

Kostenfaktor Erschließungsanlagen

English Summary

Development Installations as a Cost Factor

Mit Förderung des Bundesministeriums für
Raumordnung, Bauwesen und Städtebau
(Förderkennzeichen: B I 5 - 80 01 95-16)

WEEBER+PARTNER
Institut für Stadtplanung und Sozialforschung
- Planung und Forschung im Bauwesen und Städtebau -
Mühlrain 9 70180 Stuttgart
Emser Str. 17 10719 Berlin
Bearbeiter: Dr.-Ing. Hannes Weeber, Michael Rees, M.A.

Brief Report:

Development Installations as a Cost Factor

Rational development of housing estates -
a contribution towards dampening the costs of housing

Costs of housing are considerably influenced by development costs. It is taken to be certain that reduction and rationalisation potentials are often not used to the full in development.

The optimisation of development plans with costs does not function well enough in practice. Possibilities for damping costs are:

- ▶ Simplifications
- ▶ Mass reduction in the building expenditure
- ▶ Reduction in area use
- ▶ Saving of resources

Expert combination (both as regards function and as regards production)
Suitable legal and organisational structuring of planning and constructional implementation.

External specifications and aims for housing estates and development
- Demand planning or supply planning ?

There are priorities and hierarchies amongst the aims. Compared with the construction program and its implementation in the draft of the residential quarters, development initially has a serving function.

Low development costs can only be achieved with certainty if the development is drawn up together with the buildings and the draft reacts to the local conditions:

- ▶ Which location suitability, external development and topography of the area for which housing demands and which building forms?
- ▶ Which configuration of building? Forms in which mixture and which building arrangement?
- ▶ What type and allocation of parking facilities?

If detailed commitments have already been made up to block level or plot level, then the prospects of economical and good quality results are however, already limited.

Procedures in Planning

The procedures for drawing up a plan are highly formalised. The procedural stages arising from planning and construction law are joined by the procedural rules from the local government - including their committees up to their factions. This leads to compromises which mean loss of qualities and increased costs.

Development Subsystems

Many development components are conceivable as public installations as well as collectively-owned installations, and also as private development in commonly-owned property or individual property. This particularly applies to the following items:

<i>Non-public Development</i>			
<i>Collectively-owned installations</i>		<i>Installations on the building sites</i>	
Traffic facilities and green spaces	Supply and disposal facilities	Traffic facilities and green spaces	Supply and disposal facilities
Private roads, paths, squares.	Non-public pipelines	Paths, access roads, parking places	House connections for water, waste water, electricity and heating.
Commonly-owned parking spaces Commonly-owned garages	Locations for dustbins, recycling bins	Garages with access roads	Locations for dustbins
Commonly-owned green areas, Children's play areas	Commonly-owned installations for water recovery, water storage, water treatment	Green spaces, play areas	Installations for using rainwater and seepage, springs Miniature sewage treatment facilities
Pollution control installations	Waste water installations Community aerials Lighting	Pollution control installations	Telephone installations (external) Lighting

Practically all of the development subsystems more or less completely follow an "overall development system" which has come about with the development of the town planning concept. All subsystems can be seen as being networks. Their main elements overlap and thus form the "framework" for the development.

This results in a series of critical statements for the design of economical development installations which apply both to the overall system and to the subsystems.

The endeavours to make savings in the phase of town planning are those with the best prospects, after the phase of programming and briefing the project. They can contribute most towards reductions in the development installations.

The following tabular summary shows items, aims and potential of the endeavours to make savings in the phase of town planning, as they are treated in the study.

Elements of planning and criteria for economical development

Subject of planning	Criteria and potential for cost-effective development
Residential construction (in the respective residential forms and residential home forms)	Exploitation of the possibilities for constructional concentration: Higher amount of floor space Higher number of floors (short paths between the networks and the apartment) Most concentrated construction where the development offers the maximum capacity. Head-on construction of key streets
Plot sizes and cuts	Largest plots in marginal areas, where they do not necessitate any further network expansion. Narrow side of plot facing the routes.
Location and surveying of plots capable of being built upon	Near to the routes, concentrated constructional installations; open areas preferably in the "development shadow"
Areas and routes for traffic, supply and disposal	Short (pipeline) distances, narrow cross-sections, making to the full use of the respective traffic capacity, traffic mixture principle Building on both sides of the routes preferable, reduction of turning facilities Avoidance of double-development of plots Less precautionary expenditure for exceptional requirements Possibilities of leading supply pipelines independent of the transportation routes

Water supply	<p>Acceptance of a less constant water pressure</p> <p>No securing of extinguishing supply exclusively from the water supply, instead, additional use of surface reserves (e.g. pond used for extinguishing)</p>
Waste water and surface water	<p>Reduction of the waste (rain)water by providing seepage, by use of grey water, roof-greening, low amount of sealed surfaces</p> <p>open leading off of the surface water into ditches</p> <p>No use of control shafts</p> <p>Use of a mixed system (surface water and household waste)</p> <p>Gravity drainage, with as low a pipeline network location as possible; Orientation of the network in the direction of the ground slope</p>
Energy supply	<p>Reduction of the heat required</p> <p>Guarantee supply safety using closed circular pipelines and not (with twice-laid) key pipelines</p> <p>Optimal choice of location for substation</p>
Plot connections to traffic, supply and disposal, up to the buildings	<p>Close arrangement of the routes and the buildings</p> <p>Use of topography for favourable height location of ducts and access roads.</p> <p>Clear grading of the requirements /dimensions.</p> <p>In certain cases, use of construction procedure without ditches, connection of distributor shafts.</p> <p>Common ditch and connections to house installations.</p>
Parking facilities	<p>Alignment to in any case necessary access routes</p> <p>Concentration at points easy to reach</p> <p>Commonly-owned installation for private parking places</p> <p>Public parking places cannot be a replacement for lack of private provisions; placing of the parking spaces should also make parking space management easier</p>
Service traffic, Emergency services	<p>Avoidance of special dimensions and turning points (emergency cross-routes possibly intended, also useful for supply via closed circular pipelines especially in the case of electricity and water)</p> <p>Trash collection points concentrated, for example, at the front, on residential paths</p> <p>Avoid separate fire brigade access routes</p>
Additional town planning measures, e.g. for avoiding disturbances to the apartment buildings and the residential surroundings	<p>To be avoided by means of adequate choice of location,</p> <p>proper instructions for use in the plan of area use,</p> <p>high town planning draft quality</p>

Project Management in Development Installations

Heterogeneity and "separatism" in project management are taken to be the main impairments to the planning and production of cost-effective development systems. The variety of subsystem representatives leads to a corresponding variety of planning activities which exist alongside the overall planning of the housing estates.

The project structure of construction projects allows the formation of two equally important and inseparably linked sections:

- Project structure planning and
- Project structure implementation.

Here, the anchoring of the costs management into the structure and process organisation of the planning side and contributions from the director of works are of particular interest.

Project Structure on the Planning Side

- ▶ Those involved in planning and their responsibilities; their contributions towards dampening costs.
- ▶ Persons responsible for the control of planning; economic approaches in the direction of works; for this, test drafts
- ▶ Persons responsible for project development; contractual obligation to carry out economic checks.
- ▶ Planning group town planning and development; responsible for costs in specialist areas, co-operation and flexibility.
- ▶ Persons responsible for the residential construction: earliest possible co-operation in the development project
- ▶ Approval authorities; provision of help for economic needs, reliable information
- ▶ Other persons in co-operation, involved and affected (contributions towards dampening costs ambivalent)
- ▶ Director of works team; Advice on cost-saving techniques and construction organisation. Rationalisation concepts ought to be cost-effectively implemented in the enterprise.

The optimisation of the planning with costs

The persons actually affected by the development costs are seldom present in the usual planning procedures and where they are present, they are hardly capable of intervening. For many other persons involved however, there is no particular attraction to specifically work towards cost-saving solutions.

A housing estate takes on concrete shape in the planning in many, often separate stages. The defined distribution of roles and time staging in planning requires relatively autonomous efforts towards cost-effective solutions. In all early stages of planning, the "decisions" are based upon incomplete information, i.e. they are partially provisional. This leads to the requirements which apply equally to all planning levels:

- ▶ Avoidance of unnecessary stipulations
- ▶ Keeping variation solutions open (allow optimisation)
- ▶ Retention of alternative locations and planning (allow selection)

Project Structure on the Implementation Side

The structural organisation for the constructional implementation of the development measure is conventionally characterised by the extensive equation of a series of contract awarders on the one hand, and an often high number of construction companies as contractors on the other hand. In order to avoid double-work, impairments, planning and constructional errors and corresponding losses in terms of money and time, there has to be closer association on these two levels.