



BROOKS-RANSOM ASSOCIATES

STRUCTURAL ENGINEERS
CIVIL ENGINEERS

7415 N. PALM SUITE 100
TELEPHONE (559) 449-8444
WEB PAGE: WWW.BROOKSRANSOM.COM

FRESNO, CALIFORNIA 93711
FAX (559) 449-8404
EMAIL: INFO@BROOKSRANSOM.COM

GAYLORD "RICK" RANSOM, SE, CE
KLARE YAVASILE, SE, CE

DWIGHT DREW, SE, CE
ARTURO LOPEZ, PRINCIPAL

15 September 2016

Mr. Jeff Cazaly
Jeff Cazaly Architect
759 W. Alluvial, Suite 101
Fresno, CA 93711

Subject: Schematic Condition Assessment – 450 E. Belmont Avenue, Fresno CA
North and South Buildings

Mr. Cazaly;

Proceeding in response to your request, Klare Yavasile S.E. and I proceeded to the subject location in the afternoon of Tuesday September 14th, 2016.

Upon arriving at the site, we met you and you gave us a tour through both buildings. After the tour, you left and Klare and I proceeded to walk through the buildings to observe the existing conditions and to take photographs of some of the conditions we observed.

The following will provide you with a summary of some of the area of concern that we observed during our walk-through:

South Building:

- Unreinforced Red Brick Walls (Photo S7)
- Nominally reinforced CMU walls (Photo S2)
- Straight board roof sheeting with water damage and rot. (Photo S6)
- Severe water damage to roof framing (Photos S5 & S6)
- Significant impact damage to the west wall. (Photo S7)
- Step cracking in the east wall near the north corner. (Photo S1)
- Deteriorated ceiling sheeting at the east side of the building. (Photo S3)
- No wall ties from perimeter walls to the roof framing. (Photo S5)
- Roof joist embedded directly in the masonry wall. (Photo S5)
- No shear transfer from the roof "diaphragm" to the shear walls. (Photos S5 & S6)



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North Building:

- A mixture of Unreinforced Red Brick walls, wood stud walls, and light gage metal stud walls apparently all working as shear walls.
- Tall unreinforced red brick perimeter walls (Photo N37)
- Steel moment frames resisting lateral forces in same principal direction as solid masonry walls. (Photo N9)
- Nominally reinforced CMU walls. (Photo N22)
- Lack of roof diaphragm continuity between successive building additions. (Photo N29)
- Offsets in wall lines with questionable means to distribute shear loads. (Photo N10)
- West wall above moment frame is a diagonally sheeted wood wall with a plater finish on the outside. (Photo N9)
- Straight wood board diaphragms exist in several areas of the building. (Photo N25)
- Seriously damaged roof sheeting was observed in several areas of the building. (Photo N25)
- There appears to be at least 3 major phases of construction. The nature of these separate phases seem to lack a coordination with the previous construction resulting in a lack in continuity and connection of the subsequent phases so as to provide a total building which will act as a whole during exposure to wind or seismic forces. (Photo N29)
- The westerly most addition to the building has a significant vertical discontinuity in stiffness as the roof diaphragm forces move from a second story shear wall system to a steel moment from on the lower level. (Photo N9)

Summary & Conclusions:

The subject buildings were probably initially constructed in the late 1930's to the early 1940's. Construction and design practices at the time made considerable use of unreinforced masonry design. This type of design also included elements that have since proven to perform badly when resisting code level seismic forces. Some of these elements include: straight or diagonal board roof and floor sheeting, wall pockets in masonry walls to support roof or floor joist, a lack of shear transfer from the diaphragms to the shear walls, unreinforced red-brick masonry walls, and a lack of out-of-plane wall ties to the roof and floor diaphragms.

All of these types of conditions were observed in both the North and South Buildings.

It has been my experience that the retrofit of these types of buildings to bring them up to current code standards for wind and seismic load resistance usually proves to be an expensive undertaking.



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Being unreinforced red brick walls, the walls must be thoroughly tested to see if they qualify to remain as structural elements in the building, and if they are found to be wanting, they must be heavily reinforced to remain as a part of the structural lateral load resisting system.

If the walls are retained, then the existing diaphragms almost always need to be retrofitted and a new system of shear transfer from the diaphragms to the shear walls must be installed. Finally, the red brick walls must be well tied to the diaphragms to resist the out-of-plane forces to which the wall may be exposed during an earthquake.

It has been my experience that the cost to fully rehabilitate buildings (of the type which exist at both the North and South buildings) to current code structural standards may approach, or even exceed, the cost to demolish the buildings and replace them with new buildings of similar size.

Since this office is not a construction firm which is familiar with the local labor market or the cost and availability of materials, we are not able to render an opinion of probable cost for the structural rehabilitation of these buildings.

It is my professional opinion that for a contractor to do so, we anticipate that a complete program of testing and analysis would need to be completed to allow the development of a set of structural drawings for the rehabilitation for these buildings so that a contractor can determine the nature of the work that would need to be completed to rehabilitate these buildings. As a rough estimate I submit that a structural engineering and testing fee of about \$45,000 would be required for the development of a final set of biddable drawings for the two buildings which are the subject of this report.

Once said drawings are complete, these plans can be provided to a General Contractor for the development of a total cost to rehabilitate both the North and South Buildings.

It is hoped that this report will provide you with the information at you need at this point. If you have any questions, please call.

Respectfully Submitted,

Gaylord R. Ransom, S.E.
President





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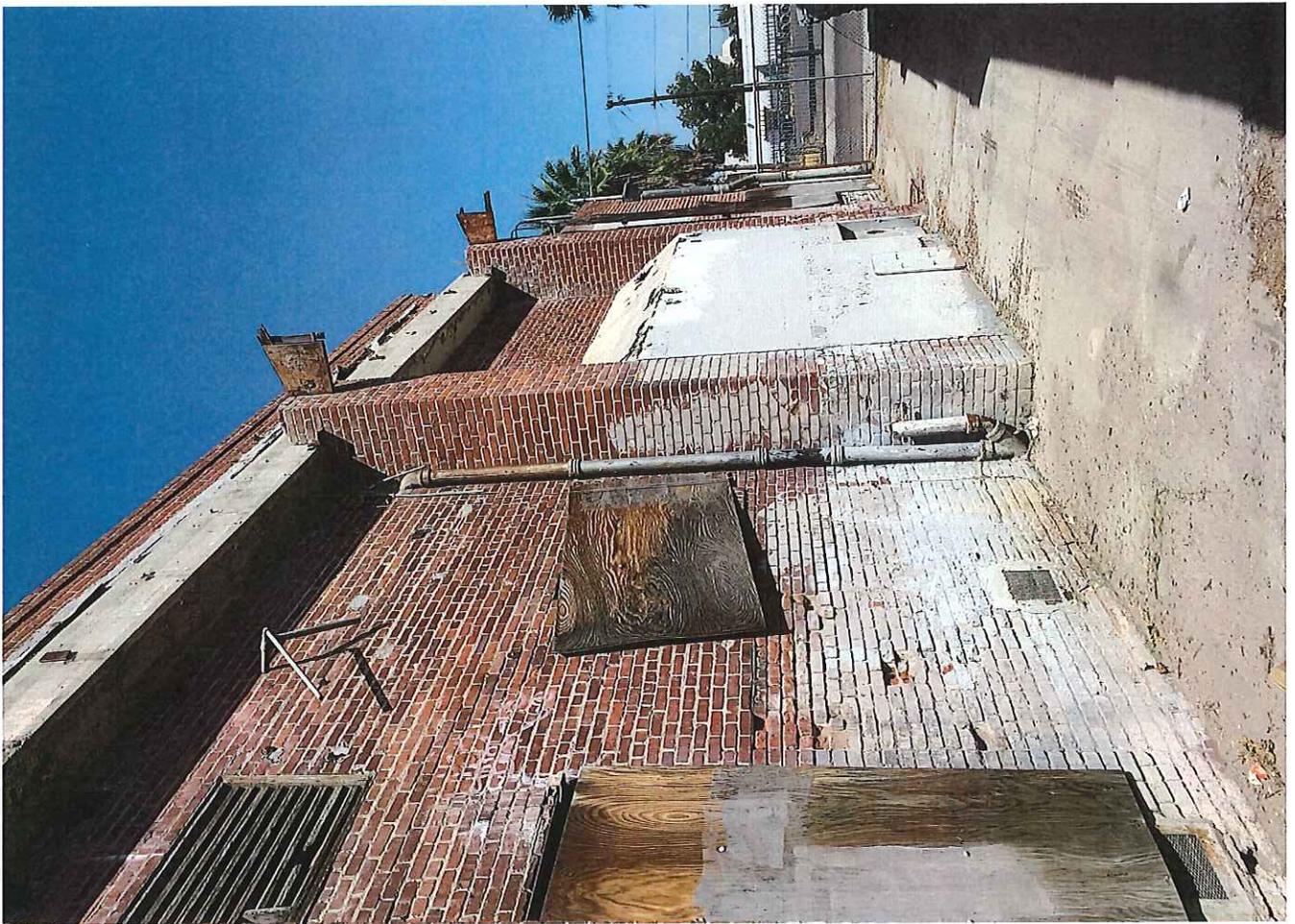
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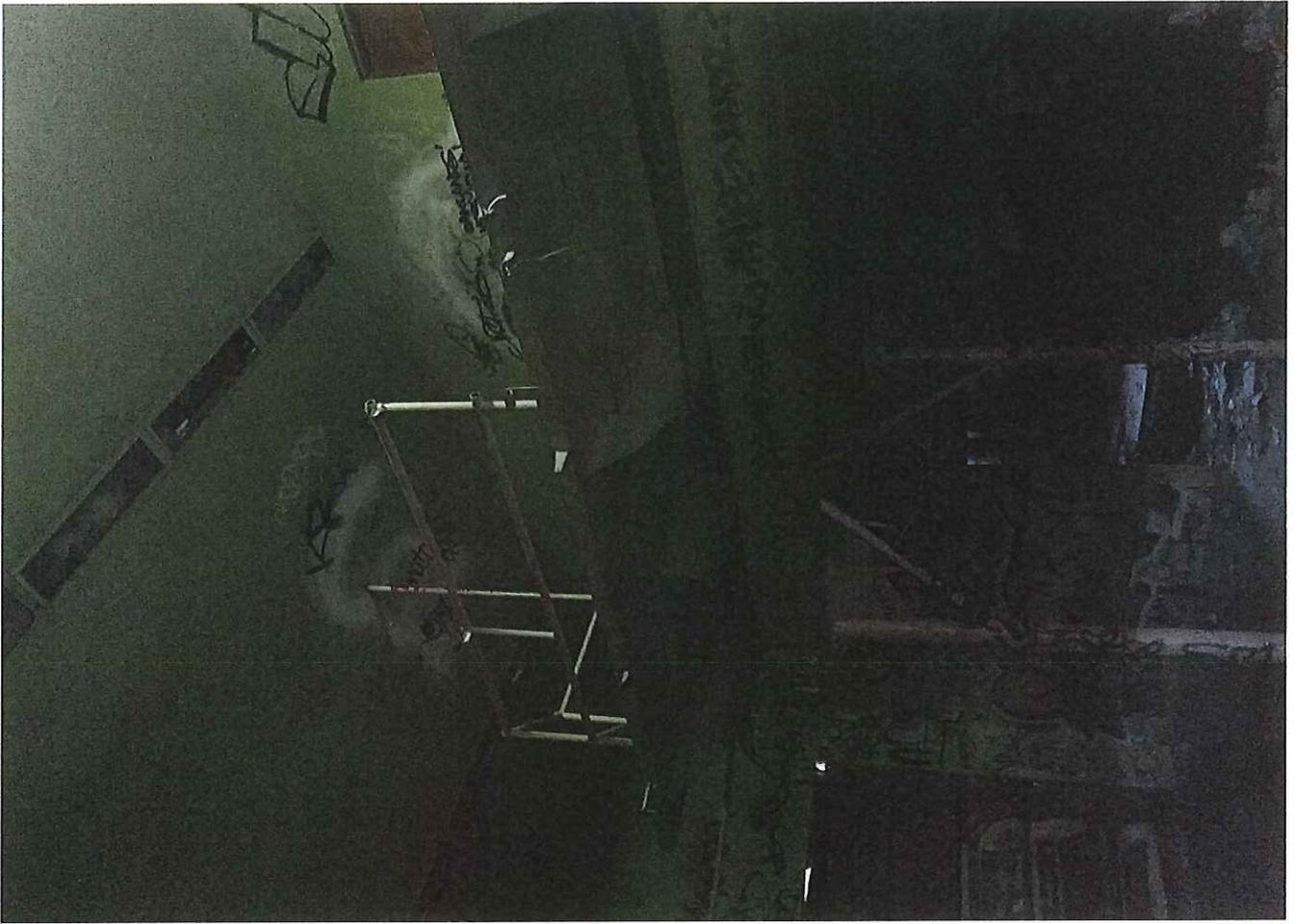
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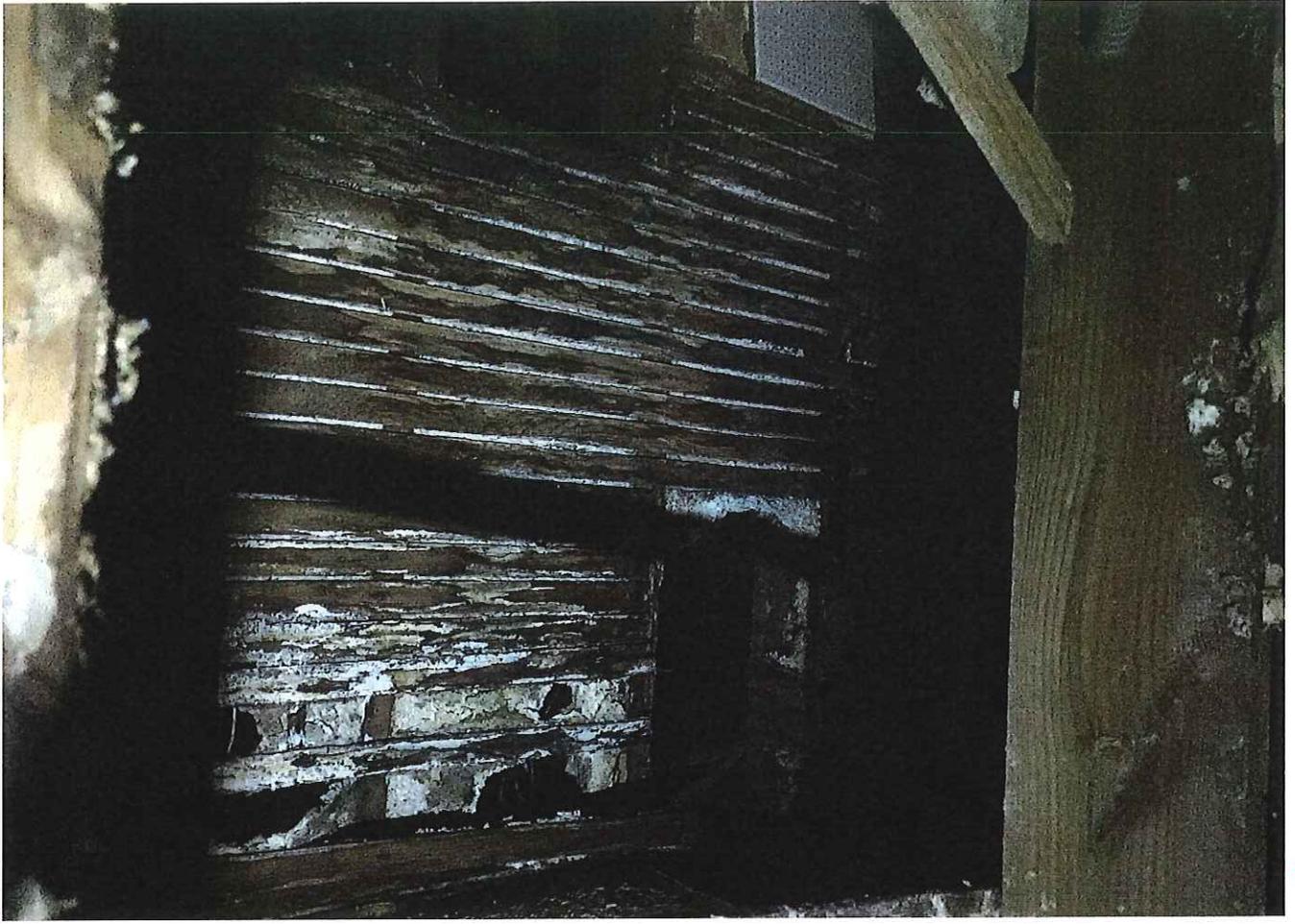
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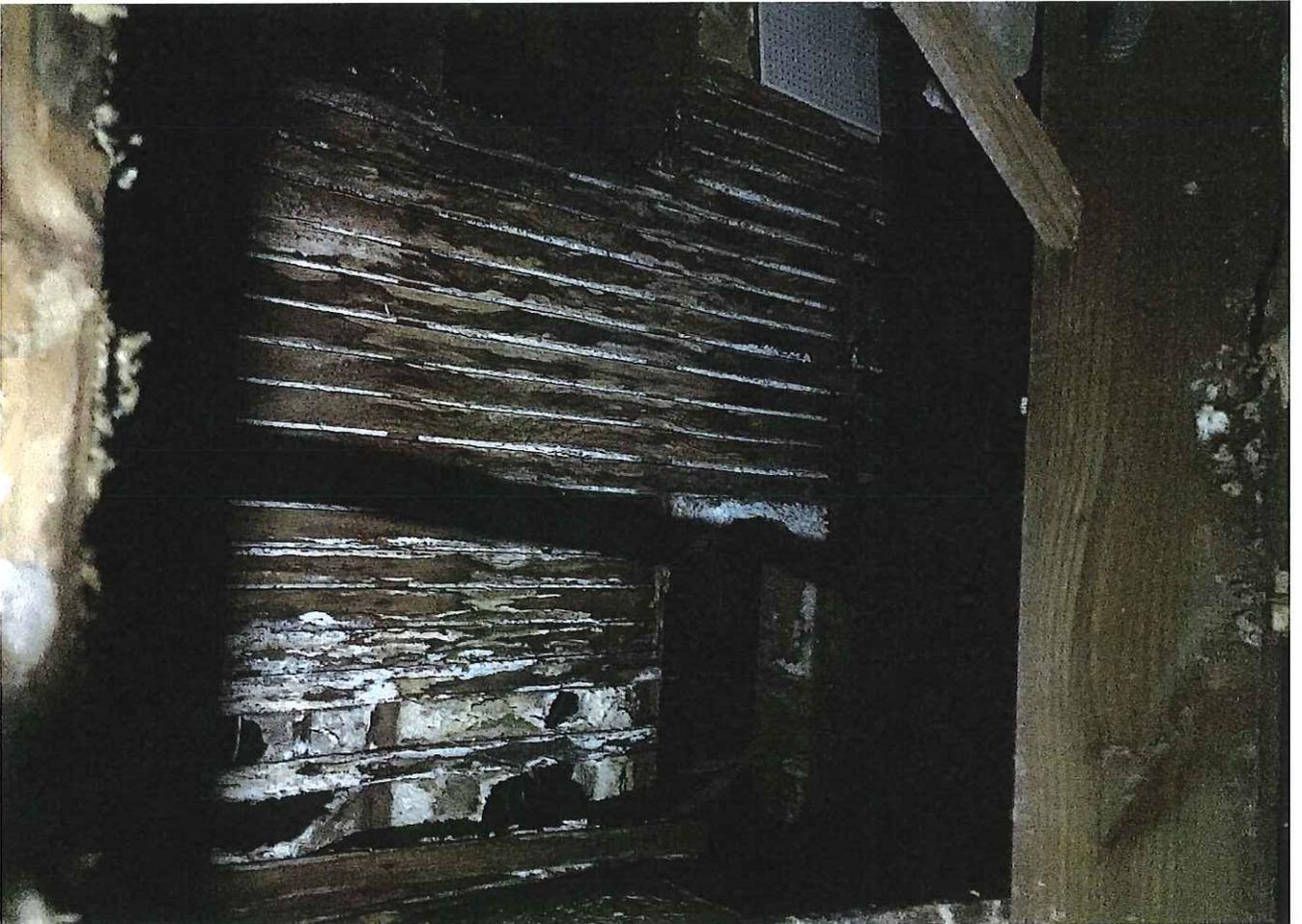
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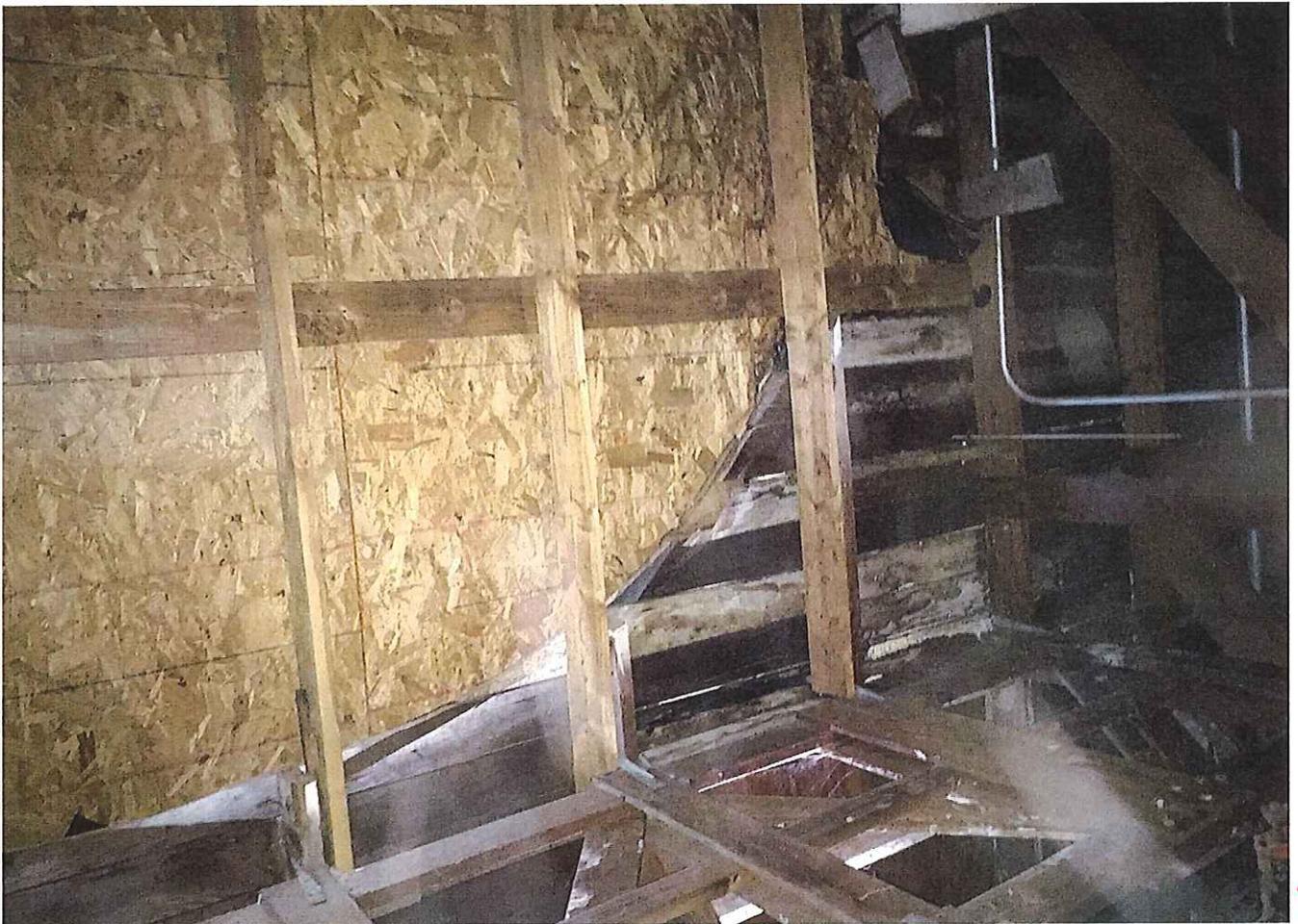
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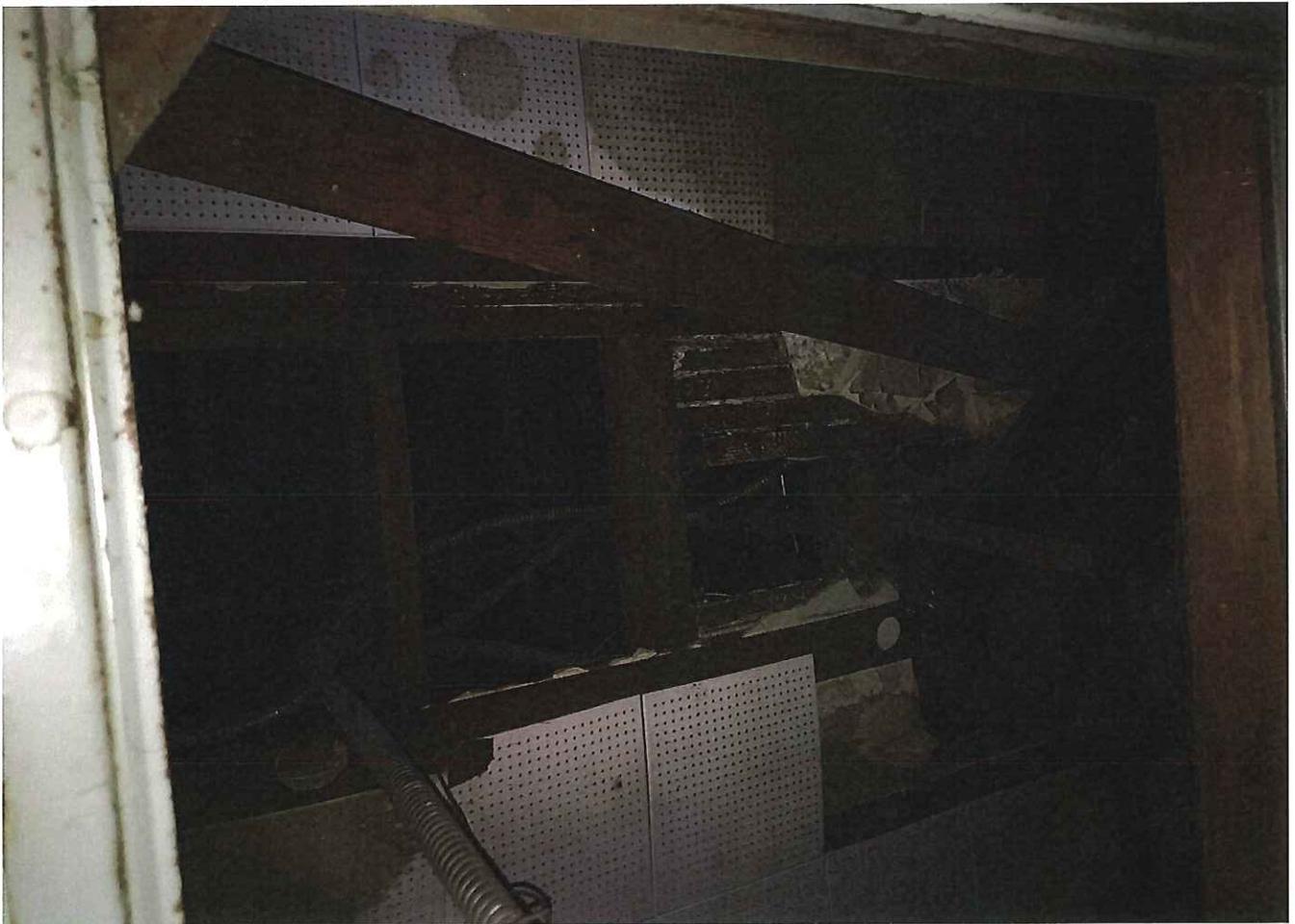
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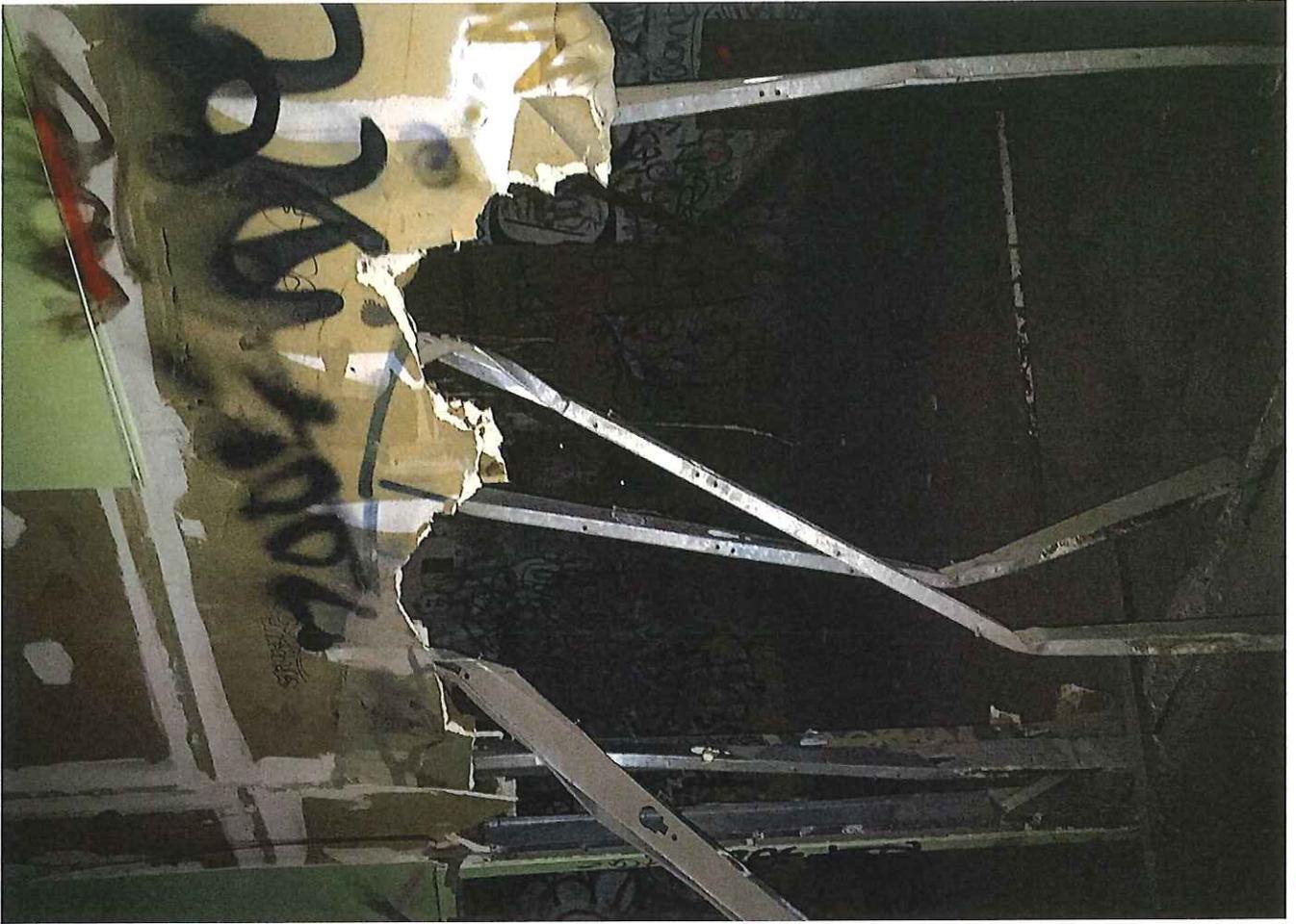
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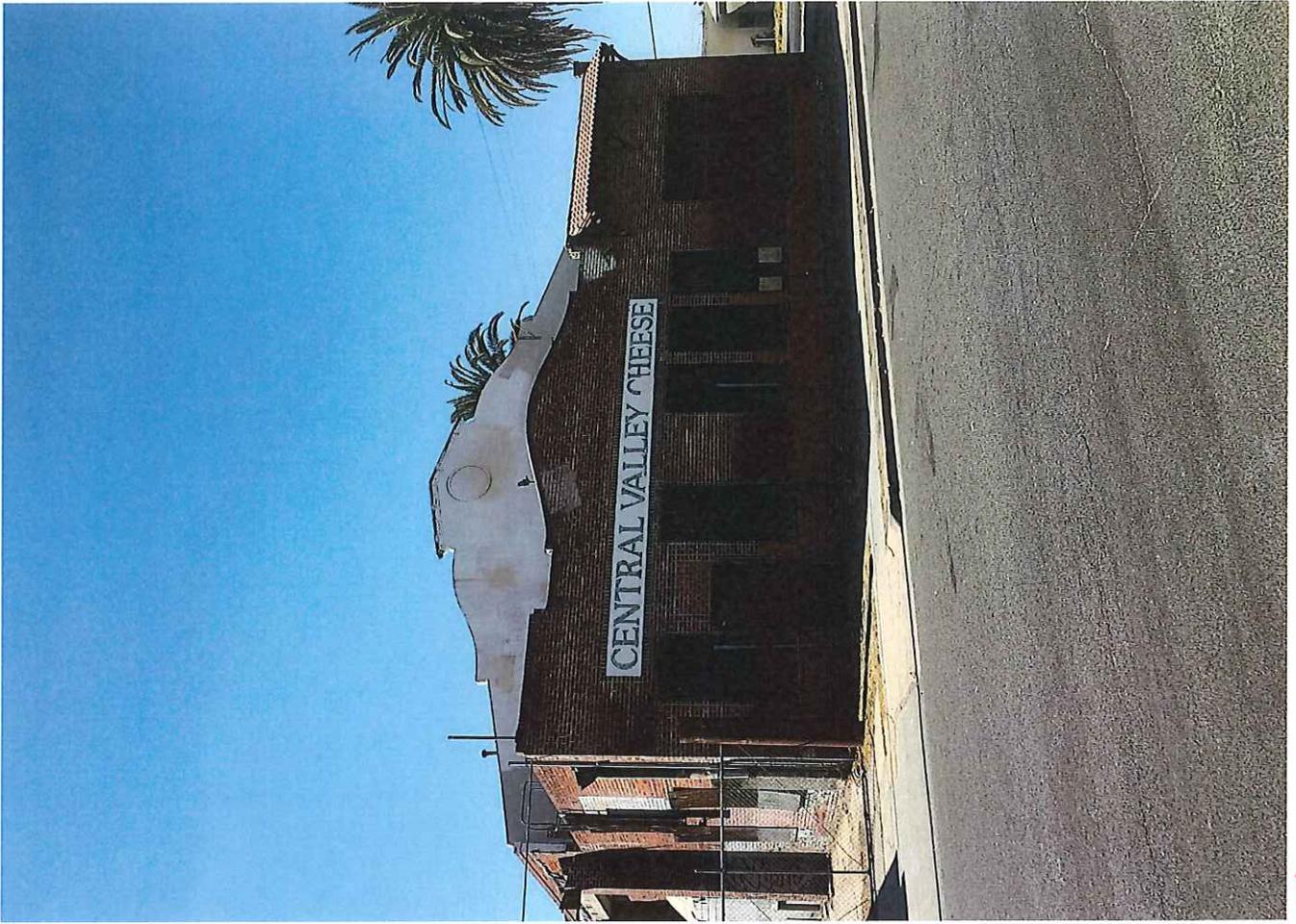
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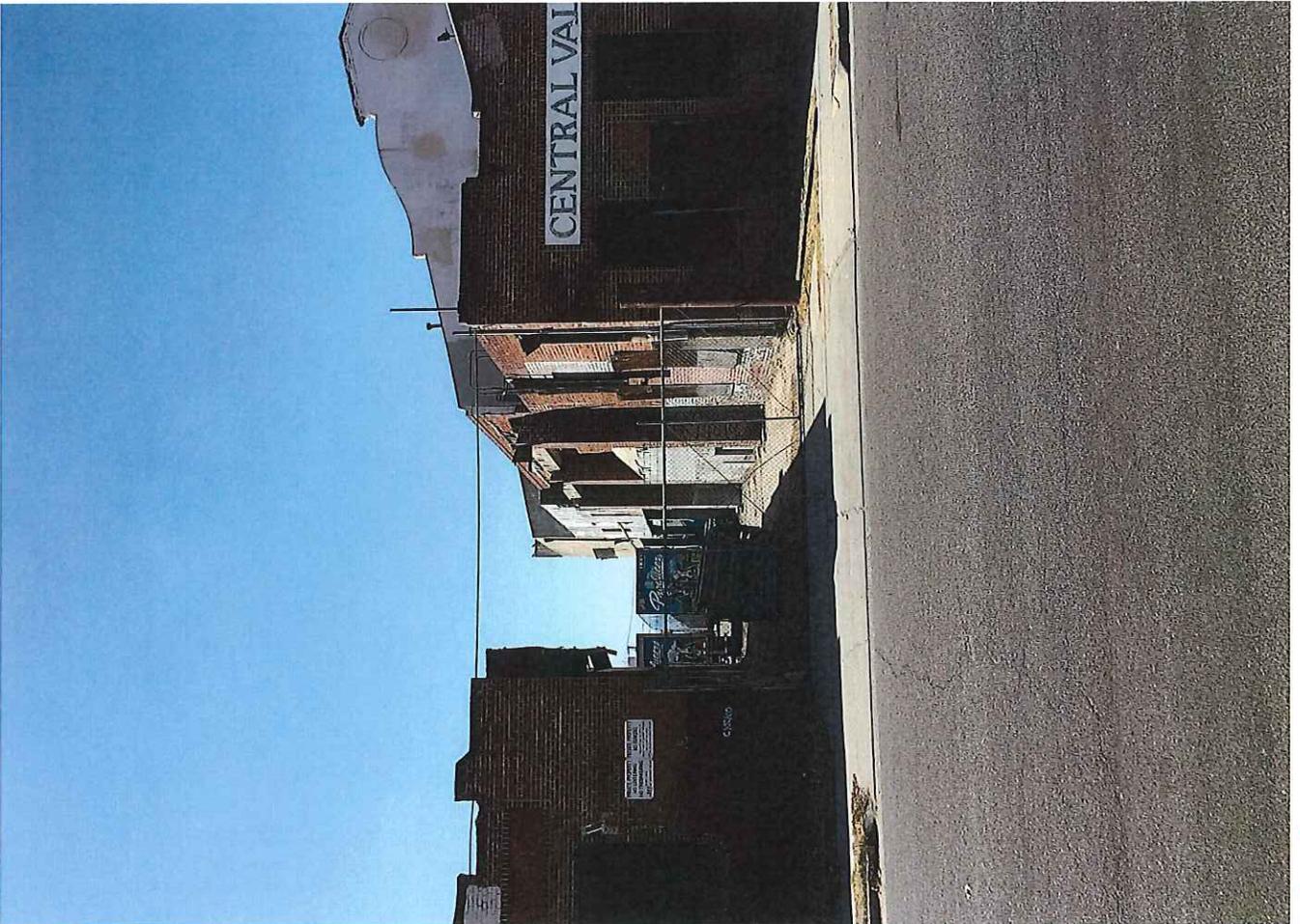
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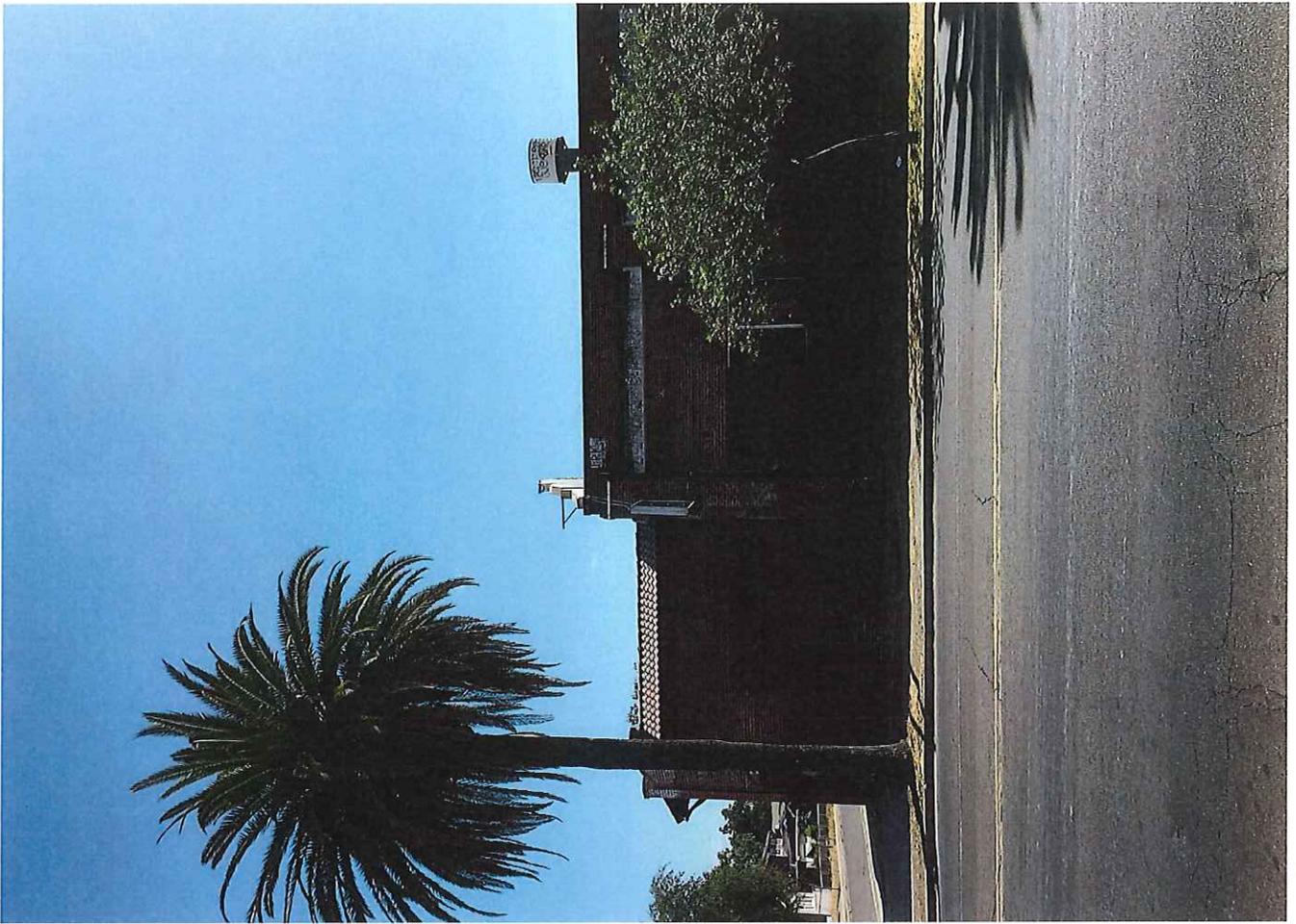
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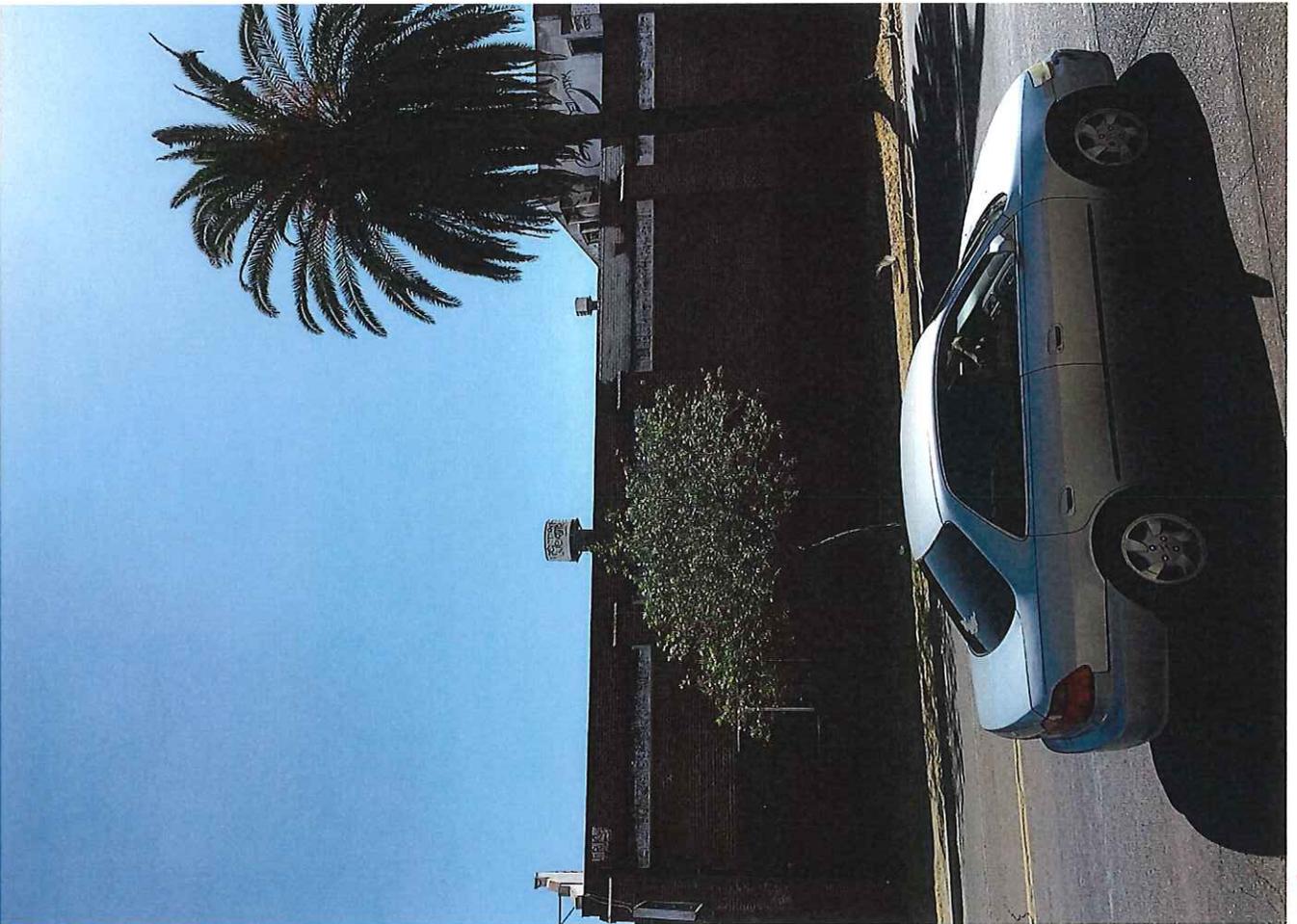
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