Experiences in Japan
Tsukuba and E-Defense

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Tsukuba Experiences

shake table: 12m×12m, Laminar Box: 12mL×3.5mD×6mH
Max. acc. 500gal, vel: 75cm/s, Disp. 30cm
2 types of making sand bed
Sensor setting
Sensor setting
Density measure
Pile with strain gage
Install pile
Loading test
Cone test
S wave measure
Before shaking
After shaking
Remove sand
Remove sand
After remove sand
Sand bed making

Drop in water;
- High saturation condition
- Cannot control density

Dry compaction
- Control density
- Low saturation condition
E-Defense Experiments
Set piles
Making sand bed
Laminar box with sand bed
Vacum chamber
Water tank
Before test
Some of development

Saturation evaluation; P wave measurement
Displacement measure; rotation meter
Shear Modulus; Microtremor measure
図-1 音波を用いたP波速度計測システムの概略

\[ V_p = \frac{(d_2 - d_1)}{dt} \]
パルス発生装置

水中マイク  $d_1=10.8\,\text{cm},\ d_2=29.5\,\text{cm}$

パルス発生装置

加速度計  $d_1=11.5\,\text{cm},\ d_2=32.5\,\text{cm}$

(a) 加速度計  $d_1=11.5\,\text{cm},\ d_2=32.5\,\text{cm}$

パルス発生装置

加振1

パルス発生装置

加振2

(b)
Displacement measure
displacement
Microtremor measurement
My feeling

• In Tsukuba, the one-dimensional shaking table test was conducted and many results were got.
• On E-defense, the two-dimensional and three-dimensional shaking table test was conducted.
• In the two-dimensional and three-dimensional experiment, the action of the foundation and a structure is complicated and analysis reached to an extreme of difficulty. Although 20 or more papers are announced in the experiment in Tsukuba, only several papers are announced in the experiment of E-defense.
• Since a real large experiment of the foundation and a structure is seldom carried out even if it sees it globally, it is considered that it can raise many results with first of all simplifying an experimental condition if possible.
Thank you!