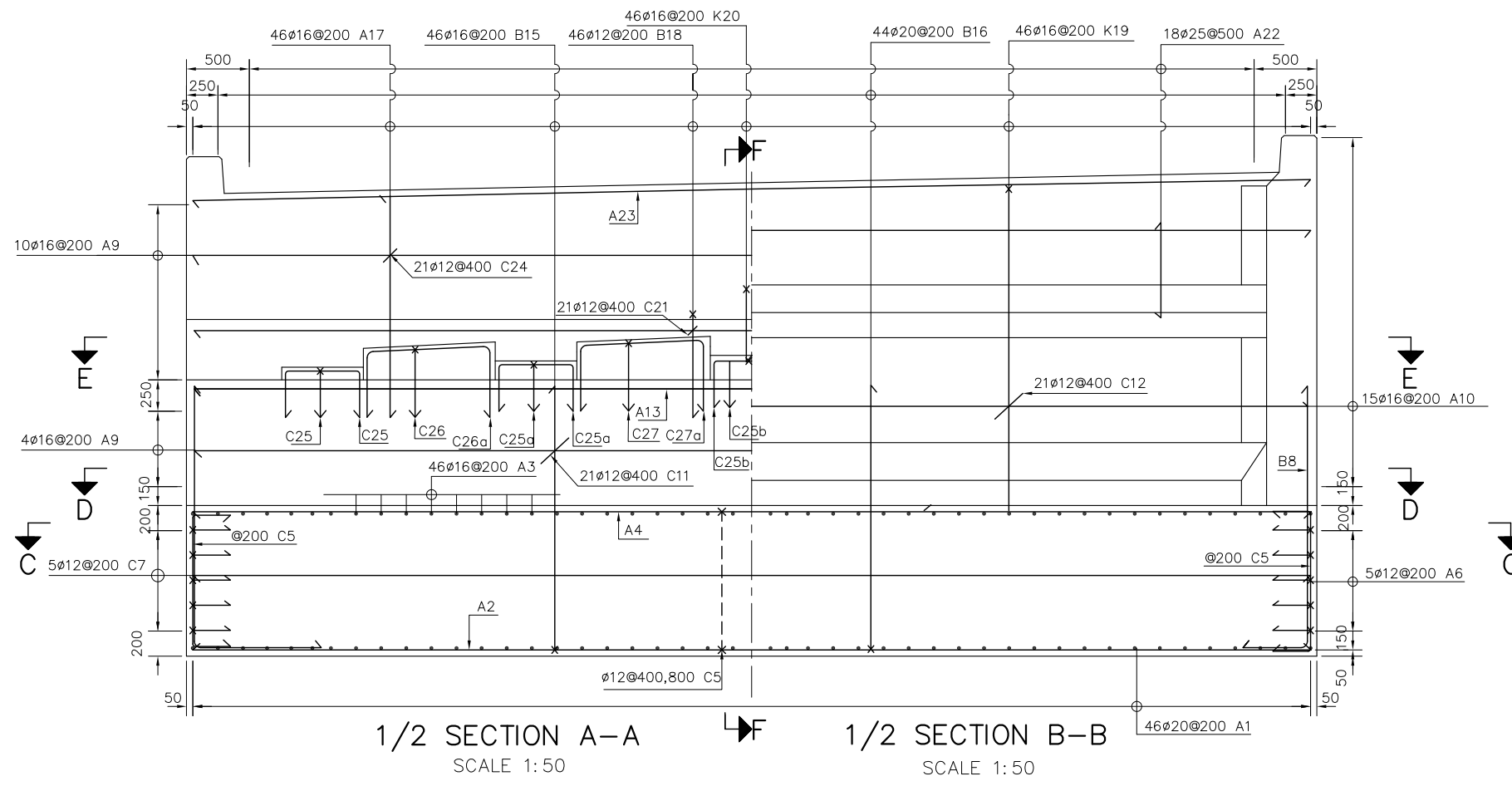


ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
NAM HOUM BRIDGE  
DETAIL OF ABUTMENT A AND B  
(SHEET 1 OF 2)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BDA-21
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN





**NOTES:**

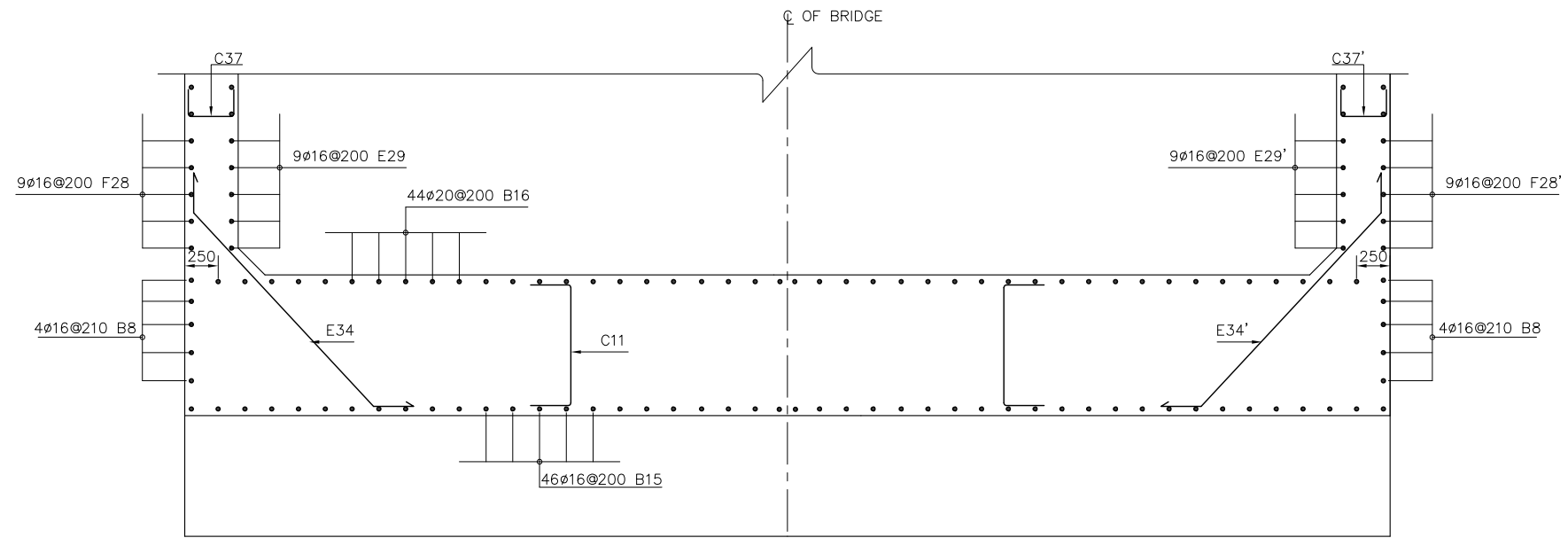
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS=50 mm.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-21, BDA-22, BBA-24, BBA-25 BBA-26 AND BBA-27.



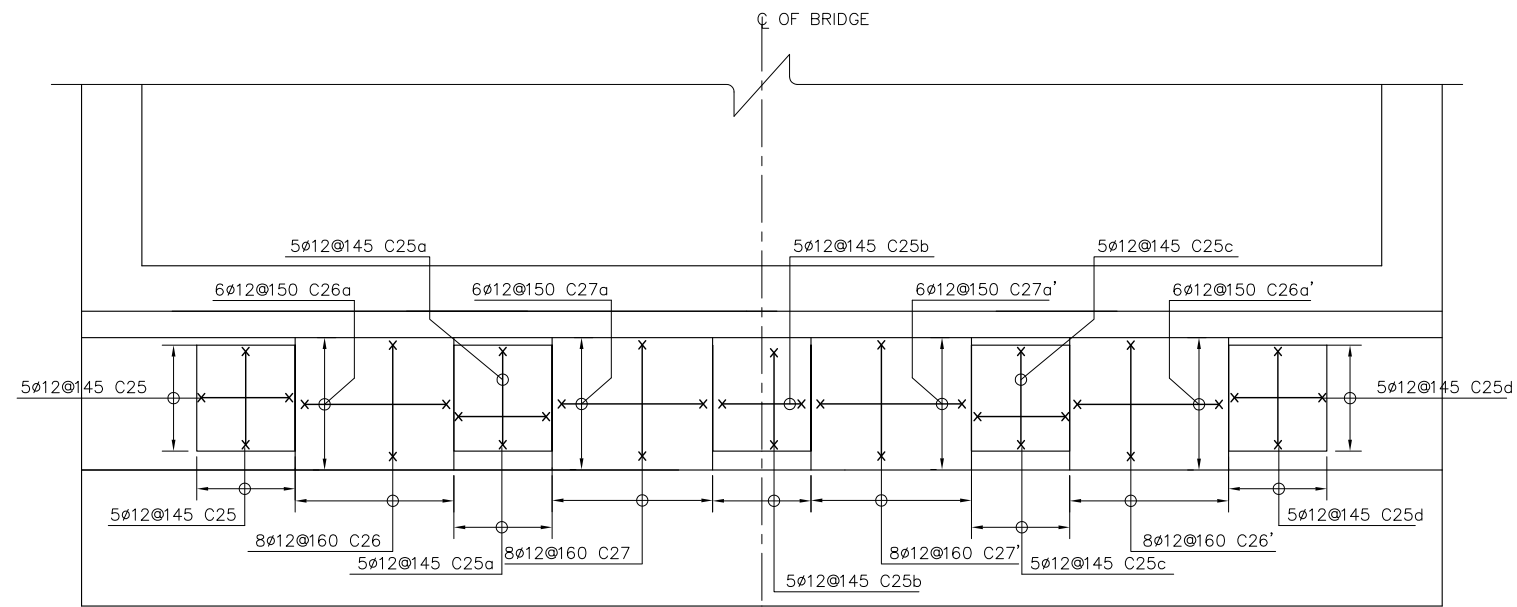
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LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
  
NAM HOUM BRIDGE  
BAR ARRANGEMENT OF ABUTMENT  
A&B (SHEET 1 OF 5)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
			DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
			CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BBA-23
			APPROVED	Mr.Vandy VORASACK		SCALE: 1:50



SECTION D-D  
SCALE 1:50



SECTION E-E  
SCALE 1:50

NOTES:

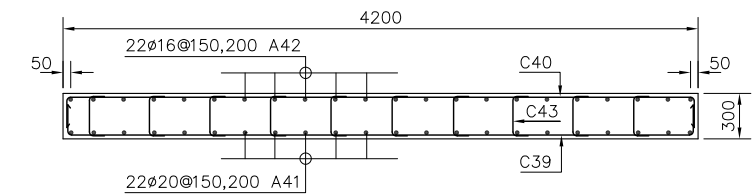
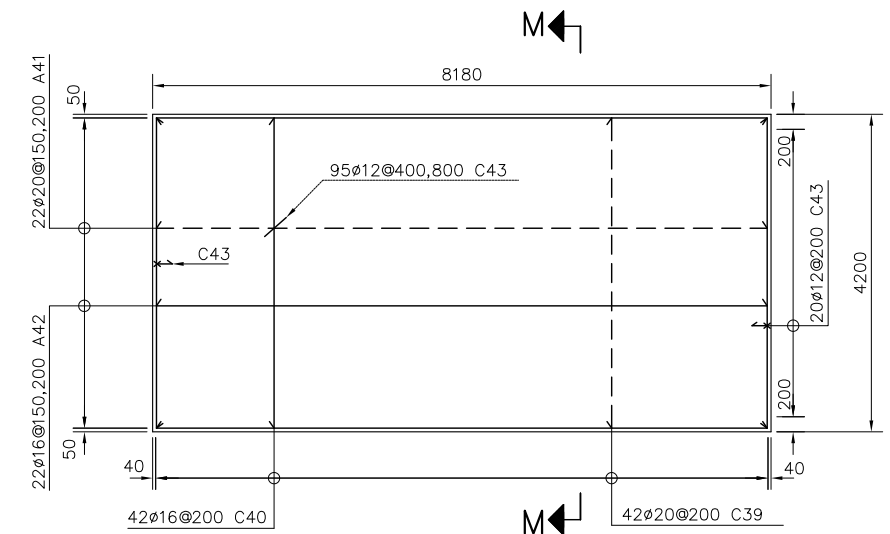
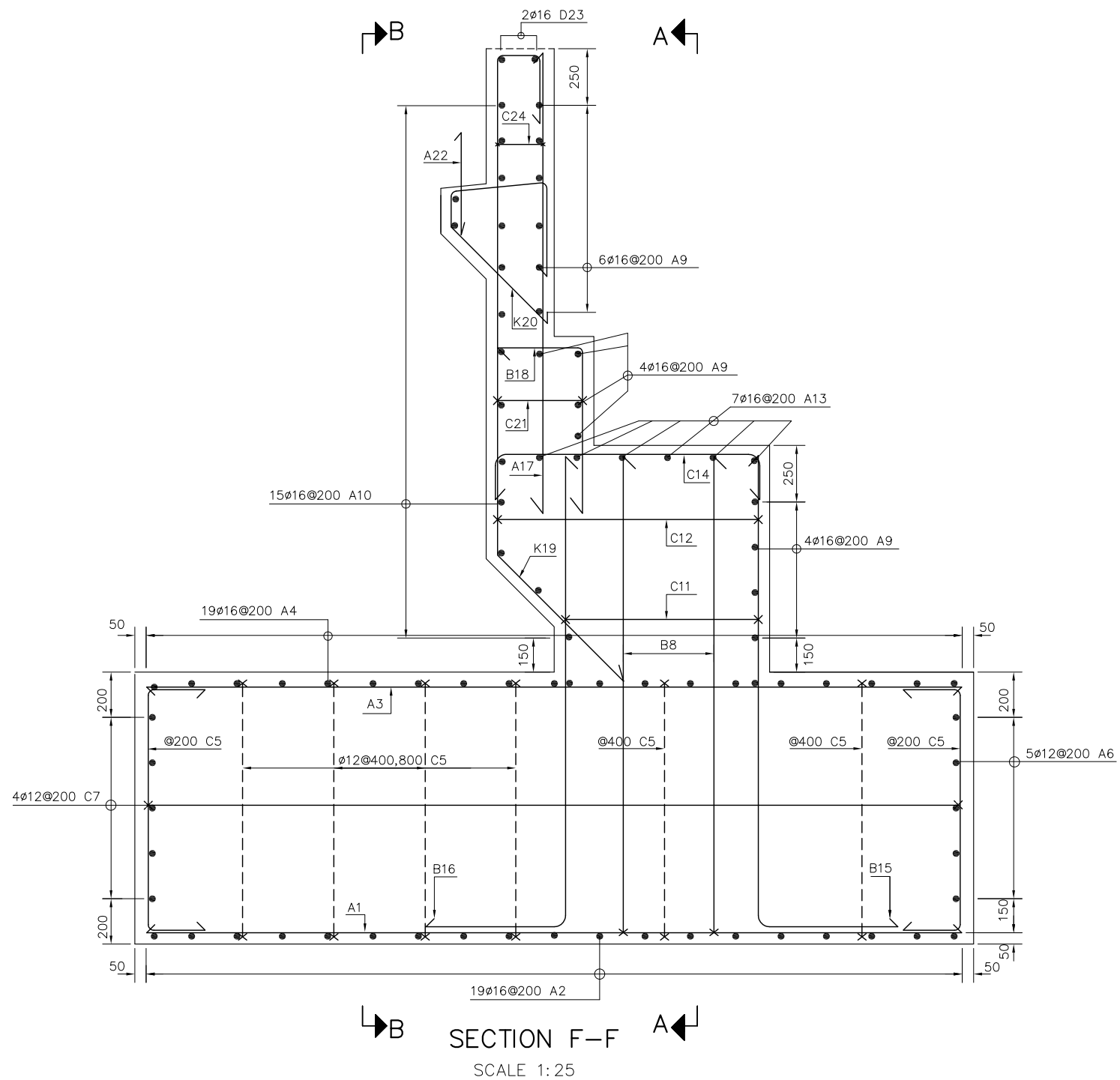
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS=50 mm.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-21, BDA-22, BBA-23, BBA-25 BBA-26 AND BBA-27.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
NAM HOUM BRIDGE  
BAR ARRANGEMENT OF ABUTMENT  
A&B (SHEET 2 OF 5)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BBA-24
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:50



**NOTES:**

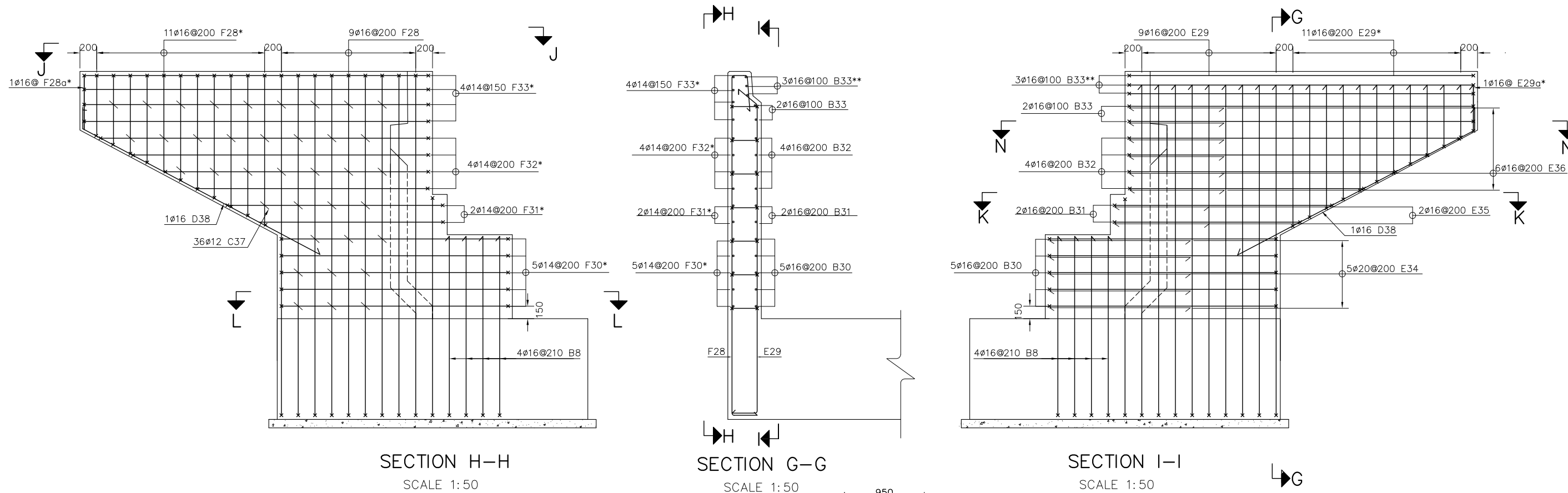
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS=50 mm.
3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-21, BDA-22, BBA-23, BBA-24 BBA-26 AND BBA-27.



ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
**NAM HOUM BRIDGE  
BAR ARRANGEMENT OF ABUTMENT  
A&B (SHEET 3 OF 5)**

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
			DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
			CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BBA-25
			APPROVED	Mr.Vandy VORASACK		SCALE: AS SHOWN



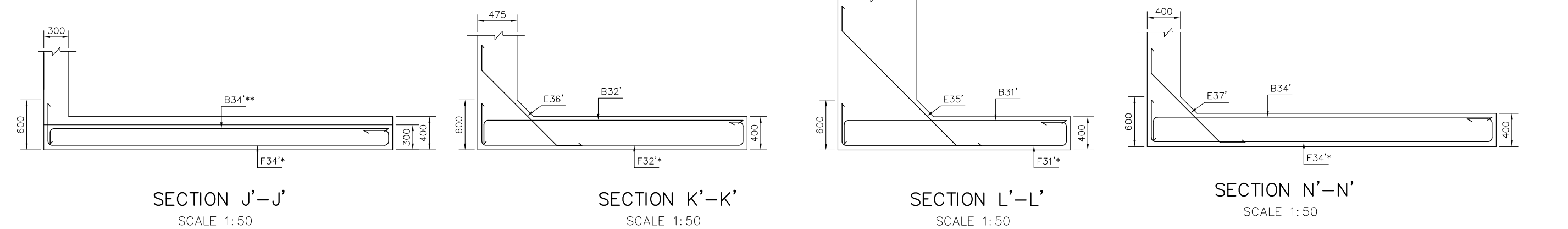
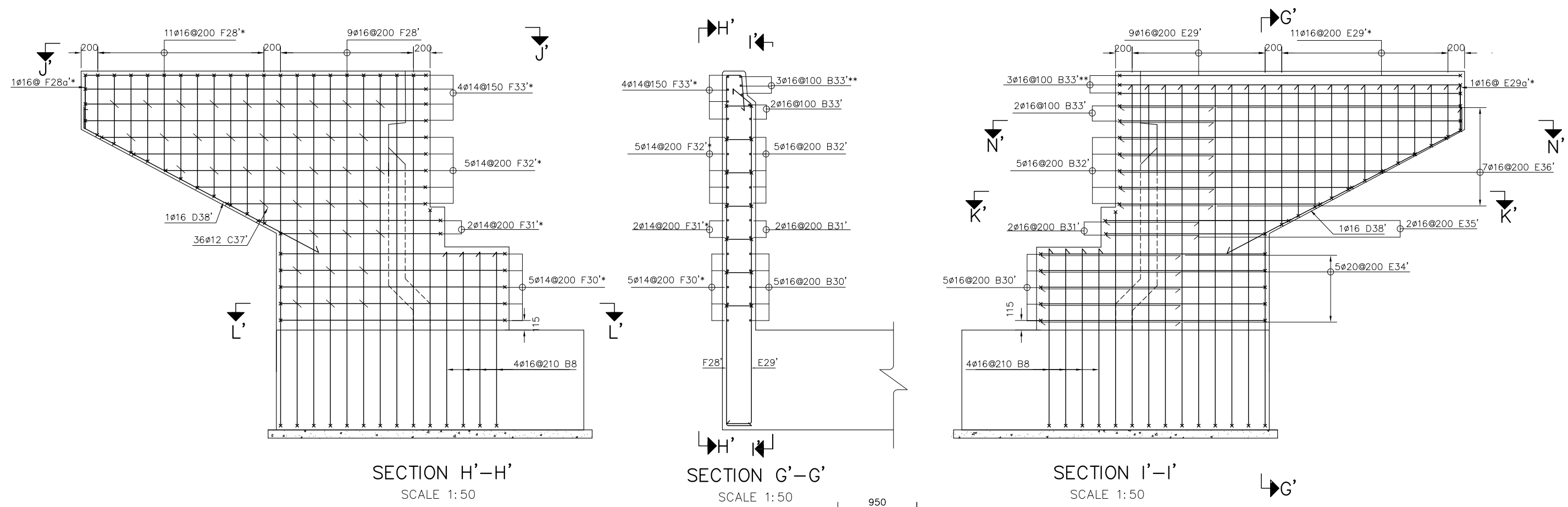
- NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS.
  2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS=50 mm.
  3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-21, BDA-22, BBA-23, BBA-24 BBA-25 AND BBA-27.

ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY

NAM HOUM BRIDGE  
BAR ARRANGEMENT OF ABUTMENT  
A&B (SHEET 4 OF 5)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
			DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
			CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BBA-26
			APPROVED	Mr.Vandy VORASACK		SCALE: 1:50



- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS.
  2. CONCRETE COVER SHALL BE MEASURED FROM THE SURFACE OF CONCRETE TO THE FACE OF NEAREST BARS=50 mm.
  3. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWINGS No. BDA-21, BDA-22, BBA-23, BBA-24 BBA-25 AND BBA-26.

ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY

NAM HOUM BRIDGE  
BAR ARRANGEMENT OF ABUTMENT  
A&B (SHEET 5 OF 5)

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
			DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
			CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BBA-27
			APPROVED	Mr.Vandy VORASACK		SCALE: 1:50





TABLE OF BAR ARRANGEMENT FOR ONE ABUTMENT A OR B

SHAPE OF BAR	No.	DIAMETER (mm)	LENGTH OF BAR (mm)	QUANTITY	TOTAL LENGTH (m)	SIZE OF BENDING (mm)						SPACE @ (mm)	REMARK	A	B
						a	b	c	d	e	f				
B	33	16	4400	2	8.8	4100	300					100			
B	33'	16	4400	2	8.8	4100	300					100			
F	33*	14	5300	4	21.2	300	300	4100	600			150			
F	33*	14	5300	4	21.2	300	300	4100	600			150			
B	33**	16	4400	3	13.2	4100	300					100			
B	33**	16	4400	3	13.2	4100	300					100			
E	34	16	2550	5	12.75	300	1950	300				200			
E	34'	16	2550	5	12.75	300	1950	300				200			
E	35	16	1875	2	3.75	300	1275	300				200			
E	35'	16	1875	2	3.75	300	1275	300				200			
E	36	16	1770	6	10.62	300	1170	300				200			
E	36'	16	1770	7	12.39	300	1170	300				200			
C	37	12	700	36	25.2	200	300	200				400			
C	37'	12	700	36	25.2	200	300	200				400			
D	38	16	3700	2	7.4	500	3200					-			
D	38'	16	3700	2	7.4	500	3200					-			
C	39	20	4500	42	189	200	4100	200				200			
C	40	16	4500	42	189	200	4100	200				200			
A	41	20	8900	22	195.8	8900						200			
A	42	16	8900	22	195.8	8900						200			
C	43	12	500	135	67.5	150	200	150	0			400,800			

RADIUS OF BAR BENDING

DIAMETER OF BARS (mm)	RADIUS (mm)
10	35
12	42
16	56
20	100
25	125
32	224


NOTES:

- △ IS DIFFERENT LENGTH OF BAR WITH THE SAME NUMBER.
- THE TABLE OF QUANTITY OF REINFORCEMENT IS FOR ONE ABUTMENT ONLY.

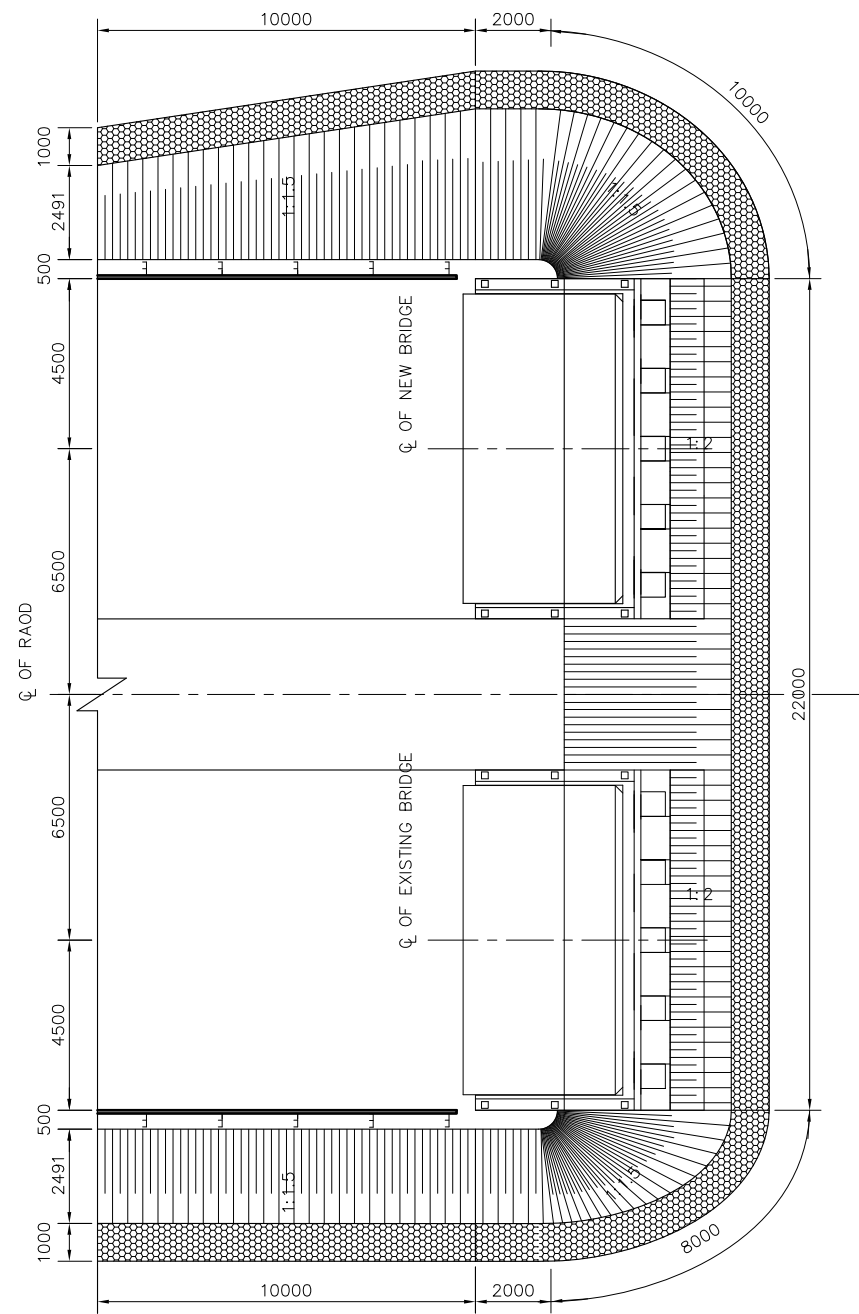
<p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	NAM HOUM BRIDGE TABLES OF BAR ARRANGEMENTS FOR ABUTMENT A OR B (SHEET 3 OF 4)					CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BTB-30
						APPROVED	Mr.Vandy VORASACK	SCALE: -

SUMMARY OF QUANTITIES FOR ONE ABUTMENT A OR B

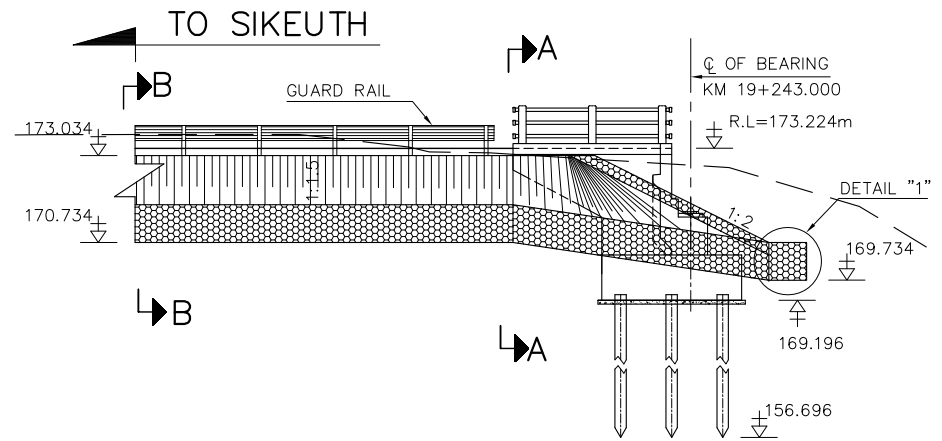
ITEM	CONCRETE (m <sup>3</sup> )			REINFORCEMENT (Kg)						MIX SAND AND GRAVEL (m <sup>3</sup> )	PRECAST CONCRETE PILE 350x350 mm (m)
	GRADE 10MPa.	GRADE 25MPa.	GRADE 30MPa.	Ø12	Ø14	Ø16	Ø20	Ø25	TOTAL		
1. ABUTMENT	3.59	65.35	0.38	768.88	163.20	2782.17	690.52	34.68		17.97	FOR ABUT.A = 225.00
2. APPROACH SLAB	1.72	10.31	-	59.93	-	607.34	948.98	-			FOR ABUT.B = 225.00
TOTAL	4.31	75.66	0.38	828.81	163.20	3389.51	1639.50	34.68	6055.69	17.97	450.00

 <p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	<p>NR 13N IMPROVEMENT AND MAINTENANCE PROJECT CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY</p> <p>NAM HOUM BRIDGE TABLES OF BAR ARRANGEMENTS FOR ABUTMENT A OR B (SHEET 4 OF 4)</p>	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17	
						DESIGNED	Mr.Phonepasong SENSONGKHAM		DATE: April, 2018
						CHECKED	Mr.Khamphone SORPHABMIXAY		DRW No. BTB-31
						APPROVED	Mr.Vandy VORASACK		SCALE: -

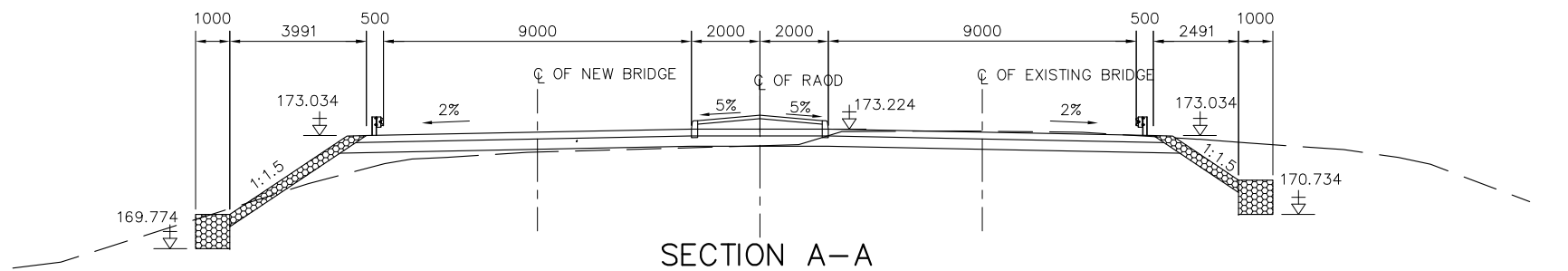
# III. MISCELLANEOUS DRAWINGS



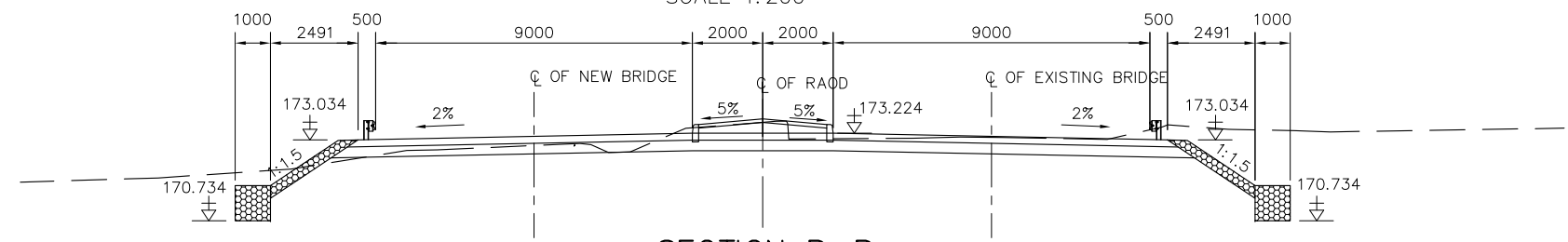
PLAN  
SCALE 1:200



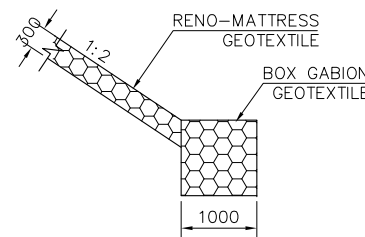
SIDE ELEVATION  
SCALE 1:200



SECTION A-A  
SCALE 1:200



SECTION B-B  
SCALE 1:200



DETAIL "1"  
SCALE 1:100

TABLE OF QUANTITIES OF SLOPE PROTECTION

ITEMS	DESCRIPTIONS	UNIT	QUANTITIES
1	GABION BOX	m <sup>3</sup>	64.00
2	GEOTEXTILE	m <sup>2</sup>	427.19
3	RENO-MATTRESS	m <sup>3</sup>	89.76
4	EMBANKMENT	m <sup>3</sup>	51.87
5	STRUCTURE EXCAVATION (COMMON)	m <sup>3</sup>	550.60

NOTE:

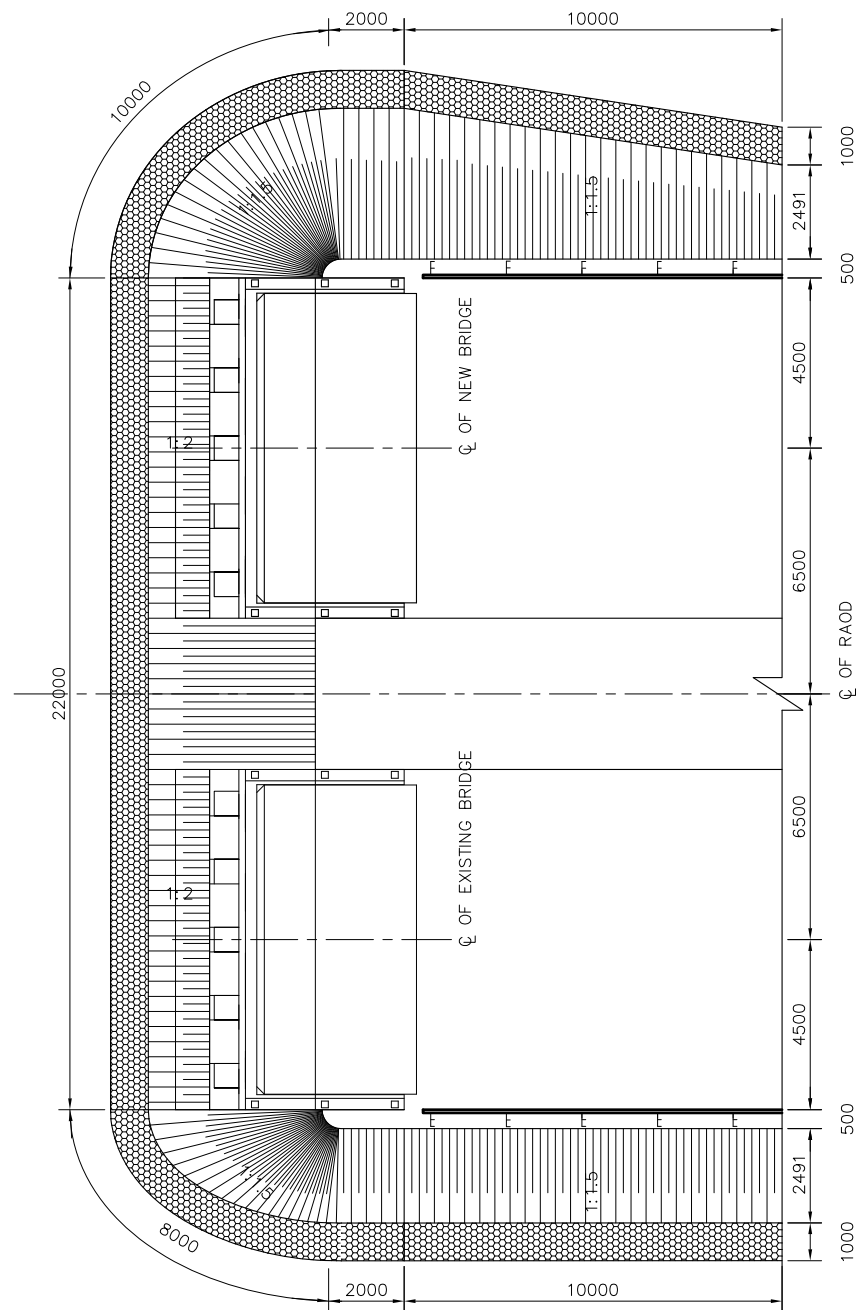
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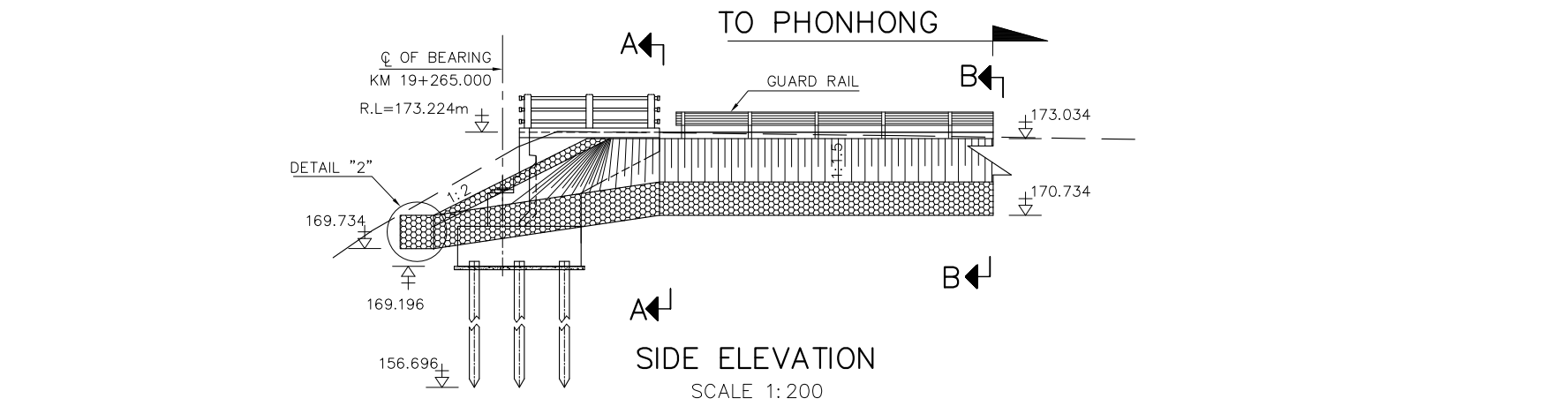
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LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
NAM HOUM BRIDGE  
SLOPE PROTECTION  
AROUND ABUTMENT A

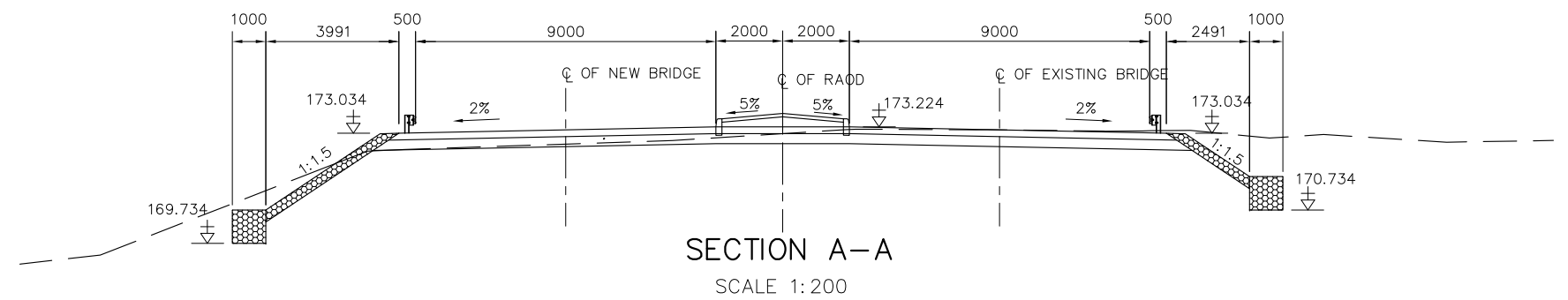
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BSP-32
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



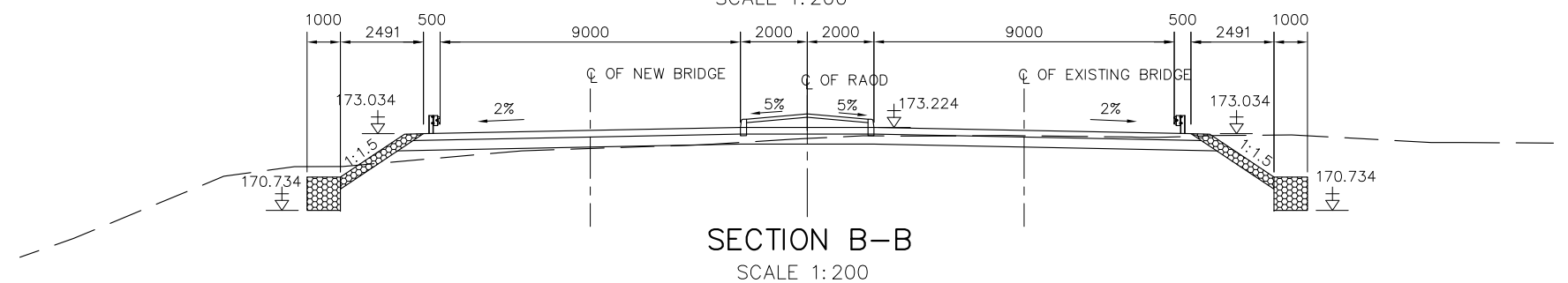
PLAN  
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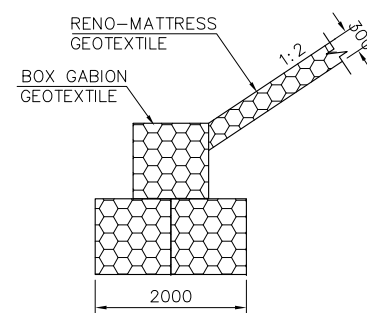
SIDE ELEVATION  
SCALE 1:200



SECTION A-A  
SCALE 1:200



SECTION B-B  
SCALE 1:200



DETAIL "2"  
SCALE 1:100

TABLE OF QUANTITIES OF SLOPE PROTECTION

ITEMS	DESCRIPTIONS	UNIT	QUANTITIES
1	GABION BOX	m <sup>3</sup>	64.00
2	GEOTEXTILE	m <sup>2</sup>	427.19
3	RENO-MATTRESS	m <sup>3</sup>	89.76
4	EMBANKMENT	m <sup>3</sup>	44.15
5	STRUCTURE EXCAVATION (COMMON)	m <sup>3</sup>	432.75

NOTE:

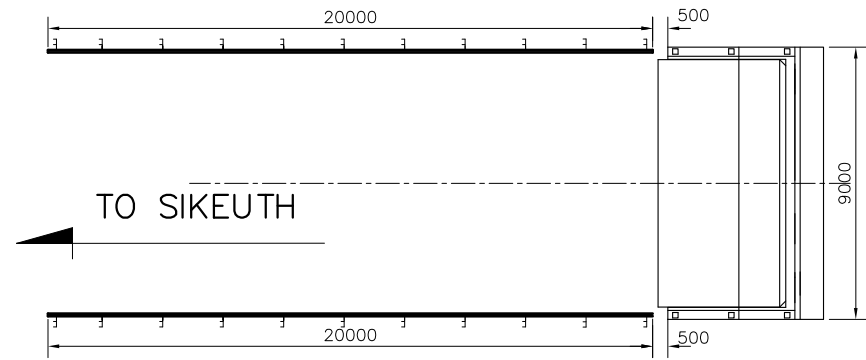
1. ALL DIMENSIONS ARE IN MILLIMETERS, LEVELS ARE IN METERS.



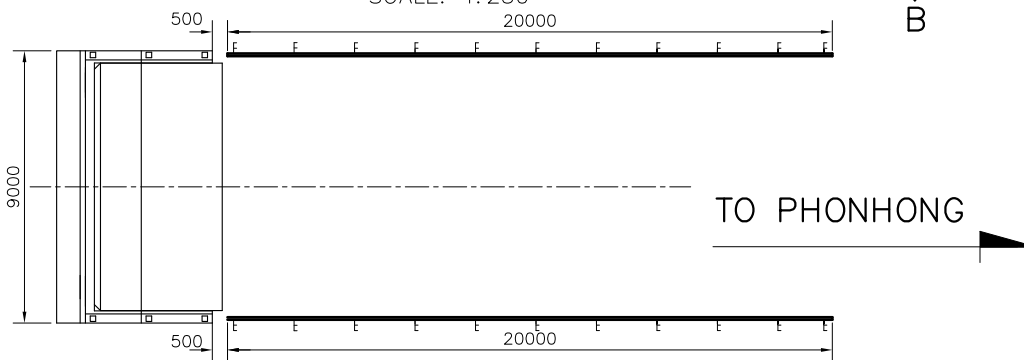
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
NAM HOUM BRIDGE  
SLOPE PROTECTION  
AROUND ABUTMENT B

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BSP-33
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



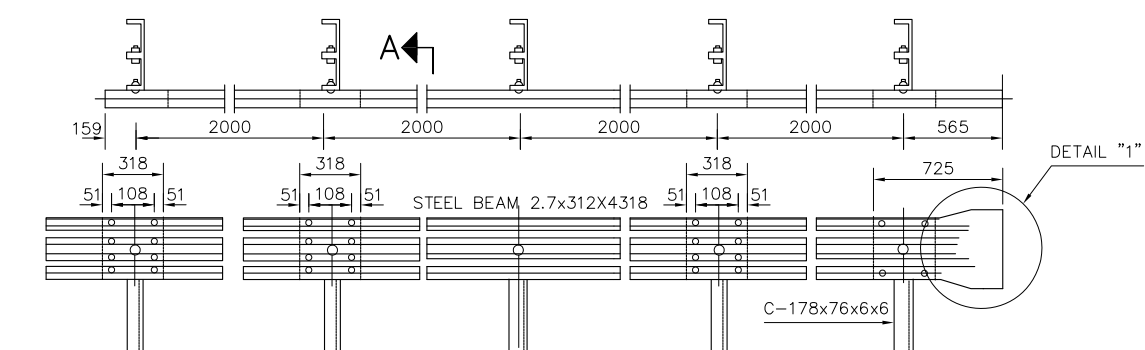
GENERAL PLAN SIDE SIKEUTH  
SCALE: 1:250



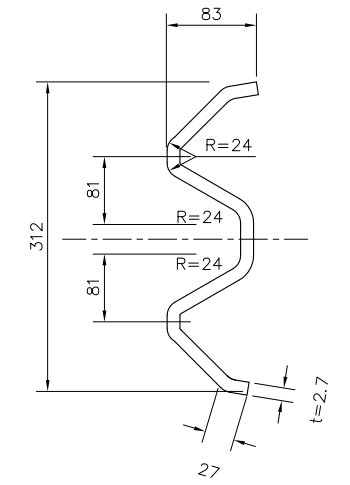
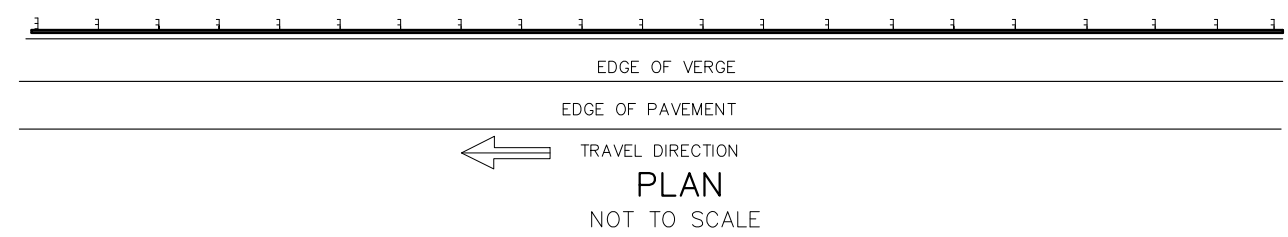
GENERAL PLAN SIDE PHONHONG  
SCALE: 1:250



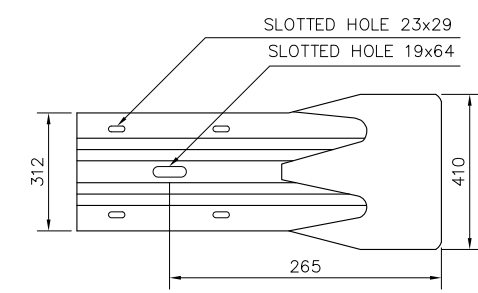
SIDE ELEVATION B-B  
NOT TO SCALE



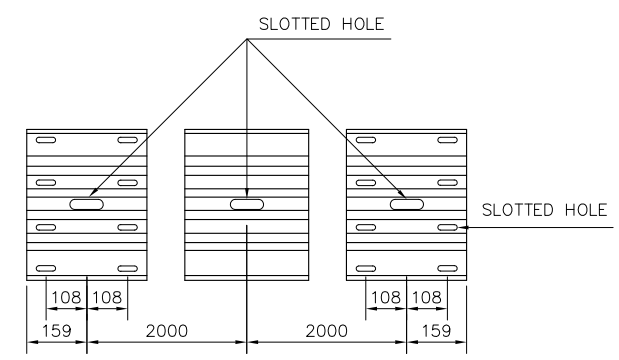
FRONT VIEW  
NOT TO SCALE



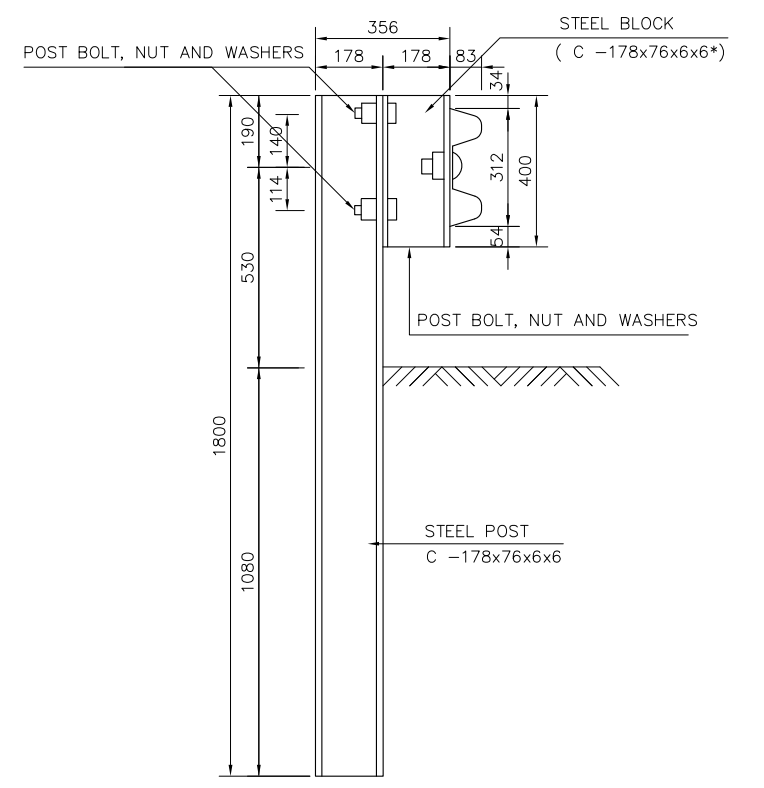
SECTION A-A  
NOT TO SCALE



DETAIL "1"  
SCALE 1:20



STEEL BEAM  
NOT TO SCALE



SECTION A-A  
VERTICAL TRANSPORTION  
SCALE 1:20

TABLE OF QUANTITIES

ITEMS	DESCRIPTIONS	UNIT	QUANTITIES
1	GUARDRAILL (ABUTMENT A SIDE)	m	40.00
2	GUARDRAILL (ABUTMENT B SIDE)	m	40.00
	TOTAL	m	80.00

NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. GUARD RAIL STANDARD SHALL MEET THE REQUIREMENTS OF AASHTO M 180, TYPE I CLASS A, W-BEAM.

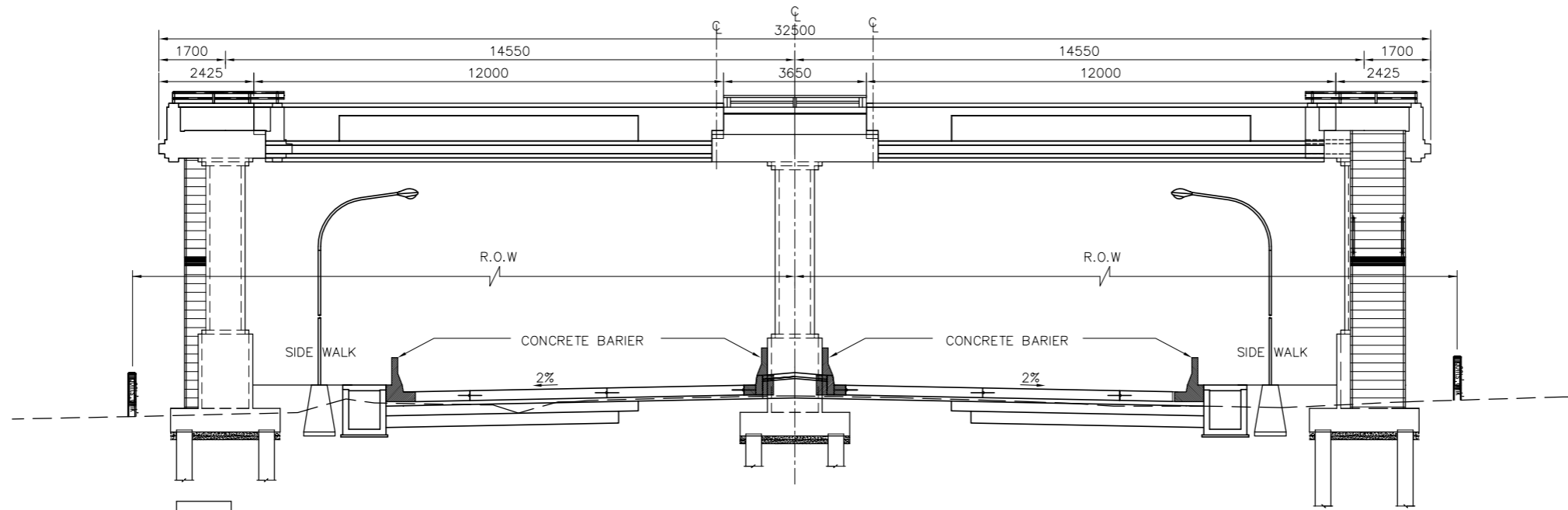


NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
NAM HOUM BRIDGE  
GUARD RAIL

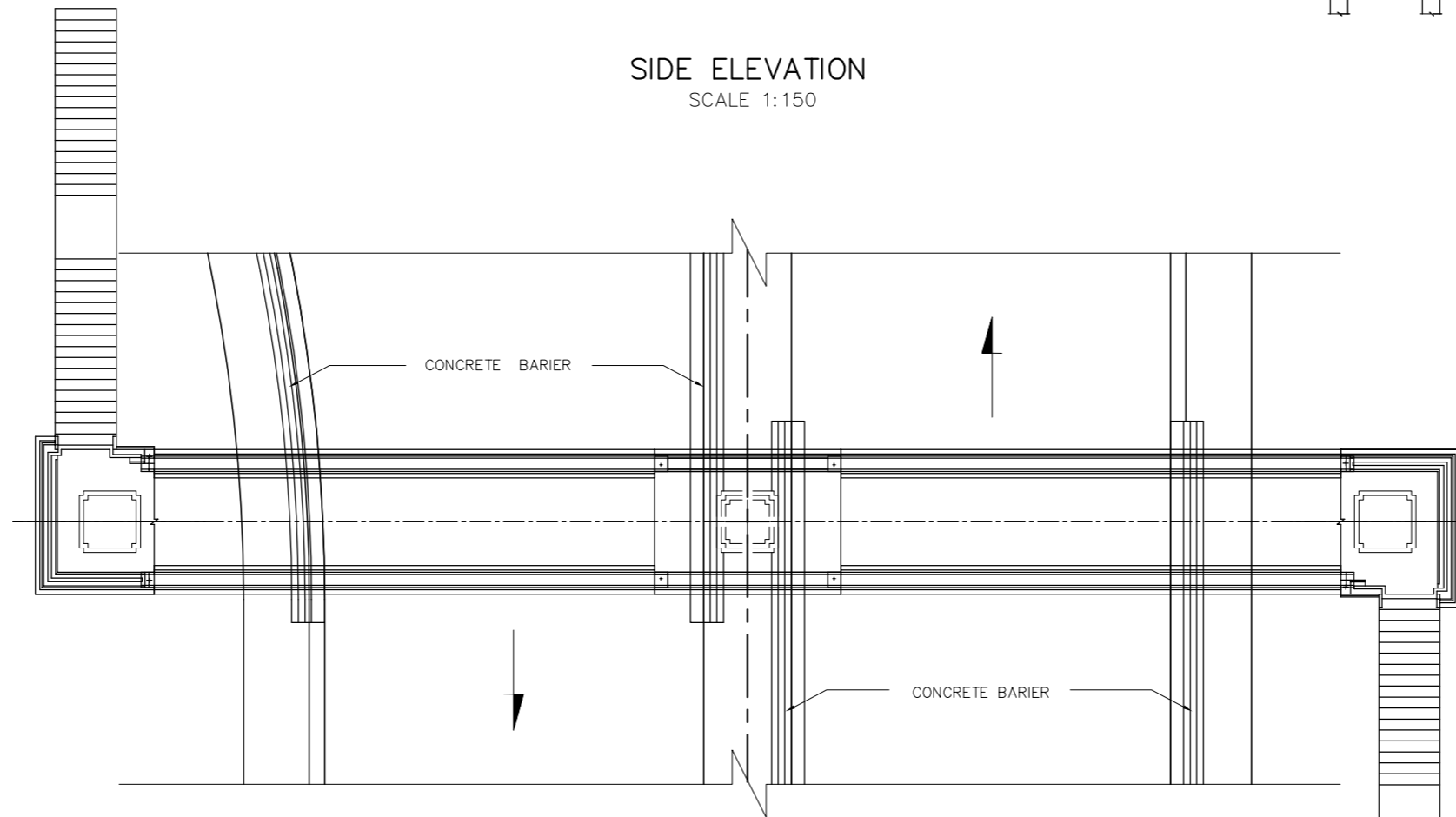
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. RGR-34
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN

PREDESTRIAN CROSSING BRIDGE

# I. GENERAL DRAWINGS



SIDE ELEVATION  
SCALE 1:150



PLAN  
SCALE 1:150

NOTE:

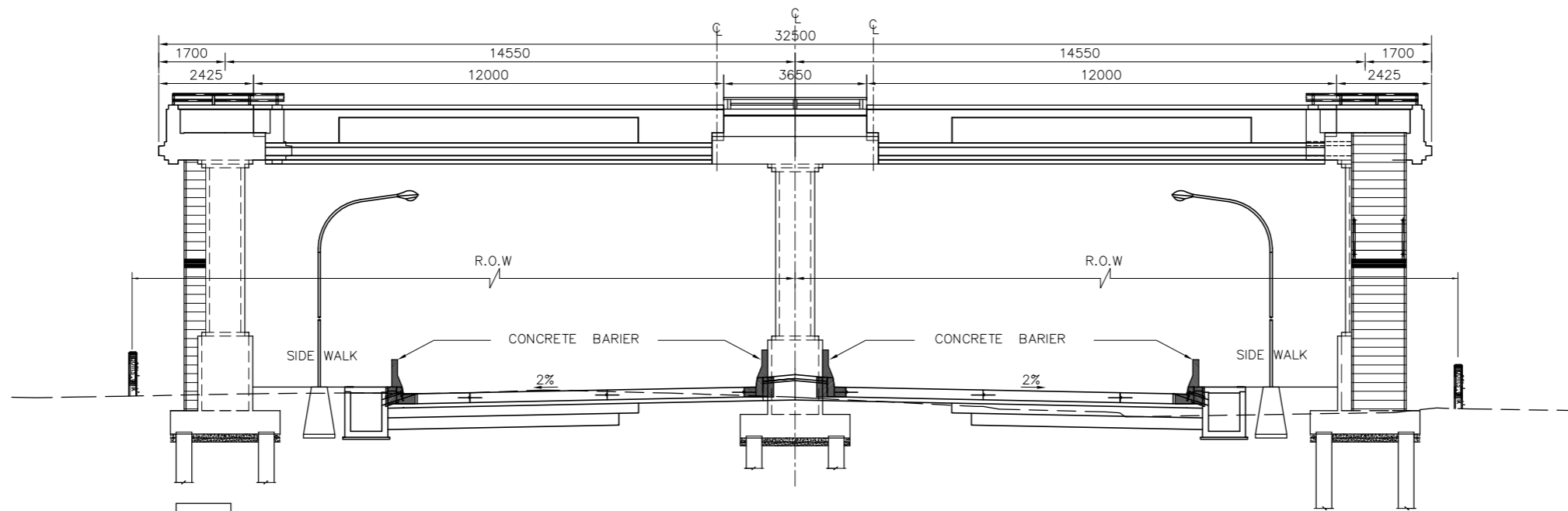
1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE STATED.
2. WHEN ERECTION OF RIGHT OF WAY MONUMENT THE WIDTH OF RIGHT OF WAY SHALL BE AS DIRECTED BY DEPARTMENT OF ROAD MINISTRY OF PUBLIC WORKS AND TRANSPORT.



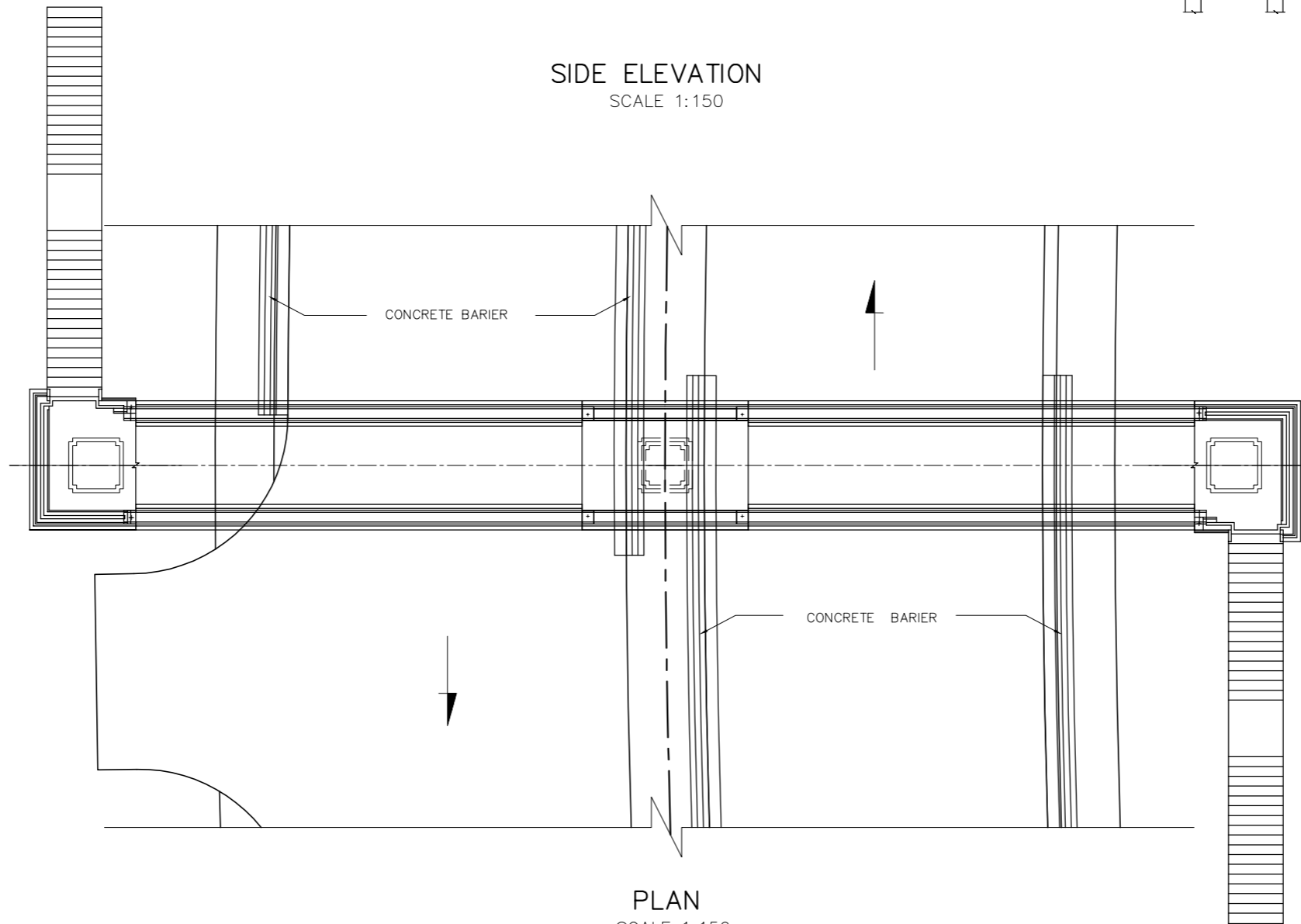
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
GENERAL ARRANGEMENT OF  
PREDESTRIAN CROSSING  
BRIDGE Km 1+800

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BGA-01
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:150



SIDE ELEVATION  
SCALE 1:150



PLAN  
SCALE 1:150

NOTE:

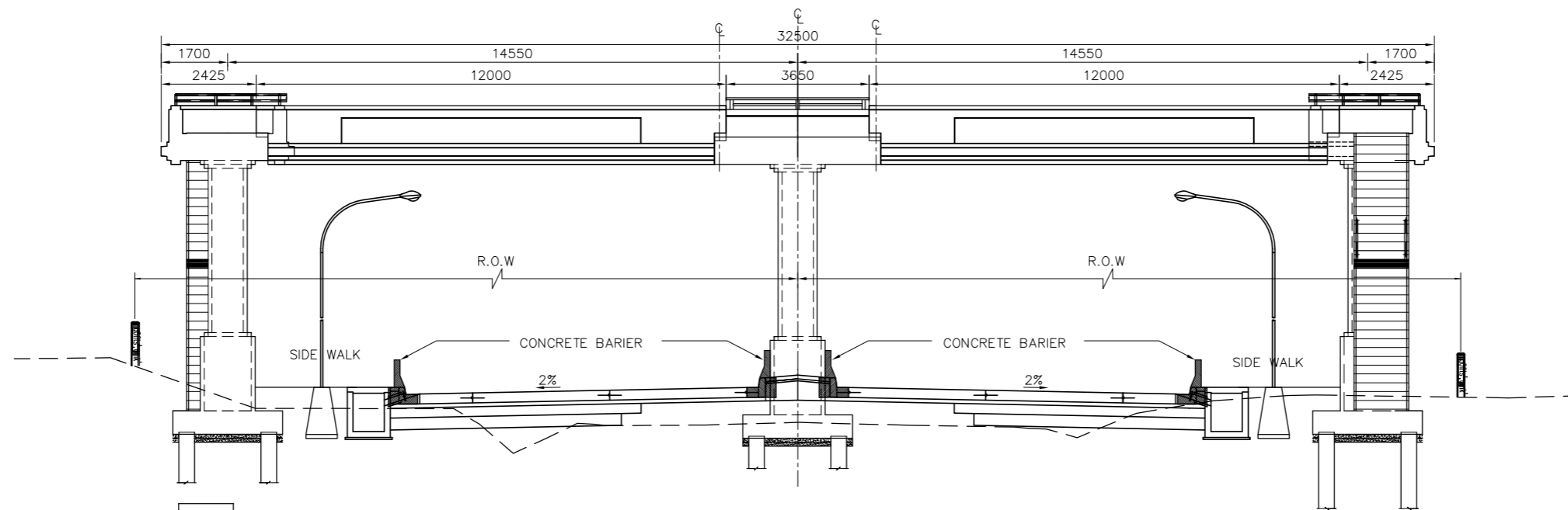
1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE STATED.
2. WHEN ERECTION OF RIGHT OF WAY MONUMENT THE WIDTH OF RIGHT OF WAY SHALL BE AS DIRECTED BY DEPARTMENT OF ROAD MINISTRY OF PUBLIC WORKS AND TRANSPORT.



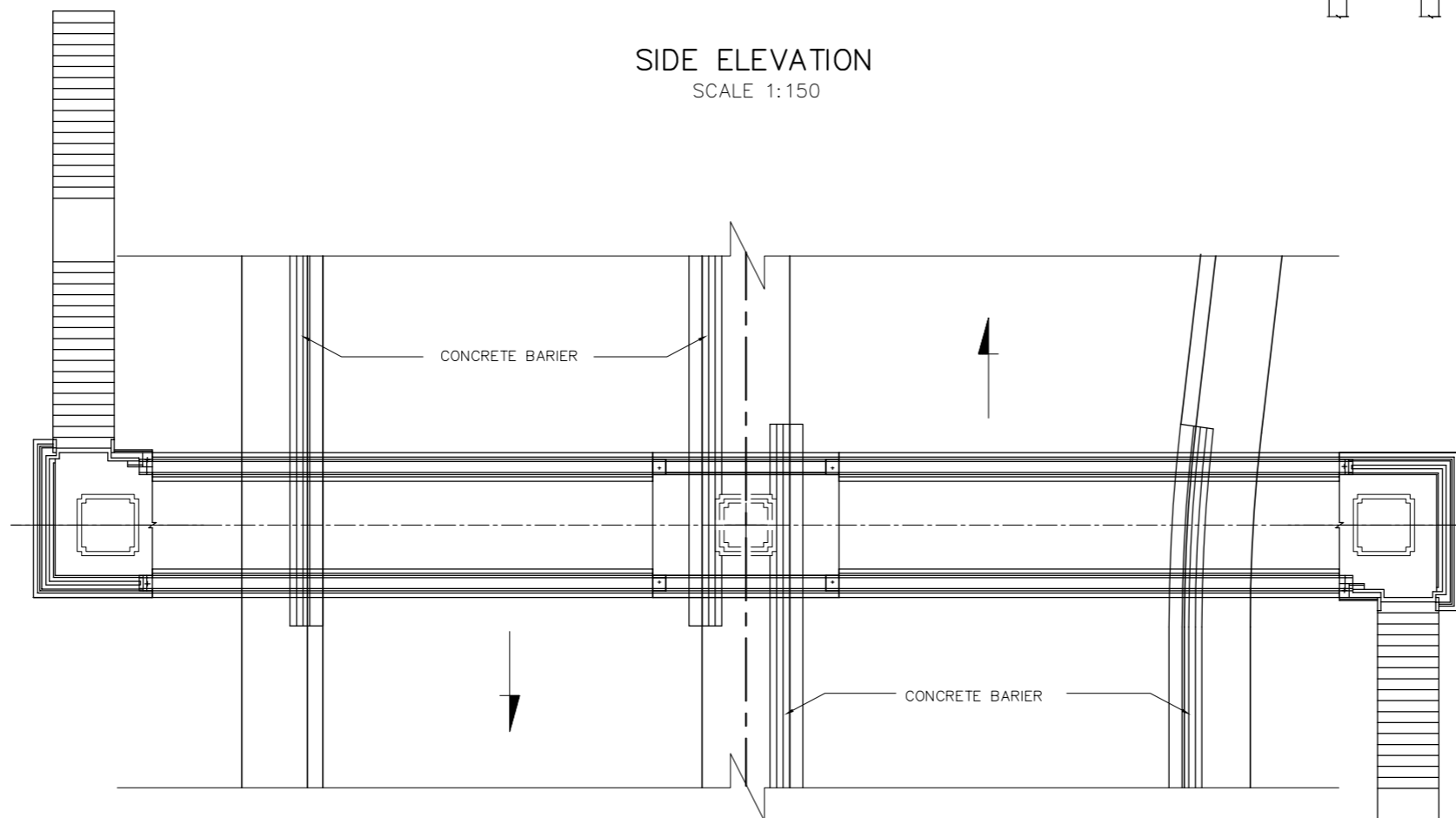
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LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
GENERAL ARRANGEMENT OF  
PREDESTRIAN CROSSING  
BRIDGE KM 4+730

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BGA-02
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:150



SIDE ELEVATION  
SCALE 1:150



PLAN  
SCALE 1:150

NOTE:

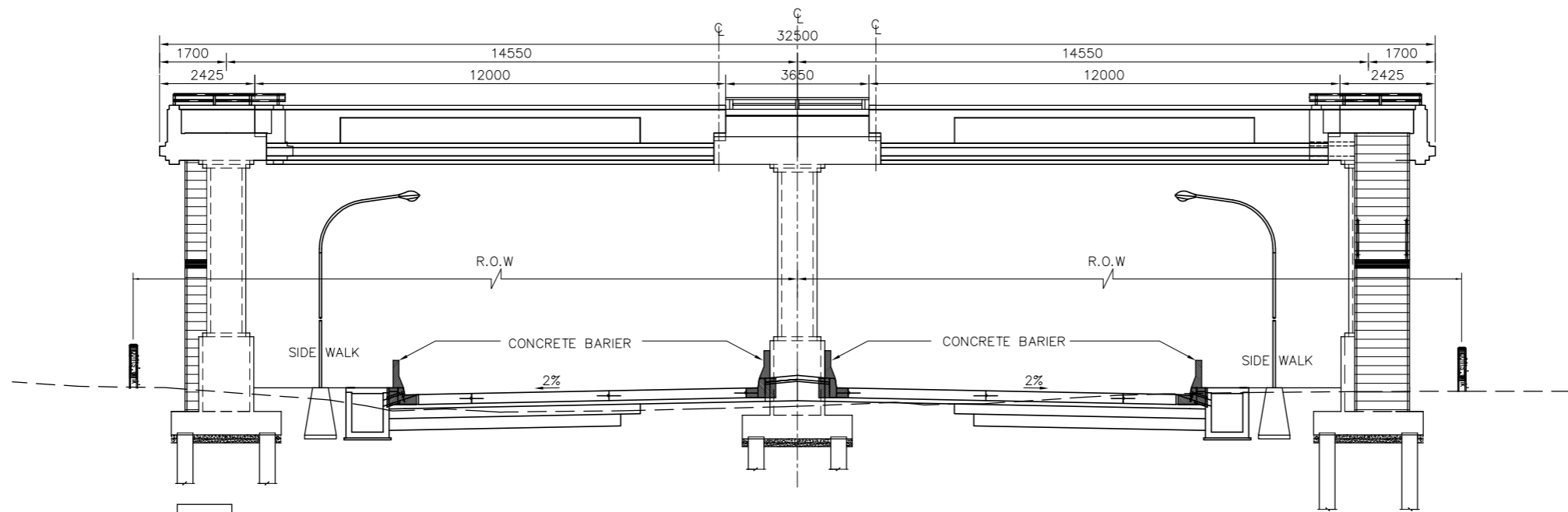
1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE STATED.
2. WHEN ERECTION OF RIGHT OF WAY MONUMENT THE WIDTH OF RIGHT OF WAY SHALL BE AS DIRECTED BY DEPARTMENT OF ROAD MINISTRY OF PUBLIC WORKS AND TRANSPORT.



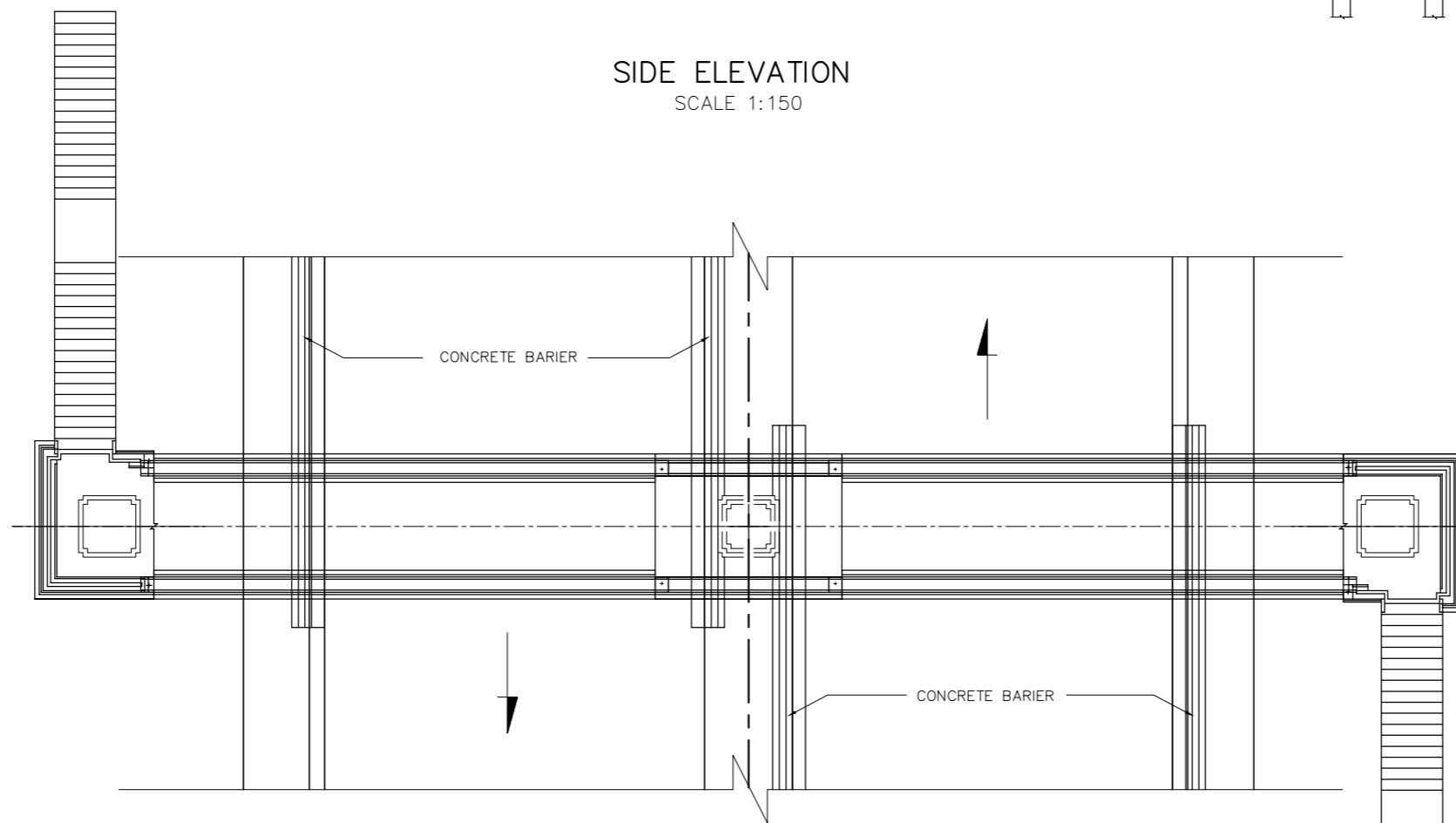
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LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
GENERAL ARRANGEMENT OF  
PREDESTRIAN CROSSING  
BRIDGE KM 15+400

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BGA-03
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:150



SIDE ELEVATION  
SCALE 1:150



PLAN  
SCALE 1:150

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE STATED.
2. WHEN ERECTION OF RIGHT OF WAY MONUMENT THE WIDTH OF RIGHT OF WAY SHALL BE AS DIRECTED BY DEPARTMENT OF ROAD MINISTRY OF PUBLIC WORKS AND TRANSPORT.

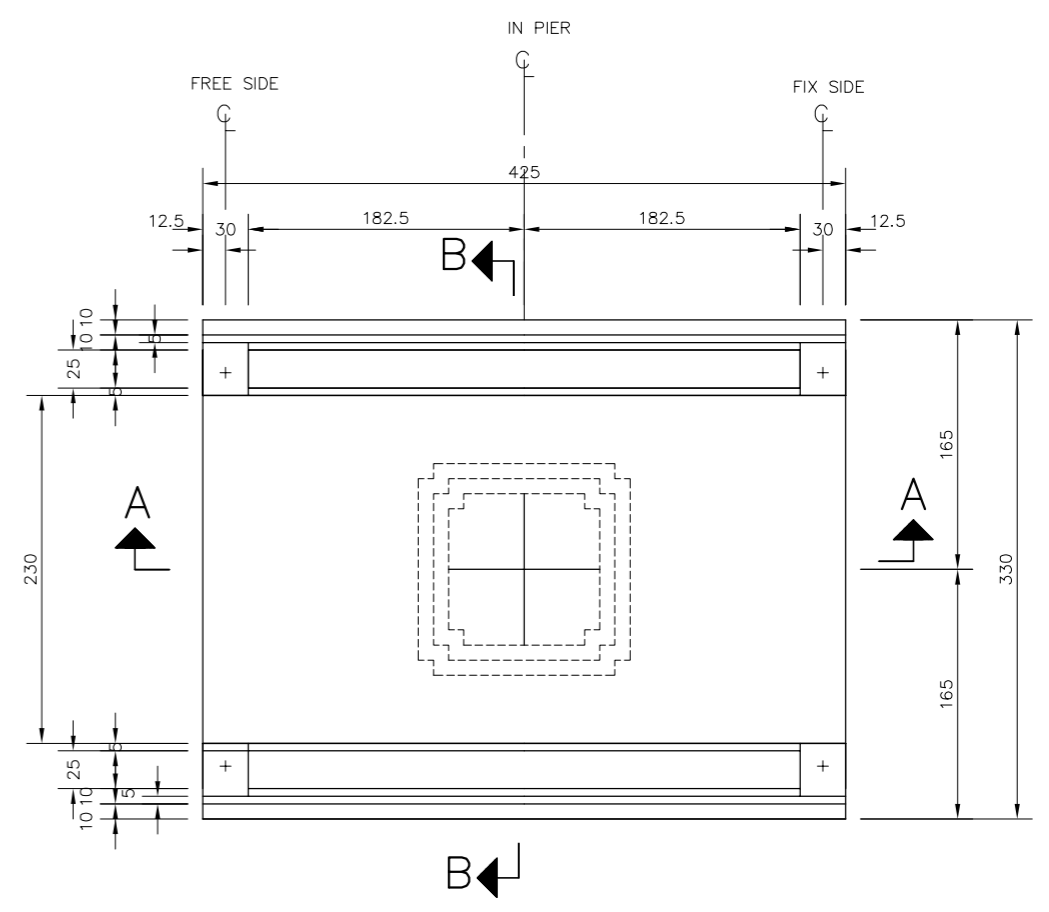
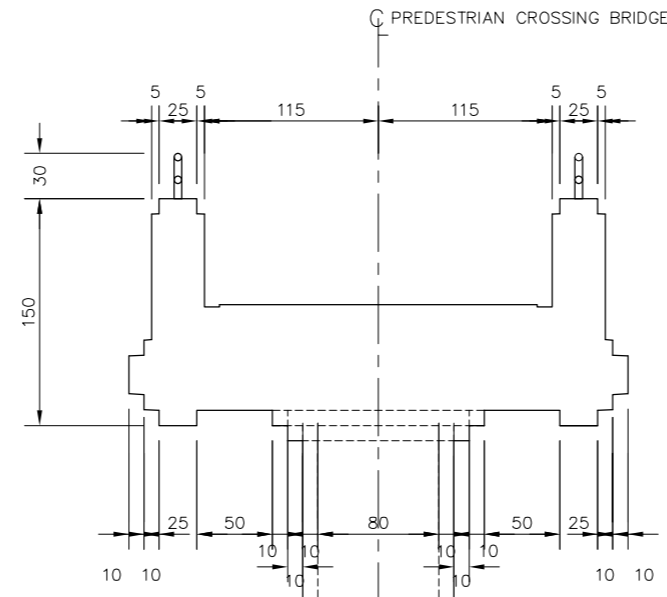
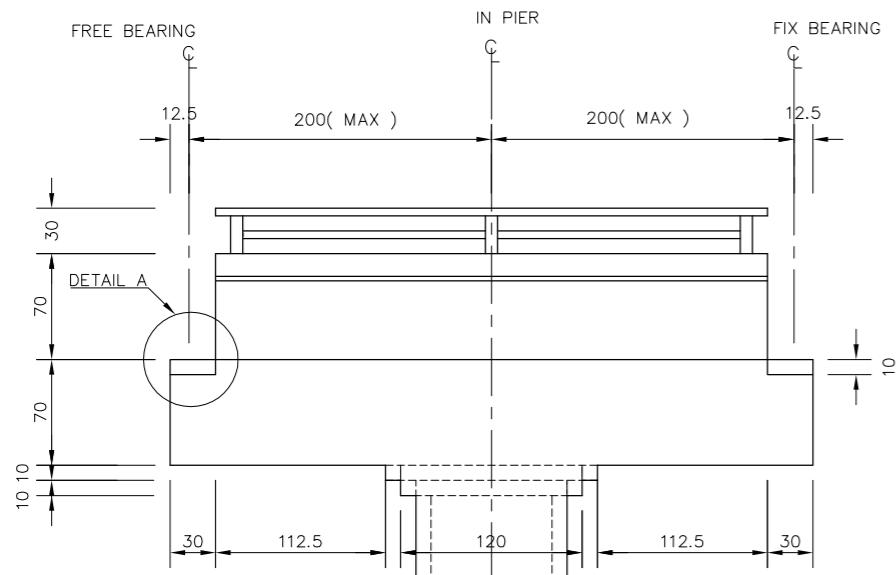


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LAO TRANSPORT ENGINEERING CONSULTANT

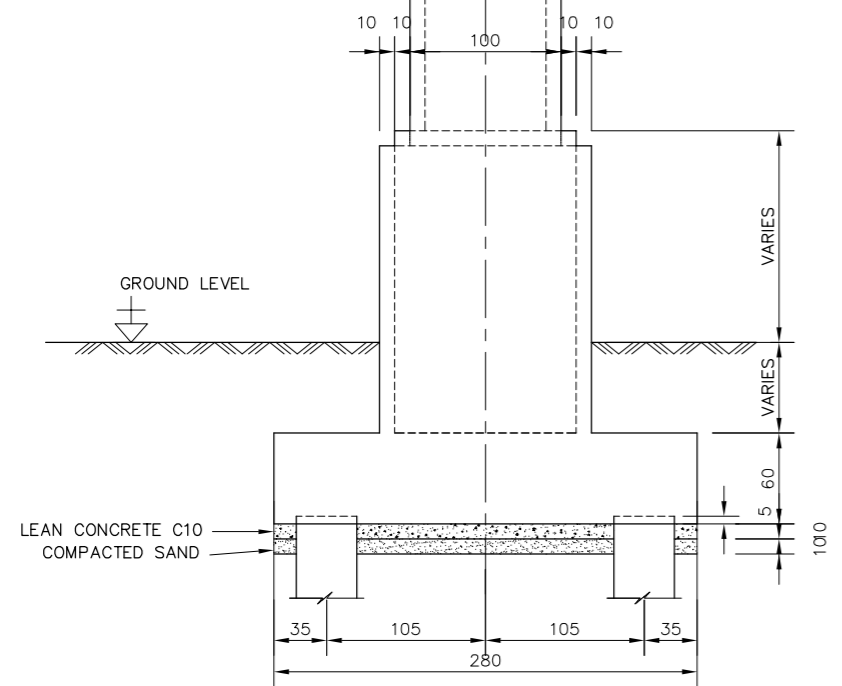
NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
GENERAL ARRANGEMENT OF  
PREDESTRIAN CROSSING  
BRIDGE KM 18+900

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BGA-04
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:150

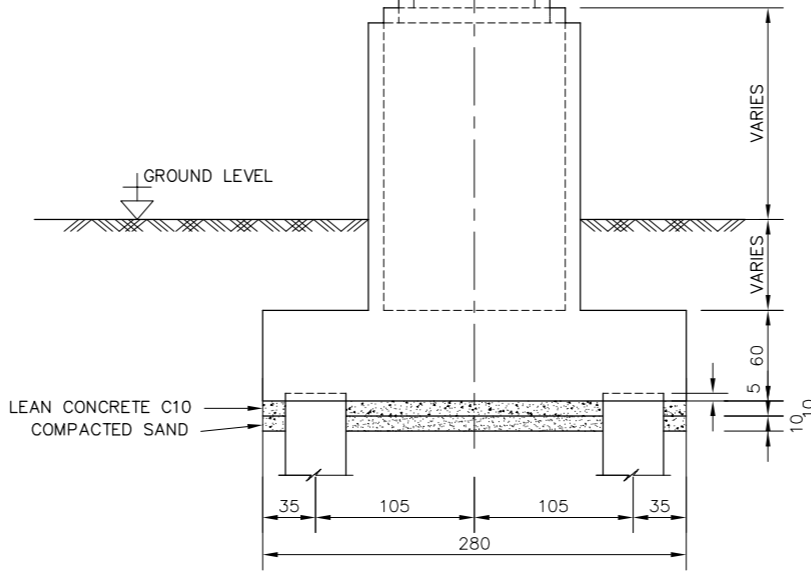
## II. STRUCTURE DRAWINGS



PLAN  
SCALE 1:50



SECTION A-A  
SCALE 1:50



SECTION B-B  
SCALE 1:50

NOTE:

1. ALL DIMENSIONS ARE IN CENTIMETERS UNLESS OTHERWISE INDICATED.
2. ALL CONCRETE SHALL BE GRADE 25 MPA UNLESS OTHERWISE INDICATED  
CONCRETE SHALL HAVE MINIMUM UTMATE STRENGTH AT AGE 28 DAYS  $f_c=25$  Mpa,  $f_c=10$  Mpa.
3. ALL REINFORCING BAR SHALL BE AGE DEFORMED BAR (AASHTO M31, Grade 60)  
DEFORMED BAR AND ROUND BAR SHALL BE GRADE 40.
4. CLEAR CONCRETE COVER SHALL BE 40 mm.
5. ALL EDGES OF CONCRETE SHALL BE CHAMFERED 20mm.
6. THE LENGTH OF OVERLAP STEEL BAR SHALL BE WITH THE REQUIREMENTS SET OUT IN THE TECHNICAL SPECIFICATION.
7. PILES SHOWN IN THE DRAWING IS A PRELIMINARY ESTIMATE ONLY, IN THE IMPECCATION STAGE, THE CONTRACTOR IS REQUIRED TO INVESTIGATE THE FOUNDATION AND MAKE DETAILED DESIGN FOR CONSTRUCTION AS DIRECTED BY THE ENGINEER.
8. PRESTRESSED CONCRETE PILE SHALL BE CONFIRMED TO AASHTO "LRFD BRIDGE DESIGN SPECIFICATION" CURRENT EDITION, DIMENSION 400x400 mm AND SAFETY LOAD 60 TONS.

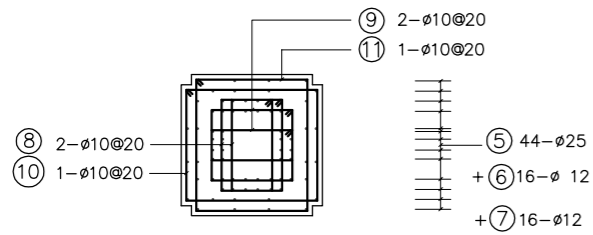


ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

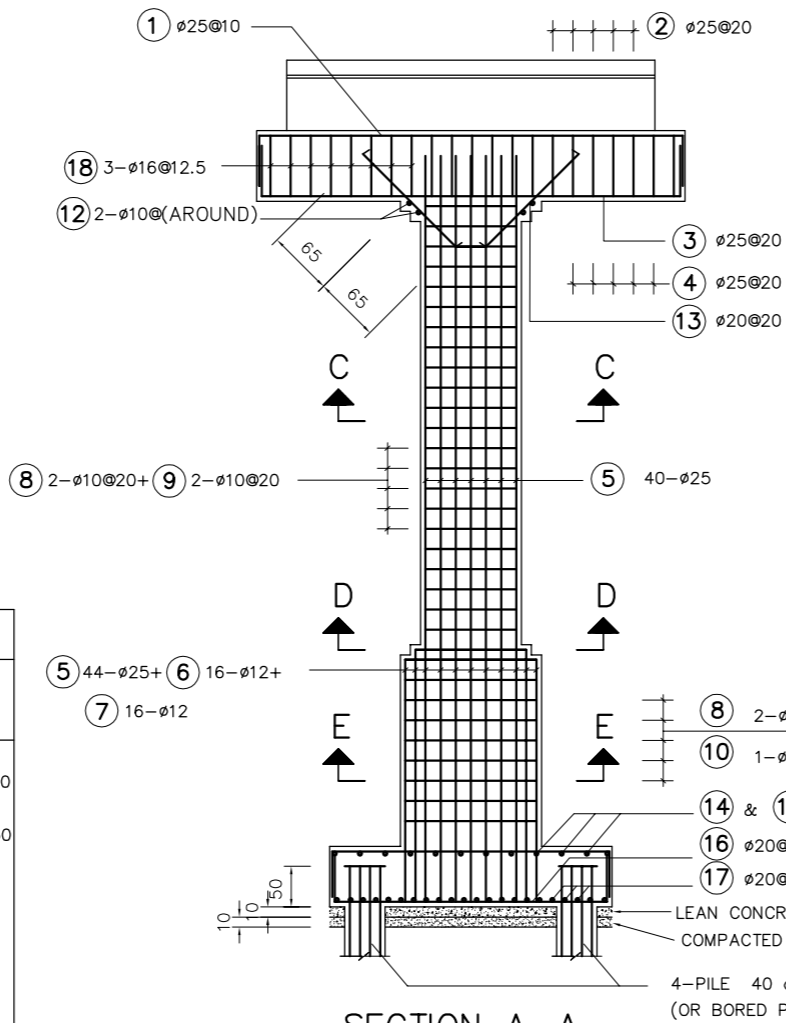
NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY

INSIDE PIER FOR SPAN 12.00m

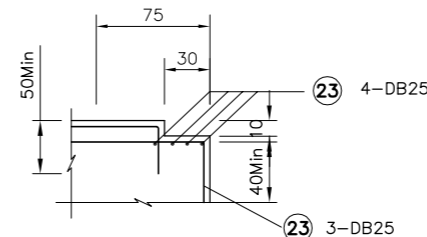
REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. SBR-05
				APPROVED	Mr.Vandy VORASACK	SCALE: 1:50



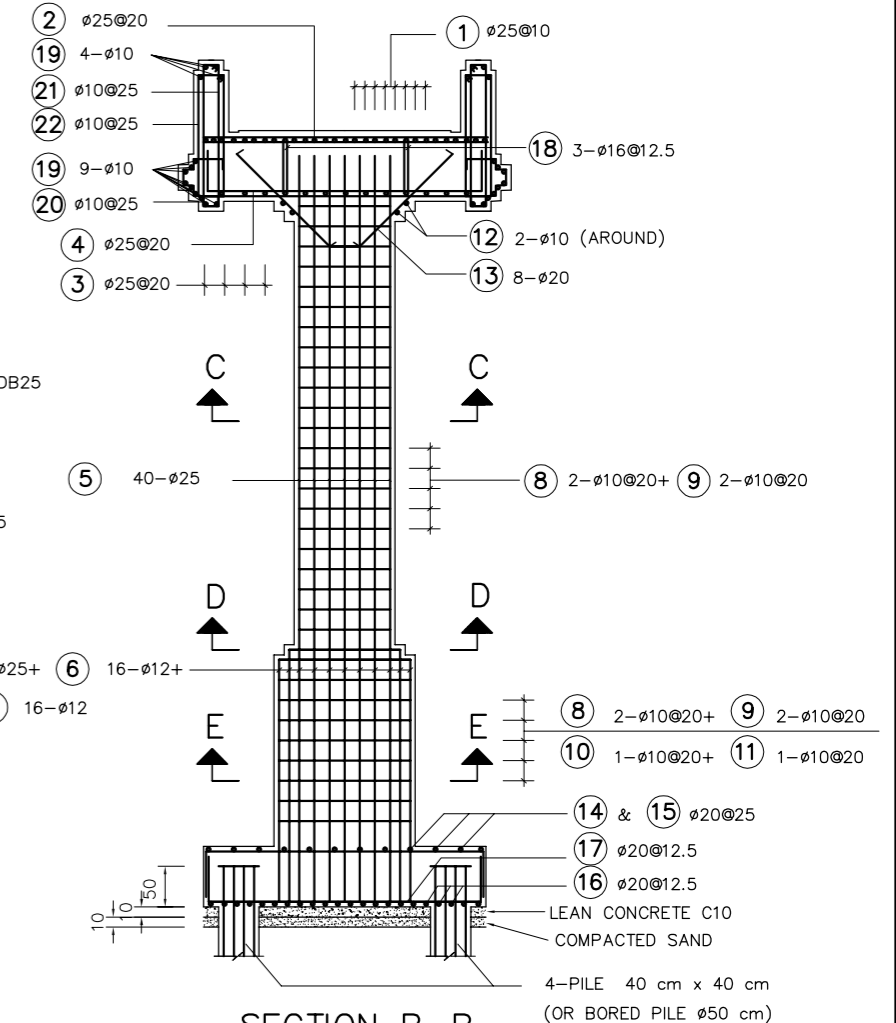
SECTION E-E  
SCALE 1:75



SECTION A-A  
SCALE 1:75

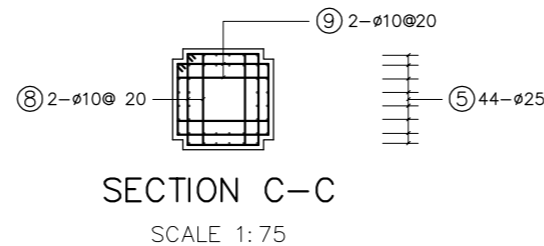


DETAIL A  
SCALE 1:50

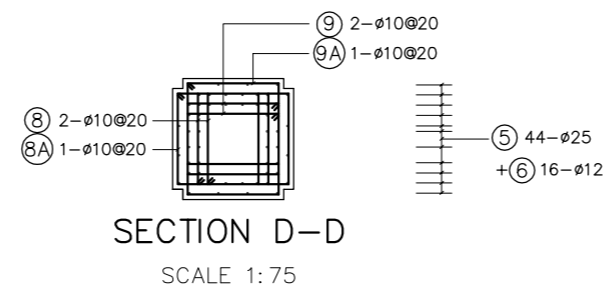


SECTION B-B  
SCALE 1:75

TABLE OF REINFORCEMENT		
NO STEEL	SIDE (mm)	BAR BENDING DIAGRAM
1	ø 25	VARIES
2	ø 25	VARIES
3	ø 25	VARIES
4	ø 25	VARIES
5	ø 25	VARIES
6	ø 12	VARIES
7	ø 12	VARIES
8 & 8A	ø 10	VARIES
9 & 9A	ø 10	VARIES
10	ø 10	VARIES
11	ø 10	VARIES
12	ø 10	VARIES
13	ø 20	VARIES
14	ø 20	VARIES
15	ø 20	VARIES
16	ø 20	VARIES
17	ø 20	VARIES
18	ø 16	VARIES
19	ø 10	VARIES
20	ø 10	VARIES
21	ø 10	VARIES
22	ø 10	VARIES
23	ø 25	VARIES



SECTION C-C  
SCALE 1:75



SECTION D-D  
SCALE 1:75

NOTE:

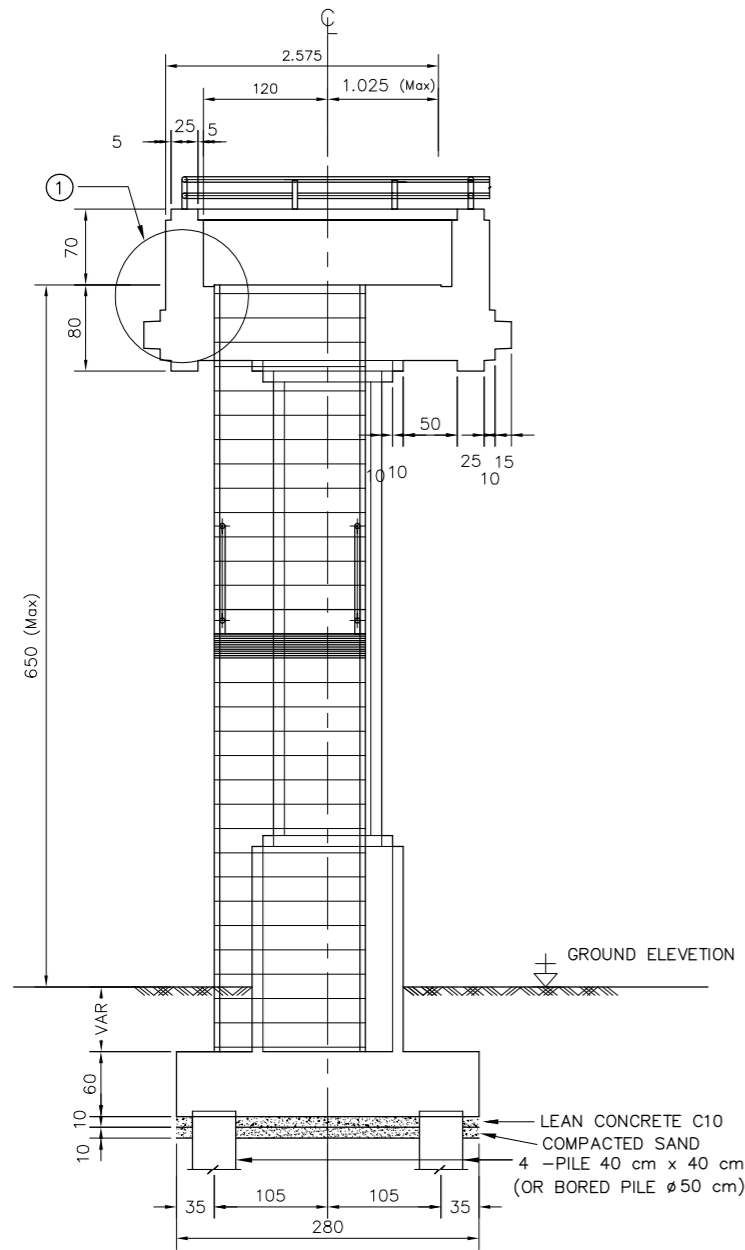
- ALL DIMENSIONS ARE IN CENTIMETERS UNLESS OTHERWISE INDICATED.
- ALL CONCRETE SHALL BE GRADE 25 MPA UNLESS OTHERWISE INDICATED. CONCRETE SHALL HAVE MINIMUM ULTIMATE STRENGTH AT AGE 28 DAYS  $f_c=25$  Mpa,  $f_{ct}=10$  Mpa.
- ALL REINFORCING BAR SHALL BE AGE DEFORMED BAR (AASHTO M31, Grade 60). DEFORMED BAR AND ROUND BAR SHALL BE GRADE 40.
- CLEAR CONCRETE COVER SHALL BE 40 mm.
- ALL EDGES OF CONCRETE SHALL BE CHAMFERED 20mm.
- THE LENGTH OF OVERLAP STEEL BAR SHALL BE WITH THE REQUIREMENTS SET OUT IN THE TECHNICAL SPECIFICATION.
- PILES SHOWN IN THE DRAWING IS A PRELIMINARY ESTIMATE ONLY, IN THE IMPLEMENTATION STAGE, THE CONTRACTOR IS REQUIRED TO INVESTIGATE THE FOUNDATION AND MAKE DETAILED DESIGN FOR CONSTRUCTION AS DIRECTED BY THE ENGINEER.



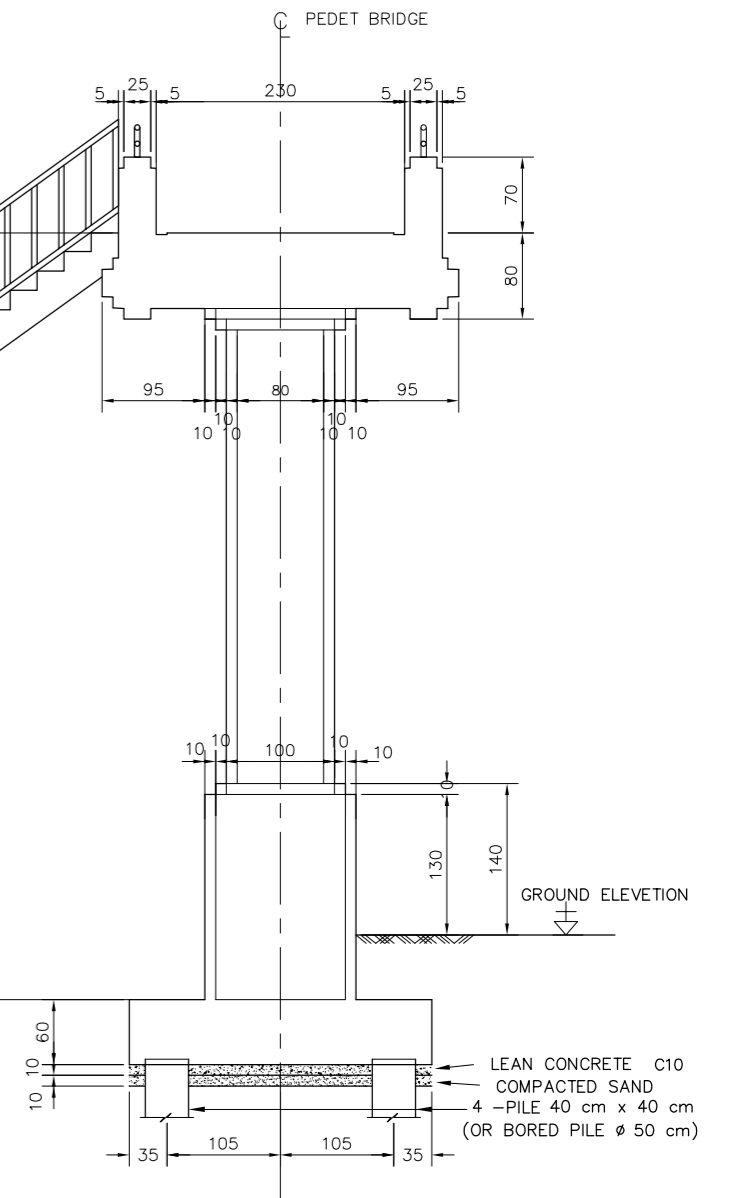
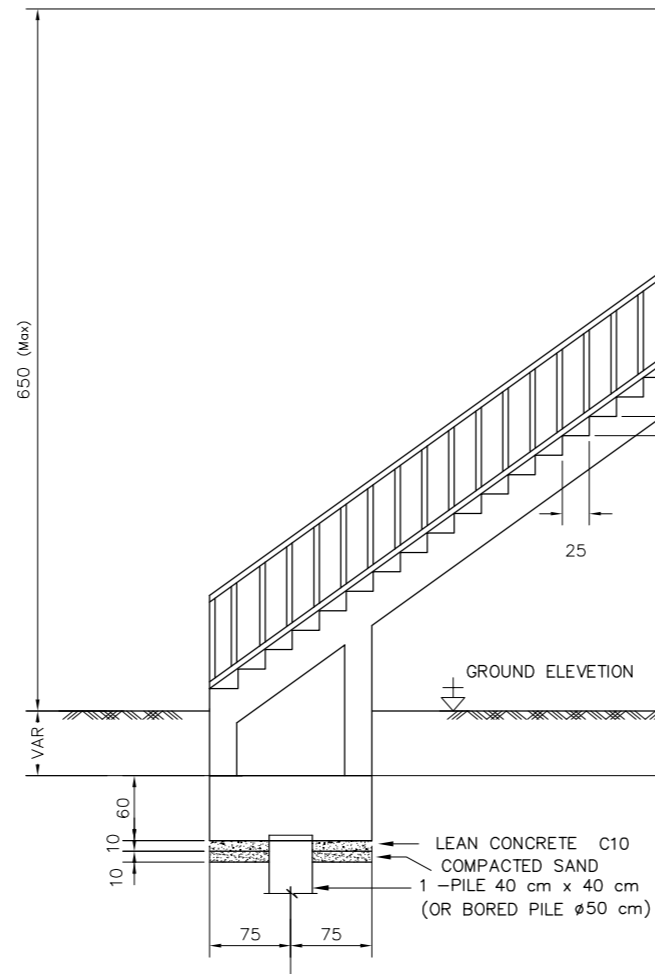
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY  
DETAIL REINFORCEMENT OF INSIDE  
PIER SPAN 12.00

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. SBR-06
				APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN



SECTION A-A  
SCALE 1: 70



SECTION B-B  
SCALE 1: 70

NOTE:

1. ALL DIMENSIONS ARE IN CENTIMETERS UNLESS OTHERWISE INDICATED.
2. ALL CONCRETE SHALL BE GRADE 25 MPA UNLESS OTHERWISE INDICATED. CONCRETE SHALL HAVE MINIMUM ULTIMATE STRENGTH AT AGE 28 DAYS  $f_c=25$  Mpa,  $f_t=10$  Mpa.
3. ALL REINFORCING BAR SHALL BE AGE DEFORMED BAR (AASHTO M31, Grade 60) DEFORMED BAR AND ROUND BAR SHALL BE GRADE 40.
4. CLEAR CONCRETE COVER SHALL BE 40 mm.
5. ALL EDGES OF CONCRETE SHALL BE CHAMFERED 20mm.
6. THE LENGTH OF OVERLAP STEEL BAR SHALL BE WITH THE REQUIREMENTS SET OUT IN THE TECHNICAL SPECIFICATION.
7. PILES SHOWN IN THE DRAWING IS A PRELIMINARY ESTIMATE ONLY, IN THE IMPECCATION STAGE, THE CONTRACTOR IS REQUIRED TO INVESTIGATE THE FOUNDATION AND MAKE DETAILED DESIGN FOR CONSTRUCTION AS DIRECTED BY THE ENGINEER.
8. PRESTRESSED CONCRETE PILE SHALL BE CONFIRMED TO AASHTO "LRFD BRIDGE DESIGN SPECIFICATION" CURRENT EDITION, DIMENSION 400x400 mm AND SAFETY LOAD 60 TONS.



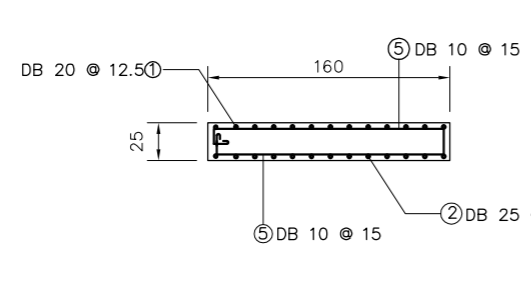
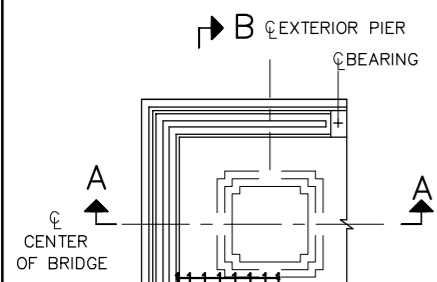
ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ  
LAO TRANSPORT ENGINEERING CONSULTANT

NR 13N IMPROVEMENT AND MAINTENANCE PROJECT  
CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY

STAIR CASE SPAN 12.00m

REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
				DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
				CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. SBR-07
				APPROVED	Mr.Vandy VORASACK	SCALE: 1: 70





SECTION 1-1  
SCALE 1:50

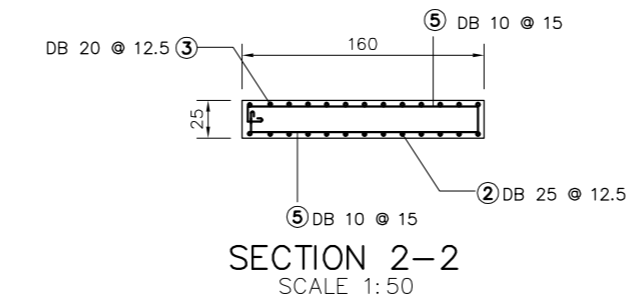
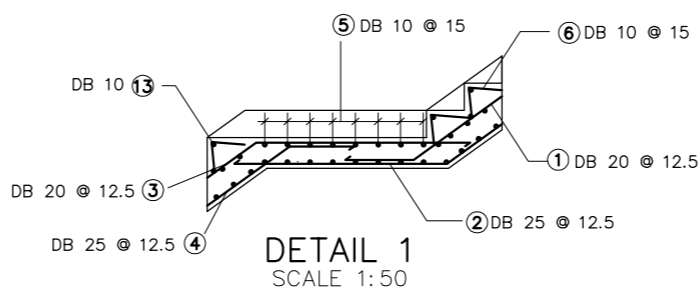
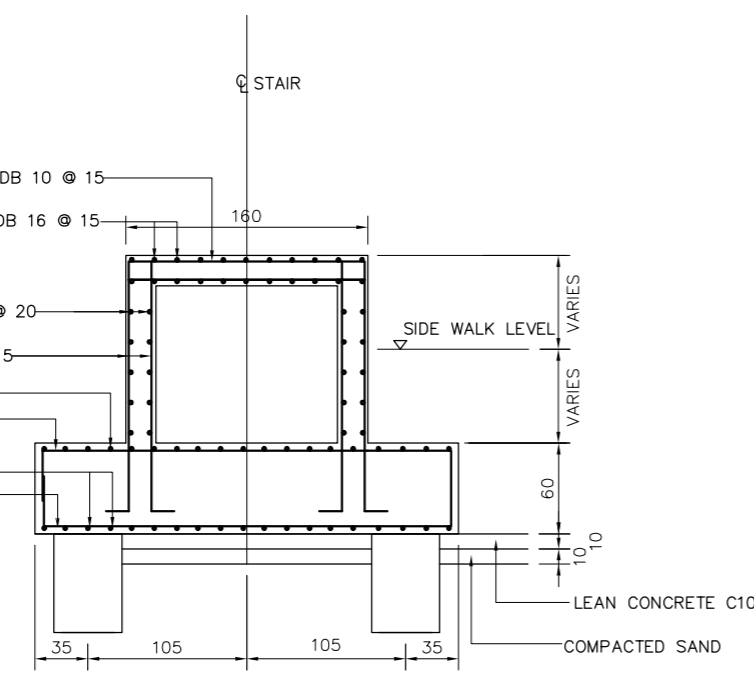
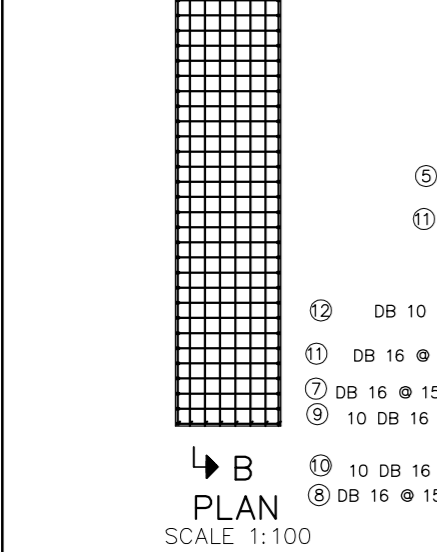
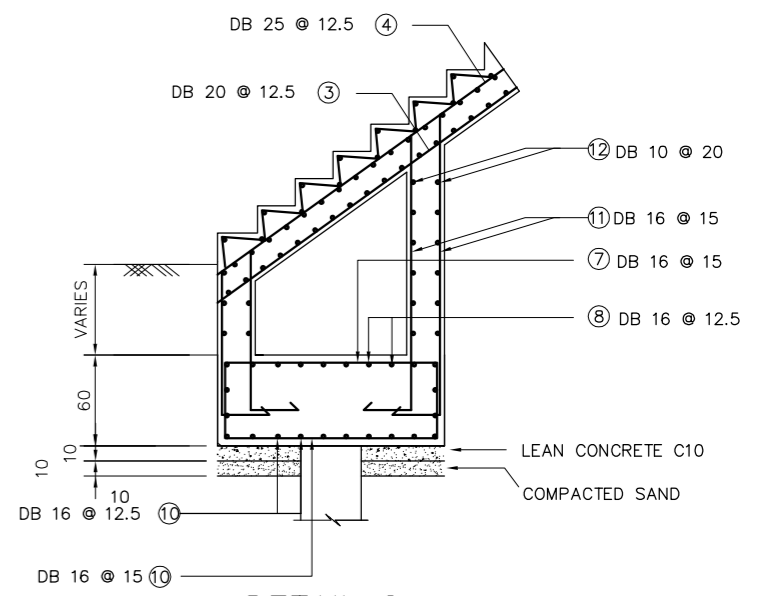
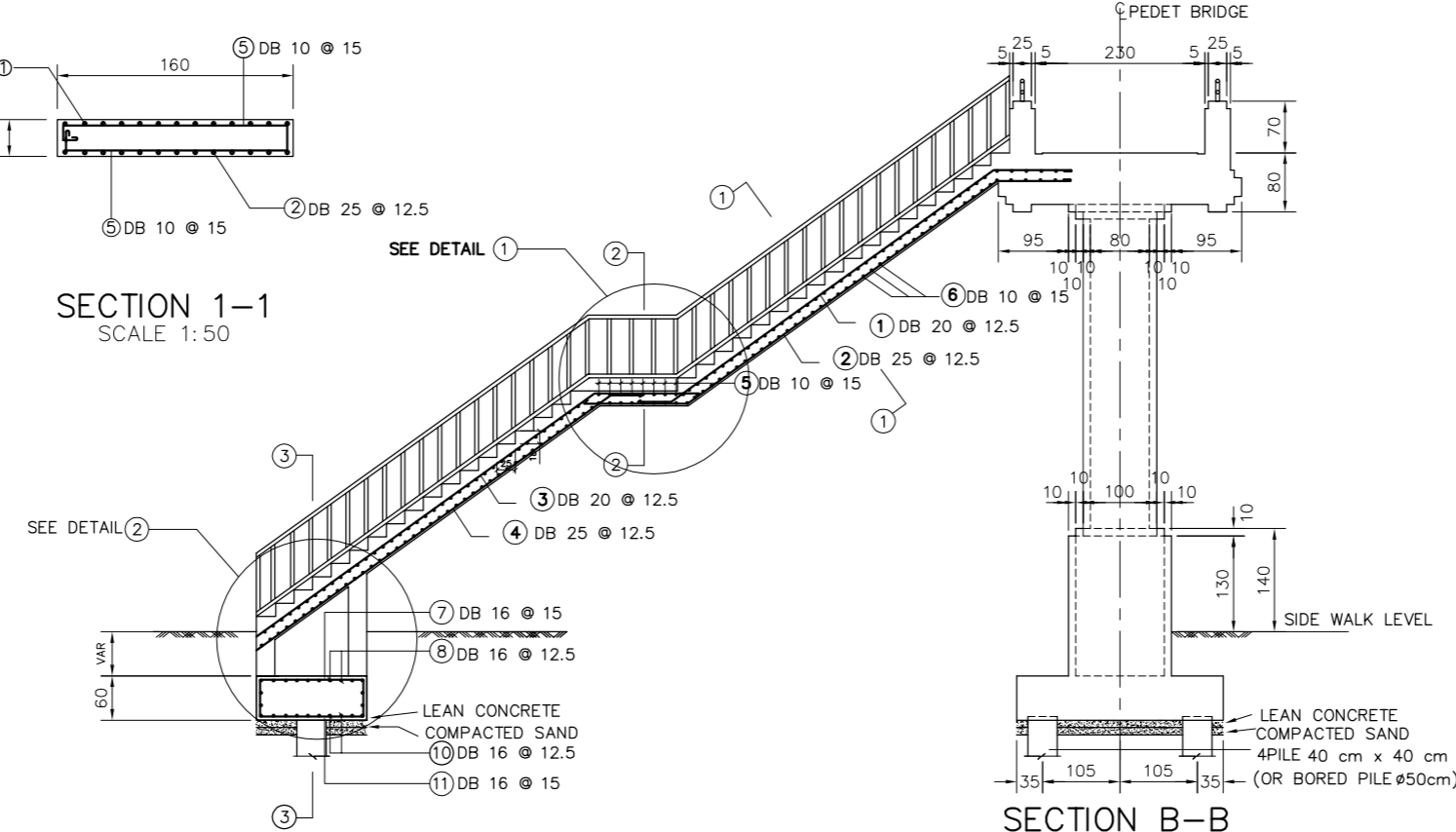


TABLE OF REINFORCEMENT		
BAR MARK	BAR DIA (mm)	DEFORMED BAR REINFORCING
①	ø 20	
②	ø 25	
③	ø 20	
④	ø 25	
⑤	ø 10	
⑥	ø 10	
⑦	ø 16	
⑧	ø 16	
⑨	ø 16	
⑩	ø 16	
⑪	ø 16	
⑫	ø 10	
⑬	ø 10	

- NOTE:**
- ALL DIMENSIONS ARE IN CENTIMETERS UNLESS OTHERWISE INDICATED.
  - PILES SHOWN IN THE DRAWING IS A PRELIMINARY ESTIMATE ONLY, IN THE IMPECCMENTATION STAGE, THE CONTRACTOR IS REQUIRED TO INVESTIGATE THE FOUNDATION AND MAKE DETAILED DESIGN FOR CONSTRUCTION AS DIRECTED BY THE ENGINEER.
  - CONSTRUCTION CONTRACTORS MUST PENETRATE THE BASE  
FOLLOW THE DESIGN CALCULATIONS ROOTED TAILORED TO THE ACTUAL LOCATION.
  - THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRAWING NO: SBR-07.

<p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17
	DETAIL OF STAIR					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
						CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. SBR-09
						APPROVED	Mr.Vandy VORASACK	SCALE: AS SHOWN





TABLE OF INSIDE PIERS REINFORCEMENT

NO	BAR DIA (mm)	LENGTH (mm)	NUMBER	TOTAL LENGTH (mm)	SPACING @ (mm)	REMARK
1	25	5200	29	150.8	100	
2	25	3840	22	84.48	200	
3	25	5200	15	78	200	
4	25	3840	22	84.48	200	
5	25	7900	44	347.6	-	
6	12	2600	16	41.6	-	
7	12	2700	16	43.2	-	
8	10	3200	66	211.2	200	
8a	10	4200	10	42	200	
9	10	3200	66	211.2	200	
9a	10	4280	10	42.8	200	
10	10	5080	9	45.72	200	
11	10	5080	9	45.72	200	
12	10	5720	1	5.72	-	
12	10	5320	1	5.32	-	
13	20	1500	32	48	200	
14	20	1170	12	14.04	250	
15	20	1170	12	14.04	250	
16	20	1170	23	26.91	125	
17	20	1170	23	26.91	125	
18	16	3840	105	403.2	125	
19	10	4400	18	79.2	-	
19	10	3800	8	30.4	-	
20	10	1330	36	47.88	250	
21	10	3680	36	132.48	250	
22	10	3080	36	110.88	250	
23	25	1150	28	32.2	-	

SUMMARIZE THE VOLUME OF INSIDE PIER

STRUCTURE	CONCRETE (M3)			REINFORCEMENT (KG)					MATERIAL MIX FILL (m3)	Pile (m)	Railing (m)
	GRADE 10MPa.	GRADE 25MPa.	GRADE 30MPa.	Ø12	Ø16	Ø20	Ø25	TOTAL			
1. INSIDE PIER	0.78	25.37	-	75.29	636.39	320.35	2996.22		0.78	-	7.30
TOTAL	0.78	25.37	-	75.29	636.39	320.35	2996.22	4028.24	0.78	-	7.30

NOTE:

1. TABLE OF REINFORCEMENT FOR HEAD OF COLUMN ONLY.


 <p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED		NAME	SIGNATURE	LTEC CODE: SD-262-17	
	CONTRACT 1 : SIKEUTH JUNCTION – BAN SONGPEUAY						DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018	
	SUMMARY OF QUANTITIES FOR INSIDE PIER							CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BTB-12
								APPROVED	Mr.Vandy VORASACK	SCALE: -

TABLE OF FOR STAIR CASE REINFORCEMENT

NO	BAR DIA (mm)	LENGTH (mm)	NUMBER	TOTAL LENGTH (mm)	SPACING @ (mm)	REMARK
1	25	3400	24	81.6	125	
2	25	3840	20	76.8	125	
3	25	3400	13	44.2	250	
4	25	3840	11	42.24	250	
5	25	7900	44	347.6	-	
6	12	2600	16	41.6	-	
7	12	2700	16	43.2	-	
8	10	3200	66	211.2	200	
8a	10	4200	10	42	200	
9	10	3200	66	211.2	200	
9a	10	4280	10	42.8	200	
10	10	5080	9	45.72	200	
11	10	5080	9	45.72	200	
12	10	5720	1	5.72	-	
12	10	5320	1	5.32	-	
13	20	1500	32	48	200	
14	20	1170	15	17.55	200	
15	20	1170	23	26.91	125	
16	20	1170	23	26.91	125	
17	20	1170	23	26.91	125	
18	16	3840	60	230.4	125	
19	10	3020	9	27.18	-	
19	10	3020	4	12.08	-	
19	10	2600	18	46.8	-	
19	10	2600	4	10.4	-	
20	10	1330	32	42.56	250	
21	10	3680	26	95.68	250	
22	10	3080	26	80.08	250	
23	25	1150	14	16.1	-	

TABLE OF STAIR REINFORCEMENT

NO	BAR DIA (mm)	LENGTH (mm)	NUMBER	TOTAL LENGTH (mm)	SPACING @ (mm)	REMARK
1	20	6891	13	89.58	250	
2	25	6891	13	89.58	250	
3	20	7110	13	92.43	250	
4	25	7110	13	92.43	250	
5	10	3400	182	618.8	250	
6	10	772	420	324.24	250	
7	16	3800	20	76	100	
8	16	3200	12	38.4	125	
9	16	3200	12	38.4	150	
10	16	3800	20	76	150	
11	16	1800	18	32.4	150	
12	10	2310	42	97.02	200,350	
13	16	1860	35	65.1	200,350	

SUMMARIZE THE VOLUME OF FOR STAIR CASE

STRUCTURE	CONCRETE (M3)			REINFORCMENT (KG)						MATERIAL MIX FILL (m3)	Pile (m)	Railing (m)
	GRADE 10MPa.	GRADE 25MPa.	GRADE 30MPa.	Ø10	Ø12	Ø16	Ø20	Ø25	TOTAL			
1. OUTSIDE PIER	0.78	21.58	-	-	75.29	363.65	360.75	2344.92		0.99	-	36.00
2. STAIR	0.21	9.57	-	728.23	-	292.31	448.86	701.35				
TOTAL	0.99	31.15	-	728.23	75.29	655.96	808.96	3046.27	5228.205	0.99	-	36.00

NOTE:

1. TABLE OF REINFORCEMENT FOR HEAD OF COLUMN ONLY.


	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED		NAME	SIGNATURE	LTEC CODE: SD-262-17
	CONTRACT 1 : SIKEUTH JUNCTION - BAN SONGPEUAY						DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018
	SUMMARY OF QUANTITIES FOR STAIR CASE						CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BTB-13
							APPROVED	Mr.Vandy VORASACK	SCALE: -

TABLE OF CONCRETE BARRIER REINFORCEMENT

NO	BAR DIA (mm)	LENGTH (mm)	NUMBER	TOTAL LENGTH (m)	SPACING @ (mm)	REMARK
1	10	19000	6	114	-	
2	10	19000	1	19	-	
3	10	19000	2	38	-	
4	10	3685	37	136.35	500	
5	10	3375	37	124.88	500	

SUMMARIZE THE VOLUME OF CONCRETE BARRIER

STRUCTURE	CONCRETE (M3)			REINFORCMENT (KG)					MATERIAL MIX FILL (m3)	Pile (m)
	GRADE 10MPa.	GRADE 25MPa.	GRADE 30MPa.	Ø10	Ø12	Ø16	Ø20	TOTAL		
1.CONCRETE BARRIER	-	14.24	-	266.49	-	-	-	-	-	-
TOTAL	-	14.24	-	266.49	-	-	-	266.49	-	-

NOTE:

1. TABLE OF REINFORCEMENT FOR HEAD OF COLUMN ONLY.


 <p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17	
	CONTRACT 1 : SIKEUTH JUNCTION – BAN SONGPEUAY					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018	
	SUMMARY OF QUANTITIES FOR CONCRETE BARRIER						CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BTB-14
							APPROVED	Mr.Vandy VORASACK	SCALE: -

TABLE OF GIRDER SPAN 12 m REINFORCEMENT

NO	BAR DIA (mm)	LENGTH (mm)	NUMBER	TOTAL LENGTH (mm)	SPACING @ (mm)	REMARK
1	12	3600	40	144	200	
1a	12	3500	44	154	100	
2	12	1200	40	48	200	
2a	12	3260	44	143.44	100	
3	10	1700	61	103.7	100	
4	10	4100	61	250.1	100	
5	12	1900	8	15.2	100	
6	10	13000	20	260	-	
7	20	2500	4	10	100	
8	25	2775	4	11.1	-	
9	12	600	324	194.4	150	
9	12	960	324	311.04	150	
10	12	2000	4	8	-	
11	10	17000	12	204	-	
12	20	800	60	48		

TABLE OF DECK SLAB SPAN 12 m REINFORCEMENT


NO	BAR DIA (mm)	LENGTH (mm)	NUMBER	TOTAL LENGTH (mm)	SPACING @ (mm)	REMARK
1	20	2400	36	86.4	-	
2	10	1760	72	126.72	200	
3	12	13000	10	130	-	
4	10	13000	6	78	-	
5	10	13000	7	91	150	
6	10	900	82	73.8	300	
7	10	620	122	75.64	200	
8	10	2400	81	194.4	150	
9	10	1000	16	16	300	
10	10	2400	32	76.8	300	

SUMMARIZE THE VOLUME OF SUPER STRUCTURE SPAN 12 m

STRUCTURE	CONCRETE (M3)			REINFORCMENT (KG)						MATERIAL MIX FILL (m <sup>3</sup> )	Pile (m)	Railing (m)
	GRADE 10MPa.	GRADE 25MPa.	GRADE 30MPa.	Ø10	Ø12	Ø16	Ø20	Ø25	TOTAL			
1. 2 GIRDERS	-	12.66	-	1008.408	1807.732	-	286.074	85.544		-	-	24.00
2. DECK SLAB	-	5.49	-	451.53	115.42	-	213.08	-		-	-	
TOTAL	-	18.14	-	2801.52	2896.48	-	499.15	85.54	6282.69	-	-	24.00

NOTE:

1. TABLE OF REINFORCEMENT FOR HEAD OF COLUMN ONLY.

 <p>ລັດວິສາຫະກິດ ວິສະວະກຳ ຄົມມະນາຄົມ LAO TRANSPORT ENGINEERING CONSULTANT</p>	NR 13N IMPROVEMENT AND MAINTENANCE PROJECT	REV.	DATE	DESCRIPTION	APPROVED	NAME	SIGNATURE	LTEC CODE: SD-262-17	
	CONTRACT 1 : SIKEUTH JUNCTION – BAN SONGPEUAY					DESIGNED	Mr.Phonepasong SENSONGKHAM	DATE: April, 2018	
	SUMMARY OF QUANTITIES FOR GIRDER SPANS 12 m						CHECKED	Mr.Khamphone SORPHABMIXAY	DRW No. BTB-15
							APPROVED	Mr.Vandy VORASACK	SCALE: -