Roads

Measures against Road Vibrations

By a 2.5 D FEM analysis that simulates the lay of the land, soil, road structure, pavement structure, mitigation works, etc., we quantitatively identify the effects of various types of mitigation works and propose measures designed to deliver the maximum effects.

3 steps for considering measures against road vibration

Step 1: Select the mitigation measure based on quantitative analysis of mitigation effects.
Step 2: Determine the specifications, scale, and layout of the mitigation work based on the results of FEM analysis.
Step 3: Support the client in ordering the works based on detailed drawings, execution plans, estimates and calculation, etc.

STEP1 Select the mitigation measure based on quantitative analysis of mitigation effects

Input
Generating conditions: Where vehicles run, the speeds, weights, shapes, predominant vibration frequency of the ground
Transmission paths: Density of each type of soil and structure, Poisson’s ratio, damping constant, elastic wave velocity, etc.

Output
A table of comparison of various types of mitigation works that comprehensively examines all factors such as the effect of each type of works on reduction of vibration, workability, reliability, and approximate cost of execution, and selects the one that is best suited to the site.
Measures against Road Vibrations (cont.)

**STEP2** Determine the specifications, scale, and layout of the mitigation work based on the results of the analysis

In examining the specifications, scale, and layout of the mitigation works to be selected, we determine the optimal ones by conducting multiple FEM analyses while varying their physical values, layout, etc.

**STEP3** Support the client in ordering the works based on detailed drawings, execution plans, estimates and calculation, etc.

In vibration mitigation works projects, which are conducted less often than noise mitigation works, it is necessary to order the construction works in an optimal way considering the execution method based on the type of mitigation works. CTI Engineering provides the client with optimal support from various divisions on the environment, design, execution, etc. working in coordination, who compile calculation sheets based on detailed drawings, execution plans, etc., and provide general instructions and warnings for execution of works.

Examples of checklist when ordering construction works
- Does the candidate have a prescribed production rate?
- Does he have special machines?
- Does he give grounds for the calculation of the number of days necessary for execution?
- Is his proposal consistent with similar works?