# Law enforcement on proactive protection of noise and vibration pollution for residential in Thailand

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Pollution Control Department

# Presentation outline

- Pollution Control Department
- Noise Standards
- Vibration Standard
- Related Regulations

# Pollution Control Department

## Vision

Pollution Control, Good Environment,
for People, through Public Participation.

## Mission

control, prevent, reduce and eliminate pollution and to conserve and rehabilitate the environment conducive for human life.

# Duties

1. To submit opinions for formulating national policy and plans of environmental quality conservation in regarding as pollution control.
2. To recommend for the establishment of environment/pollution standards and guidelines.
3. To develop pollution plans, measures and implementations in controlling and solving pollution problems.
4. To monitor environmental quality and annually provide the Thailand Pollution State Report.
5. To develop appropriate technologies and mechanisms of the environment/pollution management in water quality, air quality & noise and solid & hazardous waste.

6. To coordinate and rehabilitate pollution damages in the contaminated areas.

7. To provide advices and compliances on environment/pollution management.

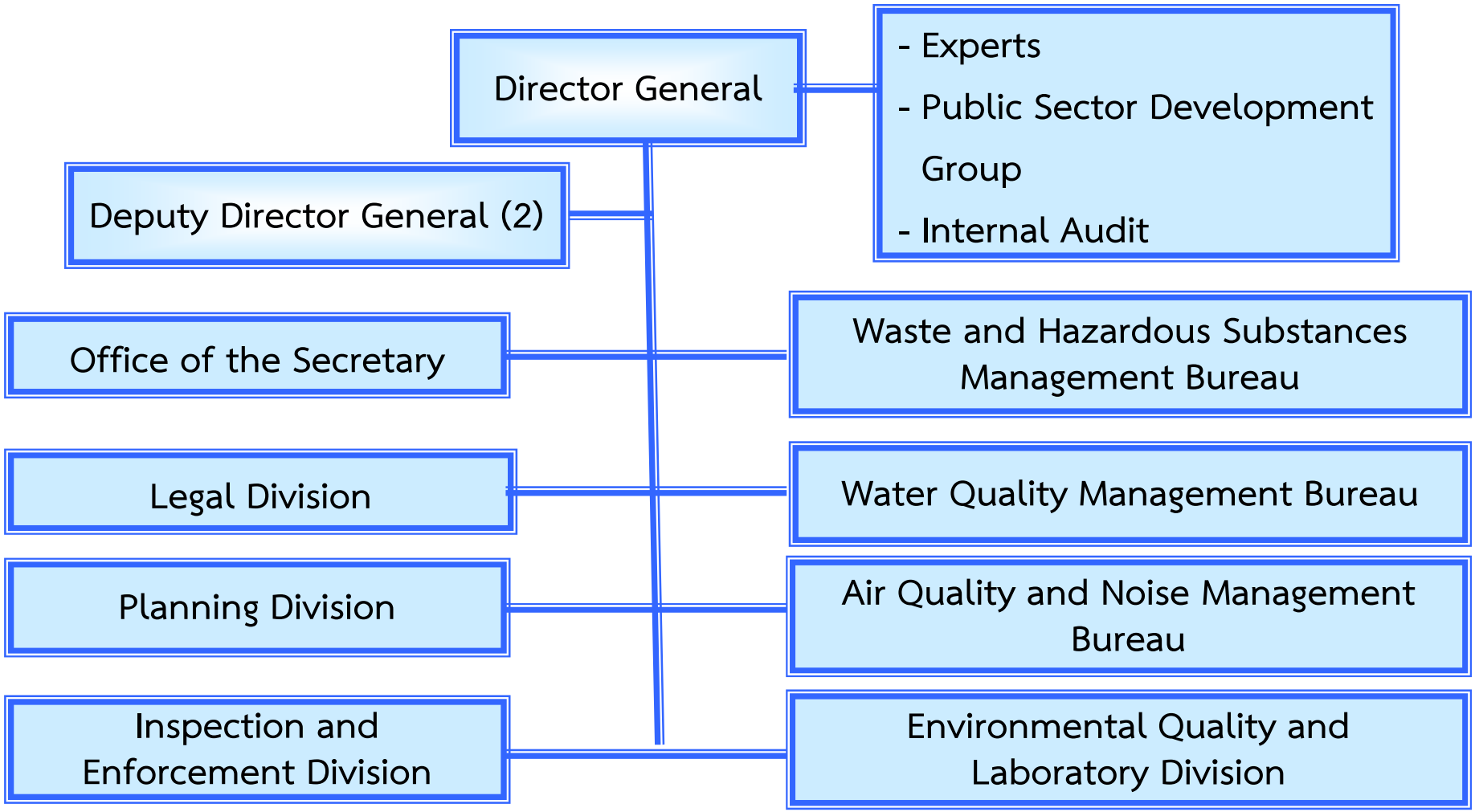
8. To cooperate with national and international levels on environmental collaboration and agreement.

9. To review and investigate public complaints on pollution.

10. To perform on pollution control, specified by the Enhancement and Conservation of National Environment Act, B.E. 2535 (1992).

11. To perform on pollution control, designated by either the Ministry of Natural Resources and Environment or the Cabinet.

# Organization chart




Human Resources: 517 in total

# Cooperate with National Institute of Metrology (Thailand)

2015

- Develop the vehicle noise measurement guideline
- Develop the method for analyze mercury in sea water
- Develop the traceability of mass flow meters for $PM_{10}$ analyzer

2016-2017

- Develop code of practice for vibration measurement
- Develop the monitoring of aircraft sound in the vicinity of airports guideline
- Develop the traceability of Orifice Unit for High-Volume Sampler's calibration

# Noise Standards

Law and regulations under The Enhancement and Conservation of National Environment Act, B.E. 2535 (1992).

## 1. Ambient

### 1. Environmental Noise

#### 1.1 Standard

(1) Maximum sound pressure level ($L_{Amax}$) is not exceed 115 dBA

(2) Equivalent continuous sound pressure level ($L_{Aeq}$) is not exceed 70 dBA

#### 1.2 Instrument

Sound level meter which conform to IEC651 or IEC804

Source

Notification of the National Environment board, No.15, B.E.2540 (1997), Environmental noise standard, dated March 12, B.E.2540 (1997)

## 1.3 Measurement locations

Representative noise receivers, noise sensitive receivers

Outdoor : - at the height of 1.2 m. above the ground

- at least 3.5 m. from any reflecting surface other than the ground

Indoor : - at the height of 1.2 m. above the ground

- at least 1 m. from any reflecting surface other than the ground and at least 1.5 m. from windows

## 1.4 Application

- Ambient noise situation
- Provide the noise management plan
- EIA Projects

by

- Pollution Control Department
- Regional Environmental Office
- Environmental consultant

Noise monitoring station

Noise monitoring point

Noise monitoring unit

## 2. Annoyance Noise

### 2.1 Standard

Specific sound level is not exceed 10 dBA

Principle:

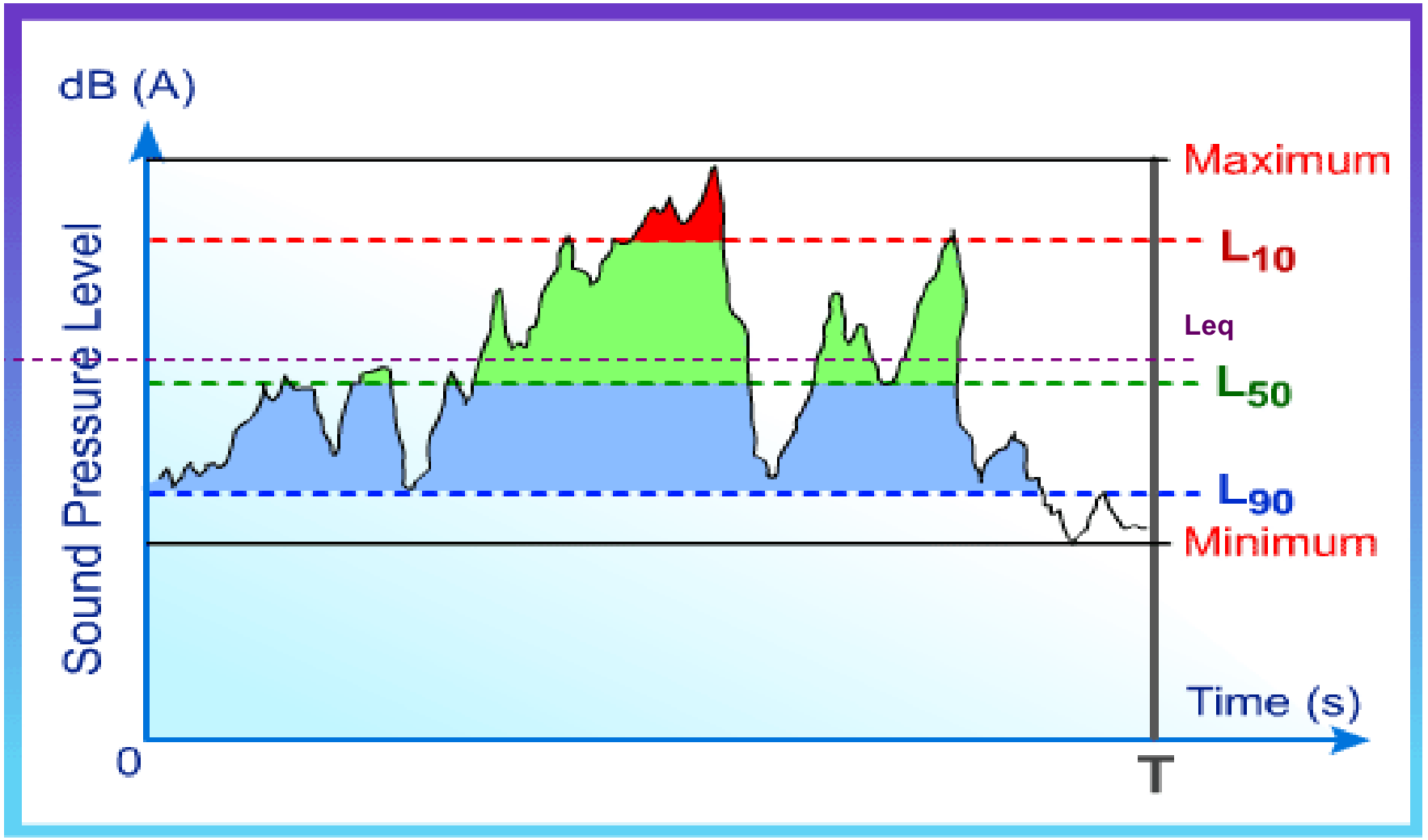
Ambient sound level – Background sound level = Specific sound level

Where::

Ambient sound level : Equivalent continuous sound pressure level ($L_{Aeq}$) of the totally encompassing sound in a given situation at a given time (usually from many sources at the assessment location)

Background sound level : Sound pressure level that is exceeded for 90% of a given time interval ($L_{A90}$) when the specific sound source is suppressed

Specific sound level : $L_{Aeq}$ produced by the specific sound source at the assessment location over a given reference time interval


dB (A)
Sound Pressure Level
Maximum
L10
Leq
L50
L90
Minimum
Time (s)
0
T

## 2.2 Instrument

Sound level meter which conform to IEC60804 or IEC61672

## 2.3 Measurement locations

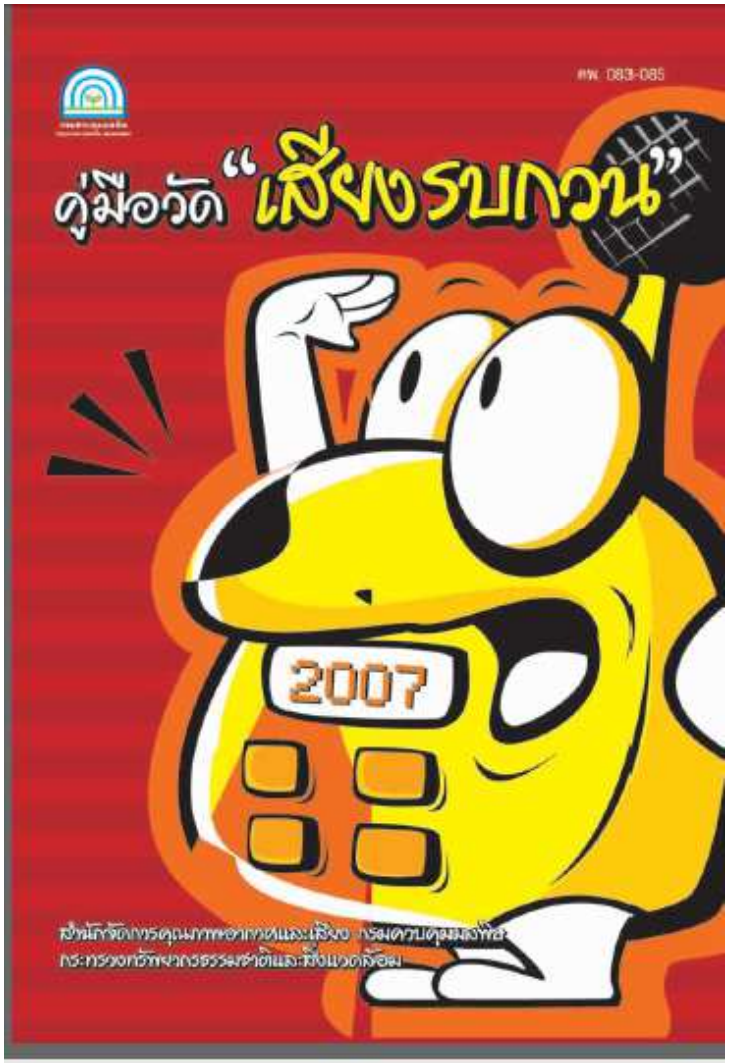
Complainant area

Outdoor : - at the height of 1.2-1.5 m. above the ground

- at least 3.5 m. from any reflecting surface other than the ground

Indoor : - at the height of 1.2-1.5 m. above the ground

- at least 1 m. from any reflecting surface other than the ground and at least 1.5 m. from windows




Annoyance noise measurement manual

## 2.4 Application

- Complainant case
- Injunction of the administrative court (Noise management Expert)
- Monitoring in EIA Project

by

- Pollution Control Department
- Regional Environmental Office
- Environmental consultant
- The local official

example

Hotel in Ayutthaya province

Medicine factory in Bangkok

Source:

Notification of the National Environment board, No.29, B.E.2550 (2007), dated June 29, B.E.2550 (2007)

example

Hotel in Ayutthaya province

# example

Medicine factory in Bangkok

# 2. Source

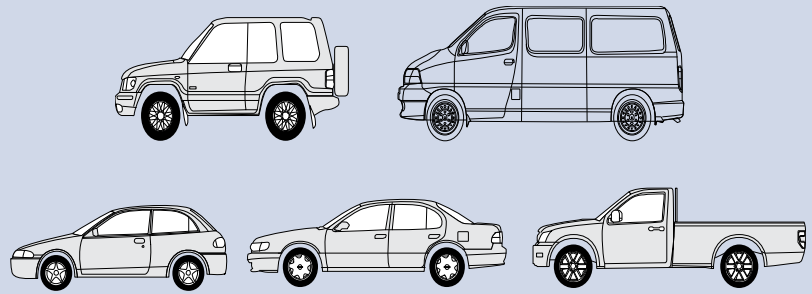
## Vehicle noise (stationary measurement)

### 1. Standard

Motorcycle : Not exceed 95 dBA

Car

| Register date | Gross vehicle weight | Limit values |
|---|---|---|
| Before January 1, B.E.2557 (2014) | All size | Not exceed 100 dBA |
| Since January 1, B.E.2557 (2014) | ≤ 2,200 kg. | Not exceed 95 dBA |
| | > 2,200 kg. | Not exceed 99 dBA |

| Vehicle Type | Gross vehicle weight |
| --- | --- |
|  | 710 – 2200 kg. |
|  | > 2200 kg. |

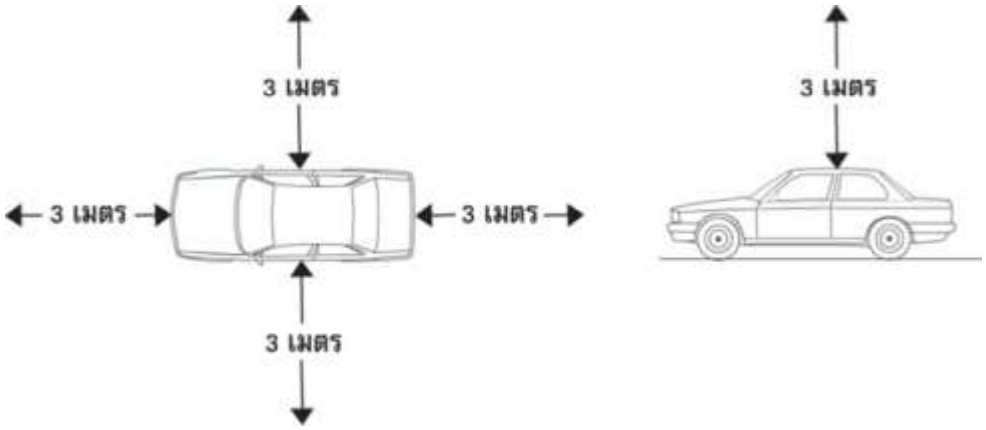
## 2. Instrument

Sound level meter and sound calibrator which conform to IEC 61672

(Sound calibrators are calibrated at intervals not exceeding 1 year, measuring systems is verified at intervals not exceeding 2 years)

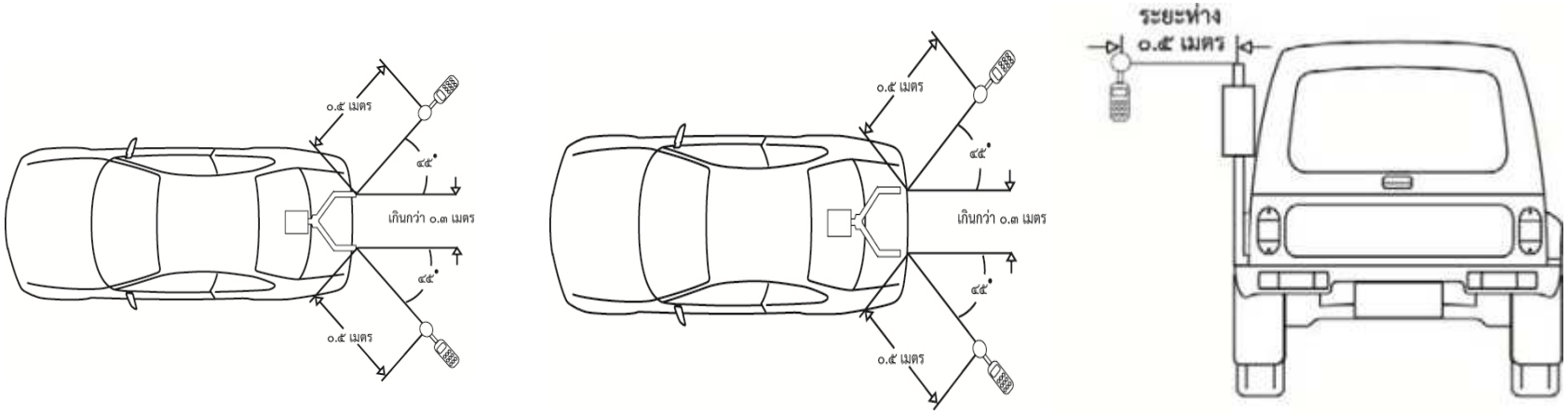
## 3. Measurement

(1) Positioning and preparing of the vehicle




- At least 3 m. from any reflecting surface other than the ground
- Gear level in neutral position
- Ambient noise must be at least 10 dBA below the sound level to be measured

(2) Microphone orientation




- at a distance of 0.5 m. from the exhaust pipe and at an angle of $45^{\circ}$ to the vertical plane containing of the flow axis of the pipe termination.
- for vehicle with a vertical exhaust the microphone shall be placed at the height of vertical and orient upwards, be placed at a distance of 0.5 m. from the exhaust pipe.

(3) Target engine speed

Motorcycle

| max. engine power (rpm.) | Measure engine speed (rpm.) |
|---|---|
| ≤ 5,000 | ¾ of max. rpm. |
| > 5,000 | ½ of 3,750 |

Car

| max. engine power (rpm.) | Measure engine speed (rpm.) |
|---|---|
| ≤ 5,000 | ¾ of max. engine power |
| 5,001-7,499 | 3,750 |
| ≥ 7,500 | ½ of max. engine power |

Notification of the Ministry of Natural Resources and Environment, Motorcycle noise standard, dated July 7, B.E.2546 (2003)

Notification of the Ministry of Natural Resources and Environment, vehicle noise standard, dated January 9, B.E.2558 (2015)

## 4. Applications

- Vehicle noise inspection : - Department of land Tra
  - Traffic Police Division
- Vehicle noises survey : Pollution Control Departme
- Vehicle noise screening : Department of National F


Vehicle noise inspection ;
Ram Indra road,
Bangkok

Vehicle noise screening ;
Khao-yai national park,
Nakhonrachasima Province

# Vibration Standard

## Vibration Standard for Protect Impact on Building

Protect 3 types of building

1. Building Type 1 Factory, Commercial Building, Office Building
2. Building Type 2 Residential Building, Apartment, Dormitory, Condominium, Medical center, Education Institute, Religious Building
3. Building Type 3 Archaeological site, Antiquities, Artifact, National Museum, Insecure Building which High Cultural Values

Source

- Notification of the National Environment board, No.37, B.E.2553 (2010), dated April 26, B.E.2553 (2010)

Referent standard

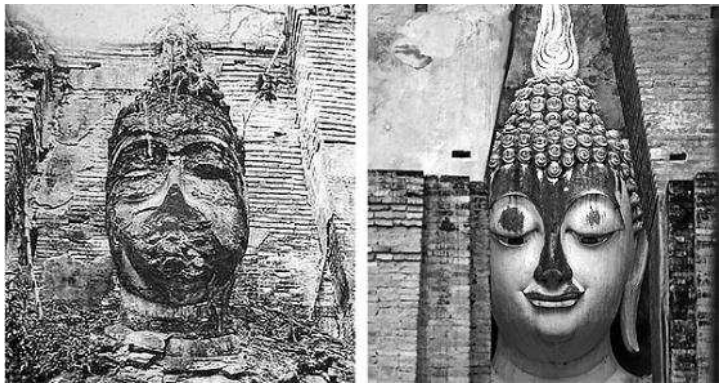
- DIN 4150-3 May 1999-02, Structural vibration Part 3 : Effects of vibration on structures

# Building Type 1

# Building Type 2



# Building Type 3



Case of Vibration Source

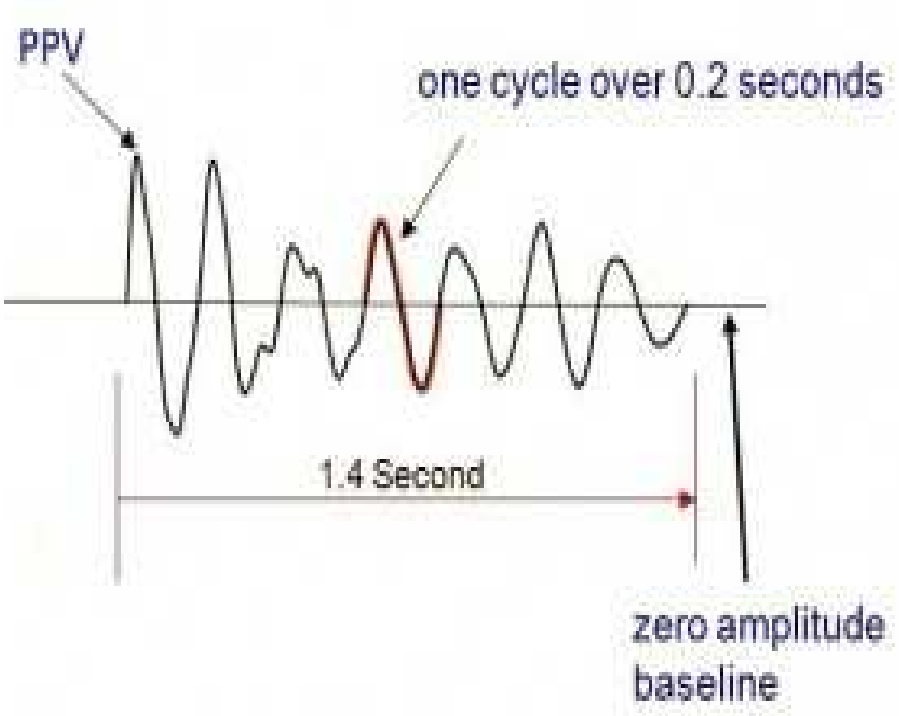
1. Vibration Case 1 means Shot-term Vibration, Vibration which does not occur enough to cause structural fatigue and which does not produce resonance in the structure being evaluated
2. Vibration Case 2 means Long-term Vibration, All types of vibration not covered by the Vibration Case 1 definition in 1.

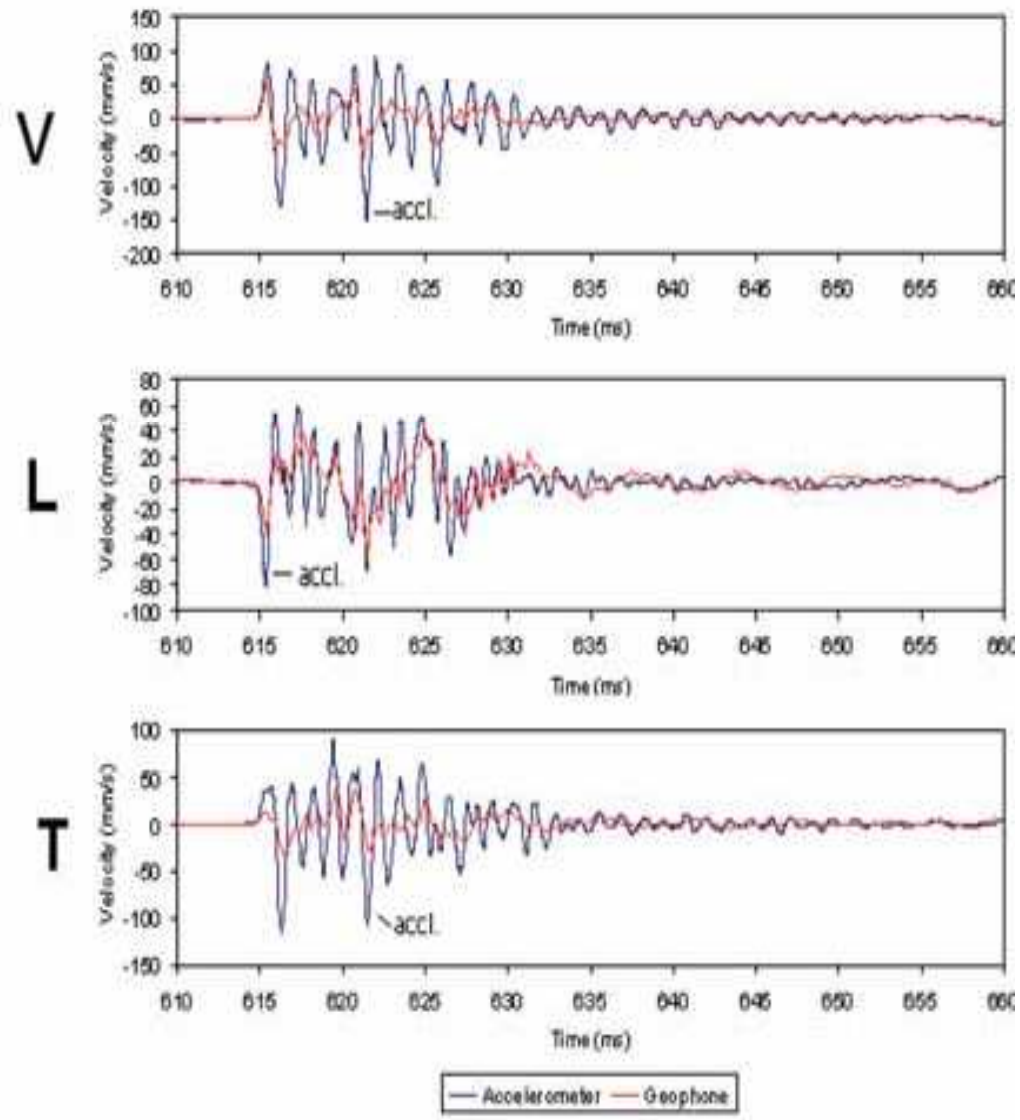

Case 1

Case 2

## Vibration Indicator

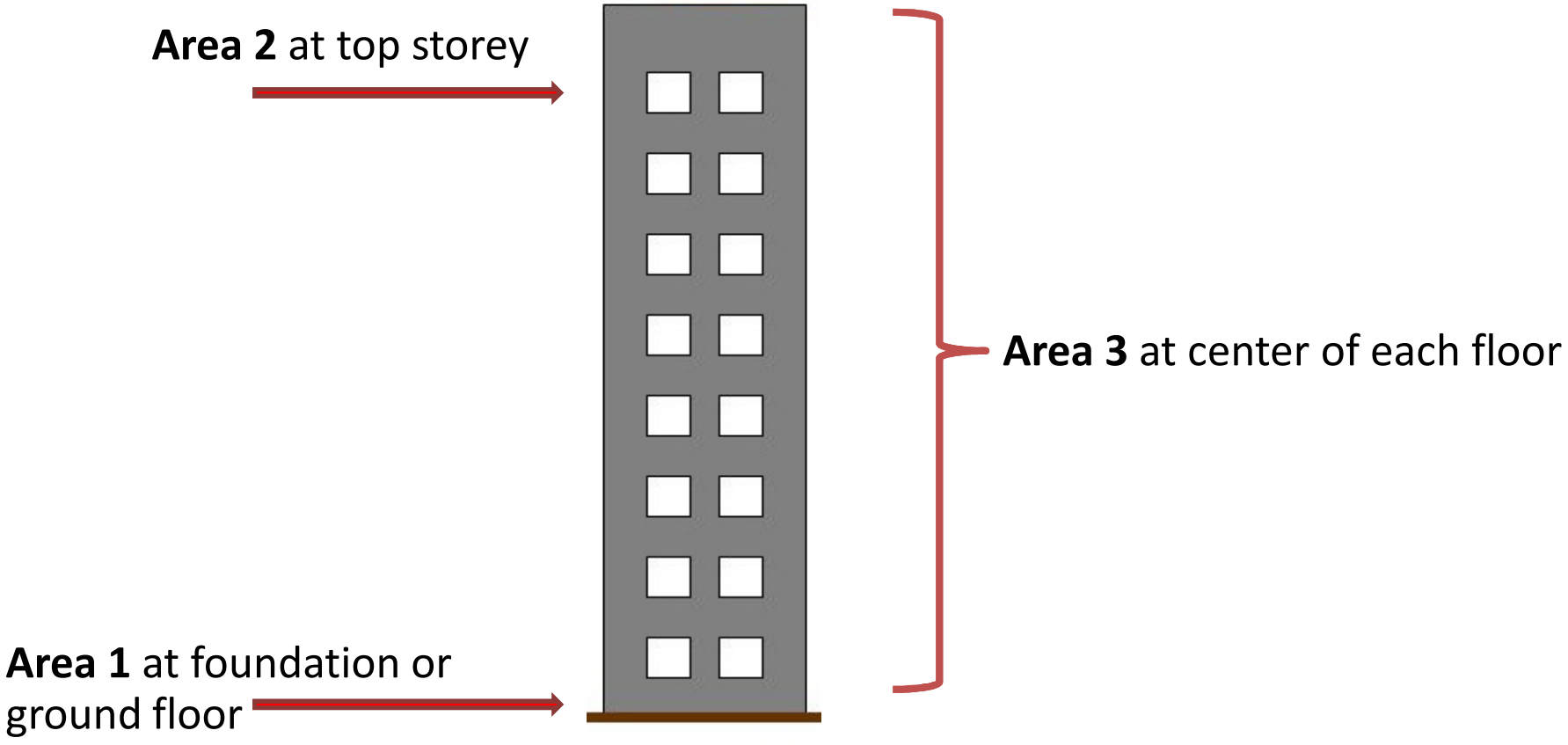
Peak Particle Velocity (PPV) in mm/second unit



## Measurement Area

1. At building foundation or ground floor for Vibration Case 1 only
2. At top storey of building for both Vibration Case
3. At center of each floor for both Vibration Case



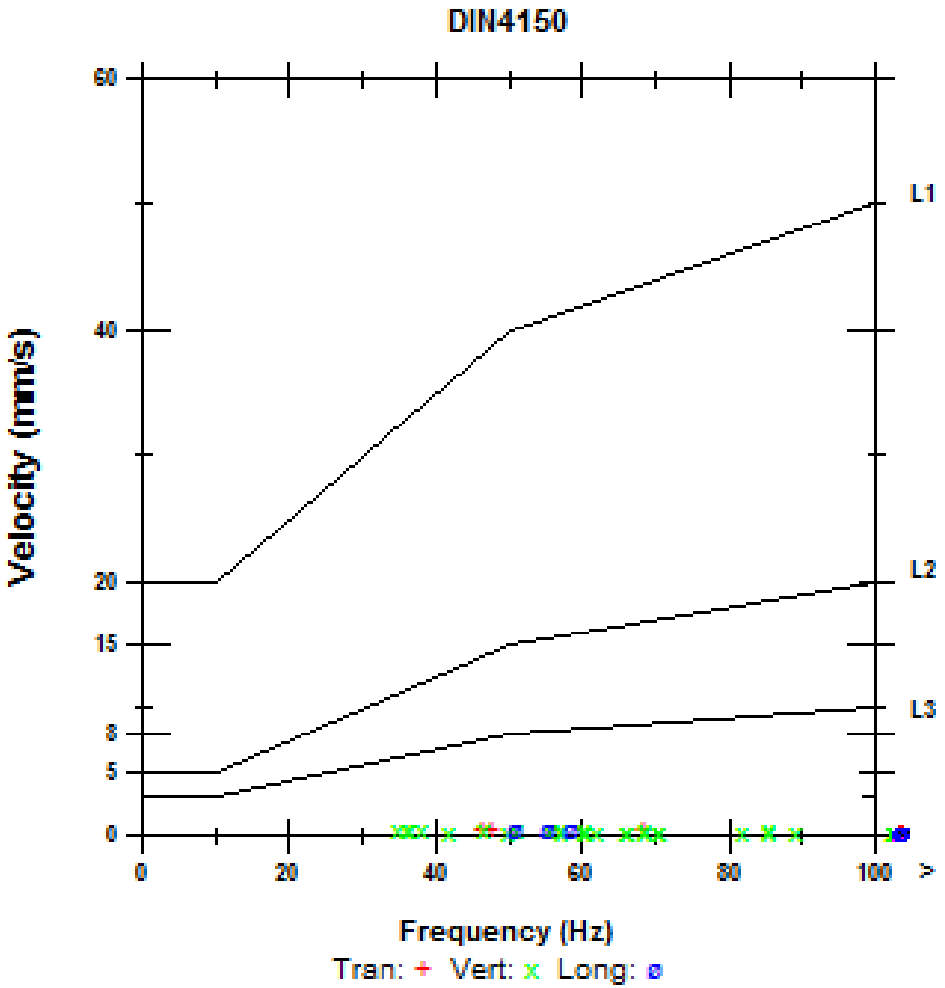
## Vibration Standard for Protect Impact on Building

| Vibration Case | Case 1 | | | | | | Case 2 | |
|---|---|---|---|---|---|---|---|---|
| Measurement Area | Foundation | | | | Top Storey* | Each floor** | Top Storey* | Each floor** |
| Frequency (Hz) | <10 | 10-50 | 50-100 | >100 | All | All | All | All |
| Building Type 1 | 20 | 20-40 | 40-50 | 50 | 40 | 20 | 10 | 10 |
| Building Type 2 | 5 | 5-15 | 15-20 | 20 | 15 | 20 | 5 | 10 |
| Building Type 3 | 3 | 3-8 | 8-10 | 8 | 8 | 20 | 2.5 | 10 |

* Standard Specified for horizontal axis only

** Standard Specified for vertical axis only

# Standard for Foundation area measurement




Building Type 1

Building Type 2

Building Type 3

## Application

- Complainant case
- Injunction of the administrative court (Noise management Expert)
- Monitoring in EIA Project institute
- Pollution Control Department
- Regional Environmental Office
- Environmental consultant
- The local official

# Related Regulations

## 1. Environmental Impact Assessment

The Announcement of the Ministry of Natural Resources and Environment, dated May 24, B.E.2555 (2012)

List of Projects requiring Environmental Impact Assessment :

Construction and operation of railway systems

EIA consist of :

- Description of the proposed project
- Description of the existing environment (baseline conditions)
- Description of the likely significant environmental impacts and mitigation measures
    - Prediction of the likely significant impacts
    - Description of the likely significant environmental effects and their mitigation
    - Indirect and cumulative environmental impacts and impact interactions
    - Risk cases
    - Summary of impacts and mitigation, residual impact
- Environmental Monitoring Plan
- Environmental Management Plan

## 2. The Public Health Act, B.E. 2535 (1992)

### Section 25

In the event of an occurrence that may cause annoyance to residents in the neighboring area or expose person to the following, it shall be of nuisance:

(4) Any action which cause odor, light, ray, noise, heat, toxic matter, vibration, dust, powder, soot, ash, or any other, to the extent that cause impairment or may be harmful to health.

### Section 26

The local official shall have power to forbid any, person to cause a nuisance in a public place or way or private place and also to abate nuisance, and to look after, improve, and maintain road, land routes, watercourses, gutters, trenches, canals, and other places to be free from source of nuisances. In this connection, the local shall have powers to issue written order to abate, eliminate, and control source of nuisance.

## Section 27

In the event a nuisance occurs or may occur in public place or way, The local official shall have powers to issue a written order to person who is the cause or is involved in the occurrence or possible a nuisance occurrence of such nuisance requiring him to abate or prevent the nuisance within a reasonable period of time as specified in the order and if he deems it expedient to prescribe the method of the abatement or prevention of such nuisance or to prescribe the method of the prevention of future nuisances, he shall specify such method in the order.

In the event it appears to the local official that an order of the official was not complied with and the nuisance that occurred may cause serious necessary to prevent recurrence of such nuisance at the expense of the person who was the cause or involved in the occurrence or possible occurrence of nuisance.

## 3. The Building Control Act B.E. 2522 (1979)

Section 21

prohibits the construction of any building. Unless the building owner receives a license from the local authority.

Section 46

In the case of a building constructed or altered by unauthorized removal of this Act. Conditions or the potential danger to the health or life of the asset. Or may not be safe from fire or causing nuisance or damage to the environment and local authorities have the power to amend the rules, procedures and conditions prescribed in the Ministerial Regulations.

In the absence of action by the local authority under paragraph one. And if the building could be a serious danger to health, life, body or property. Local authorities have the power to order the demolition of the building.

# 4. Construction Regulation

Building : Construction or demolition work

- Avoid impact pile driving where possible. Forbid the operation of pile driving between the hours of sunset and sunrise.
- Provide barriers that can be very effective at screening receivers from particular items of plant or noisy operations.
- Forbid the operation of any tools or equipment used in construction, drilling, or demolition work between the hours of 10.00 p.m. and 6.00 a.m.

Public utility

- Should be responsible for the design and implementation of the construction noise control and mitigation measures. recommended In the EIA Report.

Source

Notification of the Bangkok Metropolitan Administration, building and Public utility construction rule, B.E.2539 (1996)