## VIETNAM INFRASTRUCTURE DEVELOPMENT AND FINANCE INVESTMENT JOINT STOCK COMPANY

# **REPORT ON ENVIRONMENTAL MONITORING**

THE EXPRESSWAY HA NOI - HAI PHONG PROJECT The 6<sup>th</sup> monitoring of locations of packages EX-2. EX-3. EX-4. EX-5. EX-6. EX-8. EX-10

Address: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street Me Tri Commune, Tu Lien, Ha Noi

Owner finance investment joint stock company

Consultancy Vietnam Infrastructure development and Institute of Environmental Technology r. VIÊN TRƯỞNG

VIEN

CÔNG NGHÊ MÔI TRƯỜNG

Nguyễn Thị Huệ

VIÊN TRƯỚNG

VIEN SEN TRUĞNG CONG NGHĘ (1001 TRUGNG)

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# INTRODUCTION

The Hanoi – Hai Phong Expressway project was issued by Transportation Ministry. The highway is built according to international standards. The route starts at the FIFTH ring road of Hanoi . which runs across Hung Yen. Hai Duong Province and ends at Hai Phong Province.

Starting point: at the FIFTH ring road. surrounding Hanoi City. 1'025m from the Northern abutment of Thanh Tri bridge. in Thuong Hoi hamlet. Thach Ban commune. Gia Lam District. Hanoi Capital.

- Ending point: Dinh Vu dam. Hai An District. Hai Phong city.

Scale of research on the Ha Noi – Hai Phong expressway run across some hamlet, commune. District as below:

Starting at Thuong Hoi hamlet. Thach Ban commune. Long Bien District. the route runs across Dao Xuyen hamlet. Da Ton commune. Kieu Ky commune. Gia Lam District. Ha Noi capital. Starting point: the FIFTH ring road (km 0 to km 6.1).

The communes Cuu Cao. Long Hung. Tan Tien belong to Van Giang District and Yen Phu. Viet Cuong. Minh Chau. Thuong Kiet. Tan Viet commune belong to Yen My District and Van Du commune is in An Thi District. Hung Yen province (km 6.1 to km 25).

Binh Giang District includes Thai Duong. Thai Hoa. Thai Hoc. Co Bi communes while Gia Loc District includes Yet Kieu. Phuong Hung. Gia Khanh. Gia Xuyen communes. Gia Loc town. Ngoc Ky. Dong Ky. Tu Xuyen communes are in Tu Ky District while Thanh Hong. Thanh Cuong. Vinh Lap communes are in Thanh Ha District. Hai Duong province (km 25 – km 82).

Quang Trung. Quoc Tuan. My Duc. An Thai communes are in An Lao District. while Huu Bang. Hoa Nghia communes are in Kien Thuy District. Trang Cat precinct – Hai An District – Hai Phong City (km 82 to ending point at km 105+500).

Implementing environmental monitoring programmers which were undertook at chapter 6 of the Environmental impact assessment report "The Ha Noi – Hai Phong expressway project" is approved by Transportation Ministry. The owner cooperated



with advisory monitoring groups and environmental quality supervision according to just progress of the project.

Based on the second monitoring outline approved by the owner of project from 3 to July 13. 2012. Institute of Environmental Technology carried out monitoring and analytical sampling of environmental parameters as follow: select determining location. position. time and frequency sampling per day of water. soil and air following windward.



#### I. GENERAL INFORMATION

#### 1.1. Contact information

Owner: Vietnam Infrastructure development and finance investment joint stock company

Address: 8th-9th-10th Floor. LILAMA tower. Me Tri commune. Tu Liem. Hanoi

Tel: (84-4) 37711 668-22209 668. Fax: (84-4) 666 22 209

The Groups of construction:

The Hanoi - Hai Phong expressway project has major 10 groups join. In which, there are 8 groups supervised and monitored environmental quality by the Institute of Environmental technology and at present only 03 groups under construction. 02 groups by group of construction observation and monitoring have in the course of construction. There are 10 tender packages for major construction of the route there were 05 construction packages also 05 packages remaining in the bidding process.

- The packages were monitored and supervised by Institute of Environmental Technology
  - 1. Package EX-2: Namkwang Engineering and Construction Co.. Ltd
- Address: 199 road Me Thuong Hamlet. Yen Phu Commune. Yen My District. Hung Yen Province.
  - Tel: 03213.968.888

Fax: 03213.968.999

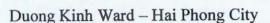
- 2. Package EX-3: General construction company China road
- Address: No. 8 Luc Dien Roac Minh Chau Commune Yen My District Hung Yen Province.
  - Tel: 03213.975.837

Fax: 03213.975.836

The group of expressway construction.

- 3. Package EX-4: Keangnam Co.. Ltd
- Address: Thai Hoc Commune Binh Giang District Hai Duong Province
- 4. Package EX-5:
- Address: Gia Loc Commune Gia Loc Distric: Hai Duong Province
- 6. Package EX-6:
- Address: Thanh Cuong Commune Thanh Ha District Hai Duong Province
  - 3. Package EX-8:
  - Address: 1st floor PLACO building. Km 5 Pham Van Dong Road -





- Tel: + 84.31.3581 562

\* Fax: +84.31.3581 565

# 4. Package EX-10: Namkwang Engineering and Construction Co.. Ltd

- Address: 3<sup>rd</sup> floor - Sao Do building - Km 1+400 - Pham Van Dong road - Anh Dung ward - Duong Kinh District - Hai Phong City.

- Tel: 0313.632.486

Fax: 0313.632.528

### Supervisory Consultancy: Institute of Environmental Technology

- Address: A30 building. No. 18 Hoang Quoc Viet. Cau Giay. Ha Noi
- Tel: 043 7569 136; 043 7911 654; 043 7916 512; Fax: 043 7911 203

#### 1.2. Location of implementing the package

Location of the implementation of package EX-2 section from km 6+200 to km 19+000 of the Ha Noi – Hai Phong expressway project.

Location of the implementation of package EX-3 section from km 19+000 to km 33+000 of the Ha Noi – Hai Phong expressway project.

Location of the implementation of package EX-4 section from km 33+000 to km 48+000 of the Ha Noi – Hai Phong expressway project.

Location of the implementation of package EX-5 section from km 48+000 to km 63+300 of the Ha Noi – Hai Phong expressway project.

Location of the implementation of package EX-6 section from km 63+300 to km 72+000 of the Ha Noi – Hai Phong expressway project.

Location of the implementation of package EX-8 section from km 91+300 to km 91+300 of the Ha Noi – Hai Phong expressway project.

Location of the implementation of package EX-10 section from km 96+300 to km 105+500 of the Ha Noi – Hai Phong expressway project.

#### II. SOURCES OF ENVIRONMENT IMPACT

# 2.1. Sources of pollutants arising from the activities of Companies

At the time of the fifth monitoring (APRIL 2012)(from 3 to July 13. 2012). the packages of EX-2. EX-3. EX-10. (EX 4. EX 5. EX 6 the FIFTH monitoring). (EX-8 the fourth monitoring) were implementing embankment construction thus sources of pollution affecting the ambient environment include:

- Sources of air pollution include:



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- + Dust. NO<sub>2</sub>. SO<sub>2</sub>. CO: arising from the embankment construction etc.
- + Dust. NO<sub>2</sub>. SO<sub>2</sub>. CO: arising from the operation of vehicles transporting raw materials (mainly sand).
  - Waste water:
- + The embankment construction stage has not production sewage. only rain water runoffs.
- + Household's wastewater is almost negligible due to the little presence of workers on site. Moreover, workers do not eat or sleep in site huts.
  - Sources of solid wastes and hazardous wastes almost zero.
  - Sources of noise and vibration:
  - + Noise. vibration etc arising from the embankment construction. transportation. etc.
  - + Noise generated by the operation of the transportation of materials.

To assess the negative impacts on the environment of air. land and water. The owner has cooperated with Institute of Environmental Technology due to implementing of environmental monitoring annually during the construction.

# III. RESULTS OF MONITORING. PERIODICALLY SAMPLING ANALYSIS OF ENVIRONMENTAL PARAMETERS

# A. RESULTS OF MONITORING IS SUPERVISED BY INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

## 1. The basis of sampling and environmental analysis

# - General regulations

Law on Environmental Protection of Socialist Republic of Vietnam 9/11/2005.

Decision 1940/QD-BTNMT dated 30/11/2007 on the approval of environmental assessment impact report on the Ha Noi-Hai Phong Expressway Project.

Based on the contents of the report on environmental impact assessment of Ha Noi-Hai Phong Expressway Project.

Detailed planning drawing of Ha Noi-Hai Phong Expressway Project.

Based on the demands and abilities of the two parties.



#### - For air environment

- + QCVN 05:2009/BTNMT National technical regulations on ambient air quality (substituted for TCVN 5937-2005 "Quality of air and ambient air").
- + QCVN 06:2009/BTNMT National technical regulations on some poison in ambient air

#### - For noise and vibration

- + QCVN 26:2010/BTNMT National technical regulations on noise (substituted for TCVN 5949-1998: "The maximum permitted noise for public and residential areas").
- + QCVN 27:2010/BTNMT National technical regulations on vibration (substituted for TCVN 6962-2001: "Vibration and shock Vibration emitted by construction activities and industrial production The maximum allowed on the environment of public places and residential areas").

#### - For water environment

- + QCVN 08:2008/BTNMT National technical regulations on quality of surface water source (substituted for TCVN 5942-1995: Quality regulation of surface water)
- + QCVN 09:2008/BTNMT National technical regulations on quality of underground water.

## - Monitoring locations

Table 1.1. Positions and air sampling time

| No. | Content | Sign | Package<br>No. | Monitoring locations   | Sampling date                                   |
|-----|---------|------|----------------|--|---|
| 1   | Air     | K 2  | 2              | Intersection with the 179 road. Cuu Cao commune. Van Giang District. Hung Yen Province.                        | July<br>3 <sup>rd</sup> -4 <sup>th</sup> . 2012 |
| 2   |         | К3   | 3              | Intersection with the 39 road.<br>(Luc Dien Ward. Minh Chau<br>commune. Yen My District.<br>Hung Yen Province) | July<br>4 <sup>th</sup> -5 <sup>th</sup> . 2012 |
|     | Logical | K 4  | 4              | Intersection with the 38 road. (Tan Phuc commune. Yen My District. Hung Yen Province)                          | July<br>5 <sup>th</sup> -6 <sup>th</sup> . 2012 |



|   | K 5  | 5  | Intersection with the 20 road. (Nhan Quyen commune. Yen My District. Hung Yen Province)   | July 6 <sup>th</sup> -7 <sup>th</sup> . 2012      |
|---|------|----|---|---|
|   | К 6  | 5  | Gia Loc High School (Gia<br>Loc town commune. Gia Loc<br>District. Hung Yen Province)     | July 9 <sup>th</sup> -10 <sup>th</sup> . 2012     |
|   | К7   | 6  | Intersection with the 190 road. (Thanh Cuong commune. Yen My District. Hung Yen Province) | July 10 <sup>th</sup> -11 <sup>th</sup> . 2012    |
| 3 | K 10 | 8  | Three - way crossroads Quan<br>Re. My Duc Commune. An<br>Lao District. Hai Phong City     | July 11 <sup>th</sup> -12 <sup>th</sup> .<br>2012 |
| 4 | K 12 | 10 | Residential area in Tan Vu.<br>Trang Cat. Hai An. Hai Phong                               | July 12 <sup>th</sup> -13 <sup>th</sup> . 2012    |

# Table 1.2. Position and surface water sampling time

| No. | Sign | Package<br>No. | Monitoring locations  | Sampling date                                     |
|-----|------|----------------|---|---|
| 1   | NM 1 | 2              | Bac Hung Hai river – Van Giang<br>District (Cau Chua – Chu Xa. Kieu<br>Ky. Gia Lam. Ha Noi) | July 3 <sup>rd</sup> -4 <sup>th</sup> . 2012      |
| 2   | NM 2 | 4              | O Xuyen river, Gia Loc District, Hai<br>Duong Province                                      | July 6 <sup>th</sup> -7 <sup>th</sup> . 2012      |
| 3   | NM 4 | 8              | Da Do river- My Duc Commune. An Lao District. Hai Phong City                                | July 11 <sup>th</sup> -12 <sup>th</sup> . 2012    |
| 4   | NM 5 | 10             | Lach Tray river. Hai Phong  | July 12 <sup>th</sup> -13 <sup>th</sup> .<br>2012 |

# Table 1.3. Positions and ground water sampling time

| No. | Content | Sign | Package<br>No. | Sampling location | Sampling date |
|-----|---------|------|----------------|-------------------|---------------|
|-----|---------|------|----------------|-------------------|---------------|



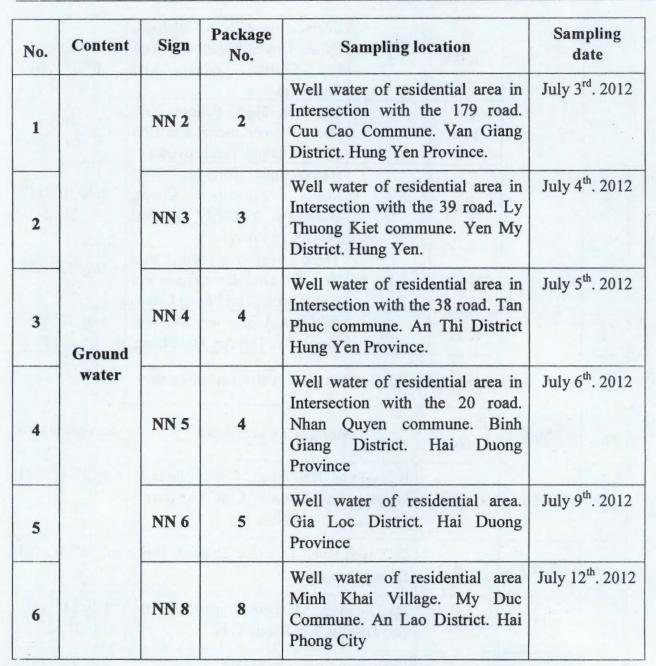


Table 1.4. Positions and soil sampling time

| No. | Content | Sign | Package<br>No. | Sampling location  | Sampling date               |
|-----|---------|------|----------------|--|-----------------------------|
| 1   | Soil    | D 2  | 2              | Farmland taken in Intersection with the 179 road. Van Giang area.                          | July 3 <sup>rd</sup> . 2012 |
| 2   |         | D3   | 3              | Farmland taken in Intersection with the 39 road. Luc Dien Ward. Yen My District. Hung Yen. | July 4 <sup>th</sup> . 2012 |



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| 3 | D 4        | 4  | Farmland taken in Intersection with the 38B road. Gia Loc District, Hai Duong Province area. | July 5 <sup>th</sup> . 2012  |
|---|------------|----|--|------------------------------|
| 4 | D 5        | 4  | Farmland taken in Intersection with the 20 road. Hai Duong area.                             | July 6 <sup>th</sup> . 2012  |
| 5 | D 6        | 5  | Farmland taken in Intersection with the 38B road. Gia Loc District, Hai Duong Province area. | July 9 <sup>th</sup> . 2012  |
| 6 | <b>D</b> 7 | 6  | Farmland taken in Intersection with the 190 road.  | July 10 <sup>th</sup> . 2012 |
| 7 | D 10       | 10 | Soil sample taken near shrimp hatchery area. Hai Phong City.                                 | July 12 <sup>th</sup> . 2012 |

# - Monitoring equipments

Table 1.5. List of Monitoring equipments

| No. | List of equipments  | Origin  |
|-----|---|---|
| 1   | Sampling equipment (CO. SO <sub>2</sub> . NO <sub>2</sub> . H <sub>2</sub> S) | Multiwarn II SEP 8314060. Drager. Germany           |
| 2   | Dust equipment  | Sibata SL20/30. Japan                               |
| 3   | Gas Absorbent   | Kimoto HS-7. Japan                                  |
| 4   | Noise   | ORION NL-21. Japan                                  |
| 5   | Vibration   | VM-1220E - Japan                                    |
| 6   | Water sampling  | EW-05488-10<br>Horizontal Alpha Water Sampler - USA |
| 7   | Quick measurement<br>(Temperature. pH. Dissolved<br>oxygen)                   | YSI - Japan   |

# - The parameters. method and analysis equipment in laboratory

# Table 1.6. The parameters and analysis method for air environment

| No. | Parameters | Analysis method | Analysis equipment |  |
|-----|------------|-----------------|--------------------|--|
|-----|------------|-----------------|--------------------|--|



| 1 | Vibration frequency    | TCVN 5409:1991 | VM-1220E- Japan  |
|---|------------------------|----------------|--|
| 2 | Vibration acceleration | TCVN 5409:1991 | VM-1220E- Japan  |
| 3 | Noise                  | TCVN 5949-1998 | ORION NL-21. Japan   |
| 4 | VOCs                   | JISK. Japan    | GC-MS QP 2010. Shimadzu. Japan<br>GC-MS GC 2010. Shimadzu. Japan |
| 5 | Dust                   | TCVN-5067:1995 | Sibata CL20/30. Japan  |
| 7 | SO <sub>2</sub>        | TCVN 5971–1995 | UV-VIS 2450- Shimadzu- Japan                                     |
| 8 | NO <sub>2</sub>        | TCVN 6137–2009 | UV-VIS 2450- Shimadzu- Japan                                     |
| 9 | СО                     | TCVN 5972–1995 | UV-VIS 2450- Shimadzu- Japan                                     |
|   |                        |                |  |

Table 1.7. The parameters and analysis method for surface water environment

| No. | Parameter        | Analysis method          | Analysis equipment                                       |
|-----|------------------|--------------------------|--|
| 1   | pН               | TCVN 6492 – 1999         | pH – YSI 63 -USA   |
| 2   | DO               | TCVN 7325 – 2004         | YSI 55- USA  |
| 3   | COD              | KMnO <sub>4</sub> method | THE CONTRACTOR OF SITE AND ADDRESS.                      |
| 4   | BOD <sub>5</sub> | TCVN 6001 – 2008         | YSI-52- USA – BOD <sub>5</sub> Oven. Lovibond-<br>France |
| 5   | TSS              | SMEWW 2540 D - 2005      | DR/2010. Hach -USA                                       |
| 6   | Total phosphorus | TCVN 6202 - 2008         | UV-VIS 2450 – Shimadzu - Japan                           |
| 7   | Total nitrogen   | TCVN 5987-1995           | TOC-V <sub>CPH</sub> TNM1- Shimadzu - Japan              |
| 8   | Total pesticide  | TCVN 7876 : 2008         | GCMS QP 2010. Shimadzu. Japan                            |
| 9   | Oil & Grease     | SMEWW 5520 B –<br>2005   | OCMA-350 – HORIBA - Japan                                |
| 10  | Coliform         | TCVN 6187-1:1996         | Filter 0.45mm; Oven Binder. Germany                      |

Table 1.8. The parameters and analysis method for ground water

| No. | Parameter        | Analysis method          | Analysis equipment                                       |
|-----|------------------|--------------------------|--|
| 1   | Temperature      | TCVN 4457-1988           | YSI 63-USA   |
| 2   | pH               | TCVN 6492 - 1999         | YSI 63-USA   |
| 3   | COD              | KMnO <sub>4</sub> method |  |
| 4   | BOD <sub>5</sub> | TCVN 6001 – 2008         | YSI-52 - USA - Oven BOD <sub>5</sub> . Lovibond - France |



| No. | Parameter         | Analysis method         | Analysis equipment                           |
|-----|-------------------|-------------------------|--|
| 5   | TSS               | SMEWW 2540D - 2005      | TSS - DR/2010. Hach - USA                    |
| 6   | Total phosphorus  | TCVN 6202 – 2008        | UV-VIS 2450 – Shimadzu - Japan               |
| 7   | Total<br>nitrogen | TCVN 5987-1995          | TOC-V <sub>CPH</sub> TNM1 – Shimadzu - Japan |
| 8   | Fecal Coli        | TCVN 6187 – 1 –<br>1996 | Filter 0.45mm. Oven Binder. Germany          |
| 9   | Coliform          | TCVN 6187 – 1 –<br>1996 | Filter 0.45mm. Oven Binder. Germany          |

Table 1.9. The parameters and analysis method for soil sample

| No. | Parameter                  | Analysis method                      | Analysis equipment                           |
|-----|----------------------------|--------------------------------------|--|
| 1   | Dry pH                     | TCVN 5979-2007                       | pH – YSI 63-USA                              |
| 2   | Wet pH                     | TCVN 5979-2007                       | pH - YSI 63-USA                              |
| 3   | Electrical<br>Conductivity | TCVN 6650-2000                       | Horiba. Japan                                |
| 4   | Total nitrogen             | TCVN 6498-1999                       | TOC-V <sub>CPH</sub> TNM1 – Shimadzu - Japan |
| 5   | Total phosphorus           | EPA 3051 – 1996 &<br>TCVN 6202 -2008 | UV-VIS 2450 - Shimadzu-Japan                 |
| 6   | Fe                         | EPA 3051 – 1996                      | ICP MS ELAN 9000 PerKin Elmer.<br>USA        |
| 7   | Al <sup>3+</sup>           | %<br>SMEWW 3125 – 2005               | ICP MS ELAN 9000 PerKin Elmer. USA           |

## - Results of analysis

# a) Results of monitoring of construction packages EX-2

The monitoring areas of air environment. noise and ground vibration are located at the intersection between the Phu Thuy – Xuan Quan route where is operating with the Ha Noi – Hai Phong expressway (5B). Measurement points located in the residential area is the closest location with the 5B expressway.

The height of between the measurement points with the Phu Thuy – Xuan Quan road pavement as well as the Ha Noi – Hai Phong expressway (currently embankment)



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is negligible. However, between the measurement points and expressway, it's surface cleaved by Bac Hung Hai river.

Geological background at the measurement position of the Phu Thuy – Xuan Quan route are ancient clay which is durability and stable while the expressway pavement is soft ground and has been constructing for treatment

During the testing process. the vehicle occurred mainly on the Phu Thuy – Xuan Quan route. At the time of measurement, appear container trucks common at the time from 9:00 PM - 3:00 AM with the speed 40 to 60 km/h. However, main traffic density on the times: 7:00 AM - 9:00 AM and 2:00 PM - 6:00 PM. On the expressway, the vehicles over 15 tons appeared a few time.

#### + Results of air environment monitoring:

Sampling according to supervision consultancy contracts - No. 74/VIDIFI-VNCMT/2010.

Sampling locations: Intersection with the 179 road. Cuu Cao commune. Van Giang District. Hung Yen province on the EX-2 package; Coordinates: N 20° 57'730 - E 105° 57' 265;

Testing time: 9:00 AM on July 3<sup>rd</sup>. 2012 – 7:00 AM on July 4<sup>th</sup>. 2012.

Air sampling method: take 04 samples. a sample per 6 hours during 24 hours with parameters: Volatile organic compounds (VOCs). Total dust. Carbon oxide (CO). Nitrogen dioxide (NO<sub>2</sub>). Sulfur dioxide (SO<sub>2</sub>). The results are shown in table 1.

The result table showed that the parameters are within the allowable limit of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For VOCs. the measurement result showed minimum value to be  $122 \mu g/m^3$  at 21:00 PM on July  $3^{rd}$ . 2012 and maximum value is  $195 \mu g/m^3$  at 9:00 AM on July  $3^{rd}$ . 2012.

The total dust is 83; 112; 92 and 78  $\mu g/m^3$  which are at 9:00 am. 3:00 pm. 9:00 pm (in July 3<sup>rd</sup> 2012) and 3:00 am (in July 4<sup>th</sup> 2012). respectively. That is under 300 $\mu g/m^3$  lower than National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

The results of  $SO_2$  are 86; 95; 90 and 81  $\mu$ g/m<sup>3</sup> which are at 9:00 am. 3:00 pm. 9:00 pm (in July 3<sup>rd</sup> 2012) and 3:00 am (in July 4<sup>th</sup> 2012). respectively. That is under  $350\mu$ g/m<sup>3</sup> lower than National technical regulation on ambient air quality (QCVN



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05:2009/BTNMT).

The results of  $NO_2$  are 63; 27; 27 and 30  $\mu g/m^3$  which are at 9:00 am. 3:00 pm. 9:00 pm (in July 3<sup>rd</sup> 2012) and 3:00 am (in July 4<sup>th</sup> 2012). respectively. That is under  $200\mu g/m^3$  lower than National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For CO. the measurement results are: 1073; 3018; 1460 and 2048  $\mu g/m^3$  corresponding sampling times are 9:00 am. 3:00 pm. 9:00 pm (in July 3<sup>rd</sup> 2012) and 3:00 am (in July 4<sup>th</sup> 2012). respectively; these results are lower than 30000  $\mu g/m^3$ . National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

#### + Results of noise:

Sampling location: Intersection with the 179 road. Cuu Cao commune. Van Giang District. Hung Yen province on the EX-2 package; Coordinates: N 20° 57'730- E 105° 57' 265;

Testing time: 9:00 AM on July  $3^{rd}$ . 2012 - 7:00 AM on July  $4^{th}$ . 2012.

Noise are measured 12 points within 24 hours. a point per 2 hours. Using the noise meter equipment NL-21 ORION of Japan. we measured continuously for 15 minutes each sampling. record of Leq values (average value); L<sub>50</sub> (average value of test 50 times); L<sub>90</sub> (average value of test 90 times); L<sub>max</sub> (maximum value) and L<sub>min</sub> (minimum value). According to *National Technical Regulation on Noise* (QCVN 26:2010/BTNMT) for normal areas. According to equivalent acoustic level (Leq) is 70dB of about 6:00 AM to 9:00 PM and 55dB from 9:00 PM to 6:00 AM daily. Results are shown in table 2.

The result table showed that Leq value at 11:00 PM 3<sup>rd</sup> July 2012 and Leq value at 3:00 AM 4<sup>th</sup> July 2012 is 58.6 dB and 55.7 dB which is higher than the allowable limit is 55 dB according to National Technical Regulation on Noise (QCVN 26:2010/BTNMT). Other noise values are equal and lower than the allowable limit is 70dB.

The values of  $L_{50}$ .  $L_{90}$  haven't comparative regulation. respectively of about 53.5 to 61.8 dB from 6:00 AM to 9:00 PM and 50.8 to 53.0 dB from 10:00 PM to 4:00 AM for  $L_{50}$ . The values of  $L_{90}$  are respectively of about 49.5- 57.2 dB from 6:00 AM to 9:00 PM and 45.7 to 49.6 dB from 10:00 PM to 4:00 AM..

 $L_{max}$  value is 89.9 dB at 3:00 PM on July 3<sup>rd</sup>. 2012 and  $L_{min}$  value is 42.5 dB at 10:30 AM on April 3<sup>rd</sup>. 2012.





#### Owner: Vietnam Infrastructure development and finance investment joint stock company

Address: 8<sup>th</sup>-9<sup>th</sup>-10<sup>th</sup> Floors. LILAMA 10 Building. Le Van Luong street. Me Tri commune. Tu Liem. Hanoi

Tel: (84-4) 37711668 - 22209668; Fax: (84-4) 22209666

#### TABLE 1. THE SIXTH RESULTS OF AIR SAMPLES OF THE PACKAGE EX2-(July 2012)

| Sign        | Parameter       | Unit        | K 2.6.1                                 | K 2.6.2                                   | K 2.6.3                                   | K 2.6.4                                  | QCVN<br>05:2009/BTNMT |
|-------------|-----------------|-------------|---|---|---|--|-----------------------|
|             | Time            |             | 9:00 am<br>July. 03 <sup>rd</sup> .2012 | 15:00 pm<br>July. 03 <sup>rd</sup> . 2012 | 21:00 pm<br>July. 03 <sup>rd</sup> . 2012 | 3:00 am<br>July. 04 <sup>th</sup> . 2012 |                       |
|             | VOCs            |             | 195                                     | 160                                       | 122                                       | 154                                      |                       |
|             | Dust            |             | 83                                      | 112                                       | 92  | 78                                       | 300                   |
| EX 2 - K2.6 | SO <sub>2</sub> | $\mu g/m^3$ | 86                                      | 95  | 90  | 81                                       | 350                   |
|             | NO <sub>2</sub> |             | 63                                      | 27  | 27  | 30                                       |                       |
|             | СО              |             | 1073                                    | 3018                                      | 1460                                      | 2048                                     | 30000                 |

#### TABLE 2. THE SIXTH RESULTS OF NOISE OF THE PACKAGE EX2 (July 2012)

| Nama          | of comple               | Naisa |      | From 9 am July 03 <sup>rd</sup> to 7 am July 04 <sup>th</sup> , 2012 |      |      |      |      |      |      |      |      |      |      |
|---------------|-------------------------|-------|------|--|------|------|------|------|------|------|------|------|------|------|
| Name          | of sample               | Noise | 9am  | 11am   | 13pm | 15pm | 17pm | 19pm | 21pm | 23pm | 01am | 03am | 05am | 07am |
|               | Leq                     |       | 66.9 | 62.8   | 63.4 | 65.8 | 65.4 | 63.7 | 59.1 | 57.7 | 54.7 | 55.7 | 60.5 | 64.8 |
|               | Lmax                    |       | 86.3 | 82.3   | 89.5 | 89.9 | 86.0 | 83.0 | 81.2 | 76.9 | 72.1 | 71.6 | 85.0 | 83.1 |
| EX 2-<br>K2.6 | Lmin                    | (dB)  | 49.8 | 49.3   | 43.9 | 51.4 | 51.9 | 46.7 | 49.9 | 44.1 | 42.5 | 46.7 | 43.9 | 50.5 |
| 12.0          | L50                     | -     | 61.8 | 59.5   | 55.6 | 60.6 | 61.9 | 60.5 | 53.5 | 52.1 | 52.1 | 53.0 | 50.8 | 61.6 |
|               | L90                     | 3 4   | 56.1 | 54.3   | 49.5 | 55.5 | 57.2 | 54.5 | 51.1 | 45.7 | 46.5 | 49.6 | 45.7 | 55.7 |
| -             | 26:2010/B<br>mal area - |       |      |  |      | 70   |      |      |      |      | 5    | 55   |      | 70   |



#### + Results of vibration

Sampling location: Intersection with the 179 road. Cuu Cao commune. Van Giang District. Hung Yen province on the package EX-2; Coordinates: N 20° 57'730 - E 105° 57'265;

Testing time: 9:00 AM on July  $3^{rd}$ . 2012 - 7:00 AM on July  $4^{th}$ . 2012.

#### Equipment and test principles:

- Using of VM 1220E equipment (Japan) measures environmental vibration in the factory. construction and roads of traffic. It allows to measure vibration acceleration, vibration intensity according to vertical plane Z and horizontal plane with two perpendicular way X. Y. The measures is updated with speed 63 ms once time then automatically calculation according to JIS C1510 standard. Results are displayed on the screen is dB value.
- The measurements are carried out including vibration acceleration. vibration intensity according to X. Y. Z direction with about measure time is continuously 30 minutes.

Impact assessment according to vibration acceleration (Lva) or vibration intensity (Lv) follow formula:

$$L = \sqrt{L^2 x + L^2 y + L^2 z}$$

| X                            | Y                            | Z                            | TB                              |
|------------------------------|------------------------------|------------------------------|---------------------------------|
| Measurement m/s <sup>2</sup> | Measurement m/s <sup>2</sup> | Measurement m/s <sup>2</sup> | Measurement<br>m/s <sup>2</sup> |
| Lx                           | Ly                           | Lz                           | L                               |

In there. L is Lva or corresponding Lv.

 $L_x$ .  $L_y$ .  $L_z$  are acceleration value and vibration intensity according to X. Y. Z direction.

$$L = \log \sqrt{10^{2*Lx} + 10^{2*Ly} + 10^{2*Lz}}$$

| X           | Y           | Z           | TB          |
|-------------|-------------|-------------|-------------|
| Measurement | Measurement | Measurement | Measurement |
| dB          | dB          | dB          | dB          |
| Lx          | Ly          | Lz          | L           |





In there. L is Lva or corresponding Lv.

L<sub>x</sub>. L<sub>y</sub>. L<sub>z</sub> are acceleration value and vibration intensity according to X. Y. Z direction.

Geological background at the measurement position of the Phu Thuy – Xuan Quan route are ancient clay which durability and stable while the expressway pavement is soft ground and has been constructing for treatment.

- Azimuth of the axes x. y

X-axis set follow the North - South direction.

Y-axis set follow the East - West direction.

Impacts of vibratory sources to the measurement result.

During the testing process. the vehicle occurred mainly on the Phu Thuy – Xuan Quan route. At the time of measurement, appear container trucks common at the time from 9:00 PM - 3:00 AM with the speed 40 to 60 km/h. However, main traffic density on the times: 7:00 AM - 9:00 AM and 2:00 PM - 6:00 PM. On the expressway, the vehicles over 15 tons appeared a few time.

To set measurement range for equipment is 30 – 90 dB

From  $L_{\text{max}}$  and Leq values showed that: Most of testing time. vibration acceleration is lower than 60dB. However, appearance of measurement values are higher than 60dB in each measurement range, sometimes appearance of measurement range is higher than 75dB.

The values of  $L_{10}$ .  $L_{50}$ .  $L_{90}$  have decreasing rule that the larger values only occurring in short time of each measurement range.

The results in table 3 showed that two values of vibration acceleration exceed the allowable limit (75dB) according to National Technical Regulation on Vibration (QCVN 27:2010/BTNMT): the results of Lva(eq) max is 83.2 dB at the time from 5:00 PM to 5:30 PM on July 4<sup>th</sup>. 2012 and Lva(min) is 31.3 dB from 1:00 AM to 1:30 AM on July 4<sup>th</sup>. 2012.

Average Lva value in the range from 31.3 dB to 59.6 dB.



## TABLE 3. THE SIXTH RESULTS OF VIBRATION OF THE PACKAGE EX2 (JULY 2012)

| Time             |          |      | From 9:00 am to 9:30 am on July 03 <sup>rd</sup> , 2012 |        |                              |      |      |      |         |  |  |
|------------------|----------|------|---|--------|------------------------------|------|------|------|---------|--|--|
| Danamatan        | T I .: 4 | -tu  | on Leve   | l (Lv) | Vibration Acceleration (Lva) |      |      |      |         |  |  |
| Parameter        | Unit     | Z    | Y   | X      | Average                      | Z    | Y    | X    | Average |  |  |
| Leq              |          | 35.9 | 31.8  | 33.8   | 35.9                         | 58.8 | 51.8 | 50.9 | 58.8    |  |  |
| L <sub>max</sub> |          | 47.7 | 38.4  | 41.7   | 47.7                         | 80.5 | 67.2 | 69.7 | 80.5    |  |  |
| $L_{min}$        | dB       | 29.2 | 24.8  | 25.3   | 29.2                         | 47.3 | 42.5 | 43.5 | 47.3    |  |  |
| $L_{10}$         | ub       | 33.3 | 34.2  | 36.3   | 36.3                         | 59.4 | 54.2 | 53.1 | 59.4    |  |  |
| L <sub>50</sub>  |          | 34.4 | 31  | 33     | 34.4                         | 53.6 | 48.5 | 47.6 | 53.6    |  |  |
| L <sub>90</sub>  |          | 32.1 | 28.2  | 29.9   | 32.1                         | 50   | 46   | 45.5 | 50      |  |  |

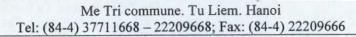
| Time             | 9    |      | From 11:00 am to 11:30 am on July 03 <sup>rd</sup> , 2012 |         |         |                              |      |      |         |  |  |  |
|------------------|------|------|---|---------|---------|------------------------------|------|------|---------|--|--|--|
| Dansmatan        | Unit |      | Vibrati   | on Leve | l (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit | Z    | Y   | X       | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq              |      | 31.2 | 32.8  | 36      | 36      | 57.5                         | 51.4 | 48.5 | 57.5    |  |  |  |
| L <sub>max</sub> |      | 45.8 | 52.1  | 56.5    | 56.5    | 73.3                         | 67.1 | 62.1 | 73.3    |  |  |  |
| L <sub>min</sub> | dB   | 22.3 | 22.9  | 23.2    | 23.2    | 44                           | 37.7 | 35.7 | 44      |  |  |  |
| L <sub>10</sub>  | UD.  | 34.1 | 35.3  | 38      | 38      | 61                           | 54   | 51.1 | 61      |  |  |  |
| L <sub>50</sub>  |      | 29.2 | 31.7  | 34.2    | 34.2    | 53.2                         | 46.9 | 44.8 | 53.2    |  |  |  |
| L90              |      | 26.6 | 28.4  | 30.7    | 30.7    | 48.5                         | 42.9 | 41   | 48.5    |  |  |  |

| Time             |      |      | From 13:00 pm to 13:30 pm on July 03 <sup>rd</sup> , 2012 |         |         |                              |      |      |         |  |  |  |
|------------------|------|------|---|---------|---------|------------------------------|------|------|---------|--|--|--|
| Donomatan        | Unit |      | Vibrati   | on Leve | 1 (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        |      | Z    | Y   | X       | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq              |      | 31.8 | 33.2  | 34.8    | 34.8    | 55.8                         | 52.9 | 49.4 | 55.8    |  |  |  |
| L <sub>max</sub> |      | 46   | 40.4  | 43.8    | 46      | 80.8                         | 75.1 | 70.7 | 80.8    |  |  |  |
| $L_{min}$        | dB   | 22.4 | 23.8  | 25.1    | 25.1    | 38.2                         | 35.4 | 32.5 | 38.2    |  |  |  |
| L <sub>10</sub>  | ub.  | 34.1 | 35.9  | 37.5    | 37.5    | 58.3                         | 55.8 | 52.5 | 58.3    |  |  |  |
| L <sub>50</sub>  |      | 28.8 | 32.4  | 34      | 34      | 48.3                         | 45.6 | 44.1 | 48.3    |  |  |  |
| L <sub>90</sub>  |      | 26.3 | 28.9  | 30.6    | 30.6    | 42.5                         | 39.6 | 37.9 | 42.5    |  |  |  |

| Time             | 9    |      | From 15:00 pm to 15:30 pm on July 03 <sup>rd</sup> , 2012 |         |         |                              |      |      |         |  |  |
|------------------|------|------|---|---------|---------|------------------------------|------|------|---------|--|--|
| D                | Unit |      | Vibrati   | on Leve | 1 (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        |      | Z    | Y   | X       | Average | Z                            | Y    | X    | Average |  |  |
| Leq              |      | 37.9 | 32.4  | 34.5    | 37.9    | 58.2                         | 55.5 | 49.6 | 58.2    |  |  |
| L <sub>max</sub> |      | 46.7 | 41.1  | 45.2    | 46.7    | 78.1                         | 71   | 65.5 | 78.1    |  |  |
| L <sub>min</sub> | dB   | 30.2 | 23.1  | 26.5    | 30.2    | 44                           | 40.6 | 37.8 | 44      |  |  |
| L <sub>10</sub>  | ub   | 40.3 | 35  | 37      | 40.3    | 61.3                         | 59.2 | 52.8 | 61.3    |  |  |
| L <sub>50</sub>  |      | 37   | 31.5  | 33.7    | 37      | 53.1                         | 51   | 45.6 | 53.1    |  |  |
| L90              |      | 34.5 | 28.5  | 30.7    | 34.5    | 47.6                         | 45.6 | 42   | 47.6    |  |  |







| Time             |       |        | From 17:00 pm to 17:30 pm on July 03 <sup>rd</sup> , 2012 |         |         |                              |      |      |         |  |  |
|------------------|-------|--------|---|---------|---------|------------------------------|------|------|---------|--|--|
| D                | T.T:4 | TYLE I | Vibrati   | on Leve | 1 (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Unit  | Z      | Y   | X       | Average | Z                            | Y    | X    | Average |  |  |
| Leq              |       | 34.2   | 30.9  | 32.7    | 34.2    | 59.6                         | 55.2 | 52   | 59.6    |  |  |
| L <sub>max</sub> |       | 45.2   | 37.6  | 39.7    | 45.2    | 83.2                         | 79.9 | 76.8 | 83.2    |  |  |
| L <sub>min</sub> | dB    | 23.9   | 23.4  | 23.3    | 23.9    | 45.6                         | 40.2 | 37.5 | 45.6    |  |  |
| L <sub>10</sub>  | ав    | 37.3   | 33.4  | 35.3    | 37.3    | 60.2                         | 55.4 | 51.8 | 60.2    |  |  |
| L <sub>50</sub>  |       | 32.3   | 30.3  | 31.9    | 32.3    | 53.6                         | 48.8 | 45.3 | 53.6    |  |  |
| L <sub>90</sub>  | 216   | 27.3   | 27.3  | 28.7    | 28.7    | 50                           | 44.6 | 40.9 | 50      |  |  |

| Time             | 9     |      | From 19:00 pm to 19:30 pm on July 03 <sup>rd</sup> , 2012 |        |                              |      |      |      |         |  |  |
|------------------|-------|------|---|--------|------------------------------|------|------|------|---------|--|--|
| D                | TT-14 |      | on Leve   | l (Lv) | Vibration Acceleration (Lva) |      |      |      |         |  |  |
| Parameter        | Unit  | Z    | Y   | X      | Average                      | Z    | Y    | X    | Average |  |  |
| Leq              |       | 29.5 | 30.3  | 31.8   | 31.8                         | 56.7 | 54.5 | 49.4 | 56.7    |  |  |
| L <sub>max</sub> |       | 40.4 | 37.8  | 40.3   | 40.4                         | 80   | 78.5 | 70.2 | 80      |  |  |
| L <sub>min</sub> | dB    | 22.6 | 21.8  | 23.1   | 23.1                         | 38   | 35.7 | 32   | 38      |  |  |
| L <sub>10</sub>  | uВ    | 31.3 | 32.8  | 34.3   | 34.3                         | 57.5 | 54.9 | 49.4 | 57.5    |  |  |
| L50              |       | 28.7 | 29.7  | 31     | 31                           | 48.1 | 45.7 | 40.9 | 48.1    |  |  |
| L <sub>90</sub>  |       | 26.7 | 26.1  | 27.8   | 27.8                         | 42.8 | 40.3 | 35.9 | 42.8    |  |  |

| Time             | 9        |      | From 21:00 pm to 21:30 pm on July 03 <sup>rd</sup> , 2012 |        |                              |      |      |      |         |  |  |
|------------------|----------|------|---|--------|------------------------------|------|------|------|---------|--|--|
| D                | TT-:4    |      | on Leve   | l (Lv) | Vibration Acceleration (Lva) |      |      |      |         |  |  |
| Parameter        | Unit     | Z    | Y   | X      | Average                      | Z    | Y    | X    | Average |  |  |
| Leq              | <u> </u> | 35.3 | 30.5  | 32     | 35.3                         | 56.7 | 46.3 | 45.1 | 56.9    |  |  |
| L <sub>max</sub> |          | 46.7 | 40  | 38.8   | 46.7                         | 70.3 | 62.2 | 61.5 | 70.3    |  |  |
| Lmin             | dB       | 31.9 | 21.6  | 23.4   | 31.9                         | 53.8 | 43.2 | 41.1 | 53.8    |  |  |
| L <sub>10</sub>  | uБ       | 36.8 | 33.1  | 34.6   | 36.8                         | 58.2 | 47.5 | 46.6 | 58.2    |  |  |
| L <sub>50</sub>  |          | 33.7 | 29.7  | 31.3   | 33.7                         | 55.4 | 44.8 | 43.5 | 55.4    |  |  |
| L <sub>90</sub>  |          | 33   | 26.5  | 27.9   | 33                           | 54.7 | 43.9 | 42.3 | 54.7    |  |  |

| Time             |      |      |        | From 23  | :00 pm to 23: | 30 pm | on July                      | 03 <sup>rd</sup> , 201 | 2       |  |  |
|------------------|------|------|--------|----------|---------------|-------|------------------------------|------------------------|---------|--|--|
| Danamatan        | Unit |      | Vibrat | ion Leve | el (Lv)       | V     | Vibration Acceleration (Lva) |                        |         |  |  |
| Parameter        | Omt  | Z    | Y      | X        | Average       | Z     | Y                            | X                      | Average |  |  |
| Leq              |      | 28.8 | 30.1   | 31.6     | 31.6          | 42.6  | 40.9                         | 41.8                   | 42.6    |  |  |
| Lmax             |      | 44.7 | 37.8   | 38.2     | 44.7          | 57.2  | 56.8                         | 56.8                   | 57.2    |  |  |
| L <sub>min</sub> | dB   | 20.2 | 21.2   | 22.6     | 22.6          | 33.3  | 29.6                         | 29.7                   | 33.3    |  |  |
| L <sub>10</sub>  | ub   | 28.8 | 22.7   | 34.2     | 34.2          | 45.2  | 43                           | 44.4                   | 45.2    |  |  |
| L <sub>50</sub>  |      | 25.2 | 29.4   | 31       | 31            | 36.4  | 33.5                         | 35.2                   | 36.4    |  |  |
| L90              |      | 22.9 | 26.2   | 27.5     | 27.5          | 34.6  | 31.2                         | 32.6                   | 34.6    |  |  |



| Time            |      |      | From 1:00 am to 1:30 am on July 04 <sup>th</sup> , 2012 |         |         |                              |      |      |         |  |  |  |
|-----------------|------|------|---|---------|---------|------------------------------|------|------|---------|--|--|--|
| Danamatan       | Unit | 1730 | Vibrat  | ion Lev | el (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter       | Unit | Z    | Y   | X       | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq             |      | 30.2 | 30  | 32.5    | 32.5    | 36.1                         | 36.3 | 33.5 | 36.3    |  |  |  |
| $L_{max}$       |      | 45.9 | 37.1  | 40.7    | 45.9    | 53.2                         | 59.4 | 43.6 | 59.4    |  |  |  |
| $L_{min}$       | dB   | 20   | 22.6  | 23.9    | 23.9    | 31.3                         | 28.8 | 28.5 | 31.3    |  |  |  |
| L <sub>10</sub> | ub   | 30.9 | 32.6  | 35.2    | 35.2    | 37.3                         | 35.4 | 35.7 | 37.3    |  |  |  |
| $L_{50}$        |      | 25.1 | 29.3  | 31.7    | 31.7    | 34.5                         | 32.3 | 32.5 | 34.5    |  |  |  |
| L90             |      | 22.7 | 25.9  | 28.1    | 28.1    | 33                           | 30.8 | 30.4 | 33      |  |  |  |

| Time             |         |      |          | From 3  | :00 am to 3:30               | am on | July 04 | th, 2012 |         |
|------------------|---------|------|----------|---------|------------------------------|-------|---------|----------|---------|
| Danamatan        | T Tools |      | ion Leve | el (Lv) | Vibration Acceleration (Lva) |       |         |          |         |
| Parameter        | Unit    | Z    | Y        | X       | Average                      | Z     | Y       | X        | Average |
| Leq              |         | 29.9 | 30.5     | 32.2    | 32.2                         | 43.9  | 40.7    | 40.5     | 43.9    |
| L <sub>max</sub> |         | 46.1 | 38.6     | 38.8    | 46.1                         | 60.3  | 55.4    | 57       | 60.3    |
| L <sub>min</sub> | dB      | 20.2 | 20.5     | 23.1    | 23.1                         | 36.8  | 32.4    | 32.3     | 36.8    |
| L <sub>10</sub>  | ub      | 30.4 | 33.1     | 34.8    | 34.8                         | 46.5  | 43.8    | 43.5     | 46.5    |
| L <sub>50</sub>  |         | 27.7 | 29.8     | 31.4    | 31.4                         | 38.9  | 35.5    | 35.7     | 38.9    |
| L <sub>90</sub>  |         | 23.8 | 26.4     | 27.9    | 27.9                         | 37.5  | 33.7    | 33.8     | 37.5    |

| Time             | e muli | State a              | From 5:00 am to 5:30 am on July 04 <sup>th</sup> , 2012 |      |         |      |                              |      |         |  |  |  |
|------------------|--------|----------------------|---|------|---------|------|------------------------------|------|---------|--|--|--|
| Danamatan        | Unit   | Vibration Level (Lv) |   |      |         |      | Vibration Acceleration (Lva) |      |         |  |  |  |
| Parameter        | Oint   | Z                    | Y   | X    | Average | Z    | Y                            | X    | Average |  |  |  |
| $L_{eq}$         |        | 29.8                 | 30.2  | 31.8 | 31.8    | 46.7 | 44.9                         | 47.3 | 47.3    |  |  |  |
| L <sub>max</sub> |        | 44.6                 | 37.2  | 38.9 | 44.6    | 67.2 | 66.5                         | 66.8 | 67.2    |  |  |  |
| L <sub>min</sub> | dB     | 20.9                 | 21.2  | 21.7 | 21.7    | 33.5 | 31                           | 33.4 | 33.5    |  |  |  |
| L <sub>10</sub>  | uБ     | 31.5                 | 32.9  | 34.4 | 34.4    | 48.7 | 46.6                         | 50.1 | 50.1    |  |  |  |
| L <sub>50</sub>  |        | 20.2                 | 29.4  | 31   | 31      | 41.5 | 39.6                         | 42.1 | 42.1    |  |  |  |
| L <sub>90</sub>  |        | 23.8                 | 25.9  | 27.7 | 27.7    | 36.5 | 34.1                         | 37.7 | 37.7    |  |  |  |

| Time             |         |      | From 7:00 am to 7:30 am on July 04 <sup>th</sup> , 2012 |        |                              |      |      |      |         |  |  |  |
|------------------|---------|------|---|--------|------------------------------|------|------|------|---------|--|--|--|
| D                | T Tools |      | on Leve   | 1 (Lv) | Vibration Acceleration (Lva) |      |      |      |         |  |  |  |
| Parameter        | Unit    | Z    | Y   | X      | Average                      | Z    | Y    | X    | Average |  |  |  |
| Leq              |         | 31.7 | 30.3  | 32.1   | 32.1                         | 52.8 | 51   | 45.8 | 52.8    |  |  |  |
| L <sub>max</sub> |         | 46.8 | 37.5  | 40.3   | 46.8                         | 69.8 | 63.5 | 60.2 | 69.8    |  |  |  |
| L <sub>min</sub> | dB      | 22.8 | 20.5  | 22.7   | 22.8                         | 39.1 | 37   | 33.4 | 39.1    |  |  |  |
| L <sub>10</sub>  | иБ      | 34.5 | 32.8  | 34.9   | 34.9                         | 55.9 | 54.2 | 48.2 | 55.9    |  |  |  |
| L <sub>50</sub>  |         | 29.1 | 29.5  | 31.3   | 31.3                         | 49.9 | 48.6 | 42.6 | 49.9    |  |  |  |
| L90              |         | 26.1 | 26.5  | 27.8   | 27.8                         | 44.3 | 42.1 | 38   | 44.3    |  |  |  |





| QCV | N 27:2010/BTNMT: | National Technical Reg | gulation on Vibration                                |
|-----|------------------|------------------------|--|
| No. | Location         | Testing time per day   | Vibration acceleration level. dB  Average level. Leq |
| ,   | 1 0 11 1         | 6:00 AM – 6:00 PM      | 75   |
| 1   | Special location | 6:00 PM - 6:00 AM      | Background level                                     |
| 2   | Name I I and a   | 6:00 AM – 9:00 PM      | 75   |
| 2   | Normal location  | 9:00 PM - 6:00 AM      | Background level                                     |

#### +/ Results of surface water sample:

Surface water sample (coded NM 1.6) was monitored and sampled at Bac Hung Hai river – Van Giang District near intersection with the 179 road. Cuu Cao commune. coordinates of sampling location: N 20° 57.730 - E 105° 57. 265.

Sampling time: From July 3<sup>rd</sup>. 2012 to July 4<sup>th</sup>. 2012.

Sample was taken 3 times at the times. a sample per 8 hours in 24 hours with 01 blank sample. pH and DO parameters are tested on location. The samples were refrigerated and fixed after sampling and transported to the laboratory in the shortest time. Results of sample analysis are shown in table 4 as below.

The result table showed that oil & grease parameters are 0.11 mg/L higher than the column B1 (0.1 mg/L). lower than the limit value is 0.3 mg/L in column B2 according to National technical regulation on surface water quality (QCVN 08:2008/BTNMT).

COD; TSS and BOD<sub>5</sub> concentration of 03 samples are lower than both B1 and B2 column at the different times according to QCVN 08:2008/BTNMT. In B1 column compared with TSS (Total suspended solids) of QCVN 08:2008/BTNMT. The value of DO (Dissolved Oxygen) in MN 1.6.2 and MN 1.6.3 are 3.90 and 2.70 mg/L. respectively lower than QCVN 08:2008/BTNMT at B1 (≥ 4mg/L).

As for pesticides of organic chlorine group have quantitative limit of analysis method is 0.05  $\mu$ g/L (the most of environmental laboratories only determine this quantitative limit). However, according to National technical regulation on surface water quality (QCVN 08:2008/BTNMT), comparative value about 0.004 – 0.01  $\mu$ g/L (Aldrin - Dieldrin); 0.014 – 0.01  $\mu$ g/L (Endrin) etc.



On the other hand, comparison of National technical regulation on surface water quality (QCVN 08:2008) and Surface water quality standard (TCVN 5942:1995). DDT is 0.01 mg/L corresponding to 10  $\mu$ g/L in standard. Vietnam standard (TCVN) by Ministry of science and technology promulgate while Vietnam regulation by Ministry of natural resources and environment promulgate that regulation for parameters of surface water but different to 2500 times.

In this case. TCVN 5942:1995 more consistent with the international standard. Thus, results of minimum quantitative limit also exceed the QCVN 08: 2008/BTNMT.

#### + Results of groundwater sample

Groundwater sample (coded NN2.6) is well water of private house of Van Giang area. intersection with the 179 road. householder is Mr. Nguyen Van Than. Nguyen village. Cuu Cao commune. Van Giang District - the well was drilled in 1996 with the depth of 45m. coordinates of sampling location: N 20° 57.730 - E 105° 57. 265;

Sampling time: 10:30 AM on July 3<sup>rd</sup>. 2012.

Results of sample analysis are shown in table 5 as below.

From the table 5 showed that the all of parameters are lower than QCVN 09:2008/BTNMT (National technical regulation on underground water quality) except coliform parameter.





#### Owner: Vietnam Infrastructure development and finance investment joint stock company

Address: 8<sup>th</sup>-9<sup>th</sup>-10<sup>th</sup> Floors. LILAMA 10 Building. Le Van Luong street. Me Tri commune. Tu Liem. Hanoi

Tel: (84-4) 37711668 - 22209668; Fax: (84-4) 22209666

# TABLE 4. THE SIXTH RESULTS OF SURFACE WATER NM1 OF THE PACKAGE EX2 (APRIL 2012)

| No | Parameter            | Unit                |          | Resi     | ult      |        |           | CVN<br>/BTNMT |
|----|----------------------|---------------------|----------|----------|----------|--------|-----------|---------------|
|    |                      |                     | NM 1.6.1 | NM 1.6.2 | NM 1.6.3 | MT     | Column B1 | Column B2     |
| 1  | pH                   |                     | 7.63     | 7.71     | 7.33     | 7.1    | 5.5 -9    | 5.5 -9        |
| 2  | DO                   | mg/L                | 4.65     | 3.90     | 2.70     | 7.0    | ≥4        | ≥2            |
| 3  | COD                  | mgO <sub>2</sub> /L | 12.8     | 8.8      | 15.2     | < 1.0  | 30        | 50            |
| 4  | BOD <sub>5</sub>     | mg/L                | 6.3      | 4.9      | 7.1      | < 1.0  | 15        | 25            |
| 5  | TSS                  | mg/L                | 9        | 8        | 8        | < 3.0  | 50        | 100           |
| 6  | Total P              | mg/L                | 0.67     | 0.73     | 0.74     | < 0.01 | - 1       |               |
| 7  | Total N              | mg/L                | 11.8     | 12.0     | 12.7     | < 0.10 | 1 7 1 1   | -             |
| 8  | * Pesticides         | mg/L                | <0.5     | <0.5     | <0.5     | <0.5   | - 1       |               |
| 9  | Aldrin+Dieldrin      |                     | <0.05    | <0.05    | <0.05    | <0.05  | 0.008     | 0.01          |
| 10 | Endrin               |                     | <0.05    | <0.05    | <0.05    | <0.05  | 0.014     | 0.01          |
| 11 | ВНС                  |                     | <0.05    | <0.05    | <0.05    | <0.05  | 0.13      | 0.015         |
| 12 | DDT                  |                     | <0.05    | <0.05    | <0.05    | <0.05  | 0.004     | 0.005         |
| 13 | DDD                  | μg/L                | <0.05    | <0.05    | <0.05    | <0.05  | -         | -             |
| 14 | Endosunfan (Thiodan) |                     | <0.05    | <0.05    | <0.05    | <0.05  | 0.01      | 0.02          |
| 15 | Lindan               | V-                  | < 0.05   | <0.05    | <0.05    | <0.05  | 0.38      | 0.4           |
| 16 | Chlordane            |                     | < 0.05   | <0.05    | <0.05    | <0.05  | 0.02      | 0.03          |
| 17 | Heptachlor           |                     | < 0.05   | <0.05    | <0.05    | <0.05  | 0.02      | 0.05          |
| 18 | Oil                  | mg/L                | 0.10     | 0.10     | 0.11     | <0.05  | 0.1       | 0.3           |
| 19 | *Coliform            | MPN/100 mL          | 2300     | 2100     | 2800     | ND     | 7500      | 10000         |



Note: - QCVN 08:2008/BTNMT: National technical regulation on surface water quality

B1- For the usage of irrigation or other purpose having the similar quality requirement like B2 level

B2 – For the usage of water navigation and other purpose with less water quality NM 1.6.1: Sampling at 3:0 PM. On July  $3^{rd}$  2012; NM 1.6.2: Sampling at 11:00 PM on July  $3^{rd}$  2012; NM 1.6.3: Sampling at 7:00 AM on July  $4^{th}$  2012; MT: Blank sample.

KPHD: Undetectable

TABLE 5. THE SIXTH RESULTS OF GROUND WATER SAMPLE NN2.6 OF THE PACKAGE EX2 (JULY 2012)

| No | Downstan         | TTm:4               | Re     | sult   | QCVN          |  |
|----|------------------|---------------------|--------|--------|---------------|--|
|    | Parameter        | Unit                | NN 2.6 | MT     | 09:2008/BTNMT |  |
| 1. | Temperature      | °C                  | 27.8   | 27.0   | 24.4          |  |
| 2. | pН               |                     | 7.71   | 7.10   | 7.23          |  |
| 3. | COD              | mgO <sub>2</sub> /L | 2.2    | < 1.0  | 2.88          |  |
| 4. | BOD <sub>5</sub> | mg/L                | <1.0   | < 1.0  | 1.4           |  |
| 5. | TSS              | mg/L                | 5      | < 3.0  | 4             |  |
| 6. | Total P          | mg/L                | 0.07   | < 0.01 | 0.10          |  |
| 7. | Total N          | mg/L                | 4.5    | < 0.10 | 2.00          |  |
| 8. | *Coliform        | MPN/                | 5      | KPHT   | 15            |  |
| 9. | *E. Coli         | 100mL               | KPHT   | KPHT   | ND            |  |

#### Note:

- QCVN 09:2008/BTNMT: National technical regulation on underground water quality
- ND: None detected

# b) Results of monitoring of construction packages EX-3

The monitoring areas of air environment. noise environment and ground vibration are located in Tu Duong hamlet - Ly Thuong Kiet commune - Yen My. Hung Yen. intersection with the 39 road and the expressway.

- General description of the status quo of terrain and geology





The monitoring area of ground vibration is a place where is constructing the expressway.

Measurement point in the courtyard area of a house are far from the expressway about 5m and the 39 road - Hung Yen - Pho Noi about 150m.

The height of between the measurement point with the 39 road pavement of Hung Yen - Pho Noi as well as the pavement of Hanoi - Hai Phong expressway (being covered with sand) is approximately 1.5m. The measurement point and the 39 road pavement are divided by local irrigation canal.

- Impacts of vibratory sources to the measurement result.

During the testing process. the vehicle transported mainly on the 39 route. Pho Noi. Hung Yen; appear container trucks with the speed from 40 to 60 km/h and higher. While construction machines and container trucks transporting at 8:00 - 11:00 AM and 2:00 - 8:00 PM on the expressway.

#### + Results of air monitoring:

Sampling according to supervision consultancy contracts - No. 74/VIDIFI-VCNMT/2010. Coordinates of sampling location: N 20° 51.603 - E 106° 01. 488. At the each location take 04 samples. a sample per 6 hours during 24 hours with parameters: Volatile organic compounds (VOCs). Total dust. Carbon oxide (CO). Nitrogen dioxide (NO<sub>2</sub>). Sulfur dioxide (SO<sub>2</sub>). The results are shown in table 7. From the results table showed that the measured parameters are within the allowable limits of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For VOCs. the measurement result showed minimum value is  $105 \mu g/m^3$  at 3:00 pm on July 4<sup>th</sup>. 2012 and maximum value is  $165 \mu g/m^3$  at 9:00 am on July 4<sup>th</sup>. 2012.

For total dust, the measurement results are: 276; 324; 218 and 182  $\mu g/m^3$  corresponding sampling times are 9:00 AM; 3:00 PM; 9:00 PM on July 4<sup>th</sup>, 2012 and 3:00 AM on July 5<sup>th</sup>, 2012; these results are lower than 300  $\mu g/m^3$  according to National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For  $SO_2$ . the measurement results are: 103; 120; 109 and 97  $\mu g/m^3$  corresponding sampling times are 9:00 AM; 3:00 PM; 9:00 PM on July 4<sup>th</sup>. 2012 and 3:00 AM on July 5<sup>th</sup>. 2012; these results are under 350  $\mu g/m^3$  comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).



For  $NO_2$ . the measurement results are: 29; 27; 35 and 27  $\mu$ g/m³ corresponding sampling times are 9:00 AM; 3:00 PM; 9:00 PM on July 4<sup>th</sup>. 2012 and 3:00 AM on July 5<sup>th</sup>. 2012; these results are lower than 200  $\mu$ g/m³ comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For CO. the measurement results are: 2683; 4812; 2465 and 1163  $\mu g/m^3$  corresponding sampling times are 9:00 AM; 3:00 PM; 9:00 PM on July 4<sup>th</sup>. 2012 and 3:00 AM on July 5<sup>th</sup>. 2012; these results are under 30000  $\mu g/m^3$  comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

#### + Results of noise:

Noise level is measured 12 samples within 24 hours (a point per 2 hours) from 9:00 am July 4<sup>th</sup>. 2012 to 7:00 am July 5<sup>th</sup>. 2012. Using the noise meter equipment NL-21 ORION of Japan. we measured continuously for 15 minutes each sampling. record of Leq values (average value); L<sub>50</sub> (average value of test 50 times); L<sub>90</sub> (average value of test 90 times); L<sub>max</sub> (maximum value) and L<sub>min</sub> (minimum value). According to National Technical Regulation on Noise (QCVN 26:2010/BTNMT) for normal areas. According to equivalent acoustic level (Leq) is 70dB of about 6:00 AM to 8:00 PM and 55dB from 9:00 PM to 6:00 AM daily. Results are shown in table 7.

The table results showed that 12 Leq values for 24 hours are lower than the allowable limit 55 dB and 70 dB according to National Technical Regulation on Noise (QCVN 26:2010/BTNMT). The values of  $L_{50}$ .  $L_{90}$  haven't comparative regulation. respectively of about 43.4 to 56.1 dB from 7:00 AM to 21:00 PM and 45.3 to 57.3 dB from 23:00 PM to 5:00 AM for  $L_{50}$ . The values of  $L_{90}$  are respectively of about 42.9 to 56.9 dB from 6:30 AM to 8:30 PM and 41.2 to 50.1 dB from 10:30 PM to 4:30 AM.

 $L_{max}$  value is 90.1 dB at 13:00 PM on July 4<sup>th</sup>. 2012 and  $L_{min}$  value is 36.9 dB at 1:00 PM on July 4<sup>th</sup>, 2012.





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Tel: (84-4) 37711668 - 22209668; Fax: (84-4) 22209666

#### TABLE 6: THE SIXTH RESULTS OF AIR SAMPLE OF EX3 (JULY 2012)

| Name of sample | Parameter       | Unit              | K 3.6.1                                 | K 3.6.2                                  | K 3.6.3                                  | K 3.6.4                                 | QCVN<br>05:2009/BTNMT |
|----------------|-----------------|-------------------|---|--|--|---|-----------------------|
|                | Time            |                   | 9:00 am<br>July. 4 <sup>th</sup> . 2012 | 15:00 pm<br>July. 4 <sup>th</sup> . 2012 | 21:00 pm<br>July. 4 <sup>th</sup> . 2012 | 3:00 am<br>July. 5 <sup>th</sup> . 2012 |                       |
|                | VOCs            |                   | 165                                     | 154                                      | 110                                      | 105                                     |                       |
| EX 3 -         | Dust            | μg/m <sup>3</sup> | 267                                     | 324                                      | 218                                      | 182                                     | 300                   |
| K 3.6          | SO <sub>2</sub> | PB                | 103                                     | 120                                      | 109                                      | 97                                      | 350                   |
|                | NO <sub>2</sub> |                   | 30                                      | 28                                       | 23                                       | 22                                      | -                     |
|                | СО              |                   | 2683                                    | 4812                                     | 2465                                     | 1163                                    | 30000                 |

Note: QCVN 05:2009/ BTNMT: National technical regulation on ambient air quality

TABLE 7: THE SIXTH RESULTS OF NOISE SAMPLES OF THE PACKAGE EX3 (JULY 2012)

| Nama          | of samula                  | Noise  |      | From 9:00 am July 04 <sup>th</sup> to 7:00 am July 05 <sup>th</sup> , 2012 |      |      |      |      |      |      |      |      |      |      |  |
|---------------|----------------------------|--|------|--|------|------|------|------|------|------|------|------|------|------|--|
| Name          | Name of sample             |  | 9am  | 11am   | 13pm | 15pm | 17pm | 19pm | 21pm | 23pm | 01am | 03am | 05am | 07am |  |
|               | Leq                        |  | 67.2 | 64.4   | 61.7 | 64.3 | 62.5 | 51.7 | 55.0 | 57.1 | 48.0 | 53.4 | 55.5 | 61.8 |  |
|               | Lmax                       |  | 88.0 | 85.5   | 90.1 | 85.6 | 80.1 | 72.6 | 65.5 | 73.4 | 58.7 | 78.4 | 81.5 | 85.1 |  |
| EX 3-<br>K3.6 | Lmin                       | (dB)   | 42.5 | 41.7   | 36.9 | 44.4 | 47.4 | 41.4 | 51.8 | 48.7 | 45.5 | 46.7 | 39.3 | 42.3 |  |
| 125.0         | L50                        |  | 51.1 | 50.4   | 48.9 | 51.2 | 55.9 | 46.3 | 54.3 | 57.1 | 47.7 | 51.4 | 45.3 | 50.2 |  |
|               | L90                        |  | 46.1 | 45.7   | 43.4 | 47.1 | 51.6 | 43.5 | 53.5 | 56.1 | 47.0 | 49.1 | 42.2 | 45.7 |  |
|               | N 26:2010/B<br>rmal area - | and the second s |      |  |      | 70   |      |      |      |      | 5    | 5    |      | 70   |  |

Note: QCVN 26:2010/BTNMT: - National Technical Regulation on Noise



Consultancy: Institute of Environmental Technology

Address: No.18 Hoang Quoc Viet – Cau Giay – Ha Noi Tel: 043 7569 136; 043 7911 654 \* Fax: 043 7911 203

#### + Results of vibration

- Starting time: 9:00 AM on July 4th. 2012; Ending time: 7:00 AM on July 5th. 2012.
  - Azimuth of the axes x. y

X-axis set follow the North – South direction.

Y-axis set follow the East – West direction.

Impacts of vibratory sources to the measurement result.

To set measurement range for equipment is 30 - 90 dB.

From  $L_{\text{max}}$  and Leq values showed that: Most of testing time. vibration acceleration is lower than 60dB. However, some measurement values are higher than 60dB and lower than 75dB..

The values of  $L_{10}$ ,  $L_{50}$ ,  $L_{90}$  have decreasing rule that the larger values only occurring in short time of the each measurement range.

The results in table 8 showed that value of vibration acceleration level (Lva) exceed the allowable limit (75dB) of National Technical Regulation on Vibration (QCVN 27:2010/BTNMT).

Average Lv value in the range from 36.3 to 59.1 dB.

The value of Lva<sub>max</sub> is 85.7 dB which is highest at the time from 9:00 PM to 21:30 PM on July 4<sup>th</sup>, 2012.

The value of Lva<sub>min</sub> is 25.6 dB which is lowest at the time from 8:30 to 9:00 PM on July 4<sup>th</sup>, 2012.

TABLE 8. THE SIXTH RESULTS OF VIBRATION OF THE PACKAGE EX 3 (JULY 2012)

| Time             |      |      | From 8:00 am to 9:30am on July 04 <sup>th</sup> , 2012 |           |         |                              |      |      |         |  |  |  |
|------------------|------|------|--|-----------|---------|------------------------------|------|------|---------|--|--|--|
| D.               | Unit |      | Vibra  | tion Leve | el (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Omt  | Z    | Y  | X         | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq              |      | 32.1 | 33   | 33.7      | 33.7    | 57.9                         | 50.7 | 50.4 | 57.9    |  |  |  |
| L <sub>max</sub> |      | 43.9 | 40.3   | 41.7      | 43.9    | 72.7                         | 67.9 | 67.7 | 72.7    |  |  |  |
| L <sub>min</sub> | dB   | 24.5 | 27.5   | 24.9      | 27.5    | 36.5                         | 31.7 | 33.2 | 36.5    |  |  |  |
| L <sub>10</sub>  |      | 35.6 | 35.1   | 36.5      | 36.5    | 62.6                         | 56.1 | 55.9 | 62.6    |  |  |  |
| L <sub>50</sub>  |      | 29.9 | 32.5   | 32.8      | 32.8    | 45.7                         | 43.7 | 42.7 | 45.7    |  |  |  |
| L90              |      | 27.4 | 30.3   | 29.7      | 30.3    | 39.2                         | 35.6 | 36.3 | 39.2    |  |  |  |



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| Time             | •     |                      | F    | From 11 | :00 am to 11 | :30 am | on July                      | 04 <sup>th</sup> , 20 | 12      |  |  |
|------------------|-------|----------------------|------|---------|--------------|--------|------------------------------|-----------------------|---------|--|--|
| D                | TT-:4 | Vibration Level (Lv) |      |         |              |        | Vibration Acceleration (Lva) |                       |         |  |  |
| Parameter        | Unit  | Z                    | Y    | X       | Average      | Z      | Y                            | X                     | Average |  |  |
| Leq              |       | 44.1                 | 44.5 | 51.6    | 51.6         | 54.6   | 51.1                         | 46.2                  | 54.6    |  |  |
| L <sub>max</sub> |       | 63.4                 | 70.2 | 77.4    | 77.4         | 76.1   | 73.3                         | 68.8                  | 76.1    |  |  |
| L <sub>min</sub> | dB    | 23                   | 26.7 | 26.8    | 26.8         | 33.8   | 32.5                         | 31.2                  | 33.8    |  |  |
| L <sub>10</sub>  |       | 48.1                 | 40   | 39.6    | 48.1         | 53.4   | 51.4                         | 47.4                  | 53.4    |  |  |
| L <sub>50</sub>  |       | 32.2                 | 34.1 | 35.3    | 35.3         | 39.9   | 38.1                         | 37.3                  | 39.9    |  |  |
| L <sub>90</sub>  |       | 28.2                 | 31   | 31.8    | 31.8         | 36.3   | 34.8                         | 33.9                  | 36.3    |  |  |

| Time             | Time |                      | From 13:00 am to 13:30 pm on July 04 <sup>th</sup> , 2012 |      |         |                              |      |      |         |  |  |
|------------------|------|----------------------|---|------|---------|------------------------------|------|------|---------|--|--|
| Darameter        | TT:4 | Vibration Level (Lv) |   |      |         | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Unit | Z                    | Y   | X    | Average | Z                            | Y    | X    | Average |  |  |
| Leq              |      | 47.2                 | 46.8  | 56.8 | 56.8    | 50.5                         | 45.9 | 48.6 | 50.5    |  |  |
| L <sub>max</sub> |      | 65.6                 | 72  | 81.4 | 81.4    | 69.8                         | 63.9 | 69.7 | 69.8    |  |  |
| L <sub>min</sub> | dB   | 24.1                 | 27.2  | 28.1 | 28.1    | 32.7                         | 31   | 31.5 | 32.7    |  |  |
| L <sub>10</sub>  |      | 45.5                 | 38.7  | 41.1 | 45.5    | 52.2                         | 47.2 | 48.6 | 52.2    |  |  |
| L <sub>50</sub>  |      | 33.2                 | 34.7  | 37.2 | 37.2    | 38.5                         | 36.5 | 38.7 | 38.7    |  |  |
| L <sub>90</sub>  |      | 28.3                 | 31.5  | 33.5 | 33.5    | 35.3                         | 33.6 | 35.1 | 35.3    |  |  |

| Т                | Time     |      | From 15:00 pm to 15:30 pm on July 04 <sup>th</sup> , 2012 |         |                              |      |      |      |         |  |  |
|------------------|----------|------|---|---------|------------------------------|------|------|------|---------|--|--|
| Damanatan        | Unit     |      | ion Leve  | el (Lv) | Vibration Acceleration (Lva) |      |      |      |         |  |  |
| Parameter        | Onit     | Z    | Y   | X       | Average                      | Z    | Y    | X    | Average |  |  |
| Leq              |          | 47.3 | 36  | 36.7    | 47.3                         | 52.3 | 48.6 | 44   | 52.3    |  |  |
| L <sub>max</sub> | The same | 66.7 | 48  | 45.8    | 66.7                         | 68.9 | 59.5 | 56.1 | 68.9    |  |  |
| L <sub>min</sub> | dB       | 26.3 | 26.8  | 28.1    | 28.1                         | 44.5 | 42.6 | 38.1 | 44.5    |  |  |
| L <sub>10</sub>  | cześ     | 43.7 | 38.2  | 39.2    | 43.7                         | 55.6 | 51.5 | 46.8 | 55.6    |  |  |
| L <sub>50</sub>  |          | 34.2 | 34.5  | 36      | 36                           | 48.1 | 46.2 | 42.2 | 48.1    |  |  |
| L <sub>90</sub>  |          | 29.7 | 31.3  | 32.8    | 32.8                         | 45.8 | 44.4 | 39.7 | 45.8    |  |  |

| Time             | Time |                      | From 17:00 pm to 17:30 pm on July 04 <sup>th</sup> , 2012 |         |      |      |                              |         |      |  |  |
|------------------|------|----------------------|---|---------|------|------|------------------------------|---------|------|--|--|
| Danamatan        | Unit | Vibration Level (Lv) |   |         |      | Vil  | Vibration Acceleration (Lva) |         |      |  |  |
| Parameter Unit   | Z    | Y                    | X   | Average | Z    | Y    | X                            | Average |      |  |  |
| Leq              |      | 52.3                 | 38.4  | 37.7    | 52.3 | 57.7 | 54.6                         | 56.5    | 57.7 |  |  |
| L <sub>max</sub> | dB   | 72.1                 | 57.2  | 49.3    | 72.1 | 79.7 | 75.3                         | 76.2    | 79.7 |  |  |
| L <sub>min</sub> |      | 25.6                 | 26.5  | 26.8    | 26.8 | 37.1 | 35.8                         | 36.6    | 37.1 |  |  |
| L <sub>10</sub>  |      | 49.9                 | 40.6  | 40      | 49.9 | 60.5 | 57.3                         | 59.2    | 60.5 |  |  |
| L <sub>50</sub>  |      | 34.9                 | 34.1  | 35.9    | 35.9 | 48.7 | 46.3                         | 48.1    | 48.7 |  |  |
| L <sub>90</sub>  |      | 29.3                 | 30.5  | 32.4    | 32.4 | 41.6 | 40.2                         | 41.6    | 41.6 |  |  |



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| Time            | 9    | Mule      | From 19:00 pm to 19:30 pm on July 04 <sup>th</sup> . 2012 |         |         |                              |      |      |         |  |  |  |
|-----------------|------|-----------|---|---------|---------|------------------------------|------|------|---------|--|--|--|
| Donomoton       | Unit | Para di N | Vibratio  | n Level | (Lv)    | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter       | Omt  | Z         | Y   | X       | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq             |      | 29.5      | 31.8  | 33.7    | 33.7    | 57.1                         | 50.5 | 45.5 | 57.1    |  |  |  |
| $L_{max}$       |      | 44.2      | 38.2  | 41.3    | 44.2    | 76.8                         | 67.5 | 64.6 | 76.8    |  |  |  |
| $L_{min}$       | dB   | 22.2      | 23.9  | 24.7    | 24.7    | 35.1                         | 32.3 | 29.6 | 35.1    |  |  |  |
| L <sub>10</sub> |      | 31.2      | 34.1  | 36.3    | 36.3    | 60.3                         | 54.2 | 48.3 | 60.3    |  |  |  |
| L <sub>50</sub> |      | 27.8      | 31.3  | 32.9    | 32.9    | 45.4                         | 40.3 | 37.1 | 45.4    |  |  |  |
| L <sub>90</sub> |      | 25.6      | 28.8  | 29.5    | 29.5    | 37.7                         | 34.6 | 33.5 | 37.7    |  |  |  |

| Time             |       |       | From 21:00 pm to 21:30 pm on July 04 <sup>th</sup> . 2012 |         |         |                              |      |      |      |  |  |
|------------------|-------|-------|---|---------|---------|------------------------------|------|------|------|--|--|
| Parameter        | TT-:4 | THE P | Vibratio  | n Level | (Lv)    | Vibration Acceleration (Lva) |      |      |      |  |  |
|                  | Unit  | Z     | Y   | X       | Average | Z                            | Y    | X    |      |  |  |
| $L_{eq}$         |       | 28.2  | 32.2  | 34.7    | 34.7    | 59.1                         | 57.2 | 57.6 | 59.1 |  |  |
| L <sub>max</sub> |       | 49.7  | 51.5  | 52.3    | 52.3    | 85.7                         | 82.9 | 83.8 | 85.7 |  |  |
| L <sub>min</sub> | dB    | 20.1  | 23.5  | 24.9    | 24.9    | 34.5                         | 32.7 | 31.8 | 34.5 |  |  |
| L <sub>10</sub>  |       | 29.3  | 33.9  | 36.6    | 36.6    | 54.9                         | 50.8 | 48.1 | 54.9 |  |  |
| L <sub>50</sub>  |       | 26.2  | 31  | 33.3    | 33.3    | 40.3                         | 37.8 | 36.3 | 40.3 |  |  |
| L90              |       | 23.9  | 28.6  | 30.1    | 30.1    | 37.3                         | 35.4 | 33.9 | 37.3 |  |  |

| Time             |      |                      | From 23:00 pm to 23:30 pm on July 04 <sup>th</sup> , 2012 |      |         |                              |      |      |         |  |  |
|------------------|------|----------------------|---|------|---------|------------------------------|------|------|---------|--|--|
| Donomoton        | Unit | Vibration Level (Lv) |   |      |         | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Unit | Z                    | Y   | X    | Average | Z                            | Y    |      | Average |  |  |
| $L_{\sf eq}$     |      | 27                   | 31  | 34.1 | 34.1    | 38.3                         | 35.2 | 36.6 | 38.3    |  |  |
| L <sub>max</sub> | dB   | 37                   | 37  | 41.6 | 41.6    | 57.3                         | 52.7 | 54   | 57.3    |  |  |
| L <sub>min</sub> |      | 19.7                 | 22.6  | 25.6 | 25.6    | 34.3                         | 31.5 | 31.9 | 34.3    |  |  |
| L <sub>10</sub>  |      | 29.3                 | 33.3  | 36.9 | 36.9    | 38.9                         | 36.3 | 38.3 | 38.9    |  |  |
| L <sub>50</sub>  |      | 25.8                 | 30.4  | 23.1 | 30.4    | 36.7                         | 33.8 | 35.1 | 36.7    |  |  |
| L <sub>90</sub>  |      | 23.2                 | 27.5  | 29.5 | 29.5    | 35.8                         | 32.6 | 33.5 | 35.8    |  |  |

| Time             | Time   |      | From 1:00 am to 1:30 am on July 05 <sup>th</sup> . 2012 |         |         |                              |      |      |         |  |  |  |
|------------------|--------|------|---|---------|---------|------------------------------|------|------|---------|--|--|--|
| D                | I Init |      | Vibratio  | n Level | (Lv)    | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit   | Z    | Y   | X       | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq              |        | 28.1 | 30.8  | 33.8    | 33.8    | 36.3                         | 33.4 | 35.2 | 36.3    |  |  |  |
| $L_{max}$        |        | 43.7 | 37.6  | 41.7    | 43.7    | 45.5                         | 43.1 | 45.2 | 45.5    |  |  |  |
| L <sub>min</sub> | dB     | 20.4 | 22.4  | 24.5    | 24.5    | 32.5                         | 30   | 30.7 | 32.5    |  |  |  |
| L <sub>10</sub>  |        | 29.8 | 33.5  | 36.6    | 36.6    | 38.1                         | 35.2 | 37.5 | 38.1    |  |  |  |
| L <sub>50</sub>  |        | 25.8 | 30.1  | 32.8    | 32.8    | 35.6                         | 32.7 | 34.4 | 35.6    |  |  |  |
| L <sub>90</sub>  |        | 23.1 | 26.7  | 28.9    | 28.9    | 34                           | 31.1 | 32   | 34      |  |  |  |



| Time             |       |                      | From 3:00 am to 3:30 am on July 05 <sup>th</sup> . 2012 |      |         |                              |      |      |         |  |  |
|------------------|-------|----------------------|---|------|---------|------------------------------|------|------|---------|--|--|
| D                | T I!4 | Vibration Level (Lv) |   |      |         | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Unit  | Z                    | Y   | X    | Average | Z                            | Y    | X    | Average |  |  |
| Leq              |       | 26.8                 | 30.7  | 33.4 | 33.4    | 57.6                         | 52.5 | 49.9 | 57.6    |  |  |
| L <sub>max</sub> | dB    | 38.1                 | 39.3  | 40.7 | 40.7    | 82                           | 74.6 | 71.7 | 82      |  |  |
| L <sub>min</sub> |       | 19.6                 | 22.6  | 22.5 | 22.6    | 43.7                         | 38.4 | 37.1 | 43.7    |  |  |
| L <sub>10</sub>  |       | 29.1                 | 33.2  | 36.1 | 36.1    | 50.3                         | 46.9 | 45.2 | 50.3    |  |  |
| L <sub>50</sub>  |       | 25.6                 | 29.8  | 32.5 | 32.5    | 45.3                         | 39.8 | 38.8 | 45.3    |  |  |
| L <sub>90</sub>  |       | 23.1                 | 26.7  | 29.2 | 29.2    | 44.4                         | 39   | 37.8 | 44.4    |  |  |

| Time             |        | 75 360               | From 5:00 am to 5:30 am on July 05 <sup>th</sup> . 2012 |      |         |                              |      |      |         |  |  |
|------------------|--------|----------------------|---|------|---------|------------------------------|------|------|---------|--|--|
| Damanatan        | T I ia | Vibration Level (Lv) |   |      |         | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Unit   | Z                    | Y   | X    | Average | Z                            | Y    | X    | Average |  |  |
| Leq              |        | 42.2                 | 31.5  | 32.8 | 42.2    | 51.2                         | 48.3 | 50.5 | 51.2    |  |  |
| L <sub>max</sub> |        | 64.1                 | 45  | 42   | 64.1    | 70.4                         | 68.9 | 70.6 | 70.6    |  |  |
| L <sub>min</sub> | dB     | 20.5                 | 20.5  | 23.3 | 23.3    | 32.4                         | 32.2 | 31.5 | 32.4    |  |  |
| L <sub>10</sub>  |        | 34.9                 | 33.9  | 35.5 | 35.5    | 52.9                         | 50   | 52.2 | 52.9    |  |  |
| L <sub>50</sub>  |        | 26.8                 | 30.2  | 31.8 | 31.8    | 40.5                         | 39.5 | 39.3 | 40.5    |  |  |
| L <sub>90</sub>  |        | 24                   | 27  | 28.5 | 28.5    | 35.6.                        | 34.8 | 34.9 | 35.6    |  |  |

| Time             | Time |                      | From 7:00 am to 7:30 am on July 05 <sup>th</sup> . 2012 |      |         |                              |      |      |         |  |  |
|------------------|------|----------------------|---|------|---------|------------------------------|------|------|---------|--|--|
| Donomoton        | Unit | Vibration Level (Lv) |   |      |         | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Omt  | Z.                   | Y   | X    | Average | Z                            | Y    | X    | Average |  |  |
| Leq              |      | 43.9                 | 35.1  | 34   | 43.9    | 57.9                         | 57   | 54.9 | 57.9    |  |  |
| L <sub>max</sub> |      | 60.8                 | 50.8  | 45.3 | 60.8    | 80.3                         | 81.8 | 80.3 | 81.8    |  |  |
| L <sub>min</sub> | dB   | 22.1                 | 24.8  | 23.5 | 24.8    | 33.7                         | 30.8 | 29.4 | 33.7    |  |  |
| L <sub>10</sub>  |      | 45.1                 | 37.8  | 36.6 | 45.1    | 57.3                         | 51.6 | 49.3 | 57.3    |  |  |
| L <sub>50</sub>  |      | 31.6                 | 32.2  | 32.4 | 32.4    | 41.4                         | 38.1 | 36.8 | 41.4    |  |  |
| L <sub>90</sub>  |      | 27.1                 | 29  | 29   | 29      | 35.9                         | 33.6 | 33   | 35.9    |  |  |

| QCVN 27:2010/J   | BTNMT: National Tecl | hnical Regulation on Vibration                                |
|------------------|----------------------|---|
| Location         | Testing time per day | Allowable vibration acceleration level. dB Average level. Leq |
| 0 :11 ::         | 6:00 AM - 6:00 PM    | 75  |
| Special location | 6:00 PM – 6:00 AM    | Background level  |
| Named In add     | 6:00 AM – 9:00 PM    | 75  |
| Normal location  | 9:00 PM - 6:00 AM    | Background level  |



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#### + Results of groundwater sample NN 3.6

Groundwater sample (coded NN 3.6) is well water of house in intersection with the 39 road. householder is Mrs. Le Van Hoa. Tu Duong hamlet. Ly Thuong Kiet commune. Yen My. Hung Yen. The well was drilled in 2002 with depth of 18 m.

Results of sample analysis are shown in table 9 as below.

Table 9 showed that the all of parameters are lower than QCVN 09:2008/BTNMT (National technical regulation on underground water quality) except coliform sample exceeding allowable limit. The value of Blank sample is very low so it does not effect on test samples.

TABLE 9. THE SIXTH RESULTS OF GROUNDWATER OF THE PACKAGE EX3 (JULY 2012)

| NT  | D                | 77.3                | Res    | sult   | QCVN             |
|-----|------------------|---------------------|--------|--------|------------------|
| No. | Parameter        | Unit                | NN 3.6 | MT     | 09:2008/BTNMT    |
| 1.  | Temperature      | °C                  | 27.8   | 27.0   | William Built    |
| 2.  | pН               | 900/22-1-1          | 7.70   | 7.10   | 5.5 – 8.5        |
| 3.  | COD              | mgO <sub>2</sub> /L | 3.2    | < 1.0  | 4                |
| 4.  | BOD <sub>5</sub> | mg/L                | 1.5    | < 1.0  |                  |
| 5.  | TSS              | mg/L                | 5      | < 3.0  | Solid etenin 121 |
| 6.  | Total P          | mg/L                | 0.06   | < 0.01 |                  |
| 7.  | Total N          | mg/L                | 0.5    | < 0.10 | - Lag 2 - Age 50 |
| 8.  | *Coliform        |                     | 9      | ND     | 3                |
| 9.  | *E. Coli         | MPN/100mL           | ND     | ND     | ND               |

# c) Results of monitoring of construction packages EX-4

The monitoring areas of air environment, noise environment and ground vibration are located in Tan Phuc commune – An Thi District. Hung Yen province, intersection with the 20 road and the expressway.

# - General description of the status quo of terrain and geology

The monitoring area of ground vibration is a place where is constructing the expressway.

Measurement point in the courtyard area of a house are far from the expressway about 10m



The height of between the measurement point with the 20 road pavement of Hung Yen - Pho Noi as well as the pavement of Hanoi - Hai Phong expressway (being covered with sand) is approximately 1.5m. The measurement point and the 20 road pavement are divided by local irrigation canal.

- Impacts of vibratory sources to the measurement result.

During the testing process. the vehicle transported mainly on the 39 route. Pho Noi. Hung Yen; appear container trucks with the speed from 40 to 60 km/h and higher. While construction machines and container trucks transporting at 8:00 - 11:00 AM and 2:00 - 8:00 PM on the expressway.

#### + Results of air monitoring:

Sampling according to supervision consultancy contracts - No. 74/VIDIFI-VCNMT/2010. Coordinates of sampling location: N 20° 51.603 - E 106° 01. 488. At the each location take 04 samples. a sample per 6 hours during 24 hours with parameters: Volatile organic compounds (VOCs). Total dust. Carbon oxide (CO). Nitrogen dioxide (NO<sub>2</sub>). Sulfur dioxide (SO<sub>2</sub>). The results are shown in table 12. From the results table showed that the measured parameters are within the allowable limits of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For VOCs. the measurement result showed minimum value is  $78 \mu g/m^3$  at 3:00 pm on July  $5^{th}$ . 2012 and maximum value is  $142 \mu g/m^3$  at 9:00 am on July  $5^{th}$ . 2012.

For total dust, the measurement results are: 79; 89; 85 and 73  $\mu g/m^3$  corresponding sampling times are 9:00 AM; 3:00 PM; 9:00 PM on July 5<sup>th</sup>. 2012 and 3:00 AM on July 6<sup>th</sup>. 2012; these results are lower than 300  $\mu g/m^3$  according to National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For  $SO_2$ . the measurement results are: 79; 89; 85 and 73  $\mu$ g/m<sup>3</sup> corresponding sampling times are 9:00 AM; 3:00 PM; 9:00 PM on July 5<sup>th</sup>. 2012 and 3:00 AM on July 6<sup>th</sup>. 2012; these results are under 350  $\mu$ g/m<sup>3</sup> comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For  $NO_2$  the measurement results are: 18; 25; 22 and 25  $\mu$ g/m<sup>3</sup> corresponding sampling times are 9:00 AM; 3:00 PM; 9:00 PM on July 5<sup>th</sup>. 2012 and 3:00 AM on July 6<sup>th</sup>. 2012; these results are lower than 200  $\mu$ g/m<sup>3</sup> comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For CO. the measurement results are: 1860; 1601; 991 and 1441 µg/m<sup>3</sup> corresponding sampling times are 9:00 AM; 3:00 PM; 9:00 PM on July 5<sup>th</sup>. 2012



and 3:00 AM on July 6<sup>th</sup>. 2012 these results are under 30000 µg/m<sup>3</sup> comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

#### + Results of noise:

Noise level is measured 12 samples within 24 hours (a point per 2 hours) from 9:00 am July 5<sup>th</sup>. 2012 to 7:00 am July 6<sup>th</sup>. 2012. Using the noise meter equipment NL-21 ORION of Japan. we measured continuously for 15 minutes each sampling. record of Leq values (average value); L<sub>50</sub> (average value of test 50 times); L<sub>90</sub> (average value of test 90 times); L<sub>max</sub> (maximum value) and L<sub>min</sub> (minimum value). According to National Technical Regulation on Noise (QCVN 26:2010/BTNMT) for normal areas. According to equivalent acoustic level (Leq) is 70dB of about 6:00 AM to 8:00 PM and 55dB from 9:00 PM to 6:00 AM daily. Results are shown in table 11.

The table results showed that 12 Leq values for 24 hours are lower than the allowable limit according to National Technical Regulation on Noise (QCVN 26:2010/BTNMT) (55 dB and 70 dB).

The values of  $L_{50}$ .  $L_{90}$  haven't comparative regulation. respectively of about 50.7 to 62.2 dB from 7:00 AM to 9:00 PM and 44.8 to 54.2 dB from 11:00 PM to 5:00 AM for  $L_{50}$ . The values of  $L_{90}$  are respectively of about 43.0 to 66.8 dB from 7:00 AM to 9:00 PM and 42.1 to 48.6 dB from 11:00 PM to 5:00 AM. all these values are lower than both Leq and  $L_{50}$ .

 $L_{max}$  value is 87.8 dB at 7:00 AM on July 6<sup>th</sup>. 2012 and  $L_{min}$  value is 40.4 dB at 5:00 AM on July 6<sup>th</sup>, 2012.





#### Owner: Vietnam Infrastructure development and finance investment joint stock company

Address: 8<sup>th</sup>-9<sup>th</sup>-10<sup>th</sup> Floors. LILAMA 10 Building. Le Van Luong street. Me Tri commune. Tu Liem. Hanoi

Tel: (84-4) 37711668 - 22209668; Fax: (84-4) 22209666

#### TABLE 10: THE FOURTH RESULTS OF AIR SAMPLE OF EX4 (JULY 2012)

| Name of sample  | Parameter       | Unit  | K 4.3.1                                 | K 4.3.2                                  | K 4.3.3                                  | K 4.3.4                                 | QCVN<br>05:2009/BTNMT |  |
|-----------------|-----------------|-------|---|--|--|---|-----------------------|--|
|                 | Time            |       | 9:00 am<br>July 05 <sup>th</sup> , 2012 | 15:00 pm<br>July 05 <sup>th</sup> , 2012 | 21:00 pm<br>July 05 <sup>th</sup> , 2012 | 3:00 am<br>July 06 <sup>th</sup> , 2012 |                       |  |
| EX 4 –<br>K 4.4 | VOCs            | μg/m³ | 142                                     | 142 136 86 78                            |  | 78                                      | 1 1 - 1 -             |  |
|                 | Dust            |       | 94                                      | 158                                      | 124                                      | 88                                      | 300<br>350            |  |
|                 | SO <sub>2</sub> |       | 79                                      | 89                                       | 85                                       | 73                                      |                       |  |
|                 | NO <sub>2</sub> |       | 18                                      | 25                                       | 22                                       | 25                                      |                       |  |
|                 | СО              |       | 1860                                    | 1601                                     | 991                                      | 1441                                    | 30000                 |  |

Note: QCVN 05:2009/ BTNMT: National technical regulation on ambient air quality

TABLE 11: THE FOURTH RESULTS OF NOISE SAMPLES OF THE PACKAGE EX4 (JULY 2012)

| Name of sample                             |      | Noise | From 9 am July 05 <sup>th</sup> to 7 am July 06 <sup>th</sup> , 2012 |      |      |      |      |      |      |      |      |      |      |      |
|--|------|-------|--|------|------|------|------|------|------|------|------|------|------|------|
|  |      |       | 9am  | 11am | 13pm | 15pm | 17pm | 19pm | 21pm | 23pm | 01am | 03am | 05am | 07am |
| EX 4-<br>K4.4                              | Leq  | (dB)  | 62.2   | 59.4 | 55.7 | 56.1 | 59.3 | 54.4 | 54.8 | 57.6 | 48.1 | 47.8 | 55.3 | 68.7 |
|  | Lmax |       | 83.0   | 78.3 | 71.3 | 76.0 | 77.9 | 79.2 | 75.1 | 72.3 | 67.9 | 56.8 | 73.4 | 87.8 |
|  | Lmin |       | 44.7   | 41.5 | 43.5 | 44.5 | 48.4 | 42.3 | 50.2 | 44.4 | 44.2 | 44.5 | 40.4 | 50.6 |
|  | L50  |       | 53.4   | 55.9 | 50.9 | 50.7 | 58.0 | 50.9 | 53.5 | 54.2 | 47.1 | 46.9 | 44.8 | 62.2 |
|  | L90  |       | 48.9   | 49.2 | 45.7 | 47.0 | 55.1 | 46.5 | 52.2 | 48.6 | 45.5 | 45.7 | 42.1 | 62.1 |
| QCVN 26:2010/BTNMT<br>(Normal area - Leq ) |      |       |  |      | 70   |      |      |      |      | 4    | 55   |      | 70   |      |

Note: QCVN 26:2010/BTNMT: - National Technical Regulation on Noise



### + Results of vibration

- Starting time: 9:00 AM on July 5<sup>th</sup>. 2012; Ending time: 7:00 AM on July 6<sup>th</sup>. 2012.
  - Azimuth of the axes x. y

X-axis set follow the North – South direction.

Y-axis set follow the East - West direction.

Impacts of vibratory sources to the measurement result.

To set measurement range for equipment is 30 - 90 dB.

From  $L_{\text{max}}$  and Leq values showed that: Most of testing time. vibration acceleration is lower than 60dB. However, some measurement values are higher than 60dB and lower than 75dB..

The values of  $L_{10}$ ,  $L_{50}$ ,  $L_{90}$  have decreasing rule that the larger values only occurring in short time of the each measurement range.

The results in table 12 showed that value of vibration acceleration level (Lva) exceed the allowable limit (75dB) of National Technical Regulation on Vibration (QCVN 27:2010/BTNMT).

Average Lv value in the range from 39.3 to 67.7 dB.

The value of  $Lva_{max}$  is 90.1 dB which is highest at the time from 1:00 PM to 1:30 PM on July 5<sup>th</sup>, 2012.

The value of Lva<sub>min</sub> is 30.8 dB which is lowest at the time from 5:00 to 5:30 AM on July 6<sup>th</sup>, 2012.

TABLE 12. THE FOURTH RESUXLTS OF VIBRATION OF THE PACKAGE EX 4 (JULY 2012)

| Time            | 9      |      | From 9:00 am to 9:30 am on July 05 <sup>th</sup> , 2012 |         |         |                              |      |      |         |  |  |  |
|-----------------|--------|------|---|---------|---------|------------------------------|------|------|---------|--|--|--|
| Donomoton       | I Inia |      | Vibrati   | on Leve | l (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter       | Unit   | Z    | Y   | X       | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq             |        | 44.1 | 37.2  | 36.9    | 44.1    | 60.9                         | 63.7 | 64.1 | 64.1    |  |  |  |
| $L_{max}$       |        | 60.9 | 50.1  | 49.8    | 60.9    | 88.8                         | 88.9 | 90   | 90      |  |  |  |
| Lmin            | dB     | 22.6 | 24.5  | 25.5    | 25.5    | 35.9                         | 36.3 | 36.3 | 36.3    |  |  |  |
| $L_{10}$        | uБ     | 47.4 | 40.5  | 39.9    | 47.4    | 53.1                         | 63.7 | 61.8 | 63.7    |  |  |  |
| L <sub>50</sub> |        | 35.5 | 35.2  | 35.6    | 35.6    | 50.8                         | 62.2 | 60.4 | 62.2    |  |  |  |
| L <sub>90</sub> |        | 28.8 | 30.6  | 31.2    | 31.2    | 40.6                         | 40   | 40.2 | 40.6    |  |  |  |



| Time             |      |         | From 11:00 am to 11:30 am on July 05 <sup>th</sup> . 2012 |         |         |                              |      |      |         |  |  |  |
|------------------|------|---------|---|---------|---------|------------------------------|------|------|---------|--|--|--|
|                  | ***  | T. Alle | Vibrati   | on Leve | l (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit | Z       | Y   | X       | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq              |      | 45.2    | 35.3  | 35.7    | 45.2    | 60.00                        | 57.8 | 61.1 | 61.1    |  |  |  |
| L <sub>max</sub> |      | 63.2    | 48.8  | 49.3    | 63.2    | 76.4                         | 74.8 | 77.8 | 77.8    |  |  |  |
| Lmin             | dr.  | 23.2    | 21.2  | 23.5    | 23.5    | 33.9                         | 30.7 | 33.4 | 33.9    |  |  |  |
| L <sub>10</sub>  | dB   | 45.5    | 37.8  | 38.2    | 45.5    | 61.9                         | 60   | 62.7 | 62.7    |  |  |  |
| L <sub>50</sub>  |      | 33.8    | 32.5  | 33.5    | 33.8    | 41.7                         | 39.2 | 41.5 | 41.7    |  |  |  |
| L <sub>90</sub>  |      | 27.4    | 28.2  | 29.6    | 29.6    | 37.9                         | 35.4 | 37   | 37.9    |  |  |  |

| Time             |       | From 13:00 am to 13:30 pm on July 05 <sup>th</sup> . 2012 |         |         |         |                              |      |      |         |  |  |
|------------------|-------|---|---------|---------|---------|------------------------------|------|------|---------|--|--|
| D                | TT-:4 | FERT  | Vibrati | on Leve | el (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Unit  | Z   | Y       | X       | Average | Z                            | Y    | X    | Average |  |  |
| Leq              |       | 31  | 32.9    | 31.2    | 32.9    | 67.4                         | 67.7 | 66.4 | 67.7    |  |  |
| L <sub>max</sub> |       | 44  | 39.7    | 41.1    | 44      | 90.1                         | 90.1 | 89.8 | 90.1    |  |  |
| L <sub>min</sub> | dB    | 20.7  | 23.3    | 25.3    | 25.3    | 35.7                         | 35.6 | 36.1 | 36.1    |  |  |
| L <sub>10</sub>  | db    | 34.1  | 35.6    | 36.8    | 36.8    | 50.6                         | 52.1 | 53.4 | 53.4    |  |  |
| L <sub>50</sub>  |       | 28.8  | 32.2    | 33.4    | 33.4    | 41.3                         | 40.1 | 40.8 | 41.3    |  |  |
| L <sub>90</sub>  |       | 25.2  | 28.7    | 29.8    | 29.8    | 38.3                         | 37.5 | 38.3 | 38.3    |  |  |

| Time             | 9     |      | F       | rom 15  | :00 pm to 15: | 30 pm o                      | n July 0 | 5 <sup>th</sup> . 2012 | 2       |  |
|------------------|-------|------|---------|---------|---------------|------------------------------|----------|------------------------|---------|--|
| D                | TT-14 |      | Vibrati | on Leve | l (Lv)        | Vibration Acceleration (Lva) |          |                        |         |  |
| Parameter        | Unit  | Z    | Y       | X       | Average       | Z                            | Y        | X                      | Average |  |
| Leq              |       | 34.9 | 33.1    | 35.5    | 35.5          | 47.9                         | 46       | 46.5                   | 47.9    |  |
| L <sub>max</sub> |       | 53.7 | 40.3    | 52.8    | 53.7          | 63                           | 61.1     | 63.2                   | 63.2    |  |
| L <sub>min</sub> | dB    | 25   | 25.1    | 26.3    | 26.3          | 41.6                         | 40.7     | 40.4                   | 41.6    |  |
| L <sub>10</sub>  | ав    | 37.9 | 35.5    | 37.5    | 37.9          | 49.8                         | 48       | 48.4                   | 49.8    |  |
| L <sub>50</sub>  |       | 31.7 | 32.4    | 33.9    | 33.9          | 44.8                         | 44.3     | 44.5                   | 44.8    |  |
| L <sub>90</sub>  |       | 28.5 | 29.2    | 30.7    | 30.7          | 43.1                         | 42       | 41.9                   | 43.1    |  |

| Time             | 9       |      | F       | From 17: | 00 pm to 17: | 30 pm or                     | n July 0 | 5 <sup>th</sup> . 2012 | 2       |  |
|------------------|---------|------|---------|----------|--------------|------------------------------|----------|------------------------|---------|--|
| D                | T I : 4 |      | Vibrati | on Leve  | 1 (Lv)       | Vibration Acceleration (Lva) |          |                        |         |  |
| Parameter        | Unit    | Z    | Y       | X        | Average      | Z                            | Y        | X                      | Average |  |
| Leq              |         | 45.5 | 44.8    | 44.2     | 45.5         | 47.9                         | 52.5     | 51.4                   | 52.5    |  |
| L <sub>max</sub> |         | 62.7 | 61      | 61.4     | 62.7         | 73.6                         | 79.8     | 78.1                   | 79.8    |  |
| L <sub>min</sub> | dB      | 36.6 | 35.7    | 35.7     | 36.6         | 36.9                         | 36.9     | 38.6                   | 38.6    |  |
| L <sub>10</sub>  | uБ      | 47.5 | 45.8    | 45.4     | 47.5         | 45                           | 46.3     | 47.4                   | 47.4    |  |
| L <sub>50</sub>  |         | 41.4 | 43      | 42.9     | 43           | 41.9                         | 42.7     | 43.1                   | 43.1    |  |
| L90              |         | 39.7 | 40.8    | 40.9     | 40.9         | 39.1                         | 40.6     | 40.8                   | 40.8    |  |



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| Time             |       | From 19:00 pm to 19:30 pm on July 05 <sup>th</sup> . 2012 |         |         |         |                              |      |      |         |  |  |
|------------------|-------|---|---------|---------|---------|------------------------------|------|------|---------|--|--|
| D                | TT-:4 |   | Vibrati | on Leve | 1 (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Unit  | Z   | Y       | X       | Average | Z                            | Y    | X    | Average |  |  |
| Leq              |       | 39.3  | 34.2    | 38      | 39.3    | 38.7                         | 38.3 | 39.3 | 39.3    |  |  |
| L <sub>max</sub> |       | 56.4  | 50.8    | 57.3    | 57.3    | 54.8                         | 51.1 | 34.1 | 54.8    |  |  |
| $L_{min}$        | dB    | 20.8  | 21.9    | 24.4    | 24.4    | 32.5                         | 30.9 | 30.3 | 32.5    |  |  |
| $L_{10}$         | ub    | 42.6  | 36.2    | 37.5    | 42.6    | 40.5                         | 40.5 | 41.7 | 41.7    |  |  |
| L <sub>50</sub>  |       | 29.1  | 31.8    | 33.2    | 33.2    | 37.8                         | 37.5 | 38.3 | 38.3    |  |  |
| L <sub>90</sub>  |       | 25  | 28.2    | 29.8    | 29.8    | 35.3                         | 34.2 | 35.1 | 35.3    |  |  |

| Time             |       | Jagan La | From 21:00 pm to 21:30 pm on July 05 <sup>th</sup> . 2012 |         |         |                              |      |      |         |  |  |  |
|------------------|-------|----------|---|---------|---------|------------------------------|------|------|---------|--|--|--|
| Damanadan        | TToda |          | Vibrati   | on Leve | l (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit  | Z        | Y   | X       | Average | Z                            | Y    | X    | Average |  |  |  |
| $L_{eq}$         |       | 32.5     | 34.9  | 37.6    | 37.6    | 50.7                         | 51.4 | 51.4 | 51.4    |  |  |  |
| L <sub>max</sub> |       | 72.2     | 72.7  | 73.7    | 73.7    | 75.8                         | 76   | 75.6 | 76      |  |  |  |
| L <sub>min</sub> | dB    | 21.2     | 22.4  | 23.5    | 23.5    | 38                           | 37.6 | 38.4 | 38.4    |  |  |  |
| L <sub>10</sub>  | uБ    | 35.2     | 35.4  | 36.5    | 36.5    | 50.5                         | 52.9 | 52.4 | 52.9    |  |  |  |
| L <sub>50</sub>  |       | 28.8     | 32  | 32.7    | 32.7    | 43.9                         | 44.9 | 45.4 | 45.4    |  |  |  |
| L <sub>90</sub>  |       | 25.1     | 28.5  | 29.4    | 29.4    | 39.9                         | 40.3 | 40.9 | 40.9    |  |  |  |

| Time             | ,     |      | From 23:00 pm to 23:30 pm on July 05 <sup>th</sup> . 2012 |          |         |                              |      |      |         |  |  |  |
|------------------|-------|------|---|----------|---------|------------------------------|------|------|---------|--|--|--|
| D                | TT-:4 |      | Vibrat  | ion Leve | l (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit  | Z    | Y   | X        | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq              |       | 36.1 | 34.1  | 36.4     | 36.4    | 42                           | 41.4 | 40.8 | 42      |  |  |  |
| L <sub>max</sub> |       | 53.8 | 50.7  | 54.7     | 54.7    | 55.1                         | 56.3 | 55.4 | 56.3    |  |  |  |
| L <sub>min</sub> | dB    | 22.8 | 22.3  | 24.7     | 24.7    | 32.2                         | 31.3 | 31.4 | 32.2    |  |  |  |
| $L_{10}$         | ub    | 39.6 | 35.3  | 36.5     | 39.6    | 45.8                         | 44.8 | 44.1 | 45.8    |  |  |  |
| L <sub>50</sub>  |       | 31.3 | 31.9  | 33       | 33      | 39.6                         | 38.1 | 38.3 | 39.6    |  |  |  |
| L90              |       | 26.3 | 28.6  | 29.7     | 29.7    | 35.3                         | 34.6 | 34.6 | 35.3    |  |  |  |

| Time             |        |       | From 1:00 am to 1:30 am on July 06 <sup>th</sup> . 2012 |          |         |                              |      |      |         |  |  |  |
|------------------|--------|-------|---|----------|---------|------------------------------|------|------|---------|--|--|--|
| D                | T T-:4 | 1 511 | Vibrat  | ion Leve | el (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit   | Z     | Y   | X        | Average | Z                            | Y    | X    | Average |  |  |  |
| $L_{eq}$         |        | 40    | 38.2  | 36.7     | 40      | 44                           | 42.8 | 41.5 | 44      |  |  |  |
| L <sub>max</sub> | . 15   | 53.7  | 54  | 51.5     | 54      | 61.2                         | 60.3 | 58   | 61.2    |  |  |  |
| L <sub>min</sub> | dB     | 37.2  | 35.3  | 33.6     | 37.2    | 37.7                         | 35.9 | 33.9 | 37.7    |  |  |  |
| L <sub>10</sub>  | uБ     | 40.9  | 38.7  | 37.3     | 40.9    | 45.3                         | 43.3 | 41.8 | 45.3    |  |  |  |
| L <sub>50</sub>  |        | 39.2  | 37  | 35.2     | 39.2    | 39.6                         | 38   | 30.5 | 39.6    |  |  |  |
| L <sub>90</sub>  |        | 38.4  | 36.3  | 34.3     | 38.4    | 38.4                         | 30.5 | 34.9 | 38.4    |  |  |  |



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| Time             |      |      |        | From     | 3:00 am to 3:3 | 0 am on                      | July 06 | 5 <sup>th</sup> . 2012 | ini) =  |  |
|------------------|------|------|--------|----------|----------------|------------------------------|---------|------------------------|---------|--|
| D                | TT   |      | Vibrat | ion Leve | el (Lv)        | Vibration Acceleration (Lva) |         |                        |         |  |
| Parameter        | Unit | Z    | Y      | X        | Average        | Z                            | Y       | X                      | Average |  |
| Leq              |      | 46.4 | 41.9   | 39.6     | 46.4           | 47.7                         | 48.4    | 42.4                   | 48.4    |  |
| L <sub>max</sub> | (HA) | 68.2 | 62.7   | 57       | 68.2           | 73.8                         | 71.3    | 71.1                   | 73.8    |  |
| L <sub>min</sub> | dB   | 32.5 | 31.4   | 31.5     | 32.5           | 38.4                         | 36.1    | 34.4                   | 38.4    |  |
| $L_{10}$         | ub.  | 44.1 | 42.2   | 41.3     | 44.1           | 48.7                         | 45.5    | 42.4                   | 48.7    |  |
| L <sub>50</sub>  |      | 37.9 | 36.2   | 36.2     | 37.9           | 43                           | 40      | 38.5                   | 43      |  |
| L <sub>90</sub>  |      | 35.4 | 33.6   | 33.9     | 35.4           | 40                           | 37.6    | 36.2                   | 40      |  |

| Time            |       | RELEGIE | H THE  | From     | 5:00 am to 5:3 | 30 am on | July 0   | 5 <sup>th</sup> . 2012 |             |
|-----------------|-------|---------|--------|----------|----------------|----------|----------|------------------------|-------------|
| D               | T In: |         | Vibrat | ion Leve | el (Lv)        | V        | ibration | Acceler                | ation (Lva) |
| Parameter       | Unit  | Z       | Y      | X        | Average        | Z        | Y        | X                      | Average     |
| Leq             |       | 30.4    | 38     | 38.8     | 38.8           | 56.2     | 53.7     | 56.7                   | 56.7        |
| $L_{max}$       |       | 45.4    | 55.1   | 55.8     | 55.8           | 90.1     | 89.9     | 89.8                   | 90.1        |
| Lmin            | dB    | 21.2    | 22     | 23.4     | 23.4           | 30.8     | 29.2     | 28.5                   | 30.8        |
| L <sub>10</sub> | ub.   | 32.4    | 34.9   | 36.4     | 36.4           | 45.3     | 42.8     | 42.3                   | 45.3        |
| L <sub>50</sub> |       | 26.3    | 30.2   | 31.4     | 31.4           | 35.6     | 33.4     | 34                     | 35.6        |
| L90             |       | 24      | 26.8   | 28.1     | 28.1           | 33       | 31       | 31.1                   | 33          |

| Time             |       |       | From 7:00 am to 7:30 am on July 06 <sup>th</sup> . 2012 |          |         |                              |      |      |         |  |  |  |
|------------------|-------|-------|---|----------|---------|------------------------------|------|------|---------|--|--|--|
| Danamatan        | Timia | 49-11 | Vibrat  | ion Leve | 1 (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit  | ·Z    | Y   | X        | Average | Z                            | Y    | X    | Average |  |  |  |
| $L_{eq}$         |       | 32.8  | 32.6  | 31.8     | 32.8    | 66.7                         | 67.2 | 66.9 | 67.2    |  |  |  |
| L <sub>max</sub> |       | 48.6  | 41.5  | 33.2     | 48.6    | 75                           | 76.1 | 74.2 | 76.1    |  |  |  |
| Lmin             | dB    | 26.1  | 24.1  | 29.8     | 29.8    | 41.7                         | 43.2 | 42.8 | 43.2    |  |  |  |
| L <sub>10</sub>  | uБ    | 35.2  | 34.8  | 37       | 37      | 70.2                         | 70.4 | 70.5 | 70.5    |  |  |  |
| L <sub>50</sub>  |       | 31    | 31.4  | 35.9     | 35.9    | 65.8                         | 66.8 | 65.4 | 66.8    |  |  |  |
| L <sub>90</sub>  |       | 28.8  | 28.6  | 28.9     | 28.9    | 59.3                         | 58.7 | 59   | 59.3    |  |  |  |

| QCVN 27:2010/BTNMT: National Technical Regulation on Vibration |                      |  |  |  |  |  |  |  |  |  |
|--|----------------------|--|--|--|--|--|--|--|--|--|
| Location   | Testing time per day | Allowable vibration acceleration level dB Average level. Leq |  |  |  |  |  |  |  |  |
| C  | 6:00 AM – 6:00 PM    | 75   |  |  |  |  |  |  |  |  |
| Special location   | 6:00 PM - 6:00 AM    | Background level   |  |  |  |  |  |  |  |  |
| Normal leastion  | 6:00 AM – 9:00 PM    | 75   |  |  |  |  |  |  |  |  |
| Normal location  | 9:00 PM - 6:00 AM    | Background level   |  |  |  |  |  |  |  |  |



### + Results of groundwater sample NN 4.4

Groundwater sample (coded NM 4.4) is well water of house in intersection. householder is Mrs. Nam. Tan Phuc commune. An Thi District. Hung Yen Province. Results of sample analysis are shown in table 13 as below.

Table 13 showed that the all of parameters are lower than QCVN 09:2008/BTMMT (National technical regulation on underground water quality) except coliform sample exceeding allowable limit. The value of Blank sample is very low so it does not effect on test samples.

TABLE 13. THE FOURTH RESULTS OF GROUNDWATER OF THE

| бсли           | ault   | Res    | 7:-11 | Description      | 214 |
|----------------|--------|--------|-------|------------------|-----|
| TMNTB\8002:90  | TM     | 4.4 NN | tinU  | Рагатетег        | .oV |
| mame 7 mail ma | 0.82   | 8.62   | J₀    | Temperature      | .I  |
| 2.8 – 2.2      | 01.7   | 29.9   |       | Hq               | 2.  |
| Þ              | 0.1 >  | 6.1    | J\sQm | COD              | 3.  |
|                | 0.1 >  | 0.1>   | J\gm  | BOD <sup>2</sup> | .4. |
| Jen Jensen     | 0.£>   | 6      | J/gm  | TSS              | .2  |
| y Tituakeu     | 10.0>  | ₽0.0   | J\gm  | 4 lstoT          | .9  |
|                | 01.0 > | 5.2    | J\gm  | V latoT          | .T  |
| 3              | ND     | S      | /NdW  | mroliloO*        | .8  |
| αN             | MD     | dΝ     | Jm001 | *E. Coli         | .6  |
|                |        |        |       |                  |     |

Results monitoring of Intersection with the 20 road in Nhan Quyen Commune. Binh Giang District, Hai Duong Province

### + Results of air monitoring:

Sampling according to supervision consultancy contracts - No. 74/VIDIFIL-VCNMT/2010. Coordinates of sampling location: N 20° 51.204" - E 106° 12. 14.9. At the each location take 04 samples. a sample per 6 hours during 24 hours with parameters: Volatile organic compounds (VOCs). Total dust. Carbon oxide (CO). Nitrogen dioxide (NO<sub>2</sub>). Sulfur dioxide (SO<sub>2</sub>). The results are shown in table 14. From the results table showed that the measured parameters are within the allowable limits of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For VOCs. the measurement result showed minimum value is 120 µg/m³ at



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3:00 am on April  $7^{th}$ . 2012 and maximum value is 150  $\mu$ g/m<sup>3</sup> at 3:00 p m on April  $6^{th}$ . 2012.

For total dust, the measurement results are: 456; 589; 284 and 352  $\mu g/m^3$  corresponding sampling times are 9:00 AM; 3:00 PM; 9:00 PM on April 6<sup>th</sup>, 2012 and 3:00 AM on April 7<sup>th</sup>, 2012; these results are higher lower than 300  $\mu g/m^3$  according to National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For  $SO_2$ . the measurement results are: 93; 119; 117 and 105  $\mu$ g/m<sup>3</sup> corresponding sampling times are 9:00 AM; 3:00 PM; 9:00 PM on April 6<sup>th</sup>. 2012 and 3:00 AM on April 7<sup>th</sup>. 2012; these results are under 350  $\mu$ g/m<sup>3</sup> comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For  $NO_2$ . the measurement results are: 33; 20; 20 and 22  $\mu$ g/m<sup>3</sup> corresponding sampling times are 9:00 AM; 3:00 PM; 9:00 PM on April 6<sup>th</sup>. 2012 and 3:00 AM on April 7<sup>th</sup>. 2012; these results are lower than 200  $\mu$ g/m<sup>3</sup> comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For CO. the measurement results are: 945; 1346; 1020 and 1696  $\mu g/m^3$  corresponding sampling times are 9:00 AM; 3:00 PM; 9:00 PM on April 6<sup>th</sup>. 2012 and 3:00 AM on April 7<sup>th</sup>. 2012 these results are under 30000  $\mu g/m^3$  comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

### + Results of noise:

Noise level is measured 12 samples within 24 hours (a point per 2 hours) from 9:00 am April 6<sup>th</sup>. 2012 to 7:00 am April 7<sup>th</sup>. 2012. Using the noise meter equipment NL-21 ORION of Japan. we measured continuously for 15 minutes each sampling. record of Leq values (average value); L<sub>50</sub> (average value of test 50 times); L<sub>90</sub> (average value of test 90 times); L<sub>max</sub> (maximum value) and L<sub>min</sub> (minimum value). According to National Technical Regulation on Noise (QCVN 26:2010/BTNMT) for normal areas. According to equivalent acoustic level (Leq) is 70dB of about 6:00 AM to 8:00 PM and 55dB from 9:00 PM to 6:00 AM daily. Results are shown in table 15.

The table results showed that 12 Leq values for 24 hours. There is one result at 9:00 AM on April 6<sup>th</sup> 2012 is 71.1 dB are higher 70 dB and all results at night from 11:00 PM on April 6<sup>th</sup> 2012 to 5:00 AM on April 7<sup>th</sup> 2012 are 56.3; 55.8; 59.0 and 68.5 dB are higher 55 dB than the allowable limit according to National Technical Regulation on Noise (QCVN 26:2010/BTNMT). Other noise values are lower than the allowable limit is 70dB.



The values of  $L_{50}$ .  $L_{90}$  haven't comparative regulation. respectively of about 59.1 to 67.9 dB from 7:00 AM to 9:00 PM and 48.1 to 57.7 dB from 11:00 PM to 5:00 AM for  $L_{50}$ . The values of  $L_{90}$  are respectively of about 53.3 to 62.3 dB from 7:00 AM to 9:00 PM and 45.0 to 53.0 dB from 11:00 PM to 5:00 AM.

 $L_{max}$  value is 101.4 dB at 11:00 AM on April 6<sup>th</sup>. 2012 and  $L_{min}$  value is 41.1 dB at 1:00 AM on April 7<sup>th</sup>, 2012.





### Owner: Vietnam Infrastructure development and finance investment joint stock company

Address: 8<sup>th</sup>-9<sup>th</sup>-10<sup>th</sup> Floors. LILAMA 10 Building. Le Van Luong street. Me Tri commune. Tu Liem. Hanoi

Tel: (84-4) 37711668 - 22209668; Fax: (84-4) 22209666

### TABLE 14: THE FOURTH RESULTS OF AIR SAMPLE OF EX4 (JULY 2012)

| Name of sample  | Parameter       | Unit        | K 5.4.1                             | K 5.4.2                                 | K 5.4.3                                 | K 5.4.4                                | QCVN          |     |
|-----------------|-----------------|-------------|-------------------------------------|---|---|--|---------------|-----|
|                 | Time            |             | 9 am<br>July 6 <sup>th</sup> , 2012 | 15:00 pm<br>July 6 <sup>th</sup> , 2012 | 21:00 pm<br>July 6 <sup>th</sup> , 2012 | 3:00 am<br>July 7 <sup>th</sup> , 2012 | 05:2009/BTNMT |     |
|                 | VOCs            |             | 130                                 | 150                                     | 130                                     | 120                                    | -             |     |
|                 | Dust            |             |                                     | 456                                     | 589                                     | 284                                    | 352           | 300 |
| EX 4 –<br>K 5.3 | SO <sub>2</sub> | $\mu g/m^3$ | 93                                  | 119                                     | 117                                     | 105                                    | 350           |     |
| K 3.3           | NO <sub>2</sub> |             | 33                                  | 20                                      | 20                                      | 22                                     | -             |     |
|                 | СО              |             | 945                                 | 1346                                    | 1020                                    | 1696                                   | 30000         |     |

Note: QCVN 05:2009/BTNMT: National technical regulation on ambient air quality

### TABLE 15: THE FOURTH RESULTS OF NOISE SAMPLES OF THE PACKAGE EX4 (JULY 2012)

| Mama          | of somels                  | Maine |      | From 9 am July 06 <sup>th</sup> to 7 am July 07 <sup>th</sup> , 2012 |      |      |      |      |      |      |      |      |      |      |
|---------------|----------------------------|-------|------|--|------|------|------|------|------|------|------|------|------|------|
| Name          | of sample                  | Noise | 9am  | 11am   | 13pm | 15pm | 17pm | 19pm | 21pm | 23pm | 01am | 03am | 05am | 07am |
|               | Leq                        |       | 72.3 | 72.7   | 69.5 | 68.1 | 68.2 | 68.0 | 66.0 | 57.9 | 55.0 | 66.2 | 69.2 | 70.4 |
|               | Lmax                       |       | 90.8 | 101.4  | 99.6 | 87.7 | 87.1 | 94.3 | 91.8 | 89.6 | 86.2 | 84.7 | 90.1 | 90.1 |
| EX 4-<br>K5.3 | Lmin                       | (dB)  | 54.1 | 47.9   | 48.9 | 50.5 | 51.3 | 46.5 | 48.0 | 43.3 | 41.1 | 47.0 | 46.9 | 51.2 |
| K3.3          | L50                        |       | 67.9 | 64.1   | 60.1 | 63.1 | 63.6 | 61.6 | 59.1 | 50.1 | 48.1 | 57.0 | 57.7 | 65.3 |
|               | L90                        |       | 62.3 | 56.5   | 53.4 | 55.3 | 57.8 | 54.2 | 53.3 | 47.7 | 45.0 | 53.0 | 51.5 | 58.0 |
| _             | V 26:2010/I<br>rmal area - |       |      |  |      | 70   |      |      |      |      | 5    | 55   |      | 70   |

Note: QCVN 26:2010/BTNMT: - National Technical Regulation on Noise



### + Results of vibration

- Starting time: 9:00 AM on July 6th. 2012; Ending time: 7:00 AM on July 7th. 2012.
  - Azimuth of the axes x. y

X-axis set follow the North – South direction.

Y-axis set follow the East – West direction.

Impacts of vibratory sources to the measurement result.

To set measurement range for equipment is 30 - 90 dB.

From  $L_{\text{max}}$  and Leq values showed that: Most of testing time. vibration acceleration is lower than 60dB. However, some measurement values are higher than 60dB and lower than 75dB.

The values of  $L_{10}$ ,  $L_{50}$ ,  $L_{90}$  have decreasing rule that the larger values only occurring in short time of the each measurement range.

The results in table 16 showed that value of vibration acceleration level (Lva) exceed the allowable limit (75dB) of National Technical Regulation on Vibration (QCVN 27:2010/BTNMT).

Average Lv value in the range from 53.3 to 69.9 dB.

The value of Lva<sub>max</sub> is 90.1 dB which is highest at the time from 1:00 AM to 1:30 AM on July  $7^{th}$ , 2012.

The value of Lva<sub>min</sub> is 31.8 dB which is lowest at the time from 23:00 to 23:30 AM on July  $6^{th}$ , 2012.

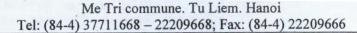
TABLE 16. THE FOURTH RESULTS OF VIBRATION OF THE PACKAGE EX 4 (JULY 2012)

| Time             |       |      | F        | rom 9:0  | 0 am to 9:30 | am on .                      | July 06 <sup>t</sup> | h, 2012 |         |
|------------------|-------|------|----------|----------|--------------|------------------------------|----------------------|---------|---------|
| D                | TT-:4 |      | Vibratio | on Level | (Lv)         | Vibration Acceleration (Lva) |                      |         |         |
| Parameter        | Unit  | Z    | Y        | X        | Average      | Z                            | Y                    | X       | Average |
| Leq              |       | 50.6 | 37.1     | 38.1     | 50.6         | 66.9                         | 69.9                 | 64.5    | 69.9    |
| L <sub>max</sub> |       | 68.3 | 50.8     | 57.4     | 68.3         | 79.2                         | 78.4                 | 74.2    | 79.2    |
| $L_{min}$        | dB    | 32.8 | 29.8     | 29.3     | 32.8         | 60.5                         | 60.9                 | 55.6    | 60.9    |
| L <sub>10</sub>  | uD    | 53.6 | 39.3     | 39.8     | 53.6         | 67.2                         | 71.5                 | 65.9    | 71.5    |
| L <sub>50</sub>  |       | 47   | 35.9     | 36.9     | 47           | 66.4                         | 69.4                 | 64.2    | 69.4    |
| L <sub>90</sub>  |       | 43.4 | . 33     | 33.5     | 43.4         | 66                           | 67.2                 | 62.1    | 67.2    |



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1.5



| Time             |       |      | Fr       | om 11:0 | 0 am to 11:3 | 0 am on                      | July 06 | 5 <sup>th</sup> . 2012 | 2       |
|------------------|-------|------|----------|---------|--------------|------------------------------|---------|------------------------|---------|
| D                | TT-14 |      | Vibratio | n Level | (Lv)         | Vibration Acceleration (Lva) |         |                        |         |
| Parameter        | Unit  | Z    | Y        | X       | Average      | Z                            | Y       | X                      | Average |
| Leq              |       | 48.8 | 35.8     | 36.8    | 48.8         | 61.5                         | 59.2    | 60.1                   | 61.5    |
| L <sub>max</sub> |       | 64.3 | 49.9     | 45.5    | 64.3         | 84.6                         | 81.1    | 85.6                   | 85.6    |
| Lmin             | dB    | 27   | 25.9     | 26.3    | 27           | 44                           | 39.2    | 39.7                   | 44      |
| L <sub>10</sub>  | uБ    | 52.9 | 38.5     | 39.4    | 52.9         | 61.5                         | 59.6    | 58.9                   | 61.5    |
| L <sub>50</sub>  |       | 42.2 | 34.6     | 36      | 42.2         | 54                           | 51.1    | 50.6                   | 54      |
| L <sub>90</sub>  |       | 32.9 | 31.3     | 32.6    | 32.9         | 49                           | 45.6    | 45.7                   | 49      |

| Time             |       | 1    | Fr       | om 13:0 | 00 pm to 13:3 | 30 pm or                     | n July 0 | 6 <sup>th</sup> . 201: | 2       |
|------------------|-------|------|----------|---------|---------------|------------------------------|----------|------------------------|---------|
| D                | TT-:A |      | Vibratio | n Level | (Lv)          | Vibration Acceleration (Lva) |          |                        |         |
| Parameter        | Unit  | Z    | Y        | X       | Average       | Z                            | Y        | X                      | Average |
| Leq              |       | 43.7 | 34.9     | 36.5    | 43.7          | 56.7                         | 56.9     | 55.1                   | 56.9    |
| L <sub>max</sub> |       | 59.5 | 43.4     | 47.1    | 59.5          | 76.3                         | 74.9     | 76.4                   | 76.4    |
| L <sub>min</sub> | dB    | 26.6 | 26.2     | 26.1    | 26.6          | 38                           | 35.5     | 34.5                   | 38      |
| L <sub>10</sub>  | db    | 47.3 | 37.7     | 38.9    | 47.3          | 61.1                         | 60.8     | 58.1                   | 61.1    |
| L <sub>50</sub>  |       | 38.7 | 33.9     | 35.7    | 38.7          | 49.7                         | 48.3     | 46.1                   | 49.7    |
| L <sub>90</sub>  |       | 31.7 | 30.8     | 32.1    | 32.1          | 43                           | 41.2     | 39.6                   | 43      |

| Time             |       |      | F        | rom 15:0 | 00 pm to 15: | 30 pm o                      | n July 0 | 6 <sup>th</sup> . 201: | 2       |  |
|------------------|-------|------|----------|----------|--------------|------------------------------|----------|------------------------|---------|--|
| Parameter        | T In: |      | Vibratio | n Level  | (Lv)         | Vibration Acceleration (Lva) |          |                        |         |  |
|                  | Unit  | Z    | Y        | X        | Average      | Z                            | Y        | X                      | Average |  |
| $L_{\sf eq}$     |       | 48.1 | 37.4     | 38.5     | 48.1         | 54.4                         | 55.2     | 53.2                   | 55.2    |  |
| $L_{max}$        |       | 59.8 | 46       | 46.1     | 59.8         | 72.6                         | 71.6     | 70.4                   | 72.6    |  |
| L <sub>min</sub> | dB    | 29.6 | 28.5     | 27.8     | 29.6         | 42.6                         | 44.7     | 42.9                   | 44.7    |  |
| L <sub>10</sub>  | ub    | 51.9 | 40       | 41.1     | 51.9         | 50.6                         | 57.9     | 55.5                   | 57.9    |  |
| L <sub>50</sub>  |       | 44.7 | 36.5     | 37.7     | 44.7         | 48.9                         | 50.7     | 47.9                   | 50.7    |  |
| L90              |       | 37.4 | 35.2     | 34.4     | 37.4         | 44.9                         | 47       | 44.7                   | 47      |  |

| Time            |      |      | From 17:00 pm to 17:30 pm on July 06 <sup>th</sup> . 2012 |      |                              |      |      |      |         |  |  |  |
|-----------------|------|------|---|------|------------------------------|------|------|------|---------|--|--|--|
| Daramatar       | Unit |      | on Level  | (Lv) | Vibration Acceleration (Lva) |      |      |      |         |  |  |  |
| Parameter       | Unit | Z    | Y   | X    | Average                      | Z    | Y    | X    | Average |  |  |  |
| Leq             | 10   | 46.1 | 34.8  | 35.3 | 46.1                         | 55.6 | 52.3 | 50.6 | 55.6    |  |  |  |
| $L_{max}$       |      | 60.2 | 42.6  | 42.6 | 60.2                         | 69.2 | 67.7 | 65.4 | 69.2    |  |  |  |
| Lmin            | dB   | 26.8 | 26.7  | 23.9 | 26.8                         | 40.9 | 36.6 | 36.4 | 40.9    |  |  |  |
| L <sub>10</sub> | ub   | 50.2 | 37  | 37.8 | 50.2                         | 59.4 | 55.5 | 54.3 | 59.4    |  |  |  |
| L <sub>50</sub> |      | 42   | 34  | 34.7 | 42                           | 50   | 46.4 | 45.5 | 50      |  |  |  |
| L <sub>90</sub> |      | 33.9 | 31.1  | 31.6 | 33.9                         | 44.6 | 40.8 | 40.2 | 44.6    |  |  |  |



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| Time             |       | Janagi | F        | rom 19: | 00 pm to 19: | 30 pm o                      | n July 0 | 6 <sup>th</sup> . 2012 | 2       |
|------------------|-------|--------|----------|---------|--------------|------------------------------|----------|------------------------|---------|
| D                | T.T'A |        | Vibratio | n Level | (Lv)         | Vibration Acceleration (Lva) |          |                        |         |
| Parameter        | Unit  | Z      | Y        | X       | Average      | Z                            | Y        | X                      | Average |
| Leq              |       | 40     | 32.7     | 33.9    | 40           | 54.9                         | 54.3     | 53.5                   | 54.9    |
| L <sub>max</sub> |       | 59.8   | 40       | 43.9    | 59.8         | 68.9                         | 69.1     | 67.3                   | 69.1    |
| L <sub>min</sub> | dB    | 22.6   | 24.3     | 24.3    | 24.3         | 36.5                         | 35.1     | 35.2                   | 36.5    |
| $L_{10}$         | ub    | 38.4   | 35.5     | 36.5    | 38.4         | 58.8                         | 58.1     | 57.5                   | 58.8    |
| L <sub>50</sub>  |       | 30.7   | 31.7     | 33.1    | 33.1         | 49.4                         | 48.7     | 48.5                   | 49.4    |
| L <sub>90</sub>  |       | 27.1   | 28.4     | 29.5    | 29.5         | 42.1                         | 40.9     | 40.4                   | 42.1    |

| Time             |       |      | F        | rom 21:0 | 00 pm to 21:3 | 30 pm or | July 1                       | )6 <sup>th</sup> . 201 | 2       |  |  |
|------------------|-------|------|----------|----------|---------------|----------|------------------------------|------------------------|---------|--|--|
| Dansanatan       | Timia |      | Vibratio | n Level  | (Lv)          | Vi       | Vibration Acceleration (Lva) |                        |         |  |  |
| Parameter        | Unit  | Z    | Y        | X        | Average       | Z        | Y                            | X                      | Average |  |  |
| Leq              |       | 40.8 | 32.2     | 33.3     | 40.8          | 53.5     | 53.7                         | 51.7                   | 53.7    |  |  |
| L <sub>max</sub> |       | 60.8 | 42.2     | 42.7     | 60.8          | 71.7     | 72.7                         | 70.4                   | 72.7    |  |  |
| L <sub>min</sub> | dB    | 22.5 | 22.7     | 23.7     | 23.7          | 45.9     | 46.9                         | 43.7                   | 46.9    |  |  |
| L <sub>10</sub>  | uБ    | 40.7 | 34.8     | 35.9     | 40.7          | 55       | 54.3                         | 53                     | 55      |  |  |
| L <sub>50</sub>  |       | 29.5 | 31.2     | 32.4     | 32.4          | 51.6     | 51                           | 48                     | 51.6    |  |  |
| L <sub>90</sub>  |       | 26.1 | 27.9     | 28.9     | 28.9          | 47       | 49.1                         | 46.5                   | 49.1    |  |  |

| Time             |         | THE P. | I                    | From 23: | 00 pm to 23: | 30 pm o | n July 0                     | 5 <sup>th</sup> . 2012 |         |  |  |
|------------------|---------|--------|----------------------|----------|--------------|---------|------------------------------|------------------------|---------|--|--|
| Dansanatan       | T T- :4 |        | Vibration Level (Lv) |          |              |         | Vibration Acceleration (Lva) |                        |         |  |  |
| Parameter        | Unit    | Z      | Y                    | X        | Average      | Z       | Y                            | X                      | Average |  |  |
| Leq              |         | 32.7   | 31.7                 | 34.3     | 34.3         | 51.5    | 53.3                         | 47.3                   | 53.3    |  |  |
| L <sub>max</sub> | 1180    | 57.5   | 51.2                 | 56.2     | 57.5         | 73.5    | 79                           | 71.6                   | 79      |  |  |
| Lmin             | dB      | 20.8   | 21.3                 | 24.6     | 24.6         | 31.8    | 29.7                         | 30.1                   | 31.8    |  |  |
| L <sub>10</sub>  | ub      | 29.3   | 33.8                 | 35.7     | 35.7         | 53      | 50.6                         | 47.2                   | 53      |  |  |
| L <sub>50</sub>  |         | 25.6   | 30.3                 | 32.1     | 32.1         | 43.1    | 40.9                         | 38.2                   | 43.1    |  |  |
| L <sub>90</sub>  |         | 23.3   | 27                   | 28.9     | 28.9         | 35.1    | 33                           | 33.5                   | 35.1    |  |  |

| Time             | ;     |                      | From 1:00 am to 1:30 am on July 07th . 2012 |      |         |      |                              |      |         |  |  |  |
|------------------|-------|----------------------|---|------|---------|------|------------------------------|------|---------|--|--|--|
| D                | TT.:4 | Vibration Level (Lv) |   |      |         |      | Vibration Acceleration (Lva) |      |         |  |  |  |
| Parameter        | Unit  | Z                    | Y   | X    | Average | Z    | Y                            | X    | Average |  |  |  |
| Leq              |       | 39.5                 | 31.2  | 33.1 | 39.5    | 63.6 | 61.8                         | 61.5 | 63.6    |  |  |  |
| L <sub>max</sub> |       | 58.9                 | 42.8  | 44.7 | 58.9    | 90.1 | 90.1                         | 90   | 90.1    |  |  |  |
| L <sub>min</sub> | dB    | 21.5                 | 21.9  | 23.4 | 23.4    | 35.5 | 36                           | 34.6 | 36      |  |  |  |
| L <sub>10</sub>  | db    | 38.5                 | 33.8  | 35.7 | 38.5    | 60.4 | 56.6                         | 54.5 | 60.4    |  |  |  |
| L <sub>50</sub>  |       | 29.2                 | 30.3  | 32.1 | 32.1    | 46.8 | 44.6                         | 42.8 | 46.8    |  |  |  |
| L90              |       | 25.3                 | 27  | 28.9 | 28.9    | 38.4 | 38.3                         | 37.7 | 38.4    |  |  |  |



| Time             |         | The last             | From 3:00 am to 3:30 am on July 07th . 2012 |      |         |      |                              |      |         |  |  |  |
|------------------|---------|----------------------|---|------|---------|------|------------------------------|------|---------|--|--|--|
| Dawanatan        | T Tools | Vibration Level (Lv) |   |      |         |      | Vibration Acceleration (Lva) |      |         |  |  |  |
| Parameter        | Unit    | Z                    | Y   | X    | Average | Z    | Y                            | X    | Average |  |  |  |
| $L_{\sf eq}$     |         | 41                   | 30.5  | 32.4 | 41      | 55.3 | 51.3                         | 49.3 | 55.3    |  |  |  |
| $L_{max}$        |         | 59.9                 | 39  | 43.3 | 59.9    | 72.5 | 68.9                         | 65.2 | 72.5    |  |  |  |
| L <sub>min</sub> | dB      | 20.6                 | 21.3  | 24.3 | 24.3    | 36.2 | 36.4                         | 37   | 37      |  |  |  |
| L <sub>10</sub>  | ub      | 39.6                 | 33.1  | 35.1 | 39.6    | 58.6 | 54.4                         | 52.7 | 58.6    |  |  |  |
| L <sub>50</sub>  |         | 27.3                 | 29.6  | 31.2 | 31.2    | 45   | 42.5                         | 42.6 | 45      |  |  |  |
| L <sub>90</sub>  |         | 24.1                 | 26.2  | 27.8 | 27.8    | 37.7 | 37.7                         | 39.1 | 39.1    |  |  |  |

| Time            |      | Lagger               | From 5:00 am to 5:30 am on July 07th . 2012 |      |         |      |                              |      |         |  |  |  |
|-----------------|------|----------------------|---|------|---------|------|------------------------------|------|---------|--|--|--|
| Danamatan       | Unit | Vibration Level (Lv) |   |      |         | Vi   | Vibration Acceleration (Lva) |      |         |  |  |  |
| Parameter       | Omt  | Z                    | Y   | X    | Average | Z    | Y                            | X    | Average |  |  |  |
| $L_{\sf eq}$    |      | 36.5                 | 30.3  | 31.5 | 36.5    | 58.2 | 54.7                         | 51.6 | 58.2    |  |  |  |
| $L_{max}$       |      | 58.8                 | 38.4  | 41.4 | 58.8    | 83.7 | 79.1                         | 73.3 | 83.7    |  |  |  |
| Lmin            | dB   | 21.4                 | 22.3  | 23.3 | 23.3    | 34.4 | 30.5                         | 31.3 | 34.4    |  |  |  |
| L <sub>10</sub> | ub   | 34.1                 | 32.8  | 34   | 34.1    | 58.9 | 56.8                         | 53.9 | 58.9    |  |  |  |
| L <sub>50</sub> |      | 27.8                 | 29.6  | 30.8 | 30.8    | 48.4 | 45.8                         | 44   | 48.4    |  |  |  |
| L <sub>90</sub> |      | 24.6                 | 26.3  | 27.7 | 27.7    | 39.2 | 37.4                         | 35.9 | 39.2    |  |  |  |

| Time             |      |                      | From 7:00 am to 7:30 am on July 07th . 2012 |      |         |                              |      |      |         |  |  |
|------------------|------|----------------------|---|------|---------|------------------------------|------|------|---------|--|--|
| Doromotor        | Unit | Vibration Level (Lv) |   |      |         | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        |      | Z                    | Y   | X    | Average | Z                            | Y    | X    | Average |  |  |
| Leq              |      | 45.1                 | 33.6  | 34.9 | 45.1    | 61.7                         | 59.2 | 56   | 61.7    |  |  |
| L <sub>max</sub> |      | 65.3                 | 65.3  | 66.2 | 66.2    | 82.1                         | 83.2 | 76.5 | 83.2    |  |  |
| L <sub>min</sub> | dB   | 24.5                 | 22.6  | 23.5 | 24.5    | 39.9                         | 37   | 36.2 | 39.9    |  |  |
| L <sub>10</sub>  | ub   | 48.9                 | 30.6  | 30.5 | 48.9    | 64.3                         | 61   | 59   | 64.3    |  |  |
| L <sub>50</sub>  |      | 39.7                 | 32  | 32.5 | 39.7    | 52.6                         | 49.9 | 48.8 | 52.6    |  |  |
| L90              |      | 31                   | 28.2  | 29   | 31      | 44.2                         | 41.9 | 39.9 | 44.2    |  |  |

| CVN 27:2010/BTN  | MT: National Technical | Regulation on Vibration                                       |
|------------------|------------------------|---|
| Location         | Testing time per day   | Allowable vibration acceleration level dB  Average level. Leq |
| Special location | 6:00 AM – 6:00 PM      | 75  |
| Special location | 6:00 PM - 6:00 AM      | Background level  |
| Normal langtion  | 6:00 AM – 9:00 PM      | 75  |
| Normal location  | 9:00 PM - 6:00 AM      | Background level  |



### + Results of surface water sample:

Surface water sample (coded NM 2.4) was monitored and sampled at Bac Hung Hai river – Van Giang District near intersection with the 179 road. Cuu Cao commune. coordinates of sampling location: N 20° 57.730 - E 105° 57. 265.

Sampling time: From July 6<sup>rd</sup>. 2012 to July 7<sup>th</sup>. 2012.

Sample was taken 3 times at the times. a sample per 8 hours in 24 hours with 01 blank sample. pH and DO parameters are tested on location. The samples were refrigerated and fixed after sampling and transported to the laboratory in the shortest time. Results of sample analysis are shown in table 17 as below.

The result table showed that oil & grease parameters are 0.12; 0.13; 0.15 mg/L higher than the column B1 (0.1 mg/L). lower than the limit value is 0.3 mg/L in column B2 according to National technical regulation on surface water quality (QCVN 08:2008/BTNMT).

COD; TSS and BOD<sub>5</sub> concentration of 03 samples are lower than both B1 and B2 column at the different times according to QCVN 08:2008/BTNMT. In B1 column compared with TSS (Total suspended solids) of QCVN 08:2008/BTNMT. The value of DO (Dissolved Oxygen) in NM 2.4.1; NM 2.4.2 and NM 2.4.3 are 2.60; 2.45 and 2.70 mg/L. respectively lower than QCVN 08:2008/BTNMT at B1 (≥ 4mg/L).

As for pesticides of organic chlorine group have quantitative limit of analysis method is 0.05  $\mu$ g/L (the most of environmental laboratories only determine this quantitative limit). However, according to National technical regulation on surface water quality (QCVN 08:2008/BTNMT), comparative value about 0.004 – 0.01  $\mu$ g/L (Aldrin - Dieldrin); 0.014 – 0.01  $\mu$ g/L (Endrin) etc.

On the other hand, comparison of National technical regulation on surface water quality (QCVN 08:2008) and Surface water quality standard (TCVN 5942:1995). DDT is 0.01 mg/L corresponding to 10  $\mu$ g/L in standard. Vietnam standard (TCVN) by Ministry of science and technology promulgate while Vietnam regulation by Ministry of natural resources and environment promulgate that regulation for parameters of surface water but different to 2500 times.

In this case. TCVN 5942:1995 more consistent with the international standard. Thus, results of minimum quantitative limit also exceed the QCVN 08: 2008/BTNMT.





### Owner: Vietnam Infrastructure development and finance investment joint stock company

Address: 8<sup>th</sup>-9<sup>th</sup>-10<sup>th</sup> Floors. LILAMA 10 Building. Le Van Luong street. Me Tri commune. Tu Liem. Hanoi

Tel: (84-4) 37711668 - 22209668; Fax: (84-4) 22209666

### TABLE 17. THE FOURTH RESULTS OF SURFACE WATER NM1 OF THE PACKAGE EX2 (JULY 2012)

| No | Parameter            | Unit                |          | Res      | ult      |        | QCVN<br>08:2008/BTNMT |           |
|----|----------------------|---------------------|----------|----------|----------|--------|-----------------------|-----------|
|    |                      |                     | NM 2.4.1 | NM 2.4.2 | NM 2.4.3 | MT     | Column B1             | Column B2 |
| 1  | pН                   | -                   | 7.11     | 7.45     | 7.36     | 7.20   | 5.5 -9                | 5.5 -9    |
| 2  | DO                   | mg/L                | 2.60     | 2.45     | 2.37     | 7.38   | ≥4                    | ≥2        |
| 3  | COD                  | mgO <sub>2</sub> /L | 9.6      | 10.4     | 26.2     | <1.0   | 30                    | 50        |
| 4  | BOD <sub>5</sub>     | mg/L                | 5.2      | 5.8      | 13.9     | <1.0   | 15                    | 25        |
| 5  | TSS                  | mg/L                | 5        | 7        | 8        | <3.0   | 50                    | 100       |
| 6  | Total P              | mg/L                | 0.21     | 0.15     | 0.25     | 0.01   |                       | -         |
| 7  | Total N              | mg/L                | 6.6      | 3.8      | 3.8      | <0.10  | 1 2 - 6               | - 1       |
| 8  | *Pesticides          | mg/L                | <0.5     | <0.5     | <0.5     | <0.5   |                       | -         |
| 9  | Aldrin+Dieldrin      |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.008                 | 0.01      |
| 10 | Endrin               |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.014                 | 0.01      |
| 11 | ВНС                  |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.13                  | 0.015     |
| 12 | DDT                  |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.004                 | 0.005     |
| 13 | DDD                  | μg/L                | < 0.05   | < 0.05   | < 0.05   | < 0.05 | F-10-2                | -         |
| 14 | Endosunfan (Thiodan) |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.01                  | 0.02      |
| 15 | Lindan               |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.38                  | 0.4       |
| 16 | Chlordane            |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.02                  | 0.03      |
| 17 | Heptachlor           |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.02                  | 0.05      |
| 18 | Oil                  | mg/L                | 0.12     | 0.13     | 0.15     | < 0.05 | 0.1                   | 0.3       |
| 19 | *Coliform            | MPN/100 mL          | 38       | 96       | 200      | ND     | 7500                  | 10000     |



Note: - QCVN 08:2008/BTNMT: National technical regulation on surface water quality

B1-For the usage of irrigation or other purpose having the similar quality requirement like B2 level

B2 – For the usage of water navigation and other purpose with less water quality

NM 2.4.1: Sampling at 14:00pm on July 6th. 2012; NM 2.4.2: Sampling at 22:00 pm on July 6th. 2012; NM 2.4.3: Sampling at 6:00 am on July 7th. 2012; MT: Blank sample; ND: non detect

### + Results of groundwater sample NN 5.4

Groundwater sample (coded NN 5.4) is well water of house in intersection. householder is Mrs. Vu Van Hoi. Nhan Quyen commune. Binh Giang District. Hai Durong Province. Results of sample analysis are shown in table 20 as below.

Table 18 showed that the all of parameters are lower than QCVN 09:2008/BTNMT (National technical regulation on underground water quality) except coliform sample exceeding allowable limit. The value of Blank sample is very low so it does not effect on test samples.

TABLE 18. THE FOURTH RESULTS OF GROUNDWATER OF THE PACKAGE EX4-N 5.4 (JULY 2012)

|     | P                | TT. 14              | Re     | QCVN   |  |
|-----|------------------|---------------------|--------|--------|--|
| No. | Parameter        | Unit                | NN 5.4 | MT     | 09:2008/BTNMT  |
| 1.  | Temperature      | °C                  | 27.5   | 28.0   | - 2  |
| 2.  | pH               | -                   | 7.01   | 7.10   | 5.5 – 8.5  |
| 3.  | COD              | mgO <sub>2</sub> /L | 10.6   | < 1.0  | 4  |
| 4.  | BOD <sub>5</sub> | mg/L                | 3.6    | < 1.0  | -  |
| 5.  | TSS              | mg/L                | 31     | < 3.0  | The state of the s |
| 6.  | Total P          | mg/L                | 0.15   | < 0.01 | -  |
| 7.  | Total N          | mg/L                | 28.8   | < 0.10 | -  |
| 8.  | *Coliform        | MPN/                | 21     | ND     | 3  |
| 9.  | *E. Coli         | 100mL               | ND     | ND     | ND   |

d) Results of monitoring of construction packages EX-5

+ Results of air monitoring:



Sampling according to supervision consultancy contracts - No. 74/VIDIFI-VCNMT/2010. Coordinates of sampling location: N 20° 51.341 - E 106° 18. 131. At the each location take 04 samples. a sample per 6 hours during 24 hours with parameters: Volatile organic compounds (VOCs). Total dust. Carbon oxide (CO). Nitrogen dioxide (NO<sub>2</sub>). Sulfur dioxide (SO<sub>2</sub>). The results are shown in table 22. From the results table showed that the measured parameters are within the allowable limits of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For VOCs. the measurement result showed minimum value is  $105 \mu g/m^3$  at 3:00 am on July  $10^{th}$ . 2012 and maximum value is  $145 \mu g/m^3$  at 9:00am on July  $9^{th}$ . 2012.

For total dust, the measurement results are: 128; 112; 96 and 88  $\mu g/m^3$  corresponding sampling times are 9:00 AM; 3:00 PM; 9:00 PM on July 9<sup>th</sup>. 2012 and 3:00 AM on July 10<sup>th</sup>. 2012; these results are lower than 300  $\mu g/m^3$  according to National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For  $SO_2$ . the measurement results are: 79; 95; 87 and 74  $\mu$ g/m<sup>3</sup> corresponding sampling times are 9:00 AM; 3:00 PM; 9:00 PM on July 9<sup>th</sup>. 2012 and 3:00 AM on July 10<sup>th</sup>. 2012; these results are under 350  $\mu$ g/m<sup>3</sup> comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For NO<sub>2</sub>. the measurement results are: 22; 23; 18 and 18 μg/m<sup>3</sup> corresponding sampling times are 9:00 AM; 3:00 PM; 9:00 PM on July 9<sup>th</sup>. 2012 and 3:00 AM on July 10<sup>th</sup>. 2012; these results are lower than 200 μg/m<sup>3</sup> comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For CO. the measurement results are: 1175; 1866; 1219 and 1385  $\mu g/m^3$  corresponding sampling times are 9:00 AM; 3:00 PM; 9:00 PM on July 9<sup>th</sup>. 2012 and 3:00 AM on July 10<sup>th</sup>. 2012 these results are under 30000  $\mu g/m^3$  comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

### + Results of noise:

Noise level is measured 12 samples within 24 hours (a point per 2 hours) from 9:00 am July 9<sup>th</sup>. 2012 to 7:00 am July 10<sup>th</sup>. 2012. Using the noise meter equipment NL-21 ORION of Japan. we measured continuously for 15 minutes each sampling. record of Leq values (average value);  $L_{50}$  (average value of test 50 times);  $L_{90}$  (average value of test 90 times);  $L_{max}$  (maximum value) and  $L_{min}$  (minimum value). According to National Technical Regulation on Noise (QCVN 26:2010/BTNMT) for normal



areas. According to equivalent acoustic level (Leq) is 70dB of about 6:00 AM to 8:00 PM and 55dB from 9:00 PM to 6:00 AM daily. Results are shown in table 20.

The table results showed that 12 Leq values for 24 hours are lowered 55 dB and 70 dB than the allowable limit according to National Technical Regulation on Noise (QCVN 26:2010/BTNMT).

The values of  $L_{50}$ .  $L_{90}$  haven't comparative regulation. respectively of about 53.2 to 61.6 dB from 7:00 AM to 9:00 PM and 46.6 to 55.9 dB from 11:00 PM to 5:00 AM for  $L_{50}$ . The values of  $L_{90}$  are respectively of about 48.0 to 59.3 dB from 7:00 AM to 9:00 PM and 44.4 to 55.4 dB from 11:00 PM to 5:00 AM. all these values are lower than both Leq and  $L_{50}$ .

 $L_{max}$  value is 89.1 dB at 7:00 AM on July 9<sup>th</sup>. 2012 and  $L_{min}$  value is 44.4 dB at 13:00 PM on July 10<sup>th</sup>, 2012.





### Owner: Vietnam Infrastructure development and finance investment joint stock company

Address: 8<sup>th</sup>-9<sup>th</sup>-10<sup>th</sup> Floors. LILAMA 10 Building. Le Van Luong street. Me Tri commune. Tu Liem. Hanoi

Tel: (84-4) 37711668 - 22209668; Fax: (84-4) 22209666

### TABLE 19: THE FOURTH RESULTS OF AIR SAMPLE OF EX5-K6.4 (JULY 2012)

| Name of sample | Parameter       | Unit        | K 6.4.1                             | K 6.4.2                                 | K 6.4.3                                 | K 6.4.4                                 | QCVN<br>05:2009/BTNMT |
|----------------|-----------------|-------------|-------------------------------------|---|---|---|-----------------------|
|                | Time            |             | 9 am<br>July 9 <sup>th</sup> , 2012 | 15:00 pm<br>July 9 <sup>th</sup> , 2012 | 21:00 pm<br>July 9 <sup>th</sup> , 2012 | 3:00 am<br>July 10 <sup>th</sup> , 2012 |                       |
|                | VOCs            |             | 145                                 | 130                                     | 110                                     | 105                                     | -                     |
|                | Dust            |             | 128                                 | 112                                     | 96                                      | 88                                      | 300                   |
| EX 5 – K 6.3   | SO <sub>2</sub> | $\mu g/m^3$ | 79                                  | 95                                      | 87                                      | 74                                      | 350                   |
| K 0.3          | NO <sub>2</sub> |             | 22                                  | 23                                      | 18                                      | 18                                      |                       |
|                | СО              |             | 1175                                | 1866                                    | 1219                                    | 1385                                    | 30000                 |

Note: QCVN 05:2009/ BTNMT: National technical regulation on ambient air quality

TABLE 20: THE FOURTH RESULTS OF NOISE SAMPLES OF THE PACKAGE EX5-K6.4 (JULY 2012)

| Name          | of some la                 | Maine |      | From 9am July 09 <sup>th</sup> to 7 am July 10 <sup>th</sup> , 2012 |      |      |      |      |      |      |      |      |      |      |
|---------------|----------------------------|-------|------|---|------|------|------|------|------|------|------|------|------|------|
| Name          | of sample                  | Noise | 9am  | 11am  | 13pm | 15pm | 17pm | 19pm | 21pm | 23pm | 01am | 03am | 05am | 07am |
|               | Leq                        |       | 62.0 | 60.3  | 59.3 | 62.7 | 60.9 | 59.8 | 59.5 | 50.6 | 57.1 | 55.8 | 54.9 | 66.5 |
|               | Lmax                       |       | 80.6 | 77.4  | 76.8 | 86.1 | 82.8 | 74.2 | 74.5 | 77.5 | 74.1 | 72.1 | 79.9 | 89.1 |
| EX 5-<br>K6.3 | Lmin                       | (dB)  | 50.8 | 47.3  | 44.4 | 53.7 | 50.5 | 47.8 | 50.8 | 45.3 | 52.9 | 47.2 | 42.7 | 56.3 |
| K0.5          | L50                        |       | 58.8 | 56.5  | 53.2 | 59.5 | 58.5 | 58.4 | 56.4 | 47.4 | 55.9 | 53.7 | 46.6 | 61.6 |
|               | L90                        |       | 55.3 | 51.4  | 48.0 | 57.0 | 55.1 | 54.0 | 53.6 | 46.4 | 55.4 | 51.4 | 44.4 | 59.3 |
|               | N 26:2010/I<br>rmal area - |       |      |   |      | 70   |      |      |      |      | 4    | 55   |      | 70   |

Note: QCVN 26:2010/BTNMT: - National Technical Regulation on Noise



### + Results of vibration

- Starting time: 9:00 AM on July 9th. 2012; Ending time: 7:00 AM on July 10th. 2012.
  - Azimuth of the axes x. y

X-axis set follow the North - South direction.

Y-axis set follow the East - West direction.

Impacts of vibratory sources to the measurement result.

To set measurement range for equipment is 30 - 90 dB.

From  $L_{\text{max}}$  and Leq values showed that: Most of testing time, vibration acceleration is lower than 60dB. However, some measurement values are higher than 60dB and lower than 75dB..

The values of  $L_{10}$ ,  $L_{50}$ ,  $L_{90}$  have decreasing rule that the larger values only occurring in short time of the each measurement range.

The results in table 21 showed that value of vibration acceleration level (Lva) not exceed the allowable limit (75dB) of National Technical Regulation on Vibration (QCVN 27:2010/BTNMT).

Average Lva value in the range from 37.4 to 56.1 dB.

The value of Lva<sub>max</sub> is 81.1 dB which is highest at the time from 11:00 AM to 11:30 AM on July  $9^{th}$ , 2012.

The value of Lva<sub>min</sub> is 31.1 dB which is lowest at the time from 5:00 to 5:30 AM on July 10<sup>th</sup>, 2012.

TABLE 21. THE FOURTH RESULTS OF VIBRATION OF THE PACKAGE
EX 5-K6.4 (JULY 2012)

| Time             |       |       | From 9:00 am to 9:30 am on July 09 <sup>th</sup> , 2012 |         |         |                              |      |      |         |  |  |  |
|------------------|-------|-------|---|---------|---------|------------------------------|------|------|---------|--|--|--|
| D                | TT '4 | Liva. | Vibrati   | on Leve | l (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit  | Z     | Y   | X       | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq              |       | 40.3  | 32.7  | 34.4    | 40.3    | 54.70                        | 50.3 | 49.7 | 54.7    |  |  |  |
| L <sub>max</sub> |       | 53.8  | 41.2  | 42.9    | 53.8    | 79                           | 73.8 | 72.6 | 79      |  |  |  |
| L <sub>min</sub> | dB    | 23.2  | 24.1  | 25.5    | 25.5    | 39.5                         | 35.7 | 35.6 | 39.5    |  |  |  |
| L <sub>10</sub>  | ub    | 45.2  | 35.2  | 37      | 45.2    | 56.1                         | 52.1 | 51.7 | 56.1    |  |  |  |
| L <sub>50</sub>  |       | 34.3  | 31.9  | 33.7    | 34.3    | 47.2                         | 43   | 42.7 | 47.2    |  |  |  |
| L <sub>90</sub>  | -77   | 28.7  | 28.8  | 30.4    | 30.4    | 42.1                         | 38.9 | 38.7 | 42.1    |  |  |  |



| Time             | 9      |      | From 11:00 am to 11:30 am on July 09 <sup>th</sup> . 2012 |        |                              |      |      |      |         |  |  |  |
|------------------|--------|------|---|--------|------------------------------|------|------|------|---------|--|--|--|
| D                | TT. 14 |      | on Leve   | l (Lv) | Vibration Acceleration (Lva) |      |      |      |         |  |  |  |
| Parameter        | Unit   | Z    | Y   | X      | Average                      | Z    | Y    | X    | Average |  |  |  |
| Leq              |        | 34.6 | 32.7  | 34.9   | 34.9                         | 56.1 | 50.2 | 48.2 | 56.1    |  |  |  |
| L <sub>max</sub> |        | 49.8 | 42  | 43.8   | 49.8                         | 81.1 | 73.8 | 69.5 | 81.1    |  |  |  |
| L <sub>min</sub> | dB     | 24   | 23.4  | 26.6   | 26.6                         | 38.8 | 35.3 | 35.8 | 38.8    |  |  |  |
| L <sub>10</sub>  | aв     | 38   | 35.3  | 37.3   | 38                           | 57.4 | 52.3 | 50.9 | 57.4    |  |  |  |
| L <sub>50</sub>  |        | 31.9 | 31.9  | 34     | 34                           | 48.9 | 43.8 | 43.3 | 48.9    |  |  |  |
| L <sub>90</sub>  |        | 28.2 | 28.8  | 30.8   | 30.8                         | 43.3 | 39.2 | 39.4 | 43.3    |  |  |  |

| Time             | 9     | 1                    | From 13:00 pm to 13:30 pm on July 09 <sup>th</sup> . 2012 |      |         |      |                              |      |         |  |  |  |
|------------------|-------|----------------------|---|------|---------|------|------------------------------|------|---------|--|--|--|
| D                | T7-:4 | Vibration Level (Lv) |   |      |         |      | Vibration Acceleration (Lva) |      |         |  |  |  |
| Parameter        | Unit  | Z                    | Y   | X    | Average | Z    | Y                            | X    | Average |  |  |  |
| Leq              |       | 33.7                 | 32.6  | 34.1 | 34.1    | 49.2 | 46.2                         | 43.8 | 49.2    |  |  |  |
| L <sub>max</sub> |       | 47.8                 | 39.8  | 40.6 | 47.8    | 63.4 | 62.7                         | 61.9 | 63.4    |  |  |  |
| L <sub>min</sub> | dB    | 22.9                 | 23.6  | 25.8 | 25.8    | 38.1 | 36.2                         | 32.9 | 38.1    |  |  |  |
| L <sub>10</sub>  | uБ    | 37.6                 | 35.1  | 36.6 | 37.6    | 52.5 | 49.1                         | 46   | 52.5    |  |  |  |
| L <sub>50</sub>  |       | 29.7                 | 31.9  | 33.4 | 33.4    | 44.7 | 41.5                         | 39.1 | 44.7    |  |  |  |
| L <sub>90</sub>  |       | 26.8                 | 28.4  | 30.2 | 30.2    | 40.7 | 38                           | 35.8 | 40.7    |  |  |  |

| Time             |      | 1                    | From 15:00 pm to 15:30 pm on July 09 <sup>th</sup> . 2012 |      |         |      |           |          |               |  |  |  |
|------------------|------|----------------------|---|------|---------|------|-----------|----------|---------------|--|--|--|
| Domonoston       | Unit | Vibration Level (Lv) |   |      |         | Vil  | oration . | Accelera | eration (Lva) |  |  |  |
| Parameter        |      | Z                    | Y   | X    | Average | Z    | Y         | X        | Average       |  |  |  |
| Leq              |      | 40.1                 | 33.6  | 34.7 | 40.1    | 51.9 | 52.6      | 52.9     | 52.9          |  |  |  |
| $L_{max}$        |      | 53.2                 | 40.6  | 41.4 | 53.2    | 74.8 | 77.1      | 78.3     | 78.3          |  |  |  |
| L <sub>min</sub> | dB   | 28                   | 24.4  | 25   | 28      | 41.3 | 38.7      | 38.7     | 41.3          |  |  |  |
| L <sub>10</sub>  | ub   | 43.6                 | 36.2  | 37.3 | 43.6    | 51.3 | 48.9      | 48.5     | 51.3          |  |  |  |
| L <sub>50</sub>  |      | 36.4                 | 32.8  | 34   | 36.4    | 46.9 | 44.1      | 43.9     | 46.9          |  |  |  |
| L <sub>90</sub>  |      | 32.7                 | 29.8  | 30.8 | 32.7    | 43.6 | 40.8      | 40.9     | 43.6          |  |  |  |

| Time             | 9    | From 17:00 pm to 17:30 pm on July 09 <sup>th</sup> . 2012 |         |        |         |           |                      |      |         |  |
|------------------|------|---|---------|--------|---------|-----------|----------------------|------|---------|--|
| Donomoton        | Unit | 11/2  | on Leve | l (Lv) | Vil     | oration . | n Acceleration (Lva) |      |         |  |
| Parameter        | Unit | Z   | Y       | X      | Average | Z         | Y                    | X    | Average |  |
| Leq              |      | 37.5  | 31.5    | 33     | 37.5    | 46.4      | 49.4                 | 46.2 | 49.4    |  |
| L <sub>max</sub> |      | 51.6  | 38.5    | 40.3   | 51.6    | 64.6      | 75.3                 | 76.1 | 76.1    |  |
| L <sub>min</sub> | dB   | 23.3  | 22.7    | 23.9   | 23.9    | 37        | 34.5                 | 34.2 | 37      |  |
| L <sub>10</sub>  | ub   | 41.5  | 34      | 35.7   | 41.5    | 49        | 46.4                 | 45.3 | 49      |  |
| L <sub>50</sub>  |      | 31.8  | 30.9    | 32.2   | 32.2    | 42.6      | 40.3                 | 39.3 | 42.6    |  |
| L90              |      | 28.8  | 27.7    | 28.9   | 28.9    | 40.2      | 37.5                 | 36.8 | 40.2    |  |



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| Time             |      | L DUG | From 19:00 pm to 19:30 pm on July 09 <sup>th</sup> . 2012 |         |         |      |          |          |              |  |  |  |
|------------------|------|-------|---|---------|---------|------|----------|----------|--------------|--|--|--|
| Donomotor        | Unit |       | Vibrati   | on Leve | l (Lv)  | Vil  | oration. | Accelera | ration (Lva) |  |  |  |
| Parameter        |      | Z     | Y   | X       | Average | Z    | Y        | X        | Average      |  |  |  |
| $L_{eq}$         |      | 37.4  | 31.3  | 32.8    | 37.4    | 49   | 44.5     | 40.8     | 49           |  |  |  |
| L <sub>max</sub> |      | 51.5  | 40.1  | 41.9    | 51.5    | 65.7 | 62.3     | 53.5     | 65.7         |  |  |  |
| $L_{min}$        | dB   | 23    | 21.9  | 22.5    | 23      | 38.1 | 36       | 33.5     | 38.1         |  |  |  |
| $L_{10}$         | ub   | 41.6  | 33.8  | 35.6    | 41.6    | 50.6 | 45.7     | 42.6     | 50.6         |  |  |  |
| L <sub>50</sub>  |      | 31.7  | 30.5  | 31.6    | 31.7    | 43.5 | 40.8     | 38.9     | 43.5         |  |  |  |
| L90              |      | 28.3  | 23.7  | 28.4    | 28.4    | 40.7 | 38.4     | 36.4     | 40.7         |  |  |  |

| Time             | e      | From 21:00 pm to 21:30 pm on July 09 <sup>th</sup> . 2012 |      |      |         |      |         |          |             |  |  |
|------------------|--------|---|------|------|---------|------|---------|----------|-------------|--|--|
| Donomaton        | I Init | Vibration Level (Lv)                                      |      |      |         | Vil  | oration | Accelera | ation (Lva) |  |  |
| Parameter        | Unit   | Z   | Y    | X    | Average | Z    | Y       | X        | Average     |  |  |
| Leq              |        | 30.4  | 30   | 32.4 | 32.4    | 46.9 | 43.8    | 40.5     | 46.9        |  |  |
| L <sub>max</sub> |        | 48.4  | 39.4 | 40.6 | 48.4    | 62.4 | 59.7    | 58.7     | 62.4        |  |  |
| L <sub>min</sub> | dB     | 21.4  | 21.3 | 23.2 | 23.2    | 39.3 | 36.4    | 34.3     | 39.3        |  |  |
| L <sub>10</sub>  | ub     | 31  | 33   | 35.1 | 35.1    | 48.1 | 45.3    | 42.1     | 48.1        |  |  |
| L <sub>50</sub>  |        | 26.9  | 29.9 | 31.5 | 31.5    | 44.4 | 42.8    | 39.1     | 44.4        |  |  |
| L <sub>90</sub>  |        | 24.8  | 26.7 | 28.1 | 28.1    | 42.1 | 39.4    | 37       | 42.1        |  |  |

| Time             |        |                      | F     | rom 23: | 00 pm to 23: | 30 pm o | n July 0 | 9 <sup>th</sup> . 2012 | 2          |
|------------------|--------|----------------------|-------|---------|--------------|---------|----------|------------------------|------------|
| Danamatan        | T Tmia | Vibration Level (Lv) |       |         |              | Vil     | oration  | Accelera               | tion (Lva) |
| Parameter        | Unit   | Z                    | Y     | X       | Average      | Z       | Y        | X                      | Average    |
| Leq              |        | 26                   | 30.8  | 32.4    | 32.4         | 42.8    | 38.3     | 40.7                   | 42.8       |
| L <sub>max</sub> |        | 69.9                 | 58.6  | 54.6    | 69.9         | 62.1    | 52.2     | 61.5                   | 62.1       |
| L <sub>min</sub> | dB     | 19.4                 | 21.4  | 22.9    | 22.9         | 31.9    | 28.9     | 30                     | 31.9       |
| $L_{10}$         | ub     | 27.7                 | 33    | 35.1    | 35.1         | 46.4    | 40.5     | 43.4                   | 46.4       |
| L <sub>50</sub>  |        | 25.3                 | 29.60 | 31.4    | 31.4         | 36.2    | 33.2     | 34.2                   | 36.2       |
| L <sub>90</sub>  |        | 23.1                 | 26.1  | 27.7    | 27.7         | 34.2    | 31.2     | 32.1                   | 34.2       |

| Time             | ;      |                      | From 1:00 am to 1:30 am on July 10 <sup>th</sup> . 2012 |      |         |      |         |          |                 |  |  |  |
|------------------|--------|----------------------|---|------|---------|------|---------|----------|-----------------|--|--|--|
| Damanastan       | I Inia | Vibration Level (Lv) |   |      |         | Vil  | oration | Accelera | eleration (Lva) |  |  |  |
| Parameter        | Unit   | Z                    | Y   | X    | Average | Z    | Y       | X        | Average         |  |  |  |
| Leq              |        | 26.3                 | 30.6  | 31.5 | 31.5    | 37.4 | 33.9    | 34.1     | 37.4            |  |  |  |
| L <sub>max</sub> |        | 35.8                 | 38.4  | 37.9 | 38.4    | 60.9 | 54.1    | 53.3     | 60.9            |  |  |  |
| L <sub>min</sub> | dB     | 19.7                 | 22.1  | 21   | 22.1    | 32.4 | 29.6    | 29.7     | 32.4            |  |  |  |
| L <sub>10</sub>  | ub.    | 28.2                 | 33.2  | 34.3 | 34.3    | 37.5 | 34.6    | 35.4     | 37.5            |  |  |  |
| L <sub>50</sub>  |        | 25.9                 | 29.8  | 30.7 | 30.7    | 34.8 | 32.3    | 32.8     | 34.8            |  |  |  |
| L <sub>90</sub>  |        | 23.5                 | 26.4  | 27.4 | 27.4    | 33.5 | 31      | 31.1     | 33.5            |  |  |  |



| Time             |         | From 3:00 am to 3:30 am on July 10 <sup>th</sup> . 2012 |        |          |         |      |          |         |             |  |  |
|------------------|---------|---|--------|----------|---------|------|----------|---------|-------------|--|--|
| D                | T.T. :4 |   | Vibrat | ion Leve | el (Lv) | V    | ibration | Acceler | ation (Lva) |  |  |
| Parameter Un     | Unit    | Z   | Y      | X        | Average | Z    | Y        | X       | Average     |  |  |
| $L_{eq}$         |         | 25.8  | 30.4   | 31.3     | 31.3    | 45.5 | 45.1     | 46.6    | 46.6        |  |  |
| L <sub>max</sub> |         | 31.9  | 38.7   | 39.3     | 39.3    | 68.6 | 71.8     | 73.8    | 73.8        |  |  |
| L <sub>min</sub> | dB      | 19.5  | 20.8   | 22.8     | 22.8    | 34.6 | 30.5     | 32.3    | 34.6        |  |  |
| L <sub>10</sub>  | uБ      | 27.7  | 33     | 33.9     | 33.9    | 44.6 | 41.1     | 41.9    | 44.6        |  |  |
| L <sub>50</sub>  |         | 25.3  | 29.6   | 30.7     | 30.7    | 37.9 | 34.6     | 35.3    | 37.9        |  |  |
| L <sub>90</sub>  |         | 23.3  | 26.4   | 27.2     | 27.2    | 36.1 | 32.4     | 33.6    | 36.1        |  |  |

| Time             |       |                      | From 5:00 am to 5:30 am on July 10 <sup>th</sup> . 2012 |      |         |      |         |          |             |  |  |  |
|------------------|-------|----------------------|---|------|---------|------|---------|----------|-------------|--|--|--|
| D                | TT-:4 | Vibration Level (Lv) |   |      |         | V    | bration | Accelera | ation (Lva) |  |  |  |
| Parameter        | Unit  | Z                    | Y   | X    | Average | Z    | Y       | X        | Average     |  |  |  |
| $L_{\sf eq}$     |       | 33.2                 | 30.8  | 31.8 | 33.2    | 41.6 | 35.8    | 35.7     | 41.6        |  |  |  |
| $L_{max}$        |       | 50.4                 | 46.9  | 50.4 | 50.4    | 56.6 | 44.8    | 46.4     | 56.6        |  |  |  |
| L <sub>min</sub> | dB    | 20.2                 | 21.9  | 21.4 | 21.9    | 31.1 | 29.9    | 28.9     | 31.1        |  |  |  |
| L <sub>10</sub>  | uD    | 35.1                 | 33.1  | 34.5 | 35.1    | 43.8 | 38.5    | 38.3     | 43.8        |  |  |  |
| L <sub>50</sub>  |       | 26.4                 | 29.6  | 31   | 31      | 36.4 | 34.3    | 34.1     | 36.4        |  |  |  |
| L <sub>90</sub>  |       | 23.4                 | 26.3  | 27.6 | 27.6    | 33.4 | 31.8    | 31.4     | 33.4        |  |  |  |

| Time             |        |      | From 7:00 am to 7:30 am on July 10 <sup>th</sup> . 2012 |         |         |      |          |          |             |  |  |  |
|------------------|--------|------|---|---------|---------|------|----------|----------|-------------|--|--|--|
| Downworton       | T Init | 10   | Vibrati   | on Leve | 1 (Lv)  | V    | ibration | Accelera | ation (Lva) |  |  |  |
| Parameter        | Unit   | Z    | Y   | X       | Average | Z    | Y        | X        | Average     |  |  |  |
| Leq              |        | 40.3 | 31.2  | 32.6    | 40.3    | 50.8 | 47.6     | 44.5     | 50.8        |  |  |  |
| L <sub>max</sub> |        | 53.9 | 42  | 39.1    | 53.9    | 63.5 | 63.6     | 57.8     | 63.6        |  |  |  |
| L <sub>min</sub> | dB     | 26.9 | 22.3  | 22.3    | 26.9    | 3.7  | 35       | 34.4     | 37          |  |  |  |
| L <sub>10</sub>  | ub     | 45.1 | 33.5  | 35      | 45.1    | 37   | 35       | 34.4     | 37          |  |  |  |
| L <sub>50</sub>  |        | 34.3 | 30.4  | 32      | 34.3    | 54.2 | 49.9     | 46.1     | 54.2        |  |  |  |
| L <sub>90</sub>  |        | 30.8 | 27.3  | 28.7    | 30.8    | 45   | 41.8     | 40.2     | 45          |  |  |  |

| QCVN 27:2010/BT   | NMT: National Technica | al Regulation on Vibration                                   |
|-------------------|------------------------|--|
| Location          | Testing time per day   | Allowable vibration acceleration level dB Average level. Leq |
| Consist Is setion | 6:00 AM - 6:00 PM      | 75   |
| Special location  | 6:00 PM - 6:00 AM      | Background level   |
| Name al la cation | 6:00 AM - 9:00 PM      | 75   |
| Normal location   | 9:00 PM - 6:00 AM      | Background level   |



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### + Results of groundwater sample NN 6.4

Groundwater sample (coded NN 6.4) is well water of house in intersection. householder is Mrs. Nam. Tan Phuc commune. An Thi District. Hung Yen Province. Results of sample analysis are shown in table 22 as below.

Table 22 showed that the all of parameters are lower than QCVN 09:2008/BTNMT (National technical regulation on underground water quality) except coliform sample exceeding allowable limit. The value of Blank sample is very low so it does not effect on test samples.

TABLE 22. THE FOURTH RESULTS OF GROUNDWATER OF THE PACKAGE EX5-NN 6.4 (JULY 2012)

| NI- | Dawaratan        | TT                  | Res             | sult   | QCVN          |
|-----|------------------|---------------------|-----------------|--------|---------------|
| No. | Parameter        | Unit                | Unit NN 6. 4 MT |        | 09:2008/BTNMT |
| 1.  | Temperature      | °C                  | 28.8            | 28.0   |               |
| 2.  | pH               | -                   | 7.30            | 7.10   | 5.5 - 8.5     |
| 3.  | COD              | mgO <sub>2</sub> /L | 9.8             | < 1.0  | 4             |
| 4.  | BOD <sub>5</sub> | mg/L                | 5.4             | < 1.0  |               |
| 5.  | TSS              | mg/L                | 10              | < 3.0  | <u> </u>      |
| 6.  | Total P          | mg/L                | 0.55            | < 0.01 |               |
| 7.  | Total N          | mg/L                | 29              | < 0.10 |               |
| 8.  | *Coliform        | MPN/                | 7               | ND     | 3             |
| 9.  | *E. Coli         | 100mL               | ND              | ND     | ND            |

### e) Results of monitoring of construction packages EX-6

### + Results of air monitoring:

Sampling according to supervision consultancy contracts - No. 74/VIDIFI-VCNMT/2010. Coordinates of sampling location: N 20° 49.181 - E 106° 28. 490. At the each location take 04 samples. a sample per 6 hours during 24 hours with parameters: Volatile organic compounds (VOCs). Total dust. Carbon oxide (CO). Nitrogen dioxide (NO<sub>2</sub>). Sulfur dioxide (SO<sub>2</sub>). The results are shown in table 23. From the results table showed that the measured parameters are within the allowable limits of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For VOCs. the measurement result showed minimum value is  $90 \mu g/m^3$  at 9:00



pm and 9:00 pm on July  $10^{th}$ . 2012 and maximum value is 130  $\mu$ g/m<sup>3</sup> at 3:00 pm on July  $10^{th}$ . 2012.

For total dust, the measurement results are: 105; 95; 86 and 90  $\mu g/m^3$  corresponding sampling times are 9:00 AM; 3:0 PM; 9:00 PM on July  $10^{th}$ . 2012 and 3:00 AM on July  $11^{th}$ . 2012; these results are lower than 300  $\mu g/m^3$  according to National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For  $SO_2$ . the measurement results are: 86; 93; 78 and 72  $\mu$ g/m<sup>3</sup> corresponding sampling times are 9:00 AM; 3:0 PM; 9:00 PM on July  $10^{th}$ . 2012 and 3:00 AM on July  $11^{th}$ . 2012; these results are under 350  $\mu$ g/m<sup>3</sup> comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For  $NO_2$ . the measurement results are: 33; 18; 20 and 18  $\mu g/m^3$  corresponding sampling times are 9:00 AM; 3:0 PM; 9:00 PM on July  $10^{th}$ . 2012 and 3:00 AM on July  $11^{th}$ . 2012; these results are lower than 200  $\mu g/m^3$  comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For CO the measurement results are: 1259; 3223; 984 and 969  $\mu g/m^3$  corresponding sampling times are 9:00 AM; 3:0 PM; 9:00 PM on July  $10^{th}$ . 2012 and 3:00 AM on July  $11^{th}$ . 2012 these results are under 30000  $\mu g/m^3$  comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

### + Results of noise:

Noise level is measured 12 samples within 24 hours (a point per 2 hours) from 9:00 am July 10<sup>th</sup>. 2012 to 7:00 am July 11<sup>th</sup>. 2012. Using the noise meter equipment NL-21 ORION of Japan. we measured continuously for 15 minutes each sampling. record of Leq values (average value); L<sub>50</sub> (average value of test 50 times); L<sub>90</sub> (average value of test 90 times); L<sub>max</sub> (maximum value) and L<sub>min</sub> (minimum value). According to National Technical Regulation on Noise (QCVN 26:2010/BTNMT) for normal areas. According to equivalent acoustic level (Leq) is 70dB of about 6:00 AM to 8:00 PM and 55dB from 9:00 PM to 6:00 AM daily. Results are shown in table 24.

The table results showed that 12 Leq values for 24 hours. There are values lower than the allowable limit of QCVN 26:2010/BTNMT.

The values of  $L_{50}$ .  $L_{90}$  haven't comparative regulation. respectively of about 47.7 to 53.3 dB from 7:00 AM to 9:00 PM and 41.8 to 47.4 dB from 11:00 PM to 5:00 AM for  $L_{50}$ . The values of  $L_{90}$  are respectively of about 44.3 to 49.1 dB from 7:00 AM to 9:00 PM and 41.2 to 45.6 dB from 11:00 PM to 5:00 AM.



 $L_{max}$  value is 86.8 dB at 5:00 PM on July  $10^{th}.\ 2012$  and  $L_{min}$  value is 38.8 dB at 5:00 AM on July  $11^{th},\ 2012.$ 





### Owner: Vietnam Infrastructure development and finance investment joint stock company

Address: 8<sup>th</sup>-9<sup>th</sup>-10<sup>th</sup> Floors. LILAMA 10 Building. Le Van Luong street. Me Tri commune. Tu Liem, Hanoi

Tel: (84-4) 37711668 - 22209668; Fax: (84-4) 22209666

### TABLE 23: THE FOURTH RESULTS OF AIR SAMPLE OF EX6-K7.4 (JULY 2012)

| Name of sample  | Parameter       | Unit        | K 7.4.1                                 | K 7.4.2                                  | K 7.4.3                                  | K 7.4.4                                 | QCVN<br>05:2009/BTNMT |
|-----------------|-----------------|-------------|---|--|--|---|-----------------------|
|                 | Time            |             | 9:00 am<br>July 10 <sup>th</sup> , 2012 | 15:00 pm<br>July 10 <sup>th</sup> , 2012 | 21:00 pm<br>July 10 <sup>th</sup> , 2012 | 3:00 am<br>July 11 <sup>th</sup> , 2012 |                       |
| VOCs            | VOCs            |             | 120                                     | 130                                      | 90                                       | 105                                     | -                     |
| DV. (           | Dust            |             | 105                                     | 95                                       | 86                                       | 90                                      | 300                   |
| EX 6 –<br>K 7.4 | SO <sub>2</sub> | $\mu g/m^3$ | 86                                      | 93                                       | 78                                       | 72                                      | 350                   |
| 12 / .7         | NO <sub>2</sub> |             | 33                                      | 18                                       | 20                                       | 18                                      | -                     |
| CO              | СО              |             | 1259                                    | 3223                                     | 984                                      | 969                                     | 30000                 |

Note: QCVN 05:2009/ BTNMT: National technical regulation on ambient air quality

### TABLE 24: THE FOURTH RESULTS OF VIBRATION SAMPLES OF THE PACKAGE EX6-K7.4 (JULY 2012)

| Name          | of sample                  | Noise |      |      |      |      | From 9am | July 10 <sup>th</sup> t | o 7 am July | 11 <sup>th</sup> , 2012 | 2    |      |      |      |
|---------------|----------------------------|-------|------|------|------|------|----------|-------------------------|-------------|-------------------------|------|------|------|------|
| ranic         | or sample                  | Noise | 9am  | 11am | 13pm | 15pm | 17pm     | 19pm                    | 21pm        | 23pm                    | 01am | 03am | 05am | 07am |
|               | Leq                        |       | 58.2 | 59.5 | 51.8 | 55.6 | 60.6     | 57.8                    | 54.0        | 48.3                    | 48.6 | 42.0 | 55.1 | 57.8 |
| EV            | Lmax                       |       | 78.1 | 84.1 | 71.6 | 77.6 | 86.8     | 778.3                   | 85.2        | 68.9                    | 70.9 | 52.4 | 70.3 | 81.5 |
| EX 6-<br>K7.4 | Lmin                       | (dB)  | 42.6 | 42.7 | 40.8 | 46.2 | 41.5     | 40.0                    | 45.2        | 44.6                    | 43.1 | 40.6 | 38.8 | 40.2 |
| 127.4         | L50                        |       | 53.3 | 52.7 | 47.7 | 52.9 | 52.0     | 51.2                    | 49.1        | 46.9                    | 45.0 | 41.8 | 47.4 | 49.1 |
|               | L90                        |       | 48.0 | 47.8 | 44.3 | 49.1 | 46.7     | 45.2                    | 47.5        | 45.6                    | 44.1 | 41.2 | 42.1 | 43.6 |
| -             | N 26:2010/E<br>rmal area - |       |      |      |      | 70   |          |                         |             |                         | 5    | 55   |      | 70   |

Note: QCVN 26:2010/BTNMT: - National Technical Regulation on Noise



Consultancy: Institute of Environmental Technology

Address: No.18 Hoang Quoc Viet - Cau Giay - Ha Noi Tel: 043 7569 136; 043 7911 654 \* Fax: 043 7911 203

### + Results of vibration

- Starting time: 9:00 AM on July 10th. 2012; Ending time: 7:00 AM on July 11th. 2012.
  - Azimuth of the axes x. y

X-axis set follow the North - South direction.

Y-axis set follow the East - West direction.

Impacts of vibratory sources to the measurement result.

To set measurement range for equipment is 30 - 90 dB.

From  $L_{\text{max}}$  and Leq values showed that: Most of testing time. vibration acceleration is lower than 60dB. However, some measurement values are higher than 60dB and lower than 75dB..

The values of  $L_{10}$ ,  $L_{50}$ ,  $L_{90}$  have decreasing rule that the larger values only occurring in short time of the each measurement range.

The results in table 25 showed that value of vibration acceleration level (Lva) exceed the allowable limit (75dB) of National Technical Regulation on Vibration (QCVN 27:2010/BTNMT).

Average Lva value in the range from 44.9 to 66.9 dB.

The value of Lva<sub>max</sub> is 89.4 dB which is highest at the time from 9:00 AM to 9:30 AM on July 10<sup>th</sup>, 2012.

The value of Lva $_{min}$  is 32.3 dB which is lowest at the time from 19:00 to 19:30 PM on July  $10^{th}$ , 2012.

TABLE 25. THE FOURTH RESULTS OF VIBRATION OF THE PACKAGE EX 6-K7.4 (JULY 2012)

| Time             |         |       | From 9:00 am to 9:30 am on July 10 <sup>th</sup> , 2012 |         |         |                              |      |      |         |  |  |  |
|------------------|---------|-------|---|---------|---------|------------------------------|------|------|---------|--|--|--|
| Domanatan        | 11-24   |       | Vibratio  | n Level | (Lv)    | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit    | Z     | Y   | X       | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq              | 1. 6:11 | 39.9  | 35.1  | 34.8    | 39.9    | 66.9                         | 63.9 | 62.3 | 66.9    |  |  |  |
| L <sub>max</sub> |         | 64.2  | 57.2  | 42.4    | 64.2    | 89.4                         | 87.6 | 84.3 | 89.4    |  |  |  |
| $L_{min}$        | dB      | 25.1  | 25.6  | 25.9    | 25.9    | 39.6                         | 36.1 | 35.6 | 39.6    |  |  |  |
| L <sub>10</sub>  | uБ      | 40.3  | 36  | 37.3    | 40.3    | 60.3                         | 58   | 58   | 60.3    |  |  |  |
| L <sub>50</sub>  |         | 32.40 | 32.8  | 34      | 34      | 50.2                         | 47.4 | 47   | 50.2    |  |  |  |
| L <sub>90</sub>  |         | 29.2  | 29.8  | 30.9    | 30.9    | 44.3                         | 41.1 | 40.1 | 44.3    |  |  |  |



| Time             | e     | From 11:00 am to 11:30 am on July 10 <sup>th</sup> . 2012 |         |         |         |                              |      |      |         |  |  |  |
|------------------|-------|---|---------|---------|---------|------------------------------|------|------|---------|--|--|--|
| D                | TT-:4 | AY TH   | Vibrati | on Leve | 1 (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit  | Z   | Y       | X       | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq              |       | 38.3  | 33.6    | 34.8    | 38.3    | 52.4                         | 50.8 | 52.4 | 52.4    |  |  |  |
| L <sub>max</sub> |       | 52.7  | 41.8    | 42.3    | 52.7    | 71.1                         | 76.5 | 75.5 | 76.5    |  |  |  |
| L <sub>min</sub> | dB    | 24  | 24.4    | 25.5    | 25.5    | 37.4                         | 33.3 | 34.4 | 37.4    |  |  |  |
| L <sub>10</sub>  | uБ    | 41.3  | 36.1    | 37.5    | 41.3    | 54.9                         | 30.1 | 53.8 | 54.9    |  |  |  |
| L <sub>50</sub>  |       | 34  | 32.7    | 34      | 34      | 48.9                         | 43.9 | 47.7 | 48.9    |  |  |  |
| L90              |       | 28.5  | 29.5    | 30.7    | 30.7    | 42.9                         | 38.2 | 40.2 | 42.9    |  |  |  |

| Time             |        |      | From 13:00 pm to 13:30 pm on July 10 <sup>th</sup> . 2012 |         |         |                              |      |      |         |  |  |  |
|------------------|--------|------|---|---------|---------|------------------------------|------|------|---------|--|--|--|
| Donomoton        | I I-i+ |      | Vibrati   | on Leve | l (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit   | Z    | Y   | X       | Average | Z                            | Y    | X    | Average |  |  |  |
| Leg              |        | 39.9 | 36.5  | 37.8    | 39.9    | 46.4                         | 42.6 | 43.9 | 46.4    |  |  |  |
| L <sub>max</sub> |        | 54.5 | 48.5  | 49.2    | 54.5    | 60.3                         | 57.3 | 55.7 | 60.3    |  |  |  |
| $L_{min}$        | dB     | 23.6 | 24.4  | 28.8    | 28.8    | 34.2                         | 30.3 | 32   | 34.2    |  |  |  |
| L <sub>10</sub>  | ub.    | 43.7 | 39.2  | 40.6    | 43.7    | 49.9                         | 45.8 | 47.5 | 49.9    |  |  |  |
| L <sub>50</sub>  |        | 36.5 | 35.4  | 36.8    | 36.8    | 44.1                         | 40.5 | 41.9 | 44.1    |  |  |  |
| L <sub>90</sub>  |        | 28.3 | 31.5  | 33.4    | 33.4    | 38.5                         | 35.7 | 36.5 | 38.5    |  |  |  |

| Time             |        | From 15:00 pm to 15:30 pm on July 10 <sup>th</sup> . 2012 |         |         |         |                              |      |      |         |  |  |
|------------------|--------|---|---------|---------|---------|------------------------------|------|------|---------|--|--|
| Doromotor        | I Imit |   | Vibrati | on Leve | 1 (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Unit   | Z   | Y       | X       | Average | Z                            | Y    | X    | Average |  |  |
| Leq              |        | 34.5  | 34.3    | 35.9    | 35.9    | 56.3                         | 55.8 | 56   | 56.3    |  |  |
| L <sub>max</sub> |        | 48.7  | 42.2    | 46.6    | 48.7    | 80.6                         | 81.2 | 81.8 | 81.8    |  |  |
| L <sub>min</sub> | dB     | 25.2  | 25.8    | 26.1    | 26.1    | 37.8                         | 34.2 | 34.4 | 37.8    |  |  |
| L <sub>10</sub>  | uБ     | 37.2  | 36.9    | 38.5    | 38.5    | 58.2                         | 52.4 | 49   | 58.2    |  |  |
| L <sub>50</sub>  |        | 31.3  | 33.5    | 35      | 35      | 55.3                         | 49.9 | 46.6 | 55.3    |  |  |
| L <sub>90</sub>  |        | 28.4  | 30.3    | 31.5    | 31.5    | 41.7                         | 38.1 | 37.3 | 41.7    |  |  |

| Time             |      | Mr. May. | From 17:00 pm to 17:30 pm on July 10 <sup>th</sup> . 2012 |         |         |      |                              |      |         |  |  |  |  |
|------------------|------|----------|---|---------|---------|------|------------------------------|------|---------|--|--|--|--|
| Parameter        | Unit | Fry 7    | Vibrati   | on Leve | el (Lv) | Vil  | Vibration Acceleration (Lva) |      |         |  |  |  |  |
| rarameter        | Omt  | Z        | Y   | X       | Average | Z    | Y                            | X    | Average |  |  |  |  |
| Leq              |      | 33.1     | 33.7  | 34.8    | 34.8    | 46.2 | 45.6                         | 43.9 | 46.2    |  |  |  |  |
| L <sub>max</sub> |      | 47.5     | 41.5  | 42      | 47.5    | 61.7 | 64.1                         | 61.6 | 64.1    |  |  |  |  |
| L <sub>min</sub> | dB   | 24.2     | 24.9  | 25.8    | 25.8    | 36   | 34                           | 32.8 | 36      |  |  |  |  |
| L <sub>10</sub>  | ub   | 34.9     | 36.3  | 37.3    | 37.3    | 49   | 47.6                         | 46.3 | 49      |  |  |  |  |
| L <sub>50</sub>  |      | 30.8     | 33  | 34.1    | 34.1    | 43.8 | 41.8                         | 40.6 | 43.8    |  |  |  |  |
| L <sub>90</sub>  |      | 28.2     | 29.7  | 30.7    | 30.7    | 39.8 | 37.3                         | 36.6 | 39.8    |  |  |  |  |



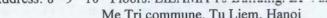
| Time             |      | From 19:00 pm to 19:30 pm on July 10 <sup>th</sup> . 2012 |         |         |         |                              |      |      |         |  |  |
|------------------|------|---|---------|---------|---------|------------------------------|------|------|---------|--|--|
| Domonoston       | Unit |   | Vibrati | on Leve | l (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Unit | Z   | Y       | X       | Average | Z                            | Y    | X    | Average |  |  |
| $L_{eq}$         |      | 30.7  | 31.9    | 33.2    | 33.2    | 51.6                         | 51.7 | 48.5 | 51.7    |  |  |
| $L_{max}$        |      | 48  | 39.8    | 42.9    | 48      | 71.7                         | 69.8 | 68.1 | 71.7    |  |  |
| L <sub>min</sub> | dB   | 22.7  | 22      | 22.6    | 22.7    | 32.3                         | 29.7 | 29.2 | 32.3    |  |  |
| L <sub>10</sub>  | ub   | 31.7  | 34.5    | 36      | 36      | 54.4                         | 55.2 | 51.2 | 55.2    |  |  |
| L <sub>50</sub>  |      | 28.3  | 31.1    | 32.3    | 32.3    | 45                           | 43.4 | 40.9 | 45      |  |  |
| L <sub>90</sub>  |      | 26  | 27.8    | 28.9    | 28.9    | 38                           | 35.2 | 34.5 | 38      |  |  |

| Time             |         | III II | From 21:00 pm to 21:30 pm on July 10 <sup>th</sup> . 2012 |         |         |                              |      |      |         |  |  |  |
|------------------|---------|--------|---|---------|---------|------------------------------|------|------|---------|--|--|--|
| D                | T In 14 | Lavier | Vibrati   | on Leve | l (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit    | Z      | Y   | X       | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq              |         | 32.7   | 31.4  | 32.6    | 32.7    | 51                           | 47.5 | 48.4 | 51      |  |  |  |
| L <sub>max</sub> |         | 52.60  | 39.1  | 40.4    | 52.6    | 72.2                         | 68.6 | 68.4 | 72.2    |  |  |  |
| L <sub>min</sub> | dB      | 21.7   | 22.2  | 24.2    | 24.2    | 37.9                         | 33.3 | 34   | 37.9    |  |  |  |
| L <sub>10</sub>  | ub      | 34.2   | 34  | 35.1    | 35.1    | 49.9                         | 46.5 | 48   | 49.9    |  |  |  |
| L <sub>50</sub>  |         | 28.2   | 30.6  | 31.8    | 31.8    | 40.7                         | 37.2 | 37.3 | 40.7    |  |  |  |
| L <sub>90</sub>  |         | 25.2   | 27.6  | 28.7    | 28.7    | 39.3                         | 35.2 | 35.3 | 39.3    |  |  |  |

| Time             | SHE S | Ti bib |         | From 23 | 3:00 pm to 23 | :30 pm                       | on July | 10 <sup>th</sup> . 201 | 2       |  |
|------------------|-------|--------|---------|---------|---------------|------------------------------|---------|------------------------|---------|--|
| D                | TI-:4 | 04     | Vibrati | on Leve | el (Lv)       | Vibration Acceleration (Lva) |         |                        |         |  |
| Parameter        | Unit  | Z      | Y       | X       | Average       | Z                            | Y       | X                      | Average |  |
| Leq              | 120   | 26.6   | 31.2    | 32.1    | 32.1          | 49.5                         | 50.6    | 43.2                   | 50.6    |  |
| L <sub>max</sub> |       | 43.4   | 39.9    | 39.7    | 43.4          | 76.8                         | 78.8    | 70                     | 78.8    |  |
| L <sub>min</sub> | dB    | 20.2   | 21.7    | 21.5    | 21.7          | 34.3                         | 30.8    | 30.6                   | 34.3    |  |
| $L_{10}$         | ub    | 28     | 33.8    | 34.7    | 34.7          | 45.3                         | 39      | 39.7                   | 45.3    |  |
| L <sub>50</sub>  |       | 25.2   | 30.3    | 31.3    | 31.3          | 37.8                         | 33.8    | 34                     | 37.8    |  |
| L <sub>90</sub>  |       | 23     | 27      | 28      | 28            | 36                           | 32.2    | 32                     | 36      |  |

| Time             |       | From 1:00 am to 1:30 am on July 11 <sup>th</sup> . 2012 |        |          |         |                              |      |      |         |  |  |
|------------------|-------|---|--------|----------|---------|------------------------------|------|------|---------|--|--|
| D                | TT.:4 |   | Vibrat | ion Leve | el (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Unit  | Z   | Y      | X        | Average | Z                            | Y    | X    | Average |  |  |
| $L_{eq}$         |       | 26.8  | 30.9   | 32.3     | 32.3    | 52.9                         | 46.1 | 45.5 | 52.9    |  |  |
| L <sub>max</sub> |       | 39.4  | 38.9   | 39.1     | 39.4    | 77.1                         | 66.2 | 68.4 | 77.1    |  |  |
| L <sub>min</sub> | dB    | 20.1  | 22     | 22.4     | 22.4    | 34.3                         | 30.3 | 30.3 | 34.3    |  |  |
| L <sub>10</sub>  | ub.   | 29.5  | 33.5   | 35       | 35      | 51.9                         | 46.4 | 46.2 | 51.9    |  |  |
| L <sub>50</sub>  |       | 25.4  | 30.1   | 31.5     | 31.5    | 38.9                         | 35.1 | 35.3 | 38.9    |  |  |
| L90              |       | 23  | 26.8   | 28       | 28      | 35.9                         | 32.1 | 32   | 35.9    |  |  |





| Time             |        |      | From 3:00 am to 3:30 am on July 11 <sup>th</sup> . 2012 |          |         |                              |      |      |         |  |  |  |  |
|------------------|--------|------|---|----------|---------|------------------------------|------|------|---------|--|--|--|--|
| D                | TT-:4  |      | Vibrat  | ion Leve | el (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |  |  |
| Parameter        | Unit   | Z    | Y   | X        | Average | Z                            | Y    | X    | Average |  |  |  |  |
| $L_{\sf eq}$     |        | 30.4 | 30.8  | 32.2     | 32.2    | 55.5                         | 50.6 | 47.9 | 55.5    |  |  |  |  |
| L <sub>max</sub> |        | 48.7 | 40.3  | 39.8     | 48,7    | 80                           | 75.7 | 72.9 | 80      |  |  |  |  |
| L <sub>min</sub> | dB     | 20.9 | 19.8  | 22.4     | 22.4    | 45.7                         | 38   | 35.2 | 45.7    |  |  |  |  |
| L <sub>10</sub>  | ab     | 32.5 | 33.4  | 34.8     | 34.8    | 54.9                         | 50.5 | 47.7 | 54.9    |  |  |  |  |
| L <sub>50</sub>  |        | 29   | 30  | 31.5     | 31.5    | 47.6                         | 41.7 | 38.4 | 47.6    |  |  |  |  |
| L <sub>90</sub>  | 1-1-44 | 24.9 | 26.5  | 28       | 28      | 46.9                         | 39.9 | 36.5 | 46.9    |  |  |  |  |

| Time             |       | LEK SOFT | From 5:00 am to 5:30 am on July 11 <sup>th</sup> . 2012 |          |         |                              |      |      |         |  |  |  |  |
|------------------|-------|----------|---|----------|---------|------------------------------|------|------|---------|--|--|--|--|
| Danamatan        | TI-:4 | E Algue  | Vibrat  | ion Leve | el (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |  |  |
| Parameter        | Unit  | Z        | Y   | X        | Average | Z                            | Y    | X    | Average |  |  |  |  |
| Leq              |       | 32.3     | 30.6  | 32       | 32.3    | 60.3                         | 44.9 | 50.2 | 60.3    |  |  |  |  |
| L <sub>max</sub> |       | 47.5     | 38.6  | 38.7     | 47.5    | 85.8                         | 67.2 | 75.2 | 85.8    |  |  |  |  |
| L <sub>min</sub> | dB    | 22.6     | 22.8  | 23.2     | 23.2    | 33.7                         | 29.5 | 29.6 | 33.7    |  |  |  |  |
| L <sub>10</sub>  | uБ    | 35.4     | 33.2  | 34.8     | 35.4    | 49.7                         | 42.2 | 40.8 | 49.7    |  |  |  |  |
| L <sub>50</sub>  |       | 29.6     | 29.7  | 31.1     | 31.1    | 40.8                         | 35.8 | 35.9 | 40.8    |  |  |  |  |
| L <sub>90</sub>  |       | 25.8     | 26.6  | 27.8     | 27.8    | 37.2                         | 32.4 | 32.8 | 37.2    |  |  |  |  |

| Time             |       | From 7:00 am to 7:30 am on July 11th. 2012 |      |      |         |      |                              |      |         |  |  |
|------------------|-------|--|------|------|---------|------|------------------------------|------|---------|--|--|
| Donomoton        | TImia | Vibration Level (Lv)                       |      |      |         |      | Vibration Acceleration (Lva) |      |         |  |  |
| Parameter        | Unit  | Z  | Y    | X    | Average | Z    | Y                            | X    | Average |  |  |
| Leq              |       | 30.6                                       | 31.3 | 32.6 | 32.6    | 44.9 | 36.8                         | 36.1 | 44.9    |  |  |
| L <sub>max</sub> |       | 44.2                                       | 39.9 | 40.5 | 44.2    | 65.8 | 56.3                         | 52.1 | 65.8    |  |  |
| L <sub>min</sub> | dB    | 21.7                                       | 21.2 | 23.9 | 23.9    | 34.2 | 28.3                         | 29   | 34.2    |  |  |
| L <sub>10</sub>  | uD    | 33.6                                       | 33.8 | 35.2 | 35.2    | 48.1 | 38.7                         | 38.8 | 48.1    |  |  |
| L <sub>50</sub>  |       | 27.4                                       | 30.4 | 31.8 | 31.8    | 40.4 | 34.1                         | 34.4 | 40.4    |  |  |
| L <sub>90</sub>  |       | 24.6                                       | 27.1 | 28.5 | 28.5    | 36.6 | 31.3                         | 31.6 | 36.6    |  |  |

| QCVN 27:2010/BT   | NMT: National Technic | al Regulation on Vibration                                    |
|-------------------|-----------------------|---|
| Location          | Testing time per day  | Allowable vibration acceleration level dB  Average level. Leq |
| Canadal la sation | 6:00 AM - 6:00 PM     | 75  |
| Special location  | 6:00 PM – 6:00 AM     | Background level  |
| Name I I anting   | 6:00 AM - 9:00 PM     | 75  |
| Normal location   | 9:00 PM - 6:00 AM     | Background level  |





## VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY INSTITUTE OF ENVIRONMENTAL TECHNOLOGY DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

Address: R.712, A30 Building 18 Hoang Quoc Viet Road –Cau Giay District – Hanoi - Vietnam Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

| Time             | 2    |                      | From 23:00 pm to 23:30 pm on July 13 <sup>th</sup> . 2012 |       |         |      |         |       |               |  |  |
|------------------|------|----------------------|---|-------|---------|------|---------|-------|---------------|--|--|
| Parameter        | Unit | Vibration Level (Lv) |   |       |         | Vi   | bration | Accel | eration (Lva) |  |  |
| Tarameter Ont    | Onit | Z                    | Y   | X     | Average | Z    | Y       | X     | Average       |  |  |
| $L_{\rm eq}$     |      | 27.1                 | 31.4  | 34.8  | 34.8    | 40.5 | 35.5    | 36    | 40.5          |  |  |
| L <sub>max</sub> |      | 40.2                 | 39.5  | 41.7  | 41.7    | 63.6 | 55.9    | 53.2  | 63.6          |  |  |
| $L_{\min}$       | dB   | 21.5                 | 21.9  | 23.80 | 23.8    | 30.4 | 28.2    | 27.7  | 30.4          |  |  |
| $L_{10}$         | ars  | 28.6                 | 34.1  | 37.2  | 37.2    | 39.4 | 35.8    | 37.7  | 39.4          |  |  |
| $L_{50}$         |      | 26.1                 | 30.7  | 33.8  | 33.8    | 35   | 32.2    | 38.9  | 38.9          |  |  |
| L <sub>90</sub>  |      | 24.2                 | 27.3  | 30.3  | 30.3    | 32.9 | 30      | 30.9  | 32.9          |  |  |

| Time            | 9       | From 1:00 am to 1:30 am on July 13 <sup>th</sup> . 2012 |       |         |           |      |         |         |               |  |
|-----------------|---------|---|-------|---------|-----------|------|---------|---------|---------------|--|
| Parameter Unit  | ¥ Insid |   | Vibra | tion L  | evel (Lv) | Vi   | bration | ı Accel | eration (Lva) |  |
|                 | Z       | Y   | X     | Average | Z         | Y    | X       | Average |               |  |
| $L_{eq}$        |         | 27.1  | 33.5  | 36.9    | 36.9      | 43.4 | 40.4    | 42.3    | 43.4          |  |
| $L_{ m max}$    |         | 75.4  | 72.9  | 74      | 75.4      | 61.6 | 69.5    | 63.8    | 69.5          |  |
| $L_{min}$       | dB      | 21.6  | 21.6  | 22.8    | 22.8      | 34.9 | 31.2    | 32.7    | 32.7          |  |
| $L_{10}$        | uD      | 28.4  | 34.7  | 26      | 34.7      | 44.2 | 40      | 44.1    | 44.2          |  |
| L <sub>50</sub> |         | 20.1  | 30.8  | 32.2    | 32.2      | 40.4 | 35      | 37.6    | 40.4          |  |
| L <sub>90</sub> |         | 24.1  | 27.2  | 28.7    | 28.7      | 37.1 | 32.9    | 35      | 37.1          |  |

| Time            | )  |                      | From 3:00 am to 3:30 am on July 13 <sup>th</sup> . 2012 |         |      |      |         |         |               |  |  |
|-----------------|--|----------------------|---|---------|------|------|---------|---------|---------------|--|--|
| Parameter Unit  | T Init   | Vibration Level (Lv) |   |         |      | Vi   | bration | Accele  | eration (Lva) |  |  |
|                 | Z  | Y                    | X   | Average | Z    | Y    | X       | Average |               |  |  |
| $L_{eq}$        | ar o las languages e ar lle compete e la comp | 26.2                 | 31.8  | 33.1    | 33.1 | 45.5 | 43.7    | 41.6    | 45.5          |  |  |
| $L_{max}$       |  | 33.4                 | 39.9  | 41.3    | 41.3 | 71.4 | 68.1    | 63.1    | 71.4          |  |  |
| $L_{\min}$      | dB   | 19.7                 | 22.1  | 24.2    | 24.2 | 36.5 | 36.5    | 35.9    | 36.5          |  |  |
| $L_{10}$        | ub   | 28.8                 | 34.2  | 35.9    | 35.9 | 42.6 | 42.3    | 42      | 42.6          |  |  |
| L <sub>50</sub> |  | 25.6                 | 30.9  | 32.1    | 32.1 | 39.1 | 38.9    | 38.8    | 39.1          |  |  |
| L <sub>90</sub> |  | 23.4                 | 27.6  | 28.5    | 28.5 | 37.8 | 37.7    | 37.2    | 37.8          |  |  |

| Time             | <b>)</b> | From 5:00 am to 5:30 am on July 13 <sup>th</sup> . 2012 |      |      |         |      |         |          |              |  |
|------------------|----------|---|------|------|---------|------|---------|----------|--------------|--|
| Parameter        | Unit     | Vibration Level (Lv)                                    |      |      |         |      | bration | ı Accele | ration (Lva) |  |
| rarameter Ont    | Onit     | Z   | Y    | X    | Average | Z    | Y       | X        | Average      |  |
| Leq              |          | 27  | 31.4 | 34.3 | 34.3    | 40.9 | 37.3    | 38.7     | 40.9         |  |
| L <sub>max</sub> |          | 36.6  | 38.3 | 41.9 | 41.9    | 58.9 | 55.5    | 59.4     | 59.4         |  |
| L <sub>min</sub> | dB       | 20.7  | 21.2 | 22.9 | 22.9    | 32.7 | 30.1    | 30.6     | 32.7         |  |
| $L_{10}$         | UD       | 29.4  | 34.1 | 37   | 37      | 42.3 | 38.5    | 39.8     | 42.3         |  |
| $L_{50}$         |          | 26.1  | 30.6 | 33.4 | 33.4    | 37.5 | 34.9    | 35.6     | 37.5         |  |
| L <sub>90</sub>  |          | 23.8  | 27.3 | 29.8 | 29.8    | 35.1 | 32.8    | 33       | 35.1         |  |

<sup>1</sup> Test results are valid for test samples

<sup>2</sup> Only quoted a part of test report if receiving the agreement by terms of DEQA

<sup>3</sup> Test iterms in italic are not recognized by VILAS; test iterms marked by (\*) are recognized by subcontractor

<sup>4.</sup> Name of sample, customers written by customers' request



## VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY INSTITUTE OF ENVIRONMENTAL TECHNOLOGY DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

Address: R.712, A30 Building 18 Hoang Quoc Viet Road –Cau Giay District – Hanoi - Vietnam Tel: (84 - 4) 3791 1654

Fax: (84 - 4) 3791 1203

| Time            | 2    |                      | From 15:00 pm to 15:30 pm on July 12 <sup>th</sup> . 2012 |      |         |                              |      |      |         |  |  |
|-----------------|------|----------------------|---|------|---------|------------------------------|------|------|---------|--|--|
| Parameter       | Unit | Vibration Level (Lv) |   |      |         | Vibration Acceleration (Lva) |      |      |         |  |  |
| 1 at affected   |      | Z                    | Y   | X    | Average | Z                            | Y    | X    | Average |  |  |
| $L_{eq}$        |      | 28                   | 33.4  | 35.2 | 35.2    | 43.5                         | 41.5 | 40.6 | 43.5    |  |  |
| $L_{max}$       |      | 36.7                 | 43.9  | 44.1 | 44.1    | 55.8                         | 52.6 | 51.3 | 55.8    |  |  |
| $L_{min}$       | dB   | 22.7                 | 23.4  | 25.8 | 25.8    | 40.2                         | 38.5 | 36.3 | 40.2    |  |  |
| $L_{10}$        | цD   | 29.8                 | 36.1  | 37.9 | 37.9    | 44.8                         | 42.6 | 42.2 | 44.8    |  |  |
| $L_{50}$        |      | 27.4                 | 32.5  | 34.2 | 34.2    | 43                           | 41.3 | 40.2 | 43      |  |  |
| L <sub>90</sub> |      | 25.4                 | 28.8  | 30.5 | 30.5    | 41.6                         | 39.8 | 38.1 | 41.6    |  |  |

| Time            | 2      |                      | From 17:00 pm to 17:30 pm on July 12 <sup>th</sup> . 2012 |      |         |      |          |        |               |  |  |  |
|-----------------|--------|----------------------|---|------|---------|------|----------|--------|---------------|--|--|--|
| Parameter       | Unit   | Vibration Level (Lv) |   |      |         | V    | ibration | Accele | eration (Lva) |  |  |  |
|                 | - Cint | Z                    | Y   | X    | Average | Z    | Y        | X      | Average       |  |  |  |
| $L_{eq}$        |        | 28.5                 | 32.9  | 35.2 | 35.2    | 39   | 37.7     | 38.5   | 39            |  |  |  |
| $L_{max}$       |        | 42.3                 | 42.6  | 43.7 | 43.7    | 52.4 | 58.9     | 56.8   | 58.9          |  |  |  |
| Lmin            | dB     | 21.9                 | 22.6  | 23.7 | 23.7    | 33.4 | 31.4     | 31.9   | 33.4          |  |  |  |
| $L_{10}$        | uВ     | 29.80                | 35.5  | 37.9 | 37.9    | 40.5 | 38.4     | 40.1   | 40.5          |  |  |  |
| $L_{50}$        |        | 27.2                 | 32.1  | 34.6 | 34.6    | 37.9 | 35.2     | 36.7   | 37.9          |  |  |  |
| L <sub>90</sub> |        | 25.2                 | 28.5  | 30.9 | 30.9    | 36.1 | 33.3     | 34.3   | 36.1          |  |  |  |

| Time             | e                                     |                      |      | From | om 19:00 pm to 19:30 pm on July 12 <sup>th</sup> . 2012 |      |                              |       |         |  |  |
|------------------|---------------------------------------|----------------------|------|------|---|------|------------------------------|-------|---------|--|--|
| Parameter        | Unit                                  | Vibration Level (Lv) |      |      |   |      | Vibration Acceleration (Lva) |       |         |  |  |
| 1 arameter       | Onit                                  | Z                    | Y    | X    | Average   | Z    | Y                            | X     | Average |  |  |
| $L_{eq}$         |                                       | 27.9                 | 33   | 36.1 | 36.1  | 45.5 | 44.5                         | 42.80 | 45.5    |  |  |
| L <sub>max</sub> |                                       | 66                   | 66.3 | 67.5 | 67.5  | 63.4 | 60.8                         | 59.2  | 63.4    |  |  |
| $L_{min}$        | dB                                    | 21.7                 | 21.1 | 24.7 | 24.7  | 33.1 | 30.8                         | 30.4  | 33.1    |  |  |
| $L_{10}$         | uБ                                    | 29.1                 | 35   | 37.5 | 37.5  | 47.8 | 46                           | 49.9  | 49.9    |  |  |
| L <sub>50</sub>  |                                       | 26.6                 | 31.4 | 33.4 | 33.4  | 38.7 | 37.1                         | 36.6  | 38.7    |  |  |
| $L_{90}$         | · · · · · · · · · · · · · · · · · · · | 24.7                 | 28.2 | 29.7 | 29.7  | 36   | 34.1                         | 33.5  | 36      |  |  |

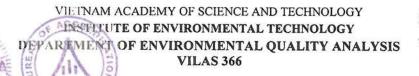
| Time             | 2      | From 21:00 pm to 21:30 pm on July 12 <sup>th</sup> . 2012 |      |      |         |      |      |      |              |  |  |
|------------------|--------|---|------|------|---------|------|------|------|--------------|--|--|
| Parameter        | Unit   | Vibration Level (Lv)                                      |      |      |         |      |      |      | ration (Lva) |  |  |
| 1 arameter Omi   | - Omit | Z   | Y    | X    | Average | Z    | Y    | X    | Average      |  |  |
| Leq              |        | 26.3  | 32.1 | 34.8 | 34.8    | 35.2 | 33   | 34.8 | 35.2         |  |  |
| L <sub>max</sub> |        | 36.1  | 40   | 43.2 | 43.2    | 48.1 | 42.1 | 48.1 | 48.1         |  |  |
| $L_{\min}$       | dB     | 20.2  | 20.4 | 25.5 | 25.5    | 30.5 | 27.5 | 27.9 | 30.5         |  |  |
| L <sub>10</sub>  | QI)    | 28.2  | 34.8 | 37.7 | 37.7    | 37.1 | 35.2 | 37.2 | 37.2         |  |  |
| L <sub>50</sub>  |        | 25.9  | 31.3 | 33.8 | 33.8    | 34.6 | 32.1 | 33.9 | 34.6         |  |  |
| L <sub>90</sub>  |        | 23.8  | 27.7 | 30.3 | 30.3    | 32.9 | 30.1 | 31   | 32.9         |  |  |

<sup>1.</sup> Test results are valid for test samples

<sup>2.</sup> Only quoted a part of test report if receiving the agreement by terms of DEQA

<sup>3.</sup> Test iterms in italic are not recognized by VILAS; test iterms marked by (\*) are recognized by subcontractor

<sup>4.</sup> Name of sample, customers written by customers' request



Address: R.712, A30 Building 18 Hoang Quoc Viet Road -Cau Giay District - Hanoi - Vietnam Tel: (84 - 4) 3791 1654

Fax: (84 - 4) 3791 1203

VILAS 366

### ANALYTICAL RESULT

No: A1207.EX10

Client

: Vietnam Infrastructure Development and Finance Investment Joint

Stock Company (VIDIFI., JSC)

Address

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street

Me Tri commune, Tu Liem, Ha Noi

Kind of sample

: Vibration (Contract : 74/VDIFI-VCNMT/2010)

Number of sample

: 12

Name of sample

: EX 10 - K 12.6

Testing place

: House of culture in Tan Vu Village, Trang Cat Commune, Hai An

District, Hai Phong City (Package EX10).

Co-ordinate

: N 20° 48'059" - E 106° 44' 839"

Testing time

: From 9:00 am on July12<sup>th</sup> to 7:00 am on July 13<sup>th</sup>, 2012

| Time            | e    |      | From 9:00 am to 9:30 am on July 12th, 2012 |         |                              |      |      |      |         |  |  |
|-----------------|------|------|--|---------|------------------------------|------|------|------|---------|--|--|
| Parameter       | Unit |      | tion Lev                                   | el (Lv) | Vibration Acceleration (Lva) |      |      |      |         |  |  |
| 1 at affected C | Onit | Z    | Y  | X       | Average                      | Z    | Y    | X    | Average |  |  |
| $L_{eq}$        |      | 33.5 | 32.5                                       | 33.6    | 33.6                         | 56.3 | 55.8 | 48.4 | 56.3    |  |  |
| $L_{max}$       |      | 54.9 | 41   | 43.8    | 54.9                         | 81.7 | 83.3 | 72.8 | 83.3    |  |  |
| $L_{min}$       | dB   | 20.8 | 21.4                                       | 24.7    | 24.7                         | 36.3 | 34.8 | 32.4 | 36.3    |  |  |
| $L_{10}$        | uБ   | 33.2 | 35.1                                       | 36.4    | 36.4                         | 56.7 | 54   | 50.1 | 56.7    |  |  |
| L <sub>50</sub> |      | 28.1 | 31.7                                       | 32.7    | 32.7                         | 44.2 | 42.8 | 39.9 | 44.2    |  |  |
| L <sub>90</sub> |      | 25.4 | 28.3                                       | 29.1    | 29.1                         | 39.5 | 38.2 | 35.7 | 39.5    |  |  |

| Time             |      | From 11:00 am to 11:30 am on July 12th. 2012 |      |      |         |                              |      |      |         |  |
|------------------|------|--|------|------|---------|------------------------------|------|------|---------|--|
| Parameter        | Unit | Vibration Level (Lv)                         |      |      | Vil     | Vibration Acceleration (Lva) |      |      |         |  |
| 1 at afficted    | Onit | Z  | Y    | X    | Average | Z                            | Y    | X    | Average |  |
| $L_{eq}$         |      | 29.1   | 33.4 | 34.9 | 34.9    | 49.7                         | 48   | 46   | 49.7    |  |
| L <sub>max</sub> |      | 49.2   | 41.6 | 42.6 | 49.2    | 75.5                         | 72.9 | 69.8 | 75.5    |  |
| $L_{min}$        | dB   | 22.4   | 21.7 | 24.9 | 24.9    | 32.2                         | 30.4 | 30.2 | 32.2    |  |
| $L_{10}$         | uis  | 30.7   | 36.1 | 37.7 | 37.7    | 47.7                         | 46.7 | 45.6 | 47.7    |  |
| $L_{50}$         |      | 27.6   | 32.5 | 34   | 34      | 40.4                         | 38.7 | 38.6 | 40.4    |  |
| L <sub>90</sub>  |      | 25.5   | 29   | 30.4 | 30.4    | 36                           | 34.5 | 34.6 | 36      |  |

| Time             | •    |      |       | From 13  | 3:00 pm to 13: | 30 pm o | n July | 12 <sup>th</sup> . 201 | 2           |
|------------------|------|------|-------|----------|----------------|---------|--------|------------------------|-------------|
| Parameter        | Unit |      | Vibra | tion Lev | vel (Lv)       | Vil     | ration | Acceler                | ation (Lva) |
| 1 al ameter      | Onit | Z    | Y     | X        | Average        | Z       | Y      | X                      | Average     |
| $L_{eq}$         | 71-0 | 28.2 | 34.7  | 36.8     | 36.8           | 39.8    | 36.6   | 37.3                   | 39.8        |
| L <sub>max</sub> |      | 36.3 | 44.3  | 45.1     | 45.1           | 49.3    | 44.4   | 45.6                   | 49.3        |
| $L_{min}$        | dB   | 21.2 | 23    | 27.1     | 27.1           | 35.3    | 31.8   | 30.5                   | 35.3        |
| $L_{10}$         | ub.  | 30.2 | 37.4  | 39.6     | 39.6           | 41.9    | 38.6   | 39.8                   | 41.9        |
| L <sub>50</sub>  |      | 27.6 | 33.6  | 35.9     | 35.9           | 38.8    | 35.9   | 36.2                   | 38.8        |
| L <sub>90</sub>  |      | 25.5 | 30.1  | 32.4     | 32.4           | 37      | 33.9   | 33.8                   | 37 .        |

<sup>1.</sup> Test results are valid for test samples

<sup>2.</sup> Only quoted a part of test report if receiving the agreement by terms of DEQA

<sup>3.</sup> Test iterms in italic are not recognized by VILAS; test iterms marked by (\*) are recognized by subcontractor

<sup>4.</sup> Name of sample, customers written by customers' request

### Owner: Vietnam Infrastructure development and finance investment joint stock company



Address: 8<sup>th</sup>-9<sup>th</sup>-10<sup>th</sup> Floors. LILAMA 10 Building. Le Van Luong street. Me Tri commune. Tu Liem. Hanoi

Tel: (84-4) 37711668 - 22209668; Fax: (84-4) 22209666

### f) Results of monitoring of construction packages EX-8

The monitoring position of air. noise and vibration at house of culture. Three - way crossroads Quan Re, My Duc Commune, An Lao District, Hai Phong City.

Coordinates: N 20° 46.223 - E 106° 36. 572

### + Results of air monitoring

Monitoring according to the supervision consultancy contracts - No. 74/VIDIFI-VCNMT/2010. The each location takes 04 samples (a sample per 6 hours) during 24 hours with parameters: Volatile organic compounds (VOCs). Total dust. Carbon oxide (CO). Nitrogen dioxide (NO<sub>2</sub>). Sulfur dioxide (SO<sub>2</sub>). The results are shown in table 26. From the results table showed that the measured parameters are within the allowable limits of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For VOCs the measurement result showed minimum value is 218  $\mu$ g/m³ at 3:00 PM on July 11<sup>th</sup>. 2012 and maximum value is 285  $\mu$ g/m³ at 9:00 AM on July 11<sup>th</sup>, 2012.

Total dust the measurement results are: 706; 522; 328 and 372  $\mu g/m^3$  corresponding sampling times are 9:00 AM. 3:00 PM. 9:00 PM on July 11<sup>th</sup>. 2012 and 3:00 AM on July 12<sup>th</sup>. 2012; these results are higher than 300  $\mu g/m^3$  comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For  $SO_2$ . the measurement results are: 73; 89; 84 and 70  $\mu$ g/m³ corresponding sampling times are 9:00 AM. 3:00 PM. 9:00 PM on July  $11^{th}$ . 2012 and 3:00 AM on July  $12^{th}$ . 2012; these results are lower than 350  $\mu$ g/m³ comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For  $NO_2$ . the measurement results are: 25; 27; 18 and 17  $\mu$ g/m³ corresponding sampling times are 9:00 AM. 3:00 PM. 9:00 PM on July 11<sup>th</sup>. 2012 and 3:00 AM on July 12<sup>th</sup>. 2012; these results are lower than 200  $\mu$ g/m³ comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For CO. the measurement results are: 1297; 1462; 1289 and 1709  $\mu g/m^3$  corresponding sampling times are 9:00 AM. 3:00 PM. 9:00 PM on July 11<sup>th</sup>. 2012 and 3:00 AM on July 12<sup>th</sup>. 2012; these results are lower than 30000  $\mu g/m^3$  comparative of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

### + Results of noise

Noise are measured 12 points within 24 hours. a point per 2 hours from 9:00 AM on July  $11^{th}$ . 2012 to 7:00 AM on July  $12^{th}$ . 2012. Using the noise meter equipment NL-21 ORION of Japan. we measured continuously for 15 minutes each sampling. record of Leq values (average value);  $L_{50}$  (average value of test 50 times);  $L_{90}$  (average value of test 90 times);  $L_{max}$  (maximum value) and  $L_{min}$  (minimum value). According to National Technical Regulation on Noise (QCVN 26:2010/BTNMT) for normal areas. According to equivalent acoustic level (Leq) is 70dB of about 6:00 AM to 8:00 PM and 55dB from 9:00 PM to 6:00 AM daily.

The table showed that in 12 Leq value for 24 hours, those from 11:00 PM on July 11<sup>th</sup>. 2012 to 5:00 AM on July 12<sup>th</sup>. 2012. All value is lower 55 dB than the65

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allowable limit according to National Technical Regulation on Noise (QCVN 26:2010/BTNMT). At the other time, noise values are lower 70dB than its the allowable limit At this measurement value.

The values of  $L_{50}$ .  $L_{90}$  haven't comparative regulation. respectively of about 50.3 to 62.1 dB from 7:00 AM to 9:00 PM and 45.1 to 53.6 dB from 11:00 PM to 5:00 AM for  $L_{50}$ . The values of  $L_{90}$  are respectively of about 45.6 to 60.2 dB from 7:00 AM to 9:00 PM and 32.2 - to 43.4 dB from 11:00 PM to 5:00 AM. all these values are lower than both Leq and  $L_{50}$ .

 $L_{max}$  value is 92.6 dB at 9:00 AM on July 11<sup>th</sup>. 2012 and  $L_{min}$  value is 41.8 dB at 11:00 PM on July 11<sup>th</sup>, 2012.



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Me Tri commune. Tu Liem. Hanoi

Tel: (84-4) 37711668 – 22209668; Fax: (84-4) 22209666

## TABLE 26. THE FIFTH RESULTS OF AIR SAMPLE OF THE PACKAGE EX 8 (JULY 2012)

| [       | ·             |  | Ţ    |      |                  | T-     |       |
|---------|---------------|--|------|------|------------------|--------|-------|
| TOTAL   | O5:2009/BTNMT |  |      | 300  | 350              | 1      | 30000 |
|         | K 10.5.4      | 3:00 am<br>July 12 <sup>th</sup> , 2012  | 234  | 372  | 70               | 17     | 1709  |
|         | K 10.5.3      | 21:00 pm<br>July 11 <sup>th</sup> , 2012 | 218  | 328  | 84               | 18     | 1289  |
|         | K 10.5.2      | 15:00 pm<br>July 11 <sup>th</sup> , 2012 | 245  | 522  | 68               | 27     | 1462  |
|         | K 10.5.1      | 9:00 am<br>July 11 <sup>th</sup> , 2012  | 285  | 902  | 73               | 25     | 1297  |
|         | Unit          |  |      |      | µg/m³            |        |       |
| ,       | Parameter     | Time                                     | VOCs | Dust | $SO_2$           | $NO_2$ | 00    |
| Name of | sample        |  |      | 0 70 | EA 0 -<br>K 10.5 |        |       |

Note: QCVN 05:2009/ BTNMT: National technical regulation on ambient air quality

# TABLE 27. THE FIFTH RESULTS OF NOISE, SAMPLE KID OF THE PACKAGE EV 8 (1111 V 2012)

|                |  |                  |      |       |       | TIOTO TO | C OCCUPAL A | OF HOUSE SAMELE NIO OF THE FACINGE EX 8 (JULY 2012) | T TITE T  | ACNAG                   | E EA O | OF X TO | (7)   |       |   |
|----------------|--|------------------|------|-------|-------|----------|-------------|---|-----------|-------------------------|--------|---------|-------|-------|---|
| Name           | Name of sample                         | Noise            |      |       |       | Ľ,       | rom 9 am J  | From 9 am July 11th to 7 am July 12th, 2012         | 7 am July | 12 <sup>th</sup> , 2012 |        |         |       |       | _ |
|                | ordina i                               |                  | 9 am | 11 am | 13 pm | 15 pm    | 17pm        | 19 pm   | 21 pm     | 23 pm                   | 01 am  | 03 am   | 05 am | 7 am  |   |
|                | Led                                    |                  | 9.79 | 65.3  | 53.5  | 67.0     | 62.0        | 62.6  | 9.09      | 57.8                    | 57.6   | 53.7    | 48.7  | 8 69  |   |
| 1 O O          | Lmax                                   |                  | 82.2 | 97.6  | 72.6  | 87.5     | 84.9        | 88.7  | 77.2      | 72.6                    | 63.5   | 57.2    | 70.6  | 85.1  |   |
| EA 8-<br>K10 5 | Lmin                                   | (dB)             | 48.9 | 46.2  | 41.2  | 55.1     | 47.2        | 49.2  | 50.4      | 49.3                    | 50.5   | 52.5    | 41.8  | 51.2  |   |
|                | L50                                    |                  | 54.0 | 57.8  | 50.3  | 62.1     | 56.9        | 57.5  | 58.6      | 57.2                    | 575    | 53.6    | 45.1  | 50.05 |   |
|                | T60                                    |                  | 51.2 | 50.9  | 46.3  | 59.8     | 52.4        | 53.4  | 52.7      | 562                     | 7.75   | 53.1    | 1.64  | 56.5  |   |
| QCVN<br>(Nor   | OCVN 26:2010/BTNMT (Normal area - Leq) | BTNMT<br>- Leq ) |      |       |       | 7.0      |             |   |           |                         | 55     | ļ       | 0.0   | 70    |   |
|                |  |                  |      |       |       |          |             |   |           |                         |        |         |       |       |   |

Note: OCVN 26:2010/BTNMT: - National Technical Regulation on Noise





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### + Results of vibration

- Starting time: 9:00 AM on July 11<sup>th</sup>. 2012; Ending time: 7:30 AM on July 12<sup>th</sup>. 2012.
- Azimuth of the axes x. y

X-axis set follow the North – South direction.

Y-axis set follow the East – West direction.

Impacts of vibratory sources to the measurement result.

To set measurement range for equipment is 30-90 dB.

From  $L_{max}$  and Leq values showed that: Most of testing time. vibration acceleration is lower than 60dB. However, measurement values are higher than 60dB and lower than 75 dB in each measurement range The values of  $L_{10}$ ,  $L_{50}$ ,  $L_{90}$  have decreasing rule that the larger values only occurring in short time of the each measurement range.

The results in table 28 showed that there is not any value of vibration acceleration level (Lva) exceeding the allowable limit (75dB) of National Technical Regulation on Vibration (QCVN 27:2010/BTNMT).

Average Lva value in the range from 42.3 to 63.7 dB.

The value of  $Lva_{max}$  is 90.0 dB which is highest at the time from 11:00 AM to 11:30 AM on July  $11^{th}$ . 2012.

The value of Lva<sub>min</sub> is 35.2 dB which is lowest at the time from 5:00 to 5:30 AM on July  $12^{th}$ . 2012.

TABLE 28. THE FIFTH RESULTS OF VIBRATION SAMPLE K10 OF THE PACKAGE EX 8 (JULY 2012)

| Time            | <del></del> |      | F       | rom 9:  | 00 am to 9:30 a | ım on J | uly 11 <sup>t</sup> | <sup>h</sup> , 2012 |             |
|-----------------|-------------|------|---------|---------|-----------------|---------|---------------------|---------------------|-------------|
| D               | T T:4       |      | Vibrati | on Leve | el (Lv)         | Vib     | ration A            | Accelera            | ation (Lva) |
| Parameter       | Unit        | Z    | Y       | X       | Average         | Z       | Y                   | X                   | Average     |
| $L_{\sf eq}$    |             | 41.2 | 34.7    | 35.5    | 41.2            | 53.3    | 50.3                | 47.7                | 53.3        |
| $L_{max}$       |             | 53.6 | 42.2    | 42.4    | 53.6            | 72.6    | 69.7                | 69.9                | 69.9        |
| $L_{min}$       | σь          | 31.7 | 26.4    | 27.5    | 31.7            | 41.2    | 39.3                | 33.7                | 41.2        |
| L <sub>10</sub> | dB          | 43.6 | 36.9    | 38.1    | 43.6            | 53.8    | 51.8                | 45.8                | 53.8        |
| $L_{50}$        |             | 39.5 | 34      | 34.7    | 39.5            | 47.4    | 45.4                | 41                  | 47.4        |
| L <sub>90</sub> |             | 35.8 | 31.3    | 31.7    | 35.8            | 44.3    | 42.3                | 38.4                | 44.3        |



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A. 9.

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| Time             | e       |      |      | From 1 | 1:00 am to 11: | 30 am o | n July | 11 <sup>th</sup> . 20 | 12           |
|------------------|---------|------|------|--------|----------------|---------|--------|-----------------------|--------------|
| Parameter        | Unit    |      |      |        | el (Lv)        | 1       |        |                       | ration (Lva) |
|                  | O III t | Z    | Y    | Х      | Average        | Z       | Y      | X                     | Average      |
| $L_{eq}$         |         | 48.8 | 40.4 | 38.5   | 48.8           | 63.7    | 63.6   | 60.4                  | 63.7         |
| L <sub>max</sub> |         | 58.7 | 52.8 | 46.3   | 58.7           | 90      | 89.6   | 86.5                  | 90           |
| L <sub>min</sub> | dB      | 37.3 | 29   | 29.9   | 37.3           | 42.2    | 36.9   | 36.7                  | 42.2         |
| L <sub>10</sub>  | u.D     | 52   | 42.8 | 41     | 52             | 54.5    | 48.9   | 48.6                  | 54.5         |
| $L_{50}$         |         | 47   | 38.6 | 37.8   | 47             | 48.6    | 42.7   | 42.7                  | 48.6         |
| L <sub>90</sub>  |         | 42.5 | 35.1 | 34.7   | 42.5           | 44.9    | 39.7   | 39.4                  | 44.9         |

| Tim             | <del></del> |      | ]                    | From 13 | 3:00 pm to 13:3 | 30 pm c | n Iuly | 11 <sup>th</sup> 20 | 10           |
|-----------------|-------------|------|----------------------|---------|-----------------|---------|--------|---------------------|--------------|
| Parameter       | Unit        |      | Vibration Level (Lv) |         |                 |         |        |                     | ration (Lva) |
| - urameter      | Ome         | Z    | Y                    | X       | Average         | Z       | Y      | Х                   | Average      |
| $L_{eq}$        |             | 37.4 | 33.3                 | 34.1    | 37.4            | 50      | 46.6   | 44.9                | 50           |
| $L_{max}$       |             | 49.8 | 41.5                 | 41.7    | 49.8            | 74      | 71.4   | 69.3                | 74           |
| $L_{min}$       |             | 26.6 | 24.1                 | 24.3    | 26.6            | 38      | 33.8   | 33.8                | 38           |
| L <sub>10</sub> |             | 40.9 | 35.7                 | 36.8    | 40.9            | 48.7    | 44     | 43.5                | 48.7         |
| $L_{50}$        |             | 33.7 | 32.7                 | 33.3    | 33.7            | 44      | 39.5   | 39.5                | 44.0         |
| L <sub>90</sub> | dB          | 30   | 29.9                 | 29.9    | 30              | 41.2    | 36.4   | 36.7                | 41.2         |

| Time             | е    |      | I    | From 15 | 5:00 pm to 15:3 | :30 pm on July 11 <sup>th</sup> . 2012 |      |      |              |  |
|------------------|------|------|------|---------|-----------------|--|------|------|--------------|--|
| Parameter        | Unit |      |      |         | el (Lv)         | T                                      |      |      | ration (Lva) |  |
|                  | Oint | Z    | Y    | X       | Average         | Z                                      | Y    | X    | Average      |  |
| Leq              |      | 63.9 | 69.3 | 71.4    | 71.4            | 54                                     | 50.4 | 48   | 54           |  |
| L <sub>max</sub> |      | 89.9 | 90   | 89.7    | 90              | 68.9                                   | 69.4 | 66.3 | 69.4         |  |
| L <sub>min</sub> | dB   | 37.7 | 30.8 | 30      | 37.7            | 43.2                                   | 39.5 | 39   | 43.2         |  |
| L <sub>10</sub>  |      | 54.1 | 41.7 | 42.3    | 54.1            | 57.4                                   | 51.5 | 50   | 57.4         |  |
| L <sub>50</sub>  |      | 48.4 | 38.4 | 37.9    | 48.4            | 50.5                                   | 45.6 | 44.3 | 50.5         |  |
| $L_{90}$         |      | 43   | 35.6 | 34.7    | 43              | 46.7                                   | 42.3 | 41.3 | 46.7         |  |

| Time             | e    |      | 1    | From 1 | 7:00 pm to 17: | 30 pm o | n Iuly 1 | 1 <sup>th</sup> 201 | 2           |
|------------------|------|------|------|--------|----------------|---------|----------|---------------------|-------------|
| Parameter        | Unit |      |      |        | el (Lv)        | 7       |          |                     | ation (Lva) |
| 1 drameter       | Omt  | Z    | Y    | X      | Average        | Z       | Y        | Х                   | Average     |
| Leq              |      | 44.7 | 36.5 | 36.1   | 44.7           | 54.6    | 49.1     | 49.1                | 54.6        |
| L <sub>max</sub> |      | 53   | 43.2 | 43     | 53             | 76.7    | 68.6     | 67.6                | 76.7        |
| L <sub>min</sub> | dB   | 33.8 | 27.7 | 27.3   | 33.8           | 41.2    | 36.5     | 35.4                | 41.2        |
| L <sub>10</sub>  | uБ   | 47.9 | 39.1 | 38.5   | 47.9           | 57.3    | 51.1     | 50                  | 57.3        |
| L <sub>50</sub>  |      | 43.7 | 35.7 | 35.5   | 43.7           | 48.8    | 43.5     | 42.6                | 48.8        |
| L <sub>90</sub>  |      | 38.3 | 32.2 | 32     | 38.3           | 43.8    | 38.6     | 38.4                | 43.8        |

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Address: No.18 Hoang Quoc Viet – Cau Giay – Ha Noi Tel: 043 7569 136; 043 7911 654 \* Fax: 043 7911 203



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| Time             | 9      |      | F       | rom 19 | 0:00 pm to 19:3 | 0 pm o                       | n July 1 | l 1 <sup>th</sup> . 20 | 12      |
|------------------|--------|------|---------|--------|-----------------|------------------------------|----------|------------------------|---------|
| D                | T T:-4 |      | Vibrati | on Lev | el (Lv)         | Vibration Acceleration (Lva) |          |                        |         |
| Parameter        | Unit   | Z    | Y       | X      | Average         | Z                            | Y        | X                      | Average |
| $L_{eq}$         |        | 38.3 | 32.9    | 33.9   | 38.3            | 53.1                         | 47.9     | 46.5                   | 53.1    |
| L <sub>max</sub> |        | 50.7 | 48.2    | 49.7   | 50.7            | 73.9                         | 69.3     | 66.7                   | 73.9    |
| $L_{min}$        | dB     | 28.9 | 24.1    | 25.3   | 28.9            | 38.5                         | 34.2     | 34.4                   | 38.5    |
| $L_{10}$         | d.b    | 41.6 | 35.2    | 36.3   | 41.6            | 55.2                         | 49.1     | 48.2                   | 55.2    |
| L <sub>50</sub>  |        | 36.7 | 32.2    | 33     | 36.7            | 46.3                         | 41.7     | 40.9                   | 46.3    |
| L <sub>90</sub>  |        | 32.6 | 29.2    | 30     | 32.6            | 41.6                         | 38.2     | 37.5                   | 41.6    |

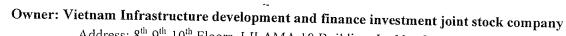
| Time            | e     |      | From 21:00 pm to 21:30 pm on July 11 <sup>th</sup> . 2012 |        |         |                              |      |      |         |  |
|-----------------|-------|------|---|--------|---------|------------------------------|------|------|---------|--|
| D               | T T:4 |      | Vibrati   | on Lev | el (Lv) | Vibration Acceleration (Lva) |      |      |         |  |
| Parameter       | Unit  | Z    | Y   | Х      | Average | Z                            | Y    | X    | Average |  |
| $L_{\sf eq}$    |       | 35.3 | 31.8  | 33.8   | 35.3    | 48.3                         | 49.6 | 48.8 | 49.6    |  |
| $L_{max}$       |       | 51.1 | 48.5  | 51.8   | 51.8    | 67.5                         | 72.1 | 71.2 | 72.1    |  |
| $L_{min}$       | מנ    | 24   | 23.9  | 21.6   | 24      | 40.6                         | 36   | 34.9 | 40.6    |  |
| $L_{10}$        | dB    | 38.7 | 34.4  | 36.4   | 38.7    | 49.7                         | 50.3 | 49.7 | 50.3    |  |
| $L_{50}$        |       | 32.3 | 31.2  | 32.8   | 32.8    | 44.4                         | 41.8 | 41.2 | 44.4    |  |
| L <sub>90</sub> |       | 28.5 | 28.1  | 29.3   | 29.3    | 42.5                         | 38   | 37.8 | 42.5    |  |

| Time            | 9    |      | F       | From 23 | :00 pm to 23:3 | 30 pm o                      | n July 1 | 11 <sup>th</sup> . 201 | 12      |  |
|-----------------|------|------|---------|---------|----------------|------------------------------|----------|------------------------|---------|--|
| D               | Unit |      | Vibrati | on Lev  | el (Lv)        | Vibration Acceleration (Lva) |          |                        |         |  |
| Parameter       | Onit | Z    | Y       | X       | Average        | Z                            | Y        | X                      | Average |  |
| $L_{eq}$        |      | 36.1 | 32      | 33.6    | 36.1           | 42.3                         | 38.7     | 39.2                   | 42.3    |  |
| $L_{max}$       |      | 50.9 | 38.5    | 43.1    | 50.9           | 54.7                         | 60       | 57.5                   | 60      |  |
| $L_{min}$       | dB   | 23.3 | 22.4    | 23.2    | 23.3           | 38.9                         | 33.4     | 34.4                   | 38.9    |  |
| L <sub>10</sub> | dБ   | 39.5 | 34.7    | 36.2    | 39.5           | 43.3                         | 39.4     | 40.3                   | 43.3    |  |
| L <sub>50</sub> |      | 29.8 | 31.3    | 32.7    | 32.7           | 41.8                         | 36.3     | 37.7                   | 41.8    |  |
| $L_{90}$        |      | 26.2 | 27.8    | 29.2    | 29.2           | 40.9                         | 35.1     | 36.4                   | 40.9    |  |

| Time             | e    |      |         | From 1  | :00 am to 1:30 | 0 am on July 12 <sup>th</sup> . 2012 |      |      |         |  |
|------------------|------|------|---------|---------|----------------|--------------------------------------|------|------|---------|--|
| Parameter        | Unit |      | Vibrati | on Leve | el (Lv)        | Vibration Acceleration (Lva)         |      |      |         |  |
| Parameter        | Omt  | Z    | Y       | X       | Average        | Z                                    | Y    | X    | Average |  |
| $L_{\sf eq}$     |      | 28.7 | 32.2    | 35      | 35             | 43.1                                 | 42.6 | 40.9 | 43.1    |  |
| L <sub>max</sub> |      | 59.4 | 58.6    | 59.5    | 59.5           | 59.7                                 | 67.9 | 64.9 | 67.9    |  |
| $L_{min}$        | dB   | 23.1 | 21.7    | 23.5    | 23.5           | 38.4                                 | 32.4 | 33.1 | 38.4    |  |
| $L_{10}$         | uБ   | 30.2 | 34.2    | 36.1    | 36.1           | 43.7                                 | 38.7 | 38.6 | 43.7    |  |
| $L_{50}$         |      | 26.7 | 30.8    | 32.4    | 32.4           | 42.3                                 | 35.9 | 35.8 | 42.3    |  |
| L <sub>90</sub>  |      | 25   | 27.5    | 28.8    | 28.8           | 41.1                                 | 34.2 | 34.5 | 41.1    |  |



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| Time             | e    |      | From 3:00 am to 3:30 am on July 12 <sup>th</sup> . 2012 |      |         |      |      |      |              |  |
|------------------|------|------|---|------|---------|------|------|------|--------------|--|
| Parameter        | Unit |      | Vibrati   |      | el (Lv) |      |      |      | ration (Lva) |  |
|                  |      | Z    | Y   | X    | Average | Z    | Y    | X    | Average      |  |
| $L_{eq}$         |      | 30.6 | 30.7  | 32.5 | 32.5    | 43.1 | 39.7 | 40   | 43.1         |  |
| L <sub>max</sub> |      | 43.7 | 37.9  | 40.7 | 43.7    | 57.8 | 63.3 | 61.5 | 63.3         |  |
| Lmin             | dB   | 22.9 | 22.1  | 22.2 | 22.9    | 39   | 36.3 | 36.8 | 39           |  |
| L <sub>10</sub>  | 4.2  | 33.3 | 33.2  | 35.1 | 35.1    | 44.3 | 38.9 | 39.9 | 44.3         |  |
| $L_{50}$         |      | 28.6 | 30.1  | 31.6 | 31.6    | 43.1 | 37.9 | 38.8 | 43.1         |  |
| L <sub>90</sub>  |      | 26.4 | 26.9  | 28.1 | 28.1    | 40.2 | 37.1 | 38.1 | 40.2         |  |

| Time             | е    |      |         | From | 5:00 am to 5:3 | 30 am on July 12 <sup>th</sup> . 2012 |      |      |         |  |
|------------------|------|------|---------|------|----------------|---------------------------------------|------|------|---------|--|
| Parameter        | Unit |      | Vibrati |      | el (Lv)        | Vibration Acceleration (Lva)          |      |      |         |  |
|                  | Oint | Z    | Y       | X    | Average        | Z                                     | Y    | X    | Average |  |
| $L_{eq}$         |      | 35   | 33.3    | 36.3 | 36.3           | 45.1                                  | 42.7 | 43.3 | 45.1    |  |
| L <sub>max</sub> |      | 72.6 | 72.6    | 73.8 | 73.8           | 66,7                                  | 68   | 69.8 | 69.8    |  |
| $L_{min}$        | dB   | 22.1 | 23.1    | 24.2 | 24.2           | 35.2                                  | 31.7 | 31.2 | 35.2    |  |
| $L_{10}$         | uD.  | 38.1 | 34.5    | 35.7 | 38.1           | 46.2                                  | 40.4 | 40.9 | 43.1    |  |
| $L_{50}$         |      | 31.5 | 31      | 32.3 | 32.3           | 43.1                                  | 36   | 36.1 | 38.6    |  |
| L <sub>90</sub>  |      | 26.6 | 27.7    | 28.8 | 28.8           | 38.60                                 | 34.1 | 33.5 | 38.6    |  |

| Time             | е    |      |         | From | 7:00 am to 7:3 | 0 am or | ı July 1 | 2 <sup>th</sup> . 201 | 2            |
|------------------|------|------|---------|------|----------------|---------|----------|-----------------------|--------------|
| Parameter        | Unit |      | Vibrati |      | el (Lv)        | T       |          |                       | ration (Lva) |
|                  |      | Z    | Y       | X    | Average        | Z       | Y        | X                     | Average      |
| $L_{eq}$         |      | 41.5 | 34.3    | 34.2 | 41.5           | 49.4    | 48.3     | 47.5                  | 49.4         |
| L <sub>max</sub> |      | 51.8 | 41.3    | 39.7 | 51.8           | 68.3    | 71.1     | 69.5                  | 71.1         |
| $L_{min}$        | dB   | 34.2 | 25.7    | 27   | 34.2           | 40.8    | 36.5     | 35.5                  | 40.8         |
| $L_{10}$         |      | 44.1 | 36.8    | 36.5 | 44.1           | 50.9    | 47.8     | 47.5                  | 50.9         |
| L <sub>50</sub>  |      | 40.2 | 33.5    | 33.7 | 40.2           | 46.7    | 42.2     | 41.3                  | 46.7         |
| L <sub>90</sub>  |      | 37.1 | 30.6    | 30.9 | 37.1           | 43.9    | 39.1     | 38.5                  | 43.9         |

| QCVN 27:2010/BT  | NMT: National Technica | l Regulation on Vibration                                     |
|------------------|------------------------|---|
| Location         | Testing time per day   | Allowable vibration acceleration level. dB Average level. Leq |
| Special location | 6:00 AM - 6:00 PM      | 75  |
| Special location | 6:00 PM – 6:00 AM      | Background level  |
| Normal location  | 6:00 AM – 9:00 PM      | 75  |
| Normal location  | 9:00 PM – 6:00 AM      | Background level  |

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Me Tri commune. Tu Liem. Hanoi

Tri (84.4) 27711668 222202668; Form (84.4) 22200666

Tel: (84-4) 37711668 - 22209668; Fax: (84-4) 22209666

### + Results of surface water sample:

Surface water sample (coded NM 4.5) was monitored and sampled at Nguyet Ang Bridge. Da Do river – An Lao District – Hai Phong

Coordinates of sampling location: N 20° 46.814 - E 105° 36. 858.

Sample was taken 3 times at the times. a sample per 8 hours in 24 hours with 01 blank sample. pH and DO parameters are tested on location. The samples were refrigerated and fixed after sampling and transported to the laboratory in the shortest time. NM 4.5.1: Sampling at 3 pm on July 11<sup>th</sup>. 2012; NM 4.5.2: Sampling at 9:30 pm July 11<sup>th</sup>. 2012; NM 4.5.3: Sampling at 5:30 am July 12<sup>th</sup>. 2012. Sampling time Results of sample analysis are shown in table 29 as below.

The result table showed that oil & grease parameters are 0.12; 0.12; 0.10 mg/L higher than the column B1 (0.1 mg/L). lower than the limit value is 0.3 mg/L in column B2 according to National technical regulation on surface water quality (QCVN 08:2008/BTNMT).

COD and BOD<sub>5</sub> parameters of all 03 samples are lower than both B1 and B2 column at the different times according to QCVN 08:2008/BTNMT. All parameters of TSS (Total suspended solids). total phosphorus and total nitrogen are lower than QCVN 08:2008/BTNMT.

As for pesticides of organic chlorine group have quantitative limit of analysis method is 0.05  $\mu$ g/L (the most of environmental laboratories only determine this quantitative limit). However, according to National technical regulation on surface water quality (QCVN 08:2008/BTNMT), comparative value about 0.004 – 0.01  $\mu$ g/L (Aldrin - Dieldrin); 0.014 – 0.01  $\mu$ g/L (Endrin) etc.

On the other hand, comparison of National technical regulation on surface water quality (QCVN 08:2008) and Surface water quality standard (TCVN 5942:1995). DDT is 0.01 mg/L corresponding to 10  $\mu$ g/L in standard. Vietnam standard (TCVN) by Ministry of science and technology promulgate while Vietnam regulation by Ministry of natural resources and environment promulgate that regulation for parameters of surface water but different to 2500 times.

In this case. TCVN 5942:1995 more consistent with the international standard. Thus, results of minimum quantitative limit also exceed the QCVN 08: 2008/BTNMT.



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# TABLE 29. THE FIFTH RESULTS OF SURFACE WATER SAMPLE NM4.5 OF THE PACKAGE EX8 (JULY 2012)

|                |                   |                     |          |          | (2001 100) |       | 0) 00777 7757  | 771 4014)             |
|----------------|-------------------|---------------------|----------|----------|------------|-------|----------------|-----------------------|
| S <sub>o</sub> | Parameter         | Unit                |          | Re       | Result     |       | QC<br>08:2008/ | QCVN<br>08:2008/BTNMT |
|                |                   |                     | NM 4.5.1 | NM 4.5.2 | NM 4.5.3   | MT    | Column B1      | Column B2             |
| 급              | pH                | I                   | 8.25     | 8.27     | 8.33       | 7.20  | 5 5 0          | 0 2 3                 |
| 2.             | D0                | mg/L                | 6.45     | 6.50     | 5.20       | 7 3 8 | C- C. U        | 4- C.C                |
| 3.             | COD               | mgO <sub>2</sub> /L | 15.5     | 16.1     | 12.1       | 0.70  | 1,4            | 77                    |
| 4.             | BODs              | mg/L                | 7.7      | 8.3      | 6.5        | 0.15  | 30             | 36                    |
| 5.             | TSS               | mg/L                | 10       | 15       | 10         | 3.0   | 61             | 100                   |
| 6.             | Total P           | mg/L                | 0.59     | 0.11     | 0.13       | 0.01  |                | 100                   |
| 7.             | Total N           | mg/L                | 5        | 9        | 5.5        | <0.10 | •              |                       |
| 8.             | * Pesticides      | mg/L                | < 0.5    | < 0.5    | < 0.5      | <0.5  | 1              |                       |
| 9.             | Aldrine+Dieldrine |                     | < 0.05   | < 0.05   | < 0.05     | <0.05 | 0.008          | 0.01                  |
| 10.            | Endrine           | -                   | < 0.05   | < 0.05   | < 0.05     | <0.05 | 0.014          | 0.01                  |
| 11.            | BHC               |                     | < 0.05   | < 0.05   | < 0.05     | <0.05 | 0.13           | 0.015                 |
| 12.            | DDT               |                     | < 0.05   | < 0.05   | < 0.05     | <0.05 | 0.004          | 5000                  |
| 13.            | DDD               | hg/L                | < 0.05   | < 0.05   | < 0.05     | <0.05 |                | 0.00                  |
| 14.            | Endosunfane       |                     | < 0.05   | < 0.05   | < 0.05     | <0.05 | 0.01           | 000                   |
| 15.            | Lindane           |                     | < 0.05   | < 0.05   | < 0.05     | 20.0> | 0.01           | 0.02                  |
| 16.            | Chlordane         | 1                   | < 0.05   | < 0.05   | 50.0>      | 50.0> | 0.30           | 0.4                   |
| 17.            | Heptachlor        |                     | < 0.05   | < 0.05   | 50.0>      | 50.05 | 0.02           | 0.03                  |
| 18.            | Mineral oil       | mg/L                | 0.12     | 0.12     | 0.10       | 50.05 | 0.02           | 0.02                  |
| 19.            | *Coliform         | MPN/100 mL          | 380      | 490      | 460        | CO.S. | 7500           | 10000                 |
|                |                   |                     |          |          | 200        | GM    | 000            | 10000                 |

Note: QCVN 08:2008/BTNMT: National technical regulation on surface water quality



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Address: No.18 Hoang Quoc Viet – Cau Giay – Ha Noi Tel: 043 7569 136; 043 7911 654 \* Fax: 043 7911 203



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Tel: (84-4) 37711668 - 22209668; Fax: (84-4) 22209666

B1-For the usage of irrigation or other purpose having the similar quality requirement like B2 level

B2 - For the usage of water navigation and other purpose with less water quality

### + Results of groundwater sample NN 8.5

Groundwater sample (coded NN 8.5). householder is Mrs. Tran Van Đoai. Minh Khai village. My Đuc commune. An Lao District.. Hung Yen Province. The depth of 18 m.

Sample time is 8:00 AM on July 11<sup>th</sup> 2012. This is Results of sample analysis are shown in table 30 as below.

Table 30 showed that the COD value is  $6.56~mgO_2/L$  comparing 4mg/L and that of coliform is 15~MPN/100mL comparing with 3~MPN/100mL, which is higher than QCVN 09:2008/BTNMT

TABLE 30. THE FIFTH RESULTS OF GROUNDWATER SAMPLE NN 8.5 OF THE PACKAGE EX8 (JULY 2012)

| 3.7 | 70               | TT *4               | R      | esult  | QCVN          |  |  |
|-----|------------------|---------------------|--------|--------|---------------|--|--|
| No  | Parameter        | Unit                | NN 8.5 | MT     | 09:2008/BTNMT |  |  |
| 1.  | Temperature      | °C                  | 31.0   | 28.0   | -             |  |  |
| 2.  | pН               | _                   | 7.78   | 7.10   | 5.5 – 8.5     |  |  |
| 3.  | COD              | mgO <sub>2</sub> /L | 10.3   | < 1.0  | 4             |  |  |
| 4.  | BOD <sub>5</sub> | mg/L                | 5.9    | < 1.0  |               |  |  |
| 5.  | TSS              | mg/L                | 8      | < 3.0  | -             |  |  |
| 6.  | Total P          | mg/L                | 0.27   | < 0.01 | -             |  |  |
| 7.  | Total N          | mg/L                | 8.5    | < 0.10 | -             |  |  |
| 8.  | *Coliform        | MPN/                | 12     | ND     | 3             |  |  |
| 9.  | *E. Coli         | 100mL               | ND     | ND     | ND            |  |  |

### g) Results of monitoring of construction bid packages EX-10

The monitoring position of air. noise and vibration at house of culture. Tan Vu hamlet. Trang Cat ward. Hai An District. Hai Phong City.

Coordinates: N 20° 48.059 - E 106° 44. 839

- General description of the status quo of terrain and geology

Monitoring area is residential area a place where is nearest with the expressway about 500m. Monitoring position located in tarmac at house of culture. Tan Vu hamlet. Trang Cat ward. Hai An District. Hai Phong City.





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The height of between the measurement points with the Ha Noi – Hai Phong expressway pavement is negligible.

Geological background at the measurement position and the expressway are soft ground.

- Starting time: 10:30 AM on July 12<sup>th</sup>. 2012; Ending time: 8:30 PM on July 13<sup>th</sup>. 2012
- Impacts of vibratory sources to the measurement result.

During the testing process, the vehicle transported mainly on inter-village roads, only types of motorcycles and travelling cars with the speed from 30 to 40km/h and higher. While construction machines and container trucks transporting at 7:00 - 11:00 AM and 2:00 - 6:00 PM on the expressway.

### + Results of air monitoring

Monitoring according to the supervision consultancy contracts - No. 74/VIDIFI-VCNMT/2010. At the each location take 04 samples. a sample per 6 hours during 24 hours with parameters: Volatile organic compounds (VOCs), Total dust, Carbon oxide (CO), Nitrogen dioxide (NO<sub>2</sub>),, Sulfur dioxide (SO<sub>2</sub>). The results are shown in table 36. From the results table showed that the measured parameters are within the allowable limits of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For VOCs. the measurement result showed minimum value is  $78~\mu g/m^3$  at 3:00 AM on July  $13^{th}$ . 2012 and maximum value is  $115~\mu g/m^3$  at 9:00 AM on July  $12^{th}$ . 2012.

For total dust, the measurement results are: 48; 52; 46 and 42  $\mu g/m^3$  corresponding sampling times are 9:00 AM, 3:00 PM, 9:00 PM on July 12<sup>th</sup>, 2012 and 3:00 AM on July 13<sup>th</sup>, 2012; these results are lower than 350  $\mu g/m^3$  of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For  $SO_2$ . the measurement results are: 65; 73; 68 and 60  $\mu$ g/m³ corresponding sampling times are 9:00 AM. 3:00 PM. 9:00 PM on July  $12^{th}$ . 2012 and 3:00 AM on July  $13^{th}$ . 2012; these results are lower than 350  $\mu$ g/m³ of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For  $NO_2$ . the measurement results are: 23; 23; 25 and 23  $\mu g/m^3$  corresponding sampling times are 9:00 AM. 3:00 PM. 9:00 PM on July  $12^{th}$ . 2012 and 3:00 AM on July  $13^{th}$ . 2012; these results are lower than 200  $\mu g/m^3$  of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

For CO. the measurement results are: 811; 835; 718 and 523  $\mu g/m^3$  corresponding sampling times are 9:00 AM. 3:00 PM. 9:00 PM on July 12<sup>th</sup>. 2012 and 3:00 AM on July 13<sup>th</sup>. 2012; these results are lower than 30000  $\mu g/m^3$  of National technical regulation on ambient air quality (QCVN 05:2009/BTNMT).

### + Results of noise

Noise are measured 12 points within 24 hours. a point per 2 hours from 9:00 AM on July 12<sup>th</sup>. 2012 to 7:00 AM on July 13<sup>th</sup>. 2012. Using the noise meter equipment NL-21 ORION of Japan. we measured continuously for 15 minutes each sampling. record of Leq values (average value); L<sub>50</sub> (average value of test 50 times); L<sub>90</sub> (average

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Address: No.18 Hoang Quoc Viet – Cau Giay – Ha Noi Tel: 043 7569 136; 043 7911 654 \* Fax: 043 7911 203 75



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Me Tri commune. Tu Liem. Hanoi

Tel: (84-4) 37711668 – 22209668; Fax: (84-4) 22209666

value of test 90 times);  $L_{max}$  (maximum value) and  $L_{min}$  (minimum value). According to *National Technical Regulation on Noise* (QCVN 26:2010/BTNMT) for normal areas. According to equivalent acoustic level (Leq) is 70dB of about 6:00 AM to 8:00 PM and 55dB from 9:00 PM to 6:00 AM daily. Results are shown in table 31.

From the table 31 showed that 12 Leq value for 24 hours, the values from 9:00 AM on July 12<sup>th</sup>, 2012 to 7:00 AM on July 13<sup>th</sup>, 2012 respectively, all these values are lower than the allowable limit is 55 dB and 70 dB of National Technical Regulation on Noise (QCVN 26:2010/BTNMT).

The values of  $L_{50}$ .  $L_{90}$  haven't comparative regulation. respectively of about 44.0 to 49.7 dB from 7:00 AM to 9:00 PM and 43.3 to 56.2 dB from 9:00 AM to 7:00 AM for  $L_{50}$ . The values of  $L_{90}$  are respectively of about 39.7 to 46.9 dB from 6:30 AM to 8:30 PM and 33.5 dB to 40.1 dB from 10:30 PM to 4:30 AM.

 $L_{max}$  value is 87.4 dB at 9:00 AM on July 12<sup>th</sup>. 2012 and  $L_{min}$  value is 37.2 dB at 9:00 PM on July 13<sup>th</sup>. 2012.





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## TABLE 31. THE FIFTH RESULTS OF AIR SAMPLE K12.6 OF THE PACKAGE EX10 (JULY 2012)

|                         |  |               |      |        | т-              |     |       |      |
|-------------------------|--|---------------|------|--------|-----------------|-----|-------|------|
| QCVN<br>05:2000/PTXIA/T | 10.2009/D1.10.101                        |               | 1 (  | 300    | 350             |     | 1     | 3000 |
| K 12.6.4                | 3:00 am                                  | 7102, Ct tino | 2    | 74     | 09              | 23  | 0.7   | 523  |
| K 12.6.3                | 21:00 pm<br>July 12 <sup>th</sup> 2012   | 82            | 16   | 0+     | 89              | 25  |       | 718  |
| K 12.6.2                | 15:00 pm<br>July 12 <sup>th</sup> , 2012 | 105           | 52   | 100    | 73              | 23  | 4 ( ) | 835  |
| K 12.6.1                | 9:00 am<br>July 12 <sup>th</sup> , 2012  | 115           | 48   |        | 65              | 23  | 1 10  | 011  |
| Unit                    |  |               |      | ۲,     | mg/m            |     | •     |      |
| Parameter               | Time                                     | VOCs          | Dust | 6      | SO <sub>2</sub> | NO2 | CO    | 3    |
| Name of<br>sample       |  |               | 3    | EX 10- | K 12.6          |     |       |      |

<u>Note</u>: QCVN 05:2009/ BTNMT: National technical regulation on ambient air quality

# TABLE 32. THE FIFTH RESULTS OF NOISE SAMPLE K12.6 OF THE PACKAGE EX10 (JULY 2012)

|              | T-    | 7   | -   | Т-   |   | Τ-  |   | т—  | 1  | _  |  |   |  | _  |
|--------------|-------|---|---|--|---|---|---|---|--|--|--|---|--|--|
|              | 07000 | O/alli  | 50.3  | 70.7   | 7:71  | 20.0  | 77.7  | 517   | †:TC   | 73.0   | 47.3   | 0   | ,  |  |
|              | 05am  | ro C  | 0.76  | 71.8   | 0.17  | 051   | 2.0   | 50 A  | 72.1   | 70.7   | 7.01   | 7   | •  |  |
|              | 03am  | 3 37  | 40.7  | 69 7   | 11.70   | 40.5  | 5.01  | 45.8  | 5  | 177  |  |   |  |  |
| 7            | 01am  | 17.7  | t: /r   | 67.9   | <u>```</u>  | 300   | 27.7  | 41.5  |  | 40 ×   | 0.01   |   |  |  |
| , 10 , 401.  | 23pm  | 49.8  | 0.77  | 78.9   |   | 39.9  |   | 46.5  |  | 417  | /:::   |   | S  |  |
| inc iiim co. | 21pm  | 473   | 3   | 70.7   |   | 37.2  |   | 43.3  |  | 40.5   |  |   |  |  |
|              | 19pm  | 56.7  |   | 72.4   | -   | 43.4  |   | 56.2  |  | 50.5   |  |   |  |  |
|              | 17pm  | 56.6  |   | 9.77   |   | 41.4  |   | 51.1  | 00,7   | 7.04   |  |   |  |  |
| 1            | 15pm  | 56.3  |   | 0.6/   | 1   | 45.5  |   | 55.3  | 707  | 0./4   |  |   |  |  |
| ,            | L3pm  | 51.2  | 0.00  | 68.9   | 7 110   | 37.0  |   | 6.00  | 12.0   | 45.0   |  | 70  |  |  |
| 11           | Ilam  | 52.0  |   | .  | 200   | 38.3  | 1 [7  | 47.3  | 100  | 7:7  |  |   |  |  |
| 0            | yam   | 56.1  | 1 10  | 67.4   | 707   | 20./  | 610   | 0.16  | 46.0   | 2.2  |  |   |  |  |
| Noise        |       |   |   |  | (dp)  |   |   | ,1  |  |  | TNNT   | Lea)  | ,,   |  |
| sample       |       | Leq   | Imax  | Lillan   | ı.u.  | - Cullini   | 1 50  | 007   | 1.90   |  | 26:2010/B  | nal area -  |  |  |
| Ivalile 0    | -     |   |   | FX 10-   | -01 V   | K12.6   |   |   |  |  | OCVN   | (Norm   |  |  |
|              |       | Noise 9am 11am 13pm 15pm 17pm 19pm 21pm 23pm 01am 03am 05cm | Noise         9am         11am         13pm         17pm         19pm         21pm         23pm         01am         03am         05am           56.1         52.0         51.2         56.3         56.6         56.7         47.3         49.8         47.4         46.8         57.6 | Noise         9am         11am         13pm         15pm         17pm         19pm         21pm         23pm         01am         03am         05am           56.1         52.0         51.2         56.3         56.6         56.7         47.3         49.8         47.4         46.5         52.6 | Leg         9am         11am         13pm         15pm         17pm         19pm         21pm         23pm         01am         03am         05am           Lmax         87.4         72.1         68.9         79.0         77.6         72.4         70.7         78.9         67.9         69.7         71.8 | Leq         56.1         52.0         51.2         56.3         56.6         56.7         47.3         49.8         47.4         46.5         52.6           Lmax         1 min         100.7 | Leq         9am         11am         13pm         17pm         19pm         21pm         23pm         01am         03am         05am           Leq         56.1         52.0         51.2         56.3         56.6         56.7         47.3         49.8         47.4         46.5         52.6           Lmax         87.4         72.1         68.9         79.0         77.6         72.4         70.7         78.9         67.9         69.7         71.8           Lmin         (dB)         38.5         37.6         45.5         41.4         43.4         37.2         39.9         39.9         40.5         45.0 | Leq         56.1         52.0         51.2         56.3         56.6         56.7         47.3         49.8         47.4         46.5         52.6           Lmax         (dB)         38.7         38.5         37.6         45.5         41.4         43.4         37.2         39.9         40.5         45.0         45.6         43.4         37.2         39.9         40.5         45.0         45.0         45.6         45. | Leq         9am         11am         13pm         17pm         19pm         21pm         23pm         01am         03am         05am           Leq         56.1         52.0         51.2         56.3         56.6         56.7         47.3         49.8         47.4         46.5         52.6           Lmax         87.4         72.1         68.9         79.0         77.6         72.4         70.7         78.9         67.9         69.7         71.8           Lmin         4B)         38.5         37.6         45.5         41.4         43.4         37.2         39.9         40.5         45.0           L50         51.0         47.5         50.9         55.3         51.1         56.2         43.3         46.5         41.5         45.8         52.4 | Leq         9am         11am         13pm         17pm         19pm         21pm         23pm         01am         03am         05am           Leq         56.1         52.0         51.2         56.3         56.6         56.7         47.3         49.8         47.4         46.5         52.6           Lmax         87.4         72.1         68.9         79.0         77.6         72.4         70.7         78.9         67.9         69.7         71.8           Lmin         4B)         38.7         38.5         37.6         45.5         41.4         43.4         37.2         39.9         40.5         45.0           L50         51.0         47.5         50.9         55.3         51.1         56.2         43.3         46.5         41.5         45.8         52.4           150         46.0         47.5         47.0         47.5         46.5         41.5         45.8         52.4         52.4 | Leq         9am         11am         13pm         17pm         19pm         21pm         23pm         01am         03am         05am           Leq         56.1         52.0         51.2         56.3         56.6         56.7         47.3         49.8         47.4         46.5         52.6           Lmax         87.4         72.1         68.9         79.0         77.6         72.4         70.7         78.9         67.9         69.7         71.8           Lmin         (dB)         38.5         37.6         45.5         41.4         43.4         37.2         39.9         40.5         45.0           L50         51.0         47.5         50.9         55.3         51.1         56.2         43.3         46.5         41.5         45.8         52.4           L90         46.0         42.2         43.0         47.6         46.2         50.2         40.5         41.7         40.8         41.1         40.7 | Leq         9am         11am         13pm         17pm         19pm         21pm         23pm         01am         03am         05am           Lmax         56.1         52.0         51.2         56.3         56.6         56.7         47.3         49.8         47.4         46.5         52.6           Lmax         87.4         72.1         68.9         79.0         77.6         72.4         70.7         78.9         67.9         69.7         71.8           Lmin         (dB)         38.7         38.5         37.6         45.5         41.4         43.4         37.2         39.9         40.5         45.0           L50         51.0         47.5         50.9         55.3         51.1         56.2         43.3         46.5         41.5         45.8         52.4           L90         46.0         42.2         43.0         47.6         46.2         50.2         40.5         41.7         40.8         44.1         48.2         45.2 | Leq         9am         11am         13pm         17pm         19pm         21pm         23pm         01am         03am         05am           Leq         56.1         52.0         51.2         56.3         56.6         56.7         47.3         49.8         47.4         46.5         52.6           Lmax         87.4         72.1         68.9         79.0         77.6         72.4         70.7         78.9         67.9         69.7         71.8           Lmin         4B)         38.7         38.5         37.6         45.5         41.4         43.4         37.2         39.9         40.5         45.0           L50         51.0         47.5         56.2         43.3         46.5         41.5         45.8         52.4           L50         46.0         42.2         43.0         47.6         46.2         50.2         40.5         41.7         40.8         44.1         48.2           Nable of column         46.0         46.2         50.2         40.5         40.5         41.7         40.8         44.1         48.2 | Leq         56.1         52.0         51.2         56.3         56.6         56.7         47.3         49.8         47.4         46.5         52.6           Lmax         (dB)         38.7         72.1         68.9         79.0         77.6         72.4         70.7         78.9         67.9         69.7         71.8           Lmin         (dB)         38.7         38.5         37.6         45.5         41.4         43.4         37.2         39.9         40.5         45.0           L50         46.0         47.5         50.9         55.3         51.1         56.2         43.3         46.5         41.7         48.2         52.4         21.8           L50         46.0         47.6         46.2         50.2         40.5         41.7         40.8         44.1         48.2         70           M 26:2010/BTNMT         46.0         47.6         46.2         50.2         40.5         40.5         44.1         48.2         70 |

Note: QCVN 26:2010/BTNMT - National Technical Regulation on Noise



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Address: No.18 Hoang Quoc Viet – Cau Giay – Ha Noi Tel: 043 7569 136; 043 7911 654 \* Fax: 043 7911 203

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Tel: (84-4) 37711668 - 22209668; Fax: (84-4) 22209666

### + Results of vibration

Measurement position EX 10-K12.6: House of culture in Tan Vu hamlet. Trang Cat ward. Hai An District. Hai Phong City (Package EX-10).

Coordinates: N 20° 48.059 - E 106° 44.839

- General description of the status quo of terrain and geology

Monitoring area is residential area a place where is nearest with the expressway about 500m. Monitoring position located in tarmac at house of culture. Tan Vu hamlet. Trang Cat ward. Hai An District. Hai Phong City.

The height of between the measurement points with the Ha Noi – Hai Phong expressway pavement is negligible.

Geological background at the measurement position and the expressway are soft ground.

- Starting time: 10:30 AM on April 12<sup>th</sup>. 2012; Ending time: 8:30 PM on April 13<sup>th</sup>. 2012.
  - Azimuth of the axes X. Y

X-axis set follow the North - South direction.

Y-axis set follow the East - West direction.

To set measurement range for equipment is 30 - 90 dB.

From  $L_{\text{max}}$  and Leq values showed that: Most of testing time. vibration acceleration is lower than 60dB. However, appearance of measurement values are higher than 60dB in each measurement range but still lower than 75dB.

The values of  $L_{10}$ .  $L_{50}$ .  $L_{90}$  have decreasing rule that the larger values only occurring in short time of the each measurement range.

Results of table 38 showed that all vibration values are within allowable limit according to QCVN 27:2008/BTNMT (75dB).

Average Lva value in the range from 35.2 to 56.3dB.

The value of  $Lva_{max}$  is 83.3 dB which is highest at the time from 9:00 to 9:30 AM on July  $12^{th}$ . 2012.

The value of Lva<sub>min</sub> is 30.4 dB which is lowest at the time from 23:00 to 23:30 PM on July  $13^{th}$ . 2012.





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Tel: (84-4) 37711668 – 22209668; Fax: (84-4) 22209666

### TABLE 33. THE SIXTH RESULTS OF VIBRATION SAMPLE OF THE PACKAGE EX10 (JULY 2012)

| Time          | е    |      | From 9:00 am to 9:30 am on July 12 <sup>th</sup> , 2012 |      |         |      |      |      |              |  |  |  |
|---------------|------|------|---|------|---------|------|------|------|--------------|--|--|--|
| Parameter     | Unit |      | Vibrati   |      | el (Lv) | T    |      |      | ration (Lva) |  |  |  |
|               |      | Z    | Y   | X    | Average | Z    | Y    | X    | Average      |  |  |  |
| $L_{eq}$      |      | 33.5 | 32.5  | 33.6 | 33.6    | 56.3 | 55.8 | 48.4 | 56.3         |  |  |  |
| $L_{\sf max}$ |      | 54.9 | 41  | 43.8 | 54.9    | 81.7 | 83.3 | 72.8 | 83.3         |  |  |  |
| Lmin          | dB   | 20.8 | 21.4  | 24.7 | 24.7    | 36.3 | 34.8 | 32.4 | 36.3         |  |  |  |
| $L_{10}$      |      | 33.2 | 35.1  | 36.4 | 36.4    | 56.7 | 54   | 50.1 | 56.7         |  |  |  |
| $L_{50}$      |      | 28.1 | 31.7  | 32.7 | 32.7    | 44.2 | 42.8 | 39.9 | 44.2         |  |  |  |
| $L_{90}$      |      | 25.4 | 28.3  | 29.1 | 29.1    | 39.5 | 38.2 | 35.7 | 39.5         |  |  |  |

| Tim              | e    |      | From 11:00 am to 11:30 am on July 12 <sup>th</sup> . 2012 |      |         |             |      |      |              |  |  |  |
|------------------|------|------|---|------|---------|-------------|------|------|--------------|--|--|--|
| Parameter        | Unit |      |   |      | el (Lv) | <del></del> |      |      | ration (Lva) |  |  |  |
|                  |      | Z    | Y   | X    | Average | Z           | Y    | X    | Average      |  |  |  |
| Leq              |      | 29.1 | 33.4  | 34.9 | 34.9    | 49.7        | 48   | 46   | 49.7         |  |  |  |
| L <sub>max</sub> | dB   | 49.2 | 41.6  | 42.6 | 49.2    | 75.5        | 72.9 | 69.8 | 75.5         |  |  |  |
| $L_{min}$        |      | 22.4 | 21.7  | 24.9 | 24.9    | 32.2        | 30.4 | 30.2 | 32.2         |  |  |  |
| L <sub>10</sub>  | u.D  | 30.7 | 36.1  | 37.7 | 37.7    | 47.7        | 46.7 | 45.6 | 47.7         |  |  |  |
| $L_{50}$         |      | 27.6 | 32.5  | 34   | 34      | 40.4        | 38.7 | 38.6 | 40.4         |  |  |  |
| L <sub>90</sub>  |      | 25.5 | 29  | 30.4 | 30.4    | 36          | 34.5 | 34.6 | 36           |  |  |  |

| Tim              | е    |      | From 13:00 pm to 13:30 pm on July 12 <sup>th</sup> . 2012 |      |         |      |       |      |              |  |  |  |
|------------------|------|------|---|------|---------|------|-------|------|--------------|--|--|--|
| Parameter        | Unit |      |   |      | el (Lv) | _    | ····· |      | ration (Lva) |  |  |  |
|                  |      | Z    | Y   | X    | Average | Z    | Y     | X    | Average      |  |  |  |
| $L_{\rm eq}$     |      | 28.2 | 34.7  | 36.8 | 36.8    | 39.8 | 36.6  | 37.3 | 39.8         |  |  |  |
| L <sub>max</sub> |      | 36.3 | 44.3  | 45.1 | 45.1    | 49.3 | 44.4  | 45.6 | 49.3         |  |  |  |
| L <sub>min</sub> | dB   | 21.2 | 23  | 27.1 | 27.1    | 35.3 | 31.8  | 30.5 | 35.3         |  |  |  |
| L <sub>10</sub>  | d.D  | 30.2 | 37.4  | 39.6 | 39.6    | 41.9 | 38.6  | 39.8 | 41.9         |  |  |  |
| $L_{50}$         |      | 27.6 | 33.6  | 35.9 | 35.9    | 38.8 | 35.9  | 36.2 | 38.8         |  |  |  |
| L <sub>90</sub>  |      | 25.5 | 30.1  | 32.4 | 32.4    | 37   | 33.9  | 33.8 | 37           |  |  |  |

| Time            | Time  |      | From 15:00 pm to 15:30 pm on July 12 <sup>th</sup> . 2012 |      |         |      |      |      |              |  |  |  |
|-----------------|-------|------|---|------|---------|------|------|------|--------------|--|--|--|
| Parameter       | Unit  |      |   |      | el (Lv) | 7    |      |      | ration (Lva) |  |  |  |
| - aramotor      | Oille | Z    | Y   | X    | Average | Z    | Y    | Х    | Average      |  |  |  |
| Leq             |       | 28   | 33.4  | 35.2 | 35.2    | 43.5 | 41.5 | 40.6 | 43.5         |  |  |  |
| $L_{max}$       |       | 36.7 | 43.9  | 44.1 | 44.1    | 55.8 | 52.6 | 51.3 | 55.8         |  |  |  |
| Lmin            | dB    | 22.7 | 23.4  | 25.8 | 25.8    | 40.2 | 38.5 | 36.3 | 40.2         |  |  |  |
| $L_{10}$        | u.D   | 29.8 | 36.1  | 37.9 | 37.9    | 44.8 | 42.6 | 42.2 | 44.8         |  |  |  |
| L <sub>50</sub> |       | 27.4 | 32.5  | 34.2 | 34.2    | 43   | 41.3 | 40.2 | 43           |  |  |  |
| L <sub>90</sub> |       | 25.4 | 28.8  | 30.5 | 30.5    | 41.6 | 39.8 | 38.1 | 41.6         |  |  |  |

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Address: No.18 Hoang Quoc Viet – Cau Giay – Ha Noi Tel: 043 7569 136; 043 7911 654 \* Fax: 043 7911 203



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Me Tri commune. Tu Liem. Hanoi

Tel: (84-4) 37711668 – 22209668; Fax: (84-4) 22209666

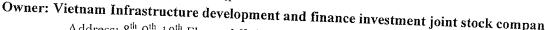
| Time            | 9       |      | From 17:00 pm to 17:30 pm on July 12 <sup>th</sup> . 2012 |         |         |      |           |          |             |  |  |  |
|-----------------|---------|------|---|---------|---------|------|-----------|----------|-------------|--|--|--|
| D               | T T : 4 |      | Vibrat  | ion Lev | el (Lv) | Vil  | oration A | Accelera | ation (Lva) |  |  |  |
| Parameter       | Unit    | Z    | Y   | Х       | Average | Z    | Y         | X        | Average     |  |  |  |
| $L_{eq}$        |         | 28.5 | 32.9  | 35.2    | 35.2    | 39   | 37.7      | 38.5     | 39          |  |  |  |
| $L_{max}$       |         | 42.3 | 42.6  | 43.7    | 43.7    | 52.4 | 58.9      | 56.8     | 58.9        |  |  |  |
| $L_{min}$       | 150     | 21.9 | 22.6  | 23.7    | 23.7    | 33.4 | 31.4      | 31.9     | 33.4        |  |  |  |
| L <sub>10</sub> | dB      | 29.8 | 35.5  | 37.9    | 37.9    | 40.5 | 38.4      | 40.1     | 40.5        |  |  |  |
| L <sub>50</sub> |         | 27.2 | 32.1  | 34.6    | 34.6    | 37.9 | 35.2      | 36.7     | 37.9        |  |  |  |
| L <sub>90</sub> |         | 25.2 | 28.5  | 30.9    | 30.9    | 36.1 | 33.3      | 34.3     | 36.1        |  |  |  |

| Time             | 9    |      | From 19:00 pm to 19:30 pm on July 12 <sup>th</sup> . 2012 |        |         |      |         |         |             |  |  |  |
|------------------|------|------|---|--------|---------|------|---------|---------|-------------|--|--|--|
| Damarastan       | Unit |      | Vibrati   | on Lev | el (Lv) | Vil  | oration | Acceler | ation (Lva) |  |  |  |
| Parameter        | Omi  | Z    | Y   | X      | Average | Z    | Y       | X       | Average     |  |  |  |
| $L_{eq}$         |      | 27.9 | 33  | 36.1   | 36.1    | 45.5 | 44.5    | 42.80   | 45.5        |  |  |  |
| L <sub>max</sub> |      | 66   | 66.3  | 67.5   | 67.5    | 63.4 | 60.8    | 59.2    | 63.4        |  |  |  |
| $L_{min}$        | dB   | 21.7 | 21.1  | 24.7   | 24.7    | 33.1 | 30.8    | 30.4    | 33.1        |  |  |  |
| L <sub>10</sub>  | uБ   | 29.1 | 35  | 37.5   | 37.5    | 47.8 | 46      | 49.9    | 49.9        |  |  |  |
| L <sub>50</sub>  |      | 26.6 | 31.4  | 33.4   | 33.4    | 38.7 | 37.1    | 36.6    | 38.7        |  |  |  |
| L <sub>90</sub>  |      | 24.7 | 28.2  | 29.7   | 29.7    | 36   | 34.1    | 33.5    | 36          |  |  |  |

| Time             | e    |      | From 21:00 pm to 21:30 pm on July 12 <sup>th</sup> . 2012 |         |         |      |          |         |             |  |  |  |
|------------------|------|------|---|---------|---------|------|----------|---------|-------------|--|--|--|
| Donomoston       | Unit |      | Vibrati   | on Leve | el (Lv) | Vil  | oration. | Acceler | ation (Lva) |  |  |  |
| Parameter        | Omi  | Z    | Y   | X       | Average | Z    | Y        | X       | Average     |  |  |  |
| $L_{\sf eq}$     |      | 26.3 | 32.1  | 34.8    | 34.8    | 35.2 | 33       | 34.8    | 35.2        |  |  |  |
| L <sub>max</sub> |      | 36.1 | 40  | 43.2    | 43.2    | 48.1 | 42.1     | 48.1    | 48.1        |  |  |  |
| L <sub>min</sub> | ī.D  | 20.2 | 20.4  | 25.5    | 25.5    | 30.5 | 27.5     | 27.9    | 30.5        |  |  |  |
| L <sub>10</sub>  | dB   | 28.2 | 34.8  | 37.7    | 37.7    | 37.1 | 35.2     | 37.2    | 37.2        |  |  |  |
| L <sub>50</sub>  |      | 25.9 | 31.3  | 33.8    | 33.8    | 34.6 | 32.1     | 33.9    | 34.6        |  |  |  |
| L <sub>90</sub>  |      | 23.8 | 27.7  | 30.3    | 30.3    | 32.9 | 30.1     | 31      | 32.9        |  |  |  |

| Time         | 9    |      | I       | rom 23  | :00 pm to 23:3 | 30 pm o | n July 1 | 13 <sup>th</sup> . 201 | 12          |
|--------------|------|------|---------|---------|----------------|---------|----------|------------------------|-------------|
| Donomoton    | Unit |      | Vibrati | on Leve | l (Lv)         | Vil     | oration  | Acceler                | ation (Lva) |
| Parameter    | Omi  | Z    | Y       | X       | Average        | Z       | Y        | X                      | Average     |
| $L_{\sf eq}$ |      | 27.1 | 31.4    | 34.8    | 34.8           | 40.5    | 35.5     | 36                     | 40.5        |
| $L_{max}$    |      | 40.2 | 39.5    | 41.7    | 41.7           | 63.6    | 55.9     | 53.2                   | 63.6        |
| $L_{min}$    | dB   | 21.5 | 21.9    | 23.80   | 23.8           | 30.4    | 28.2     | 27.7                   | 30.4        |
| $L_{10}$     | dБ   | 28.6 | 34.1    | 37.2    | 37.2           | 39.4    | 35.8     | 37.7                   | 39.4        |
| $L_{50}$     |      | 26.1 | 30.7    | 33.8    | 33.8           | 35      | 32.2     | 38.9                   | 38.9        |
| $L_{90}$     |      | 24.2 | 27.3    | 30.3    | 30.3           | 32.9    | 30       | 30.9                   | 32.9        |





Owner: Vietnam Infrastructure development and finance investment joint stock company

Address: 8<sup>th</sup>-9<sup>th</sup>-10<sup>th</sup> Floors. LILAMA 10 Building. Le Van Luong street.

Me Tri commune. Tu Liem. Hanoi

Tel: (84-4) 37711668 – 22209668; Fax: (84-4) 22209666

| Time             | <del>2</del> |      |        | From    | 1:00 am to 1:3 | 0 am or | 1 July 1 | 3 <sup>th</sup> 201 | <u> </u>                               |
|------------------|--------------|------|--------|---------|----------------|---------|----------|---------------------|--|
| Parameter        | Unit         |      | Vibrat | ion Lev | el (Lv)        |         |          |                     | ration (Lva)                           |
| т                |              | Z    | Y      | X       | Average        | Z       | Y        | X                   | Average                                |
| L <sub>eq</sub>  |              | 27.1 | 33.5   | 36.9    | 36.9           | 43.4    | 40.4     | 42.3                | 43.4                                   |
| L <sub>max</sub> |              | 75.4 | 72.9   | 74      | 75.4           | 61.6    | 69.5     | 63.8                | 69.5                                   |
| L <sub>min</sub> | dB           | 21.6 | 21.6   | 22.8    | 22.8           | 34.9    | 31.2     | 32.7                | 32.7                                   |
| $L_{10}$         |              | 28.4 | 34.7   | 26      | 34.7           | 44.2    | 40       | 44.1                | ······································ |
| $L_{50}$         |              | 20.1 | 30.8   | 32.2    | 32.2           | 40.4    | 35       | 37.6                | 44.2                                   |
| L <sub>90</sub>  |              | 24.1 | 27.2   | 28.7    | 28.7           | 37.1    | 32.9     | 35                  | <u>40.4</u><br>37.1                    |

| Time             | 2    |      |        | From 3  | 3:00 am to 3:3 | 0 am or | Inly 1 | 2th 201 | ^            |
|------------------|------|------|--------|---------|----------------|---------|--------|---------|--------------|
| Parameter        | Unit |      | Vibrat | ion Lev | el (Lv)        |         |        |         | ration (Lva) |
| т                |      | Z    | Y      | X       | Average        | Z       | Y      | X       | Average      |
| Leq              |      | 26.2 | 31.8   | 33.1    | 33.1           | 45.5    | 43.7   | 41.6    | 45.5         |
| L <sub>max</sub> |      | 33.4 | 39.9   | 41.3    | 41.3           | 71.4    | 68.1   | 63.1    | 71.4         |
| L <sub>min</sub> | dB   | 19.7 | 22.1   | 24.2    | 24.2           | 36.5    | 36.5   | 35.9    | 36.5         |
| $L_{10}$         |      | 28.8 | 34.2   | 35.9    | 35.9           | 42.6    | 42.3   | 42      | 42.6         |
| L <sub>50</sub>  |      | 25.6 | 30.9   | 32.1    | 32.1           | 39.1    | 38.9   | 38.8    | 39.1         |
| L <sub>90</sub>  |      | 23.4 | 27.6   | 28.5    | 28.5           | 37.8    | 37.7   | 37.2    | 37.8         |

| Time              | 9    |      |        | From:   | 5:00 am to 5:3 | 0 am or | Tuls: 1 | 2th 201 | 2            |
|-------------------|------|------|--------|---------|----------------|---------|---------|---------|--------------|
| Parameter         | Unit |      | Vibrat | ion Lev | el (Lv)        |         |         |         | ration (Lva) |
| T                 |      | Z    | Y      | X       | Average        | Z       | Y       | X       | Average      |
| Leg               |      | 27   | 31.4   | 34.3    | 34.3           | 40.9    | 37.3    | 38.7    | 40.9         |
| L <sub>max</sub>  |      | 36.6 | 38.3   | 41.9    | 41.9           | 58.9    | 55.5    | 59.4    | 59.4         |
| L <sub>min</sub>  | dB   | 20.7 | 21.2   | 22.9    | 22.9           | 32.7    | 30.1    | 30.6    | 32.7         |
| - L <sub>10</sub> |      | 29.4 | 34.1   | 37      | 37             | 42.3    | 38.5    | 39.8    | 42.3         |
| L <sub>50</sub>   |      | 26.1 | 30.6   | 33.4    | 33.4           | 37.5    | 34.9    | 35.6    | 37.5         |
| L <sub>90</sub>   |      | 23.8 | 27.3   | 29.8    | 29.8           | 35.1    | 32.8    | 33      | 35.1         |

| Time            | e    |      |        | From    | 7:00 am to 7:3 | 0 am or | n July 1 | 3 <sup>th</sup> 201 | 2            |
|-----------------|------|------|--------|---------|----------------|---------|----------|---------------------|--------------|
| Parameter       | Unit | ļ    | Vibrat | ion Lev | el (Lv)        |         |          |                     | ration (Lva) |
|                 |      | Z    | Y      | X       | Average        | Z       | Y        | X                   | Average      |
| $L_{eq}$        |      | 29.4 | 31.6   | 32.9    | 32.9           | 47.1    | 42.1     | 42.9                | 47.1         |
| $L_{max}$       |      | 44.7 | 39.8   | 41.2    | 44.7           | 64.4    | 61.7     | 58.2                | 64.4         |
| $L_{\min}$      | dB   | 22.1 | 23.4   | 21.8    | 23.4           | 35.3    | 31       | 31.6                | 35.3         |
| $L_{10}$        |      | 31.2 | 34.2   | 35.7    | 35.7           | 49.6    | 44.3     | 45.5                | 49.6         |
| L <sub>50</sub> |      | 27.7 | 30.9   | 31.9    | 31.9           | 42.1    | 37.2     | 38.7                | 42.1         |
| L <sub>90</sub> |      | 25   | 27.8   | 28.3    | 28.3           | 38.6    | 34       | 35.7                | 38.6         |

Consultancy: Institute of Environmental Technology

Address: No.18 Hoang Quoc Viet – Cau Giay – Ha Noi Tel: 043 7569 136; 043 7911 654 \* Fax: 043 7911 203



Address: 8<sup>th</sup>-9<sup>th</sup>-10<sup>th</sup> Floors. LILAMA 10 Building. Le Van Luong street.

Me Tri commune. Tu Liem. Hanoi

Tel: (84-4) 37711668 - 22209668; Fax: (84-4) 22209666

### Allowable maximum value of the vibration acceleration level for construction activities

| No. | Location         | Testing time per day | Allowable vibration acceleration level. dB  Average level. Leq |
|-----|------------------|----------------------|--|
|     |                  | 6:00 AM - 6:00 PM    | 75   |
| 1   | Special location | 6:00 PM – 6:00 AM    | Background level   |
|     |                  | 6:00 AM – 9:00 PM    | 75   |
| 2   | Normal location  | 9:00 PM - 6:00 AM    | Background level   |

### + Results of surface water sample:

Surface water sample (coded NM 5.6) was monitored and sampled at Lach Tray river – Hai Phong City. Coordinates of sampling location: N 20° 57.730 - E 105° 57. 265. Sample was taken 3 times at the times. a sample per 8 hours in 24 hours with 01 blank sample. pH and DO parameters are tested on location. The samples were refrigerated and fixed after sampling and transported to the laboratory in the shortest time. NM 5.6.1: sampling at 3:00 PM on July 12<sup>th</sup>. 2012; NM 5.6.2: sampling at 23:00 PM on July 12<sup>th</sup>. 2012; NM 5.6.3: sampling at 7:00 AM on July 13<sup>th</sup>. 2012. During the sampling process. appearance of boats in navigation on the Lach Tray river. Results of sample analysis are shown in table 34 as below.

The result table showed that oil & grease parameters are 0.11; 0.11; and 0.11 mg/L higher than ones in the column B1 (0.1 mg/L. lower than the limit value is 0.3 mg/L in column B2 of National technical regulation on surface water quality (QCVN 08:2008/BTNMT). COD and BOD<sub>5</sub> parameters of all 03 samples are lower than both B1 and B2 column at the different times according to QCVN 08:2008/BTNMT. All parameter of TSS (Total suspended solids). total phosphorus and total nitrogen are lower than QCVN 08:2008/BTNMT. The values of DO (Dissolved Oxygen) are lower than ones in the column B1 ( $\geq$  4mg/L) (QCVN 08:2008/BTNMT).

As for pesticides of organic chlorine group have quantitative limit of analysis method is 0.05  $\mu$ g/L (the most of environmental laboratories only determine this quantitative limit). However, according to National technical regulation on surface water quality (QCVN 08:2008/BTNMT), comparative value about 0.004 – 0.01  $\mu$ g/L (Aldrin - Dieldrin); 0.014 – 0.01  $\mu$ g/L (Endrin) etc.

On the other hand, comparison of National technical regulation on surface



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Tel: (84-4) 37711668 – 22209668; Fax: (84-4) 22209666

water quality (QCVN 08:2008) and Surface water quality standard (TCVN 5942:1995). DDT is 0.01 mg/L corresponding to 10  $\mu$ g/L in Viet Nam standard. Vietnam standard (TCVN) by Ministry of science and technology promulgate while Vietnam regulation by Ministry of natural resources and environment promulgate that regulation for parameters of surface water but different to 2500 times.



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Address: 8<sup>th</sup>-9<sup>th</sup>-10<sup>th</sup> Floors. LILAMA 10 Building. Le Van Luong street.

## TABLE 34. THE SIXTH RESULTS OF SURFACE WATER OF THE PACKAGE EX10 (JULY 2012)

| Thit     |
|----------|
| NM 5.6.1 |
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84

Consultancy: Institute of Environmental Technology

Address: No.18 Hoang Quoc Viet – Cau Giay – Ha Noi Tel: 043 7569 136; 043 7911 654 \* Fax: 043 7911 203



Address: 4th-5th Floors, VIT tower, 519 Kim Ma Str., Ba Dinh, Hanoi Tel: (84-4) 37711668 – 22209668; Fax: (84-4) 22209666

Note: QCVN 08:2008/BTNMT - National technical regulation on surface water quality B1-For the usage of irrigation or other purpose having the similar quality requirement like B2 level

B2 For the usage of water navigation and other purpose with less water quality MT: Blank sample.

### IV. MEASURES TO REDUCE AND RESOLVE THE NEGATIVE IMPACTS ON ENVIRONMENT.

### 4.1. Mitigation and treatment of negative environmental impacts are applied

As mentioned in the sources of waste, the project's the most negative impacts in this stage are those impacts to the environment of air. noise. So the company made a number of solutions following:

- For air environment:

Cleaning of material transporting vehicles before leaving the site.

Vehicles must be covered with tarpaulins. the powder material should be packed and transportation must meet the standard of toxic gas emissions.

Arranging a reasonable schedule for the truck coming in and out of the site to avoid driving vehicles into the field with no way out or the trucks on the road making the line -up that will increase the total amount of dust. emissions per unit of length as well as distance per unit of time. thus contributing to reduce the unfortunate incidents occurring during transportation. such as reducing visibility of vehicles. traffic. traffic jam . traffic accidents. ...

For warehouse: all types of sand, small particles of materials for concrete production is concentrated in the warehouse or covered carefully.

Water spraying to control dust: Regularly spraying water to the dump heaps of material or materials stockpiles. especially in dry or windy weather.

Batching plants: located far from residential areas; mixed materials from the plant transferred to the vehicle should have been sealed top at three sides and covered curtain over the entrance. For materials those can be easy to cause dust. packaging should not exceed 2 sides overflow into the car and blocked the car door. in addition to using clean canvas to cover. Periodically wash and flush batching plants.

- Control noise pollution:

Rationally arrange construction schedule. restrict the continuous construction at night

Transport time of construction materials should be arranged appropriately especially when passing through the area of villages. schools. churches... must reduce speed and definitely avoid blowing horns

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Address:  $4^{th}$ - $5^{th}$  Floors, VIT tower, 519 Kim Ma Str., Ba Dinh, Hanoi Tel: (84-4) 37711668 – 22209668; Fax: (84-4) 22209666

For equipments with big noise should be arranged with revolving construction to avoid the phenomenon of resonance noise.

For workers who have suffered from noise were equipped more protective equipment such as ear protection. helmet. ... to protect health

Material stockpiles. batching plants should be far from area of schools. resident. administrative and professional units. ...

- Protect water environment:

Coordinate with local authorities and local people to implement the ditch rehabilitation

- Handle living waste and construction waste:

Based on the guidance of Ordinance No. 59/2007/ND-CP dated 09/04/2008 signed on "solid waste". not allowed to pour the waste into the street. rivers. streams. water channels and surface water.

Make the most use of waste to reduce the amount of waste to be handled. do not dump garbage indiscriminately

Contracts with Public Works and Tourism Services Company for waste collection and treatment in time.

### 4. 2. Control other effects on the environment

- Protect fields and gardens
- Arrange the reasonable construction site. carefully make layout areas of batching plants. material stockpiles. living and working areas.

Protect daily lives of local people by:

Building service road during construction to facilitate traveling.

All trucks carrying materials not exceeding specified load Bureau of Vietnam's roads. speed should not exceed 60km/h.

Setting the speed limit signs. weight restrictions. aimed at minimizing the damage to the existing road network

Putting sign boards at restricted areas for people traveling or not being traveled through the construction site under construction.

### V. CONCLUSION AND RECOMMENDATION

Results of soil. groundwater. surface water. noise. vibration and air environmental quality monitoring shows that air and water environmental quality are rather good. There is favorable condition for implementing of the Ha Noi – Hai Phong expressway project.

However. parameters of total oil & grease. coliform. COD are equal as allowable





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limit of regulation.

Analysis results of dust at EX3 package by General construction company China road at the site monitoring Ly Thuong Kiet commune, Yen My District, Hung Yen province exceeded 1.6 standard allows times. Recommend contractor should strengthen the implementation of fresh water and measures to minimize dust. Analysis results of dust at pack EX 8 (Quan Re, My Duc, An Lao District, Hay Phong City) by Son Dong road and bridge Co.. Ltd. Observation time daytime dust concentrations exceed the permitted standards. Contractor should strengthen measures to minimize dust during construction to minimize dust.

According to the results of environmental monitoring, the contractors need to implement and maintain measures to reduce environmental pollution in order to ensure project in next time. Vietnam Infrastructure development and finance investment joint stock company undertook to implemented well about measures of environmental pollution reduction that proposed in the content of Environmental monitoring report.



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### **APPENDIX**



### VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY INSTITUTE OF ENVIRONMENTAL TECHNOLOGY DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

Address: R.712, A30 Building 18 Hoang Quoc Viet Road -Cau Giay District - Hanoi -Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

### ANALYTICAL RESULT

Client

No: W1207.183 : Vietnam Infrastructure Development and Finance Investment Joint Stock

Company (VIDIFI., JSC)

Address

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street

Me Tri commune, Tu Liem, Ha Noi

Kind of sample

: Ground water (Contract: 74/VDIFI-VCNMT/2010)

Number of sample

: 02

VILAS 366

Preservation

: 01 PE Bottle 0,5L refrigerate.

01 PE Bottle 0,5L, preserved HNO<sub>3</sub> refrigerate. 01 PE Bottle 0,5L, preserved H<sub>2</sub>SO<sub>4</sub> refrigerate.

01 glass Bottle 1,0 L

Sampling place

: Nguyen Van Than, Dau Cau Hamlet ,Nguyen Village ,Cuu Cao Commune, Van Giang District, Hung Yen Province(Package EX2-

NN2.6)

Co-ordinate

: N 20° 57,730- E 105° 57, 265

Sampling time

: July 3<sup>rd</sup>, 2012

Testing time

: From July 05th to July 16th 2012

| No  | Parameter        | Unit      | Test methods             | Res    | ults   | QCVN              |
|-----|------------------|-----------|--------------------------|--------|--------|-------------------|
| 110 | 1 at affected    | Cint      | 1 est methods            | NN 2.6 | MT     | 09:2008/<br>BTNMT |
| 1.  | Temperature      | °C        | TCVN 4457-1988           | 27.8   | 27.0   | -                 |
| 2.  | pН               | -         | TCVN 6492 – 1999         | 7.71   | 7.10   | 5.5 – 8.5         |
| 3.  | COD              | $mgO_2/L$ | KMnO <sub>4</sub> Method | 2.2    | < 1.0  | 4                 |
| 4.  | BOD <sub>5</sub> | mg/L      | TCVN 6001 – 2008         | <1.0   | < 1.0  | <del>-</del>      |
| 5.  | TSS              | mg/L      | SMEWW 2540D – 2005       | 5      | < 3.0  | -                 |
| 6.  | Total P          | mg/L      | TCVN 6202 – 2008         | 0.07   | < 0.01 | -                 |
| 7   | Total N          | mg/L      | TCVN 5987-1995           | 4.5    | < 0.10 | <del></del>       |
| 8.  | Coliform         | MPN/      | TCVN 6187 – 1 –1996      | 5      | ND     | 3                 |
| 9.  | E. Coli          | 100mL     | 1CVN 0167 - 1 -1990      | ND     | ND     | ND                |

Note: QCVN 09:2008/BTNMT: National technical regulation on underground water quality.

ND: Non detect

Hanoi. July 16th. 2012

Department of Environmental Quality Analysis

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Deputy Director

CÔNG NGHỆ MÔI TRƯỜNG

Dr. Nguyen Thi Hue

1. Test results are valid for test samples

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Version: 1.03

Page: 1/1

<sup>2.</sup> Only quoted a part of test report if receiving the agreement by terms of DEQA

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<sup>4.</sup> Name of sample, customers written by customers' request

Page: 1/2

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PARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

Address: R.712, A30 Building 18 Hoang Quoc Viet Road -Cau Giay District - Hanoi - Vietnam Tel: (84 - 4) 3791 1654

Fax: (84 - 4) 3791 1203

## ANALYTICAL RESULT

No: W1207.186-188

: Vietnam Infrastructure Development and Finance Investment Joint Stock Company (VIDIFI., JSC)

: 8th.-9th.-10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi

: Surface water (Contract : 74/VDIFI-VCNMT/2010) Kind of sample

Number of sample

VILAS 366

Client

Address

: 01 PE Bottle 0,5L refrigerate. Preservation

01 PE Bottle 0,5L, preserved HNO3 refrigerate.

01 PE Bottle 0,5L, preserved H<sub>2</sub>SO<sub>4</sub> refrigerate

01 glass Bottle 1,0 L

: Bac Hung Hai River, Cuu Cao Commune, Van Giang District, Hung Yen Province (Package EX2) Sampling place

: N 20° 57'730"- E 105° 57' 265" Co-ordinate

: From July 3rd to July 4th 2012 Sampling time

: From July 5th to July 16th 2012 Testing time

| 2   | Doromotor  | Imit                | Took models              |          | Res      | Results  |        | 20        | QCVN      |
|-----|------------|---------------------|--------------------------|----------|----------|----------|--------|-----------|-----------|
| 2   |            | OIIII               | I est memous             | NM 1.6.1 | NM 1.6.2 | NM 1.6.3 | MT     | Column B1 | Column B2 |
|     | hH         | г                   | TCVN 6492 – 1999         | 7.63     | 7.71     | 7.33     | 7.1    | 5.5-9     | 5.5 -9    |
| 2.  | DO         | mg/L                | TCVN 7325 – 2004         | 4.65     | 3.90     | 2.70     | 7.0    | ¥I        | 77        |
|     | COD        | mgO <sub>2</sub> /L | KMnO <sub>4</sub> Method | 12.8     | 8.8      | 15.2     | < 1.0  | 30        | 20        |
| 4.  | $BOD_5$    | mg/L                | TCVN 6001 – 2008         | 6.3      | 4.9      | 7.1      | < 1.0  | 15        | . 25      |
|     | TSS        | mg/L                | SMEWW 2540 D – 2005      | 6        | 8        | 8        | <3.0   | 50        | 100       |
|     | Total P    | mg/L                | TCVN 6202 - 2008         | 0.67     | 0.73     | 0.74     | < 0.01 | ì         |           |
|     | Total N    | mg/L                | TCVN 5987-1995           | 11.8     | 12.0     | 12.7     | < 0.10 | 1         |           |
| 8.  | Pesticides |                     |                          | <0.5     | <0.5     | <0.5     | < 0.5  |           |           |
| 9.  | Aldrine+   | l/gn                | TCVN 7876: 2008          | <0.05    | <0.05    | <0.05    | <0.05  | 0.008     | 0.01      |
| 10. | Endrine    |                     |                          | <0.05    | <0.05    | <0.05    | <0.05  | 0.014     | 0.01      |

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4. Name of sample, customers written by customers' request

Version: 1.03

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Cau Giay District – Hanor - Vietnam Tel: (84 - 4) 3791 1654

| 7   | đ           | <b>.</b>   |                     |          | Res      | Results  |        | QCVN      | N         |
|-----|-------------|------------|---------------------|----------|----------|----------|--------|-----------|-----------|
| 0   | Farameter   | Onit       | r est methods       | NM 1.6.1 | NM 1.6.2 | NM 1.6.3 | MT     | Column B1 | Column B2 |
| =   | BHC         |            |                     | < 0.05   | <0.05    | <0.05    | <0.05  | 0.13      | 0.015     |
| 12. | DDT         | •          |                     | <0.05    | <0.05    | <0.05    | < 0.05 | 0.004     | 0.005     |
| 13. | DDD         |            |                     | < 0.05   | < 0.05   | <0.05    | < 0.05 | ı         | ı         |
| 14. | Endosunfane | μg/L       | TCVN 7876: 2008     | < 0.05   | <0.05    | <0.05    | < 0.05 | 0.01      | 0.02      |
| 15. | Lindane     |            |                     | < 0.05   | <0.05    | <0.05    | < 0.05 | 0.38      | 0.4       |
| 16. | Chlordane   |            |                     | < 0.05   | <0.05    | <0.05    | < 0.05 | 0.02      | 0.03      |
| 17. | Heptachlor  |            |                     | < 0.05   | < 0.05   | <0.05    | < 0.05 | 0.02      | 0.05      |
| 18. | Mineral oil | mg/L       | SMEWW 5520 B - 2005 | 0.10     | 0.10     | 0.11     | < 0.05 | 0.1       | 0.3       |
| 19. | Coliform    | MPN/100 mL | TCVN 6187-1:1996    | 2300     | 2100     | 2800     | ND     | 7500      | 10000     |

Note: QCVN 08:2008/BTNMT: National technical regulation on surface water quality

BI-For the usage of irrigation or other purpose having the similar quality requirement like B2 level

B2 – For the usage of water navigation and other purpose with less water quality NM 1.6.1: Sampling at 15:00 pm on July 3<sup>rd</sup>. 2012; M 1.6.2: Sampling at 23:00 pm on July 3<sup>rd</sup>. 2012; NM 1.6.3: Sampling at 7:00 am on July

4th. 2012; MT: Blank sample; ND: non detect

## Department of Environmental Quality Analysis

Vu Van Tu

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Hanoi. July 16th. 2012

Deputy Director

Dr. Nguyen Thi Hue

<sup>1.</sup> Test results are valid for test samples

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VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366 INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Address: R.712. A30 Building 18 Hoang Quoc Viet Road -Cau Giay District - Hanoi - Vietnem Tel: (84 - 4) 3791 1654

### ANALYTICAL RESULT

Fax: (84 - 4) 3791 1203

No: A1207.64-67

VILAS 366

: Vietnam Infrastructure Development and Finance Investment Joint Stock Company (VIDIFI., JSC)

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi

: Air (Contract: 74/VDIFI-VCNMT/2010) Kind of sample

Number of sample

Address

: 179 Intersection, Cuu Cao Commune, Van Giang District, Hung Yen Province (Package EX2-K2.6) Sampling place

: N 20° 57,73.0" - E 105° 57', 26.5" Co-ordinate

: From 9 am July 03rd to 7 am on July 4th, 2012 Testing time

| QCVN<br>05.2009/RTNMT |  |      | 300     | 350    |        | 30000 |
|-----------------------|--|------|---------|--------|--------|-------|
| K 2.6.4               | 3:00 am<br>July 04th, 2012               | 154  | 78      | 81     | 30     | 2048  |
| K 2.6.3               | 21:00 pm<br>July 03 <sup>rd</sup> , 2012 | 122  | 92      | 06     | 27     | 1460  |
| K 2.6.2               | 15:00 pm<br>July 03 <sup>rd</sup> , 2012 | 160  | 112     | 95     | 27     | 3018  |
| K 2.6.1               | 9:00 am<br>July 03 <sup>rd</sup> .2012   | 195  | 83      | 98     | 63     | 1073  |
| Unit                  |  |      | µg/m³   |        |        |       |
| Parameter             | Time                                     | VOCs | Dust    | $SO_2$ | $NO_2$ | 9     |
| Name of sample        |  | FY   | 122 - X | 0.5 VI |        |       |

Note: QCVN 05:2009/ BTNMT: National technical regulation on ambient air quality

Department of Environmental Quality Analysis

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY Dr. Nguyen Thi Hue Deputy Director

Hanoi. July 16th, 2012

Vu Van Tu

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DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

Address: R.712. A30 Building 18 Hoang Quoc Viet Road -Cau Giay District - Hanoi - Vietnam Fax: (84 - 4) 3791 1203 Tel: (84 - 4) 3791 1654

### ANALYTICAL RESULT

No: A1207.64-67

: Vietnam Infrastructure Development and Finance Investment Joint Stock Company (VIDIFI., JSC) VILAS 366

Address

Client

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi

: Air (Contract: 74/VDIFI-VCNMT/2010) Kind of sample

Number of sample

: 179 Intersection, Cuu Cao Commune, Van Giang District, Hung Yen Province (Package EX2-K2.6) : N 20° 57,73.0" - E 105° 57', 26.5" Co-ordinate

Testing time

Sampling place

: From 9 am July 03rd to 7 am on July 4th, 2012

05:2009/BTNMT OCVN 30000 300 350 July 04th, 2012 3:00 am K 2.6.4 2048 154 30 78 81 July 03rd 2012 21:00 pm K 2.6.3 1460 122 27 90 July 03rd, 2012 15:00 pm K 2.6.2 3018 160 112 27 95 July 03rd 2012 K 2.6.1 9:00 am 195 63 83 µg/m³ Unit Parameter VOCs Time Dust NO<sub>2</sub> SO2 Name of sample EX 2-K 2.6

Note: QCVN 05:2009/ BTNMT: National technical regulation on ambient air quality

Department of Environmental Quality Analysis

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY Deputy Director

Dr. Nguyen Thi Hue

Hanoi. July 16th. 2012

Vu Van Tu

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4. Name of sample, customers written by customers' request

DEQA/TT/BM/17.01

Version: 1.03



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Address: R.712, A30 Building 18 Hoang Quoc Viet Road - Cau Giay District - Har - Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

### ANALYTICAL RESULT

No: A1207.EX2

Client

: Vietnam Infrastructure Development and Finance Investment Joint Stock

Company (VIDIFI., JSC)

Address

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street

Me Tri commune, Tu Liem, Ha Noi

Kind of sample

: Vibration (Contract : 74/VDIFI-VCNMT/2010)

Number of sample: 12

Name of sample

: EX 2 - K2.6

Testing place

: 179 Intersection, Cuu Cao Commune, Van Giang District, Hung Yen Province

(Package EX2)

Co-ordinate

: N 20° 57'73.0"- E 105° 57' 26.5"

Testing time

: From 9:00 am July 03<sup>rd</sup> to 7:30 am July 04<sup>th</sup>, 2012

| Time                | 2    |      |       | From 9    | 9:00 am to 9:3 | 0 am on | July 0 | 3 <sup>rd</sup> , 2012 |             |
|---------------------|------|------|-------|-----------|----------------|---------|--------|------------------------|-------------|
| Parameter           | Unit |      | Vibra | ation Lev | rel (Lv)       |         |        |                        | ation (Lva) |
|                     | dB - | Z    | Y     | X         | Average        | Z       | Y      | X                      | Average     |
| Leq                 |      | 35.9 | 31.8  | 33.8      | 35.9           | 58.8    | 51.8   | 50.9                   | 58.8        |
| L <sub>max</sub>    | dВ   | 47.7 | 38.4  | 41.7      | 47.7           | 80.5    | 67.2   | 69.7                   | 80.5        |
| L <sub>min</sub>    | dB   | 29.2 | 24.8  | 25.3      | 29.2           | 47.3    | 42.5   | 43.5                   | 47.3        |
| I <sub>&gt;10</sub> |      | 33.3 | 34.2  | 36.3      | 36.3           | 59.4    | 54.2   | 53.1                   | 59.4        |
| L <sub>50</sub>     | dB   | 34.4 | 31    | 33        | 34.4           | 53.6    | 48.5   | 47.6                   | 53.6        |
| L <sub>90</sub>     |      | 32.1 | 28.2  | 29.9      | 32.1           | 50      | 46     | 45.5                   | 50          |

| Time             | Time |                      | From 11:00 am to 11:30 am on July 03 <sup>rd</sup> , 2012 |      |         |                              |      |      |         |  |  |  |
|------------------|------|----------------------|---|------|---------|------------------------------|------|------|---------|--|--|--|
| Parameter        | Unit | Vibration Level (Lv) |   |      |         | Vibration Acceleration (Lva) |      |      |         |  |  |  |
|                  |      | Z                    | Y   | X    | Average | Z                            | Y    | X    | Average |  |  |  |
| L <sub>eq</sub>  |      | 31.2                 | 32.8  | 36   | 36      | 57.5                         | 51.4 | 48.5 | 57.5    |  |  |  |
| L <sub>max</sub> |      | 45.8                 | 52.1  | 56.5 | 56.5    | 73.3                         | 67.1 | 62.1 | 73.3    |  |  |  |
| $L_{min}$        | dB   | 22.3                 | 22.9  | 23.2 | 23.2    | 44                           | 37.7 | 35.7 | 44      |  |  |  |
| L <sub>10</sub>  | u.D  | 34.1                 | 35.3  | 38   | 38      | 61                           | 54   | 51.1 | 61      |  |  |  |
| L <sub>50</sub>  |      | 29.2                 | 31.7  | 34.2 | 34.2    | 53.2                         | 46.9 | 44.8 | 53.2    |  |  |  |
| L <sub>90</sub>  |      | 26.6                 | 28.4  | 30.7 | 30.7    | 48.5                         | 42.9 | 41   | 48.5    |  |  |  |

| Time             |      |      | From 13:00 pm to 13:30 pm on July 03 <sup>rd</sup> , 2012 |          |         |                              |      |         |      |  |  |  |
|------------------|------|------|---|----------|---------|------------------------------|------|---------|------|--|--|--|
| Parameter        | Unit |      | Vibra   | tion Lev | el (Lv) | Vibration Acceleration (Lva) |      |         |      |  |  |  |
| V CIA            | Z    | Y    | X   | Average  | Z       | Y                            | X    | Average |      |  |  |  |
| Leq              |      | 31.8 | 33.2  | 34.8     | 34.8    | 55.8                         | 52.9 | 49.4    | 55.8 |  |  |  |
| L <sub>max</sub> |      | 46   | 40.4  | 43.8     | 46      | 80.8                         | 75.1 | 70.7    | 80.8 |  |  |  |
| $L_{\min}$       | dB   | 22.4 | 23.8  | 25.1     | 25.1    | 38.2                         | 35.4 | 32.5    | 38.2 |  |  |  |
| L <sub>10</sub>  | uD.  | 34.1 | 35.9  | 37.5     | 37.5    | 58.3                         | 55.8 | 52.5    | 58.3 |  |  |  |
| L <sub>50</sub>  |      | 28.8 | 32.4  | 34       | 34      | 48.3                         | 45.6 | 44.1    | 48.3 |  |  |  |
| L <sub>90</sub>  |      | 26.3 | 28.9  | 30.6     | 30.6    | 42.5                         | 39.6 | 37.9    | 42.5 |  |  |  |

<sup>1.</sup> Test results are valid for test samples

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<sup>3.</sup> Test iterms in italic are not recognized by VILAS; test iterms marked by (\*) are recognized by subcontractor

<sup>4.</sup> Name of sample, customers written by customers' request



### VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY INSTITUTE OF ENVIRONMENTAL TECHNOLOGY DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

Address: R.712, A30 Building 18 Hoang Quoc Viet Road - Cau Giay District Hanoi - Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

| Time             | )     | From 15:00 pm to 15:30 pm on July 03 <sup>rd</sup> , 2012 |        |          |         |                              |      |      |         |  |  |
|------------------|-------|---|--------|----------|---------|------------------------------|------|------|---------|--|--|
| <b>D</b>         | TT •4 |   | Vibrat | tion Lev | el (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Unit  | Z   | Y      | X        | Average | Z                            | Y    | X    | Average |  |  |
| Leq              |       | 37.9  | 32.4   | 34.5     | 37.9    | 58.2                         | 55.5 | 49.6 | 58.2    |  |  |
| L <sub>max</sub> |       | 46.7  | 41.1   | 45.2     | 46.7    | 78.1                         | 71   | 65.5 | 78.1    |  |  |
| L <sub>min</sub> | מג    | 30.2  | 23.1   | 26.5     | 30.2    | 44                           | 40.6 | 37.8 | 44      |  |  |
| L <sub>10</sub>  | dB    | 40.3  | 35     | 37       | 40.3    | 61.3                         | 59.2 | 52.8 | 61.3    |  |  |
| L <sub>50</sub>  |       | 37  | 31.5   | 33.7     | 37      | 53.1                         | 51   | 45.6 | 53.1    |  |  |
| L <sub>90</sub>  |       | 34.5  | 28.5   | 30.7     | 34.5    | 47.6                         | 45.6 | 42   | 47.6    |  |  |

| Time             | <u>,                                      </u> |      | ]     | From 1' | 7:00 pm to 17:3 | 0 pm on                      | July 0 | 3 <sup>rd</sup> , 201 | 2       |
|------------------|--|------|-------|---------|-----------------|------------------------------|--------|-----------------------|---------|
| n                | WY *4  |      | Vibra | tion Le | evel (Lv)       | Vibration Acceleration (Lva) |        |                       |         |
| Parameter        | Unit   | Z    | Y     | X       | Average         | Z                            | Y      | X                     | Average |
| Leq              |  | 34.2 | 30.9  | 32.7    | 34.2            | 59.6                         | 55.2   | 52                    | 59.6    |
| L <sub>max</sub> |  | 45.2 | 37.6  | 39.7    | 45.2            | 83.2                         | 79.9   | 76.8                  | 83.2    |
| $L_{\min}$       | dB   | 23.9 | 23.4  | 23.3    | 23.9            | 45.6                         | 40.2   | 37.5                  | 45.6    |
| $L_{10}$         | uБ   | 37.3 | 33.4  | 35.3    | 37.3            | 60.2                         | 55.4   | 51.8                  | 60.2    |
| L <sub>50</sub>  |  | 32.3 | 30.3  | 31.9    | 32.3            | 53.6                         | 48.8   | 45.3                  | 53.6    |
| L <sub>90</sub>  |  | 27.3 | 27.3  | 28.7    | 28.7            | 50                           | 44.6   | 40.9                  | 50      |

| Time             | )    |      | From 19:00 pm to 19:30 pm on July 03 <sup>rd</sup> , 2012 |                              |         |      |      |      |         |  |  |
|------------------|------|------|---|------------------------------|---------|------|------|------|---------|--|--|
| D                |      |      | vel (Lv)  | Vibration Acceleration (Lva) |         |      |      |      |         |  |  |
| Parameter        | Unit | Z    | Y   | X                            | Average | Z    | Y    | X    | Average |  |  |
| $L_{eq}$         |      | 29.5 | 30.3  | 31.8                         | 31.8    | 56.7 | 54.5 | 49.4 | 56.7    |  |  |
| L <sub>max</sub> |      | 40.4 | 37.8  | 40.3                         | 40.4    | 80   | 78.5 | 70.2 | 80      |  |  |
| Lmin             | 4D   | 22.6 | 21.8  | 23.1                         | 23.1    | 38   | 35.7 | 32   | 38      |  |  |
| $L_{10}$         | dB   | 31.3 | 32.8  | 34.3                         | 34.3    | 57.5 | 54.9 | 49.4 | 57.5    |  |  |
| L <sub>50</sub>  |      | 28.7 | 29.7  | 31                           | 31      | 48.1 | 45.7 | 40.9 | 48.1    |  |  |
| L <sub>90</sub>  |      | 26.7 | 26.1  | 27.8                         | 27.8    | 42.8 | 40.3 | 35.9 | 42.8    |  |  |

| Time             |      |                      | From 21:00 pm to 21:30 pm on July 03 <sup>rd</sup> , 2012 |      |         |      |        |         |             |  |  |  |
|------------------|------|----------------------|---|------|---------|------|--------|---------|-------------|--|--|--|
| D                |      | Vibration Level (Lv) |   |      |         |      | ration | Acceler | ation (Lva) |  |  |  |
| Parameter        | Unit | Z                    | Y   | X    | Average | Z    | Y      | X       | Average     |  |  |  |
| $L_{eq}$         |      | 35.3                 | 30.5  | 32   | 35.3    | 56.7 | 46.3   | 45.1    | 56.9        |  |  |  |
| L <sub>max</sub> |      | 46.7                 | 40  | 38.8 | 46.7    | 70.3 | 62.2   | 61.5    | 70.3        |  |  |  |
| L <sub>min</sub> | dB   | 31.9                 | 21.6  | 23.4 | 31.9    | 53.8 | 43.2   | 41.1    | 53.8        |  |  |  |
| $L_{10}$         | uБ   | 36.8                 | 33.1  | 34.6 | 36.8    | 58.2 | 47.5   | 46.6    | 58.2        |  |  |  |
| L <sub>50</sub>  |      | 33.7                 | 29.7  | 31.3 | 33.7    | 55.4 | 44.8   | 43.5    | 55.4        |  |  |  |
| L <sub>90</sub>  |      | 33                   | 26.5  | 27.9 | 33      | 54.7 | 43.9   | 42.3    | 54.7        |  |  |  |

 $I.\ Test\ results\ are\ valid\ for\ test\ samples$ 

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<sup>3.</sup> Test iterms in italic are not recognized by VILAS; test iterms marked by (\*) are recognized by subcontractor

<sup>4.</sup> Name of sample, customers written by customers' request



### VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY ACCUMUNITATION OF ENVIRONMENTAL TECHNOLOGY DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

Address: R.712, A30 Building 18 Hoang Quoc Viet Road -Cau Giay District - Han - Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

|                                       | VILAS 366- |      |      | From 23:00 pm to 23:30 pm on July 03 <sup>rd</sup> , 2012 |      |                              |      |         |      |  |  |  |
|---------------------------------------|------------|------|------|---|------|------------------------------|------|---------|------|--|--|--|
| Parameter                             | Unit       |      |      | tion Lev  |      | Vibration Acceleration (Lva) |      |         |      |  |  |  |
| · · · · · · · · · · · · · · · · · · · | Z          | Y    | X    | Average   | Z    | Y                            | X    | Average |      |  |  |  |
| Leq                                   |            | 28.8 | 30.1 | 31.6  | 31.6 | 42.6                         | 40.9 | 41.8    | 42.6 |  |  |  |
| $L_{max}$                             |            | 44.7 | 37.8 | 38.2  | 44.7 | 57.2                         | 56.8 | 56.8    | 57.2 |  |  |  |
| Lmin                                  | dB         | 20.2 | 21.2 | 22.6  | 22.6 | 33.3                         | 29.6 | 29.7    | 33.3 |  |  |  |
| L <sub>10</sub>                       | an         | 28.8 | 22.7 | 34.2  | 34.2 | 45.2                         | 43   | 44.4    | 45.2 |  |  |  |
| L <sub>50</sub>                       |            | 25.2 | 29.4 | 31  | 31   | 36.4                         | 33.5 | 35.2    | 36.4 |  |  |  |
| L <sub>90</sub>                       |            | 22.9 | 26.2 | 27.5  | 27.5 | 34.6                         | 31.2 | 32.6    | 34.6 |  |  |  |

| Time             |      |      | From 1:00 am to 1:30 am on July 04th, 2012 |          |      |                              |      |         |      |  |  |  |
|------------------|------|------|--|----------|------|------------------------------|------|---------|------|--|--|--|
| Parameter        | Unit |      | Vibra                                      | tion Lev |      | Vibration Acceleration (Lva) |      |         |      |  |  |  |
| i arameter Omit  | Z    | Y    | X  | Average  | Z    | Y                            | X    | Average |      |  |  |  |
| L <sub>eq</sub>  |      | 30.2 | 30   | 32.5     | 32.5 | 36.1                         | 36.3 | 33.5    | 36.3 |  |  |  |
| L <sub>max</sub> |      | 45.9 | 37.1                                       | 40.7     | 45.9 | 53.2                         | 59.4 | 43.6    | 59.4 |  |  |  |
| L <sub>min</sub> | dB   | _20  | 22.6                                       | 23.9     | 23.9 | 31.3                         | 28.8 | 28.5    | 31.3 |  |  |  |
| L <sub>10</sub>  | ub   | 30.9 | 32.6                                       | 35.2     | 35.2 | 37.3                         | 35.4 | 35.7    | 37.3 |  |  |  |
| L <sub>50</sub>  |      | 25.1 | 29.3                                       | 31.7     | 31.7 | 34.5                         | 32.3 | 32.5    | 34.5 |  |  |  |
| L <sub>90</sub>  |      | 22.7 | 25.9                                       | 28.1     | 28.1 | 33                           | 30.8 | 30.4    | 33   |  |  |  |

| Time              | 81   |                      | From 3:00 am to 3:30 am on July 04th, 2012 |         |      |                              |      |         |      |  |  |  |
|-------------------|------|----------------------|--|---------|------|------------------------------|------|---------|------|--|--|--|
| Parameter         | Unit | Vibration Level (Lv) |  |         |      | Vibration Acceleration (Lva) |      |         |      |  |  |  |
| i ai ameter Offit | Z    | Y                    | X  | Average | Z    | Y                            | X    | Average |      |  |  |  |
| $L_{eq}$          |      | 29.9                 | 30.5                                       | 32.2    | 32.2 | 43.9                         | 40.7 | 40.5    | 43.9 |  |  |  |
| L <sub>max</sub>  |      | 46.1                 | 38.6                                       | 38.8    | 46.1 | 60.3                         | 55.4 | 57      | 60.3 |  |  |  |
| $L_{min}$         | dB   | 20.2                 | 20.5                                       | 23.1    | 23.1 | 36.8                         | 32.4 | 32.3    | 36.8 |  |  |  |
| L <sub>10</sub>   | uD   | 30.4                 | 33.1                                       | 34.8    | 34.8 | 46.5                         | 43.8 | 43.5    | 46.5 |  |  |  |
| $L_{50}$          |      | 27.7                 | 29.8                                       | 31.4    | 31.4 | 38.9                         | 35.5 | 35.7    | 38.9 |  |  |  |
| L90               |      | 23.8                 | 26.4                                       | 27.9    | 27.9 | 37.5                         | 33.7 | 33.8    | 37.5 |  |  |  |

| Time              |      |      | From 5:00 am to 5:30 am on July 04 <sup>th</sup> , 2012 |          |         |                              |      |         |      |  |  |  |
|-------------------|------|------|---|----------|---------|------------------------------|------|---------|------|--|--|--|
| Parameter         | Unit |      | Vibra   | tion Lev | el (Lv) | Vibration Acceleration (Lva) |      |         |      |  |  |  |
| i ai ainetei Onit | Z    | Y    | X   | Average  | Z       | Y                            | X    | Average |      |  |  |  |
| Leq               |      | 29.8 | 30.2  | 31.8     | 31.8    | 46.7                         | 44.9 | 47.3    | 47.3 |  |  |  |
| L <sub>max</sub>  |      | 44.6 | 37.2  | 38.9     | 44.6    | 67.2                         | 66.5 | 66.8    | 67.2 |  |  |  |
| L <sub>min</sub>  | dB   | 20.9 | 21.2  | 21.7     | 21.7    | 33.5                         | 31   | 33.4    | 33.5 |  |  |  |
| L <sub>10</sub>   | uD   | 31.5 | 32.9  | 34.4     | 34.4    | 48.7                         | 46.6 | 50.1    | 50.1 |  |  |  |
| L <sub>50</sub>   |      | 20.2 | 29.4  | 31       | 31      | 41.5                         | 39.6 | 42.1    | 42.1 |  |  |  |
| L90               |      | 23.8 | 25.9  | 27.7     | 27.7    | 36.5                         | 34.1 | 37.7    | 37.7 |  |  |  |

<sup>1.</sup> Test results are valid for test samples

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<sup>4.</sup> Name of sample, customers written by customers' request



### VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY INSTITUTE OF ENVIRONMENTAL TECHNOLOGY DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

Address: R.712, A30 Building 18 Hoang Quoc Viet Road –Cau Giay District – Hanoi

- Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

| Time             |      | From 7:00 am to 7:30 am on July 04th, 2012 |        |           |   |      |         |         |             |  |  |
|------------------|------|--|--------|-----------|---|------|---------|---------|-------------|--|--|
| D 4 11-14        |      |  | Vibrat | tion Leve | TATEL STREET, | Vil  | bration | Acceler | ation (Lva) |  |  |
| Parameter        | Unit | Z  | Y      | X         | Average   | Z    | Y       | X       | Average     |  |  |
| $L_{eq}$         |      | 31.7                                       | 30.3   | 32.1      | 32.1  | 52.8 | 51      | 45.8    | 52.8        |  |  |
| L <sub>max</sub> |      | 46.8                                       | 37.5   | 40.3      | 46.8  | 69.8 | 63.5    | 60.2    | 69.8        |  |  |
| $L_{min}$        | ID   | 22.8                                       | 20.5   | 22.7      | 22.8  | 39.1 | 37      | 33.4    | 39.1        |  |  |
| L <sub>10</sub>  | dB   | 34.5                                       | 32.8   | 34.9      | 34.9  | 55.9 | 54.2    | 48.2    | 55.9        |  |  |
| L <sub>50</sub>  |      | 29.1                                       | 29.5   | 31.3      | 31.3  | 49.9 | 48.6    | 42.6    | 49.9        |  |  |
| L <sub>90</sub>  |      | 26.1                                       | 26.5   | 27.8      | 27.8  | 44.3 | 42.1    | 38      | 44.3        |  |  |

### Allowable maximum value of the vibration acceleration for contruction activities

| No | Area         | Time in day        | Vibration Acceleration (dB)<br>Average (Leq) |
|----|--------------|--------------------|--|
|    | 0 11         | From 6 am to 6 pm  | 75   |
| 1  | Special area | From 18 pm to 6 am | Background level                             |
|    | N. T         | From 6 am to 9 pm  | 75   |
| 2  | Normal area  | From 9 pm to 6 am  | Background level                             |

Note: QCVN 27:2008/BTNMT: National Technical Regulation on Vibration

Department of Environmental Quality Analysis

Hanoi, July 16th, 2012

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Deputy Director

Dr. Nguyen Thi Hue

Vu Van Tu

1. Test results are valid for test samples

2. Only quoted a part of test report if receiving the agreement by terms of DEQA

3. Test iterms in italic are not recognized by VILAS; test iterms marked by (\*) are recognized by subcontractor

4. Name of sample, customers written by customers' request



### VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY INSTITUTE OF ENVIRONMENTAL TECHNOLOGY DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

Address: R.712, A30 Building 18 Hoang Quoc Viet Road –Cau Giay District – Hanoi - Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

### ANALYTICAL RESULT

VILAS 366

No: W1207.184

Client

: Vietnam Infrastructure Development and Finance Investment Joint Stock

Company (VIDIFI., JSC)

Address

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street

Kind of sample

Me Tri commune, Tu Liem, Ha Noi : Ground water (Contract: 74/VDIFI-VCNMT/2010)

Number of sample

. 02

Preservation

: 01 PE Bottle 0,5L refrigerate

01 PE Bottle 0,5L, preserved HNO<sub>3</sub> refrigerate 01 PE Bottle 0,5L, preserved H<sub>2</sub>SO<sub>4</sub> refrigerate

01 glass Bottle 1,0 L

Sampling place

: Mr. Le Van Hoa, Tu Duong Village- Ly Thuong Kiet Commune – Yen My

District, Hung Yen Province (Depth: 45m). (Package EX3-NN3.6)

Co-ordinate

: N 20° 51,603- E 106° 01, 448 : From July 4<sup>th</sup> 2012

Sampling time Testing time

: From July 5th to July 16th 2012

| No  | Parameter        | Unit                | Test methods             | Results |        | QCVN              |  |
|-----|------------------|---------------------|--------------------------|---------|--------|-------------------|--|
| 140 | rarameter        | Ont                 | 1 est methods            | NN 3.6  | MT     | 09:2008/<br>BTNMT |  |
| 1.  | Temperature      | °C                  | TCVN 4457-1988           | 27.8    | 27.0   | -                 |  |
| 2.  | pН               | -                   | TCVN 6492 – 1999         | 7.70    | 7.10   | 5.5 – 8.5         |  |
| 3.  | COD              | mgO <sub>2</sub> /L | KMnO <sub>4</sub> Method | 3.2     | < 1.0  | 4                 |  |
| 4.  | BOD <sub>5</sub> | mg/L                | TCVN 6001 – 2008         | 1.5     | < 1.0  | =                 |  |
| 5.  | TSS              | mg/L                | SMEWW 2540 D – 2005      | 5       | < 3.0  | -                 |  |
| 6.  | Total P          | mg/L                | TCVN 6202 – 2008         | 0.06    | < 0.01 | -                 |  |
| 7.  | Total N          | mg/L                | TCVN 5987-1995           | 0.5     | < 0.10 |                   |  |
| 8.  | Coliform         | MPN/                | mgrny (105 1 100 (       | 9       | ND     | 3                 |  |
| 9.  | E. Coli          | 100mL               | TCVN 6187 – 1 –1996      | ND      | ND     | ND                |  |

Note: QCVN 09:2008/BTNMT: National technical regulation on underground water quality.

ND: Non detect

Hanoi. July 16th. 2012

Dept. Environmental Quality Analysis

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY
Deputy Director

Dr. Nguyen Thi Hue

Vu Van Tu

1. Test results are valid for test samples

2. Only quoted a part of test report if receiving the agreement by terms of DEQA

3. Test iterms in italic are not recognized by VILAS; test iterms marked by (\*) are recognized by subcontractor

4. Name of sample, customers written by customers' request

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Version: 1.03

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VIELINAM ACADEMY OF SCIENCE AND TECHNOLOGY

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

Address: R.712, A30 Building 18 Hoang Quoc Viet Road -Cau Giay District - Hanoi - Vietnam Fax: (84 - 4) 3791 1203 Tel: (84 - 4) 3791 1654

## ANALYTICAL RESULT

No: A1207.68-71.1

Client VILAS 366; Vietnam Infrastructure Development and Finance Investment Joint Stock Company (VIDIFI., JSC)

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi Address

: Air (Contract: 74/VDIFI-VCNMT/2010) Kind of sample

Number of sample

: Tu Duong Village - Ly Thuong Kiet Commune - Yen My District, Hung Yen Province, Intersection with : 4 sample Sampling place

the 39 road far from the expressway about 5 m and 39 road about 150 m (Package EX3-K3.6)

: N 20° 51'60.3"- E 106° 01' 48.8" Co-ordinate : From 9 am July 4th to 7 am on July 5th, 2012 Testing time

| Name of sample | Parameter | Unit  | K 3.6.1                                | K3.6.2                     | K 3.6.3                                 | K 3.6.4                                | QCVN<br>05:2009/BTNMT |
|----------------|-----------|-------|--|----------------------------|---|--|-----------------------|
|                | Time      |       | 9:00 am<br>July 4 <sup>th</sup> . 2012 | 15:00 pm<br>July 4th. 2012 | 21:00 pm<br>July 4 <sup>th</sup> . 2012 | 3:00 am<br>July 5 <sup>th</sup> . 2012 |                       |
| 7 7 7          | VOCs      |       | 165                                    | 154                        | 110                                     | 105                                    |                       |
| EX 3 -         | Dust      | µg/m³ | 267                                    | 324                        | 218                                     | 182                                    | 300                   |
| N. 3.0         | $SO_2$    |       | 103                                    | 120                        | 109                                     | 26                                     | 350                   |
|                | NO2       |       | 30                                     | 28                         | 23                                      | 22                                     | 1                     |
|                | 00        |       | 2683                                   | 4812                       | 2465                                    | 1163                                   | 30000                 |

Note: QCVN 05:2009/ BTNMT : National technical regulation on ambient air quality

Hanoi, July 16th, 2012

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Department of Environmental Quality Analysis

Dr. Nguyen Thi Hue VIE Deputy Director

Vu Van Tu

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4. Name of sample, customers written by customers' request

Version: 1.03

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DEQA/TT/BM/17.01



VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Fax: (84 - 4) 3791 1203 Tcl: (84 - 4) 3791 1654 DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

-Cau Giay District - Hanoi - Vietnam

Address: R.712, A30 Building 18 Hoang Quoc Viet Road

## ANALYTICAL RESULT

No: A1204. EX 3

: Viet Nam Infrastructure Development and Finance Investment Joint Stock Company

: 8th-9th-10th floors, LILA:MA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi

Noise (Contract: 74/VDIFI-VCNMT/2010) Kind of sample Address

Number of sample

CIVILAS 366

: EX3-K3.6 Name of sample

: Tu Duong Village- Ly Thuong Kiet Commune - Yen My District, Hung Yen Province, Intersection Sampling place

with the 39 road far from the expressway about 5 m and 39 road about 150 m (Package EX3-K3.6)

: N 20° 51,603- E 106° 01, 488 Co-ordinate

From 9 am July 04th to 7 am July 05th, 2012 Testing time

| Nome         | olumos                                  | Noise         |      |      |      |      | From 9 am | July 04th 1 | to 7 am Jul | From 9 am July 04th to 7 am July 05th, 2012 |      |      |      |      |
|--------------|---|---------------|------|------|------|------|-----------|-------------|-------------|---|------|------|------|------|
| Ivanic       | value of sample                         | Ivoise        | 9am  | 11am | 13pm |      | 17pm      | 19pm        | 21pm        | 23pm  | _    | 03am | 05am | 07am |
|              | Leg                                     |               | 67.2 | 64.4 | 61.7 | 64.3 | 62.5      | 51.7        | 55.0        | 57.1  | 48.0 | 53.4 | 55.5 | 61.8 |
| EV 2         | Lmax                                    |               | 88.0 | 85.5 | 90.1 | 85.6 | 80.1      | 72.6        | 65.5        | 73.4  | 58.7 | 78.4 | 81.5 | 85.1 |
| EA 3-        | _                                       | (qB)          | 42.5 | 41.7 | 36.9 | 44.4 | 47.4      | 41.4        | 51.8        | 48.7  | 45.5 | 46.7 | 39.3 | 42.3 |
| 2.0          |   |               | 51.1 | 50.4 | 48.9 | 51.2 | 55.9      | 46.3        | 54.3        | 57.1  | 47.7 | 51.4 | 45.3 | 50.2 |
|              | L90                                     |               | 46.1 | 45.7 | 43.4 | 47.1 | 51.6      | 43.5        | 53.5        | 56.1  | 47.0 | 49.1 | 42.2 | 45.7 |
| QCVI<br>(Not | QCVN 26:2010/BTNMT (Nomarl area - Leq ) | TINMT · Lea ) |      |      |      | 70   |           |             |             |   | 5.   | 55   |      | 70   |

Note: QCVN 26:2010/BTNMT - National Technical Regulation on Noise

Department of Environmental Quality Analysis

Dr. Nguyen Thi Hue

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

| Deputy Director

Hanoi. July 23rd 2012

Vu Van Tu

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4. Name of sample, customers written by customers' request

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Address: R.712, A30 Building 18 Hoang Quoc Viet Road -Cau Giay District - Hanoi - Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

### VILAS 366 ANALYTICAL RESULT

No: A1207.EX3

Client

: Vietnam Infrastructure Development and Finance Investment Joint Stock

Company (VIDIFI., JSC)

Address

:  $8^{\text{th}}$ - $9^{\text{th}}$ - $10^{\text{th}}$  floors, LILAMA 10 Building, Le Van Luong street

Me Tri commune, Tu Liem, Ha Noi

Kind of sample:

: Vibration (Contract: 74/VDIFI-VCNMT/2010)

Number of sample: 12

Name of sample

: EX 3 – K3.6

Testing place

: Intersection with the 39 road, Ly Thuong Kiet Commune, Yen My District,

Hung Yen Province (Package EX3)

Co-ordinate

: N 20° 51'60.3"- E 106° 01' 48.8"

Testing time

: From 9:00 am on July 04th to 7:30 am on July 05th, 2012

| Time            | •    |      | From 8:00 am to 9:30am on July 04th, 2012 |          |         |                              |       |      |         |  |  |  |
|-----------------|------|------|---|----------|---------|------------------------------|-------|------|---------|--|--|--|
| Parameter       | Unit |      | Vibrat                                    | ion Leve | el (Lv) | Vibration Acceleration (Lva) |       |      |         |  |  |  |
| i arameter      | Ouit | Z    | Y   | X        | Average | Z                            | Y     | X    | Average |  |  |  |
| Leq             |      | 32.1 | 33  | 33.7     | 33.7    | 57.9                         | 50.7  | 50.4 | 57.9    |  |  |  |
| $L_{max}$       |      | 43.9 | 40.3                                      | 41.7     | 43.9    | 72.7                         | 67.90 | 67.7 | 72.7    |  |  |  |
| $L_{min}$       | dB   | 24.5 | 27.5                                      | 24.9     | 27.5    | 36.5                         | 31.7  | 33.2 | 36.5    |  |  |  |
| I.10            |      | 35.6 | 35.1                                      | 36.5     | 36.5    | 62.6                         | 56.1  | 55.9 | 62.6    |  |  |  |
| L <sub>50</sub> |      | 29.9 | 32.5                                      | 32.8     | 32.8    | 45.7                         | 43.7  | 42.7 | 45.7    |  |  |  |
| L90             |      | 27.4 | 30.3                                      | 29.7     | 30.3    | 39.2                         | 35.6  | 36.3 | 39.2    |  |  |  |

| Time             | •    |   | From 11:00 am to 11:30 am on July 04th, 2012 |          |         |                              |      |      |         |  |  |  |
|------------------|------|---|--|----------|---------|------------------------------|------|------|---------|--|--|--|
| Parameter        | Unit | 111111111111111111111111111111111111111 | Vibrat                                       | ion Leve | el (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| rarameter        | Unit | Z                                       | Y  | X        | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq              |      | 44.1                                    | 44.5   | 51.6     | 51.6    | 54.6                         | 51.1 | 46.2 | 54.6    |  |  |  |
| L <sub>max</sub> |      | 63.4                                    | 70.2   | 77.4     | 77.4    | 76.1                         | 73.3 | 68.8 | 76.1    |  |  |  |
| $L_{\min}$       | dB   | 23                                      | 26.7   | 26.8     | 26.8    | 33.8                         | 32.5 | 31.2 | 33.8    |  |  |  |
| L <sub>10</sub>  |      | 48.1                                    | 40   | 39.6     | 48.1    | 53.4                         | 51.4 | 47.4 | 53.4    |  |  |  |
| L <sub>50</sub>  |      | 32.2                                    | 34.1   | 35.3     | 35.3    | 39.9                         | 38.1 | 37.3 | 39.9    |  |  |  |
| L <sub>90</sub>  |      | 28.2                                    | 31   | 31.8     | 31.8    | 36.3                         | 34.8 | 33.9 | 36.3    |  |  |  |

| Time             | ;    |      | From 13:00 am to 13:30 pm on July 04th, 2012 |          |         |                              |      |      |         |  |  |  |
|------------------|------|------|--|----------|---------|------------------------------|------|------|---------|--|--|--|
| Parameter        | Unit |      | Vibrat                                       | ion Leve | el (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| rarameter        | Onn  | Z    | Y  | X        | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq              |      | 47.2 | 46.8   | 56.8     | 56.8    | 50.5                         | 45.9 | 48.6 | 50.5    |  |  |  |
| L <sub>max</sub> |      | 65.6 | 72   | 81.4     | 81.4    | 69.8                         | 63.9 | 69.7 | 69.8    |  |  |  |
| L <sub>min</sub> | dB   | 24.1 | 27.2   | 28.1     | 28.1    | 32.7                         | 31   | 31.5 | 32.7    |  |  |  |
| L <sub>10</sub>  |      | 45.5 | 38.7   | 41.1     | 45.5    | 52.2                         | 47.2 | 48.6 | 52.2    |  |  |  |
| L <sub>50</sub>  |      | 33.2 | 34.7   | 37.2     | 37.2    | 38.5                         | 36.5 | 38.7 | 38.7    |  |  |  |
| L <sub>90</sub>  |      | 28.3 | 31.5   | 33.5     | 33.5    | 35.3                         | 33.6 | 35.1 | 35.3    |  |  |  |

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| T                | ime  |      | Fı   | om 15:0  | 00 pm to 15:3 | 30 pm oi                     | a July 0 | 4 <sup>tn</sup> , 2012 |         |  |
|------------------|------|------|------|----------|---------------|------------------------------|----------|------------------------|---------|--|
|                  | ~ 7  |      |      | ion Leve |               | Vibration Acceleration (Lva) |          |                        |         |  |
| Parameter        | Unit | Z    | Y    | X        | Average       | Z                            | Y        | X                      | Average |  |
| $L_{eq}$         |      | 47.3 | 36   | 36.7     | 47.3          | 52.3                         | 48.6     | 44                     | 52.3    |  |
| L <sub>max</sub> |      | 66.7 | 48   | 45.8     | 66.7          | 68.9                         | 59.5     | 56.1                   | 68.9    |  |
| L <sub>min</sub> | dB   | 26.3 | 26.8 | 28.1     | 28.1          | 44.5                         | 42.6     | 38.1                   | 44.5    |  |
| $L_{10}$         |      | 43.7 | 38.2 | 39.2     | 43.7          | 55.6                         | 51.5     | 46.8                   | 55.6    |  |
| $L_{50}$         |      | 34.2 | 34.5 | 36       | 36            | 48.1                         | 46.2     | 42.2                   | 48.1    |  |
| L <sub>90</sub>  |      | 29.7 | 31.3 | 32.8     | 32.8          | 45.8                         | 44.4     | 39.7                   | 45.8    |  |

| Time             | )        |      | Fı   | com 17:0 | 00 pm to 17: | 30 pm oi                     | July 0 | 4 <sup>th</sup> , 2012 | 2       |  |
|------------------|----------|------|------|----------|--------------|------------------------------|--------|------------------------|---------|--|
| -                | W.T. • . |      |      | ion Leve |              | Vibration Acceleration (Lva) |        |                        |         |  |
| Parameter        | Unit     | Z    | Y    | X        | Average      | Z                            | Y      | X                      | Average |  |
| $L_{eq}$         |          | 52.3 | 38.4 | 37.7     | 52.3         | 57.7                         | 54.6   | 56.5                   | 57.7    |  |
| L <sub>max</sub> |          | 72.1 | 57.2 | 49.3     | 72.1         | 79.7                         | 75.3   | 76.2                   | 79.7    |  |
| $L_{\min}$       | dB       | 25.6 | 26.5 | 26.8     | 26.8         | 37.1                         | 35.8   | 36.6                   | 37.1    |  |
| $L_{10}$         |          | 49.9 | 40.6 | 40       | 49.9         | 60.5                         | 57.3   | 59.2                   | 60.5    |  |
| $L_{50}$         |          | 34.9 | 34.1 | 35.9     | 35.9         | 48.7                         | 46.3   | 48.1                   | 48.7    |  |
| L <sub>90</sub>  |          | 29.3 | 30.5 | 32.4     | 32.4         | 41.6                         | 40.2   | 41.6                   | 41.6    |  |

| Time             | }    | From 19:00 pm to 19:30 pm on July 04 <sup>th</sup> . 2012 |        |          |         |                              |      |      |         |  |  |
|------------------|------|---|--------|----------|---------|------------------------------|------|------|---------|--|--|
|                  | ** · |   | Vibrat | ion Leve | el (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Unit | Z   | Y      | X        | Average | Z                            | Y    | X    | Average |  |  |
| $L_{eq}$         |      | 29.5  | 31.8   | 33.7     | 33.7    | 57.1                         | 50.5 | 45.5 | 57.1    |  |  |
| L <sub>max</sub> |      | 44.2  | 38.2   | 41.3     | 44.2    | 76.8                         | 67.5 | 64.6 | 76.8    |  |  |
| L <sub>min</sub> | dB   | 22.2  | 23.9   | 24.7     | 24.7    | 35.1                         | 32.3 | 29.6 | 35.1    |  |  |
| L <sub>10</sub>  |      | 31.2  | 34.1   | 36.3     | 36.3    | 60.3                         | 54.2 | 48.3 | 60.3    |  |  |
| 1,50             |      | 27.8  | 31.3   | 32.9     | 32.9    | 45.4                         | 40.3 | 37.1 | 45.4    |  |  |
| L <sub>90</sub>  |      | 25.6  | 28.8   | 29.5     | 29.5    | 37.7                         | 34.6 | 33.5 | 37.7    |  |  |

| Time             | )              | From 21:00 pm to 21:30 pm on July 04 <sup>th</sup> . 2012 |         |          |         |                              |      |      |         |  |  |
|------------------|----------------|---|---------|----------|---------|------------------------------|------|------|---------|--|--|
|                  | <b>T</b> T • . |   | Vibrati | ion Leve | el (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Unit           | Z   | Y       | X        | Average | Z                            | Y    | X    | Average |  |  |
| $L_{eq}$         |                | 28.2  | 32.2    | 34.7     | 34.7    | 59.1                         | 57.2 | 57.6 | 59.1    |  |  |
| L <sub>max</sub> |                | 49.7  | 51.5    | 52.3     | 52.3    | 85.7                         | 82.9 | 83.8 | 85.7    |  |  |
| $L_{\min}$       | dB             | 20.1  | 23.5    | 24.9     | 24.9    | 34.5                         | 32.7 | 31.8 | 34.5    |  |  |
| $L_{10}$         |                | 29.3  | 33.9    | 36.6     | 36.6    | 54.9                         | 50.8 | 48.1 | 54.9    |  |  |
| L <sub>50</sub>  |                | 26.2  | 31      | 33.3     | 33.3    | 40.3                         | 37.8 | 36.3 | 40.3    |  |  |
| L <sub>90</sub>  |                | 23.9  | 28.6    | 30.1     | 30.1    | 37.3                         | 35.4 | 33.9 | 37.3    |  |  |

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Fax: (84 - 4) 3791 1203

| Time             | ETNAM           |      | From 23:00 pm to 23:30 pm on July 04 <sup>th</sup> , 2012 |         |         |                              |      |      |         |  |  |  |  |
|------------------|-----------------|------|---|---------|---------|------------------------------|------|------|---------|--|--|--|--|
| Damamatan        | .AS 366<br>Unit |      | Vibrati   | on Leve | l (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |  |  |
| Parameter        | Unit            | Z    | Y   | X       | Average | Z                            | Y    | X    | Average |  |  |  |  |
| $L_{eq}$         |                 | 27   | 31  | 34.1    | 34.1    | 38.3                         | 35.2 | 36.6 | 38.3    |  |  |  |  |
| L <sub>max</sub> |                 | 37   | 37  | 41.6    | 41.6    | 57.3                         | 52.7 | 54   | 57.3    |  |  |  |  |
| $L_{\min}$       | dB              | 19.7 | 22.6  | 25.6    | 25.6    | 34.3                         | 31.5 | 31.9 | 34.3    |  |  |  |  |
| L <sub>10</sub>  |                 | 29.3 | 33.3  | 36.9    | 36.9    | 38.9                         | 36.3 | 38.3 | 38.9    |  |  |  |  |
| $L_{50}$         |                 | 25.8 | 30.4  | 23.1    | 30.4    | 36.7                         | 33.8 | 35.1 | 36.7    |  |  |  |  |
| L <sub>90</sub>  |                 | 23.2 | 27.5  | 29.5    | 29.5    | 35.8                         | 32.6 | 33.5 | 35.8    |  |  |  |  |

| Time             |      |      | From 1:00 am to 1:30 am on July 05th. 2012 |         |         |                              |      |      |         |  |  |  |
|------------------|------|------|--|---------|---------|------------------------------|------|------|---------|--|--|--|
| Donomoton        | Unit |      | Vibrati                                    | on Leve | l (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit | Z    | Y  | X       | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq              |      | 28.1 | 30.8                                       | 33.8    | 33.8    | 36.3                         | 33.4 | 35.2 | 36.3    |  |  |  |
| L <sub>max</sub> |      | 43.7 | 37.6                                       | 41.7    | 43.7    | 45.5                         | 43.1 | 45.2 | 45.5    |  |  |  |
| $L_{min}$        | dB   | 20.4 | 22.4                                       | 24.5    | 24.5    | 32.5                         | 30   | 30.7 | 32.5    |  |  |  |
| L <sub>10</sub>  |      | 29.8 | 33.5                                       | 36.6    | 36.6    | 38.1                         | 35.2 | 37.5 | 38.1    |  |  |  |
| L <sub>50</sub>  |      | 25.8 | 30.1                                       | 32.8    | 32.8    | 35.6                         | 32.7 | 34.4 | 35.6    |  |  |  |
| L90              |      | 23.1 | 26.7                                       | 28.9    | 28.9    | 34                           | 31.1 | 32   | 34      |  |  |  |

| Time            |      |      | From 3:00 am to 3:30 am on July 05th. 2012 |         |         |                              |      |      |         |  |  |  |
|-----------------|------|------|--|---------|---------|------------------------------|------|------|---------|--|--|--|
| Danamatan       | Unit |      | Vibrati                                    | on Leve | l (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter       | Unit | Z    | Y  | X       | Average | Z                            | Y    | X    | Average |  |  |  |
| $L_{eq}$        |      | 26.8 | 30.7                                       | 33.4    | 33.4    | 57.6                         | 52.5 | 49.9 | 57.6    |  |  |  |
| $L_{max}$       |      | 38.1 | 39.3                                       | 40.7    | 40.7    | 82                           | 74.6 | 71.7 | 82      |  |  |  |
| $L_{\min}$      | dB   | 19.6 | 22.6                                       | 22.5    | 22.6    | 43.7                         | 38.4 | 37.1 | 43.7    |  |  |  |
| $L_{10}$        |      | 29.1 | 33.2                                       | 36.1    | 36.1    | 50.3                         | 46.9 | 45.2 | 50.3    |  |  |  |
| L <sub>50</sub> |      | 25.6 | 29.8                                       | 32.5    | 32.5    | 45.3                         | 39.8 | 38.8 | 45.3    |  |  |  |
| L <sub>90</sub> |      | 23.1 | 26.7                                       | 29.2    | 29.2    | 44.4                         | 39   | 37.8 | 44.4    |  |  |  |

| Time             | ;      |      | From 5:00 am to 5:30 am on July 05th. 2012 |          |         |                              |      |      |         |  |  |  |
|------------------|--------|------|--|----------|---------|------------------------------|------|------|---------|--|--|--|
| n .              | WT. 14 |      | Vibrat                                     | ion Leve | el (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit   | Z    | Y  | X        | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq              |        | 42.2 | 31.5                                       | 32.8     | 42.2    | 51.2                         | 48.3 | 50.5 | 51.2    |  |  |  |
| L <sub>max</sub> |        | 64.1 | 45   | 42       | 64.1    | 70.4                         | 68.9 | 70.6 | 70.6    |  |  |  |
| $L_{min}$        | dB     | 20.5 | 20.5                                       | 23.3     | 23.3    | 32.4                         | 32.2 | 31.5 | 32.4    |  |  |  |
| L <sub>10</sub>  |        | 34.9 | 33.9                                       | 35.5     | 35.5    | 52.9                         | 50   | 52.2 | 52.9    |  |  |  |
| L <sub>50</sub>  |        | 26.8 | 30.2                                       | 31.8     | 31.8    | 40.5                         | 39.5 | 39.3 | 40.5    |  |  |  |
| L <sub>90</sub>  |        | 24   | 27   | 28.5     | 28.5    | 35.6                         | 34.8 | 34.9 | 35.6    |  |  |  |

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<sup>4.</sup> Name of sample, customers written by customers' request



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Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

| Time             | ;    | From 7:00 am to 7:30 am on July 05 <sup>th</sup> . 2012 |         |         |         |                              |      |      |         |  |  |
|------------------|------|---|---------|---------|---------|------------------------------|------|------|---------|--|--|
|                  |      |   | Vibrati | on Leve | l (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Unit | Z   | Y       | X       | Average | Z                            | Y    | X    | Average |  |  |
| $L_{eq}$         |      | 43.9  | 35.1    | 34      | 43.9    | 57.9                         | 57   | 54.9 | 57.9    |  |  |
| L <sub>max</sub> |      | 60.8  | 50.8    | 45.3    | 60.8    | 80.3                         | 81.8 | 80.3 | 81.8    |  |  |
| L <sub>min</sub> | dB   | 22.1  | 24.8    | 23.5    | 24.8    | 33.7                         | 30.8 | 29.4 | 33.7    |  |  |
| L <sub>10</sub>  |      | 45.1  | 37.8    | 36.6    | 45.1    | 57.3                         | 51.6 | 49.3 | 57.3    |  |  |
| L <sub>50</sub>  |      | 31.6  | 32.2    | 32.4    | 32.4    | 41.4                         | 38.1 | 36.8 | 41.4    |  |  |
| L <sub>90</sub>  |      | 27.1  | 29      | 29      | 29      | 35.9                         | 33.6 | 33   | 35.9    |  |  |

### Allowable maximum value of the vibration acceleration for contruction activities

| No | Area         | Time in day       | Vibration Acceleration (dB)<br>Average (Leq) |
|----|--------------|-------------------|--|
|    | C '.1        | From 6 am to 6 pm | 75   |
| 1  | Special area | From 6 pm to 6 am | Background level                             |
|    | N            | From 6 am to 9 pm | 75   |
| 2  | Normal area  | From 9 pm to 6 am | Background level                             |

Note: QCVN 27:2008/BTNMT: National Technical Regulation on Vibration

Department of Environmental Quality Analysis

Hanoi. July 16th. 2012

INSTITUTE OF ENVIRONMENTAL

TECHNOLOGY

**Deputy Director** 

Dr. Nguyen Thi Hue

Vu Van Tu

<sup>1.</sup> Test results are valid for test samples

<sup>2.</sup> Only quoted a part of test report if receiving the agreement by terms of DEQA

<sup>3.</sup> Test iterms in italic are not recognized by VILAS; test iterms marked by (\*) are recognized by subcontractor

<sup>4.</sup> Name of sample, customers written by customers' request

Address: R.712, A30 Building 18 Iloang Quoc Viet Road –Cau Giay District – Ila Noi - Viet Nam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

### ANALYTICAL RESULT

No: W1207.185

Client

: Vietnam Infrastructure Development and Finance Investment Joint

Stock Company (VIDIFI., JSC)

Address

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street

Me Tri commune, Tu Liem, Ha Noi

Kind of sample

: Ground water (Contract: 74/VDIFI-VCNMT/2010)

Number of sample

VILAS 366

: 02

Preservation

: 01 PE Bottle 0,5L refrigerate.

01 PE Bottle 0,5L, preserved HNO<sub>3</sub> refrigerate. 01 PE Bottle 0,5L, preserved H<sub>2</sub>SO<sub>4</sub> refrigerate.

01 glass Bottle 1,0 L

Sampling place

: Mr. Nam- Tân Phuc Commune -An Thi District, Hung Yen Province

. (Package EX4-NN4.4)

Co-ordinate

: N 20° 50'92.7"- E 106° 66' 37.6"

Sampling time

: July 5<sup>th</sup>, 2012

Testing time

: From July 06th to July16th 2012

|    |                  | ** **               | T 4 41 1                 | Res    | ults   | QCVN<br>09:2008/ |
|----|------------------|---------------------|--------------------------|--------|--------|------------------|
| No | Parameter        | Unit                | Test methods             | NN 4.4 | MT     | BTNMT            |
| 1. | Temperature      | °C                  | TCVN 4457-1988           | 29.8   | 28.0   | _                |
| 2. | pН               | -                   | TCVN 6492 – 1999         | 6.65   | 7.10   | 5.5 – 8.5        |
| 3. | COD              | mgO <sub>2</sub> /L | KMnO <sub>4</sub> Method | 1.9    | < 1.0  | 4                |
| 4. | BOD <sub>5</sub> | mg/L                | TCVN 6001 – 2008         | <1.0   | < 1.0  | -                |
| 5. | TSS              | mg/L                | SMEWW 2540 D – 2005      | 9      | < 3.0  | -                |
| 6. | Total P          | mg/L                | TCVN 6202 – 2008         | 0.04   | < 0.01 |                  |
| 7. | Total N          | mg/L                | TCVN 5987-1995           | 5.3    | < 0.10 | -                |
| 8. | Coliform         | MPN/                | TCVN 6187 – 1 –1996      | 5      | ND     | 3                |
| 9. | E. Coli          | 100mL               | 1CVIV 0107 - 1 -1990     | ND     | ND     | ND               |

Note: QCVN 09:2008/BTNMT: National technical regulation on underground water quality.

ND: Non detect

Hanoi. July 16<sup>th</sup>. 2012

Department of Environmental Quality Analysis

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

WEDeputy Director

CÔNG NGHỆ MÔI TRƯỜNG

Dr. Nguyen Thi Huc

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Vu Van Tu

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4. Name of sample, customers written by customers' request

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Version: 1.03

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VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

EPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

Address: R.712. A30 Building 18 Hoang Quoe Viet Road -

Cau Giay District - Hanoi - Vietnam

### ANALYTICAL RESULT

No: A1207.72-75

VILAS 366 : Vietnam Infrastructure Development and Finance Investment Joint Stock Company (VIDIRI., JSC) Client

: 8th.9th.10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi Address

Kind of sample : Air (Contract: 74/VDIFI-VCNMT/2010)

Number of sample: 4 sample

Sampling place : Intersection with the 38 road, Tan Phuc Commune, An Thi District, Hung Yen Province (Package EX4-K4.4)

Co-ordinate : N 20° 50' 92.7" - E 106° 66' 37.6"

Testing time : From 9:00 am on July 5th to 7 am on July 6th, 2012

| Unit                       |                            | K 4.4.1 | K 4.4.2                                  | K 4.4.3   | K 4.4.4                                 | QCVN<br>05:2009/BTNMT |
|----------------------------|----------------------------|---------|--|---|---|-----------------------|
| 9:00 am<br>July 05th, 2012 | 9:00 am<br>July 05th, 2012 |         | 15:00 pm<br>July 05 <sup>th</sup> , 2012 | $21:00 \ \mathrm{pm}$ July $05^{\mathrm{th}}, 2012$ | 3:00 am<br>July 06 <sup>th</sup> , 2012 |                       |
| 142                        | 142                        |         | 136                                      | 98  | 78                                      | •                     |
| 94                         | 94                         |         | 158                                      | 124   | 88                                      | 300                   |
| µg/m³ 79                   | 79                         |         | 68                                       | 85  | 73                                      | 350                   |
| 18                         | 18                         |         | 25                                       | 22  | 25                                      | <b>:</b>              |
| 1860                       | 1860                       |         | 1601                                     | 166   | 1441                                    | 30000                 |

Note: QCVN 05:2009/ BTNMT: National technical regulation on ambient air quality

Department of Environmental Quality Analysis

Hanoi. July 16<sup>th</sup>, 2012

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

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Version: 1.03



-Cau Giay District - Hanoi - Vietnam Tel: (84 - 4) 3791 1654 DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

Fax: (84 - 4) 3791 1203

### ANALYTICAL RESULT

No: A1207. EX4

VILAS 366: Viet Nam Infrastructure Development and Finance Investment Joint Stock Company

: 8th.9th.10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi

: Noise (Contract: 74/VDIFI-VCNMT/2010) Kind of sample

Number of sample

Address Client

: EX4-K4.4 Name of sample

: Intersection with the 38 road, Tan Phuc Commune, An Thi District, Hung Yen Province (Package EX4-K4.4) Sampling place

: N-20°50'927"; E-106° 66' 376" Co-ordinate

Testing time

: From 9 am July 05th to 7 am July 06th, 2012

|        |                    |       |      |      |      | Fre  | From 9 am. July 05th | ulv 05th to | 7 am Jul | to 7 am July 06th, 2012 | 2    |      |      |      |
|--------|--------------------|-------|------|------|------|------|----------------------|-------------|----------|-------------------------|------|------|------|------|
| Name ( | Name of sample     | Noise | 9am  | 11am | 13pm | 15pm | 17pm                 | 19pm        | 21pm     | 23pm                    | 3.70 | 03am | 05am | 07am |
|        | T. P.O.            |       | 62.2 | 59.4 | 55.7 | 56.1 | 59.3                 | 54.4        | 54.8     | 57.6                    | 48.1 | 47.8 | 55.3 | 68.7 |
|        | I max              |       | 83.0 | 78.3 | 71.3 | 76.0 | 77.9                 | 79.2        | 75.1     | 72.3                    | 6.79 | 56.8 | 73.4 | 87.8 |
| EX 4-  | Lmin               | (dB)  | 44.7 | 41.5 | 43.5 | 44.5 | 48.4                 | 42.3        | 50.2     | 44.4                    | 44.2 | 44.5 | 40.4 | 9.09 |
| K4.4   | 1.50               |       | 53.4 | 55.9 | 50.9 | 50.7 | 58.0                 | 50.9        | 53.5     | 54.2                    | 47.1 | 46.9 | 44.8 | 62.2 |
|        | 067                |       | 48.9 | 49.2 | 45.7 | 47.0 | 55.1                 | 46.5        | 52.2     | 48.6                    | 45.5 | 45.7 | 42.1 | 62.1 |
| OCVA   | OCVN 26:2010/BTNMT | 3TNMT |      |      |      | 70   |                      |             |          |                         | 55   | \$   |      | 70   |

Note: QCVN 26:2010/BTNMT - National Technical Regulation on Noise

Department of Environmental Quality Analysis

Hanoi. July 23rd 2012

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY VIEW Deputy Director

\* Dr. Nguyen Thi Hue

Vu Van Tu

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<sup>4.</sup> Name of sample, customers written by customers' request



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Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

### ANALYTICAL RESULT

No: A1207.EX4

Page: 1/4

Client

: Vietnam Infrastructure Development and Finance Investment Joint

Stock Company (VIDIFI., JSC)

Address

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street

Me Tri commune, Tu Liem, Ha Noi

Kind of sample : Vibration (Contract: 74/VDIFI-VCNMT/2010)

Number of sample: 12

VILAS 366

Name of sample

: EX 4 - K4.4

Testing place

: Intersection with the 38 road, Tan Phuc Commune, An Thi District

(Package EX4)

Co-ordinate

: N 20° 50' 92.7" - E 106° 66' 37.6"

Testing time

: From 9:00 am July 05th to 7:30 am on July 06th, 2012

| Time             | •     |      |        | From 9  | :00 am to 9:3 | 0 am on | July 0 | 5 <sup>th</sup> , 2012 | 30(0)       |
|------------------|-------|------|--------|---------|---------------|---------|--------|------------------------|-------------|
| D                | WI 24 |      | Vibrat | ion Lev | el (Lv)       | Vib     | ration | Acceler                | ation (Lva) |
| Parameter        | Unit  | Z    | Y      | X       | Average       | Z       | Y      | X                      | Average     |
| Leq              |       | 44.1 | 37.2   | 36.9    | 44.1          | 60.9    | 63.7   | 64.1                   | 64.1        |
| L <sub>max</sub> |       | 60.9 | 50.1   | 49.8    | 60.9          | 88.8    | 88.9   | 90                     | 90          |
| L <sub>min</sub> | 110   | 22.6 | 24.5   | 25.5    | 25.5          | 35.9    | 36.3   | 36.3                   | 36.3        |
| L <sub>10</sub>  | dB    | 47.4 | 40.5   | 39.9    | 47.4          | 53.1    | 63.7   | 61.8                   | 63.7        |
| L <sub>50</sub>  |       | 35.5 | 35.2   | 35.6    | 35.6          | 50.8    | 62.2   | 60.4                   | 62.2        |
| L <sub>90</sub>  |       | 28.8 | 30.6   | 31.2    | 31.2          | 40.6    | 40     | 40.2                   | 40.6        |

| Time             |      |      | I      | From 11 | :00 am to 11: | 30 am or | July (   | )5 <sup>th</sup> . 201 | 2           |
|------------------|------|------|--------|---------|---------------|----------|----------|------------------------|-------------|
|                  | TT   |      | Vibrat | ion Lev | el (Lv)       | Vib      | ration . | Accelera               | ation (Lva) |
| Parameter        | Unit | Z    | Y      | X       | Average       | Z        | Y        | X                      | Average     |
| Leq              |      | 45.2 | 35.3   | 35.7    | 45.2          | 60.00    | 57.8     | 61.1                   | 61.1        |
| L <sub>max</sub> |      | 63.2 | 48.8   | 49.3    | 63.2          | 76.4     | 74.8     | 77.8                   | 77.8        |
| L <sub>min</sub> | ID.  | 23.2 | 21.2   | 23.5    | 23.5          | 33.9     | 30.7     | 33.4                   | 33.9        |
| L <sub>10</sub>  | dB   | 45.5 | 37.8   | 38.2    | 45.5          | 61.9     | 60       | 62.7                   | 62.7        |
| L <sub>50</sub>  |      | 33.8 | 32.5   | 33.5    | 33.8          | 41.7     | 39.2     | 41.5                   | 41.7        |
| L <sub>90</sub>  |      | 27.4 | 28.2   | 29.6    | 29.6          | 37.9     | 35.4     | 37                     | 37.9        |

| Time             | ya    |      | F      | rom 13:  | 00 am to 13: | 30 pm o | n July ( | 05 <sup>th</sup> . 201 | 2           |
|------------------|-------|------|--------|----------|--------------|---------|----------|------------------------|-------------|
|                  | WY *. |      | Vibrat | ion Leve | el (Lv)      | Vib     | ration   | Accelera               | ation (Lva) |
| Parameter        | Unit  | Z    | Y      | X        | Average      | Z       | Y        | X                      | Average     |
| Leg              |       | 31   | 32.9   | 31.2     | 32.9         | 67.4    | 67.7     | 66.4                   | 67.7        |
| L <sub>max</sub> |       | 44   | 39.7   | 41.1     | 44           | 90.1    | 90.1     | 89.8                   | 90.1        |
| L <sub>min</sub> | 100   | 20.7 | 23.3   | 25.3     | 25.3         | 35.7    | 35.6     | 36.1                   | 36.1        |
| L <sub>10</sub>  | dB    | 34.1 | 35.6   | 36.8     | 36.8         | 50.6    | 52.1     | 53.4                   | 53.4        |
| $L_{50}$         |       | 28.8 | 32.2   | 33.4     | 33.4         | 41.3    | 40.1     | 40.8                   | 41.3        |
| L <sub>90</sub>  |       | 25.2 | 28.7   | 29.8     | 29.8         | 38.3    | 37.5     | 38.3                   | 38.3        |

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| Time             | )    |      | J    | From 15 | 5:00 pm to 15:3 | 30 pm or | ı July ( | 5 <sup>th</sup> . 2012 | 2           |
|------------------|------|------|------|---------|-----------------|----------|----------|------------------------|-------------|
|                  |      |      |      |         | vel (Lv)        | Vib      | ration   | Accelera               | ation (Lva) |
| Parameter        | Unit | Z    | Y    | X       | Average         | Z        | Y        | X                      | Average     |
| Leg              |      | 34.9 | 33.1 | 35.5    | 35.5            | 47.9     | 46       | 46.5                   | 47.9        |
| L <sub>max</sub> |      | 53.7 | 40.3 | 52.8    | 53.7            | 63       | 61.1     | 63.2                   | 63.2        |
| L <sub>min</sub> | 170  | 25   | 25.1 | 26.3    | 26.3            | 41.6     | 40.7     | 40.4                   | 41.6        |
| $L_{10}$         | dB   | 37.9 | 35.5 | 37.5    | 37.9            | 49.8     | 48       | 48.4                   | 49.8        |
| L <sub>50</sub>  |      | 31.7 | 32.4 | 33.9    | 33.9            | 44.8     | 44.3     | 44.5                   | 44.8        |
| L <sub>90</sub>  |      | 28.5 | 29.2 | 30.7    | 30.7            | 43.1     | 42       | 41.9                   | 43.1        |

| Time                     | )    |      |      | From 1 | 7:00 pm to 17:3 | 30 pm or | July 0 | 5 <sup>th</sup> . 201 | 2           |
|--------------------------|------|------|------|--------|-----------------|----------|--------|-----------------------|-------------|
| graduation of the second | ~    |      |      |        | vel (Lv)        |          |        |                       | ation (Lva) |
| Parameter                | Unit | Z    | Y    | X      | Average         | Z        | Y      | X                     | Average     |
| Leg                      |      | 45.5 | 44.8 | 44.2   | 45.5            | 47.9     | 52.5   | 51.4                  | 52.5        |
| L <sub>max</sub>         |      | 62.7 | 61   | 61.4   | 62.7            | 73.6     | 79.8   | 78.1                  | 79.8        |
| L <sub>min</sub>         |      | 36.6 | 35.7 | 35.7   | 36.6            | 36.9     | 36.9   | 38.6                  | 38.6        |
| $\overline{L_{10}}$      | dB   | 47.5 | 45.8 | 45.4   | 47.5            | 45       | 46.3   | 47.4                  | 47.4        |
| L <sub>50</sub>          |      | 41.4 | 43   | 42.9   | 43              | 41.9     | 42.7   | 43.1                  | 43.1        |
| L <sub>90</sub>          |      | 39.7 | 40.8 | 40.9   | 40.9            | 39.1     | 40.6   | 40.8                  | 40.8        |

| Time             |                |      | )    | From 1 | 9:00 pm to 19:3 | 30 pm oi | ı July ( | 5 <sup>th</sup> . 201 | 2           |
|------------------|----------------|------|------|--------|-----------------|----------|----------|-----------------------|-------------|
|                  | <b>T</b> T • . |      |      |        | vel (Lv)        | Vib      | ration   | Acceler               | ation (Lva) |
| Parameter        | Unit           | Z    | Y    | X      | Average         | Z        | Y        | X                     | Average     |
| Leq              |                | 39.3 | 34.2 | 38     | 39.3            | 38.7     | 38.3     | 39.3                  | 39.3        |
| L <sub>max</sub> |                | 56.4 | 50.8 | 57.3   | 57.3            | 54.8     | 51.1     | 34.1                  | 54.8        |
| Lmin             | tro.           | 20.8 | 21.9 | 24.4   | 24.4            | 32.5     | 30.9     | 30.3                  | 32.5        |
| L <sub>10</sub>  | dB             | 42.6 | 36.2 | 37.5   | 42.6            | 40.5     | 40.5     | 41.7                  | 41.7        |
| L <sub>50</sub>  |                | 29.1 | 31.8 | 33.2   | 33.2            | 37.8     | 37.5     | 38.3                  | 38.3        |
| L <sub>90</sub>  |                | 25   | 28.2 | 29.8   | 29.8            | 35.3     | 34.2     | 35.1                  | 35.3        |

| Time             | <b>;</b>      |      |       | From 2  | 1:00 pm to 21:3 | 30 pm oı | ı July ( | 95 <sup>th</sup> . 2012 | 2           |
|------------------|---------------|------|-------|---------|-----------------|----------|----------|-------------------------|-------------|
|                  | <b>T</b> T 4, |      | Vibra | tion Le | vel (Lv)        | Vih      | ration   | Accelera                | ation (Lva) |
| Parameter        | Unit          | Z    | Y     | X       | Average         | Z        | Y        | X                       | Average     |
| Leq              |               | 32.5 | 34.9  | 37.6    | 37.6            | 50.7     | 51.4     | 51.4                    | 51.4        |
| L <sub>max</sub> |               | 72.2 | 72.7  | 73.7    | 73.7            | 75.8     | 76       | 75.6                    | 76          |
| $L_{\min}$       | 15            | 21.2 | 22.4  | 23.5    | 23.5            | 38       | 37.6     | 38.4                    | 38.4        |
| L <sub>10</sub>  | dB            | 35.2 | 35.4  | 36.5    | 36.5            | 50.5     | 52.9     | 52.4                    | 52.9        |
| $L_{50}$         |               | 28.8 | 32    | 32.7    | 32.7            | 43.9     | 44.9     | 45.4                    | 45.4        |
| L <sub>90</sub>  |               | 25.1 | 28.5  | 29.4    | 29.4            | 39.9     | 40.3     | 40.9                    | 40.9        |

<sup>1.</sup> Test results are valid for test samples

DEQA/TT/BM/17.01 Version : 1.03 Page : 2/4

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<sup>4.</sup> Name of sample, customers written by customers' request



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| Time       |      |      |        | From 2  | 23:00 pm to 23: | 30 pm c | n July  | 05 <sup>th</sup> . 20 | 012           |
|------------|------|------|--------|---------|-----------------|---------|---------|-----------------------|---------------|
| Danamatan  | Unit |      | Vibrat | tion Le | vel (Lv)        | Vi      | bration | Accele                | eration (Lva) |
| Parameter  | Unit | Z    | Y      | X       | Average         | Z       | Y       | X                     | Average       |
| Leq        |      | 36.1 | 34.1   | 36.4    | 36.4            | 42      | 41.4    | 40.8                  | 42            |
| $L_{max}$  |      | 53.8 | 50.7   | 54.7    | 54.7            | 55.1    | 56.3    | 55.4                  | 56.3          |
| $L_{\min}$ | dB   | 22.8 | 22.3   | 24.7    | 24.7            | 32.2    | 31.3    | 31.4                  | 32.2          |
| $L_{10}$   | an   | 39.6 | 35.3   | 36.5    | 39.6            | 45.8    | 44.8    | 44.1                  | 45.8          |
| 1.50       |      | 31.3 | 31.9   | 33      | 33              | 39.6    | 38.1    | 38.3                  | 39.6          |
| L90        |      | 26.3 | 28.6   | 29.7    | 29.7            | 35.3    | 34.6    | 34.6                  | 35.3          |

| Time             | The state of the s |      |       | From    | 1:00 am to 1:3 | 0 am on | July 0  | 6 <sup>th</sup> . 2012 | 2            |
|------------------|--|------|-------|---------|----------------|---------|---------|------------------------|--------------|
| 70               | ¥ 1 24   |      | Vibra | tion Le | vel (Lv)       | Vi      | bration | Accele                 | ration (Lva) |
| Parameter        | Unit   | Z    | Y     | X       | Average        | Z       | Y       | X                      | Average      |
| $L_{eq}$         |  | 40   | 38.2  | 36.7    | 40             | 44      | 42.8    | 41.5                   | 44           |
| L <sub>max</sub> |  | 53.7 | 54    | 51.5    | 54             | 61.2    | 60.3    | 58                     | 61.2         |
| $L_{\min}$       | dB   | 37.2 | 35.3  | 33.6    | 37.2           | 37.7    | 35.9    | 33.9                   | 37.7         |
| $L_{10}$         | un   | 40.9 | 38.7  | 37.3    | 40.9           | 45.3    | 43.3    | 41.8                   | 45.3         |
| $L_{50}$         |  | 39.2 | 37    | 35.2    | 39.2           | 39.6    | 38      | 30.5                   | 39.6         |
| L <sub>90</sub>  |  | 38.4 | 36.3  | 34.3    | 38.4           | 38.4    | 30.5    | 34.9                   | 38.4         |

| Time             |                           |      |       | From    | 3:00 am to 3:3 | 30 am on | July 0  | 6 <sup>th</sup> . 2012 |              |
|------------------|---------------------------|------|-------|---------|----------------|----------|---------|------------------------|--------------|
|                  | WT *4                     |      | Vibra | tion Le | vel (Lv)       | Vi       | bration | Acceler                | ration (Lva) |
| Parameter        | Unit                      | Z    | Y     | X       | Average        | Z        | Y       | X                      | Average      |
| Leq              | The state of the state of | 46.4 | 41.9  | 39.6    | 46.4           | 47.7     | 48.4    | 42.4                   | 48.4         |
| L <sub>max</sub> |                           | 68.2 | 62.7  | 57      | 68.2           | 73.8     | 71.3    | 71.1                   | 73.8         |
| L <sub>min</sub> | dB                        | 32.5 | 31.4  | 31.5    | 32.5           | 38.4     | 36.1    | 34.4                   | 38.4         |
| $L_{10}$         | uБ                        | 44.1 | 42.2  | 41.3    | 44.1           | 48.7     | 45.5    | 42.4                   | 48.7         |
| $L_{50}$         |                           | 37.9 | 36.2  | 36.2    | 37.9           | 43       | 40      | 38.5                   | 43           |
| L <sub>90</sub>  |                           | 35.4 | 33.6  | 33.9    | 35.4           | 40       | 37.6    | 36.2                   | 40           |

| Time             |      |  | The second secon | From     | 5:00 am to 5:3 | 0 am on | July 0  | 5 <sup>th</sup> . 2012 |             |
|------------------|------|--|--|----------|----------------|---------|---------|------------------------|-------------|
|                  | **   | Andreas and the state of the st | Vibra  | tion Lev | el (Lv)        | Vil     | oration | Acceler                | ation (Lva) |
| Parameter        | Unit | Z  | Y  | X        | Average        | Z       | Y       | X                      | Average     |
| Leq              |      | 30.4   | 38   | 38.8     | 38.8           | 56.2    | 53.7    | 56.7                   | 56.7        |
| L <sub>max</sub> |      | 45.4   | 55.1   | 55.8     | 55.8           | 90.1    | 89.9    | 89.8                   | 90.1        |
| $L_{\min}$       | .115 | 21.2   | 22   | 23.4     | 23.4           | 30.8    | 29.2    | 28.5                   | 30.8        |
| $L_{10}$         | dB   | 32.4   | 34.9   | 36.4     | 36.4           | 45.3    | 42.8    | 42.3                   | 45.3        |
| L <sub>50</sub>  |      | 26.3   | 30.2   | 31.4     | 31.4           | 35.6    | 33.4    | 34                     | 35.6        |
| L <sub>90</sub>  |      | 24   | 26.8   | 28.1     | 28.1           | 33      | 31      | 31.1                   | 33          |

<sup>1.</sup> Test results are valid for test samples

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<sup>4</sup> Name of sample, customers written by customers' request



Address: R.712, A30 Building 18 Hoang Quoc Viet Road -Cau Giay District - Hanoi - Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

| Time             |       |      |      | From 7:  | :00 am to 7:3  | 0 am on | July 0 | 5 <sup>th</sup> . 2012 |             |
|------------------|-------|------|------|----------|--|---------|--------|------------------------|-------------|
|                  | WY *. |      |      | ion Leve | The second secon | Vib     | ration | Accelera               | ation (Lva) |
| Parameter        | Unit  | Z    | Y    | X        | Average  | Z       | Y      | X                      | Average     |
| Leq              |       | 32.8 | 32.6 | 31.8     | 32.8   | 66.7    | 67.2   | 66.9                   | 67.2        |
| L <sub>max</sub> |       | 48.6 | 41.5 | 33.2     | 48.6   | 75      | 76.1   | 74.2                   | 76.1        |
| L <sub>min</sub> | ID.   | 26.1 | 24.1 | 29.8     | 29.8   | 41.7    | 43.2   | 42.8                   | 43.2        |
| L <sub>10</sub>  | dB    | 35.2 | 34.8 | 37       | 37   | 70.2    | 70.4   | 70.5                   | 70.5        |
| L <sub>50</sub>  |       | 31   | 31.4 | 35.9     | 35.9   | 65.8    | 66.8   | 65.4                   | 66.8        |
| L <sub>90</sub>  |       | 28.8 | 28.6 | 28.9     | 28.9   | 59.3    | 58.7   | 59                     | 59.3        |

### Allowable maximum value of the vibration acceleration for contruction activities

| No | Area         | Time in day       | Vibration Acceleration (dB)<br>Average (Lcq) |
|----|--------------|-------------------|--|
|    |              | From 6 am to 6 pm | 75   |
| 1  | Special area | From 6 pm to 6 am | Background level                             |
|    |              | From 6 am to 9 pm | 75   |
| 2  | Normal area  | From 9 pm to 6 am | Background level                             |

Note: QCVN 27:2008/BTNMT: National Technical Regulation on Vibration

Hanoi, July 16<sup>th</sup>, 2012

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

**Deputy Director** 

Vu Van Tu

Department of Environmental Quality Analysis

Dr. Nguyen Thi Hue

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Address: R.712, A30 Building 18 Hoang Quoc Viet Road - Cau Giay District - Hanoi - Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

VILAS 366

### ANALYTICAL RESULT

No: W1207.192

Client

: Viet Nam Infrastructure Development and Finance Investment Joint Stock

Address

Company (VIDIFI., JSC) : 8<sup>th</sup>-9<sup>th</sup>-10<sup>th</sup> floors, LILAMA 10 Building, Le Van Luong street

Me Tri commune, Tu Liem, Ha Noi

Kind of sample

: Ground water (Contract : 74/VDIFI-VCNMT/2010)

Number of sample

: 02

Preservation

: 01 PE Bottle 0,5L refrigerate.

01 PE Bottle 0,5L, preserved HNO<sub>3</sub> refrigerate. 01 PE Bottle 0,5L, preserved H<sub>2</sub>SO<sub>4</sub> refrigerate.

01 glass Bottle 1,0 L

Sampling place

: Mr. Vu Van Hoi- Nhan Quyen Commune -Binh Giang District,

Hai Duong Province (Package EX4-NN 5.4)

Co-ordinate

: N 20° 51,204 - E 106° 12, 149 : July 03rd, 2012

Sampling time Testing time

: From July 05th to July 16th 2012

|    |                  | ** **               | Tr. 4 and als            | Res    | ults   | QCVN<br>09:2008/ |
|----|------------------|---------------------|--------------------------|--------|--------|------------------|
| No | Parameter        | Unit                | Test methods             | NN 5.4 | MT     | BTNMT            |
| 1. | Temperature      | °C                  | TCVN 4457-1988           | 27.5   | 28.0   |                  |
| 2. | рН               | -                   | TCVN 6492 – 1999         | 7.01   | 7.10   | 5.5 – 8.5        |
| 3. | COD              | mgO <sub>2</sub> /L | KMnO <sub>4</sub> Method | 10.6   | < 1.0  | 4                |
| 4. | BOD <sub>5</sub> | mg/L                | TCVN 6001 – 2008         | 3.6    | < 1.0  | -                |
| 5. | TSS              | mg/L                | SMEWW 2540 D - 2005      | 31     | < 3.0  | -                |
| 6. | Total P          | mg/L                | TCVN 6202 – 2008         | 0.15   | < 0.01 | _                |
| 7. | Total N          | mg/L                | TCVN 5987-1995           | 28.8   | < 0.10 | -                |
| 8. | Coliform         | MPN/                | TCVN 6187 – 1 –1996      | 21     | ND     | 3                |
| 9. | E. Coli          | 100mL               | 10 11 0107 - 1 -1990     | ND     | ND     | ND               |

Note: QCVN 09:2008/BTNMT: National technical regulation on underground water quality.

ND: Non detect

Hanoi. July 16th. 2012

Department of Environmental Quality Analysis

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Deputy Director

Dr. Nguyen Thi Hue

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4. Name of sample, customers written by customers' request

DEQA/TT/BM/17.01

Version: 1.03

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DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

Fax: (84 - 4) 3791 1203 Tel: (84 - 4) 3791 1654

### ANALYTICAL RESULT

VILAS 366 FTNA

Client

No: W1207.189-191

: Vietnam Infrastructure Development and Finance Investment Joint Stock Company (VIDIFI., JSC)

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi Address

: Surface water (Contract : 74/VDIFI-VCNMT/2010) Kind of sample

Number of sample

: 01 PE Bottle 0,5L refrigerate. Preservation

01 PE Bottle 0,5L, preserved HNO3 refrigerate.

01 PE Bottle 0,5L, preserved refrigerate.

01 glass Bottle 1,0 L

: O Xuyen River, O Xuyen Village, Co Bi Commune, Binh Giang District, Hai Duong Province (Package EX4) Sampling place

: N 20° 51'309"- E 105° 15' 081" Co-ordinate

: From July 6th to July 7th 2012 Sampling time : From July 9th to July 16th 2012 Testing time

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| •                 | 7. 1.1              | F 17                     |          | Results  | ults     |        | 00         | QCVN      |
|-------------------|---------------------|--------------------------|----------|----------|----------|--------|------------|-----------|
| Parameter         | Cuit                | l est metnods            | NM 2.4.1 | NM 2.4.2 | NM 2.4.3 | MT     | Column B1  | Column B2 |
| Hd                | 1                   | TCVN 6492 – 1999         | 7.11     | 7.45     | 7.36     | 7.20   | 5.5 -9     | 5.5 -9    |
| DO                | mg/L                | TCVN 7325 - 2004         | 2.60     | 2.45     | 2.37     | 7.38   | <b>∀</b> I | >2        |
| COD               | mgO <sub>2</sub> /L | KMnO <sub>4</sub> Method | 9.6      | 10.4     | 26.2     | <1.0   | 30         | 50        |
| BODs              | mg/L                | TCVN 6001 - 2008         | 5.2      | 5.8      | 13.9     | <1.0   | 15         | 25        |
| TSS               | mg/L                | SMEWW 2540 D – 2005      | 5        | 7        | 8        | <3.0   | 20         | 100       |
| Total P           | mg/L                | TCVN 6202 - 2008         | 0.21     | 0.15     | 0.25     | 0.01   | 1          | 1         |
| Total N           | mg/L                | TCVN 5987-1995           | 9.9      | 3.8      | 3.8      | <0.10  | 1          |           |
| Pesticides        | J/gn                | TCVN 7876: 2008          | <0.5     | <0.5     | <0.5     | <0.5   | 1          | 1         |
| Aldrine+Dieldrine | µg/L                | TCVN 7876: 2008          | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.008      | 0.01      |

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<sup>4.</sup> Name of sample, customers written by customers' request



### DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366 VIETNAM ACADEMY OF SCIENCE AIND TECHNOLOGY INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Tel: (84 - 4) 3791 1654 Cau Giay District - Hanoi - Vietnam

Fax: (84 - 4) 3791 1203

|              |             |            |                     |          | Results  | ılts     |        | QCVN      | Z         |
|--------------|-------------|------------|---------------------|----------|----------|----------|--------|-----------|-----------|
| 20           | Parameter   | Unit       | Test methods        | NM 2.4.1 | NM 2.4.2 | NM 2.4.3 | TM     | Column B1 | Column B2 |
| 10           | Endrine     |            |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.014     | 0.01      |
| 1   5        | RHC         |            |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.13      | 0.015     |
| 3 :          | DDT         |            |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.004     | 0.005     |
| 2 5          | DDD         |            |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | ı         |           |
| 14           | Endosunfane | μg/L       | TCVN 7876: 2008     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.01      | 0.02      |
| 2   ;        | Lindane     |            |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.38      | 0.4       |
| 16           | Chlordane   |            |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.02      | 0.03      |
| 17           | Hentachlor  |            |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.02      | 0.05      |
| <del>2</del> | Mineral oil | mg/L       | SMEWW 5520 B - 2005 | 0.12     | 0.13     | 0.15     | < 0.05 | 0.1       | 0.3       |
| 19           | Coliform    | MPN/100 mL | TCVN 6187-1:1996    | 38       | 96       | 200      | ND     | 7500      | 10000     |

Note: QCVN 08:2008/BTNMT: National technical regulation on surface water quality

B1-For the usage of irrigation or other purpose having the similar quality requirement like B2 level

B2 – For the usage of water navigation and other purpose with less water quality NM 2.4.1: Sampling at 14:00pm on July 6<sup>th</sup>. 2012; NM 2.4.2: Sampling at 22:00 pm on July 6<sup>th</sup>. 2012; NM 2.4.3: Sampling at 6:00 am on July 7<sup>th</sup>.

2012; MT: Blank sample; ND: non detect

Department of Environmental Quality Analysis



Vu Van Tu

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Hanoi. July 16th. 2012

Deputy Director

Dr. Nguyen Thi Hue

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<sup>4.</sup> Name of sample, customers written by customers' request

Address: R.712, A30 Building 18 Hoang Quoc Viet Road -Cau Gia, District - Hanoi - Vietnam

Tel: (84 - 4) 3791 1654 DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366 INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Fax: (84 - 4) 3791 1203

### ANALYTICAL RESULT

No: A1207.76-79

VILAS 3 % ietnam Infrastructure Development and Finance Investment Joint Stock Company (VIDIFI., JSC) Client

: 8th.9th.10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi Address

: Air (Contract: 74/VDIFI-VCNMT/2010) Kind of sample

Number of sample: 4

: Intersection with TL 20, Nhan Quyen Commune, Binh Giang District, Hai Duong Province (Package EX4-K5.4) Sampling place

: N 20° 51'20.4" - E 106° 12' 14.9" Co-ordinate : From 9 am on Apr 6th to 6:30 am on Apr 7th, 2012 Testing time

| Name of | Parameter   | Unit              | K 5.4.1                             | K 5.4.2                    | K 5.4.3                                 | K 5.4.4                                | QCVN<br>05:2009/BTNMT |
|---------|-------------|-------------------|-------------------------------------|----------------------------|---|--|-----------------------|
|         | Time        |                   | 9 am<br>July 6 <sup>th</sup> , 2012 | 15:00 pm<br>July 6th, 2012 | 21:00 pm<br>July 6 <sup>th</sup> , 2012 | 3:00 am<br>July 7 <sup>th</sup> , 2012 |                       |
|         | VOCs        |                   | 130                                 | 150                        | 130                                     | 120                                    | s <b>il</b> s         |
|         | Dust        |                   | 456                                 | 589                        | 284                                     | 352                                    | 300                   |
| EX4 -   | SO,         | ug/m <sup>3</sup> | 93                                  | 119                        | 117                                     | 105                                    | 350                   |
|         | NO          | )                 | 33                                  | 20                         | 20                                      | 22                                     |                       |
|         | <b>2</b> 00 |                   | 945                                 | 1346                       | 1020                                    | 1696                                   | 30000                 |

Note: QCVN 05:2009/ BTNMT: National technical regulation on ambient air quality

Department of Environmental Quality Analysis

Hanoi. July 16th. 2012

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY Deputy Director

Vu Van Tu

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DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

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Address: R.712, A30 Building 18 Hoang Quoc Viet Road

-Cau Giay District - Hanoi - Vietnam

### ANALYTICAL RESULT

No: A1207.EX4

VILAS 366: Viet Nam Infrastructure Development and Finance Investment Joint Stock Company

: 8th.9th.10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi Address

: Noise (Contract: 74/VDIFI-VCNMT/2010) Kind of sample

Number of sample

: EX4-K5.4 Name of sample

: Intersection with TL 20, Nhan Quyen Commune, Binh Giang District, Hai Duong Province (Package EX4) Sampling place

N 20° 51' 204" - E 106° 12' 149" Co-ordinate

: From 9 am July 06th to 7 am July 07th, 2012 Testing time

|        |   | ;          |      |       |      | 4    | From 9 am July 06th | July 06th to | to 7 am July 07th, 2012 | 07th, 2012 |      |      |      |      |
|--------|---|------------|------|-------|------|------|---------------------|--------------|-------------------------|------------|------|------|------|------|
| Name   | Name of sample                          | Noise      | 9am  | 11am  | 13pm | 1    | 17pm                | 19pm         | 21pm                    | 23pm       | 01am | 03am | 05am | 07am |
|        | Lea                                     |            | 72.3 | 72.7  | 69.5 | 68.1 | 68.2                | 0.89         | 0.99                    | 57.9       | 55.0 | 66.2 | 69.2 | 70.4 |
| i      | Lmax                                    |            | 8.06 | 101.4 | 9.66 | 87.7 | 87.1                | 94.3         | 91.8                    | 9.68       | 86.2 | 84.7 | 90.1 | 90.1 |
| EX 4-  | Lmin                                    | (dB)       | 54.1 | 47.9  | 48.9 | 50.5 | 51.3                | 46.5         | 48.0                    | 43.3       | 41.1 | 47.0 | 46.9 | 51.2 |
| K5.4   | 1.50                                    | ,          | 6.79 | 64.1  | 60.1 | 63.1 | 63.6                | 9.19         | 59.1                    | 50.1       | 48.1 | 57.0 | 57.7 | 65.3 |
| on the | L90                                     |            | 62.3 | 56.5  | 53.4 | 55.3 | 57.8                | 54.2         | 53.3                    | 47.7       | 45.0 | 53.0 | 51.5 | 58.0 |
| QCV)   | QCVN 26:2010/BTNMT (Nomarl area - Leq ) | TWMT (Fed) |      |       |      | 70   |                     |              |                         |            | 55   | 10   |      | 70   |

Note: QCVN 26:2010/BTNMT - National Technical Regulation on Noise

Department of Environmental Quality Analysis

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

//E/ Deputy Director

Hanoi. July 23rd, 2012



Dr. Nguyen Thi Hue

. Test results are valid for test samples

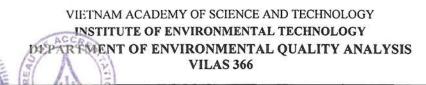
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Version: 1.03



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Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

### ANALYTICAL RESULT

No: A1204.EX4

Client

: Vietnam Infrastructure Development and Finance Investment Joint Stock

Company (VIDIFI., JSC)

Address

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street

Me Tri commune, Tu Liem, Ha Noi

Kind of sample

: Vibration (Contract: 74/VDIFI-VCNMT/2010)

Number of sample

: 12

VILAS 366

Name of sample

: EX 4 - K5.4

Testing place

: Intersection with the 20 provincial road, Nhan Quyen Commune, Binh

Giang District, Hai Duong Province (Package EX4)

Co-ordinate

: N 20° 51'20.4" - E 106° 12' 14.9"

Testing time

: From 9:00 am on July 06<sup>th</sup> to 7:30 am on July 07<sup>th</sup>, 2012.

| Time             |      |      | F       | rom 9:00 | 0 am to 9:30 | am on | July 06 | th, 2012 |            |
|------------------|------|------|---------|----------|--------------|-------|---------|----------|------------|
| Danamatan        | Unit |      | Vibrati | on Level | (Lv)         | Vib   | ration  | Accelera | tion (Lva) |
| Parameter        | Unit | Z    | Y       | X        | Average      | Z     | Y       | X        | Average    |
| Leq              |      | 50.6 | 37.1    | 38.1     | 50.6         | 66.9  | 69.9    | 64.5     | 69.9       |
| L <sub>max</sub> |      | 68.3 | 50.8    | 57.4     | 68.3         | 79.2  | 78.4    | 74.2     | 79.2       |
| $L_{min}$        | dB   | 32.8 | 29.8    | 29.3     | 32.8         | 60.5  | 60.9    | 55.6     | 60.9       |
| L <sub>10</sub>  | uБ   | 53.6 | 39.3    | 39.8     | 53.6         | 67.2  | 71.5    | 65.9     | 71.5       |
| L <sub>50</sub>  |      | 47   | 35.9    | 36.9     | 47           | 66.4  | 69.4    | 64.2     | 69.4       |
| L <sub>90</sub>  |      | 43.4 | 33      | 33.5     | 43.4         | 66    | 67.2    | 62.1     | 67.2       |

| Time             |      |      | Fr       | om 11:0  | 0 am to 11:3 | 0 am on | July 0 | 6 <sup>th</sup> . 2012 | 2          |
|------------------|------|------|----------|----------|--------------|---------|--------|------------------------|------------|
| D                | WT:4 |      | Vibratio | on Level | (Lv)         | Vib     | ration | Accelera               | tion (Lva) |
| Parameter        | Unit | Z    | Y        | X        | Average      | Z       | Y      | X                      | Average    |
| Leq              |      | 48.8 | 35.8     | 36.8     | 48.8         | 61.5    | 59.2   | 60.1                   | 61.5       |
| L <sub>max</sub> |      | 64.3 | 49.9     | 45.5     | 64.3         | 84.6    | 81.1   | 85.6                   | 85.6       |
| L <sub>min</sub> | dB   | 27   | 25.9     | 26.3     | 27           | 44      | 39.2   | 39.7                   | 44         |
| L <sub>10</sub>  | uБ   | 52.9 | 38.5     | 39.4     | 52.9         | 61.5    | 59.6   | 58.9                   | 61.5       |
| L <sub>50</sub>  |      | 42.2 | 34.6     | 36       | 42.2         | 54      | 51.1   | 50.6                   | 54         |
| L <sub>90</sub>  |      | 32.9 | 31.3     | 32.6     | 32.9         | 49      | 45.6   | 45.7                   | 49         |

| Time             |      |                      | From 13:00 pm to 13:30 pm on July 06th . 2012 |      |         |                              |      |      |         |  |  |
|------------------|------|----------------------|---|------|---------|------------------------------|------|------|---------|--|--|
| <b>.</b>         | Unit | Vibration Level (Lv) |   |      |         | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        |      | Z                    | Y   | X    | Average | Z                            | Y    | X    | Average |  |  |
| Leq              |      | 43.7                 | 34.9  | 36.5 | 43.7    | 56.7                         | 56.9 | 55.1 | 56.9    |  |  |
| L <sub>max</sub> |      | 59.5                 | 43.4  | 47.1 | 59.5    | 76.3                         | 74.9 | 76.4 | 76.4    |  |  |
| L <sub>min</sub> | dB   | 26.6                 | 26.2  | 26.1 | 26.6    | 38                           | 35.5 | 34.5 | 38      |  |  |
| $L_{10}$         | uБ   | 47.3                 | 37.7  | 38.9 | 47.3    | 61.1                         | 60.8 | 58.1 | 61.1    |  |  |
| L <sub>50</sub>  |      | 38.7                 | 33.9  | 35.7 | 38.7    | 49.7                         | 48.3 | 46.1 | 49.7    |  |  |
| L <sub>90</sub>  |      | 31.7                 | 30.8  | 32.1 | 32.1    | 43                           | 41.2 | 39.6 | 43      |  |  |

<sup>1.</sup> Test results are valid for test samples

<sup>2.</sup> Only quoted a part of test report if receiving the agreement by terms of DEQA

<sup>3.</sup> Test iterms in italic are not recognized by VILAS; test iterms marked by (\*) are recognized by subcontractor

<sup>4.</sup> Name of sample, customers written by customers' request



Address: R.712, A30 Building 18 Hoang Quoc Viet Road –Cau Giay District Hanoi - Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

| Time             | )  | From 15:00 pm to 15:30 pm on July 06 <sup>th</sup> . 2012 |      |      |         |      |          |          |            |  |
|------------------|----|---|------|------|---------|------|----------|----------|------------|--|
| Parameter Unit   |    | Vibration Level (Lv)                                      |      |      |         | Vib  | ration A | Accelera | tion (Lva) |  |
|                  |    | Z   | Y    | X    | Average | Z    | Y        | X        | Average    |  |
| $L_{eq}$         | dB | 48.1  | 37.4 | 38.5 | 48.1    | 54.4 | 55.2     | 53.2     | 55.2       |  |
| L <sub>max</sub> |    | 59.8  | 46   | 46.1 | 59.8    | 72.6 | 71.6     | 70.4     | 72.6       |  |
| L <sub>min</sub> |    | 29.6  | 28.5 | 27.8 | 29.6    | 42.6 | 44.7     | 42.9     | 44.7       |  |
| L <sub>10</sub>  |    | 51.9  | 40   | 41.1 | 51.9    | 50.6 | 57.9     | 55.5     | 57.9       |  |
| L <sub>50</sub>  |    | 44.7  | 36.5 | 37.7 | 44.7    | 48.9 | 50.7     | 47.9     | 50.7       |  |
| L <sub>90</sub>  |    | 37.4  | 35.2 | 34.4 | 37.4    | 44.9 | 47       | 44.7     | 47         |  |

| Time             | <del>)</del> |                      | F    | rom 17 | :00 pm to 17: | 30 pm o                      | n July ( | 06 <sup>tn</sup> . 201 | 2       |  |
|------------------|--------------|----------------------|------|--------|---------------|------------------------------|----------|------------------------|---------|--|
|                  | Unit         | Vibration Level (Lv) |      |        |               | Vibration Acceleration (Lva) |          |                        |         |  |
| Parameter        |              | Z                    | Y    | X      | Average       | Z                            | Y        | X                      | Average |  |
| $L_{eq}$         |              | 46.1                 | 34.8 | 35.3   | 46.1          | 55.6                         | 52.3     | 50.6                   | 55.6    |  |
| L <sub>max</sub> | dB           | 60.2                 | 42.6 | 42.6   | 60.2          | 69.2                         | 67.7     | 65.4                   | 69.2    |  |
| Lmin             |              | 26.8                 | 26.7 | 23.9   | 26.8          | 40.9                         | 36.6     | 36.4                   | 40.9    |  |
| L <sub>10</sub>  |              | 50.2                 | 37   | 37.8   | 50.2          | 59.4                         | 55.5     | 54.3                   | 59.4    |  |
| L <sub>50</sub>  |              | 42                   | 34   | 34.7   | 42            | 50                           | 46.4     | 45.5                   | 50      |  |
| L <sub>90</sub>  |              | 33.9                 | 31.1 | 31.6   | 33.9          | 44.6                         | 40.8     | 40.2                   | 44.6    |  |

| Time             | )    |              | From 19:00 pm to 19:30 pm on July 06 <sup>th</sup> . 2012 |         |         |                              |      |      |         |  |  |
|------------------|------|--------------|---|---------|---------|------------------------------|------|------|---------|--|--|
|                  |      |              | Vibrati   | on Leve | l (Lv)  | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter   U    | Unit | $\mathbf{Z}$ | Y   | X       | Average | Z                            | Y    | X    | Average |  |  |
| Leq              |      | 40           | 32.7  | 33.9    | 40      | 54.9                         | 54.3 | 53.5 | 54.9    |  |  |
| L <sub>max</sub> | dB   | 59.8         | 40  | 43.9    | 59.8    | 68.9                         | 69.1 | 67.3 | 69.1    |  |  |
| $L_{min}$        |      | 22.6         | 24.3  | 24.3    | 24.3    | 36.5                         | 35.1 | 35.2 | 36.5    |  |  |
| $L_{10}$         |      | 38.4         | 35.5  | 36.5    | 38.4    | 58.8                         | 58.1 | 57.5 | 58.8    |  |  |
| $L_{50}$         |      | 30.7         | 31.7  | 33.1    | 33.1    | 49.4                         | 48.7 | 48.5 | 49.4    |  |  |
| L <sub>90</sub>  |      | 27.1         | 28.4  | 29.5    | 29.5    | 42.1                         | 40.9 | 40.4 | 42.1    |  |  |

| Time             | <b>;</b> | From 21:00 pm to 21:30 pm on July 1 06 <sup>th</sup> . 2012 |      |      |         |                              |      |      |         |  |
|------------------|----------|---|------|------|---------|------------------------------|------|------|---------|--|
|                  | WT *4    | Vibration Level (Lv)  |      |      |         | Vibration Acceleration (Lva) |      |      |         |  |
| Parameter Unit   |          | Z   | Y    | X    | Average | Z                            | Y    | X    | Average |  |
| $L_{eq}$         |          | 40.8  | 32.2 | 33.3 | 40.8    | 53.5                         | 53.7 | 51.7 | 53.7    |  |
| L <sub>max</sub> |          | 60.8  | 42.2 | 42.7 | 60.8    | 71.7                         | 72.7 | 70.4 | 72.7    |  |
| $L_{\min}$       | .110     | 22.5  | 22.7 | 23.7 | 23.7    | 45.9                         | 46.9 | 43.7 | 46.9    |  |
| L <sub>10</sub>  | dB       | 40.7  | 34.8 | 35.9 | 40.7    | 55                           | 54.3 | 53   | 55      |  |
| L <sub>50</sub>  |          | 29.5  | 31.2 | 32.4 | 32.4    | 51.6                         | 51   | 48   | 51.6    |  |
| L <sub>90</sub>  |          | 26.1  | 27.9 | 28.9 | 28.9    | 47                           | 49.1 | 46.5 | 49.1    |  |

<sup>1</sup> Test results are valid for test samples

DEQA/TT/BM/17.01 Version: 1.03 Page: 2/4

<sup>2.</sup> Only quoted a part of test report if receiving the agreement by terms of DEQA

<sup>3.</sup> Test iterms in italic are not recognized by VILAS; test iterms marked by (\*) are recognized by subcontractor

<sup>4.</sup> Name of sample, customers written by customers' request



Address: R.712, A30 Building 18 Hoang Quoc Viet Road -- Cau Giay District Hanoi - Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

| Time            |      |      |      | From 2  | 3:00 pm to 23: | 30 pm o | n July                       | 06 <sup>th</sup> . 20 | 12      |  |  |
|-----------------|------|------|------|---------|----------------|---------|------------------------------|-----------------------|---------|--|--|
| Davameter       | Unit |      |      | ion Lev |                |         | Vibration Acceleration (Lva) |                       |         |  |  |
| Parameter       | Omi  | Z    | Y    | X       | Average        | Z       | Y                            | X                     | Average |  |  |
| Leq             |      | 32.7 | 31.7 | 34.3    | 34.3           | 51.5    | 53.3                         | 47.3                  | 53.3    |  |  |
| $L_{max}$       |      | 57.5 | 51.2 | 56.2    | 57.5           | 73.5    | 79                           | 71.6                  | 79      |  |  |
| $L_{\min}$      | dB   | 20.8 | 21.3 | 24.6    | 24.6           | 31.8    | 29.7                         | 30.1                  | 31.8    |  |  |
| $L_{10}$        | uD   | 29.3 | 33.8 | 35.7    | 35.7           | 53      | 50.6                         | 47.2                  | 53      |  |  |
| L <sub>50</sub> |      | 25.6 | 30.3 | 32.1    | 32.1           | 43.1    | 40.9                         | 38.2                  | 43.1    |  |  |
| L <sub>90</sub> |      | 23.3 | 27   | 28.9    | 28.9           | 35.1    | 33                           | 33.5                  | 35.1    |  |  |

| Time            |      |                      | From 1:00 am to 1:30 am on July 07 <sup>th</sup> . 2012 |      |         |                              |      |      |         |  |  |  |
|-----------------|------|----------------------|---|------|---------|------------------------------|------|------|---------|--|--|--|
| D               | KT24 | Vibration Level (Lv) |   |      |         | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter       | Unit | Z                    | Y   | X    | Average | Z                            | Y    | X    | Average |  |  |  |
| $L_{eq}$        |      | 39.5                 | 31.2  | 33.1 | 39.5    | 63.6                         | 61.8 | 61.5 | 63.6    |  |  |  |
| $L_{max}$       |      | 58.9                 | 42.8  | 44.7 | 58.9    | 90.1                         | 90.1 | 90   | 90.1    |  |  |  |
| $L_{\min}$      | dB   | 21.5                 | 21.9  | 23.4 | 23.4    | 35.5                         | 36   | 34.6 | 36      |  |  |  |
| 1.10            | ub   | 38.5                 | 33.8  | 35.7 | 38.5    | 60.4                         | 56.6 | 54.5 | 60.4    |  |  |  |
| 1.50            |      | 29.2                 | 30.3  | 32.1 | 32.1    | 46.8                         | 44.6 | 42.8 | 46.8    |  |  |  |
| L <sub>90</sub> |      | 25.3                 | 27  | 28.9 | 28.9    | 38.4                         | 38.3 | 37.7 | 38.4    |  |  |  |

| Time            |      |                      | From $3:00$ am to $3:30$ am on July $07^{th}$ . $2012$ |      |         |      |                              |      |         |  |  |  |
|-----------------|------|----------------------|--|------|---------|------|------------------------------|------|---------|--|--|--|
| 1)              | Unit | Vibration Level (Lv) |  |      |         | Vi   | Vibration Acceleration (Lva) |      |         |  |  |  |
| Parameter       |      | Z                    | Y  | X    | Average | Z    | Y                            | X    | Average |  |  |  |
| $L_{eq}$        |      | 41                   | 30.5   | 32.4 | 41      | 55.3 | 51.3                         | 49.3 | 55.3    |  |  |  |
| $L_{\max}$      |      | 59.9                 | 39   | 43.3 | 59.9    | 72.5 | 68.9                         | 65.2 | 72.5    |  |  |  |
| $L_{\min}$      | dB   | 20.6                 | 21.3   | 24.3 | 24.3    | 36.2 | 36.4                         | 37   | 37      |  |  |  |
| $L_{10}$        | ub   | 39.6                 | 33.1   | 35.1 | 39.6    | 58.6 | 54.4                         | 52.7 | 58.6    |  |  |  |
| L <sub>50</sub> |      | 27.3                 | 29.6   | 31.2 | 31.2    | 45   | 42.5                         | 42.6 | 45      |  |  |  |
| L <sub>90</sub> |      | 24.1                 | 26.2   | 27.8 | 27.8    | 37.7 | 37.7                         | 39.1 | 39.1    |  |  |  |

| Time  | Time |                      |      | From 5:00 am to 5:30 am on July 07 <sup>th</sup> . 2012 |         |      |         |         |             |  |  |  |  |
|---|------|----------------------|------|---|---------|------|---------|---------|-------------|--|--|--|--|
| to the same that the same to the same the same to the | Unit | Vibration Level (Lv) |      |   |         | Vi   | bration | Acceler | ation (Lva) |  |  |  |  |
| Parameter   |      | Z                    | Y    | X   | Average | Z    | Y       | X       | Average     |  |  |  |  |
| Leq   |      | 36.5                 | 30.3 | 31.5  | 36.5    | 58.2 | 54.7    | 51.6    | 58.2        |  |  |  |  |
| $L_{max}$   |      | 58.8                 | 38.4 | 41.4  | 58.8    | 83.7 | 79.1    | 73.3    | 83.7        |  |  |  |  |
| $L_{\min}$  | dB   | 21.4                 | 22.3 | 23.3  | 23.3    | 34.4 | 30.5    | 31.3    | 34.4        |  |  |  |  |
| $L_{10}$  | aB   | 34.1                 | 32.8 | 34  | 34.1    | 58.9 | 56.8    | 53.9    | 58.9        |  |  |  |  |
| L <sub>50</sub>   |      | 27.8                 | 29.6 | 30.8  | 30.8    | 48.4 | 45.8    | 44      | 48.4        |  |  |  |  |
| L <sub>90</sub>   |      | 24.6                 | 26.3 | 27.7  | 27.7    | 39.2 | 37.4    | 35.9    | 39.2        |  |  |  |  |

<sup>1.</sup> Test results are valid for test samples

<sup>2.</sup> Only quoted a part of test report if receiving the agreement by terms of DEQA  $\,$ 

<sup>3.</sup> Test iterms in italic are not recognized by VILAS; test iterms marked by (\*) are recognized by subcontractor

<sup>4.</sup> Name of sample, customers written by customers' request



Address: R.712, A30 Building 18 Hoang Quoc Viet Road -Cau Giay District -

Hanoi - Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

| Time             | ,    |                      | From 7:00 am to 7:30 am on July 07th . 2012 |      |         |                              |      |      |         |  |  |  |
|------------------|------|----------------------|---|------|---------|------------------------------|------|------|---------|--|--|--|
| _                | WT   | Vibration Level (Lv) |   |      |         | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit | Z                    | . <b>Y</b>                                  | X    | Average | Z                            | Y    | X    | Average |  |  |  |
| Leq              |      | 45.1                 | 33.6  | 34.9 | 45.1    | 61.7                         | 59.2 | 56   | 61.7    |  |  |  |
| L <sub>max</sub> |      | 65.3                 | 65.3  | 66.2 | 66.2    | 82.1                         | 83.2 | 76.5 | 83.2    |  |  |  |
| L <sub>min</sub> | מג   | 24.5                 | 22.6  | 23.5 | 24.5    | 39.9                         | 37   | 36.2 | 39.9    |  |  |  |
| L <sub>10</sub>  | dB   | 48.9                 | 30.6  | 30.5 | 48.9    | 64.3                         | 61   | 59   | 64.3    |  |  |  |
| L <sub>50</sub>  |      | 39.7                 | 32  | 32.5 | 39.7    | 52.6                         | 49.9 | 48.8 | 52.6    |  |  |  |
| L <sub>90</sub>  |      | 31                   | 28.2  | 29   | 31      | 44.2                         | 41.9 | 39.9 | 44.2    |  |  |  |

### Allowable maximum value of the vibration acceleration for contruction activities

| No | Area         | Time in day       | Vibration Acceleration (dB)<br>Average (Leq) |
|----|--------------|-------------------|--|
|    |              | From 6 am to 6 pm | 75   |
| 1  | Special area | From 6 pm to 6 am | Background level                             |
| 1  |              | From 6 am to 9 pm | 75   |
| 2  | Normal area  | From 9 pm to 6 am | Background level                             |

Note: QCVN 27:2008/BTNMT: National Technical Regulation on Vibration

Hanoi, July 23<sup>rd</sup>, 2012

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Deputy Director

\* E

Dr. Nguyen Thi Hue

Vu Van Tu

Department of Environmental Quality Analysis

<sup>1.</sup> Test results are valid for test samples

<sup>2.</sup> Only quoted a part of test report if receiving the agreement by terms of DEQA

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<sup>4.</sup> Name of sample, customers written by customers' request

Address: R.712, A30 Building 18 Hoang Quoc Viet Road -Cau Giay District - Hanoi -Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

ANALYTICAL RESULT

No: W1207.279

Client

: Vietnam Infrastructure Development and Finance Investment Joint Stock

Company (VIDIFI., JSC)

Address

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street

Me Tri commune, Tu Liem, Ha Noi

Kind of sample

: Ground water (Contract: 74/VDIFI-VCNMT/2010)

Number of sample: 02

PETNE

VILAS 366

Preservation

: 01 PE Bottle 0,5L Refrigerate.

01 PE Bottle 0,5L, preserved HNO<sub>3</sub> Refrigerate. 01 PE Bottle 0,5L, preserved H<sub>2</sub>SO<sub>4</sub> Refrigerate.

01 glass Bottle 1,0 L

Sampling place

: Mr. Cao Tho Vien - Gia Loc Town - Hai Duong Province (Package EX5-NN 6.4)

Co-ordinate

: N 20° 51'34.1"- E 106° 18' 13.1"

Sampling time

: July 10th, 2012

Testing time

: From July 13th to July 23rd 2012

| 56 - 49<br>500 | 1000             |                     |                          | Res    | ults   | QCVN              |
|----------------|------------------|---------------------|--------------------------|--------|--------|-------------------|
| No             | Parameter        | Unit                | Test methods             | NN 6.4 | MT     | 09:2008/<br>BTNMT |
| 1.             | Temperature      | °C                  | TCVN 4457-1988           | 28.8   | 28.0   | -                 |
| 2.             | pH               | <del>( -</del>      | TCVN 6492 – 1999         | 7.30   | 7.10   | 5.5 – 8.5         |
| 3.             | COD              | mgO <sub>2</sub> /L | KMnO <sub>4</sub> Method | 9.8    | < 1.0  | 4                 |
| 4.             | BOD <sub>5</sub> | mg/L                | TCVN 6001 – 2008         | 5.4    | < 1.0  | -                 |
| 5.             | TSS              | mg/L                | SMEWW 2540 D - 2005      | 10     | < 3.0  | -                 |
| 6.             | Total P          | mg/L                | TCVN 6202 – 2008         | 0.55   | < 0.01 | -                 |
| 7.             | Total N          | mg/L                | TCVN 5987-1995           | 29     | < 0.10 | -                 |
| 8.             | Coliform         | MPN/                | TOTAL (107 1 100)        | 7      | ND     | 3                 |
| 9.             | E. Coli          | 100mL               | TCVN 6187 – 1 –1996      | ND     | ND     | ND                |

Note: QCVN 09:2008/BTNMT: National technical regulation on underground water quality.

ND: Non detect

Hanoi. July 23<sup>rd</sup>. 2012

Department of Environmental Quality Analysis

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

**Deputy Director** 

Dr. Nguyen Thi Hue

1. Test results are valid for test samples

2. Only quoted a part of test report if receiving the agreement by terms of DEQA

Vu Van Tu

3. Test iterms in italic are not recognized by VILAS; test iterms marked by (\*) are recognized by subcontractor

4. Name of sample, customers written by customers' request

DEQA/TT/BM/17.01

Version: 1.03

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VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY

THE ANALYSIS VILAS 366 INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Tel: (84 - 4) 3791 1654

Address: R.712, A30 Building 18 Hoang Quoc Viet Road

Cau Giay District - Hanoi - Vietnam

Fax: (84 - 4) 3791 1203

### ANALYTICAL RESULT

No: A1207.48-51

: Vietnam Infrastructure Development and Finance Investment Joint Stock Company (VIDIFI., JSC) VILAS 366

: 8th.9th.10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi Address

: Air (Contract: 74/VDIFI-VCNMT/2010) Kind of sample

Number of sample

: Gia Loc Highschool, Gia Loc Town, Gia Loc District, Hai Duong Province (Package EX5-K6.4) Sampling place

: N 20° 51'34.1" - E 106° 18' 13.1" Co-ordinate

: From 9 am on July 9th to 7 am on July 10th, 2012 Testing time

| Name of | Parameter | Unit              | K 6.4.1                             | K 6.4.2                    | K 6.4.3                    | K 6.4.4                                 | QCVN<br>05:2009/BTNMT |
|---------|-----------|-------------------|-------------------------------------|----------------------------|----------------------------|---|-----------------------|
| admis   | Time      |                   | 9 am<br>July 9 <sup>th</sup> , 2012 | 15:00 pm<br>July 9th, 2012 | 21:00 pm<br>July 9th, 2012 | 3:00 am<br>July 10 <sup>th</sup> , 2012 |                       |
|         | VOCs      |                   | 145                                 | 130                        | 110                        | 105                                     | 1                     |
|         | Dust      |                   | 128                                 | 112                        | 96                         | 88                                      | 300                   |
| EX 5-   | SOS       | ug/m <sup>3</sup> | 79                                  | 95                         | 87                         | 74                                      | 350                   |
| K 6.4   | NO.       | 0                 | 22                                  | 23                         | 18                         | 18                                      | 10                    |
|         | 707       |                   | 1175                                | 1866                       | 1219                       | 1385                                    | 30000                 |

Note: QCVN 05:2009/ BTNMT: National technical regulation on ambient air quality

Hanoi, July 23<sup>rd</sup>, 2012

Deputy Director

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY Department of Environmental Quality Analysis

Dr. Nguyen Thi Hue

Vu Van Tu

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4. Name of sample, customers written by customers' request

DEQA/TT/BM/17.01

Version: 1.03

DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

-Cau Giay District - Hanoi - Vietnam Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

### ANALYTICAL RESULT

No: A1207. EX5

: Viet Nam Infrastructure Development and Finance Investment Joint Stock Company CINHAS 366

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi : Noise (Contract: 74/VDIFI-VCNMT/2010) Address

Kind of sample : Noise (Contract: 7 Number of sample : 12

Name of sample : EX5-K6.4

: Gia Loc Highschool, Gia Loc Town, Gia Loc District, Hai Duong Province (Package EX5-K6.4) Sampling place

Co-ordinate : N 20° 51'341"- E 106° 18'131" Testing time : From 9am July 09<sup>th</sup> to 7 am July 10<sup>th</sup>, 2012

|                |                    |        |      |      |      |      | 1         | - coth                     | ,         | with and    |      |      |      |      |   |
|----------------|--------------------|--------|------|------|------|------|-----------|----------------------------|-----------|-------------|------|------|------|------|---|
|                |                    |        |      |      |      | Fr   | om 9am J. | uly 09" to                 | 7 am July | v 10", 201. | 7    |      |      |      | _ |
| Name of sample | sample             | Noise  | 9am  | 11am | 13pm | 15pm | 17pm      | pm 17pm 19pm 21pm 23pm 01a | 21pm      | 23pm        | 01am | 03am | 05am | 07am |   |
|                | Lea                |        | 62.0 | 60.3 | 59.3 | 62.7 | 6.09      | 59.8                       | 59.5      | 9.05        | 57.1 | 55.8 | 54.9 | 66.5 |   |
| 1_             | I.max              |        | 90.8 | 77.4 | 76.8 | 86.1 | 82.8      | 74.2                       | 74.5      | 77.5        | 74.1 | 72.1 | 6.62 | 89.1 |   |
| EX 5-          | Lmin               | (dB)   | 50.8 | 47.3 | 44.4 | 53.7 | 50.5      | 47.8                       | 50.8      | 45.3        | 52.9 | 47.2 | 42.7 | 56.3 | _ |
| K6.4           | 1.50               |        | 58.8 | 56.5 | 53.2 | 59.5 | 58.5      | 58.4                       | 56.4      | 47.4        | 55.9 | 53.7 | 46.6 | 61.6 | _ |
|                | 1,90               |        | 55.3 | 51.4 | 48.0 | 57.0 | 55.1      | 54.0                       | 53.6      | 46.4        | 55.4 | 51.4 | 44.4 | 59.3 |   |
| OCVN           | QCVN 26:2010/BTNMT | TINNTS |      |      |      | 70   |           |                            |           |             | 55   | 2    |      | 70   |   |

Note: QCVN 26:2010/BTNMT - National Technical Regulation on Noise

Department of Environmental Quality Analysis

Hanoi. July 23<sup>rd</sup>. 2012

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

VIENDEPUT Director

Vu Van Tu

Dr. Nguyen Thi Hue

1. Test results are valid for test samples

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4. Name of sample, customers written by customers' request

DEQA/TT/BM/17.01

Version: 1.03

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Address: R.712, A30 Building 18 Hoang Quoc Viet Road –Cau Giay District – Hanoi -

Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

| Time             | ,       |      |        | From 7   | 7:00 am to 7:3 | 0 am on | July 10 | 0 <sup>11</sup> . 2012 | Trip No.    |
|------------------|---------|------|--------|----------|----------------|---------|---------|------------------------|-------------|
|                  | 200 2   |      | Vibrat | ion Leve |                | Vil     | bration | Acceler                | ation (Lva) |
| Parameter        | Unit    | Z    | Y      | X        | Average        | Z       | Y       | X                      | Average     |
| Lcq              |         | 40.3 | 31.2   | 32.6     | 40.3           | 50.8    | 47.6    | 44.5                   | 50.8        |
| L <sub>max</sub> |         | 53.9 | 42     | 39.1     | 53.9           | 63.5    | 63.6    | 57.8                   | 63.6        |
| L <sub>min</sub> | FASTER- | 26.9 | 22.3   | 22.3     | 26.9           | 37      | 35      | 34.4                   | 37          |
| L <sub>10</sub>  | dB      | 45.1 | 33.5   | 35       | 45.1           | 37      | 35      | 34.4                   | 37          |
| L <sub>50</sub>  |         | 34.3 | 30.4   | 32       | 34.3           | 54.2    | 49.9    | 46.1                   | 54.2        |
| L <sub>90</sub>  |         | 30.8 | 27.3   | 28.7     | 30.8           | 45      | 41.8    | 40.2                   | 45          |

### Allowable maximum value of the vibration acceleration for contruction activities

| No | Area         | Time in day        | Vibration Acceleration (dB) Average (Lcq) |
|----|--------------|--------------------|---|
|    |              | From 6 am to 6 pm  | 75  |
| 1  | Special area | From 18 pm to 6 am | Background level                          |
|    |              | From 6 am to 9 pm  | 75  |
| 2  | Normal area  | From 21 to 6 am    | Background level                          |

Note: QCVN 27:2008/BTNMT: National Technical Regulation on Vibration

Department of Environmental Quality Analysis

Hanoi. July 23rd. 2012

INSTITUTE OF ENVIRONMENTAL **TECHNOLOGY** 

**Deputy Director** 

Dr. Nguyen Thi Hue

Vu Van Tu

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<sup>4.</sup> Name of sample, customers written by customers' request

Fax: (84 - 4) 3791 1203 DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

Cau Giay District - Hanoi - Vietnam Tel: (84 - 4) 3791 1654

### ANALYTICAL RESULT

VILAS 366

No: A1207.52-55

: Vietnam Infrastructure Development and Finance Investment Joint Stock Company (VIDIFI., JSC)

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi Address

: Air (Contract: 74/VDIFI-VCNMT/2010) Kind of sample

Number of sample: 4

: 13 Hamlet, Vinh Ninh small village, Thanh Cuong Commune, Thanh Ha District, Hai Duong Province Sampling place

(Package EX6-K7.4)

: N 20° 49'18.1" - E 106° 28' 49.0" Co-ordinate

: From 9 am on July 10th to 7 am on July 11th, 2012 Testing time

| Name of sample | Parameter | Unit  | K 7.4.1                                 | K 7.4.2                                  | K 7.4.3                                  | K 7.4.4                    | QCVN<br>05:2009/BTNMT |
|----------------|-----------|-------|---|--|--|----------------------------|-----------------------|
|                | Time      |       | 9:00 am<br>July 10 <sup>th</sup> , 2012 | 15:00 pm<br>July 10 <sup>th</sup> , 2012 | 21:00 pm<br>July 10 <sup>th</sup> , 2012 | 3:00 am<br>July 11th, 2012 |                       |
|                | VOCs      |       | 120                                     | 130                                      | 06                                       | 105                        | •                     |
| 1              | Dust      |       | 105                                     | 95                                       | 98                                       | 06                         | 300                   |
| EX 6 –         | SO,       | ug/m³ | 98                                      | 93                                       | 78                                       | 72                         | 350                   |
| K./.A          | NO,       | )     | 33                                      | 18                                       | 20                                       | 18                         |                       |
|                | 00        |       | 1259                                    | 3223                                     | 984                                      | 696                        | 30000                 |

Note: QCVN 05:2009/ BTNMT: National technical regulation on ambient air quality

Department of Environmental Quality Analysis

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

VIEW Deputy Director

Hanoi, July 23rd, 2012

Dr. Nguyen Thi Hue

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Vu Van Tu

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Fax: (84 - 4) 3791 1203 Tel: (84 - 4) 3791 1654 DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

-Cau Giay District - Hanot - Vietnam

### ANALYTICAL RESULT

No: A1207. EX 6

Viet Nam Infrastructure Development and Finance Investment Joint Stock Company

8th.9th.10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi

Noise (Contract: 74/VDIFI-VCNMT/2010) Kind of sample Address

Number of sample

Velas 366

EX6-K7.4 Name of sample

Vinh Ninh small village, Thanh Cuong Commune, Thanh Ha District, Hai Duong Province Sampling place

(Package EX6-K7.4) N 20° 49'18.1" - E 106° 28' 49.0" Co-ordinate

From 9am July 10th to 7 am July 11th, 2012 Testing time

|       | 33                 | ;         |      |      |      | H    | From 9am July 10th t | July 10th t | o 7 am Ju | to 7 am July 11th, 2012 | 2    |      |      |      |
|-------|--------------------|-----------|------|------|------|------|----------------------|-------------|-----------|-------------------------|------|------|------|------|
| Name  | Name of sample     | Noise     | 9am  | 11am | 13pm | 15pm | 17pm                 | 19pm        | 21pm      | 23pm                    | 1000 | 03am | 05am | 07am |
|       | Lea                |           | 58.2 | 59.5 | 51.8 | 55.6 | 9.09                 | 57.8        | 54.0      | 48.3                    | 48.6 | 42.0 | 55.1 | 57.8 |
| 1     | Lmax               |           | 78.1 | 84.1 | 71.6 | 9.77 | 8.98                 | 778.3       | 85.2      | 6.89                    | 70.9 | 52.4 | 70.3 | 81.5 |
| EX 6- | I,min              | (dB)      | 42.6 | 42.7 | 40.8 | 46.2 | 41.5                 | 40.0        | 45.2      | 44.6                    | 43.1 | 40.6 | 38.8 | 40.2 |
| K7.4  | 1.50               | ,         | 53.3 | 52.7 | 47.7 | 52.9 | 52.0                 | 51.2        | 49.1      | 46.9                    | 45.0 | 41.8 | 47.4 | 49.1 |
| ,     | L90                |           | 48.0 | 47.8 | 44.3 | 49.1 | 46.7                 | 45.2        | 47.5      | 45.6                    | 44.1 | 41.2 | 42.1 | 43.6 |
| OCV!  | QCVN 26:2010/BTNMT | TNMT I ea |      |      |      | 70   |                      |             |           |                         | ĸ    | 55   |      | 70   |
| 7017  | Hall alva          | 1 557     |      |      |      |      |                      |             |           |                         |      |      |      |      |

Note: QCVN 26:2010/BTNMT - National Technical Regulation on Noise

Department of Environmental Quality Analysis

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Deputy Director

. Hanoi. April 23<sup>rd</sup>. 2012

Vu Van Tu

Dr. Nguyen Thi Hue

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l. Name of sample, customers written by customers' request

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Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

### ANALYTICAL RESULT

No: A1207.EX6

Client

: Vietnam Infrastructure Development and Finance Investment

Joint Stock Company (VIDIFI., JSC)

Address

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street

Me Tri commune, Tu Liem, Ha Noi

Kind of sample

: Vibration (Contract: 74/VDIFI-VCNMT/2010)

Number of sample

VILAS 366

: 12

Name of sample

: EX 6 - K7.4

Testing place

: 13 Hamlet, Vinh Ninh small village, Thanh Cuong Commune,

Thanh Ha District, Hai Duong Province (Package EX6)

Co-ordinate

: N 20° 51'34.1" - E 106° 18' 13.1"

Testing time

: From 9:00 am on July10<sup>th</sup> to 7:30 am on July 11<sup>th</sup>, 2012

| Time             | )     |       |         | From 9   | :00 am to 9:3 | 0 am on | July 1  | 0 <sup>th</sup> , 2012 |             |
|------------------|-------|-------|---------|----------|---------------|---------|---------|------------------------|-------------|
| D                | WT 34 |       | Vibrati | ion Leve | el (Lv)       | Vi      | bration | Acceler                | ation (Lva) |
| Parameter        | Unit  | Z     | Y       | X        | Average       | Z       | Y       | X                      | Average     |
| Leq              |       | 39.9  | 35.1    | 34.8     | 39.9          | 66.9    | 63.9    | 62.3                   | 66.9        |
| L <sub>max</sub> |       | 64.2  | 57.2    | 42.4     | 64.2          | 89.4    | 87.6    | 84.3                   | 89.4        |
| L <sub>min</sub> | αL    | 25.1  | 25.6    | 25.9     | 25.9          | 39.6    | 36.1    | 35.6                   | 39.6        |
| $L_{10}$         | dB    | 40.3  | 36      | 37.3     | 40.3          | 60.3    | 58      | 58                     | 60.3        |
| L <sub>50</sub>  |       | 32.40 | 32.8    | 34       | 34            | 50.2    | 47.4    | 47                     | 50.2        |
| L-90             |       | 29.2  | 29.8    | 30.9     | 30.9          | 44.3    | 41.1    | 40.1                   | 44.3        |

| Time             | ,     |      |        | From 1  | 1:00 am to 11 | :30 am | n July  | 10 <sup>th</sup> . 201 | 12          |
|------------------|-------|------|--------|---------|---------------|--------|---------|------------------------|-------------|
| D .              | WT *4 |      | Vibrat | ion Lev | el (Lv)       | Vi     | bration | Acceler                | ation (Lva) |
| Parameter        | Unit  | Z    | Y      | X       | Average       | Z      | Y       | X                      | Average     |
| Leq              |       | 38.3 | 33.6   | 34.8    | 38.3          | 52.4   | 50.8    | 52.4                   | 52.4        |
| L <sub>max</sub> |       | 52.7 | 41.8   | 42.3    | 52.7          | 71.1   | 76.5    | 75.5                   | 76.5        |
| L <sub>min</sub> | dB    | 24   | 24.4   | 25.5    | 25.5          | 37.4   | 33.3    | 34.4                   | 37.4        |
| L <sub>10</sub>  | u.b   | 41.3 | 36.1   | 37.5    | 41.3          | 54.9   | 30.1    | 53.8                   | 54.9        |
| L <sub>50</sub>  |       | 34   | 32.7   | 34      | 34            | 48.9   | 43.9    | 47.7                   | 48.9        |
| L <sub>90</sub>  |       | 28.5 | 29.5   | 30.7    | 30.7          | 42.9   | 38.2    | 40.2                   | 42.9        |

| Time             | saver yr. |      | ]      | From 13  | :00 pm to 13: | :30 pm | n July  | 10 <sup>th</sup> . 201 | 12          |
|------------------|-----------|------|--------|----------|---------------|--------|---------|------------------------|-------------|
|                  | WT        |      | Vibrat | ion Leve | el (Lv)       | Vi     | bration | Acceler                | ation (Lva) |
| Parameter        | Unit      | Z    | Y      | X        | Average       | Z      | Y       | X                      | Average     |
| Leq              |           | 39.9 | 36.5   | 37.8     | 39.9          | 46.4   | 42.6    | 43.9                   | 46.4        |
| L <sub>max</sub> |           | 54.5 | 48.5   | 49.2     | 54.5          | 60.3   | 57.3    | 55.7                   | 60.3        |
| L <sub>min</sub> | dB        | 23.6 | 24.4   | 28.8     | 28.8          | 34.2   | 30.3    | 32                     | 34.2        |
| L <sub>10</sub>  | aВ        | 43.7 | 39.2   | 40.6     | 43.7          | 49.9   | 45.8    | 47.5                   | 49.9        |
| L <sub>50</sub>  |           | 36.5 | 35.4   | 36.8     | 36.8          | 44.1   | 40.5    | 41.9                   | 44.1        |
| L <sub>90</sub>  |           | 28.3 | 31.5   | 33.4     | 33.4          | 38.5   | 35.7    | 36.5                   | 38.5        |

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Fax: (84 - 4) 3791 1203

| Time             | <del> </del> |      | ]    | From 13 | 5:00 pm to 15:3 | 30 pm or | ı July 1 | 0 <sup>th</sup> . 201 | 2           |
|------------------|--------------|------|------|---------|-----------------|----------|----------|-----------------------|-------------|
|                  | WT •4        |      |      |         | vel (Lv)        |          |          |                       | ation (Lva) |
| Parameter        | Unit         | Z    | Y    | X       | Average         | Z        | Y        | X                     | Average     |
| Leq              |              | 34.5 | 34.3 | 35.9    | 35.9            | 56.3     | 55.8     | 56                    | 56.3        |
| L <sub>max</sub> |              | 48.7 | 42.2 | 46.6    | 48.7            | 80.6     | 81.2     | 81.8                  | 81.8        |
| Lmin             | JD.          | 25.2 | 25.8 | 26.1    | 26.1            | 37.8     | 34.2     | 34.4                  | 37.8        |
| L <sub>10</sub>  | dB           | 37.2 | 36.9 | 38.5    | 38.5            | 58.2     | 52.4     | 49                    | 58.2        |
| L <sub>50</sub>  |              | 31.3 | 33.5 | 35      | 35              | 55.3     | 49.9     | 46.6                  | 55.3        |
| L <sub>90</sub>  |              | 28.4 | 30.3 | 31.5    | 31.5            | 41.7     | 38.1     | 37.3                  | 41.7        |

| Time            | <del>)</del>   |      | -     | From 1  | 7:00 pm to 17:3 | 0 pm or | July 1 | 0 <sup>th</sup> . 201 | 2           |
|-----------------|--|------|-------|---------|-----------------|---------|--------|-----------------------|-------------|
| -               | TT •4  |      | Vibra | tion Le | vel (Lv)        | Vit     | ration | Acceler               | ation (Lva) |
| Parameter       | Unit   | Z    | Y     | X       | Average         | Z       | Y      | X                     | Average     |
| Leq             | Secretary (* 1999) benefit desirables (* 1941) destructure | 33.1 | 33.7  | 34.8    | 34.8            | 46.2    | 45.6   | 43.9                  | 46.2        |
| $L_{max}$       |  | 47.5 | 41.5  | 42      | 47.5            | 61.7    | 64.1   | 61.6                  | 64.1        |
| $L_{\min}$      | αr   | 24.2 | 24.9  | 25.8    | 25.8            | 36      | 34     | 32.8                  | 36          |
| $L_{10}$        | dB   | 34.9 | 36.3  | 37.3    | 37.3            | 49      | 47.6   | 46.3                  | 49          |
| L <sub>50</sub> |  | 30.8 | 33    | 34.1    | 34.1            | 43.8    | 41.8   | 40.6                  | 43.8        |
| L <sub>90</sub> |  | 28.2 | 29.7  | 30.7    | 30.7            | 39.8    | 37.3   | 36.6                  | 39.8        |

| Time             | ,     |      | ]    | From 19 | 9:00 pm to 19:3 | 30 pm or | ı July 1 | 0 <sup>th</sup> . 201 | 2           |
|------------------|-------|------|------|---------|-----------------|----------|----------|-----------------------|-------------|
| -                | ¥T *4 |      |      |         | vel (Lv)        |          |          |                       | ation (Lva) |
| Parameter        | Unit  | Z    | Y    | X       | Average         | Z        | Y        | X                     | Average     |
| Leq              |       | 30.7 | 31.9 | 33.2    | 33.2            | 51.6     | 51.7     | 48.5                  | 51.7        |
| $L_{max}$        |       | 48   | 39.8 | 42.9    | 48              | 71.7     | 69.8     | 68.1                  | 71.7        |
| L <sub>min</sub> | CIL   | 22.7 | 22   | 22.6    | 22.7            | 32.3     | 29.7     | 29.2                  | 32.3        |
| L <sub>10</sub>  | dB    | 31.7 | 34.5 | 36      | 36              | 54.4     | 55.2     | 51.2                  | 55.2        |
| L <sub>50</sub>  |       | 28.3 | 31.1 | 32.3    | 32.3            | 45       | 43.4     | 40.9                  | 45          |
| L <sub>90</sub>  |       | 26   | 27.8 | 28.9    | 28.9            | 38       | 35.2     | 34.5                  | 38          |

| Time            | ;     |       | ]     | From 2  | 1:00 pm to 21:3 | 0 pm or | July 1 | 0 <sup>th</sup> . 201 | 2           |
|-----------------|-------|-------|-------|---------|-----------------|---------|--------|-----------------------|-------------|
|                 | ¥T *, |       | Vibra | tion Le | vel (Lv)        | Vil     | ration | Acceler               | ation (Lva) |
| Parameter       | Unit  | Z     | Y     | X       | Average         | Z       | Y      | X                     | Average     |
| Leq             |       | 32.7  | 31.4  | 32.6    | 32.7            | 51      | 47.5   | 48.4                  | 51          |
| Lmax            |       | 52.60 | 39.1  | 40.4    | 52.6            | 72.2    | 68.6   | 68.4                  | 72.2        |
| $L_{min}$       | an.   | 21.7  | 22.2  | 24.2    | 24.2            | 37.9    | 33.3   | 34                    | 37.9        |
| $L_{10}$        | dB    | 34.2  | 34    | 35.1    | 35.1            | 49.9    | 46.5   | 48                    | 49.9        |
| L <sub>50</sub> |       | 28.2  | 30.6  | 31.8    | 31.8            | 40.7    | 37.2   | 37.3                  | 40.7        |
| L <sub>90</sub> |       | 25.2  | 27.6  | 28.7    | 28.7            | 39.3    | 35.2   | 35.3                  | 39.3        |

 $<sup>{\</sup>it 1. Test results are valid for test samples}$ 

DEQA/TT/BM/17.01 Version: 1.03 Page: 2/4

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Fax: (84 - 4) 3791 1203

| Time            |      |      |        | From 2  | 3:00 pm to 23: | 30 pm c | n July  | 10 <sup>th</sup> . 20 | 12           |
|-----------------|------|------|--------|---------|----------------|---------|---------|-----------------------|--------------|
| Damamatan       | Unit |      | Vibrat | tion Le | vel (Lv)       | Vi      | bration | Accele                | ration (Lva) |
| Parameter       | Unit | Z    | Y      | X       | Average        | Z       | Y       | X                     | Average      |
| Leq             |      | 26.6 | 31.2   | 32.1    | 32.1           | 49.5    | 50.6    | 43.2                  | 50.6         |
| $L_{max}$       |      | 43.4 | 39.9   | 39.7    | 43.4           | 76.8    | 78.8    | 70                    | 78.8         |
| $L_{\min}$      | dB   | 20.2 | 21.7   | 21.5    | 21.7           | 34.3    | 30.8    | 30.6                  | 34.3         |
| $L_{10}$        | an   | 28   | 33.8   | 34.7    | 34.7           | 45.3    | 39      | 39.7                  | 45.3         |
| $L_{50}$        |      | 25.2 | 30.3   | 31.3    | 31.3           | 37.8    | 33.8    | 34                    | 37.8         |
| L <sub>90</sub> |      | 23   | 27     | 28      | 28             | 36      | 32.2    | 32                    | 36           |

| Time             | WILLIAM S |      |       | Fron    | 1:00 am to 1:3 | 0 am on | July 1  | th. 2012 | 2             |
|------------------|-----------|------|-------|---------|----------------|---------|---------|----------|---------------|
| D 4              | TT . 24   |      | Vibra | tion Le | evel (Lv)      | Vi      | bration | Accele   | eration (Lva) |
| Parameter        | Unit      | Z    | Y     | X       | Average        | Z       | Y       | X        | Average       |
| Leq              |           | 26.8 | 30.9  | 32.3    | 32.3           | 52.9    | 46.1    | 45.5     | 52.9          |
| L <sub>max</sub> |           | 39.4 | 38.9  | 39.1    | 39.4           | 77.1    | 66.2    | 68.4     | 77.1          |
| L <sub>min</sub> | dB        | 20.1 | 22    | 22.4    | 22.4           | 34.3    | 30.3    | 30.3     | 34.3          |
| $L_{10}$         | UD        | 29.5 | 33.5  | 35      | 35             | 51.9    | 46.4    | 46.2     | 51.9          |
| $L_{50}$         |           | 25.4 | 30.1  | 31.5    | 31.5           | 38.9    | 35.1    | 35.3     | 38.9          |
| L <sub>90</sub>  |           | 23   | 26.8  | 28      | 28             | 35.9    | 32.1    | 32       | 35.9          |

| Time             |          |      |       | From    | 3:00 am to 3:3 | 0 am on | July 1  | 1 <sup>th</sup> . 2012 | 2            |
|------------------|----------|------|-------|---------|----------------|---------|---------|------------------------|--------------|
| **               | W T . *4 |      | Vibra | tion Le | evel (Lv)      | Vi      | bration | Accele                 | ration (Lva) |
| Parameter        | Unit     | Z    | Y     | X       | Average        | Z       | Y       | X                      | Average      |
| $L_{eq}$         |          | 30.4 | 30.8  | 32.2    | 32.2           | 55.5    | 50.6    | 47.9                   | 55.5         |
| L <sub>max</sub> |          | 48.7 | 40.3  | 39.8    | 48.7           | 80      | 75.7    | 72.9                   | 80           |
| $L_{\min}$       | ar       | 20.9 | 19.8  | 22.4    | 22.4           | 45.7    | 38      | 35.2                   | 45.7         |
| $L_{10}$         | dΒ       | 32.5 | 33.4  | 34.8    | 34.8           | 54.9    | 50.5    | 47.7                   | 54.9         |
| $L_{50}$         |          | 29   | 30    | 31.5    | 31.5           | 47.6    | 41.7    | 38.4                   | 47.6         |
| L <sub>90</sub>  |          | 24.9 | 26.5  | 28      | 28             | 46.9    | 39.9    | 36.5                   | 46.9         |

| Time            | ali, dan dan mana and dan mana |      |        | From     | 5:00 am to 5:3 | 30 am on | July 1  | 1 <sup>th</sup> . 201 | 2            |
|-----------------|--------------------------------|------|--------|----------|----------------|----------|---------|-----------------------|--------------|
|                 | #T *.                          |      | Vibrat | tion Lev | vel (Lv)       | Vi       | bration | Accele                | ration (Lva) |
| Parameter       | Unit                           | Z    | Y      | X        | Average        | Z        | Y       | X                     | Average      |
| Leq             |                                | 32.3 | 30.6   | 32       | 32.3           | 60.3     | 44.9    | 50.2                  | 60.3         |
| $L_{max}$       |                                | 47.5 | 38.6   | 38.7     | 47.5           | 85.8     | 67.2    | 75.2                  | 85.8         |
| $L_{\min}$      | ar                             | 22.6 | 22.8   | 23.2     | 23.2           | 33.7     | 29.5    | 29.6                  | 33.7         |
| $L_{10}$        | dB                             | 35.4 | 33.2   | 34.8     | 35.4           | 49.7     | 42.2    | 40.8                  | 49.7         |
| L <sub>50</sub> |                                | 29.6 | 29.7   | 31.1     | 31.1           | 40.8     | 35.8    | 35.9                  | 40.8         |
| L <sub>90</sub> |                                | 25.8 | 26.6   | 27.8     | 27.8           | 37.2     | 32.4    | 32.8                  | 37.2         |

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<sup>4.</sup> Name of sample, customers written by customers' request



Address: R.712, A30 Building 18 Hoang Quoc Viet Road -Cau Giay District - Hanoi - Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

| Time             |        |      |        | From 7    | 7:00 am to 7:3 | 0 am on | July 1  | 1 <sup>th</sup> . 2012 |             |
|------------------|--------|------|--------|-----------|----------------|---------|---------|------------------------|-------------|
| -                | ** • • |      | Vibrat | tion Leve | el (Lv)        | Vil     | bration | Acceler                | ation (Lva) |
| Parameter        | Unit   | Z    | Y      | X         | Average        | Z       | Y       | X                      | Average     |
| Leq              |        | 30.6 | 31.3   | 32.6      | 32.6           | 44.9    | 36.8    | 36.1                   | 44.9        |
| L <sub>max</sub> |        | 44.2 | 39.9   | 40.5      | 44.2           | 65.8    | 56.3    | 52.1                   | 65.8        |
| L <sub>min</sub> | ID.    | 21.7 | 21.2   | 23.9      | 23.9           | 34.2    | 28.3    | 29                     | 34.2        |
| L <sub>10</sub>  | dB     | 33.6 | 33.8   | 35.2      | 35.2           | 48.1    | 38.7    | 38.8                   | 48.1        |
| L <sub>50</sub>  |        | 27.4 | 30.4   | 31.8      | 31.8           | 40.4    | 34.1    | 34.4                   | 40.4        |
| L <sub>90</sub>  |        | 24.6 | 27.1   | 28.5      | 28.5           | 36.6    | 31.3    | 31.6                   | 36.6        |

### Allowable maximum value of the vibration acceleration for contruction activities

| No | Area         | Time in day        | Vibration Acceleration (dB)<br>Average (Leq) |
|----|--------------|--------------------|--|
|    |              | From 6 am to 6 pm  | 75   |
| 1  | Special area | From 18 pm to 6 am | Background level                             |
|    |              | From 6 am to 9 pm  | 75   |
| 2  | Normal area  | From 21 to 6 am    | Background level                             |

Note: QCVN 27:2008/BTNMT: National Technical Regulation on Vibration

Hanoi. July 23<sup>rd</sup>. 2012

Department of Environmental Quality Analysis INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

**Deputy Director** 

NA.

Dr. Nguyen Thi Hue

Vu Van Tu

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- Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

VILAS 366

### ANALYTICAL RESULT

No: W1207.280

Client

: Vietnam Infrastructure Development and Finance Investment Joint Stock

Company (VIDIFI., JSC)

Address

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street

Me Tri commune, Tu Liem, Ha Noi

Kind of sample

: Ground water (Contract: 74/VDIFI-VCNMT/2010)

Number of sample

: 02

Preservation

: 01 PE Bottle 0,5L refrigerate.

01 PE Bottle 0,5L, preserved HNO $_3$  refrigerate. 01 PE Bottle 0,5L, preserved H $_2$ SO $_4$  refrigerate.

01 glass Bottle 1,0 L

Sampling place

: Mr. Tran Van Doai- My Duc Commune -An Lao District,

Hai Phong Province (Package EX8-NN 8.5)

Co-ordinate

: N 20° 51'34.1"- E 106° 18' 13.1"

Sampling time
Testing time

: July 12<sup>th</sup>, 2012 : From July 13<sup>th</sup> to July 23<sup>rd</sup> 2012

|    |                  | 220 770             |                          | Res    | ults   | QCVN<br>09:2008/ |
|----|------------------|---------------------|--------------------------|--------|--------|------------------|
| No | Parameter        | Unit                | Test methods             | NN 8.5 | MT     | BTNMT            |
| 1. | Temperature      | °C                  | TCVN 4457-1988           | 31.0   | 28.0   | -                |
| 2. | pH               | -                   | TCVN 6492 – 1999         | 7.78   | 7.10   | 5.5 – 8.5        |
| 3. | COD              | mgO <sub>2</sub> /L | KMnO <sub>4</sub> Method | 10.3   | < 1.0  | 4                |
| 4. | BOD <sub>5</sub> | mg/L                | TCVN 6001 – 2008         | 5.9    | < 1.0  | -                |
| 5. | TSS              | mg/L                | SMEWW 2540 D - 2005      | 8      | < 3.0  | -                |
| 6. | Total P          | mg/L                | TCVN 6202 – 2008         | 0.27   | < 0.01 | _                |
| 7. | Total N          | mg/L                | TCVN 5987-1995           | 8.5    | < 0.10 |                  |
| 8. | Coliform         | MPN/                | TCVN 6187 – 1 –1996      | 12     | ND     | 3                |
| 9. | E. Coli          | 100mL               | 1CVN 0187 - 1 -1990      | ND     | ND     | ND               |

Note: QCVN 09:2008/BTNMT: National technical regulation on underground water quality.

ND: Non detect

Hanoi. July 23<sup>rd</sup>. 2012

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Deputy Director

VIỆN CÔNG NGHỆ MÔI TRƯỜNG

Dr. Nguyen Thi Hue

Vu Van Tu

Department of Environmental Quality Analysis

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4. Name of sample, customers written by customers' request

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Version: 1.03

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DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

Tel: (84 - 4) 3791 1654

Fax: (84 - 4) 3791 1203

### ANALYTICAL RESULT

No: W1207.281-283

: Vietnam Infrastructure Development and Finance Investment Joint Stock Company (VIDIFI., JSC) VILAS 366

: 8th.9th.10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi Address

: Surface water (Contract: 74/VDIFI-VCNMT/2010) Kind of sample

Client

: 04 sample Number of sample : 01 PE Bottle 0,5L refrigerate Preservation 01 PE Bottle 0,5L, preserved HNO3 refrigerate

01 PE Bottle 0,5L, preserved H2SO4 refrigerate

01 glass Bottle 1,0 L

: Da Do River, My Duc Commune, An Lao District, Hai Phong City (Package EX8-NM4.5) Sampling place

N 20° 46'814"- E 105° 36'858" Co-ordinate

: From July 11th to July 12th, 2012 Sampling time : From July 13th to July 23rd, 2012 Testing time

| 5 | Darameter   | Ilmit               | Test methods             |          | Results | Ilts              |       | QC<br>08:2008/ | QCVN<br>08:2008/BTNMT |
|---|-------------|---------------------|--------------------------|----------|---------|-------------------|-------|----------------|-----------------------|
|   | I al ameter |                     |                          | NM 4.5.1 |         | NM 4.5.2 NM 4.5.3 | MT    | Column B1      | Column B2             |
|   | Ha          | 1                   | TCVN 6492 – 1999         | 8.25     | 8.27    | 8.33              | 7.20  | 5.5 -9         | 5.5-9                 |
|   | DO          | mg/L                | TCVN 7325 - 2004         | 6.45     | 6.50    | 5.20              | 7.38  | >4             | 77                    |
|   | COD         | mgO <sub>2</sub> /L | KMnO <sub>4</sub> Method | 15.5     | 16.1    | 12.1              | <1.0  | 30             | 20                    |
|   | BODs        | mg/L                | TCVN 6001 – 2008         | 7.7      | 8.3     | 6.5               | <1.0  | 15             | 25                    |
| 1 | TSS         | mg/L                | SMEWW 2540 D - 2005      | 10       | 15      | 10                | <3.0  | 50             | 100                   |
|   | Total P     | mg/L                | TCVN 6202 - 2008         | 0.59     | 0.11    | 0.13              | 0.01  | ı              | t                     |
|   | Total N     | mg/L                | TCVN 5987-1995           | 5        | 9       | 5.5               | <0.10 | 1              | •                     |
| 1 | Pesticides  | mg/L                | TCVN 7876: 2008          | < 0.5    | < 0.5   | < 0.5             | <0.5  | ī              | É                     |

<sup>.</sup> Test results are valid for test samples

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<sup>4.</sup> Name of sample, customers written by customers' request



### DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366 VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Cau Giay District - 1la Noi - Vict Nam Address: R.712, A30 Building 18 Hoang Quoc Viet Road -

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

| 5          | Parameter             | Unit       | Test methods        |          | Results           | Its      |        | QCVN<br>08:2008/BTNMT |
|------------|-----------------------|------------|---------------------|----------|-------------------|----------|--------|-----------------------|
| 140        | I al allietel         | Cili       | A VOT MANUALITY     | NM 4.5.1 | NM 4.5.2 NM 4.5.3 | NM 4.5.3 | TM     | Column B1             |
| 9          | Aldrine+Dieldrine     |            |                     | < 0.05   | < 0.05            | < 0.05   | < 0.05 | 0.008                 |
| 5          | Endrine               |            |                     | < 0.05   | < 0.05            | < 0.05   | <0.05  | 0.014                 |
| 1 3        | RHC                   |            |                     | < 0.05   | < 0.05            | < 0.05   | <0.05  | 0.13                  |
| 3 :        | DDT                   |            |                     | < 0.05   | < 0.05            | < 0.05   | <0.05  | 0.004                 |
| <u>ا</u> ا | DDD                   | ug/L       | TCVN 7876: 2008     | < 0.05   | < 0.05            | < 0.05   | < 0.05 |                       |
| 1 2        | Endosunfane (Thiodan) | ,          |                     | < 0.05   | < 0.05            | < 0.05   | < 0.05 | 0.01                  |
| 2 :        | Lindane               |            |                     | < 0.05   | < 0.05            | < 0.05   | < 0.05 | 0.38                  |
| 16         | Chlordane             |            |                     | < 0.05   | < 0.05            | < 0.05   | <0.05  | 0.02                  |
| 17.        | Heptachlor            |            |                     | < 0.05   | < 0.05            | < 0.05   | <0.05  | 0.02                  |
| 18.        | Mineral oil           | mg/L       | SMEWW 5520 B - 2005 | 0.12     | 0.12              | 0.10     | < 0.05 | 0.1                   |
| 19.        | Coliform              | MPN/100 mL | TCVN 6187-1:1996    | 380      | 490               | 460      | ND     | 7500                  |

Note: QCVN 08:2008/BTNMT: National technical regulation on surface water quality

B1-For the usage of irrigation or other purpose having the similar quality requirement like B2 level

B2 - For the usage of water navigation and other purpose with less water quality

NM 4.5.1: Sampling at 14:00 pm on July 11th. 2012; NM 4.5.2: Sampling at 22:00 pm July11th. 2012; NM 4.5.3: Sampling at 6:00 am July12th. 2012;

MT: Blank sample; ND: non detect

# Department of Environmental Quality Analysis

Vu Van Tu

Hanoi. April 23rd, 2012

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY VE Deputy Director

ONG NGHÊ

Dr. Nguyen Thi Hue

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Page: 2/2

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INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Address: R.712. A30 Building 18 Houng Quoc Viet Road -Cau Giay District - Hanoi - Vietnam Fax: (84 - 4) 3791 1203 Tel: (84 - 4) 3791 1654 DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

VILAS 366

### ANALYTICAL RESULT

No: A1207.56-59

: Vietnam Infrastructure Development and Finance Investment Joint Stock Company (VIDIFI., JSC)

: 8th.9th.10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi Address

Kind of sample : Air (Contract : 74/VDIFI-VCNMT/2010)

Number of sample: 4

Sampling place : Three - way crossroads Quan Re, My Duc Commune, An Lao District, Hai Phong City (Package EX 8-K10.5)

: N 20° 46'12.8" - E 106° 36' 35.2" Co-ordinate

: From 9 am on July 11th to 7 am on July 12th, 2012 Testing time

| Name of | Parameter | Unit  | K 10.5.1                                | K 10.5.2                    | K 10.5.3                                 | K 10.5.4   | QCVN<br>05:2009/BTNMT |
|---------|-----------|-------|---|-----------------------------|--|------------|-----------------------|
|         | Time      |       | 9:00 am<br>July 11 <sup>th</sup> , 2012 | 15:00 pm<br>July 11th, 2012 | 21:00 pm<br>July 11 <sup>th</sup> , 2012 | 3:<br>July |                       |
|         | VOCs      |       | 285                                     |                             | 218                                      | 234        | ( <b>1</b> )          |
|         | Dust      |       | 902                                     | 522                         | 328                                      | 372        | 300                   |
| EX 8 -  | SO        | ug/m³ | 73                                      | 68                          | 84                                       | 70         | 350                   |
| K 10.5  | NO        | 0     | 25                                      | 27                          | 18                                       | 17         | •                     |
|         | 700       |       | 1297                                    | 1462                        | 1289                                     | 1709       | 30000                 |

Note: QCVN 05:2009/ BTNMT: National technical regulation on ambient air quality

Department of Environmental Quality Analysis

Hanoi, July 23rd, 2012

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY Deputy Director

Dr. Nguyen Thi Hue

Vu Van Tu

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Version: 1.03

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DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366 VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

-Cau Giay District - Hanoi - Vietnam Tel: (84 - 4) 3791 1654

Fax: (84 - 4) 3791 1203

### ANALYTICAL RESULT

No: A1207. EX 8

: 8th.9th.10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi Client VILAS 366: Viet Nam Infrastructure Development and Finance Investment Joint Stock Company

: Noise (Contract: 74/VDIFI-VCNMT/2010) Kind of sample

Number of sample

: EX8-K10.5 Name of sample

: Three - way crossroads Quan Re, My Duc Commune, An Lao District, Hai Phong City (Package EX 10-K10.5) Sampling place

: N 20° 46'12.8" - E 106° 36' 35.2" Co-ordinate

: From 9 am July 11th to 7 am July12th, 2012 Testing time

|       |                    | ,           |      |      |      | Fr   | om 9 am. | From 9 am July 11th t | to 7 am July12th, 2012 | ly12th, 201 | 2     |      |      |      |
|-------|--------------------|-------------|------|------|------|------|----------|-----------------------|------------------------|-------------|-------|------|------|------|
| Name  | Name of sample     | Noise       | 9am  | 11am | 13pm | 15pm | 17pm     | 19pm                  | 21pm                   | 23pm        | 10000 | 03am | 05am | 07am |
|       | Lea                |             | 62.6 | 65.3 | 53.5 | 67.0 | 62.0     | 62.6                  | 9.09                   | 57.8        | 9.78  | 53.7 | 48.7 | 62.8 |
|       |                    |             | 82.2 | 92.6 | 72.6 | 87.5 | 84.9     | 88.7                  | 77.2                   | 72.6        | 63.5  | 57.2 | 9.07 | 85.1 |
| EX 8- |                    | (dB)        | 48.9 | 46.2 | 41.2 | 55.1 | 47.2     | 49.2                  | 50.4                   | 49.3        | 50.5  | 52.5 | 41.8 | 51.2 |
| K10.5 | 1.50               |             | 54.0 | 57.8 | 50.3 | 62.1 | 56.9     | 57.5                  | 58.6                   | 57.2        | 57.5  | 53.6 | 45.1 | 59.9 |
|       | T90                |             | 51.2 | 50.9 | 46.3 | 59.8 | 52.4     | 53.4                  | 52.7                   | 56.2        | 26.7  | 53.1 | 43.0 | 56.5 |
| OCVI  | QCVN 26:2010/BTNMT | BTNMT (Lea) |      |      |      | 70   |          |                       |                        |             | 55    | 10   |      | 70   |

Note: QCVN 26:2010/BTNMT - National Technical Regulation on Noise

Department of Environmental Quality Analysis

Dr. Nguyen Thi Hue EDeputy Director

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Hanoi. July 23rd. 2012

Vu Van Tu

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Address: R.712, A30 Building 18 Hoang Quoc Viet Road –Cau Giay District – Hanoi - Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

### ANALYTICAL RESULT

No: A1207.EX 8

Client

: Vietnam Infrastructure Development and Finance Investment Joint

Stock Company (VIDIFI., JSC)

Address

:  $8^{th}$ - $9^{th}$ - $10^{th}$  floors, LILAMA 10 Building, Le Van Luong street

Me Tri commune, Tu Liem, Ha Noi

Kind of sample

VILAS 366

: Vibration (Contract: 74/VDIFI-VCNMT/2010)

Number of sample

: 12

Name of sample

: EX 8 - K10.5

Testing place

: Three - way crossroads Quan Re, My Duc Commune, An Lao District,

Hai Phong City (Package EX 8)

Co-ordinate

: N 20° 46'12.8" - E 106° 36' 35.2"

Testing time

: From 9:00 am on July 11th to 7:30 am on July 12th, 2012

| Time             |       |      | From 9:00 am to 9:30 am on July 11th, 2012 |          |          |                              |      |      |         |  |  |  |  |
|------------------|-------|------|--|----------|----------|------------------------------|------|------|---------|--|--|--|--|
| D4               | WT 24 |      | Vibra                                      | tion Lev | rel (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |  |  |
| Parameter        | Unit  | Z    | Y  | X        | Average  | Z                            | Y    | X    | Average |  |  |  |  |
| $L_{eq}$         |       | 41.2 | 34.7                                       | 35.5     | 41.2     | 53.3                         | 50.3 | 47.7 | 53.3    |  |  |  |  |
| L <sub>max</sub> |       | 53.6 | 42.2                                       | 42.4     | 53.6     | 72.6                         | 69.7 | 69.9 | 69.9    |  |  |  |  |
| Lmin             | σι    | 31.7 | 26.4                                       | 27.5     | 31.7     | 41.2                         | 39.3 | 33.7 | 41.2    |  |  |  |  |
| $L_{10}$         | dB    | 43.6 | 36.9                                       | 38.1     | 43.6     | 53.8                         | 51.8 | 45.8 | 53.8    |  |  |  |  |
| L <sub>50</sub>  |       | 39.5 | 34   | 34.7     | 39.5     | 47.4                         | 45.4 | 41   | 47.4    |  |  |  |  |
| L <sub>90</sub>  |       | 35.8 | 31.3                                       | 31.7     | 35.8     | 44.3                         | 42.3 | 38.4 | 44.3    |  |  |  |  |

| Time             | 9    |      | From 11:00 am to 11:30 am on July 11th. 2012 |          |          |                              |      |      |         |  |  |  |
|------------------|------|------|--|----------|----------|------------------------------|------|------|---------|--|--|--|
| n                | TI:4 |      | Vibra  | tion Lev | vel (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit | Z    | Y  | X        | Average  | Z                            | Y    | X    | Average |  |  |  |
| Leq              |      | 48.8 | 40.4   | 38.5     | 48.8     | 63.7                         | 63.6 | 60.4 | 63.7    |  |  |  |
| L <sub>max</sub> |      | 58.7 | 52.8   | 46.3     | 58.7     | 90                           | 89.6 | 86.5 | 90.     |  |  |  |
| L <sub>min</sub> | JD.  | 37.3 | 29   | 29.9     | 37.3     | 42.2                         | 36.9 | 36.7 | 42.2    |  |  |  |
| $L_{10}$         | dB   | 52   | 42.8   | 41       | 52       | 54.5                         | 48.9 | 48.6 | 54.5    |  |  |  |
| L <sub>50</sub>  |      | 47   | 38.6   | 37.8     | 47       | 48.6                         | 42.7 | 42.7 | 48.6    |  |  |  |
| L <sub>90</sub>  |      | 42.5 | 35.1   | 34.7     | 42.5     | 44.9                         | 39.7 | 39.4 | 44.9    |  |  |  |

| Time             |    |      |        | From 13 | 3:00 pm to 13 | :30 pm                       | on July | 11 <sup>th</sup> . 20 | 12      |  |  |
|------------------|----|------|--------|---------|---------------|------------------------------|---------|-----------------------|---------|--|--|
| 1)               | ¥1 |      | Vibrat | ion Lev | el (Lv)       | Vibration Acceleration (Lva) |         |                       |         |  |  |
| Parameter        |    | Z    | Y      | X       | Average       | Z                            | Y       | X                     | Average |  |  |
| $L_{eq}$         |    | 37.4 | 33.3   | 34.1    | 37.4          | 50                           | 46.6    | 44.9                  | 50      |  |  |
| L <sub>max</sub> |    | 49.8 | 41.5   | 41.7    | 49.8          | 74                           | 71.4    | 69.3                  | 74      |  |  |
| L <sub>min</sub> |    | 26.6 | 24.1   | 24.3    | 26.6          | 38                           | 33.8    | 33.8                  | 38      |  |  |
| L <sub>10</sub>  |    | 40.9 | 35.7   | 36.8    | 40.9          | 48.7                         | 44      | 43.5                  | 48.7    |  |  |
| L <sub>50</sub>  |    | 33.7 | 32.7   | 33.3    | 33.7          | 44                           | 39.5    | 39.5                  | 44.0    |  |  |
| L <sub>90</sub>  | dB | 30   | 29.9   | 29.9    | 30            | 41.2                         | 36.4    | 36.7                  | 41.2    |  |  |

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Address: R.712, A30 Building 18 Hoang Quoc Viet Road –Cau Giay District – Hanoi - Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

| Time             | ÷             |      |        | From 15:00 pm to 15:30 pm on July 11 <sup>th</sup> . 2012 |          |                              |      |      |         |  |
|------------------|---------------|------|--------|---|----------|------------------------------|------|------|---------|--|
|                  | <b>T</b> T •, |      | Vibrat | ion Lev   | vel (Lv) | Vibration Acceleration (Lva) |      |      |         |  |
| Parameter        | Unit          | Z    | Y      | X   | Average  | Z                            | Y    | X    | Average |  |
| Leg              |               | 63.9 | 69.3   | 71.4  | 71.4     | 54                           | 50.4 | 48   | 54      |  |
| L <sub>max</sub> |               | 89.9 | 90     | 89.7  | 90       | 68.9                         | 69.4 | 66.3 | 69.4    |  |
| L <sub>min</sub> | 175           | 37.7 | 30.8   | 30  | 37.7     | 43.2                         | 39.5 | 39   | 43.2    |  |
| $L_{10}$         | dB            | 54.1 | 41.7   | 42.3  | 54.1     | 57.4                         | 51.5 | 50   | 57.4    |  |
| L <sub>50</sub>  |               | 48.4 | 38.4   | 37.9  | 48.4     | 50.5                         | 45.6 | 44.3 | 50.5    |  |
| L <sub>90</sub>  |               | 43   | 35.6   | 34.7  | 43       | 46.7                         | 42.3 | 41.3 | 46.7    |  |

| Time             | e     |      | -      | From 1  | 7:00 pm to 17 | :30 pm                       | on July | 11 <sup>th</sup> . 20 | 012     |  |
|------------------|-------|------|--------|---------|---------------|------------------------------|---------|-----------------------|---------|--|
|                  | #T *4 |      | Vibrat | ion Lev | vel (Lv)      | Vibration Acceleration (Lva) |         |                       |         |  |
| Parameter        | Unit  | Z    | Y      | X       | Average       | Z                            | Y       | X                     | Average |  |
| Leg              |       | 44.7 | 36.5   | 36.1    | 44.7          | 54.6                         | 49.1    | 49.1                  | 54.6    |  |
| L <sub>max</sub> |       | 53   | 43.2   | 43      | 53            | 76.7                         | 68.6    | 67.6                  | 76.7    |  |
| L <sub>min</sub> | ID.   | 33.8 | 27.7   | 27.3    | 33.8          | 41.2                         | 36.5    | 35.4                  | 41.2    |  |
| L <sub>10</sub>  | dB    | 47.9 | 39.1   | 38.5    | 47.9          | 57.3                         | 51.1    | 50                    | 57.3    |  |
| L <sub>50</sub>  |       | 43.7 | 35.7   | 35.5    | 43.7          | 48.8                         | 43.5    | 42.6                  | 48.8    |  |
| L <sub>90</sub>  |       | 38.3 | 32.2   | 32      | 38.3          | 43.8                         | 38.6    | 38.4                  | 43.8    |  |

| Time             | )     | From 19:00 pm to 19:30 pm on July 11 <sup>th</sup> . 2012 |        |        |          |                              |      |      |         |  |  |
|------------------|-------|---|--------|--------|----------|------------------------------|------|------|---------|--|--|
|                  | #T •/ |   | Vibrat | ion Le | vel (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Unit  | Z   | Y      | X      | Average  | Z                            | Y    | X    | Average |  |  |
| Leg              |       | 38.3  | 32.9   | 33.9   | 38.3     | 53.1                         | 47.9 | 46.5 | 53.1    |  |  |
| L <sub>max</sub> |       | 50.7  | 48.2   | 49.7   | 50.7     | 73.9                         | 69.3 | 66.7 | 73.9    |  |  |
| L <sub>min</sub> | 1D    | 28.9  | 24.1   | 25.3   | 28.9     | 38.5                         | 34.2 | 34.4 | 38.5    |  |  |
| $L_{10}$         | dB    | 41.6  | 35.2   | 36.3   | 41.6     | 55.2                         | 49.1 | 48.2 | 55.2    |  |  |
| L <sub>50</sub>  |       | 36.7  | 32.2   | 33     | 36.7     | 46.3                         | 41.7 | 40.9 | 46.3    |  |  |
| L <sub>90</sub>  |       | 32.6  | 29.2   | 30     | 32.6     | 41.6                         | 38.2 | 37.5 | 41.6    |  |  |

| Time             | <u>,</u> | From 21:00 pm to 21:30 pm on July 11 <sup>th</sup> . 2012 |        |         |          |                              |      |      |         |  |  |  |
|------------------|----------|---|--------|---------|----------|------------------------------|------|------|---------|--|--|--|
|                  | WT*4     |   | Vibrat | ion Lev | vel (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit     | Z   | Y      | X       | Average  | Z                            | Y    | X    | Average |  |  |  |
| Leq              |          | 35.3  | 31.8   | 33.8    | 35.3     | 48.3                         | 49.6 | 48.8 | 49.6    |  |  |  |
| L <sub>max</sub> |          | 51.1  | 48.5   | 51.8    | 51.8     | 67.5                         | 72.1 | 71.2 | 72.1    |  |  |  |
| L <sub>min</sub> | ID       | 24  | 23.9   | 21.6    | 24       | 40.6                         | 36   | 34.9 | 40.6    |  |  |  |
| L <sub>10</sub>  | dB       | 38.7  | 34.4   | 36.4    | 38.7     | 49.7                         | 50.3 | 49.7 | 50.3    |  |  |  |
| L <sub>50</sub>  |          | 32.3  | 31.2   | 32.8    | 32.8     | 44.4                         | 41.8 | 41.2 | 44.4    |  |  |  |
| L <sub>90</sub>  |          | 28.5  | 28.1   | 29.3    | 29.3     | 42.5                         | 38   | 37.8 | 42.5    |  |  |  |

<sup>1.</sup> Test results are valid for test samples

<sup>2.</sup> Only quoted a part of test report if receiving the agreement by terms of DEQA

<sup>3.</sup> Test iterms in italic are not recognized by VILAS; test iterms marked by (\*) are recognized by subcontractor

<sup>4.</sup> Name of sample, customers written by customers' request



Address: R.712, A30 Building 18 Hoang Quoc Viet Road --Cau Giay District -- Hanoi -- Vietnam

Tel: (84 - 4) 3791 1654 Fax: (84 - 4) 3791 1203

| Time            | e    |      |       | From   | 23:00 pm to 23:3 | 0 pm o                       | n July | 11 <sup>th</sup> . 20 | )12     |  |  |
|-----------------|------|------|-------|--------|------------------|------------------------------|--------|-----------------------|---------|--|--|
| Parameter       | Unit |      | Vibra | tion L | evel (Lv)        | Vibration Acceleration (Lva) |        |                       |         |  |  |
| 1 at afficiet   | Onn  | Z    | Y     | X      | Average          | Z                            | Y      | X                     | Average |  |  |
| $L_{eq}$        |      | 36.1 | 32    | 33.6   | 36.1             | 42.3                         | 38.7   | 39.2                  | 42.3    |  |  |
| $L_{max}$       |      | 50.9 | 38.5  | 43.1   | 50.9             | 54.7                         | 60     | 57.5                  | 60      |  |  |
| $L_{\min}$      | dB   | 23.3 | 22.4  | 23.2   | 23.3             | 38.9                         | 33.4   | 34.4                  | 38.9    |  |  |
| $L_{10}$        | ub   | 39.5 | 34.7  | 36.2   | 39.5             | 43.3                         | 39.4   | 40.3                  | 43.3    |  |  |
| L <sub>50</sub> |      | 29.8 | 31.3  | 32.7   | 32.7             | 41.8                         | 36.3   | 37.7                  | 41.8    |  |  |
| L <sub>90</sub> |      | 26.2 | 27.8  | 29.2   | 29.2             | 40.9                         | 35.1   | 36.4                  | 40.9    |  |  |

| Time             | 2    |      |       | Fron   | n 1:00 am to 1:30 | ) am on                      | July 1 | 2 <sup>th</sup> . 201 | 2       |  |  |
|------------------|------|------|-------|--------|-------------------|------------------------------|--------|-----------------------|---------|--|--|
| Danamatan        | Unit |      | Vibra | tion L | evel (Lv)         | Vibration Acceleration (Lva) |        |                       |         |  |  |
| Parameter        | Onn  | Z    | Y     | X      | Average           | Z                            | Y      | X                     | Average |  |  |
| Leq              |      | 28.7 | 32.2  | 35     | 35                | 43.1                         | 42.6   | 40.9                  | 43.1    |  |  |
| L <sub>max</sub> |      | 59.4 | 58.6  | 59.5   | 59.5              | 59.7                         | 67.9   | 64.9                  | 67.9    |  |  |
| $L_{\min}$       | dB   | 23.1 | 21.7  | 23.5   | 23.5              | 38.4                         | 32.4   | 33.1                  | 38.4    |  |  |
| $L_{10}$         | uъ   | 30.2 | 34.2  | 36.1   | 36.1              | 43.7                         | 38.7   | 38.6                  | 43.7    |  |  |
| L <sub>50</sub>  |      | 26.7 | 30.8  | 32.4   | 32.4              | 42.3                         | 35.9   | 35.8                  | 42.3    |  |  |
| L <sub>90</sub>  |      | 25   | 27.5  | 28.8   | 28.8              | 41.1                         | 34.2   | 34.5                  | 41.1    |  |  |

| Time             | <u> </u> | From 3:00 am to 3:30 am on July 12 <sup>th</sup> . 2012 |       |        |           |                              |      |      |         |  |  |
|------------------|----------|---|-------|--------|-----------|------------------------------|------|------|---------|--|--|
| D                | Unit     |   | Vibra | tion L | evel (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter        | Unit     | Z   | Y     | X      | Average   | Z                            | Y    | X    | Average |  |  |
| Leq              |          | 30.6  | 30.7  | 32.5   | 32.5      | 43.1                         | 39.7 | 40   | 43.1    |  |  |
| L <sub>max</sub> |          | 43.7  | 37.9  | 40.7   | 43.7      | 57.8                         | 63.3 | 61.5 | 63.3    |  |  |
| Lmin             | αL       | 22.9  | 22.1  | 22.2   | 22.9      | 39                           | 36.3 | 36.8 | 39      |  |  |
| L <sub>10</sub>  | dB       | 33.3  | 33.2  | 35.1   | 35.1      | 44.3                         | 38.9 | 39.9 | 44.3    |  |  |
| L <sub>50</sub>  |          | 28.6  | 30.1  | 31.6   | 31.6      | 43.1                         | 37.9 | 38.8 | 43.1    |  |  |
| L <sub>90</sub>  |          | 26.4  | 26.9  | 28.1   | 28.1      | 40.2                         | 37.1 | 38.1 | 40.2    |  |  |

| Time            | ,       | From 5:00 am to 5:30 am on July 12 <sup>th</sup> . 2012 |       |        |           |                              |      |      |         |  |  |
|-----------------|---------|---|-------|--------|-----------|------------------------------|------|------|---------|--|--|
| n               | W T \$4 |   | Vibra | tion L | evel (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |
| Parameter       | Unit    | Z   | Y     | X      | Average   | Z                            | Y    | X    | Average |  |  |
| Leg             |         | 35  | 33.3  | 36.3   | 36.3      | 45.1                         | 42.7 | 43.3 | 45.1    |  |  |
| $L_{max}$       |         | 72.6  | 72.6  | 73.8   | 73.8      | 66.7                         | 68   | 69.8 | 69.8    |  |  |
| $L_{\min}$      | m       | 22.1  | 23.1  | 24.2   | 24.2      | 35.2                         | 31.7 | 31.2 | 35.2    |  |  |
| L <sub>10</sub> | dB      | 38.1  | 34.5  | 35.7   | 38.1      | 46.2                         | 40.4 | 40.9 | 43.1    |  |  |
| L <sub>50</sub> |         | 31.5  | 31    | 32.3   | 32.3      | 43.1                         | 36   | 36.1 | 38.6    |  |  |
| L <sub>90</sub> |         | 26.6  | 27.7  | 28.8   | 28.8      | 38.60                        | 34.1 | 33.5 | 38.6    |  |  |

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<sup>3.</sup> Test iterms in italic are not recognized by VILAS; test iterms marked by (\*) are recognized by subcontractor

<sup>4.</sup> Name of sample, customers written by customers' request



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| Time             |       | From 7:00 am to 7:30 am on July 12th. 2012 |       |          |          |                              |      |      |         |  |  |  |
|------------------|-------|--|-------|----------|----------|------------------------------|------|------|---------|--|--|--|
|                  | WY ** |  | Vibra | tion Lev | vel (Lv) | Vibration Acceleration (Lva) |      |      |         |  |  |  |
| Parameter        | Unit  | Z  | Y     | X        | Average  | Z                            | Y    | X    | Average |  |  |  |
| $L_{eq}$         |       | 41.5                                       | 34.3  | 34.2     | 41.5     | 49.4                         | 48.3 | 47.5 | 49.4    |  |  |  |
| L <sub>max</sub> |       | 51.8                                       | 41.3  | 39.7     | 51.8     | 68.3                         | 71.1 | 69.5 | 71.1    |  |  |  |
| $L_{min}$        | dB    | 34.2                                       | 25.7  | 27       | 34.2     | 40.8                         | 36.5 | 35.5 | 40.8    |  |  |  |
| L <sub>10</sub>  | uБ    | 44.1                                       | 36.8  | 36.5     | 44.1     | 50.9                         | 47.8 | 47.5 | 50.9    |  |  |  |
| L <sub>50</sub>  |       | 40.2                                       | 33.5  | 33.7     | 40.2     | 46.7                         | 42.2 | 41.3 | 46.7    |  |  |  |
| L <sub>90</sub>  |       | 37.1                                       | 30.6  | 30.9     | 37.1     | 43.9                         | 39.1 | 38.5 | 43.9    |  |  |  |

### Allowable maximum value of the vibration acceleration for contruction activities

| No | Area         | Time in day        | Vibration Acceleration (dB)<br>Average (Leq) |
|----|--------------|--------------------|--|
|    | 6 1          | From 6 am to 6 pm  | 75   |
| 1  | Special area | From 18 pm to 6 am | Background level                             |
|    | 27 1         | From 6 am to 9 pm  | 75   |
| 2  | Normal area  | From 9 pm to 6 am  | Background level                             |

Note: QCVN 27:2008/BTNMT: National Technical Regulation on Vibration

Hanoi. July 23<sup>rd</sup>. 2012

Department of Environmental Quality Analysis

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Deputy Director

THUUNG

Dr. Nguyen Thi Hue

Vu Van Tu

<sup>1.</sup> Test results are valid for test samples

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<sup>4.</sup> Name of sample, customers written by customers' request

DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

Fax: (84 - 4) 3791 1203 Tel: (84 - 4) 3791 1654

### ANALYTICAL RESULT

No: W1207.284-286

: Vietnam Infrastructure Development and Finance Investment Joint Stock Company (VIDIFI., JSC)

8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi

Surface water (Contract: 74/VDIFI-VCNMT/2010) Kind of sample Address

Number of sample

Preservation

Client AS 366

: 01 PE Bottle 0,5L refrigerate

01 PE Bottle 0,5L, preserved HNO3 refrigerate

01 PE Bottle 0,5L, preserved H2SO4 refrigerate

01 glass Bottle 1,0 L

: Lach Tray River, Trang Cat commune, Hai An district, Hai Phong Province (Package EX10) Sampling place

N 20° 57'730"- E 105° 57'265" Co-ordinate

From July 12th to July 13th From July 13th to July 23rd Sampling time

Testing time

| Parameter         | Unit                | Test methods             |          | Results  | ults     |       | QC<br>08:2008 | QCVN<br>08:2008/BTNMT |
|-------------------|---------------------|--------------------------|----------|----------|----------|-------|---------------|-----------------------|
|                   |                     |                          | NM 5.6.1 | NM 5.6.2 | NM 5.6.3 | MT    | Column B1     | Column B2             |
| Hd                | 1                   | TCVN 6492 – 1999         | 8.05     | 7.88     | 7.98     | 7.20  | 5.5 -9        | 5.5 -9                |
| DO                | mg/L                | TCVN 7325 - 2004         | 5.30     | 5.00     | 4.53     | 7.38  | <b>∀</b>      | 77                    |
| COD               | mgO <sub>2</sub> /L | KMnO <sub>4</sub> Method | 17       | 16       | 18       | <1.0  | 30            | 20                    |
| BODs              | mg/L                | TCVN 6001 - 2008         | 8.7      | 8.2      | 9.3      | <1.0  | 15            | 25                    |
| TSS               | mg/L                | SMEWW 2540 D - 2005      | 18       | 15       | 91       | <3.0  | 50            | 100                   |
| Total P           | mg/L                | TCVN 6202 - 2008         | 0.19     | 2.65     | 0.14     | 0.01  | 1             |                       |
| Total N           | mg/L                | TCVN 5987-1995           | 12.5     | 7        | 10.2     | <0.10 | î             | 1                     |
| Pesticides        | µg/L                | TCVN 7876: 2008          | < 0.5    | < 0.5    | < 0.5    | <0.5  | 1             | 1                     |
| Aldrine+Dieldrine | 1/2                 | 900C - 3595 IVXOT        | < 0.05   | < 0.05   | < 0.05   | <0.05 | 0.008         | 0.01                  |
| Endrine           | n/gr                | 10414 /8/0:2008          | < 0.05   | < 0.05   | < 0.05   | <0.05 | 0.014         | 0.01                  |

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<sup>1.</sup> Test results are valid for test samples

<sup>2.</sup> Only quoted a part of test report if receiving the agreement by terms of  $DE\mathcal{Q}A$ 

<sup>3.</sup> Test iterms in italic are not recognized by VILAS: test iterms marked by (\*) are recognized by subcontractor

<sup>4.</sup> Name of sample, customers written by customers' request



Address: R.712, A30 Building 18 Hoang Quoc Viet Road -Cau Giay District - Hanoi - Vietnam Tel: (84 - 4) 3791 1654

Fax: (84 - 4) 3791 1203

# DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

|     | Domandon              | T <sub>n</sub> : | Test methods        |          | Results  | ults     |        | QCVN<br>08:2008/BTNMT | BINMI     |
|-----|-----------------------|------------------|---------------------|----------|----------|----------|--------|-----------------------|-----------|
| ď   | r al allieuei         |                  | Fedt meenone        | NM 5.6.1 | NM 5.6.2 | NM 5.6.3 | TM     | Column B1             | Column B2 |
| =   | BHC                   | 2-72-42          |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.13                  | 0.015     |
| 12  | DDT                   |                  |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.004                 | 0.005     |
| 3   | מממ                   |                  |                     | < 0.05   | < 0.05   | < 0.05   | <0.05  | i                     | 1         |
| 14. | Endosunfane (Thiodan) | J/g/L            | TCVN 7876: 2008     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.01                  | 0.02      |
| 15  | Lindane               |                  |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.38                  | 0.4       |
| 6   | Chlordane             |                  |                     | < 0.05   | < 0.05   | < 0.05   | < 0.05 | 0.02                  | 0.03      |
| 17. | Heptachlor            | · ·              |                     | < 0.05   | < 0.05   | < 0.05   | <0.05  | 0.02                  | 0.05      |
| 18. | Mineral oil           | mg/L             | SMEWW 5520 B - 2005 | 0.11     | 0.11.    | 0.11     | < 0.05 | 0.1                   | 0.3       |
| 19. | Coliform              | MPN/100 mL       | TCVN 6187-1:1996    | 930      | 960      | 1100     | ND     | 7500                  | 10000     |

B1- For the usage of irrigation or other purpose having the similar quality requirement like B2 level Note: QCVN 08:2008/BTNMT: National technical regulation on surface water quality

B2-For the usage of water navigation and other purpose with less water quality NM 5.6.1: Sampling at 15:00 pm on July  $12^{th}$ . 2012; NM 5.6.2: Sampling at 23:00 pm July $13^{th}$ . 2012; NM 201

MT: Blank sample; ND: non detect

# Department of Environmental Quality Analysis



Vu Van Tu

# INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Hanoi. July 23rd. 2012

VIEN **Deputy Director** 

Dr. Nguyen Thi Hue

Version: 1.03

<sup>1.</sup> Test results are valid for test samples

<sup>2.</sup> Only quoted a part of test report if receiving the agreement by terms of DEQA

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<sup>4.</sup> Name of sample, customers written by customers' request

Road - Cau Giay District - Hanoi - Vietnam Fax: (84 - 4) 3791 1203 Tel: (84 - 4) 3791 1654 DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366

### VILAS 366

### ANALYTICAL RESULT

No: A1207.60-63

: 8th-9th-10th floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi : Vietnam Infrastructure Development and Finance Investment Joint Stock Company Address Client

Kind of sample : Air (Contract: 74/VDIFI-VCNMT/2010)

Number of sample: 04 sample

Sampling place : House of culture in Tan Vu Village, Trang Cat Commune, Hai An District, Hai Phong City

(Package EX10- K12.6).

: N 20° 48'059" - E 106° 44' 839" Co-ordinate

From 9 am July 12th to 7 am July 13th, 2012 Testing time

| 12.6.1         K 12.6.2         K 12.6.3         K 12.6.4           :00 am         15:00 pm         21:00 pm         3:00 am           12 <sup>th</sup> , 2012         July 12 <sup>th</sup> , 2012         July 13 <sup>th</sup> , 2012           115         82         78 | K 12.6.3<br>21:00 pm<br>July 12 <sup>th</sup> , 2012<br>82                    |
|--|---|
| 15:00 pm<br>July 12 <sup>th</sup> , 2012<br>105  | 9:00 am 15:00 pm<br>July 12 <sup>th</sup> , 2012 July 12 <sup>th</sup> , 2012 |
|  | 9:00 am<br>July 12 <sup>th</sup> , 2012                                       |
| 1.   | July  |
| Parameter Time VOCs  |   |

Note: QCVN 05:2009/ BTNMT : National technical regulation on ambient air quality.

Department of Environmental Quality Analysis

Hanoi, July 23rd, 2012

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY Deputy Director

Vu Van Tu

Dr. Nguyen Thi Hue

1. Test results are valid for test samples

2. Only quoted a part of test report if receiving the agreement by terms of DEQA

3. Test iterms in italic are not recognized by VILAS; test iterms marked by (\*) are recognized by subcontractor

4. Name of sample, customers written by customers' request

DEQA/TT/BM/17.01

Version: 1.03

Page: 1/1

VIETNAM ACADEMY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS VILAS 366 INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Address: R.712. A30 Building 18 Houng Quoc Viet Road Cau Gíav District - Hanoi - Vietnam Fax: (84 - 4) 3791 1203 Tel: (84 - 4) 3791 1654

### ANALYTICAL RESULT

No: A1207. EX 10

VILAS 3:84-94-104 floors, LILAMA 10 Building, Le Van Luong street, Me Tri commune, Tu Liem, Ha Noi error: Viet Nam Infrastructure Development and Finance Investment Joint Stock Company Address Client

: Noise (Contract: 74/VDIFI-VCNMT/2010) Kind of sample

Number of sample: 12

: EX10-K12.6 Name of sample

: Tan Vu Village, Trang Cat Commune, Hai An District, Hai Phong City (Package EX10- K12.6) Sampling place

: N 20° 48'059" - E 106° 44' 839" Co-ordinate

: From 9 am July 12th to 7:00 am July 13th, 2012 Testing time

| Nomo         | Momo of comple                            | Noise        |      |      |      | Fr   | om 9 am J | From 9 am July 12th to7:00 am July 13th, 2012 | 7:00 am Ju | ly 13th, 201 | 2           |      |      |      |
|--------------|---|--------------|------|------|------|------|-----------|---|------------|--------------|-------------|------|------|------|
| Maille       | oi sampie                                 | Deloni       | 9am  | 11am | 13pm | 15pm | 17pm      | md61  | 21pm       | 23pm         | Contract of | 03am | 05am | 07am |
|              | Led                                       |              | 56.1 | 52.0 | 51.2 | 56.3 | 9.99      | 26.7  | 47.3       | 49.8         | 47.4        | 46.5 | 52.6 | 56.3 |
| EV 10        | Lmax                                      |              | 87.4 | 72.1 | 68.9 | 79.0 | 9.77      | 72.4  | 70.7       | 78.9         | 6.79        | 69.7 | 71.8 | 79.2 |
| V17 6        | Lmin                                      | (qB)         | 38.7 | 38.5 | 37.6 | 45.5 | 41.4      | 43.4  | 37.2       | 39.9         | 39.9        | 40.5 | 45.0 | 39.2 |
| 0.21W        | L50                                       |              | 51.0 | 47.5 | 50.9 | 55.3 | 51.1      | 56.2  | 43.3       | 46.5         | 41.5        | 45.8 | 52.4 | 51.4 |
|              | L90                                       |              | 46.0 | 42.2 | 43.0 | 47.6 | 46.2      | 50.2  | 40.5       | 41.7         | 40.8        | 44.1 | 48.2 | 47.3 |
| QCVN<br>(Non | QCVN 26:2010/BTNMT<br>(Nomarl area - Leq) | BTNMT - Leq) |      |      | 7    | 70   |           |   |            |              | 55          |      |      | 70   |

Note: QCVN 26:2010/BTNMT - National Technical Regulation on Noise

Department of Environmental Quality Analysis

Dr. Nguyen Thi Hue

INSTITUTE OF ENVIRONMENTAL TECHNOLOGY

Deputy Director

Hanoi. July 23rd, 2012

Vu Van Tu

. Test results are valid for test samples

2. Only quoted a part of test report if receiving the agreement by terms of DEQA

3. Test iterms in italic are not recognized by F1LAS; test iterms marked by (\*) are recognized by subcontractor

4. Name of sample, customers written by customers' request

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