

Management stages of construction projects, planning of the refurbishment process

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Four Treatment Approaches

- **Preservation** focuses on the maintenance stabilization, and repair of existing historic materials and retention of a property's form as it has evolved over time.
- **Rehabilitation** acknowledges the need to alter or add to a historic property to meet continuing or changing uses while retaining the property's historic character.
- **Restoration** depicts a property at a particular period of time in its history, while removing evidence of other periods.
- **Reconstruction** re-creates vanished or non-surviving portions of a property for interpretive purposes.

MAIN PROJECT STAGES:

- A. Initial Project Planning Stage
- B. Planning Stage
- C. Design Development Stage
- D. Construction Stage
- E. Occupancy Stage

A. Initial Project Planning Stage

1. Determining What Makes a Building Historic and Who Makes this Determination
2. Conduct Investigation and Research
3. Understand the History of a Property
4. Determine the Regulation, Guidelines, and Standards When an Activity is Planned That Affects the Proposed Work
5. Identify the Character-Defining Features of the Historic Property
6. Fit the Program to the Historic Building

B. Planning Stage

1. Form a Qualified and Experienced Project Team
2. Develop Individual Preservation Management Plans
3. Plan Suitable Spaces for Program Needs

C. Design Development Stage

1. Design to Minimize Changes to Historic Property
2. Select Competent and Qualified Contractors

D. Construction Stage

1. Provide Temporary Protection
2. Ensure Fire Safety During Construction
3. Educate Workers and Public on Significance of Historic Property
4. Develop Building Maintenance Manual

E. Occupancy Stage

1. Modify Leasing Agreements and Provisions
2. Develop Special Events Policies
3. Update Individual Preservation Management Plans



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MODERNIZATION OF A BUILDING

THE ADVANTAGE OF EARLY CONSULTATION

- Retention of history and authenticity
- Increased commercial value
- Rehabilitated historic buildings
- Retention of building materials
- Existing usable space – quicker occupancy
- Rehabilitation often costs less than new construction
- Reuse of infrastructure
- Energy savings



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Upgrading WALLS

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External appearance



Historic buildings display a wide range of materials and forms of construction, ranging from thick stone or earth walls, to timber-framed buildings with comparatively thin and lightweight wattle-and-daub infill panels.

THE USE OF POROUS MATERIALS IN WALLS

- Most historic buildings have solid walls constructed in porous materials, with internal finishes such as lime plaster. This porosity has helped to keep many buildings in good condition because:
 - on the outside, it encourages the absorption of rainwater, which is then able to run down, drain out and later to evaporate
 - on the inside, it helps to stabilise moisture levels in rooms and often averts surface condensation, for example in crowded conditions or when cooking
 - moisture can also pass through the wall and evaporate both externally and internally as conditions allow, as can any dampness rising from the earth.

THE IMPORTANCE OF PERMEABILITY

- Where walls need to transpire, new materials intended to form barriers to unwanted moisture or water vapour can impede the very processes which help a historic wall to survive in good condition.
- Many insulation products lose their insulating qualities when wet, so moisture from damp walls or interstitial condensation can make them almost useless.
- Other products, including some natural materials, are less affected.
- However, care must be taken in selecting appropriate materials that do not result in new problems such as insect infestation.

IMPROVING INSULATION EXTERNALLY

- The opportunity to improve the thermal performance of walls externally will often be limited in a historic building.
- External insulation may be more practicable, however, where tile hanging or weatherboarding has to be removed and replaced.

IMPROVING INSULATION EXTERNALLY (1)

- Technical issues that need to be considered before proceeding:
- **Rain screening**
 - Most insulation materials used externally will need to be screened from rainfall.
 - The criterion that repairs should be carried out on a like-for-like basis means adhering to the original mix of materials in preference to using a thermally more efficient render.

IMPROVING INSULATION EXTERNALLY (2)

- Technical issues that need to be considered before proceeding:
- **Vapour build-up**
 - If the external insulation, or any part of its associated construction, forms a barrier to vapour, there will be a possibility of condensation build-up from internal moisture vapour within the permeable wall behind.

IMPROVING INSULATION EXTERNALLY (3)

- Technical issues that need to be considered before proceeding:
- **Decorative and thermal insulation detailing**
 - External insulation will increase the wall thickness.
 - This will require the design of effective details for all window and door surrounds, for roof overhangs and for the wall foot, and for junctions with adjoining construction.

IMPROVING INSULATION EXTERNALLY (4)

- Technical issues that need to be considered before proceeding:
- **Warming of original fabric**
 - The external insulation will, however, offer the advantage of warming the internal fabric.



- Preservation of an estate in Pakruojis
- Before and after preservation



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IMPROVING INSULATION INTERNALLY

- Internal walls should always be carefully investigated in advance of any changes.
- Where complete internal re-plastering is required – particularly where it has been done before and when little or nothing of historic interest survives – there may be opportunities to incorporate internal insulation.

IMPROVING INSULATION INTERNALLY (1)

- Technical matters that need to be considered include:
- **Resistance to condensation**
 - If insulation is installed internally there will be a reduction in temperature towards the outside, reaching a dew point at which internal moisture vapour will condense. If this happens near to the insulation it can render it ineffective and cause rot and decay within both old and new construction.

IMPROVING INSULATION INTERNALLY (2)

- Technical matters that need to be considered include:
- **Effectiveness and durability of vapour barriers**
 - Vapour barriers are easily punctured and in existing buildings, particularly those of vapour-permeable construction, can rarely be adequately sealed at their perimeters.

IMPROVING INSULATION INTERNALLY (3)

- Technical matters that need to be considered include:
- **Detailing**
 - All internal insulation installations will need to be carefully detailed around the edges of window and door openings.
 - This will usually mean reducing the insulation thickness, possibly give rise to cold bridging and condensation.

IMPROVING INSULATION INTERNALLY (4)

- Technical matters that need to be considered include:
- **Cold bridging**
 - All breaks in insulation layers, including studwork construction to hold internal finishes, are potential cold bridges which can lead to condensation and rot.

IMPROVING INSULATION INTERNALLY (5)

- Technical matters that need to be considered include:
- **Cooling of external fabric**
 - Internal insulation means the temperature of the external fabric will be maintained at a consistently reduced level.
 - This can lead it to becoming wetter for longer, especially if it has been repointed in hard cement mortar.

IMPROVING INSULATION INTERNALLY (6)

- Because of these potential problems it is vitally important to calculate the risk of condensation before installing internal insulation.
- This will often be done free of charge by insulation manufacturers, but the resulting calculations may be based on very approximate estimates of the performance of traditional materials.
- It is therefore necessary to take a very careful view of the likely effects of changes to moisture and heat flows through the body of the wall and the construction details.



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