HOW TO START RENOVATION OF THE HOUSING STOCK BY HOME OWNERS

Prepared for

Prepared by

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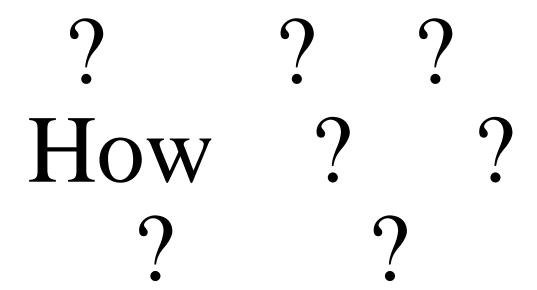
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1997

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Manual For Home Owners

1997

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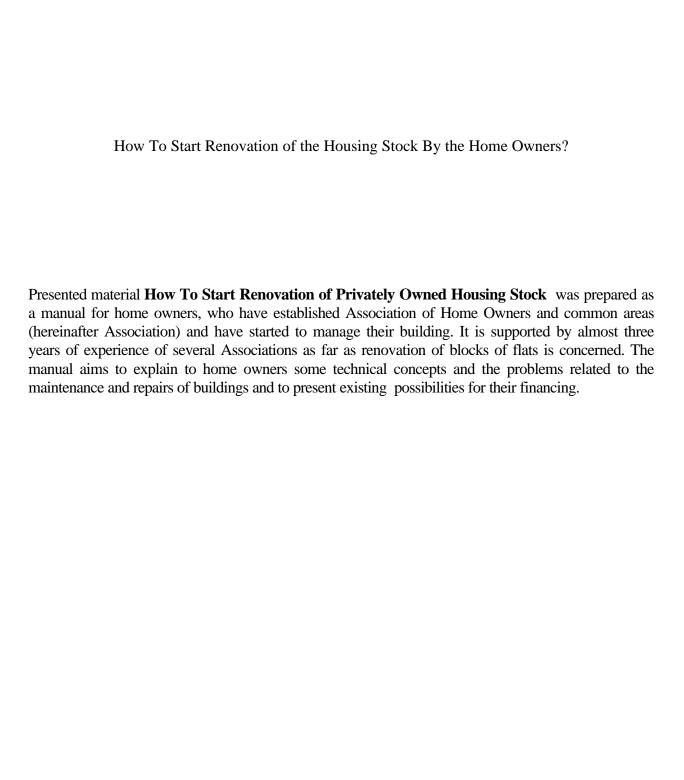
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Introduction

The housing market in every country involves several aspects. Apart from the most important one provision of housing, it also enables the mobility of owners, or tenants, so that **free movement** of the user of the flat in the **labor force** can take place. This is one of the three most characteristic features of the market economy. This mobility is possible only when the owner of the housing stock is known, through whom the desirable exchange and change of ownership can be implemented. For these reasons legislation has been amended, so that the changes of users enable the denationalization of the whole system of ownership with the aim to operate the housing stock more effectively. Experience from advanced countries shows that the smaller the influence of the state in this area is, the healthier and more viable is the whole housing sector. It works more effectively with regard to use of the housing stock, costs of basic investments and supply of services during operation.

The housing stock in Slovakia at present has several types of owners. Slovakia s structure of housing stock ownership has been different from that of other countries of Eastern Europe, as even before 1989 the major share of the housing stock was privately owned. The census of population, buildings and flats implemented by the Federal Bureau of Statistics in 1991 has shown that 50,2% of housing was family homes, 22,1% cooperative flats and 21,2% municipal flats (before 1991 state owned flats) and 6,5% state companies owned flats. The ownership structure of housing stock has brought many legislative problems related to possibilities of further transfer of ownership and to often unclarified issue of the ownership of land, on which this housing stock was built.

First the transfer of flat ownership has been subject to the Act No. 138/91 of the Legal Code concerning the property of municipalities, which meant that ownership of state owned flats managed by housing management companies has been transferred cost free to municipalities, while keeping rents regulated. Until 1991 the sale of flats was regulated by the Act No. 52/66 and its later Amendments the concerning private ownership of flats. These legal measures allowed sale of state owned flats only. Amendments of the Civic Code and the Act No. 42/92 of the Legal Code concerning regulation of property relations and settlement of property titles in cooperatives, have brought in some progress, as the flats and common areas could be acquired in the private ownership of legal persons. Further developments have, however, proven that it is important to pass legal norms, which would describe a flat as an object of sale irrespective of its ownership form.

There were further significant developments, such as price determination, obligation to sell formerly state owned housing stock, restrictions on sales possibilities and the rights of purchase and management and operation of the common areas and common equipment of the building after privatization. The bill has been widely discussed by the public, then passed as an Act No. 182/93 of the

Legal Code and entered into force on September 1, 1993. The Act concerning flats and common areas ownership was worked out as one of the first steps in the reforms of the housing policy, which was approved by the decree of the government of the Slovak Republic No. 297 in June 1991. The basic principle of the reform was to change position of the state and citizens so that the citizen is in a position to gain housing himself, while the state with its tools would stimulate market with flats and provide housing to socially weaker segments of population. The ownership of the housing stock plays an important role in this process. It is also important considering the neglected technical condition of the housing stock, as the new private owners would take a more effective care of these flats, secure reliable and safe operation of buildings and decide about appropriate measures to modernize buildings. If these aims were to be met, it became important to legalize new measures concerning the transfer of ownership of flats from existing owners to citizens.

The Act has been implemented in individual towns and villages with different mixed results. Shortly after it was passed new problem areas have emerged, as well as attitudes of the parties to the transfer of flats were often in contradiction to the spirit of the valid legal norm. For these and other reasons a new Amendment to the Act has been worked out and this has entered into force on August 1, 1995 as the Act of the Parliament of the Slovak Republic No. 151/95 of the Legal Code. The application of this Act has brought many disputed issues, but careful scrutiny allows for their solution. The will of the owners to transfer flats is of primary importance. After that the simplest and the most effective way of transfer of ownership of flats and common areas can be found. It is of primary importance to support citizens and tenants wishing to purchase flats into private ownership and take care of them.

The ownership of flat and of block of flats means for the owner many rights and obligations. The common problem of all real estate owners at present is its renovation. The issue under consideration is upgrading technical as well as functional and operational parameters of newly privatized flats and buildings. In the past, operation of these buildings has not been given sufficient care in spite of big subsidies.

On the basis of the above mentioned Act thousands of citizens of Slovakia have made use of the right to acquire ownership of their homes. Considerable neglect in maintenance of the housing stock was one of serious arguments against its privatization and has been the source of many apprehensions concerning abilities of the future owners to meet these obligations. The experience gained in the last two years seems to point out that the citizens - owners are capable to take care of this issue. Many associations of owners associations independently manage their homes. The majority of owners have agreed to pay for the management and operation the amount which was equal to their rents in the past. They are ready to pay in the fund for renovation the amount ranging from 100 to 300 Slovak Crowns monthly.

Information gained over the time shows clearly that the highest item which the owners have to cover is the heat and warm water, which represent 50-75% of all payments. In some buildings they are able to carry out small repairs by themselves, or they purchase material and temporarily employ necessary repairmen, mostly private persons. In this way the owners have proven, that saving financial resources

is the first and the foremost issue and they learn how to find appropriate forms to solve it. Repair funds include in some buildings as many as 200 to 500 thousand Slovak Crowns, while services and small repairs are being paid for immediately. Owners learn how to manage finances at their disposal, which are currently not used, to make sure that they yield the highest possible return. They cooperate with contract savings banks, invest their money so that it brings highest possible interests, etc.

The issue has emerged what to do with big repairs, which are inevitable. These include repair of roof, windows, general overhaul of lifts, heating systems, insulation of facades etc. To clarify the whole process of repairs the United States Agency for International Development in Bratislava has been financing a pivotal project. In this project also experts from the American institution The Urban Institute, Washington, D.C. have been involved. The project involved processing of documentation necessary for repairs of varied technical extent so that the proposed procedure could be used as an example for other housing objects. The precondition for participation in this project of technical aid was the condition of the object and the willingness of the owners association to cooperate. Several associations in Košice have made use of this opportunity and organized repairs on several buildings, thus having proven that the chosen procedure was correct and that the owners know to manage, prepare and secure financing of further repairs. The knowledge and experience gained during this project has been utilized in this publication and serves as example of the procedure for building renovation by the owners of flats themselves.

Transfer of Ownership of Flats and Common Areas

Act No. 182/1993 and its Amendment No. 151/1995 of the Legal Code

Application For Transfer of Flat Ownership

Process of Flat Ownership Transfer

Preparation of documentation concerning transfer of flats and common areas. Entry in the Real Estate Cadaster.

Acquisition of Property

of flats,
of common areas,
joint ownership of: common areas,
common equipment,
accessories,
built up area and adjacent land.

Management of the Building - Decisions Concerning Form of Management

Management Contract

Association of Home Owners

- Management Company

I. Carries Out Complete Management II. Carries Out Partial Management

III. Arranges Management Contract

Taking Over Building Management

Implementation of Building Management

Financial Services

- . Annual Budget
- . Financial Reports
- Collecting Payments and Records
- . Other Revenues

Administrative Services

- . Signing Contracts
 - Insurance
- . Breach of Agreements
- . Personnel Issues
- . Communication With Owners
- . Management

Maintenance and Repairs of the Building

Chapter I: MANAGEMENT OF THE BUILDING

Transfer of property of flats and common areas to former tenants means that the previous owner of the building is no longer responsible for the upkeep of the building in operational and safe condition. From the day of sale of the flat, i.e. entering the ownership title in the real estate cadaster, the tenant acquires ownership rights to the flat, to common areas, common equipment, land and accessories of the building. The rights and obligations stemming from the ownership of flat and of common areas are transferred to the legal successor, new owner. The original owner can no longer decide about the flats which were transferred to new owners, as this would mean interference with the rights of new owners.

The law concerning flat ownership specifies that the building cannot be without a manager and that each building will have only one manager. From this reason **associations of owners of flats and of common areas** are formed as a legal person, which is entered in the register of associations at the respective district office, unless the owners of flats and common areas sign a **management contract** with other legal, or physical person. The best alternative so far has proven to be the association of owners of flats and common areas (hereinafter referred to as Association) and the Association signs a management contract with a specialized management company. The Association signs management contract for the whole building, or for some partial services, which the Association is incapable to secure.

Pursuant the Act No. 182/93 of the Legal Code and its Amendment No. 151/95 of the Legal Code, 8, Section 3, signing the contract with flat owners or with the Association, the manager is obliged until 31st May of the following year at the latest present the flat owners the Association report about their activities for the previous year, especially about the financial management, conditions of common areas of the building, as well as about other significant issues related to the building management. If the manager wishes to end their activities, they are obliged within 30 days before the end of their activities present to the flat owners and Association the report on their activities and pass all written materials related to the building management. This is duty of the manager after flats have been acquired in the ownership of tenants, who decide to establish the Association for building management. The experience shows that the original managers often are not willing to meet this legal obligation and the new owners/Association receive incomplete documentation. The original manager misuses the inexperience and ignorance of new owners, who do not know what should the transfer of building management involve. For this reason it is important to keep records on what the original manager is obliged to present to new owners.

1. Taking Over Management of the Building

Transfer of the management of the building should concentrate on physical aspects of the real estate and the protocol of transfer should include all issues, which are important to the management in the following periods.

Following documents and data are the most important:

- Recording the state of individual measuring equipment (electricity, water measuring equipment, gas meters etc.) and possibly the contract of supply of heating medium in the boiler room.
- . Number of garbage cans and other containers, which are used to collect and transport garbage.
- . Repairs and other works in progress, if they are being implemented on the building.
- . All audit books, e.g. concerning the electricity, gas installation, lighting conductors, chimneys, etc.
- . Documentation concerning chimney shafts and contracts with the relevant chimney maintenance company and their regular cleaning.
- . Fire protection documentation and fire extinguishing aids.
- . Documents concerning labor safety and health protection (e.g. at work in the boiler room).

Basic documentation:

- . Building documentation, project, and its changes, project of the actual implementation.
- . Construction permission.
- . Inspection decision concerning construction, inspection, or other decisions of the Building Construction Office.
- . Documentation concerning the land and real estate ownership .
- . Insurance contract.
- . Correspondence with the Building Construction Office related to the building management.

Documents concerning technical state of the real estate:

- . Passe-partout of the building:
- . Passe-partout of individual flats, including the protocols of transfer to new owners.
- . Passe-partout of individual common areas.
- . Audit report of boiler room.
- . List, records of individual equipment (washing machines, laundry press, etc).
- . List of objects of gradual wear and tear (low valued tangible fixed assets of 5000.- Slovak Crowns or less).

Documents concerning contractual and business relations:

- . Contracts with suppliers of energy (electricity, water, gas, heating, hot water).
- . Other business contracts (garbage collection, STA revisions, emergency breakdown removal, revisions, tidying up, etc.)

Building management accounting documentation:

. Accounting documentation (statements of account, payroll, documentation concerning internal

accounting, rental collection documents, documents concerning other payments).

- . Tangible fixed assets, low valued tangible fixed assets.
- . List of furniture.
- . Investments into real estate (repairs and maintenance).
- . Investment budgets and general overhauls.
- . Documents concerning payment of dues for use of common areas.
- . Documents concerning calculation of rents, their changes and reasons for their changes.
- . Documents concerning advance payments for services rendered (water, sewage, heating, warm water).
- . Documents concerning requests for payments and documents concerning legal actions and rental claims.
- . Income tax returns and the related documentation.
- . Liquidity documentation and documents concerning the insurance coverage.

House order and the related issues:

- . House order.
- . Records on domestic animals.
- . Other documents related to rules of proper behavior.

Good start of the management depends on a proper take over of the building by the new manager. Only in this way accumulation of complications can be prevented. These complications may be caused by lack of informations concerning the whole real estate, which are necessary for management. At the end of the transfer process the take-over protocol should be signed by the former and the new manager. This protocol is an important evidence in case of possible later disputes concerning the responsibility of the new and original manager. For this reason it is important that the take-over protocol is done thoroughly.

1. Tasks of the Building Management

As soon as the management of the building is transferred to new manager the Association, through its representatives and decisions of the meetings of the owners, start management and administration of the building. These activities may be divided into three main groups:

- 1. Management of finances,
- 2. Administration,
- 3. Maintenance and repairs of the building.

Financial activities include following tasks:

. Preparation and implementation of the annual budget,

- . Transfer of payments, paying invoices of contractual partners,
- Bookkeeping (financial operations, overview of revenues and expenditures, movements of capital, reports on bad debts, etc.)

Administration ensures the following tasks:

- . Signing of contracts (electricity for common areas and equipment, supply of heat and warm water, supply of cold water and the use of sewage, supply of gas, garbage collection, emergency service, inspection of common TV aerials, lighting conductors, gas installation, lifts, electric installation, chimneys, fire protection, etc.)
- . Insurance of the building.
- . Settlement of broken agreements and rules.
- . Relations and communication with owners of flats.
- . Reports concerning management of the building.

Apart from implementation of the necessary financial and administrative services, one of the main tasks of the building management is to **secure maintenance and repairs of the building.** This area has not been paid sufficient attention to so far and as a result the buildings are in a poor technical condition. For this reason this publication is oriented on more detailed evaluation of the technical state of buildings and the issue of maintenance, repairs and modernization.

MAINTENACE AND REPAIRS OF BUILDINGS - Financial Resources

DIAGNOSTICS of the technical state of the building

- . Diagnostics of construction part,
- . Diagnostics of technical equipment.

EVALUATION of the technical state of the building

. Analysis of the results of diagnostics

ESTABLISHMENT of needs

. Prioritizing maintenance and repairs tasks, reconstruction and modernization

STUDIES of alternative technical solution of repairs

- . Studies of repairs,
- . Budgeting individual alternatives,
- . Selecting and deciding in favor of one alternative

SELECTION OF THE SUPPLIER

- . Tender for supplier of repairs,
- . Selection of supplier of repairs on the basis of presented offers,
- . Selection process,
- Evaluation of the financial need for repairs on the basis of offers...

CALCULATION of financial needs for repairs

• Budgeting for individual owners (households).

SOURCES OF FINANCING - Selecting sources

(Evaluation of the actual situation and establishing possibilities)

1. Fund of repairs and maintenance - decision concerning its use

- . Using the total fund resources for a selected repair ...
- . Distribution of fund for repairs for: maintenance,
 - x) repairs,
 - unforeseen repairs ...

1. Private and outside resources of owners

- . Household savings,
- . Loans from the state fund for housing development,
- . Subsidy on housing insulation,
- . Contract savings,
- . Bank credits.

FINANCIAL NEEDS CALCULATIONS of the Association

. Depending on availability of finances of individual owners

CUMULATION of disposable finances

- . Sub-account (independent account) of the Association of owners,
- . Stages of credit payments on the basis of written agreements.

Chapter II:

BUILDING MAINTENANCE AND REPAIRS

Before the actual maintenance and repairs work can start the actual conditions of the technical state of the building has to be established. Evaluation of the technical condition is very often a demanding task and, therefore, we recommend, that the owners of flats cooperate with experts. It is the owners who decide about the repairs and maintenance of their property and, therefore, they should have the basic knowledge concerning the technical condition of their home so that they better understand necessary requirements for a good and safe maintenance of their property.

1. Technical Condition of Blocks of Flats

The average age of the housing stock in Slovakia is approximately 30 years and approximately 83% of flats have been built after 1945. Massive panel construction has started in Slovakia in 1959 and this type of housing has become the decisive type of building construction. Construction of buildings for housing purposes of traditional brick type has gradually disappeared in the sixties and the special problem of the present represent some 650 thousand flats, which have been built using panel technologies. A special group is formed by flats, which are precious from the historical point of view and are under monument protection.

The technical state of panel buildings has been influenced by conceptual shortcomings, such as insufficient knowledge concerning spatial influence of panel construction, underestimation of significance of connecting points between individual panels. The first panel houses did not envisage spatial influence at all. So for example the horizontal sealing consolidation is completely missing. Model calculations have not been precise and the mechanisms of tension and deformation has not been appreciated properly. Volume changes at various material composition of construction have not been taken into account, nor their different durability. The insulation has been insufficient both from the point of view of statics, as well as of thermal insulation. The properties of concrete constructions were to a large extent influenced by technological procedures of concrete mix production, its components (gravel, cement, water), processing, conditions of hardening and treatment. Quality of panel production has gradually deteriorated and as far as the quality is concerned the most recent buildings are the poorest.

Technical conditions are to a great extent influenced by neglected maintenance. There were no projects of maintenance, which would describe the most suitable way of building utilization, what inspections are to be carried out, what preventive and protective procedures to apply to construction elements and technical equipment and in what time periods. Regular maintenance can substantially influence durability of construction elements and technical equipment of buildings and help to avoid extensive progressive degradation processes on construction materials. Considerable financial expenditures can be saved by protective coating of walls, ceilings, windows, metal elements, by timely and regular exchange of worn out parts of equipment, sealing etc. Top priority of the construction industry was the number of houses produced, with quantity being preferred to quality and construction companies took pride in high volumes of panel production, neglecting the issue of their quality. Continuing neglect of repairs and maintenance in the last 40 years has resulted in the estimated need of financial resources to the amount of 250 billion Slovak Crowns. The present technical condition is highly unsatisfactory and depends on the whole complex of factors, which can be divided in the following basic groups:

- . conceptual shortcomings in the construction of buildings,
- . low quality of materials and construction elements,
- . influence of the environment external and internal climate on the process of degradation of built-in construction materials.

. neglected maintenance and repairs of buildings.

On the basis experience of evaluation of technical conditions the most frequent shortcomings on buildings are the following:

- . Damaged water insulation layers of flat roofs (cracks, swells) resulting in leaking into flats.
- . Defects in the construction details in areas, where the roof coverings join the ventilation, drainage elements and other anchoring construction elements.
- . Cracks between the outside wall cover and the vertical or ceiling construction causing destruction of wall surfaces.
- . Leaking window frames and window wings as a result of their defects, leaking mechanical anchoring of windows to walls, which is manifesting itself by increased infiltration and leaking into flats, damaged frames in the absence of new coating.
- . Vertical and horizontal cracks between panels, wet cracked joining areas, with consequent leaking in the flats and increased infiltration.
- . Damaged surface walls, floors and ceilings in common and communication areas, fallen off plaster, wall tiles, original painting is very dirty, damaged upper layer of PVC on floors in corridors and staircases, and the edges on stairs are broken.
- . Insufficient thermal insulation of walls and leaks, with mould forming inside flats.
- . Deformation of the roof covering with attics, gross destruction of joins and broken water insulation layers.
- . Deformation of partition walls as a result of tension caused by the ceiling panels (the ceiling boards are not sufficiently solid).
- . Imprecise mounting and unevenness of the panel geometry.
- . Break-downs in distribution of cold and warm water, bad vents, increased incrustation resulting in plugging of piping.
- . Damaged fire protection water pumps.
- . Corrosion of outlets on the system of central heating. The metal radiators are to a considerable extent corroded and their exchange is imminent. The radiator vents are often not capable to regulate water flow in the system. The thermo-regulation vents are missing.
- . Damaged sewage, especially in horizontal connecting parts.
- . Damaged plumbing and neglected maintenance.
- . Noticeable process of aging of materials, their degradation, carbonizing, sulphatizing of concrete, corrosion of steel, surfaces with salt deposits.
- . Falling concrete layers, uncovered carrying construction especially at balcony boards and peripheral panels, leaking of corrosive products.

For the coming period the ownership of flats and common areas will create one of main preconditions for slow down of deterioration of technical conditions of buildings, as regular maintenance and inevitable repairs with the aim to preserve and improve privately owned property is likely to start. In the near future any further delay in maintenance and repairs of buildings may result in further decrease of

life length and, of course, in further increase of financial needs as far as necessary repairs are concerned.

1. Diagnosing Technical Condition of Blocks of Flats

A whole set of information concerning the technical condition of the building is required for preparation of programs of repair, maintenance, reconstruction works and modernization. These may be gained through diagnosis of the condition of building constructions, their systems and technical equipment.

The diagnosis of building construction is often complicated by a complex set of influences. Their life is also decreased by a combined influence of various environmental stress factors, including air pollution. Atmospheric pollutants increasingly participate in economic damages caused by atmospheric factors. They take part in the process of deterioration of building construction materials, they damage systems used for their protection. For example losses in Germany caused by material corrosion are estimated to be 2 billion DM in one year. Considering the long-term environmental effects, much worse and more complicated is the situation in our country, as the mechanism of care for housing fund has been missing. The mechanism of deterioration of materials, buildings and their equipment is always the result of synergic effect of environmental factors, mechanic stress factors and technical influences, including production, quality of products, anticorrosion protection, etc. Because of this diagnostics of the state of building construction elements is of a great importance.

2.1 Aims and Objectives of Diagnosing Technical Conditions of Building Construction and Technical Equipment of Buildings

The process of diagnosing technical condition of building construction and technical equipment of blocks of flats can take place as a visual, basic, or detailed inspection with the aim to gain sufficiently large quantity of information for evaluation of the building from the point of view of their safety (static components, operation of building), conditions of health and hygiene, their physical, moral and economic life, energy need, operational costs and functional requirements of the users (spatial flexibility).

The aim of diagnosing technical conditions of the building conditions is to make use of the accessible diagnostic methods to find out more about physical conditions, load influence of the building, conditions of construction materials and elements, technical equipment of the building, to evaluate their functionality and the reason for their conditions.

Evaluation of data gives a realistic basis for evaluation of building and for decision making concerning their protection, maintenance, reconstruction, modernization or a possible demolition. Objective evaluation of the technical condition of the building may often be a very demanding task and solution lies in the application of several sciences, so that cooperation of experts may be inevitable. This may be conditioned by the possibilities offered by diagnostic methods, technical equipment, by the extent of field inspections, which were carried out, condition of the locality and its environment, definition of parallel loading influences, evaluation of reasons for present condition, analysis of mechanism and

sources of tensions, deformations, damages and the degree of progressive degradation of construction materials.

The results of diagnosis may be influenced by functional conditions of inhabitants, safety of building (of its static components and operation), health and hygienic conditions of users, thermal, technical and energetic demand, operational costs and durability of the building. Evaluation of the results of diagnosis will facilitate the actual appraisal of the building, on the basis of which decisions can be taken concerning the extent of protection, maintenance, modernization, reconstruction (insulation, constructional and disposition changes, roof flats, technical equipment). Visual, basic, or detailed diagnosis can be done with regard to construction elements (upper part of the building and the foundations and their condition) technical equipment of the building (water installation, sewage, gas installation, electric installation, heating, air conditioning, lifts, etc.) The extent of the diagnosis within this research depends on the results of individual researches and from the above named circumstances and conditions. For these reasons it is not possible to produce a universal recipe, or algorithm of diagnostic works, but it is possible to give some basic indication for qualified experts, so that they can gain necessary information concerning technical conditions of the building.

The extent of information within the diagnostic framework has to be processed, so that the decisions can be made as far as the purpose of the diagnosis is concerned, including all related matters.

1. Visual Inspection

Experience so far gives an idea of possibilities of visual inspection on the general level (the extent is, of course, dependent on the aims and objectives of the inspection). The following data should be collected during the visual inspection:

- . basic data concerning the building,
- . address of the object,
- . owner of the object,
- . manager of the object,
- . description of the locality of the object (building orientation, surrounding buildings, field configuration, traffic intensity, sources of noise and dirt, air conditions, local degree of the corrosive aggressiveness of the atmosphere, climatic conditions),
- . age of the object,
- . identification of the construction system, object type, number of floors, number of flats, common areas (purpose for which these areas are used),
- technical equipment of the building (type, sources of energy, media),
- . passe-partout of the building from the owner/manager of the building (records of maintenance and repairs),
 - . project documentation,
 - . in case that the project documentation is not available it is important to make a

survey of the object,

- . survey of the position of the object (situation),
- . altitude of the object, the height of the attics, or of the upper edge of the roof, sills, balconies, loggias and other external extremities of the buildings,
- . photo documentation views of the object from all sides,
- . ground plan of rooms in the basement, entry and typical floor (dimensions of open spaces, position and dimensions of openings, thickness of walls, partitions, plaster, wall and floor tiles and other surfaces),
- . project documentation from the measured data (ground plan of a typical floor, basement and entry area, cross sections and views) material composition of the construction of floors and roof covering and probes,
 - . comparing the project documentation with the actual state, verifying the basic dimensions of constructions, used materials and recording the changes, which took place,
 - . visual evaluation of the building and individual constructions, record of irregularities,
- . overall appearance of the building,
- . condition of construction surfaces (covering, internal horizontal and vertical constructions) surface treatment, structure, homogeneity, roughness, state of pollution, color, etc.
- . condition of roof construction, roof covering, water insulating layers, draining and ventilating elements, attics, cornices, plumbing works,
- . condition of windows, doors identification of their types, evaluation of physical state, of frame deformation, untightness, connecting points of frame elements, condition of surface treatment, sealing, cements, fittings,
- . condition of balcony boards, loggia elements (side walls of loggia, loggia board), covering layer of reams, edges of boards, cracks, efflorescence, coloring due to corrosive products,
- . condition and functionality of railings,
- . condition of joining points of construction elements (especially the joining of peripheral panels, joining points of internal carrying wall and the peripheral panel and of panels on corners of the building, dilatation contacts and joints of internal vertical and horizontal elements, their breadth and composition,
- . condition of carrying elements, carrying walls, pillars, ceiling boards, beams, window construction, elements of stairs mapping, drawing and evaluation of cracks, their nature, orientation, position, continuity, breadth, cracks in the covering layer of steel elements, changes in the color of concrete, penetration of corrosive products, friability of the concrete surfaces, loose gravel, deformations of carrying elements and their deviations from the construction plane,
- . condition of the peripheral covering, cracks, falling cover layer, deviation from the vertical plane,
- . evaluation of condition of basement from the cracks in the construction elements over the basement construction,

- . positioning of wetness, bloom, moulds, microorganisms,
- . evaluation of the internal climate of the flats (temperature, humidity, possibilities of ventilation),
 - detection of the type and intensity of the actual load on building constructions, loads in the past (comparisons with the project documentation),
 - additional information from the flat users concerning the building, maintenance, repairs, reconstruction, kind of operation, use of space, especially of common areas, comfort in flats and possible other problems, which influence satisfaction of inhabitants.
 - evaluation of the static and dynamic state of the building and individual construction elements on the basis of parameters obtained during the visual inspection,
 - evaluation of thermal technical conditions of buildings, building construction on the basis of parameters gained during visual inspection (e.g. heat consumption for heating, calculation of thermal and humidity fields at crucial points of the building, such as joins of peripheral coating with the carrying wall, with corners of buildings, joints of the roof covering with the peripheral coating, joints of balconies and peripheral coatings, loggias, etc.)
 - . summary of established break-downs, damaged building construction and analyses of their sources,
 - . establishing risk areas for physical review of condition of building constructions in relationship to the kind of inevitable and planned repairs, reconstruction and modernization,
 - . visual evaluation of the technical equipment of the building,
- . condition of water installation (distribution, vents, tubing, ...)
- . condition of sewage (horizontal and vertical distribution, ...)
- . condition of gas installation (distribution, locking, ...)
- . condition of electric installation (distribution, switches, plugs, lighting, circuit breakers, fuses, ...)
- . condition of heating system (heating bodies, distribution, tubing, vents, regulation, hydraulic balance of the system, ...)

- . elevators (physical condition, functionality, ...)
- . and other possible building equipment.

Considering significance and safety of building it is important to explain basic data concerning the visual inspection of the static components. In building construction tensions and deformation may appear as a result of the whole complex of loads. Overstepping the compressive strength will result cracks and destruction of building construction. These cracks are usually perpendicular in the direction of the main tensions. Should the construction be strained in the perpendicular direction of the tension then the cracks or material crushing will take place in the parallel planes in this direction. These are basic external signs, which speak about the behavior of constructions.

1. Visual Inspection of the Outside Covering

First, it is important to identify material, from which the external covering of the building is made and whether it consist of one or more layers, which are self-carrying, carrying, not carrying. In practice following materials have been used: bricks (various kinds of bricks), moulded bricks (clinker concrete, porous concrete, slag concrete), wall panels, composed panels (made of porous concrete, slag concrete, slag pumice concrete, lava concrete, expanded concrete, ceramic, ferro-concrete layers).

Visual inspection has to include appearance of outside panels and testing their cracks and possible destruction and crumbling of material. The visible damages, cracks, destruction of surface parts of the outside panels and deformations of joints are caused especially by long term influence (balanced and unbalanced settling of the building as a whole, gradual completion of the building depending on technological procedures used), cyclic influences (flexible static deformations, increased volume due to humidity and temperature, chemical influences, dynamic influences, etc.) If cracks or crumbling of the outside panels is established in the perpendicular plane to the influence of the vertical pressure force, this means that these forces are beyond the limits of what the material can stand. As a result of pressure also cracks in parallel planes in the direction of pressure may appear. It is important to follow this phenomenon especially at corners of outside walls - vertical cracks approximately 3 to 5 cm from the edge of the side wall of the outside panel. Cracks like these may appear as a result of volume changes and internal corrosion, too (construction steel net).

Cracks on outside panels in the direction to the center of the object (in parapets and parts above the windows) may be caused by settling of the central part of the object. Cracks in one part of the building facade and their direction toward the outer edge of the building may be caused by settling of the peripheral part of foundations. Settling of both edges of foundations in the outside covering usually causes cracks inside the outside covering approximately towards the center of the object inclined in the direction of these edges. Appearance of these cracks indicates the need for detailed inspection of the static condition of the peripheral covering. In case of panels made of porous concrete the cracks come up on the surface of panels in the shape of a net. The surface layer is damaged up to the depth of 2 - 3 cm along the whole surface and can be separated from the panel (corrosion, pressures, etc.) Irregular cracks of various, often hair like shapes indicate poor production technology of panels.

1. Visual Inspection of Supporting Walls and Ceiling Slabs

The visual inspection of carrying walls should concentrate on condition, extent, position and width of cracks, which may caused by a large complex of tensions. Irregular cracks on the surface of the panel usually appear as a result of technology of panel production. In this case survey of carbonation depth of concrete should is recommended. Almost always hair shaped cracks appear at joints between the elements. These are not relevant from the point of view of reconstruction. If these cracks have width of 1 mm and more, then they are usually caused by static stress (vertical pressure, settling of the object and the like). The building should be subjected to static analysis as far as its reliability is concerned in case of inclined cracks in the surface of panels, in upper supports of door and window openings, falling off the surface layer of the concrete, of the covering layer of the construction etc. The same procedure should be applied if cracks and crumbling concrete is found on the edges in the plane which is perpendicular to the pressure force or to the plane, which is parallel to the pressure force. The inspection of ceiling boards should concentrate especially on their middle part, covering layer of the carrying steel element, deformation of the board, visible bow in the direction of its span, cracks at joining points of ceiling panels (if cracks are more sizable). These findings should be followed by inspection of carrying capacity and reliability.

Evaluation of visual inspection should be followed by the decision concerning basic research. The basic research is oriented on the review of static component condition, such as physico-mechanical and physico-chemical properties of concrete of carrying walls, of ceiling boards, joints between the parts, outside coverings, volume weight under conditions of natural humidity and in the dried state, water absorption capacity, module of flexibility and cube and rolling resistance, tentative test of carbonization depth using phenolpftalein. Detected properties of concrete are then compared with projected (standard) values. If the values are established to be lower then their comparison and evaluation will follow. Established values serve to evaluate reliability of static components, static and dynamic response of construction on actual loading established during the diagnosis. The size of actual constant loading is determined on the basis of volume weight and the actual dimensions of the building (established during visual inspection). Also analysis of loading in the past has to be made. In case that the basic research shows that the loading capacity of static components has been exceeded, then a detailed survey of static components has to be made. The basic and detailed survey within the diagnosis can be made only by expert diagnosticians. Volume of necessary knowledge exceeds what the owner probably possesses. For this reason the problems are not elaborated any further.

1. Evaluation of the Technical Condition of the Building

The results of the diagnosis of technical condition of the building has to be thoroughly analyzed, as the conclusions become a base of prioritizing the maintenance and repair tasks, or the reconstruction, or modernization of the building. The procedure is presented on actual examples of evaluation of technical conditions. It is based on examples of building repairs in Košice, which were solved in cooperation with the owners within the experimental project of reconstruction. The project was

sponsored by USAID and implemented in 1995-1996.

In the city of Košice the largest percentage, some 13,200, i.e. about 70% of the total number of municipal housing, has been privatized by the end of 1996. This is the reason why this project has been implemented in Košice. The flats which were privatized and have Associations of Home Owners, have been built in the sixties and beginning of seventies. During this period panel buildings of construction type T08B and T06B have been built. From the selected associations, 3 associations have their buildings built under the construction system T08B and one building is type T06B. The panel construction system T08B has been used on the territory of the city of Košice and some 27,900 flats have been built in this way, representing 4.3% of all panel buildings on the territory of Slovakia. The most panel buildings in Slovakia have been built using construction system T06B (some 260,000 flats), which represents 40% of all panel buildings in Slovakia.

1. Brief Characteristics of the Panel Construction System T08B

It is a transversal carrying system with carrying wall module of 6 m. Dispositions of individual flats have been solved within this module. The typical ground plan is in enclosure No. 2. Construction height of the floor is 2.8 m. This technology was used to build 4 to 8 floor buildings in rows, or as 11 floor tower buildings.

Construction elements are following:

- . Carrying walls are made of reinforced concrete 19 cm thick. The walls were relieved with round openings and these are used for electric installations.
- . The ceiling panels are of reinforced concrete 19 cm thick with openings used for electric installations.
- . The peripheral coating is made of silicates 30 cm thick. It is made of various materials, such as slag-pumice concrete, slag-concrete, porous concrete, etc. The peripheral coating consists of parapet belts and inner pieces between windows, which were in some cases made of metal-plastic combination. Elements of peripheral coating are anchored to transversal carrying walls.
- . Partition walls are assembled and replaceable. Sometimes they are masonry walls made of porous concrete bricks SIPOREX.
- . Roof construction was solved as a flat roof with 3% slope toward the middle of the building with the internal drainage for rain water. The thermal insulation layer is in most cases 5 cm thick polystyrene with smelted water insulating boards.
- . Technical floor is partly under ground and is used for installation of gas, water, heating and sewage. In some buildings cellars and installation distribution network is underground.
- . Buildings are centrally heated. The heating system is provided with double piping. The medium with forced circulation has the temperature of 90/70%. The heating bodies radiators, are made of metal sheets. The annual energy consumption of the building is approximately 10.7 MWh/flat.

3.2 Brief Characteristics of the Panel Construction System T06B

The system is solved as a transversal carrying system with the carrying walls module of 3.6 m. The typical ground plan of a floor is in Enclosure No. 3. Construction height of the floor is 2.8 m. This technology was used to build 4 to 8 floor buildings in rows or 13 floor tower buildings with basement, or with technical floor on the ground.

Construction elements are:

- . Carrying walls are made of reinforced concrete 14.15 cm thick.
- . Ceiling panels are of reinforced concrete 15 cm thick.
- . The peripheral coating is made of silicates most frequently 30 cm thick. It is implemented in various material alternatives, such as slag-concrete and porous concrete, etc. The surface layer of panels is 3 cm thick cement mortar with silicon surface sanding.
- . Partition walls are made of reinforced concrete, assembled, 8 cm thick.
- . Roof construction was solved as a flat roof with 3% slope with internal drainage for rain water. The thermal insulation layer is of 5 cm thick polystyrene with smelted water insulating layers.
- . Buildings have basement with cellars and installation of gas, water, heating and sewage.
- . Buildings are centrally heated from the central source of heat. The heating system consists of double piping with forced circulation. The heating bodies radiators, are made of metal sheets. In few cases the heating has single pipe system with a forced circulation. The annual energy consumption of the building is approximately 11.3 MWh/flat.

1. Characteristics of Buildings of Selected Associations

Characteristics of buildings of Association of Home Owners in Košice were collected on the basis of visual inspection.

4.1 Building of the Association of Home Owners Ke_marská K2

Panel building on Ke_marská street K1 has been built in 1967 under the construction system T08B. It is an 8 floor building, without cellar, with technical floor and construction height of 1,5 m serving for installations. Three sections of the building have been privatized, which represents 72 flats.

Technical shortcomings of the building are following:

Damaged water insulation of the roof layer with water leaking in the flats. Mould appears on places of leaks. The roof has been partially repaired, but with little success. The joints between peripheral panels are damaged, wet, with increased infiltration in the flats. Vertical cracks have been established at joints of carrying walls with peripheral segments. Partition walls are assembled, replaceable, and at present deformed in a vertical plane as a result of strain caused by an excessive bow of the ceiling. The wall surface is of original lime layer, which is in a very bad state at present. The wooden double windows are partially deformed in frames. Around window frames are unsealed openings with an increased infiltration and leaking. The building is heated from a central source. The heating system consists of double pipes, radiators are made of metal sheets without regulation vents. Thermometer is in the technical floor under No. 16.

4.2 Building of the Association of Home Owners Amurská K4

Panel building has been built in 1971 under the construction system T08B. It is an 8 floor building, without cellar, with technical floor for installations. Three section of the building have been privatized.

Technical shortcomings of the building are following:

The flat roof has been repaired in 1996. The original water insulation layer has been reinforced by water insulation layer made of glass fiber. In dumps the original water insulation has been removed. The company, which has done these repair works, has extended a 5 year guarantee for its work and agreed to do roof maintenance for 5 years. The cost of roof repair was 172 thousand Slovak Crowns and covered 233,7 m2 (735,- Slovak Crowns/m2). Also on this building damaged joints between the panels have been established. Window construction is in a bad condition, especially in places where window is anchored to the panel. In these areas there is higher infiltration, with leaking water on places. The joints between ceiling panels are damaged as a result of uneven deformation of ceiling panels. Surface of the walls is original and in a very bad condition. Damaged is also the surface of stairs.

The heating is from central source with double pipe thermal system. The radiators are made of metal sheets without regulation vents.

The building has problems with technical state of water tubing and it is necessary to find for them suitable compensators. This year the Association has secured the exchange of water closure and filters inside the tubing.

1. Building of the Association of Home Owners Fibichová K3

Panel building has been built in 1977 under the construction system T08B. It is an 13+1 floor tower building. The basement serves as a technical floor with cellars. The building consists of 78 flats.

Technical shortcomings of the building are following:

Two years ago the roof has been provided with one water insulation layer. It does not leak yet. The joints of panel segments are in a very bad shape. The peripheral panels have insufficient water insulating properties, as there are moulds in some flats, especially in corners. The window constructions do not seal, thus allowing for infiltration and leaking in the flats through window frames. The surface of inner walls is very damaged. The bells are completely destroyed. The building is supplied with the heat from a central source. The heating system consists of one hot water pipe and the radiators are of metal sheets. The system is badly regulated and over-dimensioned. Approximately from the 6th floor the flats are not sufficiently heated and on 13th floor the air penetrates in the heating system. The heat meter for the whole building has been installed. There are problems with cold water supply because of the insufficient water pressure. The sewage gets often clogged and approximately every 6 months the sewage has to be cleaned.

4.4 Building of the Association of Home Owners Kuzmányho K1

This panel building has been built in 1973 under the construction system T08B. It is an 8 floor building. The building consists of 92 flats and only 3 flats are not privatized.

Technical shortcomings of the building are following:

The roof has been repaired three years ago, but at present it is in a very bad shape. It is leaking at several places. Joints between the panels are damaged. Window frames are leaking and the infiltration is increased. The vents in cold and warm water tubing are in a very bad shape. The electric installation in common areas is damaged. The surface of walls is original and neglected. The stairs have damaged PVC as well as the entrance stairs in the building. The building is centrally heated, the heating system consists of two pipes, with metal sheet radiators. The vents on radiators are not functional. There are no cold and warm water meters in the building.

1. Alternative Studies of Technical Solution of Repairs and their Budgets

On the basis of evaluation of technical conditions of selected buildings **alternative studies of technical solutions and repairs** have been worked out. Budgets have been prepared for individual solutions in order to establish preliminary costs. Studies of technical solutions represent small, medium and large scale repairs. They take into account present technical state of selected buildings and also requirements of representatives of the Association of the Home Owners. Energy saving during

operation and removal of building construction defects are looked upon as priorities. Studies are used by representatives of Associations of Home Owners as a base for making decisions about optimum solutions of repairs and selection of suppliers. The budgets of technical solutions determine the basic need of financial resources for selected repairs. They are a basis for actual financial plans of repairs and maintenance.

The study defines categories of small, medium and large scale repairs depending on financial requirements, in order to explain technical terms to the owners of flats.

1. Characteristics of the Small Repairs Category

The category of small repairs includes repairs costing from 500 to 200,000 Slovak Crowns. They require relatively simple technical equipment for their implementation (artisan tools) and the essential part of these works can be done by owners themselves.

Small repairs include:

- . Improvements of walls in common areas, repair of damaged plaster, paint renewal, repair and painting of metal parts (railings, metal mounting, various grips, plumbing, mailboxes etc.)
- . Improvements of floor surfaces, renewal of the top layer of the floor (replacement of PVC), repair of stair edges, replacement of surface layer of stairs leading to the building, renewal of painting on entrance gate (frame, wings).
- . Repairs of locks, metal mountings, repair or exchange of electric bells, bell-buttons.
- . Adding glass wall in the entrance forming a new insulation (this could save as much as 2 to 3% of energy).
- . Window repairs in flats (joinery works in case of deformed frames, repair of mountings, sealing profiles, re-painting), repair of joints of window frames with the wall.
- . Repair or replacement of doors in flats.
- . Repair or replacement of electric installation material (sockets, switches, lights, bulbs).
- . Repair or replacement of vents and locks on water, gas and heating system piping inside the building, mounting of temperature regulating vents (regulation can substantially influence the energy consumption inside the buildings), installation of hot and cold water meters, thermal insulation of warm water and central heating distribution.
- . Repair of boxes and equipment of hydrants, fire protection etc.

1. Characteristics of the Medium Repairs Category

Medium repairs may include repairs and reconstruction of buildings with medium requirements of finances (approximately from 200,000 to 2 million Slovak Crowns) and complicated technical equipment for its implementation, projects of reconstruction and skilled experts for proposal and implementation, or a tender of suppliers.

Medium repairs include:

- Insulation of peripheral coating suitable for the given type of panel construction system (insulation solve the problem of damaged joints and their consequences and enables to save energy of 25 to 30%).
- . Replacement of windows with lower heat conducting coefficient and low infiltration.
- . Insulation of the flat roof, replacement of water insulating layers.
- . Insulation of ceiling boards over the unheated basement.
- . Replacement of the heating system, e.g. replacement of one-pipe heating system by two pipes, disconnecting from the central source of heat production and construction of an independent boiler room for the building either in the basement, or on the roof, construction of a heat exchanger for the building, solving problems with multistage flat heating system with an independent source of heat and distribution piping for each flat, exchange of heating bodies (radiators) for more effective types.
- . Diagnosing and repair of sewage connector.
- . Replacement of electric installation in case of a higher demand for electricity.
- . Replacement of water pipes (in case that they are clogged as a result of incrustation, , extensive corrosion, etc.)

1. Characteristics of Large Scale Repairs Category

Large scale repairs include repairs and reconstruction costing more than 2 million Slovak Crowns, demanding technical equipment during implementation, preliminary alternative solutions before selecting optimal solution (from technical, financial and term of implementation point of view), project documentation, tender for supplier etc.

Large scale repairs may include:

- . Changes in the disposition of flats (on the basis of static evaluation of stability of the building).
- . New constructions added to the building (new boiler room, stack, etc).
- . Roof flats.
- . New roof construction, new slope.
- . Construction of new protruding loggias (this has also come up as a request of one condominium).

Considering the present technical state of selected buildings, almost all need small, medium and large scale repairs. It was agreed with the Association of Home Owners to implement within the project some of these repairs, while the results will be offered to all Associations. It is important to stress that the **principle of alternative approaches to given type of repair and the need for their evaluation** should be considered.

On the basis of discussion with owners the project has been aimed to some specific problems. For the building of Association of Home Owners on Ke_marská K2, the roof reconstruction in three alternatives was considered. In case of alternative A the flat roof reconstruction was to be carried out with roof flats added. The alternative B involves low slope with insulation and the alternative C includes the roof repair together with insulation and replacement of water insulation layer.

The study of the Association building on Fibichová K3 includes additional thermal insulation of the peripheral coating of the roof construction and ceiling above the technical floor. Also three alternative solutions for reconstruction of the present heating system have been worked out, which include construction of the heat source for central heating and preparation of the warm service water directly in the object either on the roof, or in the basement inside the technical floor, or by providing suspension boilers for each flat .

In case of the building of the Association on Amurská street K4 the study considered three alternative changes of the present heating system, which would include disconnection from the present central source of heat and building own heat source on the roof, or in the basement or providing each flat independently its own source of heat.

The study for the Association on Kuzmányho street K1 solves small repairs, such as repairs of windows, stairs, corridors, protruding stairs, etc.

5.4 Repairs of Buildings of the Association of Home Owners Ke_marská K2 (Alternative A-C)

Basic layout of the floor is shown in Drawing No. 1. The characteristic cross section of the building is shown in Drawing No. 2. The visual inspection has shown extensive damage of water insulation layers of roof and as a consequence leaking of flats and appearance of moulds. For this reason reconstruction of the roof was proposed for the building. On the basis of preliminary static calculations the building meets conditions of load-carrying capacity for roof flats.

1. Alternative A - Roof Superstructure as a Solution

The roof superstructure is solved over the ceiling of the top floor. Its load carrying construction will be made of wooden roof over the whole width of the building. After the roof is built and covered the present roof layers will be removed down to the ceiling board. The ceiling will be removed above the staircase and a monolithic reinforced concrete staircase with landing to the superstructure will be built.

The thermal insulation is proposed so that it meets latest requirements as far as the energy saving of flats is concerned.

The composition is as follows:

- . roof cover,
- . lathing for anchoring the roof cover,
- . water insulating board,
- . wooden sealing,
- . rafter set,
- . heat insulation (NOBASIL, or POLYSTYROL 150 mm thick),
- . plaster card boards.

Partitions in the roof flats will be assembled, removable with a wooden carrying frame. Plaster card boards will be anchored to the frame from both sides and the filling of the partition will sound insulating properties (mineral wool boards).

The roof superstructure is shown on Drawings No. 3 and 4. Drawing No. 3 shows the ground plan of the roof flat. The cross section of the construction is shown on Drawing No. 4.

Budget for the alternative A:

Table 1

14010-1		
Construction costs - CHAPTER III		
Serial No.	Construction arrangement	Costs in Slovak Crowns (Sk)
1	Roof covering and plumbing construction 680 m2 x 2,800Sk/m2	1,904,000Sk
2	Insulation of roof construction 680 m2 x 1,700 Sk/m2	1,156,000 Sk
3	Housing arrangements of the attic 680m2 x 4,700 Sk/m2	3,196,000 Sk
Overall	construction costs - CHAPTER III	6,256,000 Sk

Overall costs for the alternative A:

Table 2

Overall costs for the alternative A		
CHAPTER III	6,256,000 Sk	
CHAPTER VI		
. Overall preparation of the site (GZS 0.95%)	59,432 Sk	
. Land influence (ÚV 2.2%)	137,632 Sk	
CHAPTER VIII		

. Reserve	625,600 Sk
CHAPTER XI	
. Finishing works	138,302 Sk
. Civils	110,642 Sk
. Value added tax	439,657 Sk
Total costs	7,767,265 Sk

1. Alternative B - Solution For the Reconstruction of the Low Roof Truss

After cleaning the roof surface heat insulation boards (polystyrene 100 mm thick) will be placed on the present water insulation layers. The carrying construction of low roof truss is made of wooden carrying beams over the whole width of the building. The cross section of the roof solution with the composition of the roof coating is shown in the drawing No. 5.

Composition of the roof coating is:

- . coating (corrugated zinc coated metal sheet),
- . horizontal beams for anchoring the roof coating,
- . wooden nailed binders,
- . thermal insulation (polystyrene 100 mm thick).

The details of the wooden nailed binder and its anchoring in the attic is shown in the Drawing No. 6.

Budget for the alternative B:

Table 3

Co	Construction costs - CHAPTER III	
1	Construction of the truss 680 m2 x 1800 Sk/m2	1,224,000 Sk
2	Roof cover of corrugated zinc coated metal sheets and rain drainage, 680	
	m2 x 600 Sk/m2	408,000 Sk
Overall costs - CHAPTER III		1,632,000 Sk

Overall costs for the alternative B:

Table 4

1 4010 1	
CHAPTER III	1,632,000 Sk
CHAPTER VI	
. Overall preparation of the site (GZS 0.95%)	15,504 Sk
. Land influence (ÚV 2.2%)	35,904 Sk
CHAPTER VIII	

. Reserve	163,200 Sk
CHAPTER XI	
. Finishing works	38,441 Sk
. Civils	30,753 Sk
. Value added tax	114,948 Sk
Total costs	2,030,750 Sk

5.4.3 Alternative $\, \, C \, \,$ - Solution for the Repair of the Flat Roof With Additional Insulation

Additional insulation of the roof will be solved by anchoring thermal insulation boards (polystyrol 100 mm thick) on the top of the present roof coating. After that the separation layer and water insulation belt will be smelted (trade mark either TROKAL, or CARBOFOL). The covering of the attic will be secured through new flanged sheet. Drawing No. 7 shows the details and composition of the construction of the present flat roof and the proposal of reconstruction with insulation.

Budget for the alternative C:

Table 5:

Co	Construction costs - CHAPTER III		
1	Cleaning of the flat roof and removal of the sheet covered attic		
	680 m2 x 160 Sk/m2	108,800 Sk	
2	New construction of the roof and attic 680 m2 x 680 Sk/m2	455,600 Sk	
Overall costs - CHAPTER III		564,400 Sk	

Overall costs for the alternative C:

Table 6

CHAPTER III	564,400 Sk
CHAPTER VI	
. Overall preparation of the site (GZS 0.95%)	5,362 Sk
. Land influence (ÚV 2.2%)	12,417 Sk
CHAPTER VIII	
. Reserve	56,440 Sk
CHAPTER XI	
. Finishing works	13,978 Sk
. Civils	11,182 Sk
. Value added tax	64,987 Sk
Total costs	703,606 Sk

1. Repairs of the Building of Association of Home Owners Fibichova K3 (Additional Insulation of the Building and Reconstruction of the Heating System)

The problem with the heating system is at present the most pressing from the point of view of owners of flats. The building is heated from the central source, the present one pipe system is not very effective and as a result some of the flats are not sufficiently heated. The building shows big operational consumption of energy, which is costly. The peripheral panels have insufficient thermal insulation properties and the joints between the panel segments are damaged to a large extent. The window construction does not seal, which has an undesirable increased infiltration as a consequence. For these reasons we have decided to solve additional insulation of peripheral and roof coating and provide alternatives for reconstruction of the heating system.

1. Additional Insulation of the Building

Drawing No. 8 shows the layout of the typical floor, while drawing No. 9 shows the details of the additional thermal insulation of the peripheral coat around the window constructions. The basic idea of the proposed system of additional insulation is as follows: thermal insulating boards of polystyrol 60 mm thick will be attached to the clean surface of peripheral panels with plate-like plastic dowels. After that a thin layer of glue is spread over boards (e.g. TERRAFIX M 702). Glass textile net is pressed into the glue. After it dries out fine final outer layers is spread over the surface (TERRAPLAST). Drawing No. 10 shows the detail of the insulation of the peripheral coating around the mop board and the insulation of the ceiling over the technical floor including the material composition. Drawing No. 10 shows the scheme of placement of dowels during the mechanical anchoring of the thermal insulating boards. Drawing No. 11 shows the manner of insulation of the roof construction, construction of the attic and the layout of the flat roof. The roof insulation process is as follows: On the original roof coating polystyrol boards 100 mm thick are anchored, then the separation layer is placed and the water insulation belt (e.g. TROKAL) is pressed. Construction formed in this way is loaded with sorted gravel layer approximately 50 mm thick. The function of the layer, apart from stabilization, is to protect the water insulation layer against weather influence and especially against the sun shine.

Budget for additional thermal insulation of the building:

Table 7

Co	Construction costs - CHAPTER III		
1	Thermal insulation of the facade 2340 m2 x 850,- Sk/m2	1,989,000 Sk	
2	Thermal insulation of the roof 518 m2 x 1,100,- Sk/m2	569,800 Sk	
3	Scaffolding - expected period of 2 months 3520 m2 x 285 Sk/m2	1,003,200 Sk	
Overall construction costs - CHAPTER III		3,562,000 Sk	

Total costs of the initial thermal insulation of the building:

Table 8:

14610		
Overall costs of additional thermal insulation of the building:		
CHAPTER III	3,562,000 Sk	
CHAPTER VI		
. Overall preparation of the site (GZS 0.95%)	33,839 Sk	
. Land influence (ÚV 2.2%)	78,364 Sk	
CHAPTER VIII		
. Budgeted reserve 10%	356,200 Sk	
CHAPTER XI		
. Finishing works	80,867 Sk	
. Civils	64,693 Sk	

. Value added tax	250,558 Sk
Total costs	4,426,521 Sk

1. Alternative Solution for Reconstruction of the Heating System

Alternative solutions were worked out for reconstruction of the existing heating system for the additionally insulated building. The heating has forced system of the heating water circulation with maximum temperature 92.5 / 67.5 °C, construction pressure of 0.6 MPa and static height of 41 m. The inlet horizontal distribution is up, while the outlet is down. Vertical distributions have a single pipe with rolled in reduction between connectors of the heating bodies. The meter of heat consumption is at the entry of the heat distribution in the building. The source of heat is the transmission station connected to the heat distribution system of the City of Košice. The secondary side is equithermally regulated depending on the temperature of the atmospheric air with the possibility of reduction and serves for several blocks of flats. Existing shortcomings of the central heating are caused by a big static height of the distribution reaching 41 m and causing partial penetration of the air in the system in top floors. This solution does not allow to keep maximum permitted difference of temperature in rooms between the lowest and the highest floor. Warm utility water is brought from the central source. It is not measured at the entry in the building. Measurements of consumption are taken at each flat. Proposed alternative solutions for the heating system are following:

- 1. Solving the source of heat for central heating and warm utility water:
- I. using present source transmission station,
- . construction of own source of heat boiler room on the roof or in the basement,
- . providing each flat with its own source of heat suspension boilers.
- 1. Reconstruction of the existing heat distribution:
- I. providing thermostatic vents, or three way distribution vents,
- . building a new two pipe vertical system,
- . building a new circuit of central heating.
- 1. Distribution of the warm utility water inside the building and preparation of warm utility water:
- . originally in the transmission station,
- . centrally in the object using speed heating with electric energy, or with natural gas,
- . locally for each flat with wall boilers, or with electricity, or with natural gas.

Evaluation of the proposed alternatives:

Evaluation of the point 1:

Existing transmission station is highly demanding as far as electricity consumption is concerned, without the possibility of individual regulation. Provision of local sources of heat in flats (multistage heating) creates a problem of outlet of fumes either through chimney or through the turbo version. Technically the most suitable solution is construction of boiler on the roof, or in the basement. It is possible to build boiler room for each alternative.

Use of a primary medium other than gas is financially demanding. E.g. heat distribution system costs approximately 7,500 Slovak Crowns per meter, while the distance to be covered is approximately 200 m. Electric energy does not have sufficient capacity in the outer distribution network of the whole locality.

Evaluation of the point 2:

To create hydraulic stability, comfort and the system, in which the invoicing of the heat consumption is possible, technically the most suitable appears to be flat circuits with independent heat meters at the branching-off point. This solution is, however, very demanding on time and investments.

In order to preserve the temperature of the sunshine it is possible to construct the heating zone for each facade. This would, however, require new radiator vents for individual heat temperature regulation. Construction of the double pipe system would require bigger construction adjustments, including holes in the floors.

Considering technical, investment and operational requirements the most suitable solution would be new thermostatic vents with regulation of the pressure difference. Correct selection would enable to support hydraulic stability, to capture thermal gains, while individual regulation would also be possible.

Evaluation of the point 3:

Heating of warm utility water in the transmission station is the least advantageous in comparison with other solutions. It is causing big temperature and circulation losses. In case of construction of gas boiler room inside the building it would help to introduce board counter-current exchanger in combination with a small container for peak consumption of warm utility water. Introduction of gas storage heaters for summer operation would be more energy saving.

Introduction of local through flow heaters for warm utility water for each flat is the most suitable from the operation point of view, but there are problems with fumes in case of natural gas heating and with reconstruction of electric distribution in case of electricity heating.

Measuring consumption of hot utility water is possible by proportional meters placed at the outflow point of consumption and measuring the water and heat quantity for preparation of warm utility water in the boiler room.

Budget

Investment requirements for individual proposals:

- 1. Roof boiler room with capacity 380 kW and preparation of hot utility water:
 - I. hot water boilers with atmospheric burner,
 - . pressure expansion container with a membrane,
 - . automatic pressure containment inside the system,
 - . preparation of warm utility water in counter current board exchanger, container,
 - . circulation pumps Grundfoss,
 - . measuring and regulation of operation without attendance,
 - . construction part, treatment of floors, stack,
 - . gas feed (gas regulation), cold water, sewage.

Investment costs: 1,550,000.- Slovak Crowns

1. Gas boiler room in the basement - as under point 1, except the stack,

Investment costs: 1,410,000.- Slovak Crowns

1. Gas feeding connection: 180 m x 1600.- Slovak Crowns/m

Investment costs: 288,000.- Slovak Crowns

1. Mounting of thermostatic vents, regulators of differential pressure, closing fixtures, proportional thermometers:

Investment costs: 300 pieces x 1,000 Sk/piece 300,000.- Sk 300 pieces x 90 Sk/piece 27,000.- Sk

1. Adjustments of warm utility water distribution without the assembly of saving mixing batteries:

Investment costs: 120,000.- Slovak Crowns

1. Repairs of the Building of the Association of Home Owners Kuzmányho K3

For the Association of the Home Owners on Kuzmányho Street small repairs were considered in

the study.

Proposal of small repairs

Drawing No. 12 shows the layout of the ground floor and the drawing No. 13 the layout of the typical floor. Window constructions are in a very bad technical state in this building (this is the situation in almost all panel buildings), allowing for increased infiltration and leakage around the window frames. For these reasons the study was concentrating on these problems. Drawing No. 14 shows the details of wooden balcony doors and present condition of their anchorage to the peripheral coating of the wall and to the balcony window. The wooden frame of the door is mechanically anchored to the wall. The point of contact is filled with sealing rope and lime-cement mortar. The contact is covered with wooden strips. The contact of balcony doors to balcony window is solved similarly. Drawing No. 15 shows details of the present anchorage of windows in the peripheral coating. Drawing No. 16 shows proposal for the arrangement of the walls around the balcony doors. The repairs presuppose dismantling of strips covering the contact between the wooden frame of balcony door and wall and also between the window frame. The sealing rope and lime-cement mortar will be removed from the place of contact and after cleaning the contact will be filled with polyurethene hardening material. After that the contact will be covered either with the original covering strip, or a new one, depending on its condition. Drawing No. 17 shows the detail of the balcony window. The contact will be dealt with similarly as in case of balcony doors. The sealing rope has to be taken out at the point of contact and the lime-cement mortar removed. The contact will be filled with polyurethene hardening material and the parapet board and strips will be anchored on the contact with window. This treatment will decrease the infiltration at the contact of the window frame with the peripheral wall, stabilize the window, prevent leaks, decrease the noise level by 3 to 4 dB and the emission of impurities. The contact between the wall and the window frame will be treated as described in previous cases. The sealing of the window wing with the window frame will be secured so that, in accordance with the drawing No. 18, the groove will be cut and the sealing profile will be anchored or glued to it.

Surfaces of floors in the areas around stairs and corridors are in a very bad shape. Drawing No. 19 shows the details of treatment of staircases, landings and corridors. Products of the company ECOOP Bratislava have been chosen to repair these constructions.

We recommend that the damaged plaster in common areas is repaired with maintenance plasters such as SANAÈNÁ OMIETKA L or S, suitable for wall surfaces damaged with humidity or salt, as it allows water fumes penetration and prevents coagulation of salts. After the plaster is repaired the common areas have to be repainted (e.g. PRIMALEX after LATEX was added to it).

Protruding stairs are very damaged. Their surface was treated with cast terazzo. We suggest that this layer is removed and stairs covered with ceramic floor tiles (e.g. unglazed ceramic floor tiles 150/150 mm). Drawing No. 20 shows the treatment of stairs.

Budget for proposed repairs:

Table 9

Co	Construction costs - CHAPTER III		
1	Window adjustment in accordance with the description (groove, sealing,		
	hardening foam) for the whole building		
	a. window 180/160 (14+98)pieces x 720 Sk/piece	80,640 Sk	
	b. window 210/160 (14+154) pieces x 840Sk/piece	141,120 Sk	
	c. balcony door and window 90/240 + 120/160 (8+84) piece x		
	1,020Sk/piece	93,840 Sk	
2	Small repairs of plaster around windows 3,127/m x 10 Sk/m	31,270 Sk	
3	Replacement of damaged window strips	50,000 Sk	
4	Labor cost of repairs of parapet boards 372 pieces x 100 Sk/piece	37,200 Sk	
Su	btotal	434,070 Sk	
5	Repair of staircases in all entrances 36 pieces x 1,950 Sk/piece	70,200 Sk	
6	Repair of floor coverings in common areas 1,200 m2 x 450 Sk/m2	450,000 Sk	
7	Arrangement of surfaces in common areas - paints 1,200 m2 x 280		
	Sk/m2	336,000 Sk	
8	Protruding stairs - repair	150,000 Sk	
Total costs - CHAPTER III		1,530,270 Sk	

Overall costs of all proposed repairs:

Table 10

CHAPTER III	1,530,270 Sk
CHAPTER VI	
. Overall preparation of the site (GZS 0.95%)	14,538 Sk
. Land influence (ÚV 2.2%)	33,666 Sk
CHAPTER VIII	
. Budget reserve 14%	214,238 Sk
CHAPTER XI	
. Finishing works	36,155 Sk
. Civils	28,924 Sk
. Value added tax	11,468 Sk
Total costs	1,969,259 Sk

5.7 Repairs of the Building of the Association of Home Owners Amurská K4 (Reconstruction of Heating, Alternative 1-3)

The panel building of the Association on Amurská Street 2 was built in 1971 using construction system 708B as a 10+1 floor building with basement. Members of the Association have shown interest primarily in the reconstruction of existing heating system and in an independent source of heat and, therefore, the study is oriented on alternative solutions and evaluation of the problem.

The block of flats on Amurská Street No. 2 in Košice is divided into two section with three entrances and sections are connected by independent switches of the heating water. Each section has installed an independent thermometer.

The study takes into account these alternatives:

1st alternative: Source of heat (boiler room) is placed on the roof.

 2^{nd} alternative: Source of heat (boiler room) is placed in the basement, at present the common room, which is to be adjusted to meet needs of the boiler room.

3rd alternative: Source of heat for each flat independently to be placed on a suitable place inside each flat.

For 1^{st} and 2^{nd} alternative boiler rooms are proposed for three entrances, i.e. for one section. For the whole object two boiler rooms with equal capacity will be proposed. Calculations in the study are made for one section.

1. Alternative 1 - Gas Boiler Room on the Roof of the Building

The required heat capacity for one section is:
Heating 555 kW
Preparation of warm utility water 157 kW
<u>Distribution losses are (5%) 36 kW</u>
Heat requirement from one boiler room is 748 kW

Three hot water cast iron boilers with atmospheric burner BUDERUS Type G 424, size 262, capacity á 262 kW will be installed as the source of heat. These boilers will have cascade switches depending on the required heat capacity. The time of operation in individual boilers will be individually monitored. The whole heating system will be safeguarded with pressurized expansion containers equipped with safety vents. Preparation of hot utility water in each boiler room will take place in each boiler with two horizontal storage heaters of hot utility water each containing 1500 l.

Circulation of the heating water will be ensured by circulation pumps type WILO. Replenishment of the heating water will be ensured through water softener BWT Type RONDOMAT.

Piping from boiler room will go in the basement and will be connected to the existing heat distribution system at the heat meter. The heat distribution system will not be interfered with in individual flats.

Depending on the atmospheric temperature the regulation of heating water will be equithermic. Regulation vent will regulate the heat of hot utility water depending on the temperature of the hot utility water.

Budget for investment costs for one boiler room (for three entrances) without the construction part

Table 11

1 400	11	
1	Hot water boiler BUDERUS G 424 size 262 with equipment 3 pieces	1,106,016 Sk
2	Horizontal heaters of hot utility water 1500 l 2 pieces	106,000 Sk
3	Expansion containers	46,500 Sk
4	Fixtures	145,000 Sk
5	Replenishment water	68,500 Sk
6	Machinery equipment of the boiler room	52,000 Sk
7	Piping	65,000 Sk
8	Other equipment	98,500 Sk
9	Assembly	590,630 Sk
To	al	2,278,146 Sk

5.7.2 Alternative 2 - Gas Boiler Room in the Basement of the Building

The required heat capacity for one section is:
Heating 555 kW
Preparation of warm utility water 157 kW
<u>Distribution losses are (5%) 36 kW</u>
Heat requirement from one boiler room is 748 kW

Three hot water cast iron boilers with atmospheric burner BUDERUS Type G 424, size 262, capacity á 262 kW will be the installed as a source of heat. These boilers will have cascade switches depending on the required heat capacity. The time of operation in individual boilers will be individually monitored. The whole heating system will be safeguarded with pressurized expansion containers equipped with safety vents. Preparation of hot utility water in each boiler room will take place in each boiler with two horizontal storage heaters of hot utility water, each containing 1500 l.

Circulation of the heating water will be ensured by circulation pumps WILO.

Piping distribution from the boiler room will be connected to existing distribution at the heat meter.

The heat distribution system will not be interfered with in individual flats.

Depending on the atmospheric temperature the regulation of the heating water will be equithermic. Regulation vent will regulate the heat of hot utility water depending on the temperature of the hot utility water. Regulation equipment will be dealt with in the part on measuring and regulation.

Budget for investment costs for one boiler room (for three entrances) without the construction part

Table 12

1	Hot water boiler BUDERUS G 424 size 262 with equipment 3 pieces	1,106,016 Sk
2	Horizontal heaters of hot utility water 1500 l 2 pieces	106,000 Sk
3	Expansion containers	86,500 Sk
4	Fixtures	145,000 Sk
5	Replenishment of water	68,000 Sk
6	Machinery equipment of the boiler room	52,000 Sk
7	Piping	55,000 Sk
8	Other equipment	98,500 Sk
9	Assembly	590,630 Sk
To	tal	2,308,146 Sk

1. Alternative 3 - Gas Boilers Type Turbo For Each Flat

In each flat a hot water wall boiler ELM LEBLANC Type GVM 7.23 H-TURBO will be installed with the capacity adjustable according to the need of heat inside flat. Natural gas max. 2,72 m3/h.

Exhaust from the boiler and air intake will be secured by a combined piping to be conducted on the facade of the building in the open air. Safeguards, circulation of heating water and heating of hot utility water is solved within the boiler. Each flat will require a new piping distribution of heated water, which will be conducted above the floor. Present connectors to heating bodies, fixtures of heating bodies and heating bodies will remain without change.

Investment Budget For the Boiler (For Three Entrances)

Table 13

1 40	10 19	
1	Hot water combined wall boiler ELM LENLANC Type GVM 7.23 H, 87	
	pieces	3,890,245 Sk
2	Regulator FLASH, 87 pieces	234,900 Sk
3	Fixtures	287,100 Sk
4	Piping	435,000 Sk
5	Assembly	1,696,530Sk
To	tal	6,543,775 Sk

Measurement and regulation:

Measurement and regulation will be done in case of alternatives 1 and 2 only. In both alternatives the process is the same as boilers are of the same capacity. Measurement and Regulation Project takes into account regime control of double-capacity boilers K1 - K3 with a possibility of adjustment and selection of the starting sequence and replacement in case of a break-down. It also solves the equithermal regulation, regulation of the temperature of the water going back in the boilers, regulation of the hot utility water temperature, replenishment of the central heating system, signaling of condition and break-downs, protection of the equipment by a timely blockage of operation. For these functions of boiler room regulation we suggest to use the equipment produced by the Trust ZPA, Czech Republic, which can be freely programmed with a microprocessor regulation system specially designed for heating systems.

Price of Delivery and Assembly 520,000.- Slovak Crowns

We can also recommend the compact regulation system DDC of Landys & Gyr / Switzerland, which can be purchased in Slovakia.

Price of Delivery and Assembly 710,000.- Slovak Crowns

Construction Part of the Heating

For the alternative 1 the roof of the boiler room has to be built. Drawing No. 21 shows typical cross-section of the boiler room on the roof and the drawing No. 22 shows the layout of the boiler room. In case of the alternative 2 the boiler room will be placed inside the common room in basement. Drawing No. 23 shows the layout of this boiler room. The chimney will have to be built from the basement up to the roof of the building. Drawing No. 24 shows solution of the chimney. Drawing No. 25 shows location of wall boilers inside flats of the building for the alternative 3.

Budget Including the Construction Part Budget For the Alternative 1, Including the Construction Part (Boiler Room on the Roof)

Table 14

CF	CHAPTER III	
1	Demolition works and rubbish removal 217 m3 x 255 Sk/m3	55,335 Sk
2	New boiler room - construction part 217 m3 x 2,230 Sk/m3	483,910 Sk
3	Chimney with three vents 1,35 m3 x 7,500 Sk/m3	10,125 Sk
4	Heating	2,278,146 Sk
5	Measurement and regulation	520,000 Sk
6	Hygiene technology	285,000 Sk
7	Electric installation	105,000 Sk
To	tal costs - CHAPTER III	3,737,516 Sk

Overall costs for alternative I:

Table 15

14010-15	
CHAPTER III	3,737,516 Sk
CHAPTER VI	
. Overall preparation of the site (GZS 0.95%)	156,976 Sk
. Land influence (ÚV 2.2%)	82,226 Sk
CHAPTER VIII	
. Budget reserve	373,752 Sk
CHAPTER XI	
. Finishing works	107,656 Sk
. Civils	86,125 Sk

. Value added tax	272,655- Sk
Total costs	4,816,906 Sk

Budget for alternative 2, including construction part (boiler room in the basement)

Table 16

CH	CHAPTER III	
1	Demolition works 84 m3 x 260 Sk/m3	21,840 Sk
2	Construction adjustments 84 m3 x 1,600,- Sk	134,400 Sk
3	Chimney with three vents 28,10 m3 x 7,650 Sk/m3	214,965 Sk
4	Heating	2,308,146 Sk
5	Measurement and regulation	520,000 Sk
6	Hygiene technology	230,000 Sk
7	Electric installation	105,000 Sk
To	tal costs - CHAPTER III	3,534,351 Sk

Overall costs for the alternative 2:

Table 17

112 - 2 - 7	
CHAPTER III	3,534,351 Sk
CHAPTER VI	
. Overall preparation of the site (GZS 0.95%)	38,443 Sk
. Land influence (ÚV 2.2%)	17,756 Sk
CHAPTER VIII	
. Budget reserve	33,435 Sk
CHAPTER XI	
. Finishing works	32,073 Sk
. Civils	41,659 Sk
. Value added tax	221,863- Sk
Total costs	3,919,580 Sk

Budget for the alternative 3 (multistage heating)

Table 18

CF	HAPTER III	
1	Construction adjustments for a flat 87 flat x 1,800 Sk/flat	156,600 Sk

2	Heating for 87 flats	6,543,775 Sk
3	Hygiene technology	205,000 Sk
4	Electric installation	304,000 Sk
To	tal costs - CHAPTER III	7,208,775 Sk

Overall costs for the alternative 3:

Table 19

CHAPTED III	7.200.775 01
CHAPTER III	7,208,775 Sk
CHAPTER VI	
. Overall preparation of the site (GZS 0.95%)	302,768 Sk
. Land influence (ÚV 2.2%)	158,593 Sk
CHAPTER VIII	
. Budget reserve	720,878 Sk
CHAPTER XI	
. Finishing works	201,304 Sk
. Civils	161,043 Sk
. Value added tax	525,202 Sk
Total costs	9,278,563 Sk

Worked out technical solutions of repairs do not represent the only possibilities, but some of the possible alternatives. The technical condition of panel buildings, especially those built in construction system T08B is approximately the same. Types of repairs presented in studies (small, medium and large) can be in principle used for buildings owned by Association members.

The studies are also usable by the representatives of associations vis-a-vis other owners of flats as a basis for justification of the need of repairs and for setting priorities in case of their implementation. The budgets which were worked out for individual proposed repairs are an aid for working out financial plans for the future periods, for the search of suppliers and for accessible resources for financing and implementation of selected repairs.

6. Choice of Suppliers

After studies have been evaluated and priorities of repairs set, the representatives of the association start their search for a suitable supplier.

Should they decide for small repairs, they evaluate, if some of the repairs could not be done by themselves. In this case the cost of repairs is the lowest, as they can be as little as the cost of the material purchased at wholesale prices. In case of medium or large repairs, or the repairs, which they are incapable to do themselves, they have to search for a supplier. Depending on the type of repairs they consider the possibilities offered on the market. They may approach several companies and ask them to work out an offer for a given type of repairs, or they place an advertisement, in which they formulate the kind of repairs needed. Large repairs may be started with a tender. If repairs are very demanding we recommend that commissions evaluating individual offers also invite independent experts in the given field.

Choice of individual suppliers should evaluate technologies and materials used, or if the perspective suppliers have certificate for material and technology proposed, service life of solutions offered, safeguards and the price and the length of time the repair will take. Budgets of individual repairs enable associations to get an overview of the price offered by suppliers.

Selection of suitable suppliers more closely specifies financial need for repairs and the owners of flats may calculate the need for the necessary financing more closely.

Chapter III: FIANCIAL PROVISION OF REPAIRS

1. Calculation of Financial Requirements of Repairs

Financial ability of flat owners (households) will determine the extent and kind of repairs, after their price has been established. The financial requirement will be divided among individual owners. The most fair solution would be to divide the cost of repair among individual owners according to the size of their ownership share. This approach corresponds to the Act No. 182/93 of the Legal Code, and its Amendment No. 151/95, 10, Section 1, which says following: Owners of flats and common areas inside the building are obliged in accordance with the memorandum of association, or management contract to contribute to the costs of operation, maintenance and repairs of the common parts of the building and common equipment of the building, its accessories, or land. The owners of flats and common areas inside the building share costs according to their ownership share, unless this issue is specified in the contract differently.

Financial amount for individual households must be evaluated considering the composition of the household. This will determine the financial burden, which each household is capable to bear. In this case the minimum income or its recognized multiple will be determinant. All financial calculations must be reevaluated after this limit has been taken into account. The extent of possible repairs will depend on the household composition. It is necessary to realize that the repairs can be done in stages or gradually depending on resources available. For your orientation the following data on net income per household indicate the average possibilities. On the basis of Micro-census 1992 and simulation of data for 1996 Infostat model, Bratislava 1996, the situation in net incomes per household in Slovakia is as follows.

Table 19

Types of Households	Net Income Per Household Slovak Crowns	Minimum Income In Slovak Crowns
1. Economically active individual	6,630	2,180
Economically active household consisting of two members without children	14,157	4,981
Economically active household with one child	15,542	5,931
Economically active household with two children	17,278	7,033
5. Economically active household with three children	18,148	8,485
6. Pensioner without job (male)	5,347	2,180
7. Pensioner without job (female)	4,977	2,180

8. Pensioners without job - couple	9,840	3,850
Average	13,244	5,287

1. Sources of Financing

After the have owners decided about repairs to be undertaken and know their final cost, they have to analyze financial resources, which they have at their disposal.

Accessible financial resources for owners may be divided into two basic groups:

- 1. Fund for operation, maintenance, repairs and own resources of the Association
- 1. Private and Outside Financial Resources (resources from financial institutions and funds)

1. Fund For Operation, Maintenance and Repairs

Resources of the owners collected in monthly payments in the fund for operation, maintenance and repairs are the basic and starting point. According to valid Act No. 182/93 of the Legal Code concerning the ownership of flats and common areas and its Amendment No. 151/95 the owners of flats are obliged to contribute to this fund. The size of payments is established by vote, i.e. decision of the majority of owners. At present in most cases the amount of financial resources paid in the fund is approximately equal to the size of the net rent, which the owners have paid before privatization. On average this amount is from 100 to 300 Slovak Crowns per flat per month.

The use of this fund is decided upon by a majority vote. Essentially two procedures are possible:

- . for a selected repair all money in the fund is used, or
- . the invoices are covered from a part of the financial means available so that, depending on the technical condition of the building, small repairs and necessary maintenance can also be financed.

After these procedures have been evaluated we can state that the first option decreases the amount of interest to be paid. Disadvantage of this solution is the risk of insufficiency of accumulated finances for basic repairs and maintenance.

The second option enables continuous provision for basic repairs and maintenance, or unforeseen contingencies. The disadvantage of this solution is the higher interest cost, especially if large credit amount is required.

a)

1. Private and Outside Financial Resources

For larger repairs, which cannot be covered from the accumulated resources in the fund of repairs, it is

necessary to make calculations about the need of cumulated finances and their division among individual households. After this calculation the issue of securing necessary financing is a matter of financial liquidity of individual households and their ability to get missing resources. Solutions are individual and hierarchy of differentiated solutions can be applied. The most commendable solution is based on minimal costs of securing finances, i.e. minimal interest costs of borrowing finances.

From this hierarchy the following sequence of possibilities can be recommended:

- . household savings, or
- . finances from financial institutions and funds.

In the first place, if the household disposes with cash, the interest cost is zero, but at the same time its cost is the loss of interest, as compared to the situation, when this cash is deposited in the bank, or the loss of the dividend and the loss stemming from the change of value in case that the household possesses bonds.

After these possibilities have been exhausted financial institution, state or municipal support funds for housing development may become another source of finances.

There are several possibilities for the flat owners to gain financial resources from outside sources:

- . contract saving for housing construction/improvement purposes,
- . state fund for housing development,
- . subsidy for building insulation,
- . loans from banks (Slovak Savings Bank, General Credit Bank, Communal Bank, Investment and Development Bank, etc.)

Contract saving for housing construction/improvement purposes enables to save from own personal sources to finance flat construction, repairs, re-constructions and is connected with the right and title for preferential housing credit and premium. Each citizen has the right to sign a contract like this, including children. In accordance with the Act on Contract Saving No. 310/92 of the Legal Code and the Decree of Ministry of Finances of the Slovak Republic No. 400/92 of the Legal Code, which is fixing conditions of state premium grants, there are two contract saving banks operating in Slovakia:

- . Prvá stavebná sporite òa, a.s. First Contract Savings Bank
- . VÚB Wustenrot a.s. General Credit Bank Wustenrot

Conditions for credits were so far limited by the length of saving and the amount of the money which was saved. The contract saving enables individual use of credit and its repayment according to needs and possibilities of the client. In 1997 new conceptions of contract saving will be introduced into life with aim to expand the possibilities to draw credits. E.g. First Contract Savings Bank has prepared a new concept, which will enable to apply for credit even those clients, who do not have at their disposal the saved sum required so far. Under certain circumstances these clients may ask for immediate credit

of 50 to 100% of the value of the flat. This credit is bound to be used for specified purposes, such as construction of a new flat or a house. Considering individual conditions of drawing such credit it is not expedient to name all possibilities and quantify the interest costs involved. As an example we can give the basic alternative of the First Contract Savings Bank, which has following conditions:

1st Stage - contract saving. When signing the contract the client of the savings bank decides about the target sum. Half of this sum are the deposits of the client, state premium and interest rate for the saved amount (3% annually).

2nd Stage - construction credit, or intermediary credit. If the client has saved at least a half of the target price and meets criteria of the evaluation number, he may ask the savings bank for a construction credit. If the client needs credit earlier, he may apply for an intermediary credit. The construction credit is at an annual interest of 6%, intermediary credit 7%. Before the credit is paid in the client is expected to provide repayment safeguards, i.e. they must prove financial ability to repay the principal sum of the credit and interest. Credit security may be:

- . mortgage on a building/flat in favor of the savings bank,
- in case of credits up to 100 thousand Slovak Crowns mortgaging real estate to the amount of the credit, interest and the costs connected with transaction. It is possible to mortgage the object of the credit.

Savings bank provides credit in accordance with the construction procedure on the basis of the presented accounts, invoices, etc. The repayment of the construction credit start three months from the grant of the credit at the latest, if the credit is paid in one lump-sum. If the credit is granted in several parts the first repayment is expected 9 months from the beginning of the credit draft. Monthly sum of credit repayment is agreed upon by the debtor and the bank and may be as follows:

- . in case of a standard alternative it is 4,6% of the target sum,
- . in case of a slow alternative it is 3,8% of the target sum,
- . in case of a quick alternative 6,4% of the target sum.

Installment includes interest on construction credit, too. The debtor is entitled to make extraordinary payments any time.

Contract saving is possible for individual persons, not for association of owners. Contract saving can be used for financing repairs of buildings of association so that the contract will be signed with individual owners of flats of the association and the saving part is covered from the fund of repairs. The notice has to be conditioned and the payment is made in favor of the association, so that it is transferred to the account of the supplying company on the basis of the invoice for repairs made. The contract is signed with individual owners so that the saving cannot be misused for individual purposes.

Flat owners may apply for financial means form the **State Fund of Housing Development.** This is a

fund for financing housing construction, additional insulation of buildings and family houses, improvements of blocks of flats, removal of deficiencies in statics and completion of objects, which have been started under the previous regime. The amount provided from the fund is regulated by the Act Concerning the State Fund of Housing Development No. 124/1996 of the Legal Code and the Decree of the Government of the Slovak Republic No. 181/96 of the Legal Code concerning programs of housing development. Support can be provided in the form of credit, contribution (non-repayable), coverage of the part of interest on bank credit (except credit from the contract saving):

- . Credit for the period of 30 years at the longest with annual interest rate of 6% to the extent of 80% of the costs (maximum 300 thousand Slovak Crowns).
- . Contribution (not to be repaid) to the extent of 20% of purchasing costs, if the applicant provides housing to physically handicapped person.
- . Contribution (non-repayable) to the extent of 30% of the credit provided, if the applicant is less than 35 years old (in case of a married couple at least one of them has to be under 35).
- . Up to 20% credit repayment reduction in case of applicants, if a child was born to them, lives with them in the same household and reaches one year of age.
- . Coverage of a part of the bank credit, if it is less than 60% of the purchasing costs of the construction.
- . Total amount of the above supports must not exceed 80% of the purchasing costs.

Support can be extended in case that applicants are able to prove that

- . they have own resources or the resources from the contract saving to the extent of at least 20% of the purchasing costs of the construction,
- . they are able to pay installments and interest from the credit in the agreed amounts and terms.

For the purposes of support grant applicants are obliged to announce the district office, if they are owners, or tenants of the flat, or a family house on the territory of Slovak Republic.

There is no legal title for the support from this fund.

The Government has passed an amendment to the decree of the program of housing development on 18th March 1997. The maximum credit amount for construction of new flats for the young people is increased from 300 to 500 thousand Slovak Crowns. For socially weaker groups these credits will be provided at interest rate of 1% annually for a period of 30 years.

Subsidy for additional insulation and removal of defects on blocks of flats may be another source of financing for flat owners in the Slovak Republic. The term of the subsidy is regulated by the Decree of the Ministry of Construction and Public Works No. 70/410/96 of 1st March 1996 and of Ministry of Finance No. 45/130/1996 No. 45/130/1996 concerning additional insulation and removal of defects on blocks of flats in Slovak Republic. The subsidy may be granted on the basis of application to owner, joint owner of the block of flats, or to physical, or legal person authorized by the owner or joint owner.

The subsidy may be granted once for one flat only. The decree relates to the blocks of flats, which were moved into before 31^{st} December 1983 with the heat consumption per flat above the standard value of 9.3 MWh/year, m.b. (130 kWh . m2 . year-1). It does not relate to the blocks of flats which were moved into after 1^{st} January 1984 in following cases:

- . flats showing hygienic defects due to insufficient thermal insulation in the construction,
- . flats with the heat consumption for heating of one specific flat (m2 of the specific space) above the standard value of 9.3 MWh/year, m.b., or 130 kWh.m2.year -1,
- . flats showing defects in static stability and construction shortcomings established during the period of use, or at diagnosing the block of flats, which endanger the safety of operation.
- . flats showing combination of the above shortcomings.

Subsidy may reach maximum amount of 80% of the budgeted costs as given in the budget documentation. The upper limit of the subsidy for one flat is 60,000.- Slovak Crowns provided that technical conditions are met. The subsidy may be used up to 80% of the total amount during the works on insulation of the block of flats. The remaining 20% will be provided after a legally valid housing inspection approval was granted. These sums will be released by the office, which is a party to the contract.

Fund for development of housing in municipalities can also be a source of financing the repairs of flat owners. According to the law this fund is to be accumulated by the municipality from the resources which were gained from the sale of municipally owned flats. At present the municipalities do not have models for application of these means, such as credits to the flat owners for specified purposes. In some municipalities attempts are made to prepare system like this, in which the municipality would cooperate with the bank. The municipality would specify conditions of credit as far as blocks of flats, its environment and the overall housing improvement is concerned. Introduction of this system could also help to renew housing fund in individual towns.

Bank credits are most demanding as far as the interest costs are concerned. The interests differ in different banks. It is important to find out, which banks provide credits like these and their credit conditions, so that the most advantageous credit terms can be chosen. Conditions for credit are substantially stricter. The applicants must

- . prove that they are able to repay credit from their income according to agreed conditions,
- . safeguard the credit sufficiently in case of problems with repayment, i.e. owners must mortgage their liquid property, or have liquid guarantee in accordance with specific conditions of the bank (this kind of guarantee is sufficient in most cases and for credits not exceeding the sum of 50,000 to 100,000.- Slovak Crowns).

The amount of interest may be influenced by the length of repayment of the credit and the repayment schedule (shorter period of repayment and higher frequency of repayment minimizes the interest to be paid). These are conditions of several banks:

Credit conditions of Slovenská sporitelòa a.s. in Bratislava (Slovak Savings Bank, public limited company) for housing purposes, i.e. credit for a purchase of a house, flat, repair and reconstruction:

- . Credit amount 70% of the budgeted cost of the flat.
- . Presentation of construction permit, budgeting of construction costs, contract with suppliers on works to be performed, certificate of instruction of building.
- . Presentation of approval of the manager of the building.
- . Documents concerning legal relations of the applicant as far as the land or object is concerned.
- . Maximum term of repayment 15 years.
- . Proof of the ability to repay credit from income of the future owner of the flat (document confirming income amount).
- . Corresponding guarantee real estate mortgage, movables, securities, guarantors with corresponding property or income, blocking the bank deposit. The bank will consider combination of these guarantees in specific cases after the credit application has been presented. The real estate mortgage has to be supported by the expert opinion on the real estate in question. The guarantors have to provide proof of income amount.
- . Interest rates are flexible and their amount depends on the situation on financial market. It may change during the credit contract. Current interest rate was 11,5% in 1996 and 12,5% at present.
- . Credit is repaid by deductions from salaries, or it is repaid directly by the debtor.
- . Credit can be drawn principally through transfer directly to organizations payment for invoices for supplies of work to the account of the supplier.

Credit repayment follows in equal monthly installments as a proportion of the amount of credit provided:

- . 3.35% in case of three year credit,
- . 2.7% 2.66% in case of four year credit,
- . 2.25% in case of 5 year credit,
- . 1.5% 1.46% in case of 10 year credit,
- . 1.25% 1.23% in case of 15 year credit.

Following are concise conditions of Všeobecná úverová banka (General Credit Bank) and Komunálna banka (Communal Bank) as far as the mortgage financing is concerned.

General Credit Bank is offering credits to citizens in the maximum amount of 250,000.- Slovak Crowns with a property guarantee. The interest rate is 12,5 to 13% for a repayment period of 10 years. They prefer to deal with businesses on the basis of business plans, rather than with individual citizens wishing to solve their housing problems. Mortgages are not offered as yet, but they are being prepared (licensing procedure with the National Bank of Slovak Republic is under way).

Communal Bank does not offer credits for citizens as yet, but is ready to negotiate. It offers credits to supplying organizations depending on the risk, with the interest rate of 12 to 15% and the repayment period of 8 years.

Mortgage financing has a proclaimed support of the government and banks in the form of the amendment to the Bank Act of 1st March 1996. Further legal norms are being awaited, so that acceptable legal environment for business with mortgages can be created.

Actual conditions for credit in other banks as far as repairs and reconstruction of houses is concerned have to be agreed upon by the owners with the financial institution in question. Potentially also regional support of housing is possible. Informations are provided at the respective office.

1. Centralization of Financial Means

From the point of view of financing it is recommended that all finances for a budget are concentrated on independent special accounts, which will be managed by Association of Home Owners. The Association carries the responsibility for correctness of invoicing and financial operations with accounts. For this reason it is preferable that all types of loans and credits for households are to be applied for in a lump-sum, which is then transferred to the account of the Association or paid out in cash. The bank, savings bank, or the state fund has to be instructed about the credit form.

Condition of smooth financing is that the money from all households comes on time. Without this no large repairs can start. It is important to inform the owners of flats, when finances shall be definitely available and about the schedule of their use.

Chapter IV:

FINANCIAL NEED FOR ALTERNATIVE PROPOSALS FOR BUILDING REPAIRS OF SELECTED ASSOCIATIONS OF HOME OWNERS IN KOŠICE

Examples of Credit Repayment Possibilities For Repairs and Reconstruction of Selected Buildings in Košice

Preliminary informations on all alternatives of monthly repayments for each flat in case of credits with various interest rate and length of repayment period have been worked out in order to provide owners the overview of actual possibilities of financing of proposed repairs under existing conditions. On this basis the owners may evaluate their financial standing as far as various solutions are concerned. The owners should work out analyses like these, especially before they decide about large repairs. Examples are based on present conditions of the Slovak Savings Bank (Slovenská sporite òa a.s.), which has been offering in 1996 loans at interest of 11.5% in the amount of 70% of the total necessary costs of repairs. The length of repayment over the years has been changing alternatively depending on the size of a loan. The owner should have 30% in cash. Comparative calculations have been made for monthly installments and the interest rate of 6% in case of use of contract saving, or original conditions of the state fund for development of housing. In the following example the procedure of financing of roof reconstruction including construction of new flats is indicated. Part of the construction of new flats is covered from the resources of the future owners and part from the means of the association members and/or credit. The aim of sale of these flats at current prices on the market is the profit, which can be reinvested in further repairs of the building, thus increasing the value of the building. Also the value of flats of individual owners in the repaired building will increase.

Financial Need For Repairs of the Association of Home Owners Ke_marská K2

1. Alternative A - Roof Flats

Roof flats are built over the ceiling of the top floor of an eight floor panel building of the construction type T08B. The ceiling of new flats will be from wood. Thermal insulation of the new row of flats will meet present requirements on energy saving. Internal partitions are assembled, removable and are made of plaster cardboard.

Cost of one flat is: 9,260.- Slovak Crowns per m2 (at price level of 1996)

If a three room flat with a total space of 67 m2 is considered, then the total costs for a flat is 620,400.-Slovak Crowns.

Form of financing:

Costs for one flat: 620,400.- Slovak Crowns

30% cash: 186,120.- Sk 70% loan: 434,280.- Sk

Table 20

Repayment in years	Interest rate 11.5%	Monthly installment Sk	Interest Rate 6%	Monthly installment in Sk
10 years 15 years	-	6,105.70 5,073	-	4,821 3,821

(Comment: Monthly installment is given in Sk for one flat)

1. Alternative B - Low Roof

Roof repair is solved with a low roof with small slope (15°). The carrying construction of the low roof is made of wood with the span over the whole building.

Form of financing:

Total costs: 2,030,750.- Slovak Crowns

30% cash: 609,225.- Sk 70% loan: 1,421,525.- Sk

Table 21

Repayment in years	Monthly installment at 11.5% interest	Monthly installment for one flat (72 flats)	Monthly installment at 6% interest	Monthly installment for one flat (72 flats)
5	31,263Sk	434.20	27,482 Sk	381.70
7	24,715 Sk	343.30	20,766 Sk	288.50
10	19,987 Sk	277.60	15,782 Sk	219.20

1. Alternative C - Repair of Flat Roof Including Insulation

Repair of the roof was solved by anchorage of thermal insulation boards on the existing roof and water insulation layers.

Financial requirements:

Total costs: 703,606.- Slovak Crowns

30% cash: 211,081.80 Sk 70% loan: 492,524.20 Sk

Table 22

Repayment in years	Monthly installment at 11.5% interest	Monthly installment for one flat (72 flats)	Monthly installment at 6% interest	Monthly installment for one flat (72 flats)
3	16,241Sk	225.60	14,984 Sk	208.20
5	10,832 Sk	150.50	9,522 Sk	132.30
6	8,563 Sk	118.90	7,195 Sk	100.00

2. Financial Need For Repairs of the Association of Home Owners Fibichova K3

1. Insulating the Building

The issue of insulation was solved for 13+1 floor building, which was built under the construction system T06B. The object of insulation is the peripheral coat, roof construction and the ceiling over the technical floor in the basement.

Financial requirements:

Total costs: 4,426,521.00Slovak Crowns

30% cash: 1,327,956.80 Sk 70% loan: 3,098,564.70 Sk

Table 23

Repayment in years	Monthly	Monthly	Monthly	Monthly

	installment at 11.5% interest	installment for one flat (78 flats)	installment at 6% interest	installment for one flat (78 flats)
5	68,146Sk	873.70	59,904.00 Sk	768.00
7	53,873 Sk	690.70	45,266 Sk	580.40
10	43,564 Sk	558.60	34,400 Sk	441.10
15	36,197 Sk	464.10	26,147 Sk	335.30

2.2 Alternative Solution of Changes in Heating System

1st Alternative - Boiler Room On The Roof

This alternative solves disconnection from the central source of heat and construction of the boiler room on the roof for heating and preparation of hot utility water (with a preliminary approval of the municipality as the owner of the central heating system).

Financial requirements:

Total costs: 2,285,000.- Slovak Crowns

30% cash: 685,500.- Sk 70% loan: 1,599,500.-Sk

Table 24

Repayment in years	Monthly installment at 11.5% interest	Monthly installment for one flat (78 flats)	Monthly installment at 6% interest	Monthly installment for one flat (78 flats)
5	35,177.20 Sk	450	30,922.90 Sk	396.50
7	27,809.70 Sk	356.60	23,366.40 Sk	299.60
10	22,448.30 Sk	288.40	17,757.80 Sk	227.70
15	18,685.20 Sk	239.60	13,497.50 Sk	173.00

2nd Alternative - Boiler Room in Basement

In this case the heating system is disconnected from the central source of heat and the boiler room for heating of flats and preparation of hot utility water is constructed in the technical floor.

Financial requirements:

Total costs: 2,145,000.- Slovak Crowns

70% cash: 1,501,500.- Sk 30% loan: 643,500.-Sk

Table 25

Repayment in years	Monthly	Monthly	Monthly	Monthly
	installment at	installment for one	installment at 6%	installment for one
	11.5% interest	flat (78 flats)	interest	flat (78 flats)
5	33,022.00 Sk	423,40	29,028.20 Sk	372,20
10	21,110.50 Sk	270.70	16,669.80 Sk	213.80

3rd Alternative - Repair of the Existing Distribution of Heat

In this alternative the repair of the present nonfunctional single pipe heating system is considered with installation of thermostatic vents, regulators of differential pressure and shut-off fixtures.

Financial requirements:

Total costs: 447,000.- Slovak Crowns

30% cash: 134,100.- Sk 70% loan: 312,900.-Sk

Table 26

Repayment in years	Monthly	Monthly	Monthly	Monthly
	installment at	installment for one	installment at 6%	installment for one
	11.5% interest	flat (78 flats)	interest	flat (78 flats)
5	10,318.20 Sk	132.30	9,122.10 Sk	519.10
6	6,881.50 Sk	88.30	6,049.30 Sk	78.00

1. Financial Need For Repairs of the Association of Home Owners Amurská K4

1. 1st Alternative - Boiler Room on the Roof

Alternative changes of the heating system have been worked out for the panel building with 10+1 floors built in construction system T08B with basement. The aim was to disconnect the building from the central source of heat. In this alternative the heating of the building and preparation of hot utility water is solved with a boiler room on the existing roof.

Financial requirements:

Total costs: 4,816,906.- Slovak Crowns

30% cash: 1,445,071.- Sk 70% loan: 3,371,834.-Sk

Table 27

Repayment in years	Monthly installment at 11.5% interest	Monthly installment for one flat (87 flats)	Monthly installment at 6% interest	Monthly installment for one flat (87 flats)
5	74,155.40 Sk	853	65,187.00 Sk	750
7	58,624.30 Sk	674	49,258.00 Sk	566
10	47,406.50 Sk	545	37,434.30 Sk	430
15	39,380.50 Sk	453	28,453.50 Sk	327

1. 2nd Alternative - Boiler Room in the Basement

In this alternative the heating and preparation of hot water is solved by a new boiler room in the basement.

Financial requirements:

Total costs: 3,919,580.- Slovak Crowns

30% cash: 1,175,784.- Sk 70% loan: 2,743,706.-Sk

Table 28

Repayment in years	Monthly installment at 11.5% interest	Monthly installment for one flat (87 flats)	Monthly installment at 6% interest	Monthly installment for one flat (87 flats)
5	60,341 Sk	694	53,044 Sk	610
7	47,703 Sk	548	40,082 Sk	461
10	38,575 Sk	444	30,461 Sk	350
15	32,052 Sk	368	23,153 Sk	266

3.3 3rd Alternative - Multistage Heating

In this alternative construction of multistage heating was considered. For each flat a boiler for internal distribution was suggested.

Financial requirements:

Total costs: 9,278,563.- Slovak Crowns

30% cash: 2,783,568.- Sk 70% loan: 6,494,994.- Sk

Table 29

Repayment in years	Monthly	Monthly	Monthly	Monthly
	installment at	installment for one	installment at 6%	installment for one
	11.5% interest	flat (87 flats)	interest	flat (87 flats)
7	142,841.85 Sk	1,642	125,567 Sk	1,443
10	91,316.00 Sk	1,050	72,108 Sk	829
15	75,874.00 Sk	873	54,809 Sk	630

1. Financial Need For Repairs of the Association of Home Owners

a) Kuzmányho K1

b)

Small repairs - windows

- a) stairs
- b) corridors
- c) floors
- d) plaster
- e) painting

1. Windows Repairs (the whole object)

Small repairs have been solved for 8+1 floor building with a basement which was built under the construction system T08B. Budget was made for repair of window frames with sealing and insulation and for repair of window wings with anchorage of sealing and repair of metal fittings, parapet boards and window strips.

Financial requirements:

Total costs: 533,906.- Slovak Crowns

30% cash: 160,171.80 Sk 70% loan: 373,734.20 Sk

Table 30

Repayment in years	Monthly	Monthly	Monthly	Monthly
	installment at	installment for one	installment at 6%	installment for one
	11.5% interest	flat (92 flats)	interest	flat (92 flats)
3	12,324.30 Sk	134	11,124.00 Sk	369.80
5	8,219.40 Sk	90	7,225.40 Sk	79.00

1. Repairs of Staircases, Corridors, Wall Surfaces, Extended Stairs

Budget was made for repair of stair surfaces, landings, floors in corridors and for repairs of damaged plaster on walls and extended stairs for the whole building.

Financial Requirements:

Total costs: 1,348,326.- Slovak Crowns

30% cash: 404,497.- Sk 70% loan: 943,829.- Sk

Table 31

Repayment in years	Monthly installment at 11.5% interest	Monthly installment for one flat (92 flats)	Monthly installment at 6% interest	Monthly installment for one flat (92 flats)
3	31,123.80 Sk	339	28,713.20 Sk	312
5	20,757.30 Sk	226	18,246.90 Sk	198
7	16,409.90 Sk	178.40	13,788.00 Sk	150

At present the owners on Kuzmányho Street have implemented several small repairs and considering the fact that households consist mostly from elderly people, they envisage the roof repair by building roof flats in order to gain additional finances. The following example shows financing of roof flat construction on Kuzmányho Street in several alternatives.

1. Roof Flats

Present composition of households is as follows:

Table 32:

Type of household	Number of households	Average monthly net income per household
Employees	41	12,659 Sk
Businessmen	7	14,769 Sk
Pensioners	44	5,993 Sk

Comment:

Data concerning the net monthly income of households have been taken from the Structure of Income and Expenditures of Households in Slovak Republic for the second quarter 1996, Bureau of Statistics of Slovak Republic, Bratislava, August 1996.

The building consists of 92 flats. Owners expect to have 367,033 Slovak Crowns accumulated in the repairs fund by 30th April 1997.

It is possible to gain 8 new flats on the roof.

Four flats - 3 rooms, size of one flat 64.237 m²

Four flats - 2 rooms, size of one flat 66,92 m2.

Budgeted costs of these flats are 9,500.- Sk/m2 (with the possibility to increase the initial quality standards).

The total costs for construction of roof flats are 4,983,968.- Sk.

The costs of one flat:

3 room flat 610,252.- Sk

2 room flat 635,740.- Sk

The exact cost depends on terms and conditions of loan or credit.

For example it the perspective buyer of one of the above roof flats has own resources in the amount of 51 - 52.8 %, or has gained these resources through contract saving, or in a combined way, then the amount of 300,000.- Sk can be gained from the state fund of housing development at 6% interest rate and the case can be summarized as follows:

Table 33

Initial conditions	Three room flat	2 room flat
Budgeted cost Sk	610,252	635,740
Own resources Sk	310,252	335,740
Loan, credit Sk	300,000	300,000
Interest costs Sk		
15 year credit	135,000	135,000
10 year credit	90,000	90,000
5 year credit	45,000	45,000
Overall costs of one flat Sk		
15 year credit	745,252	770,740
10 year credit	700,252	725,740
5 year credit	655,252	680,740
Equal monthly repayment of the		
credit Sk		
15 year credit	2,417	2,417
10 year credit	3,250	3,250
5 year credit	5,750	5,750

For comparative purposes an example is given of financing roof flat using contract savings with 20% of own financial resources and the target sum from the savings bank of 80% at interest rate of 6%.

Table 34

Initial conditions	Three room flat	Two room flat
Budgeted costs Sk	610,252	635,740
Own resources (20%)	122,052	127,140
Target Sum (80%)	488,200	508,600
Credit from savings bank (principal amount)	244,100	254,300
Interest rate in Sk over the period of repayment of principal sum and interest 8 years (alternative 1) 12 years and 4 months (alternative 2) 16 years and 3 months (alternative 3	55,804 87,876 119,609	61,032 94,091 123,971

Overall costs of flat Sk Alternative 1 Alternative 2 Alternative 3	666,056 698,128 729,861	698,772 729,831 759,711
Monthly installments Sk Alternative 1 Alternative 2 Alternative 3	3,124 2,246 1,855	3,255 2,340 1,933

In case of financing of roof flat in combination with own resources in the amount of 30% and the rest using bank credit (contract saving) at interest rate of 12.5%, the financial summary is as follows:

Table 35

Initial conditions	Three room flat	Two room flat
Budgeted costs Sk	610,252	635,740
Own resources (30%)	183,052	190,720
Credit from savings bank (principal amount)	427,200	445,020
Interest cost and fees 15 year credit 10 year credit 5 year credit	524,174 328,944 149,520	546,930 341,330 155,757
Overall costs of construction of flat Sk 15 year credit 10 year credit 5 year credit	1,134,426 939,196 759,014	1,182,670 977,070 791,497
Monthly repayments Sk 15 year credit 10 year credit 5 year credit	5,285 6,301 9,612	5,511 6,553 10,013

Also an example of financing of construction of new roof flats can be given under condition that the owners of flats agree to finance two flats, which become their common ownership. Bank credit is considered, while 30% of the sum must be in cash. After an agreement is reached part of the cash may be used from the fund of repairs, e.g. 200,000.- Sk. The rest of the cash has to be a down payment, of 1,806.- per owner in case of three room flat and 1,972.- Sk per owner in case of a two room flat. At present the owners have on their account approximately 360,000.- Sk. After completion flats will be sold at a market price. The profit from sale will go in the fund of repairs.

The financial summary in case like this may be as follows:

Table 36

Initial conditions	Three room flat	Two room flat
Budgeted cost for two flats	1,220,504 Sk	1,271,480 Sk
Budgeted cost for each owner (92 owners)	13,266 Sk	13,820 Sk
Financial resources per owner (30% cash, 92 owners)	3,980 Sk	4,146 Sk
Resources from the fund of repairs	200,000 Sk	200,000 Sk
Cash per each owner in case of repair fund utilization	1,806 Sk	1,972 Sk
Credit - principal sum (70%)	854,353 Sk	890,036 Sk
Monthly installment 15 year credit 10 year credit 5 year credit	9,980.50 Sk 12,011.80 Sk 18,789.45 Sk	10,397.30 Sk 12,513.50 Sk 19,574.20 Sk
Monthly installment for each owner		
15 year credit 10 year credit 5 year credit	1. Sk 2. Sk 204.20 Sk	113 Sk 136 Sk 212.70 Sk

Suppose that the flat owners take a five year bank credit at interest rate 11.5% to finance two flats and after a year they sell these flats. The overall costs for two flats will be as follows:

Table 37

Initial conditions	Three room flat	Two room flat
30% cash	336,151 Sk	381,444 Sk
Cost of interest annually	91,328 Sk	95,140.30 Sk
Annual repayment installment	134,145 Sk	139,750.20 Sk
Portion owed after a year	720,208 Sk	750,285.80 Sk
Overall cost of flats	1,311,832 Sk	1,336,620.30 Sk

The building on Kuzmányho Street is located in the central part of the town. Roof flats of the given size are at present sold at market prices from 800,000.- to 1,000,000.- Slovak Crowns. By sale of two flats the owner may gain cash of 1,600,000.- to 2,000,000.- Slovak Crowns. At the above given costs

owners have a real chance to gain profit of about 288,000.- to 660,000.- Slovak Crowns, which can be distributed among the original owners in the sum of 3,130.- to 7,174 Slovak Crowns. After payment of tax on sale of real estate in accordance with the Act No. 318/92 of the Legal Code, Amendment No 97/93 (3rd group - sale of flats - 4%), the net profit is 276,500.- to 633,506.- Slovak Crowns. This profit can be deposited in the fund of repairs.

The above given examples show that from the financial point of view owners at a given composition of households are able to finance to some extent even large repairs. An example of repair of roof with insulated low truss shows that the costs of 2,030,750.- Slovak Crowns at 11.5% interest and 10 year credit is born by a household to the amount of 288.- Slovak Crowns. This amount is smaller than the sum paid by owners in the fund of repairs. The owners are capable to finance repair like this without having to increase payments in the funds of repairs. Even change of the heating system by construction of a boiler room in the basement is possible under present conditions. In the example on Amurská Street K4 the financial cost of the boiler room in the basement is 3,919,580.- Slovak Crowns. The required 30% cash means 13,516.- Slovak Crowns per household. Should the owners use the means of the repair fund in the amount 500,000.- Slovak Crowns (at present they have on the fund of repairs approximately 550,000.- Slovak Crowns), then the cash per household would represent the amount 7,769.- Slovak Crowns. In case of 15 year credit the monthly payment for a household is 266.- Slovak Crowns. Construction of the boiler room would evidently bring heat energy cost down by 42.5%. After annual evaluation and inspection of actual savings this can represent approximately 300.- Slovak Crowns per household monthly. These savings may be used to repay credit at unchanged monthly installments and this would decrease the present contribution to the fund of repairs and decrease repayment of cash at the beginning of construction of boiler room.

The results of financial analysis show that the financing of repairs by flat owners even in combination with outside resources are under present conditions practically possible. Of course, the success of these activities would depend first of all on understanding, cooperation of all owners and respect of rules agreed by majority. Especially terms of regular payments have to be respected.

Conclusion

This handbook was written with the aim to indicate the flat owners how to start repairs of flats and especially to show their practicability. It is supported by concrete examples from Košice. Many of these repairs have been mastered by owners and some are in the stage of large scale repairs, such as repair of roof by construction of another row of flats. Presented evaluation of alternatives has helped them to decide about proposed repairs, it has helped them to consider financial requirements for individual repairs and to decide for a specific alternative depending on their liquidity. Many other owners became interested in these results and for this reason these real cases from Košice have been generalized, so that they become an aid to others.

Opinions against the privatization of the housing stock, because of their tremendous need for renewal of technical condition, are less and less heard, as these concrete examples and results show that the direct owners are better able to manage finances and, if provided with sufficient information, are best able to manage their financial resources.

ANNEX A TECHNICAL DRAWING DESCRIPTIONS

ANNEX A - TECHNICAL DRAWING DESCRIPTIONS

Drawing No. 1

KE_MARSKÁ STREET K2 - Layout of the typical floor

Drawing No. 2

KE_MARSKÁ STREET K2 - Cross section A-Á - Block of flats T 08 B

Drawing No. 3

KE_MARSKÁ STREET K2

Alternative A, layout of the attic space

Legend:

01 - Living room

02 - Bedroom

03 - Room

04 - Kitchen

05 - Bathroom

06 - WC

07 - Installation area

08 - Hallway

09 - Corridor

Drawing No. 4

KE_MARSKÁ STREET K2

Proposal for reconstruction of the roof with flats - Cross section A - Á

Okno VELUX - window VELUX

Monolitická el.bet.doska - monolithic reinforced concrete board 19 cm thick

Drawing No. 5

KE MARSKÁ STREET K2

Proposal for repair of the roof with low truss with the aid of nailed binders, cross section Composition of the roof cover

- cover corrugated sheet 100x40x1,5x800x2500
- horizontal beams for anchoring the cover
- wooden nailed beam
- thermal insulation polystyrol 100 mm thick anchored to the existing roof cover
- existing roof cover

Drawing No. 6

KE MARSKÁ STREET K2

Details of the wooden nailed binder

Vlnitý plech - corrugated sheet

Tyè L - bar L

Krytina - roof cover

Drawing No. 7

KE MARSKÁ STREET K2 - STUDY

Composition of the roof - present condition, alternative C

- . anti-reflexive coating
- . 2x glass fiber SKLOBYT
- . roof board SZD 3 4 120/600
- . air gap
- . Heraclite board
- . loose perlite
- . penetration paint, asphalt, cardboard A400
- . ceiling panel 19 cm

Proposal for reconstruction of flat roof with insulation

B

- . Additional insulation will applied to the original composition of the roof.
- . Roof insulation belt (e.g. TROKAL or CARBOFOL)
- . Separation layer
- . Polystyrol (10 cm thick)
- . Cover of the attic flange sheet

Drawing No. 8

FIBICHOVA STREET K3

Layout of the typical floor

Drawing No. 9

FIBICHOVA STREET K3

Thermal insulation of the peripheral coating - details of thermal insulation of window LEGEND:

- 1. Thermal insulation polystyrene boards (500 x 1000 x 60)
- 2. Glass textile net
- 3. Glue layer (e.g. TERAFIX M 702)
- 4. Polyurethene hard foam
- 5. Dowel for anchoring polystyrol boards
- 6. Acryl cement
- 7. Surface treatment (e.g. TERRAPLAST) spread plaster
- 8. New sheets (made before anchoring the thermal insulation boards)

Drawing No. 10

FIBICHOVA STREET K3

Insulation of the peripheral coating - details of insulation around the mop board

LEGEND:

- 1. Thermal insulation Polystyrol (boards 500 x 1000 x 60)
- 2. Glass-textile net
- 3. Glue layer (e.g. TERRAFIX H 702)
- 4. Dowel (fastening of the metal profile)
- 5. Dowel (fastening thermal insulation boards)
- 6. Acrylate cement

- 7. Surface treatment (e.g. TERRAPLAST)
- 8. Metal profile with eaves in front, fastened over the mop board
- 9. Combined boards HERAKLIT (2 cm) + polystyrene (3 cm)
- A. Thermal insulation of the facade
- B. Thermal insulation over the unheated basement

Obytný priestor - living space

Technické podla_ie (prízemie) - technical floor (basement)

Scheme of the mechanical anchorage of thermal insulating boards, distribution of dowels (approximately 8 pieces/m2)

Drawing No. 11

FIBICHOVA STREET K3

Thermal insulation of the roof coating and attic

LEGEND

- C gravel layer (approximately 5 cm)
 - roof insulating belt (e.g. TROKAL, or CARBOFOL)
 - separation layer
 - polystyrol layer 10 cm thick
- D Insulation of the facade and the detail of solution for attic
 - surface treatment (TERRAPLAST)
- a) glue layer (TERRAFIX)
- b) glass textile net
 - polystyrol anchored by dowels 60 mm thick

Pôvodný strešný pláš_ - original roof cover

Layout of the roof (FIBICHOVA 13) Skladba strechy - composition of the roof

Drawing No. 12

KUZMÁNYHO STREET K1 Layout of the ground floor

Drawing No. 13

KUZMÁNYHO STREET K1 Layout of the typical floor

Drawing No. 14

KUZMÁNYHO STREET K1

Present condition

Wooden balcony door (90/240 cm) used in buildings Type T 08 B.

LEGEND:

- 1. Wooden strip (12/24)
- 2. Wooden strip (12/40)
- 3. Permanent flexible glue
- 4. Sealing rope (jute)
- 5. Lime-cement plaster

Drawing No. 15

KUZMÁNYHO STREET K1

Present state

Placing of window in porous concrete peripheral coat used in buildings Type T 08 B

LEGEND:

- 1. Plaster M4
- 2. Permanent flexible glue
- 3. Parapet board
- 4. Sealing rope
- 5. Wooden strip

Drawing No. 16

KUZMÁNYHO STREET K1

Treatment of the wall around balcony door. Wooden balcony door (90/240 cm) used in buildings Type T 08 B.

LEGEND:

- 1. Wooden strip (12/24)
- 2. Wooden strip (12/40)
- 3. Polyurethene hardened foam
- 4. Lime-cement mortar

Drawing No. 17

KUZMÁNYHO STREET K1

Treatment of the wall around the balcony window

Wooden double glazed window (150/160 cm) used in buildings T 08 B.

LEGEND:

- 1. Wooden strip (12/24)
- 2. Wooden strip (12/40)
- 3. Permanent flexible glue
- 4. Polyurethene hardened foam
- 5. Lime-cement mortar
- 6. Wooden strip (12/12)
- 7. Metal parapet sheet

Drawing No. 18

KUZMÁNYHO STREET K1

Window treatment (Building Type T 08 B)

Window treatment at the contact of the window frame and panel

Proposed sealing of the window wing

LEGEND:

- 1. Mortar M4
- 2. Permanent flexible glue
- 3. Parapet board
- 4. Polyurethene hardened material
- 5. Wooden board

Proposed adjustment of the window frame: cutting small groove and glued sealing in the groove of the frame.

Drawing No. 19

KUZMÁNYHO STREET K1

Proposal for repair of surfaces of staircases and floors in common corridors

Repair of staircases and floors in common areas - System of ECCOP company:

Proposal for surface treatment of the floor in corridors, in the area of staircases

Type ZERO or CARD

For staircases - Details of stair profiles

Schodiš_ová tvarovka - shaped stairs

Podestová hrana - landing edge

Schodis_ová soklová lišta - stair mop strip

Schodiš ová hrana - Stair edge

For corridor areas - Details of wall strips

Vnútorný roh v chodbe - internal edge in the corridor

Vonkajší roh v chodbe - external edge in the corridor

Stenová soklová lišta - wall mop strip

Drawing No. 20

KUZMÁNYHO STREET K1

Protruding stairs and steel railing

A - Unglazed ceramic floor tiles

Drawing No. 21

AMURSKÁ K4

Boiler room on the roof

Prieèny rez - cross-section

Kotolòa - boiler room

Drawing No. 22

AMURSKÁ K4

Boiler room on the roof - layout

Pôdorys - layout

Kotolòa - boiler room

Výfuková stena - exhaust wall

Zásob. TÚV - container for hot utility water

Kotle - boilers

Spevòovacie nosníky pod kotle - fastening beams under the boilers

Strojovòa - engine room

Drawing No. 23

AMURSKÁ K4

Boiler room inside the common room in the basement

Ohrevòa TÚV - heating of hot utility water

Kotol - boiler

Výfuková stena - exhaust wall

Drawing No. 24

AMURSKÁ K4

Boiler room in the basement

Rez A-Á - layout A-Á

Komínové teleso - chimney

Schematické zobrazenie kotlov - drawing of boilers

Piloty - pillars

Drawing No. 25

AMURSKÁ K4

Independent sources of heating for each flat

Nástenný kotol - wall boiler

Odvod spalín - exhaust outlet

Sadrokartónová prieèka ... - plaster cardboard partition around the boiler at this type of flat (boiler must not be placed inside living room)

ANNEX B TECHNICAL DRAWINGS

ANNEX C MEMORANDUM