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Summary:

Transport of Masses from Building Sites

Calculations based upon three case studies show that regulations given by municipal authorities leading to buildings being placed deeper into the ground, will contribute to substantially increased costs to the enterprise and to the society.

Background

In Norwegian cities and built-up areas there are often restrictions on building heights. Regulations are given to secure neighbours'rights to a nice view and a good environment. The restrictions are said to lead to the placing of buildings so deeply into the ground that transportation of excavatied masses becomes a considerate cost to the businesses involved and to society. In addition there is a serious lack of depot for masses, especially in the Oslo area, where excavation masses soon will have to be transported far away from the city-area.

Formerly mass transport from building sites was no problem. Small quantities of masses were transported. Mass balance was considered the ideal condition, which means that the masses dug up also should be used for other purposes at the same building site. This was at that time natural, taking into consideration that it was very expensive to transport large quantities of stone and masses over long distances.

Results

For three case studies the costs to society are estimated to be 650 thousands NOK, 770 thousand NOK and 1900 thousand NOK. Of this, the costs to the private enterprises make 75 to 80 per cent. Transport and deposit cost make most of these costs. The total costs assosiated with earth and rockwork in these three cases will increase somewhere between 25 per cent and 130 per cent compared with the solution of a total mass balance.

Local pollution and *noise* are the factors that contributes most heavily to the external costs to the society. However factors like *road wear, congestion, making the environment muddy and dirty* and *traffic accidents* are also contributing to the external costs.

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Methods

Private Costs consist of wages (including social costs) for the work on the site. That is the costs for making the site ready for construction plus costs for transportation and depositing masses.

The distance between the building site and the nearest depot for masses is calculated by means of a transport model, that minimises travelling time between origin and destination within a given road network.

Other Costs to the Society are costs and benefits that private persons, enterprises and the public sector have because of this activity, the level of which they are not able to influence. This is what we call *external costs and benefits*.

Where there are calculation prices (unity costs) that are frequently used in comparable cost benefit analyses, these have been applied. Several of these prices are based on willingness-to-pay analyses and other statistical methods.

The case studies are connected to three projects:

- a terraced low rise condomininium project
- a detached housing project
- another low rise condomininium project with external galleries

The Institute of Transport Economics (TØI) has performed this study for *Selvaaggruppen AS, Oslo.*