E-2023-Refubishment and renovation of Solbakken, dept. 311

Cultural heritage
Housing Quality
Sustainability
Accessability
Materials
Interior Environment
Social aspects
Architecture
Energy
Structural design
Daylight Quality
Sound Qulity
Economy
Outdoor area

MØLLELØKKEVEJ 31-33

REFURBISHMENT & RENOVATION

Lecturers Christian Syversen, Søren Schaldemann Hansen, Jonas Bendixsen, Paul Andreas Jensen, Ronald Ed Toliver
23 October 2023

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Pedagogical Practice and Organization

On the 5th semester, we mainly work within what is referred to as K3 in the study activity model. This means that the student organizes their own learning processes based on the interdisciplinary project assignment. The teaching is something different and more than just academic presentations. The approach includes:

- Working on group dynamics and professional collaboration, where the individual competencies and learning opportunities of the students come into play.
- Workshops where we collectively challenge the profession's issues.
- Lectures and seminars.
- Academic group guidance, as well as individual guidance.
- The framework is based on learning objectives according to the semester description. The purpose is to create a teaching process that develops the student academically, professionally, and personally in relation to the profession.

Learning Objectives According to the Semester Description

- Knowledge: By the end of the 5th semester, the student should have knowledge about:
  - Recording and assessing existing conditions, including recording using information-bearing BIM models.
  - Understanding and reflecting on structures in connection with renovation and building physics principles, including statics and technical installations.
  - Understanding complex design and execution methods.
  - Understanding and reflecting on different energy-efficient renovation and remodeling concepts, considering social, environmental, and economic aspects.

- Skills: By the end of the 5th semester, the student should be able to:
  - Apply and master methods and tools for collecting, analyzing, and processing information related to renovation.
  - Apply and master design methods, as well as methods for planning and managing the execution of renovation work, considering social, environmental, and economic aspects.
  - Use digital building information models and transfer and extract data between different digital platforms and information systems.
  - Assess building physics issues and aspects and make informed choices.
  - Communicate practical and professional issues and solutions to collaborators and users.

- Competencies: By the end of the 5th semester, the student should have the competence to:
  - Handle complex construction technical solutions based on documented analysis.
  - Manage a digital design and production process.
  - Manage complex renovation projects, considering social, environmental, and economic aspects.
  - Incorporate acquired knowledge and skills into digital building models and plan the digital phases for renovation.
  - Independently participate in interdisciplinary collaboration on planning, design, quality assurance, and production of complex renovation projects.
  - Identify their own learning needs based on knowledge, skills, and competencies acquired during the semester.

The Students' Access to Knowledge

The instruction is based on a knowledge base focused on incorporating knowledge from practice, relevant research, and development work. A relevant knowledge base is thus used to support the student in achieving the educational goals for learning outcomes.

Students/participants are introduced to knowledge related to central trends within the profession and industry that the entire education is directed towards through: company visits, external presentations, books, articles, and research-related reports and publications.

Solbakken, dept. 311 – Mølleløkkevej 31-33 is marked with red – Project area.

Introduction.

Renovation constitutes an increasing proportion of the projects in the construction industry today and will be well into the future.
According to Dansk Byggeri, approx. 60,000 workers, out of a total workforce of 150,000 in the Danish construction industry work with renovation. This corresponds to 40% of the total number of employees in the construction industry.

Earlier, the use of what is now considered harmful materials was the norm. Today, with an increased focus on indoor climate and liveability, both in terms of air quality and daylight access, this poses major challenges in the design and construction process.

Based on a EU Building Directive, the Danish Energy Agency has drawn up a number of initiatives that support energy efficient aspects in connection with the renovation of the existing building stock.
Sustainability, however, requires more than just energy efficiency, but more and more an increased focus on choise of materials, resource consumption, life-cycle, operating costs, value stability and indoor climate.
This requires increased focus on value-creating refurbishment using methods and materials that increase the life and usefulness of the building, both in terms of refurbishment of existing building structures and new building components.

Refurbishment and renovation of residential buildings built in the 1940s, 1950s, 1960s and 1970s is a current issue not only in Denmark but worldwide. The problem is also interesting because of the cultural heritage represented in this building period.

During the Second World War, housing construction stopped and at the end of the war there was an acute shortage of housing. It was estimated that there was a need for construction of 125,000 new homes, and in order to overcome the housing shortage, a system was established after the war years, allowing state loans for housing construction.

Living conditions were poor and housing conditions unhealthy in the dense and overpopulated cities, where sunlight and fresh air were a shortage and where the individual homes were small and humid. The solution to the unsatisfactory conditions in the overpopulated cities was found. The post-war residential areas were developed in the suburbs where there was light, air and green areas.

Top: The suburb of Vollsmose in Odense
Bottom: Gellerupparken,in Brabrand in Århus

Non-profit housing

Non-profit housing is primarily characterized by the fact that no one is to make money on rent. General housing for rent is speculative and the rent is costly. The objective of non-profit housing is, that the balance between income and expense must be as close to a zero as possible.

Non-profit housing is usually subsidized from the municipality. This way, the municipality that has supported the project can allocate X amount of vacant homes for social housing purposes. It is the so-called Right of Access.

Denmark has more than half a million of these type of homes.

The non-profit housing is for everyone, but at the same time it has a number of social obligations towards population groups with special housing needs. This applies, for example, to students, single parents, elderly, disabled people, refugees and residents that are rehoused in connection with urban renewal.

All homes are assigned to a waiting list. Therefore, you need to be on the waiting list in a non-profit housing association if you want an apartment in these type of homes.

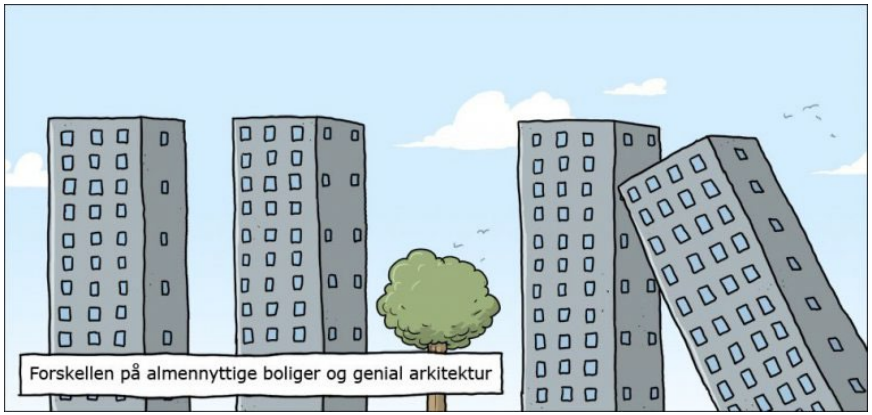
The formal organization is selected democratically with the majority of residents in all deciding bodies. Each department is an independent economic entity, and the department's financial resources can not be used elsewhere in the housing organization.

The non-profit housing association Civica

Civica is one of Denmarks biggest non-profit housing organizations with more than onehundred departments administrating about 11,500 homes in Odense, Aarup, Glamsbjerg, Søndersø, Middelfart and Nyborg.

Civica is Latin and means citizenship.

Civica was founded when when two big non-profit housing organisations merged in 2014. They were both founded in the post-war years and since then been developing new homes for the general public. Together with the general housing sector, they are a big part of Danish history that has helped to create the living forms and society we know today.



Collaboration with Civica

ATCM at UCL has entered into a collaboration with the non-profit housing association Civica.

Civica has a desire to include sustainability aspects in renovation projects. This aspect is desired in the context of this assignment, for parameter analysis to identify the potential of sustainability in the renovation of non-profit housing, and through this. identify "the lowest hanging fruits".

Some students have been taught sustainable transformation in a 7 week course, while the others have participated in a course that is based on the performance / entrepreneurial part.

This diversity can be used to test the sustainability potential in renovation tasks, for example. using parameter analysis in terms of material selection and indoor climate, as well as calculations of life cycle costs / total economy. At the same time, there will be a great focus on the construction part, especially on the identification, demolition and disposal of harmful substances, as well as on the digital process in renovation projects.

Therefore, the project will focus on analyzes and solutions in relation to:

Materials, Life Cycle Assessment (LCA), Economy (LCC) and Indoor Climate

Decomposition, handling and disposal of harmful substances

The purpose of the cooperation with the ATCM studies is as follows:

- To develop new forms of cooperation between UCL and the profession.
- To involve students in practical issues.
- To develop learning resources and learning scenarios in relation to the areas of renovation and sustainability.
- To contribute new knowledge in the renovation and sustainability area to the profession.

The students can offer the following:

- Present analytical results and solutions proposed by the students.
- Supporting sustainable measures in the area of renovation, such as the impact of materials on indoor climate and environment, life cycle assessment (LCA and LCC) and daylight optimization. This may include happen as "second opinion" for concrete projects.

Civica will contribute as follows:

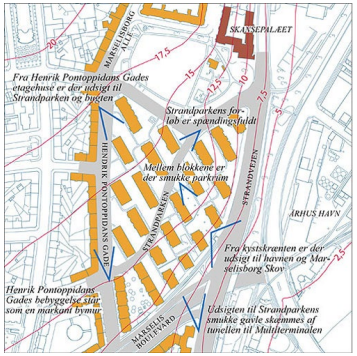
- Project material in the form of drawings and descriptions on concrete renovation projects / buildings; multi-story houses and terraced houses.
- Provide students with insight into "General construction", target group, masterplans, and the process of renovation projects - this could, for example, be through presentations for the students.
- Access to buildings for surveying the buildings state and potential.

General housing projects - Architectural development 1940 - 2012.

General housing of this period are typically placed more dispersed. This type of housing was created as part of the modernists' showdown with the social hierarchy of the square block structure of the inner cities, where wealthy residents lived in prestigious houses while the poor part of the population lived in small dwellings in tight back yards. In this type of housing, all apartments are placed in relation to the sun and usually the houses have a balcony. The properties have good lighting conditions, views as well as access to the green outdoor space that is a decisive quality in the buildings.

1920 - 1959 after-war period.

Compared to the interwar period buildings, often consisting of parallel blocks, the best building plans from 1945-1959 are more organically designed and contain different building types and mixed housing sizes. The buildings are often composed of multi-storey buildings, terraced houses, shopping centers and at times institutions and common functions, but the individual buildings are subordinate to a general structure and a common language. In the 1950s apartment buildings are dominated by handcrafted housing blocks made from building materials, such as brick on the facades, tiles or eternit sheeting on the roof surfaces, wooden structural components and gutters in zinc-coated materials that patinate beautifully



Assembled buildings: 1960 - 1979.

In 1960, the Ministry of Housing issued the so called Assembly Bill, which required, among other things, that housing should be built in prefabricated elements in order to recieve subsidising. The housing shortage was to be remedied through mass production and by building houses with concrete elements to be assembled on site. Sizes were standardized for doors, windows, kitchen cabinets, etc. to pave the way for mass production.

The purpose was to further boost the industrialization of the construction industry. Not all housing projects during that period were built as a assembled buildings, but the rationalization of the construction industry was completed and industrialized construction became a reality. Over twenty years from 1960-1979, approximately 600,000 homes were built in Denmark.

Examples of residential buildings built as assembled buildings in prefabricated concrete.

First wave of renovations, problems and criticism: 1980 - 1999

In reallity, the assembled buildings of the 1960s and 1970s was a success. The huge demand for housing was met and the goals of developing good and well-functioning homes were met as well.
However, the settlements quickly ran into a number of problems, which can be briefly described under four headings: Building design problems, Social issues, housing experience problems, and problems arising from norm changes of the period.

The modern renovations and refurbishments: 2000 - 2012.

Some of the renovations that were carried out in the early 2000s had learned from previous renovations. One of the overriding problems was the scale of buildings, which only can be worked on to a certain degree on the individual facades. Different solutions about the individual staircases / entrances can lead to variation in a large settlement and give residents better opportunities for personal identification, but far more effective is spatial processing of the land. Similarly, another important point in connection with the processing of the large scale of the assembled buildings. The individual experience of quality in the small scale is crucial to the overall experience. Qualities in the texture of the buildings and the fine visual details are crucial for the overall impression of the large settlements. Working with details such as windows, add-ons to the facades, balconies, stairs, etc.

Sustainability

One of the biggest challenges to limit the country's energy consumption lies in the existing building mass. The existing building mass form the vast majority of the country's housing, and by far the greatest potential for energy savings. Energy improvements such as exterior facade insulation, roof insulation and replacement of windows to a present standard can save up to 25% of the energy consumption in the existing housing stock.

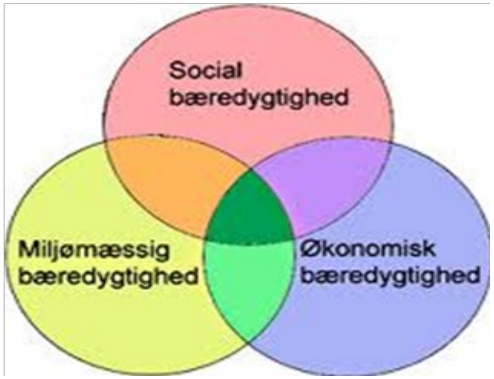
When buildings are planned and built today, the framework for our children, grandchildren and great-grandchildren is created. Therefore, it is important that we plan and build properly and with care.

The existing building mass accounts for about half of the energy consumption in our society. At the same time, many of us spend a very large amount of our time indoors

Therefore, it makes sense that the municipality's environmental policy and climate plan focuses on construction, and that the municipality already made a number of environmental requirements for buildings built in Odense from the year 2010.

Environmental requirements include energy and water consumption, building materials, waste and transportation. But sustainability is also about health and well-being and thus a good indoor climate and inspirational environment.

When planning towards a thriving city, sustainability also means mixed city features and residential neighborhoods, proximity to green areas, and minimizing the need for transportation.



The assignment:

Boligforeningen Civica owns the public housing development called Solbakken, located on Mølleløkkevej in Odense.

The owners of the housing development wish to remodel and renovate the properties to create contemporary living spaces. This entails establishing both functional and experiential qualities in connection with the renovation.

The aim is to develop new living qualities in the smaller apartments in parts of the complex where it is not deemed feasible to eliminate the small units. Instead, there can be the addition of light, air, and possibly balconies.

As both a crime-preventive measure and an enhancement of the lighting conditions, there is a desire for better views from the gable apartments in number 31 towards the eastern area of the neighborhood. This is to be achieved through the construction of bay windows on the building's gable.

Smaller apartments can be merged with adjacent units, allowing for spacious family homes to be created. This can result in roomy and well-arranged housing units with well-lit living spaces and a direct connection between the kitchen and living area.

Some of the residences should be accessible for residents with disabilities and feature modern amenities.

The client wishes to replace the roof structure and incorporate alternative energy sources such as solar cells and solar panels. The new roof structure should be optimized for the maximum utilization of these new technical installations.

The client wants to make space for a laundry area within each apartment, with room for a washer and dryer.

The goal is for the housing complex to exhibit fine architectural qualities and proportions after the renovation, respecting the historical and architectural heritage of the building.

Likewise, materials should be chosen to introduce new details and architectural qualities to the buildings while maintaining the dimensions and textures.

Mølleløkkevej, dept. 311:

The building on Mølleløkkevej was built in 1967 and consists of 92 apartments. The building is built as a building block with four floors and full basement.

The buildings are with a facade in yellow bricks and with fiber-cement sheeting as roofing.
The building's support system consists of supporting loadbearing walls in light extruded concrete bricks and floor slabs of reinforced concrete. The gable walls are solid brick work and covered with steel plates.

The existing balconies are made of reinforced concrete with steel siding.
Inside, floor surfaces are generally wooden floors built on wooden joists, except for wet rooms where the floors are cast without a wet room membrane.

The building is with full basement with access from each entrance and exterior access with ramp from east facing gable.

The basement is not heated.

Processing:

The housing organisation Civica (the developer) has had a well known consulting engineering firm to carry out a partial project proposal.

The developer has approved the overall proposal, but wants a more thoroughly review, analysis and wants the proposal adjusted accordingly. The developer wants to keep track of the choice of materials selected in a project proposal. This must be done before the developer can give his final approval of the proposal.

The project needs to be submitted to the authorities for approved the proposal as a prerequisite for the forthcoming renovation.

The layout of the building must express the builder's immediate wishes and visions, but you are free in the project proposal to propose other and better designs or selections, as long as it meetd the developers

The municipality of Odense a municipal plan framework for the area (1.D7). There is no local plan, BR18 is therefore applicable.
Further negotiations with the authorities regarding fire protection through fire strategy is required.

Relevant parts of the preliminary project and fire documentation shall be submitted to final authority approval. As a starting point, focus is on Solbakken district 311, Mølleløkkevej 31-33, but the entire area of the building plan is being processed.

The architect firm has employed you as designers to perform pre-registration, project proposals, regulatory project and a combination of a tender design and construction project.
The work required in the assignment will be specified in the assignment.

Program:

The buildings are to be energy-optimized, taking into consideration the economic viability and sustainability aspects of the chosen solutions. Additionally, careful consideration should be given to the future architectural expression of the buildings.

Apartments will be fully or partially remodeled, depending on the respective proposals developed by the consultant. At least one apartment per floor should, to the extent possible, meet the requirements for quality level B according to Building Regulations 2018 (BR18).

The apartments should, to the greatest extent possible, include the following features:

- Entrance.
- Toilet with a shower and space for a laundry area.
- Kitchen (possibly a dining kitchen) with a dishwasher.
- Bedroom/bedrooms.
- Living room.
- Installation of a balcony for the apartment.
- Installation of a bay window for recreational use.
- Establishment of a smaller communal room in the basement.

In connection with the remodeling and renovation of Mølleløkkevej 31-33, an elevator is to be installed in the building. This will be located inside the existing building by decommissioning existing bathrooms. Please note that the existing concrete floor's load-bearing capacity has been maximally utilized.

The client desires an assessment of the existing skylight over the stairwell with the aim of making the construction more energy efficient.

The existing, outdated garbage chutes will be retained and connected to an external waste disposal system.

Timeplan ***Mølleløkkevej 31-33*** */Timeplan of 23. october 2023. (changes can occur).*

WEEK	43	44	45	46	47	48	49	50	51	52	01	02
SUBJECT	Preliminary investigations	Preliminary investigations	Project proposal	Project proposal	Project proposal	Project proposal	Authority project.	Tender project	Tender project	Tender project	Tender project	Exam
ORGANIZATION	Group work	Group work	Group work	Group work	Group work	Group work	Group work	Individual	Individual	Individual	Individual	
CONTENT	Intro til semester assignment. Preliminary investigations, pre-registration, and analysis."	Preliminary investigations, pre-registration, and analysis." Written submission of a class assignment	Analysis and processing of project materials.	Analysis and processing of project materials. Panel discussion with lectures	Analysis and processing of project materials.	Finalize the project proposal. Presentation of the project proposal on Thursday, November 30th.	Authority application in building and environment Process: Selection of focus area	Focus area	Focus area	Focus area Lecture free	Focus area	
CONTENT - ORGANIZATION AND SCIENCE THEORY.	Introduction to the course and rationale for relevance, General management theory Work with theory/reference and sources.	IPD and partnering Change management Working with theory/references and sources, including the student's own exploration.	Productivity task/presentation Working with secondary empirical data	Knowledge sharing Working with an academic model.	Motivation task Independent work on literature search and processing, including source validity.	Motivation presentation synopsis initiation Individual writing.	Individual writing Guidance.	Individual writing	Individual writing	Individual writing Lecture free	Monday - Submission and presentation of synopsis, Mandatory with prerequisites.	

Based on the current outline proposal, the project will be documented through the following four contractual outputs:

1. Pre-registration and digitalization of existing conditions.
2. Design project (Project proposal)
3. Regulatory Project
4. Tender design & construction project

Exams will be in week 2-3

External lectures and construction site visits will be included in the course. Information about these will be provided continuously on Itslearning.

Planning and coordination:

Before starting the project itself, the task must be carefully read through and the work planned. The basis for the collaboration as well as the basic prerequisites of the project must be clearly stated. The following must be carried out as an introduction to the project:

- Main timeplan for the interdisciplinary project.
- Planning of project work, group contract, design strategies and coordination of the project.
- Design handbook, quality assurance handbook.
- ICT process manual.
- Clarification existing conditions.

Pre-registration:

Surveys must be performed to check whether the existing drawings are credible / correct.

Existing conditions must be recorded,up monitored in 3D digital cf. measurement charts.

Digital registration of existing conditions is performed in the Ajour system.

Pre-registration is divided into the following three independent activities:

- Inspection of the building.
- Registration of existing conditions.
- The making of the revit model. On the basis of existing drawing material and the pre-registration and based on the provided building model, each group prepares its own Revit model of the building. This model forms the basis for the group's work during the semester and later each student's individual work in the final phases of the project.

Each class collectively prepares one pre-registration report consisting of the following:

- Collection of data relating to the property, including information on supply conditions.
- Registration - including condition assessment - of building constructions based on existing drawing material.
- Registration - of the property's static system based on existing drawing material and visual observations.
- Registration - including condition assessment and location - of the technical installations (heating, water, drainage and ventilation)
- Surveying of the building in the form of situation plan, plans, sections and facades.
- Pre-registration is handed in to one common A3 folder in file format PDF in ItsLearning.

Hand-in date: Friday, November 3rd , 2023, at. 12:00

In order for the pre-registration work process to be sufficiently documented, it is necessary to:
- All material, including metering sketches, must always be accessible to all.
- All scanning sketches are scanned to PDF files and put in their own folder on common drive (Q).

Planning and organizing control surveys, as well as pre-registration and condition assessment.
What should be measured and what is the purpose?
A survey is about checking whether the existing drawings are credible, both in terms of layout and in terms of dimensions. After that, a BIM model can be generated from the collected and verified information. This forms the basis for the further design.

What should be registered and what is the purpose?

Rooms: General disposition of the rooms must be evaluated

Surfaces: Floor, ceiling, walls. (What is it covered with and what is the condition) is there moisture, mold, cracks, etc.

Fixed fixtures: Often documented with images

Fixed installations: Electricity, computer, antenna, heat, water, drainage etc. - Documented often with picture

Other components: Windows, doors, panels, frames, lighting panels, walls, slabs, etc. (registered and condition evaluated / residual life) you also record materials and properties such as heavy and / or lightweight walls, non-load bearing, stabilizing or not, etc.

Purpose:
The purpose is to describe demolition work, renovation work / replacements, etc., so that the extent and nature of work is clearly described and can form the basis for a basis for the project proposal.

Resource: You may find it advantageous to use the Building Defects Fund's 20-point list, which is available at:

https://bsf.dk/media/gaanoe1d/logbog-ks.pdf page 18

Project Proposal:

The design project is carried out as group work.

With the exception of minor changes in accordance with documented analyzes and based on dialogue with the client, the students are expected to work out the project in accordance with the handed over material from the former consultants.

The design phase must contain the following:

- Time planning and coordination of the project phases.

- Functional analysis, including daylight conditions, spatial planning, design incl. list af demands in relation to clients wishes and legislative measures.

- The spatial planning is scrutinized with a detailed analysis of the function in relation to future use. An analysis / record of how work rhythm is in everyday life for the tenants, for the various subjective areas of the rented areas, must be performed - and these considerations must be incorporated into the rooms.

- Partial analysis of altered / refurbished building components: Analysis of function, requirements, material choices and combinations, environmental impact, moisture problems, economics.

- Making the BIM model so that existing and new conditions and demolition plans can be displayed.

- Drawing list and document summary.

- Time planning and coordination of pre-registration, as well as planning in general.

- Timeplan of the project

- Building handbook

- Quality assurance of project proposals before delivery to the client

- Writen statement describing the decisions made, as well as proposals for tender and contract form with arguments for and against. The statement must also contain LCC considerations concerning selected building parts.

- Quality assurance handbook for consultants.

- Plan for health and safety and working environment in connection with demolition and rebuilding. Building site plan.

- Constructional and static analysis before reconstruction incl. inventory of existing loads.

- Constructional and static analysis after reconstruction.

- Price estimate of new building parts.

- Scrutiny of technical mains and sewage.

- Planning of technical rooms and shafts.

- Future installation of installations.

- Analysis of indoor climate requirements and ventilation requirements.

- Analysis of energy requirements, profitability and savings potential.

Presentation of project proposals:

- Brief run-through and description of the project.
- Situation plan, furnitureplans, building sections and facades.
- Illustrations of exteriors and interiors.
- Description of essential components of construction.
- Material samples and inspirational images can be included.
- Principles for technical installations and pathways.
- Timeplan / Economy / Economic estimate
- Client Memoes.
- Analyzes regarding sustainability, environmental and indoor climate material choices.

The above must be presented to the developer and advisors.

In addition to the above, each group assigns a special area of focus to be presented.

Specific areas of focus are as follows:

1. Healthy materials and indoor climate

How to ensure a healthy indoor climate after remodeling with a tight climate screen and possibly residual harmful materials. Are the materials (old and new) indoor climate-friendly? How are harmful substances handled?

2. Availability

BR18 requirements versus existing conditions

Easy adaptable measures

Adaptation of solution according to needs

Safety and security

Which requirements are possible to incorporate?

3. Light conditions

How do you get daylight as far into the apartment as possible when you have to take into account, among other things, balconies and thicker outer walls because of additional insulation. Is it possible with the chosen layout?

It is a requirement from the "Landsbyggefonden" that the homes must be properly lit or with double-sided lighting without any "dark spots" in the home.

4. Energy

Sustainable measures to lower the energy level for the homes.

How can you motivate the residents to keep the energy level down and the indoor climate up.

Ease of use for residents and operating staff (Ventilation).

Low energy measures within the economic framework.

Is additional insulation even worth it?

5. Outer leaf construction

How to protect against thermal bridges, condensation and mold?

Mold should not be a problem after renovation - Residents especially experience cold bridges around balconies, windows and recesses.

What measures are possible?

How to choose materials with a focus on longevity and low maintenance costs.

6. Planning the construction process

How to optimize the schedule so that the residents get a rehousing period max. 5-6 months per housing.
Optimization of the construction process and construction site plan. Rehousing is a very sensitive process in relation to delays, as it has large financial costs (loss of rent/vacancy) Are there works that can be carried forward / For example exterior work, so that the time plan is not sensitive to weather?

7. Demolition

How is the demolition work most optimally organised?

Demolition means removal of surfaces, penetrations, breakdown of building parts, etc. What interim measures are necessary? How are site logistics and site plan planned, including how do the demolished components get to the correct container? Which materials can be recycled and what is the correct way of handling them? Of course, the topic also covers the working environment, including safety, dust and noise and harmful substances.

Regulatory project:

Performed as group work.

The regulatory project is a processing of the decisions of the project proposal and forms the basis for an application for a building permit. Application for a building permit, possibly dispensations and the like must be submitted to the municipality via the application portal Byg & Miljø (BOM) via the link provided by the lecturer.
The necessary forms in BOM are filled in, acc. to the application procedure provided during lectures.

The authority project must contain the following:
- Drawing list and document overview.
- Main drawings:
  - Situation plans
  - Floor plans of all floors
  - Main section and partial section
  - Facades
- Overview drawings:
  - Drainage plans for changes to sewerage conditions for the building.
  - Demolition plans
  - Drawings in connection to the fire documentation
- Documents:
  - Fire documentation.
  - Calculation of new load-bearing building parts and building parts with increased load.
  - Documentation for compliance with energy requirements.
  - Documentation of indoor climate conditions in selected rooms

In addition, the authority project contains the following:
- Updating the finances and timeplan as well as the design manual.
- Stakeholders analysis and communication plan.
- The regulatory projects quality must be assessed before submission to the authorities.

Tender design / Construction project:

These phases are carried out individually.

After consultation with the lecturer, a detailed project is prepared for one of the focus areas below. A defined area of the building is chosen where new constructions meet old constructions.
All drawings revised from the regulatory project must be carried out in accordance with a revision numbering system.

Focus areas:

1. Access conditions to the building and elevator, incl. demolition.

2. Wet rooms and demolition.

3. Facades,. windows and external doors incl. demolition, as well as access to the building including landscaping.

4. Balconies and demolition.

5. Roof construction with as much reuse as possible, incl. demolition.

6. Self-chosen area of the same scope as the above.

The project material must contain the following:

- Drawing list and document overview.

- Main drawings:	- Situation plans - Floor plans of all floors - Main section and partial section - Facades
- Overview drawings:	- Demolition plans, incl. interim measures for the individual focus areas - Plans for the individual focus areas - Installations / facades of the individual focus areas
- Building component drawings:	- Plans and sections with relevance to the individual focus areas.
- Assembly details:	- Detailed drawings with relevance to the individual focus areas.
- Documents:	- Tender schedule is carried out as group work, incl. Decomposition. - Work schedule or period schedule for the selected focus area, incl. Decomposition. - Work and building component description of a contract within the chosen focus area, incl. supply control plan. - Offer list of a company within the selected focus area. - Process for evaluation and learning.

Useful information:

Exam:	Week 2 To be able to judge layout and drawing technique etc. At a minimum, the student must print and hang the following types of drawings: - Situation plan, - 1-2 floor plans, - 1 cross section, - 1 facade drawing, - 2 assembly details Ratio and drawing layout according to standards.
Client:	Ronald Ed Toliver (roto@ucl.dk), Søren Schaldemann Hansen (ssha1@ucl.dk).
Authority:	Odense Municipality (represented by the teachers).
Advisors:	Christian Syversen (cs@ucl.dk), Jonas Bendixen (jobe@ucl.dk) and Paul A. Jensen (paj@ucl.dk).
Basis of work:	Project assignment - Available digitally on ItsLearning. Drawings from municipal archive of existing conditions at www.weblager.dk Own preliminary investigations, surveying and pre-registration Current building regulations (BR18)

The client applies the following to the construction: AB18, ABR18.

Suggestions for literature:

Books:
Most of the items listed below should be available at the library.

- Compendium in House Building – Selected magazines from Byggebogen, NNF- Arnold Busk
- Molio publications on renovation of apartment buildings – no. 100, 101, 102, 103, 115, 116 and 117
- Danish Architecture for 250 years – Arkitektens Forlag 2004
- Denmark's Architecture "Buildings of Work" - Gyldendal 1979
- The renovation manual – WALL & ROOF. The publisher TEGL
- Book on building renovation, Bygherreforeningen and Landowners Investment Fund, 2013 https://gi.dk/Publikationer/Hvidbog%20om%20renovering%202013.pdf
- SBI and BUILD publications
- Construction engineering 2 – Control of construction processes
- Financial planning of construction projects

Web pages:

- Building archive for Odense Municipality. www.weblager.dk
- Værdibyg. www.værdibyg.dk
- Information on building conservation – Agency for Cultural Heritage. www.kulturarv.dk
- BygERFA. www.byg-erfa.dk
- Renovation on the agenda. www.renoveringpaadagsordenen.dk
- Landowners' Investment Fund. www.gi.dk
- Construction Damage Fund. www.bsf.dk
- WEB PUBLICATION - Information on building conservation. www.kulturarv.dk
- Handbooks from the "Center for Building Conservation". www.bygnningsbevaring.dk
- BFA Building and Construction about work environment. www.bfa.ba.dk
- The tender project portal. www.udbudportalen.dk

All the best,

5. BK lecturer team