



4LEAF, INC.

ENGINEERING • CONSTRUCTION MANAGEMENT
BUILDING INSPECTION • PLAN CHECK

Inspector Field Report

City of Benicia

SAP Evaluation of 670 East H street.

Project#: Benicia

4LEAF#: ???

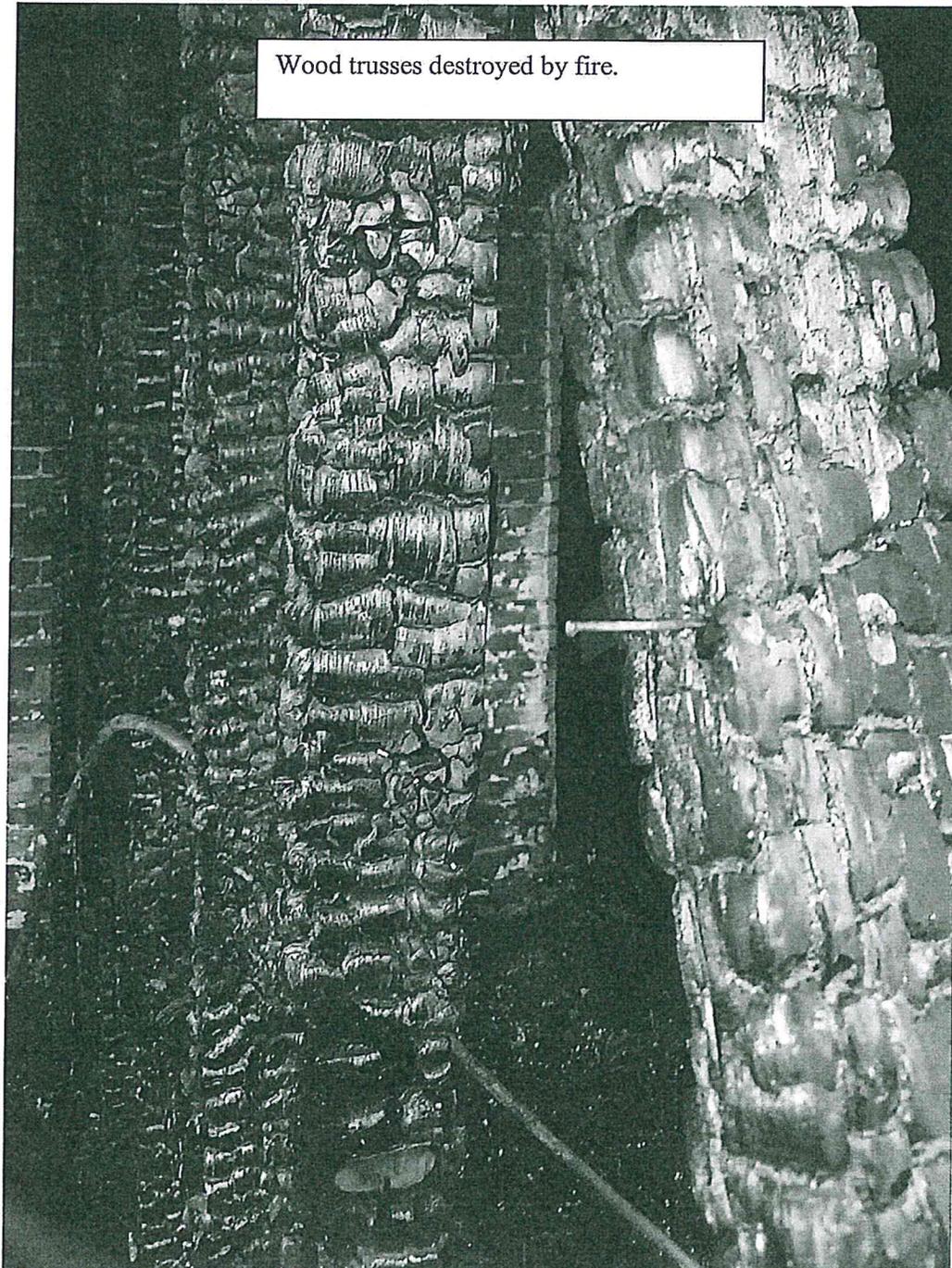
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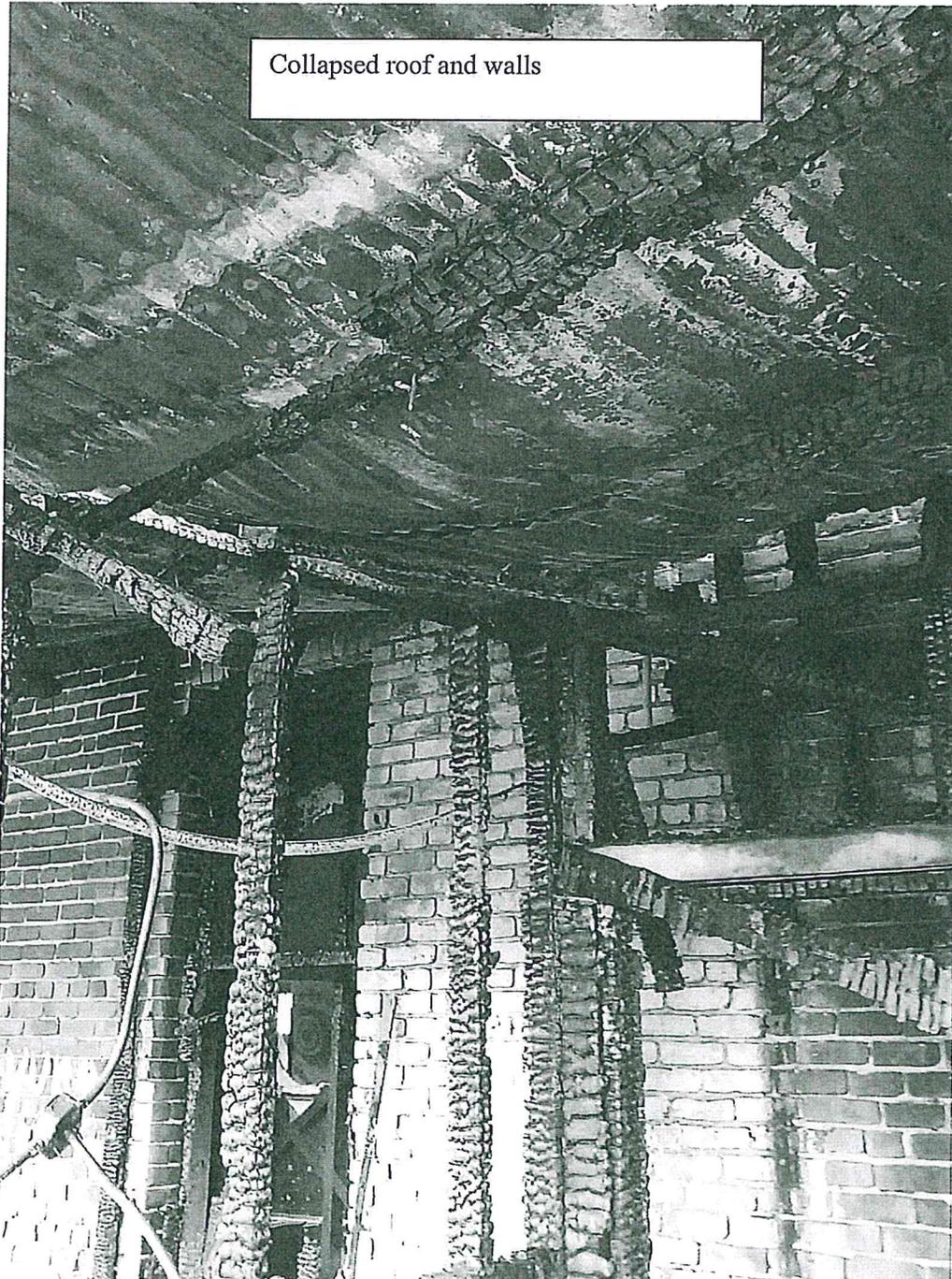
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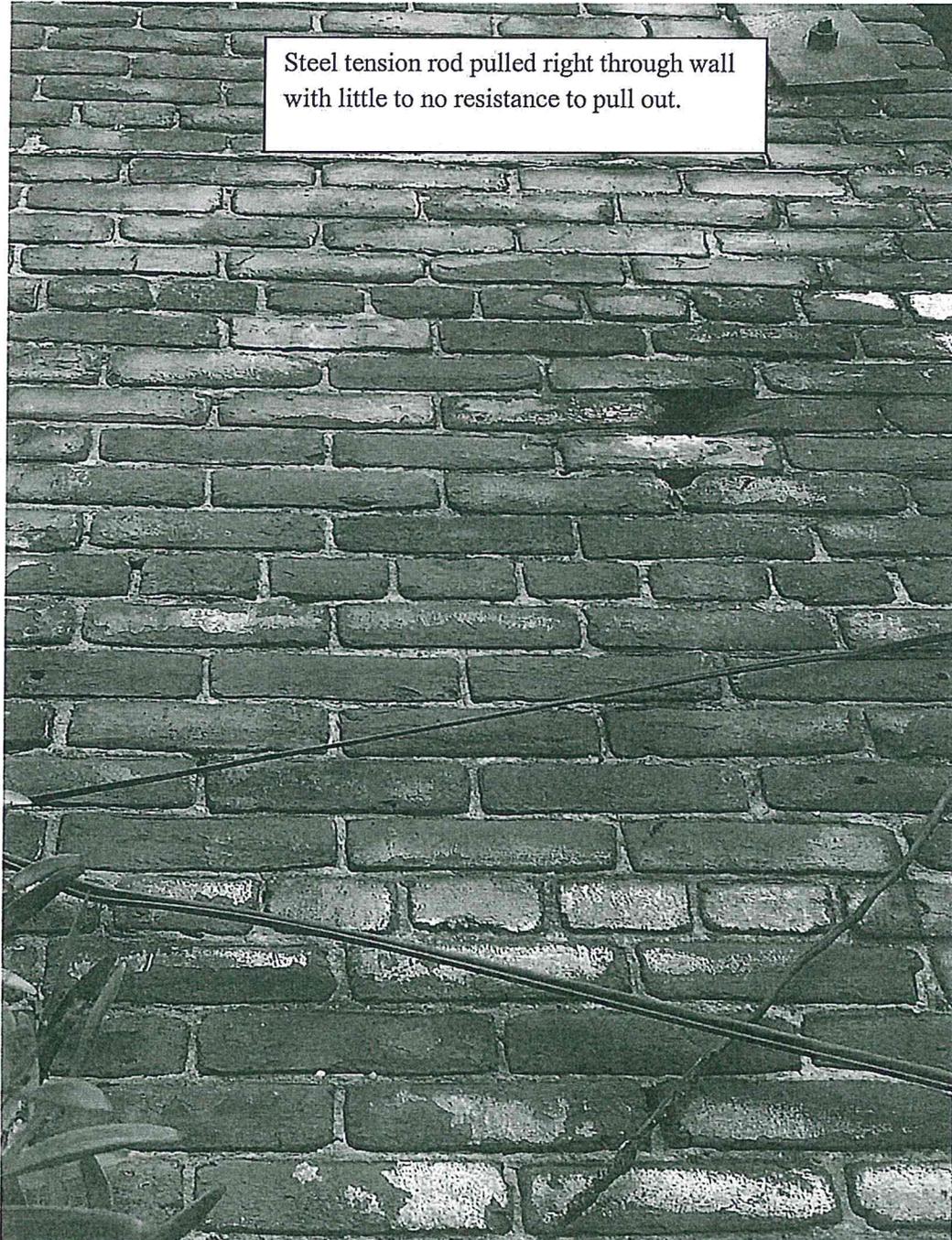
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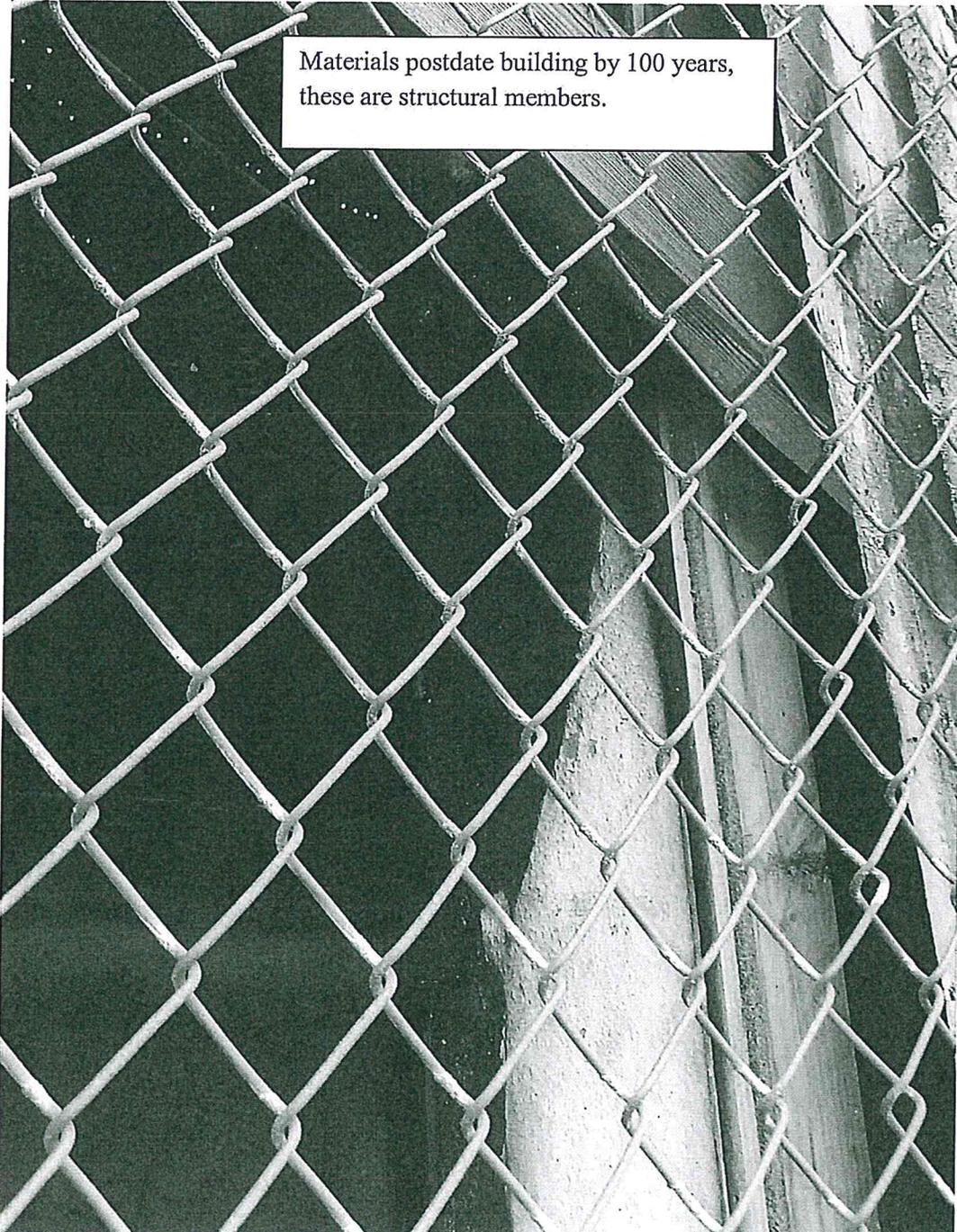
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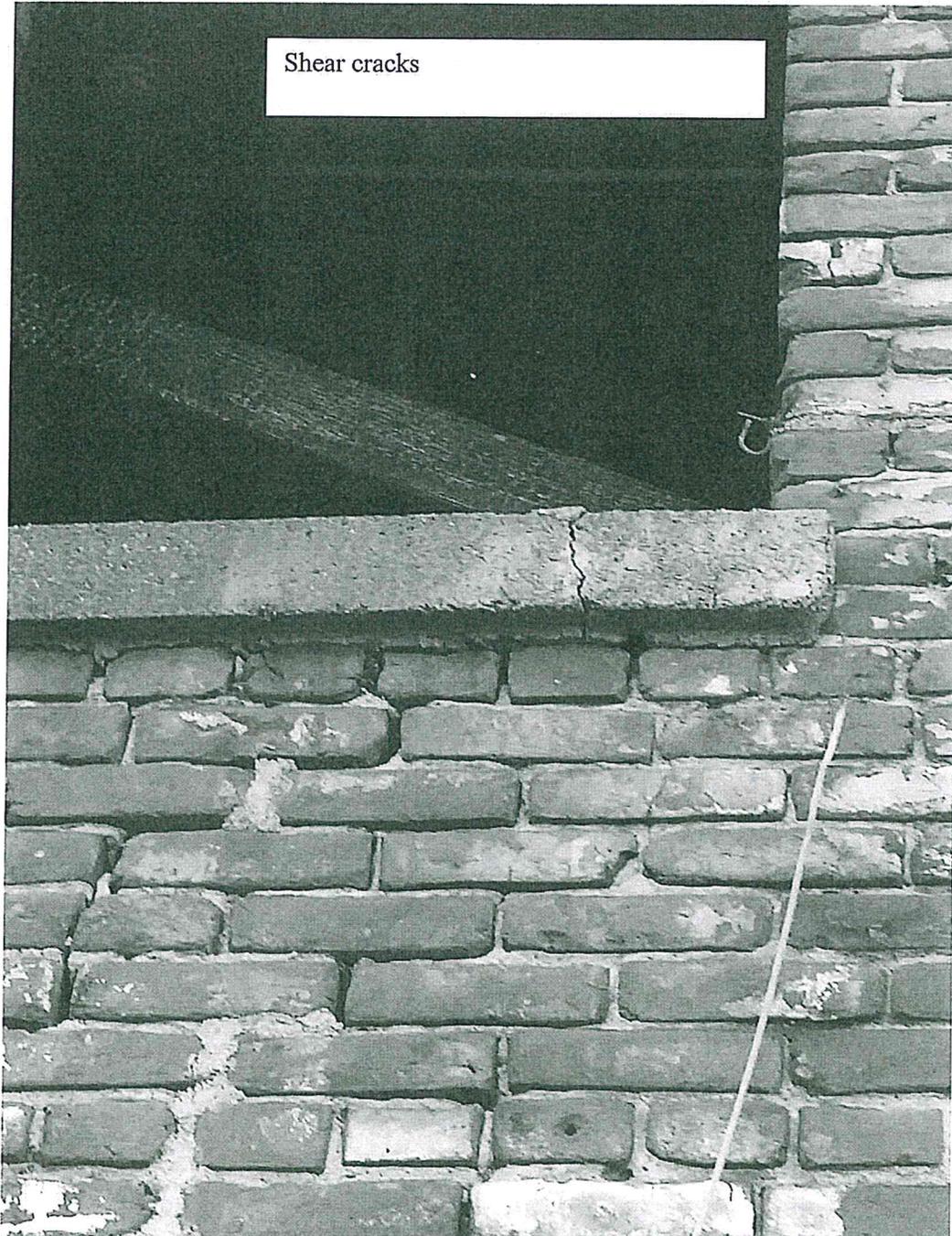
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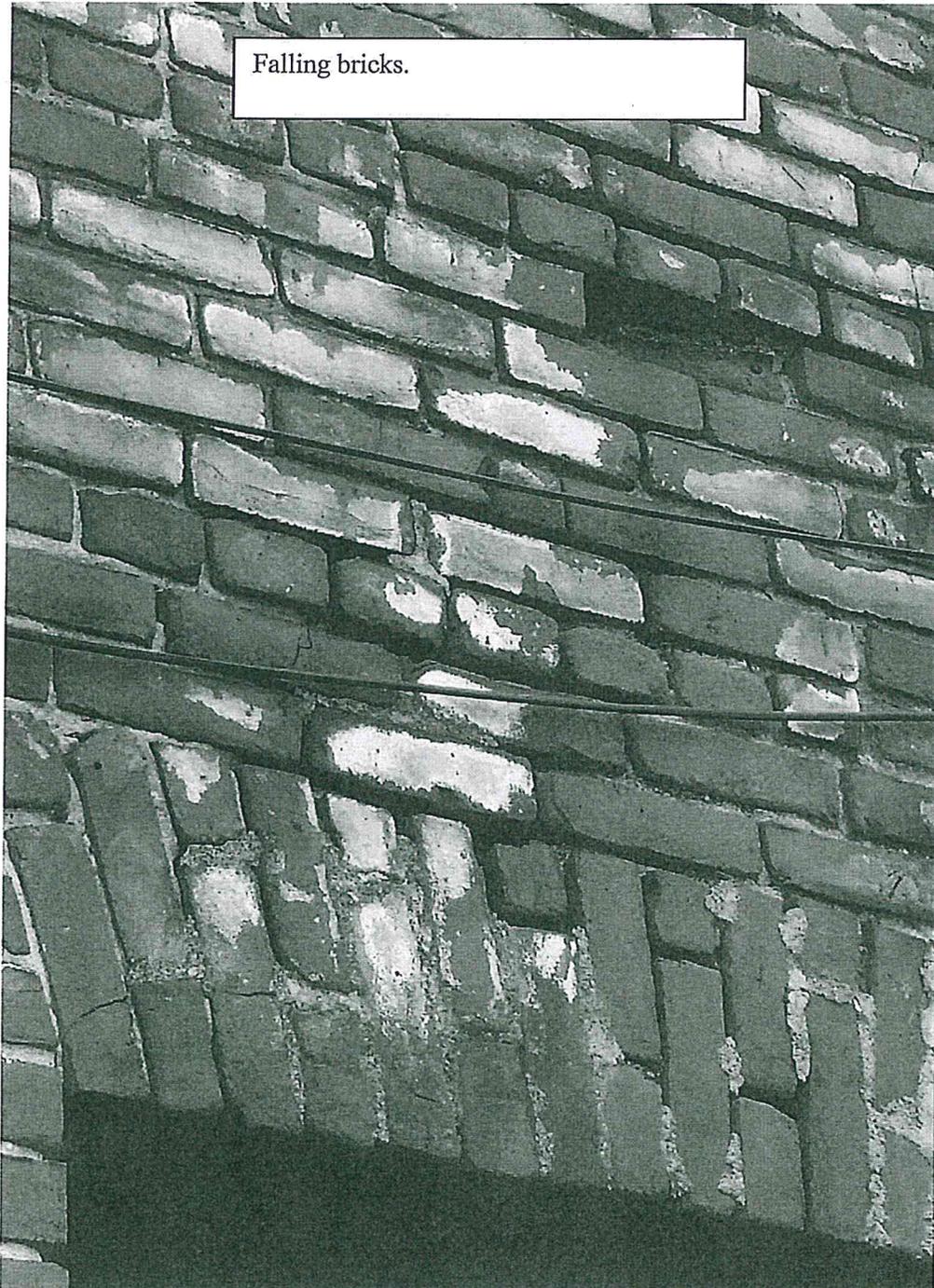
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Current Conditions have created very eccentric loading.





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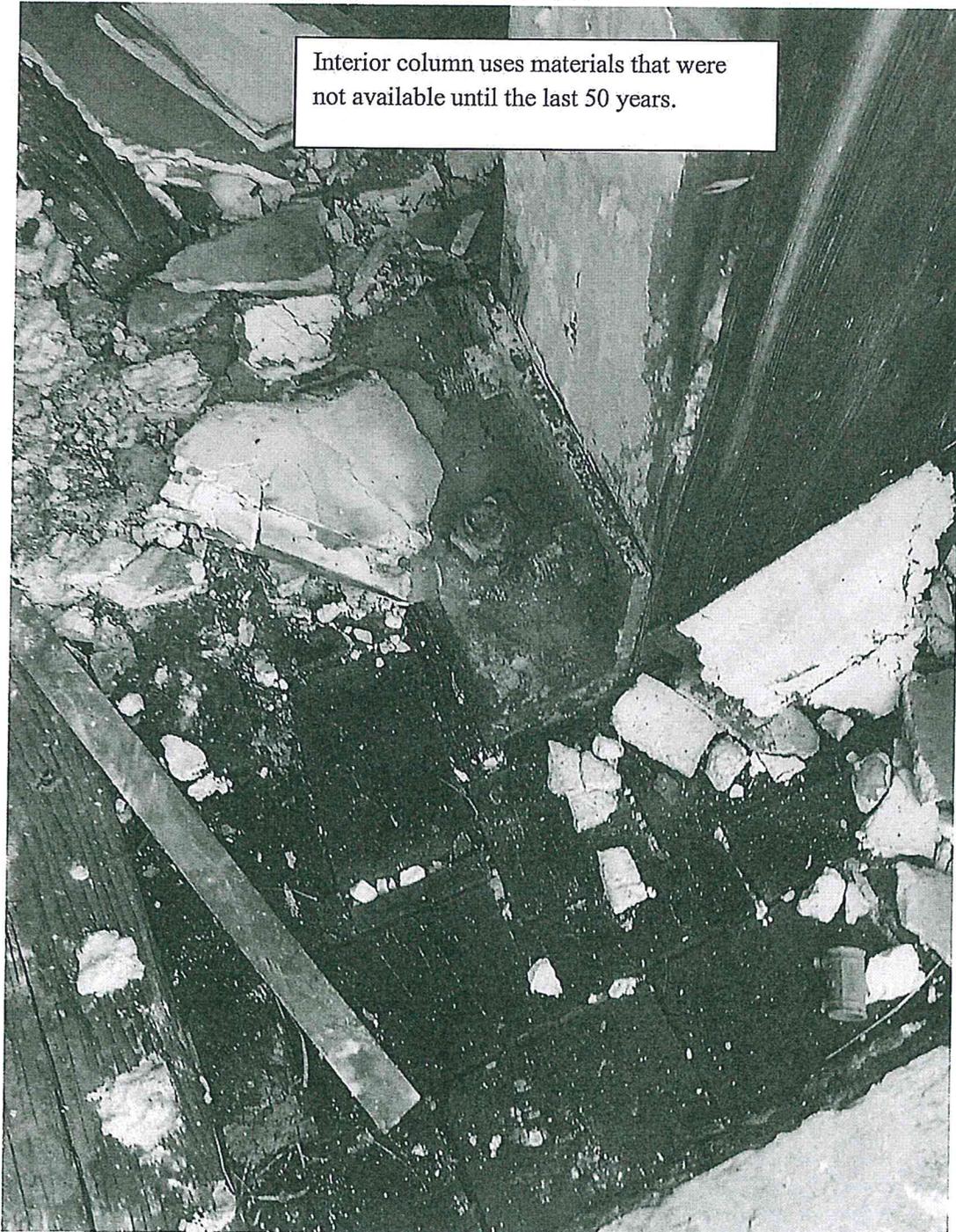
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Interior column uses materials that were
not available until the last 50 years.



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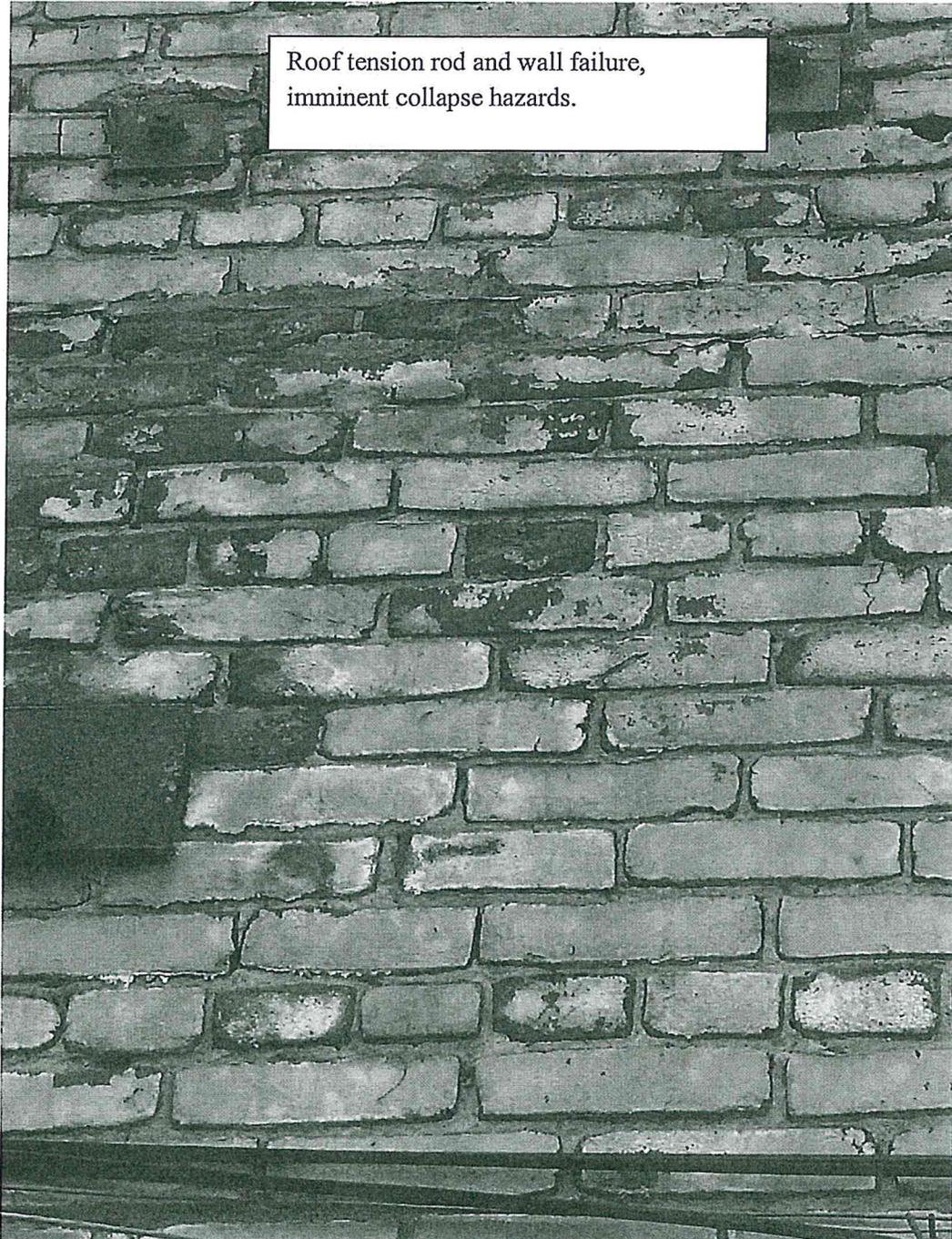
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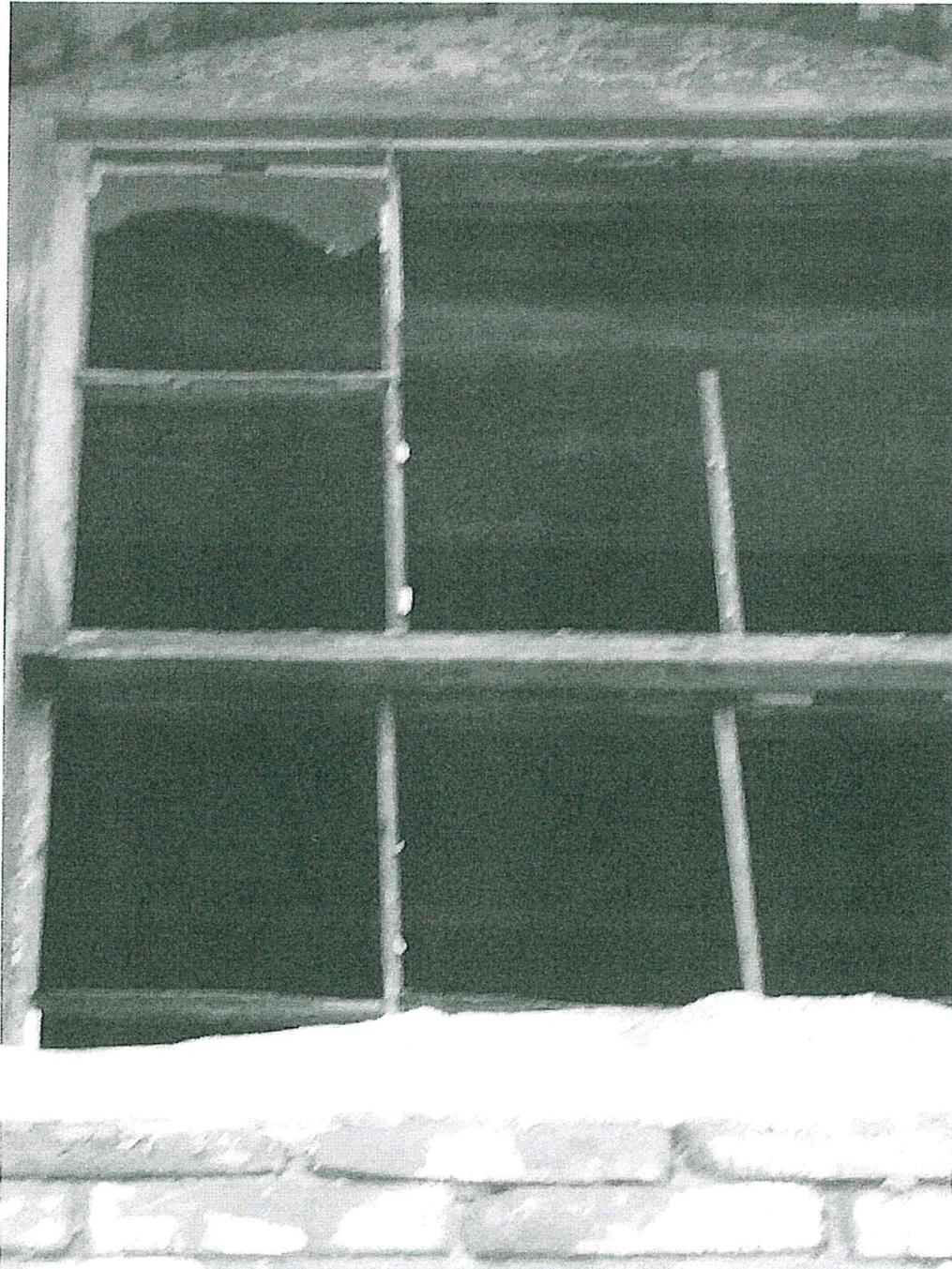
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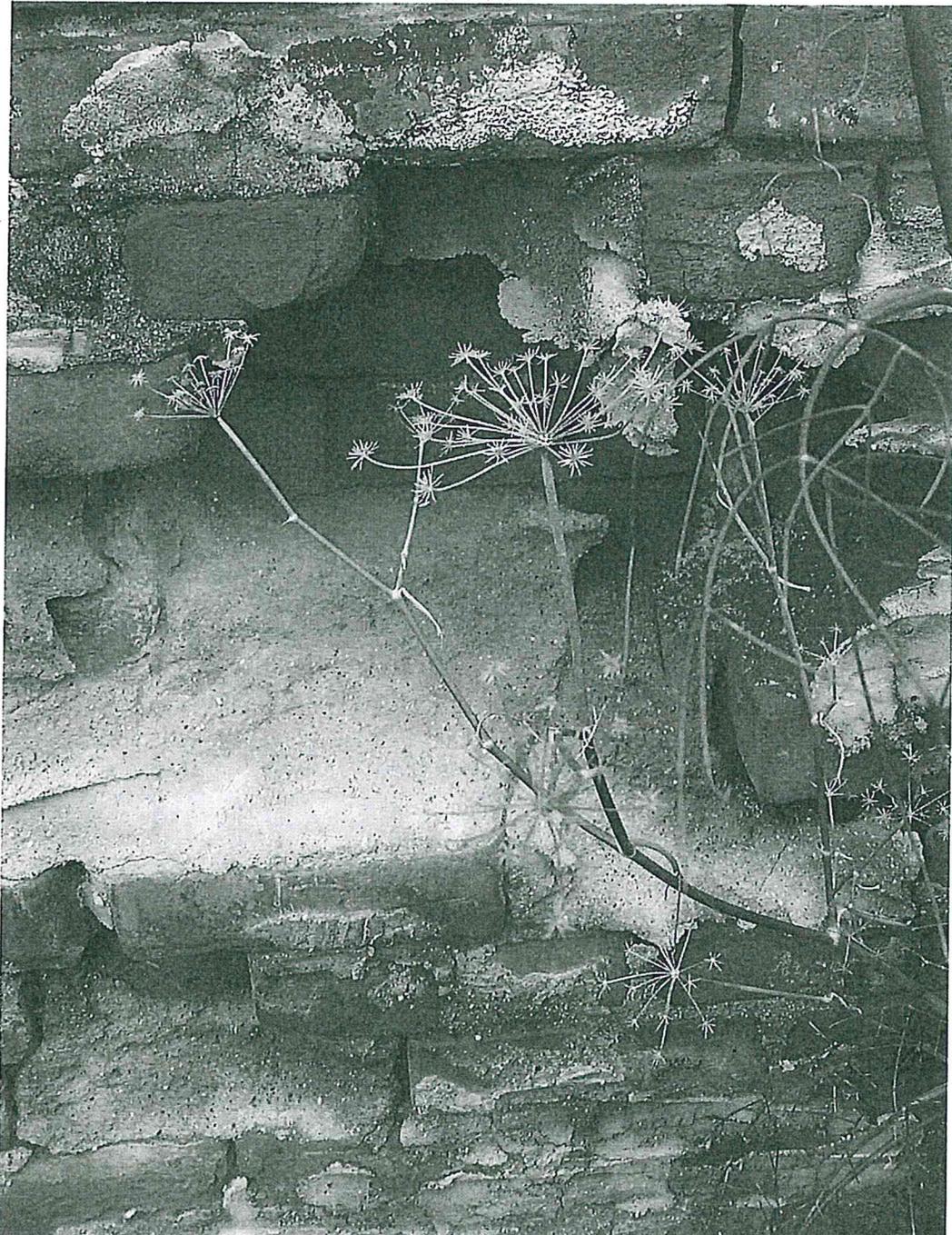
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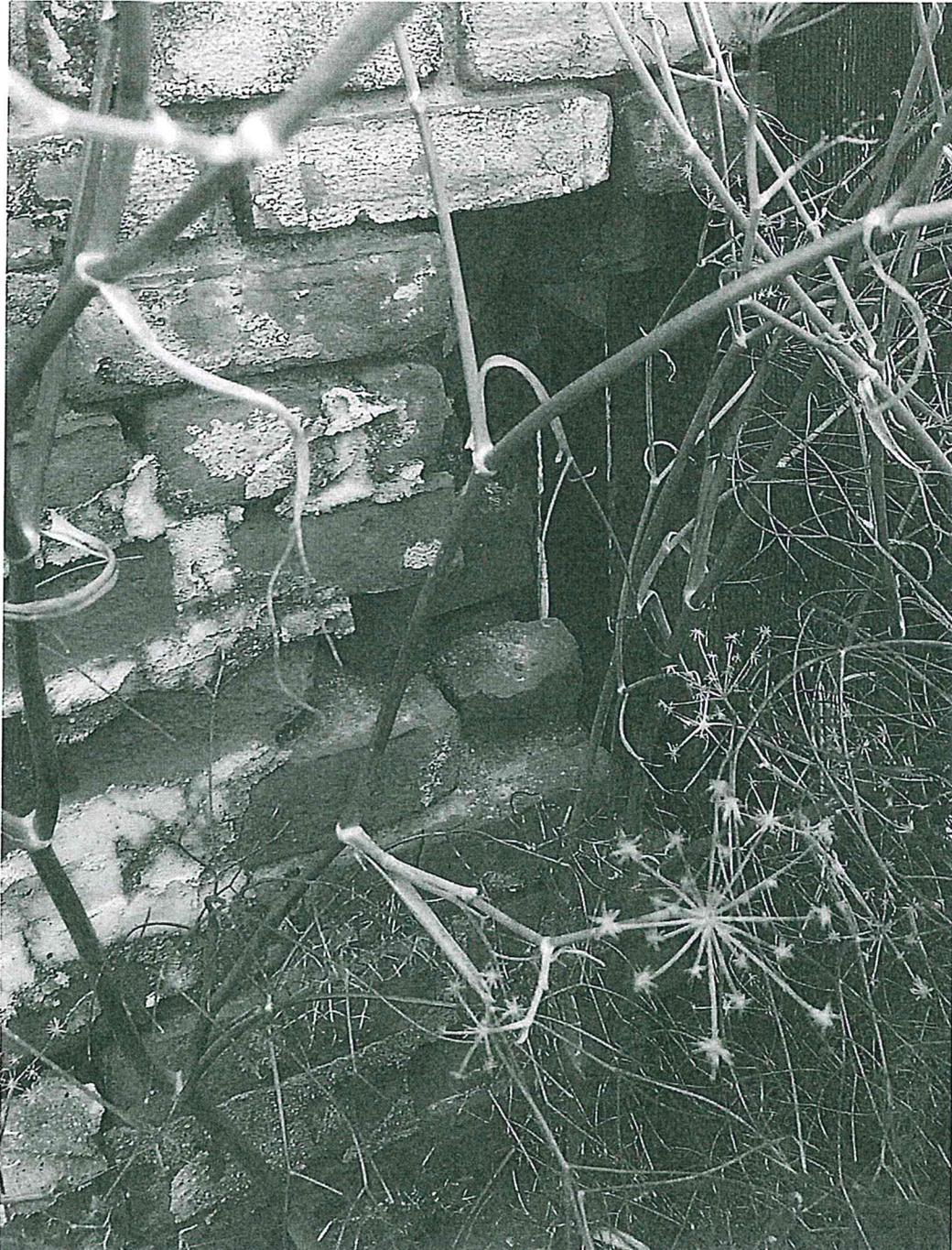
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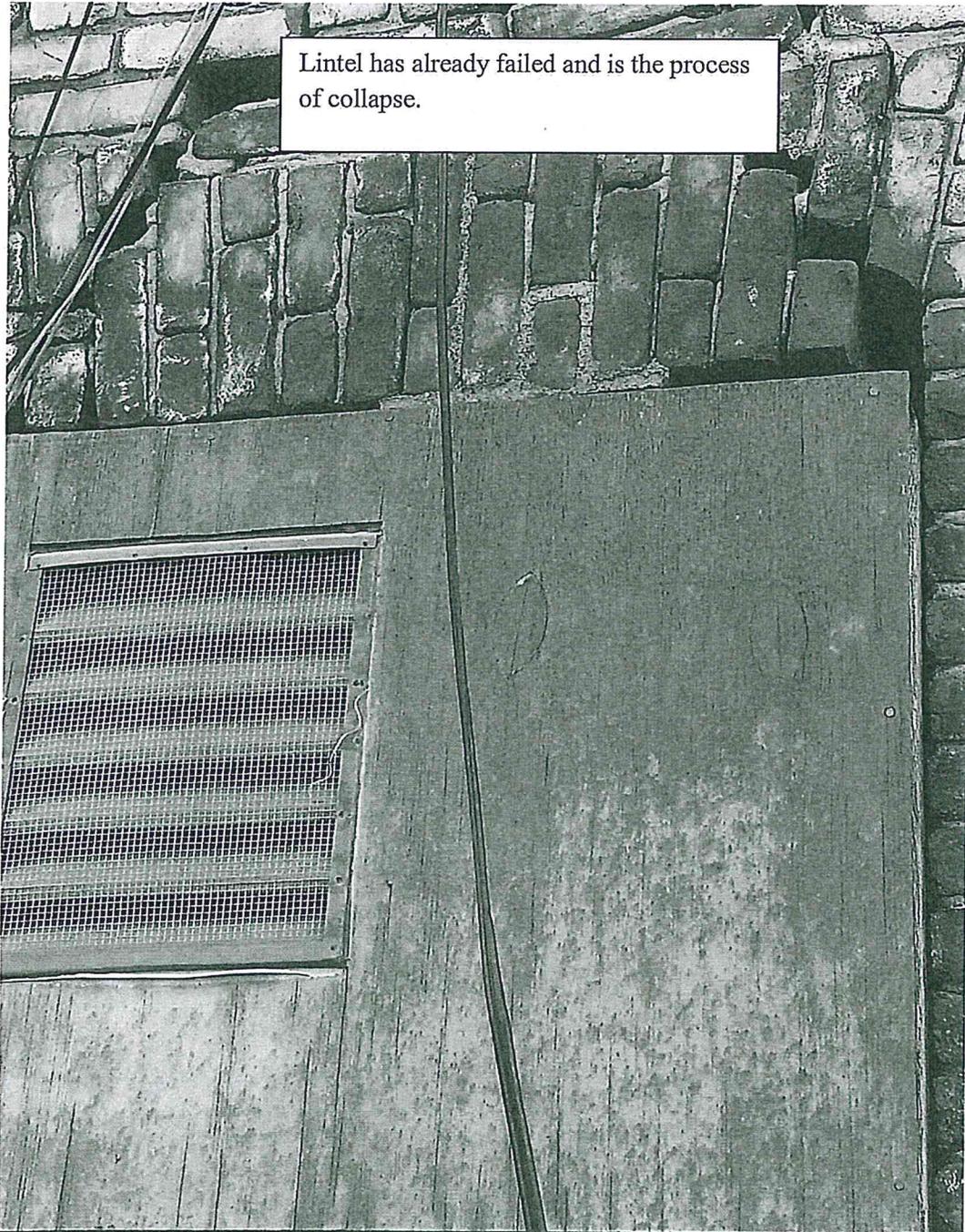
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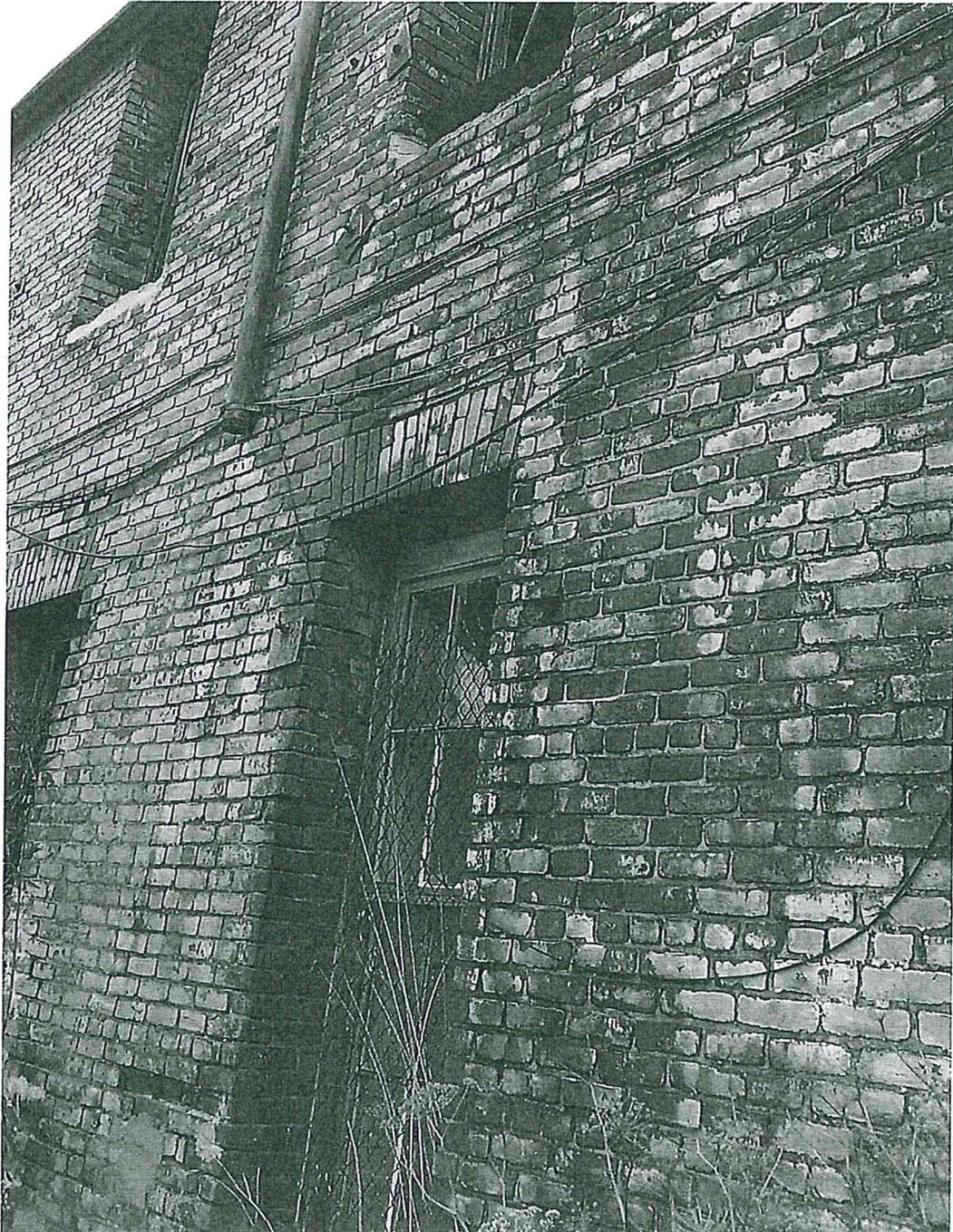
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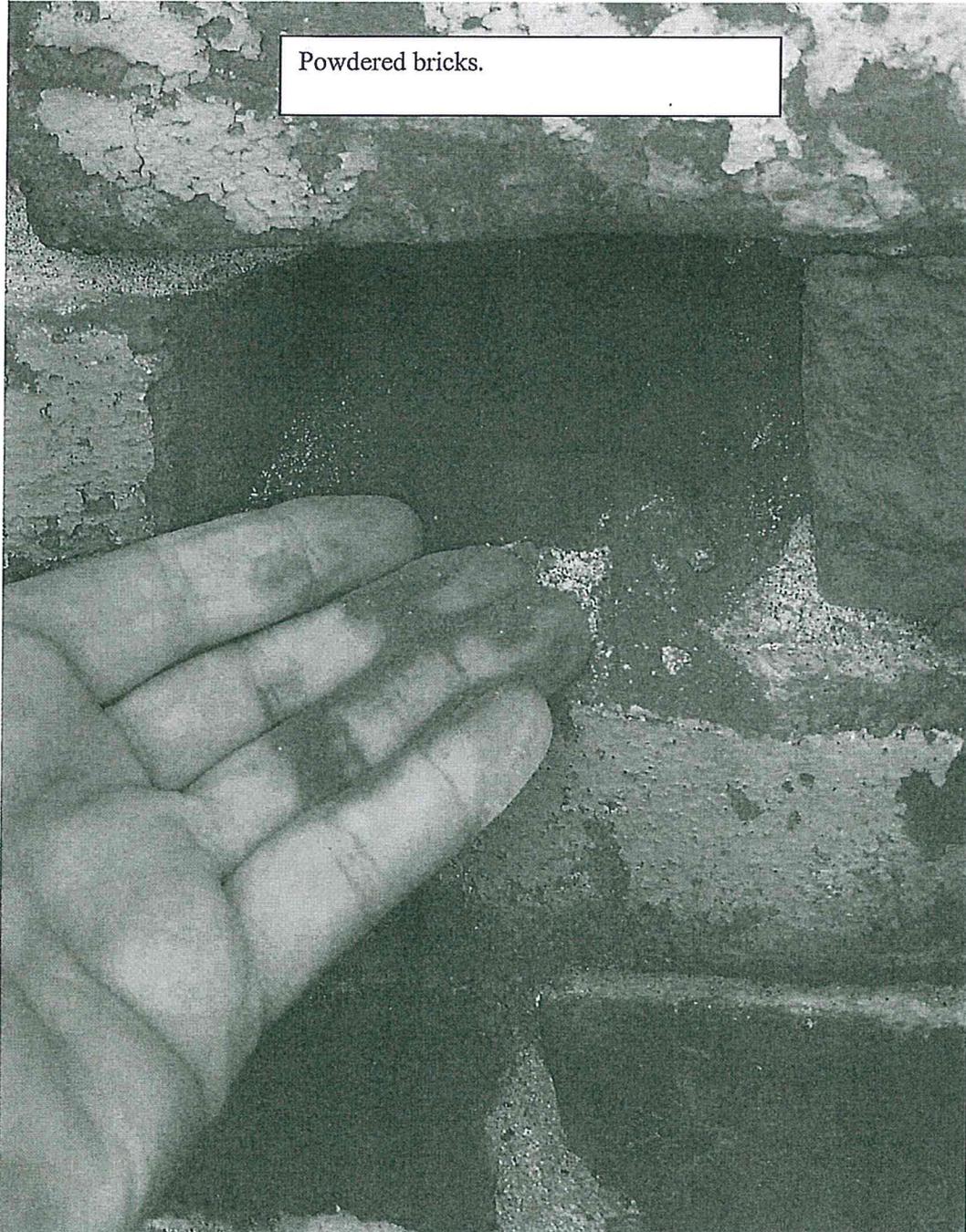
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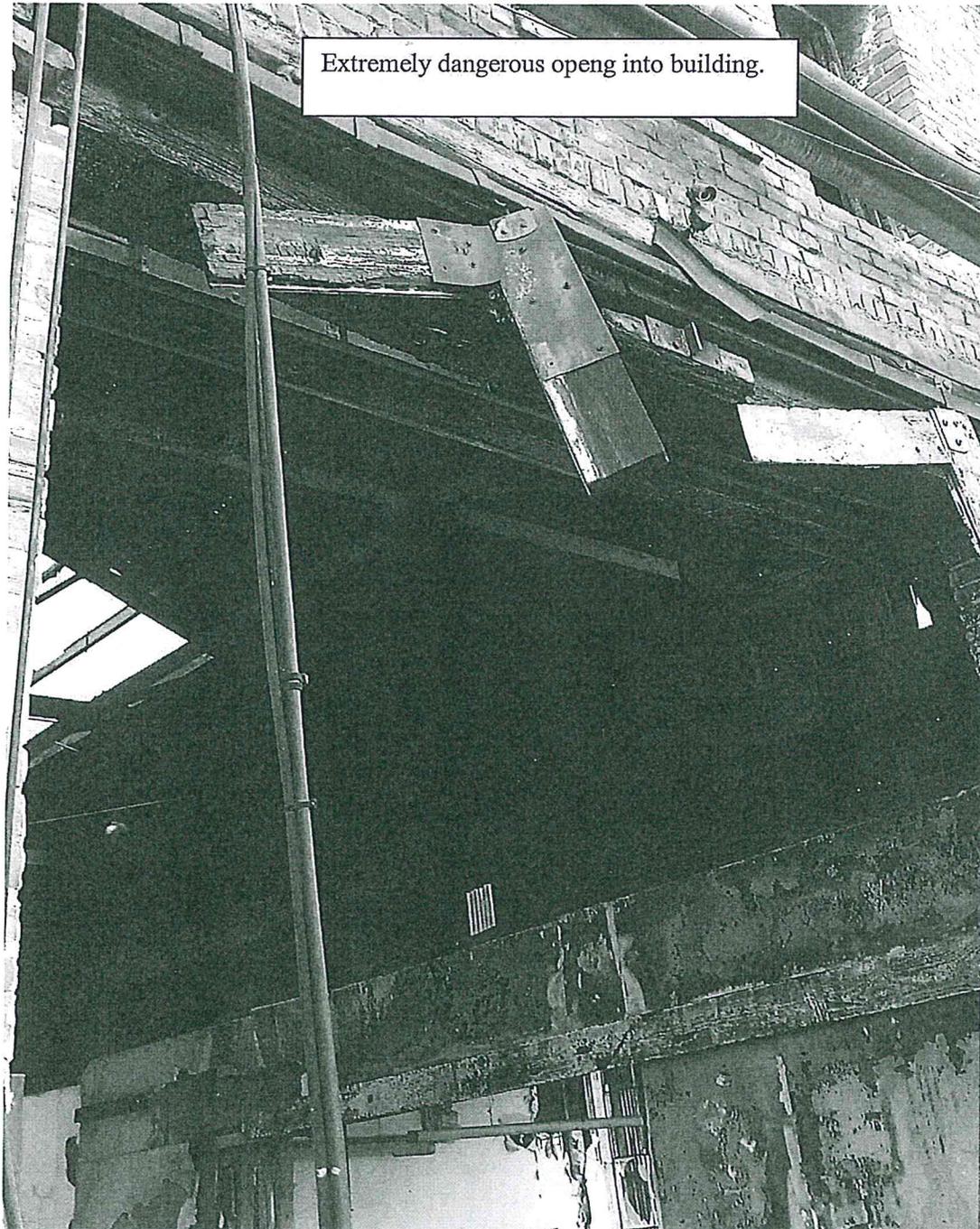
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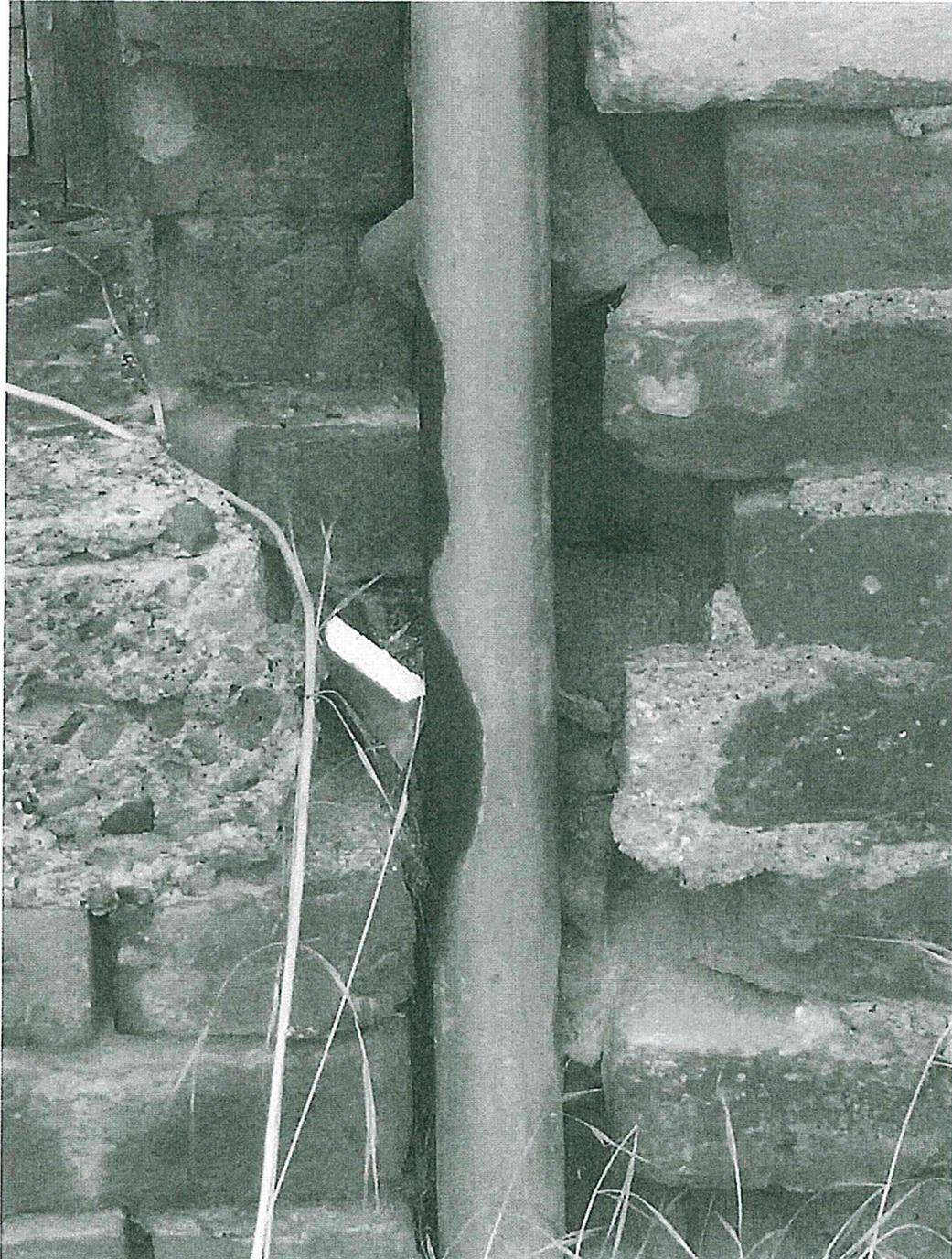
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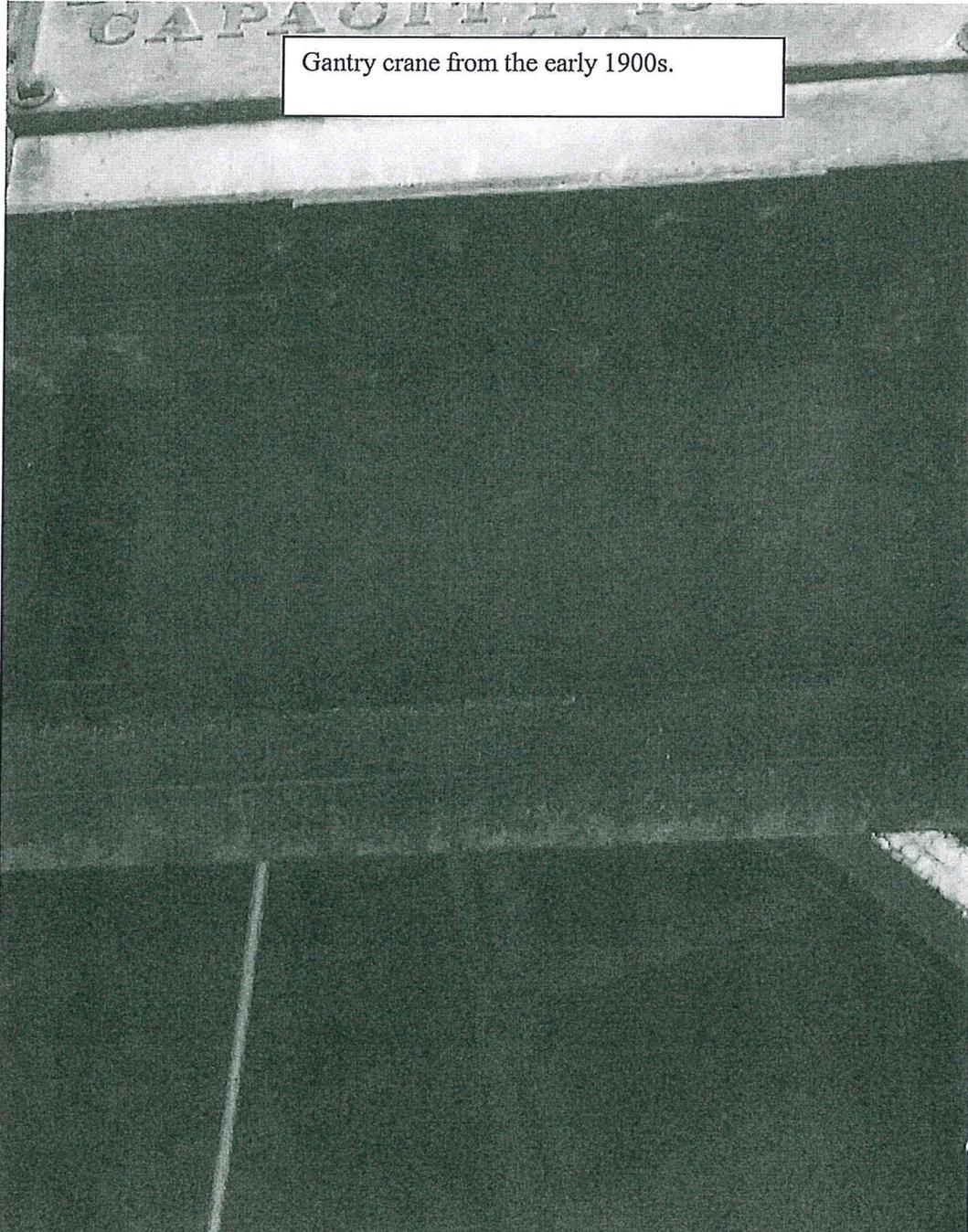
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Burned out illegal modern construction.



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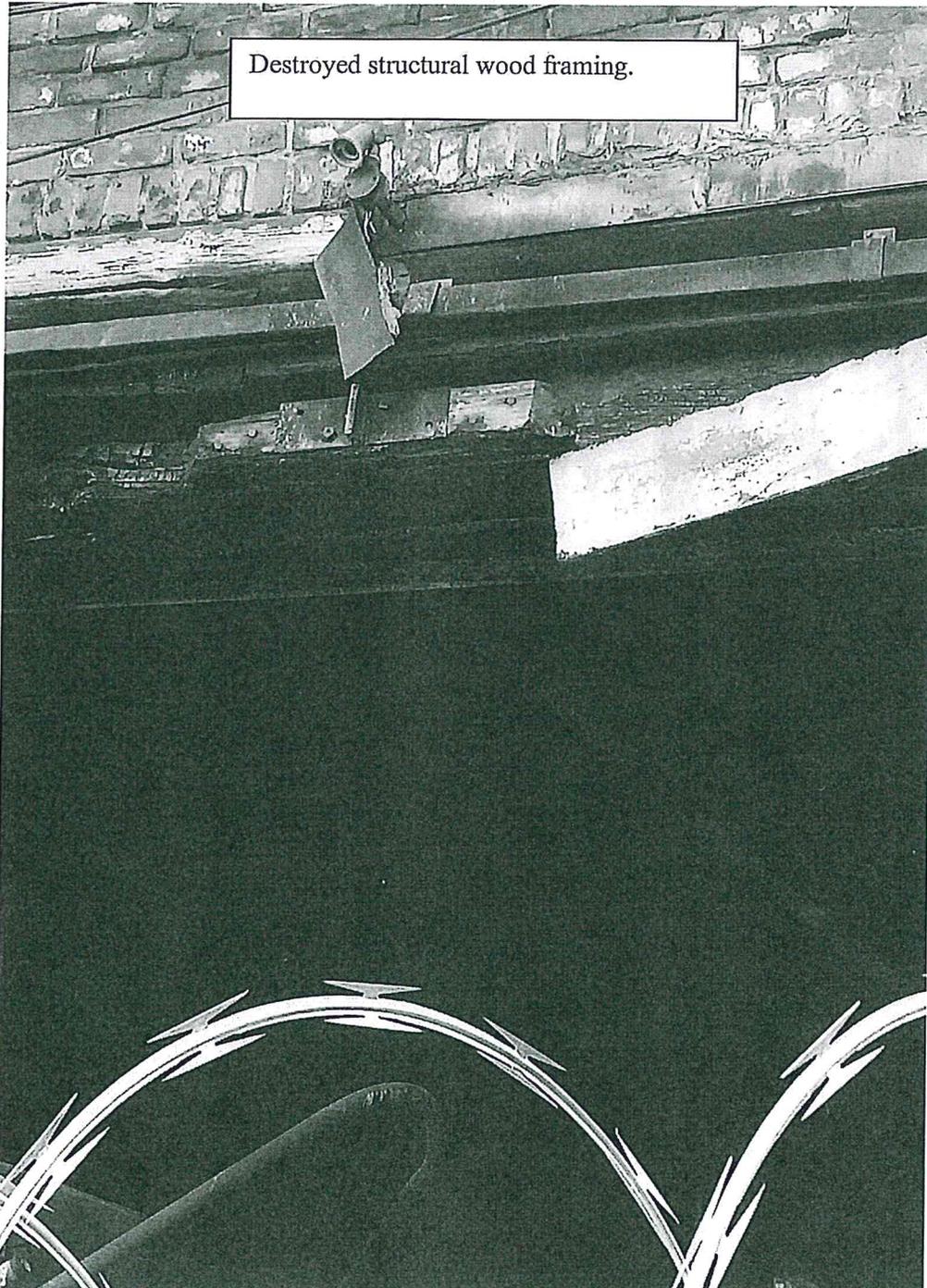
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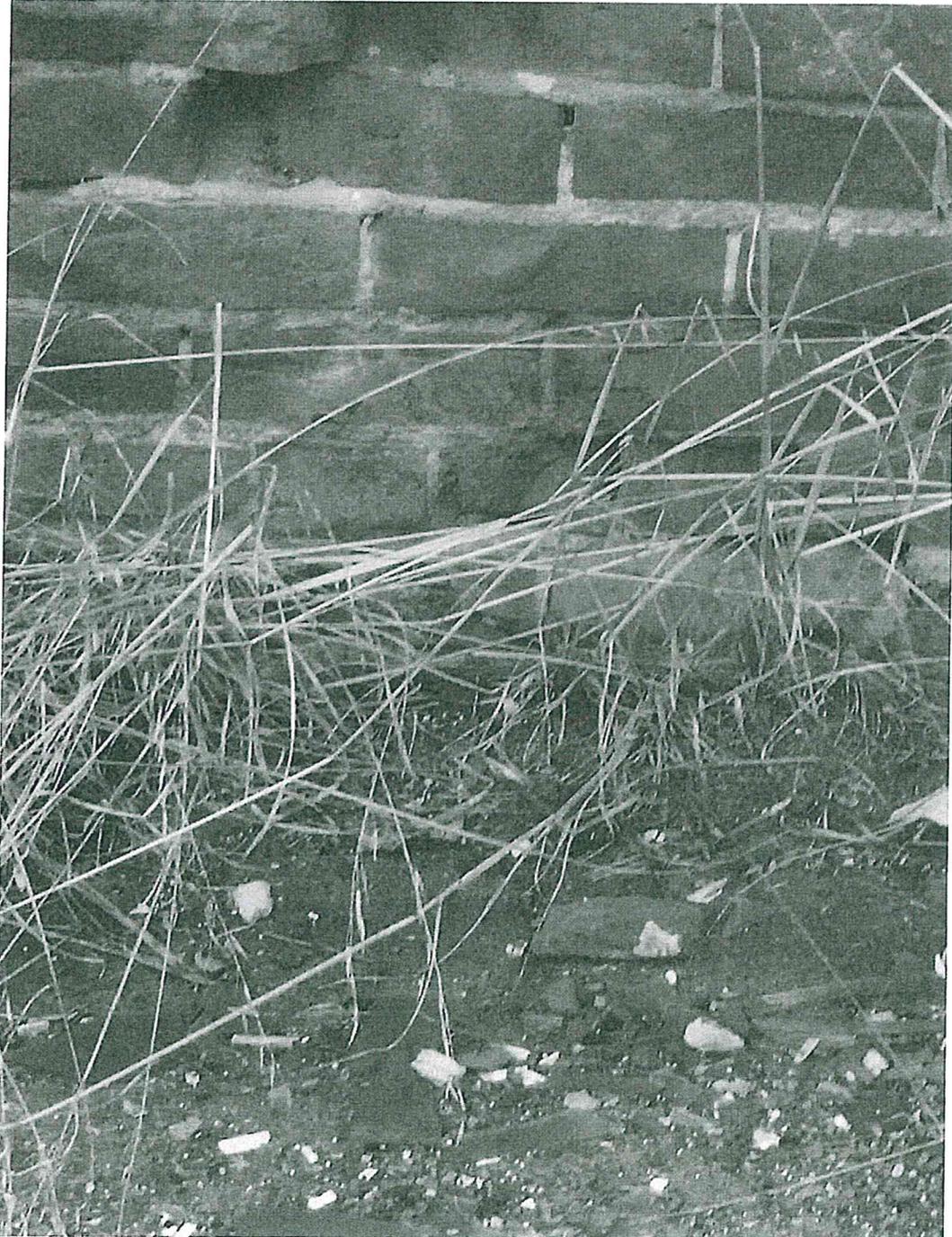
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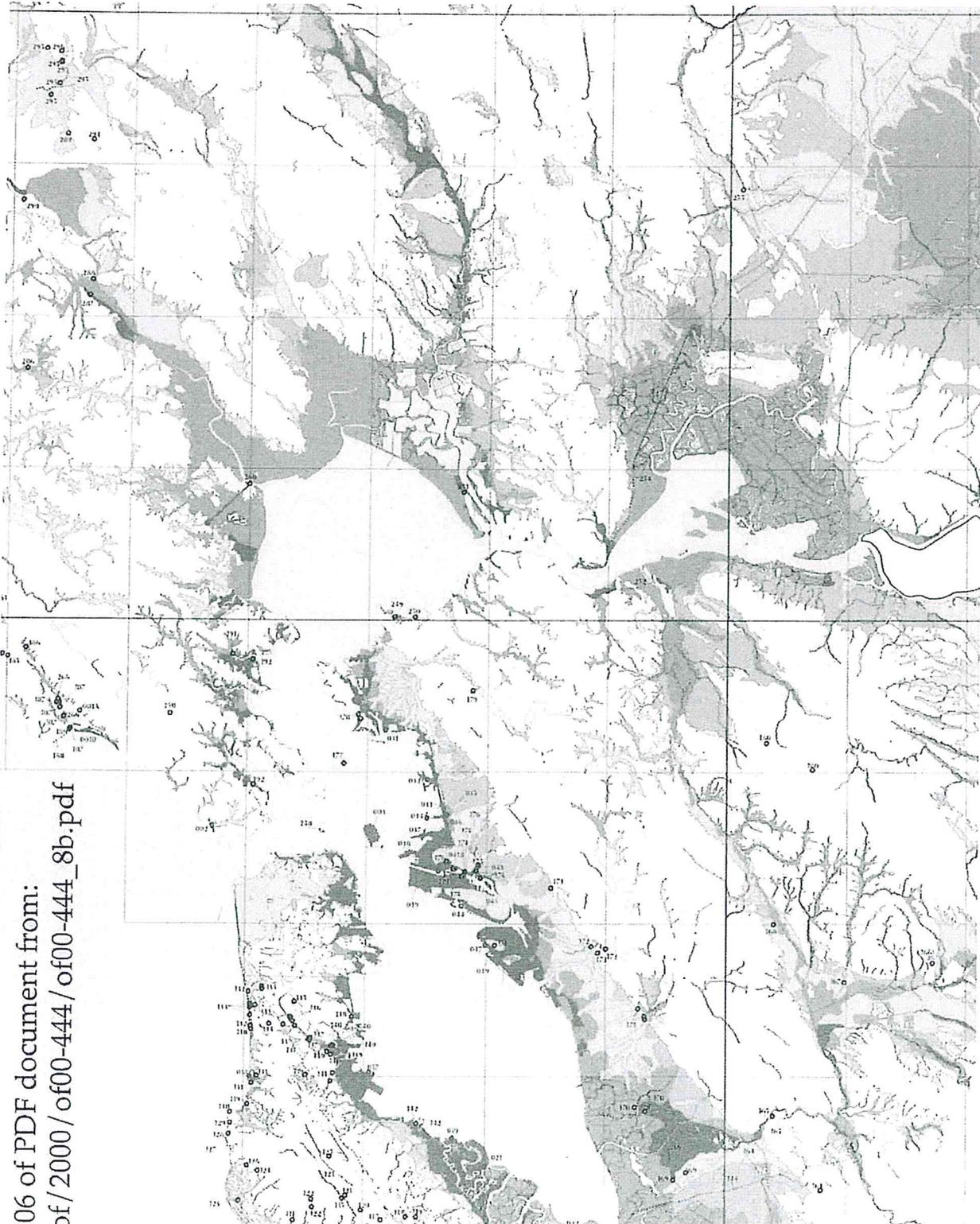
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II. Executive Summary;

The buildings located at 670 H Street in Benicia California are over 100 years old. They are constructed of brick and wood mostly with some steel and do not appear to have a proper foundations which is required in California for any project built after 1936. The California Building Code was originally published by the "Pacific Building Officials" and was adopted by California in 1933 and was in full force and effect by 1936. Some of the work done to this building has been done since 1936. Both buildings have had significant alterations since 1936.

The buildings and structures in the area of the subject building were identified as being originally built around the same time, roughly 100 plus years ago and seem to retain very little of the original architectural theme. The front of the foundry building appears to have been modified sometime around the 1970's based on materials observed in the building's construction including prefabricated metal and/or wood structural members which were not available until the 1950's. The broken lintel above the large main doors has had work done after the 1950's. There appears to be sidewalks and slabs placed in the last 40 years but are failing due to the soil being highly corrosive. I was able to scrape the concrete away from the top of grade with my foot demonstrating a compressive concrete strength of less than 200 psi when the design would have been 3000 psi. This tells us the concrete has completely degraded back to its base constituents. Current requirements for the wall system used brick/masonry system are a minimum of 1000 psi comprehensive strength but what was inspected on site rarely would resist hand pressures of 60 psi.

The current condition of the subject buildings are extremely poor and continual failure is anticipated due to site conditions and lack of appropriate strength of the materials that make up these buildings. Most buildings are built with a design life of 50 years. The concrete used for these buildings has a life span of 100 years, 50 years until it cures and reaches its ultimate strength at which point it immediately begins to degrade. In the case of these buildings, if it had been built entirely out of concrete it would likely still be failing at this point in time. Dozens of bricks also crumbled into dust when touched. The important thing about a modern concrete foundation building compared to the subject building is that



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because the interface of the concrete to soil is done over a larger area the loads are greatly dispersed. In a brick foundation building the loads imposed by the weight of the building are only supported by a very small area of interface where the brick wall meets the soil, even less area after years of differed maintenance, rot and erosion. In the case being investigated the floors are wooden and are inundated with rot and structural pests.

The following bullet points below will give a brief overview of what items of concern were observed during my site visit. (Access to the interior of the property was not deemed necessary due to the dangerous condition of the buildings and that the significant and obvious failures were easily viewed from the outside).

- Both long walls made of brick and mortar on the large building are missing most of the grout that holds the brick work together as well as the bricks have no structural integrity left in them.
- There are obvious and significant soil failures happening in the street, the sidewalk and under the building, likely caused by the weight of the structure accelerating soil subsidence.
- The site has concrete remnants from several structures on site, all concrete viewed had significant degradation based on the highly corrosive environment. All steel on site was severely corroded and most all wood framing was rotted and decayed.
- The parapet is falling off the entire building and it is my recommendation that the building be removed as the extraordinary measures in place to prevent unauthorized entry into the buildings are not sufficient to keep vandals out.
- Both buildings have current major structural collapses happening. Floors and roofs are collapsed as are walls and many structural members.
- The foundation/soil building interface has failed and will continue to degrade. This condition will accelerate if any additional loads such as seismic, wind or flood loads are encountered which is a given in this location.
- The large building has burned at least once recently and the heat of the fires have significantly reduced the strength of the concrete, mortar, steel and wood.
- The subject building also has some very eccentric lateral and gravity loads imposed on it as the pictures show. Each crack in each area viewed demonstrated building movements not intended by the designer of the building. This has greatly decreased the ability of the building to even hold itself up.



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- The subject building is of wood roof framing which due to fires, pests and rot is generally less than 30% of its original design values. Under the Historic and Existing Building Codes this is unacceptable.
- The subject building is not only very old and has exceeded its design life by over 60 years. This coupled with the differed maintenance mentioned earlier means that some of the more likely methods of repair may not be available for use on this building. In the case of these buildings the testing required to engineer the buildings back into compliance could not be completed. In other words the materials are so degraded that they cannot be reused.
- There are bricks falling from every location on the buildings, interior and exterior. Floors and roofs are collapsed and vital structural members have been seriously compromised. Both buildings are "Attractive Nuisances" under the code and all reasonable methods of keeping the public out have failed.

Recommendations;

The native soil is a silty clay with sand and is prone to liquefaction and may also be classified as expansive. A soils report should be required prior to any permitting of the project. This is also important due to seismic considerations as the fault is not far from this location geologically. The structures are in such poor shape that is likely that more damage will be discovered as demolition for repairs is attempted and these conditions are not foreseeable in my understanding. Furthermore, the condition of the materials is clearly very poor and the likelihood of being able to reuse any of it is highly unlikely.

Any designs or proposals for this building should only be undertaken by licensed and trained professionals which should include a soils engineer, a structural engineer and a forensic architect or an architect well versed in historic buildings.

The removal or attempted repair of the buildings as well as the utilities should be designed and overseen by a civil engineer and the contractor will likely need to be experienced in dangerous buildings as the structural elements will need to be evaluated in order to make the building safe to work near.



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It is my recommendation that emergency demolition and safety conditions be implemented immediately. These buildings are historically important and need to be documented prior to removal but absolutely nobody should be allowed to enter the buildings under any circumstances. This includes firefighters, police and paramedics as these buildings are not safe under any circumstance. It is recommended that the Fire Department take a "defensive position only" stance on these building as if there is another fire flood or earthquake anyone inside these buildings will likely parish. The photographs contained in this report demonstrate clearly to the average person that these buildings are a danger to anyone with 100 feet of them as the brick will explode as they continue to fall in larger and larger sections of the structures fail.

These buildings is not going to stay "as it is" and will continue to fall if nothing is done soon. Both buildings are already in a state of collapse and the materials they are constructed of are no longer able to sustain any loading whatsoever.

Sincerely,

Chris Gale, CBO