Date: 30th April 2018

Environmental Monitoring Report No. 07

A) Description: Air Quality, Water Quality, Noise/Sound and Vibration Observation

B) Date of Monitoring: 26th April 2018

C) Location: Xe Tha Mouak Project Site

D) Measurer: Mr. Vincent Fayloga (Contractor)
Mr. Janroe Morados (Contractor)

E) Attended by: Mr. Yuji IWATSUKI (Consultant)

F) Type of Measuring Tools used:

1. For Air Quality Monitor:
Name & Model: Mini-Particle Counter, CEM DT-96
Features: Mini-Particle Counter PM2.5 PM10 Handheld Detector Particle Monitor Professional Dust Air Quality Monitor.
- The determination of suspend particle concentration in the air of the weight method (PM2.5/PM10).

2. For Gas Emission Measurement:
Type: Gas Detector Tube System with Gas Aspirating Pump, Brand: KITAGAWA-Japan
List of "Kitagawa" Precision Detector Tubes Used:

Tube No.	Measuring Range	Gas to be Measured
1. 103SG	0.5 ~ 25ppm	Sulphur Dioxide (SO_2)
2. 106SC	1 ~ 50ppm	Carbon Monoxide (CO)
3. 117SD	0.1 ~ 1.0ppm	Nitrogen Dioxide (NO_2)

Type of Tools used: Aspirating Pump for Gas Detector Tube, Model: KITAGAWA AP-20.

3. **For Water Quality Monitor, PH Measurement:**
Name & Model: PH Meter, PH-201, with PH Electrode Model: PE-11, Range: 0~14 pH
With Standard Buffer Solution PH 7.00

4. **For Water Quality Monitor, Turbidity Measurement:**
Name & Model: Turbidity Meter, TU-2016, Range: 0.00~50.00 NTU, 50~1,000 NTU
With Standard Solution for Calibration:
- 0 NTU standard solution and 100 NTU standard solution

5. **For Noise Monitor, Sound Level Measurement:**
Name & Model: Sound Level Meter, TM-102,
Measuring Level Range: A Weighting: 30 ~ 130dB and C Weighting: 35 ~ 130dB

6. For Vibration Monitor, Vibration Level Measurement:

Name & Model: Vibration Level Meter, Type 3233 with Acceleration Pick up Type 7833,
Features:

- 5 arbitrarily selected values of maximum and minimum values for hour rate vibration levels (Lx) can be measured at one time.
- Power average level (Leq) can be measured. Wide range of linearity 75dB.
- Environmental vibration required for occupational health can be measured.

G) Environmental Monitoring Results

1. Ambient Air Quality Observation

Item	Location	Measurement Points	Unit	Measured Value	Remarks
Suspended Particle Matter	Xe Tha Mouak Bridge	A1 side	µg/m³	PM2.5= 7 / PM10= 12	USA PM2.5<35µg/m³ PM10<150µg/m³ *24 hours Test
		A2 side	µg/m³	PM2.5= 11 / PM10=21	
Sulfur Dioxide (SO_2)	Xe Tha Mouak Bridge	A1 side	ppm	No detection	USA <0.25 ppm (STEL)
		A2 side	ppm		
Carbon Monoxide (CO)	Xe Tha Mouak Bridge	A1 side	ppm	No detection	USA <25 ppm JPN <50 ppm
		A2 side	ppm		
Nitrogen Dioxide (NO_2)	Xe Tha Mouak Bridge	A1 side	ppm	No detection	USA <0.2 ppm
		A2 side	ppm		

2. Ambient Water Quality Observation

Item	Location	Measurement Points		Unit	Measured Value	Remarks
pH	Xe Tha Mouak River	A1 side	Upstream side	pH	8.0	Country's Standard: 6~9.5 pH
			Downstream side	pH	7.8	
		A2 side	Upstream side	pH	8.0	
			Downstream side	pH	7.8	
Turbidity	Xe Tha Mouak River	A1 side	Upstream side	NTU	60	Compare Values *Effect of Heavy rain on 25-Apr-18. (107mm/day)
			Downstream side	NTU	92	
		A2 side	Upstream side	NTU	62	
			Downstream side	NTU	102	

3. Noise and Vibration Measurement

Item	Location	Measurement Points	Unit	Measured Value	Remarks
Noise Level	Xe Tha Mouak Bridge	A1 side	dB	Fast A: 78.6 (max)	Country's Standard: Below 115dB content of noise
		A2 side	dB	Fast A: 72.8 (max)	
Vibration Level	Xe Tha Mouak Bridge	A1 side	dB	Lv10-Z: 45.4 Lmax: 52.3	Japan Standard: Below 75dB
		A2 side	dB	Lv10-Z: 47.1 Lmax: 55.8	

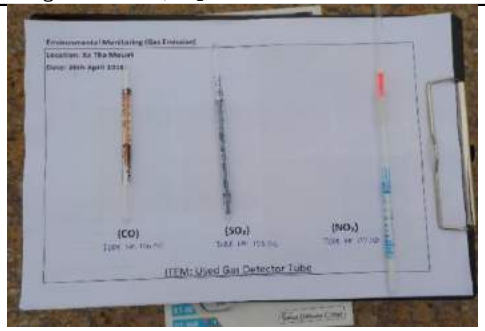
H) Time and Weather Conditions of Observation

Measurement Points		Date of Measurement	Time of Measurement	Weather Condition	Temperature
A1		26th Apr'18	14:30pm	Cloudy	27°C
A2		26th Apr'18	16:00pm	Cloudy	28°C
A1	Upstream	26th Apr'18	15:30pm	Cloudy	30°C (Water Temp.)
	Downstream	26th Apr'18	15:40pm	Cloudy	30°C (Water Temp.)
A2	Upstream	26th Apr'18	16:50pm	Cloudy	29.5°C (Water Temp.)
	Downstream	26th Apr'18	17:00pm	Cloudy	29°C (Water Temp.)

Environmental Monitoring Photo Report

Air Quality (Emission Gas/Ambient Air Quality)

Location: Existing Xe Tha Mouak Bridge Date: 26 April 2018

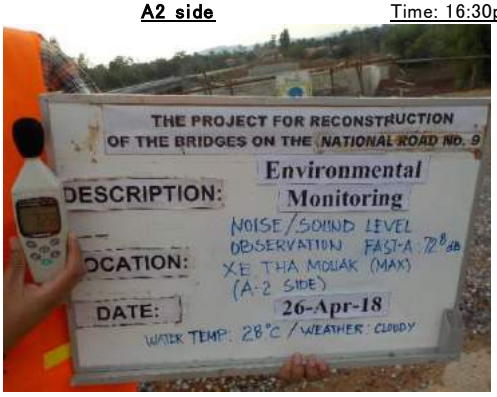
A1 side Time: 14:30pm	**A2 side** Time: 16:00pm
 1. Particulate Matter, PM2.5 and PM10	 1. Particulate Matter, PM2.5 and PM10
 2. Carbon Monoxide (CO)	 2. Carbon Monoxide (CO)
 3. Sulfur Dioxide (SO_2)	 3. Sulfur Dioxide (SO_2)
 4. Nitrogen Dioxide (NO_2)	 4. Nitrogen Dioxide (NO_2)
 5. Used Gas Detector Tube	 5. Used Gas Detector Tube

Environmental Monitoring Photo Report

Location: Existing Xe Tha Mouak Bridge Date: 26 Apr 2018

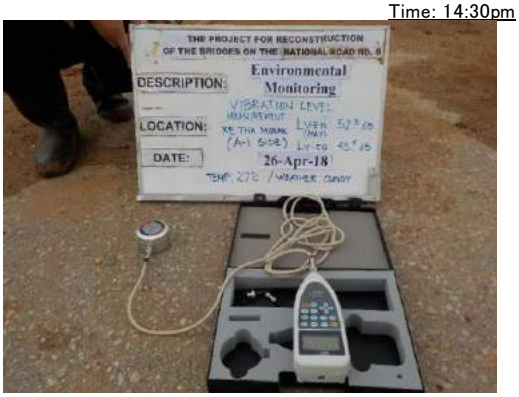
A1 side Time: 14:30pm

A2 side Time: 16:30pm



1. Noise Measurement (Noise Level)

Time: 14:30pm



Time: 16:00pm

2. Vibration Measurement (Vibration Level)

Upstream side Time: 15:30pm

Upstream side Time: 16:50pm

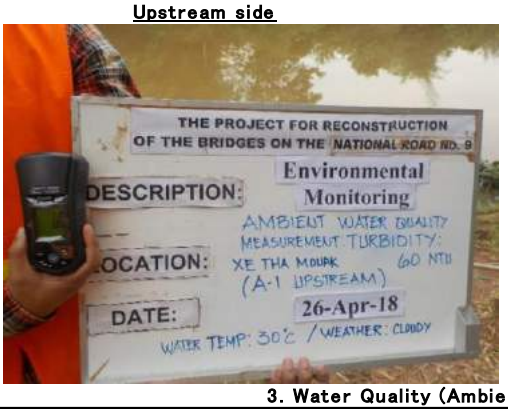
Downstream side Time: 15:40pm

Downstream side Time: 17:00pm

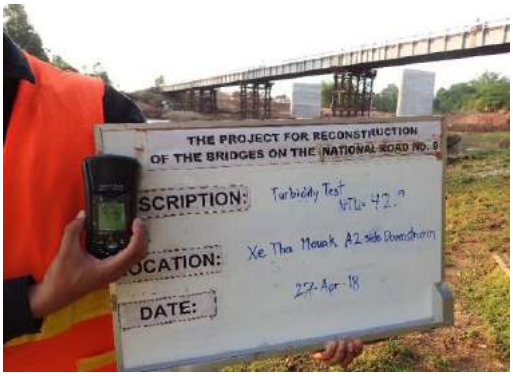
3. Water Quality (Ambient Water Quality, pH)

Environmental Monitoring Photo Report

Location: Existing Xe Tha Mouak Bridge Date: 26 Apr 2018

A1 side Time: 15:30pm **Upstream side**  	**A2 side** Time: 16:50pm **Upstream side** 
3. Water Quality (Ambient Water Quality, Turbidity)	
Downstream side Time: 15:40pm  	**Downstream side** Time: 17:00pm 
3. Water Quality (Ambient Water Quality, Turbidity)	

Date: 27 Apr 2018 Date: 28 Apr 2018

A2 side Time: 17:20pm **Upstream side** **25.4 NTU**  	**A2 side** Time: 16:00pm **Upstream side** **26.3 NTU** 
Time: 17:30pm **Downstream side** **42.9 NTU**  	Time: 16:10pm **Downstream side** **37.0 NTU** 
4. Additional Observation (Ambient Water Quality, Turbidity)	