

# Building Interior

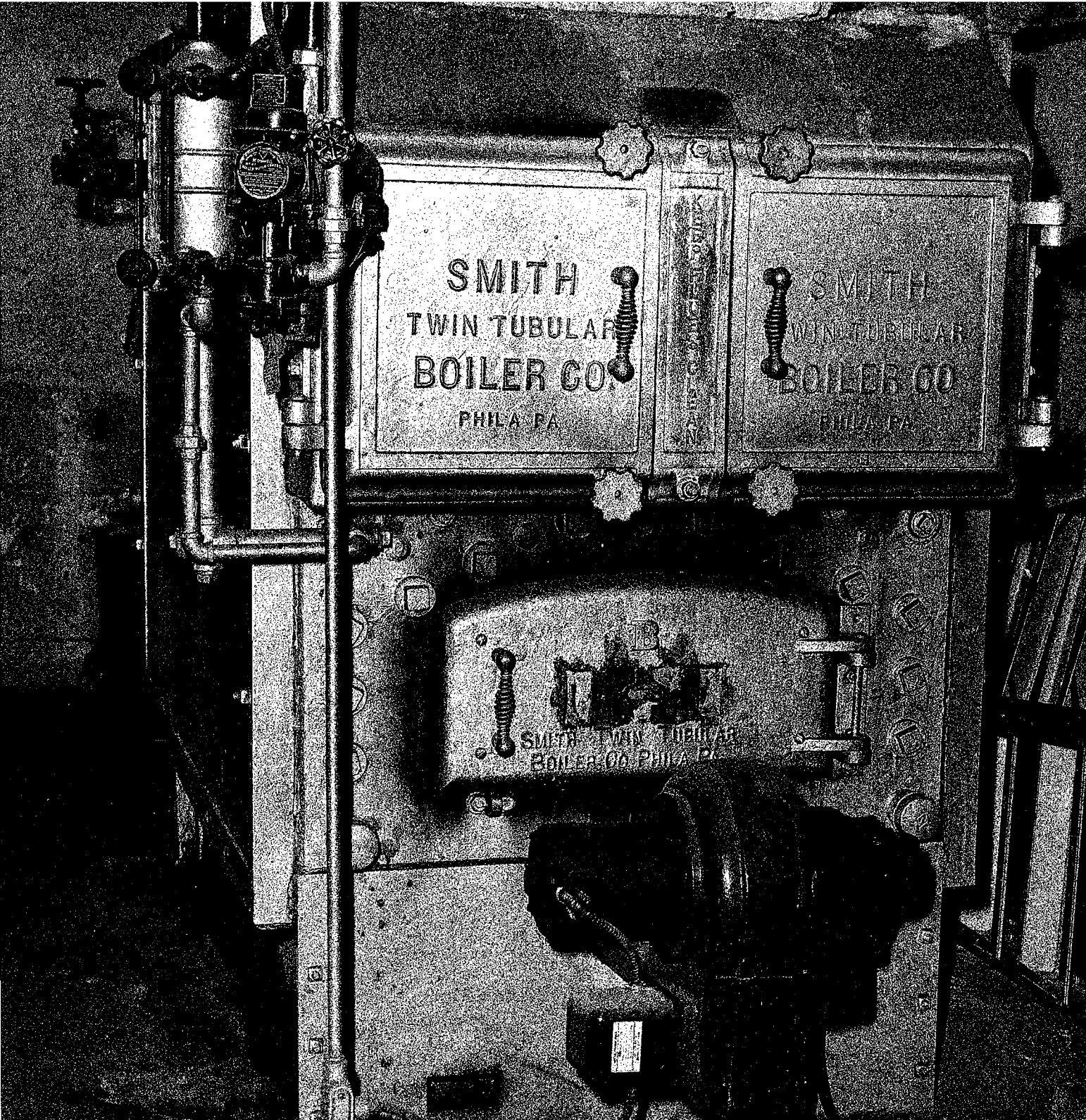
## *Mechanical Systems*

HEATING

AIR CONDITIONING

ELECTRICAL

AND PLUMBING



# Building Interior

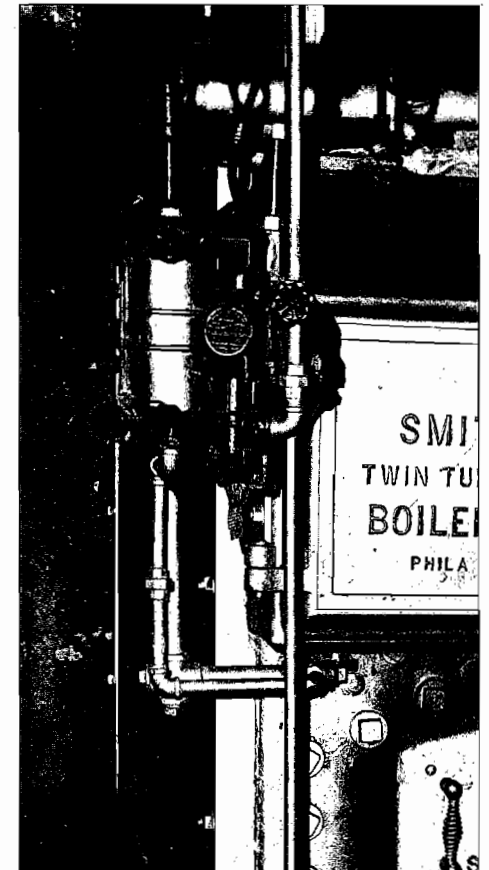
## *Mechanical Systems*

Mechanical, lighting and plumbing systems improved significantly with the coming of the Industrial Revolution. The 19th century interest in hygiene, personal comfort, and the reduction of the spread of disease was met with the development of central heating, piped water, piped gas, and networks of underground cast iron sewers. Vitreous tiles in kitchens, baths and hospitals could be cleaned easily and regularly. The mass production of cast iron radiators made central heating affordable to many; some radiators were elaborate and included special warming chambers for plates or linens. Ornamental grilles and registers provided decorative covers for functional heaters in public spaces. By the turn of the 20th century, it was common to have all of these modern amenities in a building.

The greatest impact of the 20th century on mechanical systems was the use of electricity for interior lighting, forced air ventilation, elevators for tall buildings, exterior lighting and electric heat. The new age of technology brought an increasingly high level

of design and decorative art to the functional elements of mechanical, electrical and plumbing systems.

The visible decorative features of historic mechanical systems such as grilles, lighting fixtures, and ornamental switchplates may contribute to the overall historic character of the building and should thus be retained and repaired, whenever possible. Their identification needs to take place together with an evaluation of their physical condition early in project planning. On the other hand, the functioning parts of many older systems, such as compressors and their ductwork, and wiring and pipes may often need to be upgraded or entirely replaced in order to accommodate the new use and to meet code requirements.





The visible features of historic mechanical systems, such as heating, lighting, and plumbing, may sometimes help define the overall character of an interior.

**Recommended**

***Identify, retain and preserve***

Identifying, retaining, and preserving visible features of early mechanical systems that are important in defining the overall historic character of the building, such as radiators, vents, fans, grilles, plumbing fixtures, switchplates, and lights.

**Not Recommended**

Removing or radically changing features of mechanical systems that are important in defining the overall historic character of the building so that, as a result, the character is diminished.

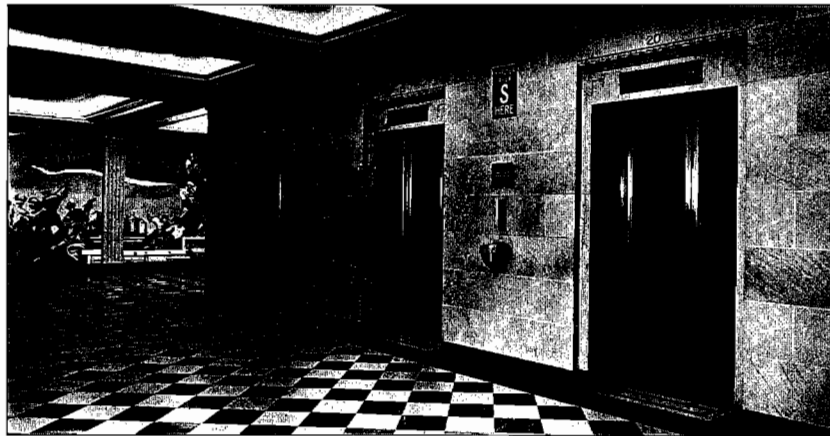


Photo: Brooks Photographers, HABS Collection.

The bronze elevator doors and light coffers play an important decorative role in this early-20th century administrative building.

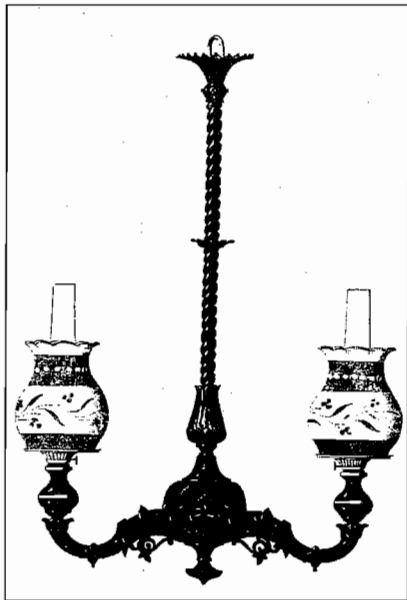
***Protect and maintain***

Protecting and maintaining mechanical, plumbing, and electrical systems and their features through cyclical cleaning and other appropriate measures.

Failing to provide adequate protection of materials on a cyclical basis so that deterioration of mechanical systems and their visible features results.

Preventing accelerated deterioration of mechanical systems by providing adequate ventilation of attics, crawlspaces, and cellars so that moisture problems are avoided.

Enclosing mechanical systems in areas that are not adequately ventilated so that deterioration of the systems results.



A gaslight may be converted for electrical use to extend its functional and decorative life.



*Both function and design elegance are evident in this row of cast iron elevator cages and light fixtures adorning an early-20th century commercial building.*

**Recommended**

Improving the energy efficiency of existing mechanical systems to help reduce the need for elaborate new equipment. Consideration should be given to installing storm windows, insulating attic crawl space, or adding awnings, if appropriate.

**Repair**

Repairing mechanical systems by augmenting or upgrading system parts, such as installing new pipes and ducts; rewiring; or adding new compressors or boilers.

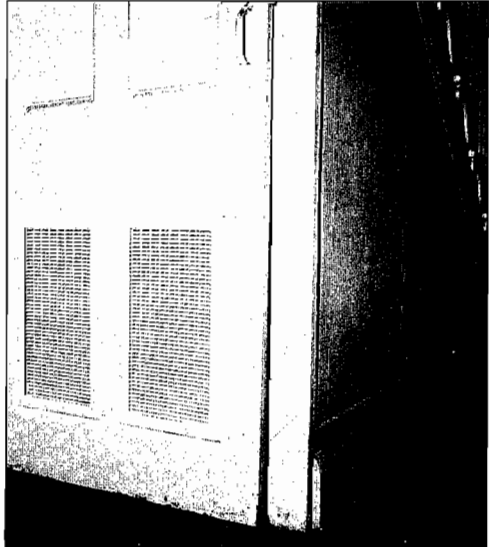
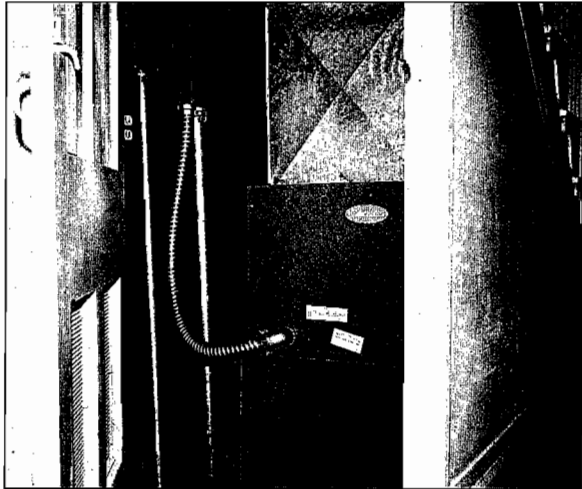
**Not Recommended**

Installing unnecessary air conditioning or climate control systems which can add excessive moisture to the building. This additional moisture can either condense inside, damaging interior surfaces, or pass through interior walls to the exterior, potentially damaging adjacent materials as it migrates.

Replacing a mechanical system or its functional parts when it could be upgraded and retained.

*The historic window on a primary facade has been shortened and the area below it filled in with brick in order to install a through-the-wall air conditioning unit. In addition to changing the window size and destroying the sill, the unit itself is visually obtrusive.*



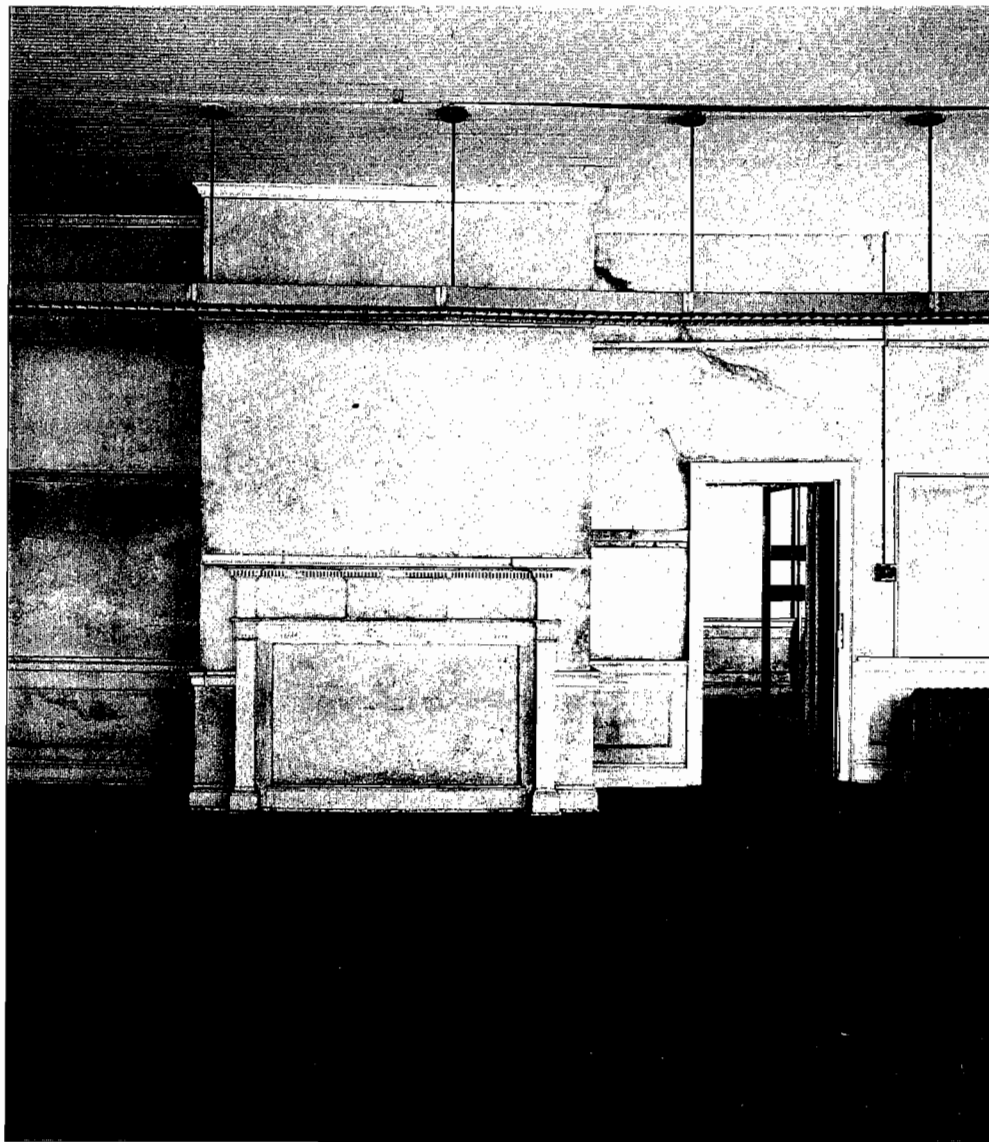


*When a late-19th century single-family house was converted to four rental units, the new HVAC system was installed under the central stair. When the door is closed, only the vents indicate its presence.*

**Recommended**

**Replace**

Replacing in kind—or with compatible substitute material—those visible features of mechanical systems that are either extensively deteriorated or are prototypes such as ceiling fans, switchplates, radiators, grilles, or plumbing fixtures.



*This row of hanging fluorescent lights installed in an earlier renovation mars an otherwise classically detailed interior. They have also caused the historic beaded ceiling to pull away from the joists.*

**Not Recommended**

Installing a replacement feature that does not convey the same visual appearance.

*The following work is highlighted to indicate that it represents the particularly complex technical or design aspects of rehabilitation projects and should only be considered after the preservation concerns listed above have been addressed.*

#### Recommended

##### ***Alterations/Additions for the New Use***

Installing a completely new mechanical system if required for the new use so that it causes the least alteration possible to the building's floor plan, the exterior elevations, and the least damage to the historic building material.

Providing adequate structural support for new mechanical equipment.

Installing the vertical runs of ducts, pipes, and cables in closets, service rooms, and wall cavities.

Installing air conditioning units if required by the new use in such a manner that historic features are not damaged or obscured and excessive moisture is not generated that will accelerate deterioration of historic materials.

Installing heating/air conditioning units in the window frames in such a manner that the sash and frames are protected. Window installations should be considered only when all other viable heating/cooling systems would result in significant damage to historic materials.

#### Not Recommended

Installing a new mechanical system so that character-defining structural or interior features are radically changed, damaged, or destroyed.

Failing to consider the weight and design of new mechanical equipment so that, as a result, historic structural members or finished surfaces are weakened or cracked.

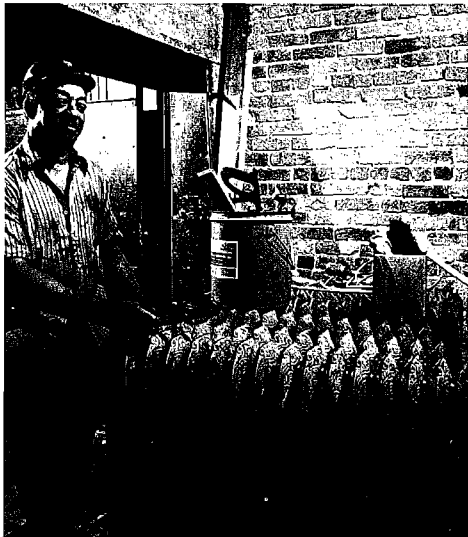
Installing vertical runs of ducts, pipes, and cables in places where they will obscure character-defining features.

Concealing mechanical equipment in walls or ceilings in a manner that requires the removal of historic building material.

Installing "dropped" acoustical ceiling to hide mechanical equipment when this destroys the proportions of character-defining interior spaces.

Cutting through features such as masonry walls in order to install air conditioning units.

Radically changing the appearance of the historic building or damaging or destroying windows by installing heating/air conditioning units in historic window frames.



# Building Site

