

PADULE
SPANNOCCHIA 1987

VISUAL INSPECTION OF PADULE

SPANNOCCHIA, ROSIA, ITALY

Submitted by PAD 1 Team
"Preservation Practice in Italy"
Graduate Program in Historic Preservation
University of Pennsylvania
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I.

INTRODUCTION

The objectives of the inspection and survey of Padule, a farmhouse on the estate of Spannocchia, were to determine the condition of the existing building, its structural system and materials, and to piece together the evolution of building construction. This information will enable the Team to produce recommendations for the future conservation and use of the site.

The project was initiated as an exercise in survey methodology, and as a means to incorporate the laboratory techniques of the course. Within this framework, Jeanne Marie Teutonico, course coordinator, and Alejandro Alva Balderama, of ICCROM, assumed the roles of clients. To address their chief concerns, the study has accomplished the following:

1. An analysis of the condition and faults that are presently affecting the structure.
2. An examination of the decay process in reference to humidity and dampness.
3. Drawings and field notes that were useful to the team throughout the study.
4. A list of suggestions for the future conservation of the building.

PARTICIPANTS

The project began during the week of July 25, 1987 and will conclude on August 27, 1987. Monitoring of structural stability, materials and humidity were conducted over a three week period from August 10 through August 27, 1987.

The inspection and survey of Padule has been conducted by:

- Jacqueline Bode -- BS Civil Engineering, BA Art History, Univ of Penn, 1987
MS Systems Engineering, Univ of Penn, 1988
- Claudio Campo -- Architect, University of Piloto de Colombia, SA, 1983
Ph.D University of Rome, Architectural Conservation, 1988
- Ellen Freedman -- BA History, Vassar College, 1981
MS Historic Preservation, Univ of Penn, 1988
- Laura Harris -- BA Historic Preservation, Mary Washington College, 1984
MS Historic Preservation, Univ of Penn, 1988
- Keevan Hawkins -- BA Architecture, Clemson University, 1984
MS Historic Preservation, Univ of Penn, 1988
- Lisa Johanningsmeier -- BA Biology, Earlham College, 1980
MS Historic Preservation, Univ of Penn, 1988
- Leslie McBride -- BA Architecture, Columbia University, 1987
M. Arch, Columbia University, 1990

ACCESSIBILITY

During the inspection, virtually the entire structure was safe and accessible to the team. We were, at times, restricted by a variety of wildlife from entering certain rooms or areas around the building; but never for an extended period of time. Although, the roof appears to be sound, it was only examined visually from the ground level. The "hayloft" was examined by using a ladder on the outside of the building.

DOCUMENTARY EVIDENCE

Documentation and historic evidence concerning the site was limited. A set of measured drawings produced by the University of Kansas in June, 1987 was essentially the only graphic documentation available to us. It must be noted that these drawings were only useful to our inspection in a limited way, i.e., as a basic illustration of the plan and elevation form and to serve as a guide during our preliminary inspection. The Team proceeded to take a set of measurements using a triangulation survey method and produced a new set of floor plans of Padule.

II.

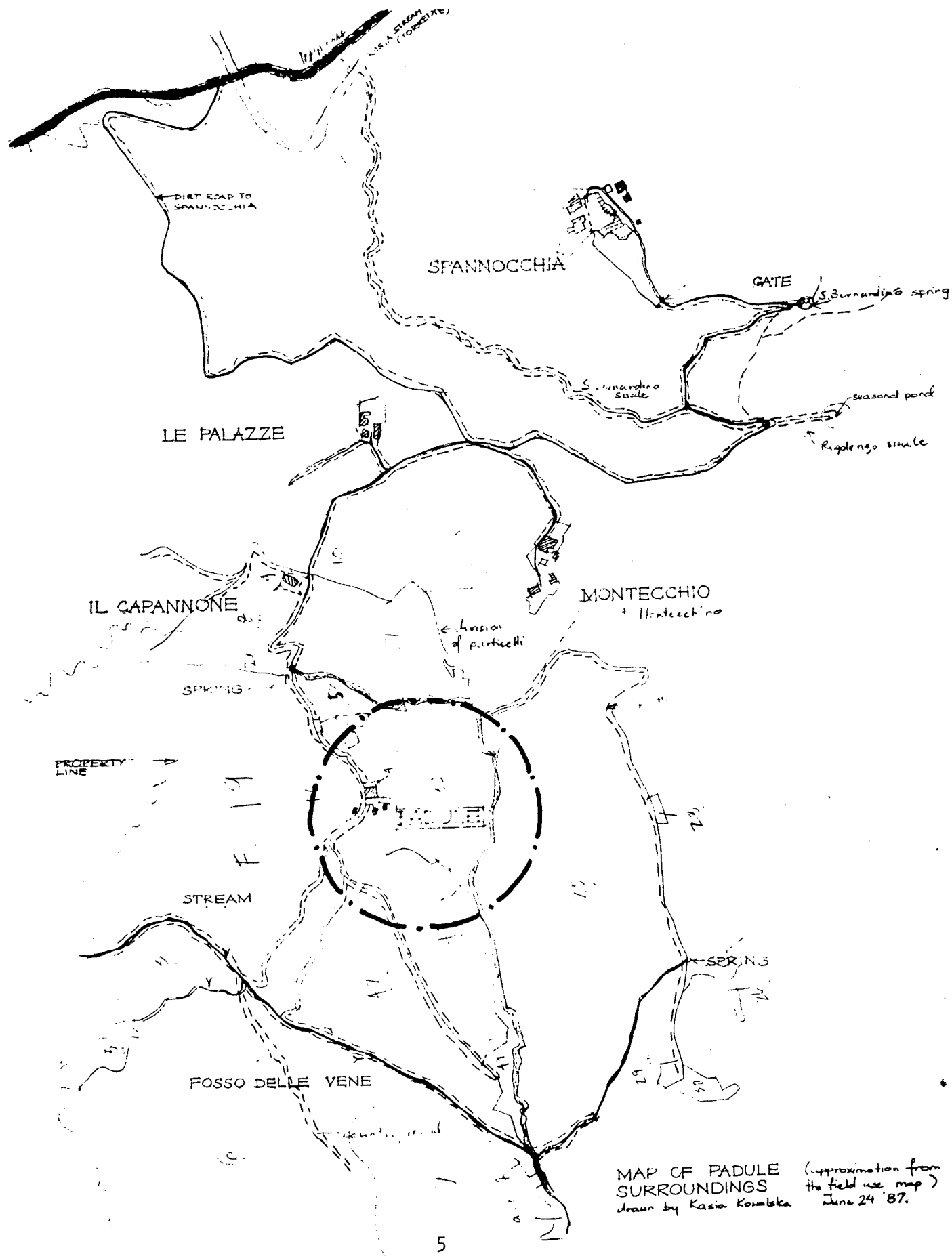
HISTORIC BACKGROUND/DESCRIPTION

Padule is a rubble fieldstone farmhouse. Although there is no written documentary evidence, it is possible from a visual inspection to speculate that the original portion of the building was built around the seventeenth century with numerous additions and changes which have greatly altered the original fabric of the house. Padule was built, as is typical of many Tuscan farmhouses of this size, in two levels; the lower level housing the animals and divided into stalls, and the upper level where the family occupied the large central space. As the immediate family grew and the extended family became larger, additions and changes to the building were probably made. This type of evolution is not unique to Padule. Vernacular structures throughout the world have grown to meet the needs of its occupants.

The house stands within the estate of Spannocchia and was occupied by farm workers of the estate. In the late 1960s, the building was abandoned and has remained unoccupied to this day. The approach to the building is along a dirt and stone road which shoots off the main Spannocchia road. The road, in rough condition, is now primarily used by a local sheep herder who grazes sheep in fields behind the site. The Team approached the site by foot along this road, roughly a 2 kilometer walk from the beekeeper's house, Il Capannone (see Figure 1).

Padule is situated on a steep slope surrounded by a dirt road on the west and overgrown cultivated land on the north, south, and east. The main entrance today is on the east facade by the outdoor brick oven. The building is rectangular in form, although, clearly defined divisions and additions are more irregular. The interior plan is comprised of six units.

FIGURE 1



MAP OF PADULE SURROUNDINGS (approximation from the field use map)
 drawn by Kasia Kowalska June 24 '87.

III.

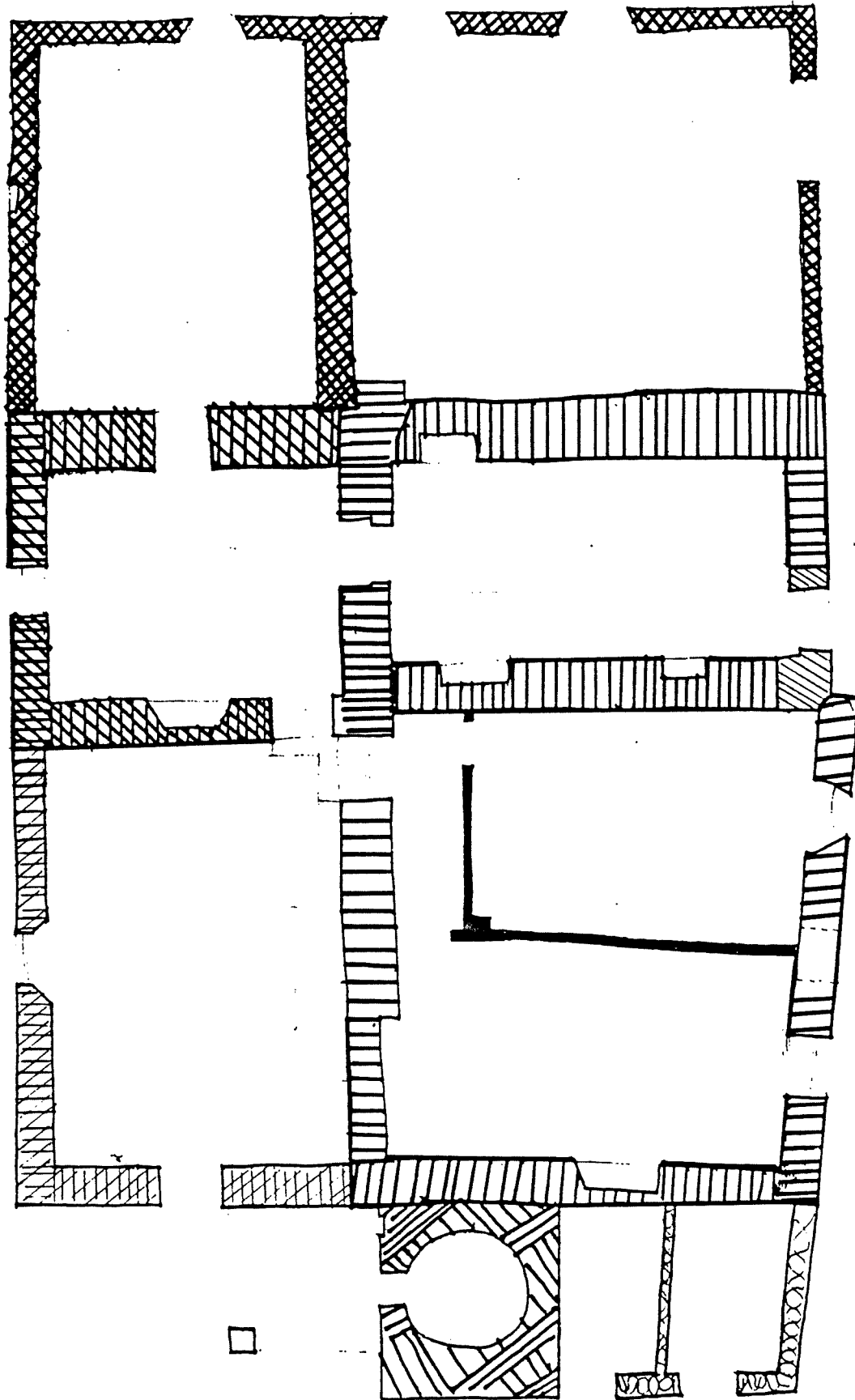
STRUCTURE

Padule is structurally comprised of load bearing walls of varying thicknesses supporting rough hewn timber beams (see Figures 2 and 3). The roof structure is a 3-part system made up of large main beams, secondary members laid perpendicular to the main beams, and smaller tertiary members again laid perpendicular to the secondary members. The space between the beams and the roof is filled in with mortar. The roof tiles are two-layered. The first spans between the tertiary members, the second layer is in a typical Italian roofing configuration. The roof is built in two parts or halves of differing heights and slopes (see Figure 4).

The red tile floor is laid in a similar technique, the first layer spanning between framing members and the top layer in a pattern above. These patterns vary from room to room.

MATERIALS

Padule is constructed of local fieldstone; examples present in Padule are limestone and toufo. The earliest lintels and structural members are constructed of chestnut, an indigenous wood type. Brick intrusions around the doors and window openings signify newer additions to the building. Cement lintels and infills, as well as a set of window frames signify the most recent modifications to the structure. The roof is constructed of locally produced clay tiles.



THE VARIOUS COLORS AND PATTERNS INDICATE
DISTINCTLY DIFFERENT WALL CONSTRUCTION
TECHNIQUES AND POSSIBLY DIFFERENT PERIODS
OR BUILDING CAMPAIGNS.

STRUCTURAL EVOLUTION

STRUCTURAL EVOLUTION

FIGURE 3



ORIGINAL WALL

CHARACTERIZED BY: cut stone windows and doorways. Stone wall construction superior.



2 units built into original wall

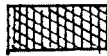


CHARACTERIZED BY: cut stone quoins on corners



All of east end of building constructed at one time.

CHARACTERIZED BY: 1. change in floor level and direction of roofing members
2. all walls which run east and west about the walls of the red units.



Kitchen: added after red units.



Added after original unit. Could be as old as other red units. Sequence in construction unknown.



Pig Pens

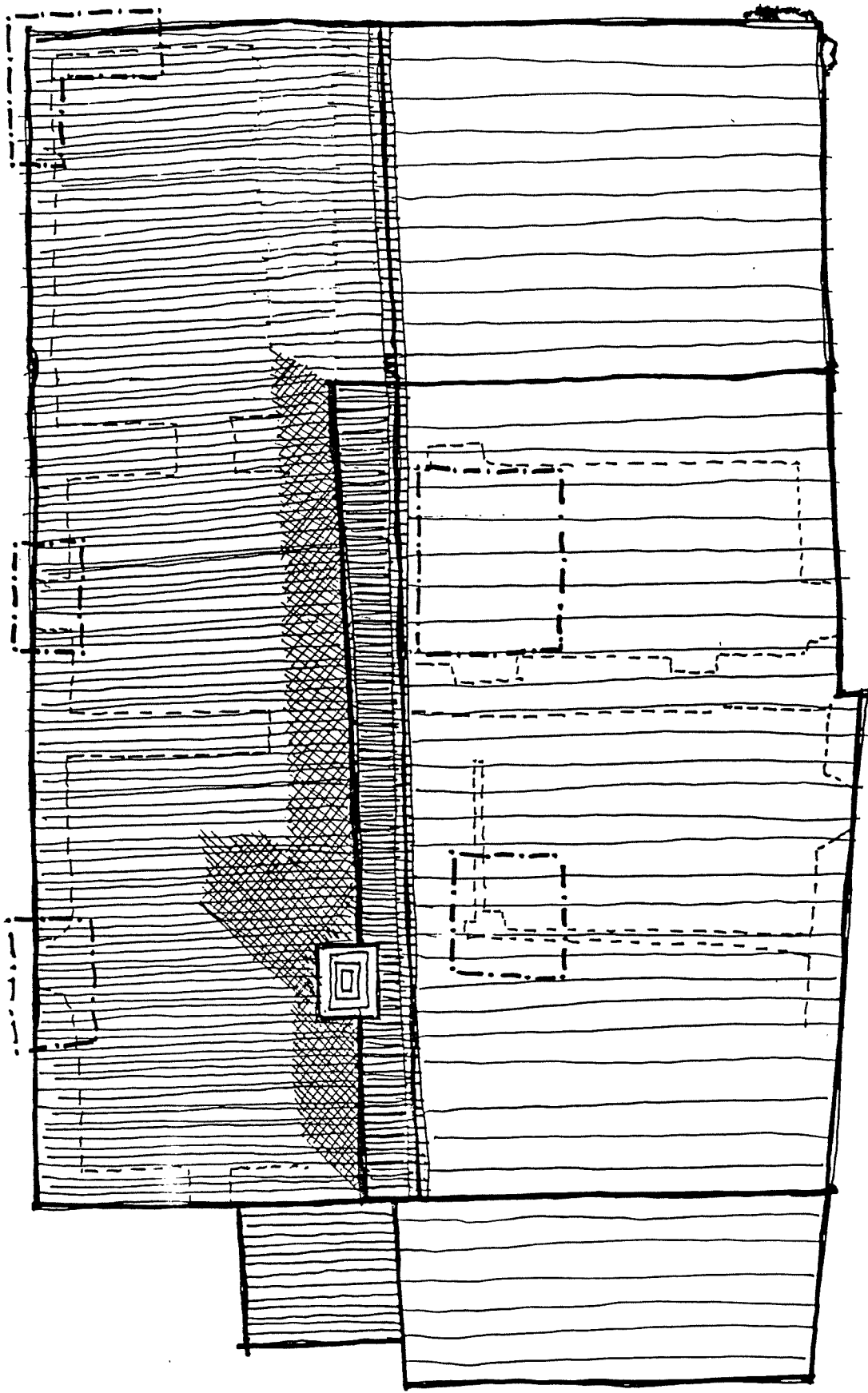
Constructed after door in original wall unit was bricked in and after construction of oven.



UNKNOWN CONSTRUCTION

CHARACTERIZED BY: BRICK OR STONE INFILL.
Indicative of a structural collapse or infill of larger opening.

CONCLUSIONS: Padule represents evolutions over many years. The exact time of each unit is unknown. We have attempted a general sequence of events, which have aided in our interpretation of the building, its history and its structural problems.



- ENTIRE ROOF TO BE ASSESSED
 - REPLACE SEVERELY DAMAGED TILES
 - REORGANIZE MISALIGNED TILES
- INDICATES PROBLEM AREAS FOR CLOSE INSPECTION.

ROOF PLAN INDICATING POSSIBLE ROOF DAMAGE

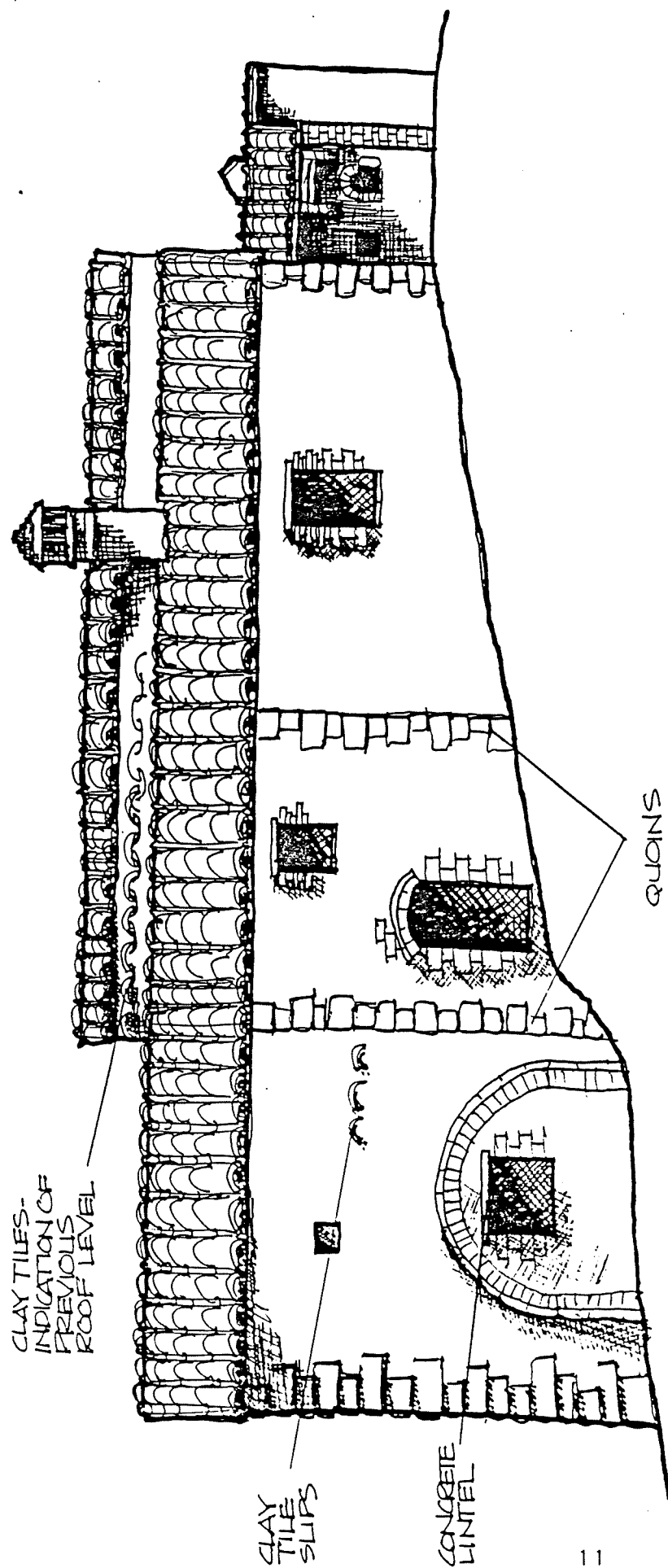
NORTH ELEVATION (see Figure 5)

The north facade is on a sloping grade divided into three separate units. The north west unit is at the highest point on the slope, it is one story in height and contains one window opening. The window has a wooden lintel and the jamb and sills are of brick.

The two story south unit is defined by limestone quoins on both sides of the unit. The upper floor features one window which is brick and is dressed with a wooden lintel. The door is also dressed with brick and is topped with a double coursed arch. The first course is laid with a rowlock pattern and the second laid flat.

The third story unit is defined by a large walled up arch on the first floor with a concrete window in the center. The second story has a small square opening that has been bricked in. This unit has a strong coursing in rubble fieldstone construction. Limestone quoins square off this unit.

FIGURE 5

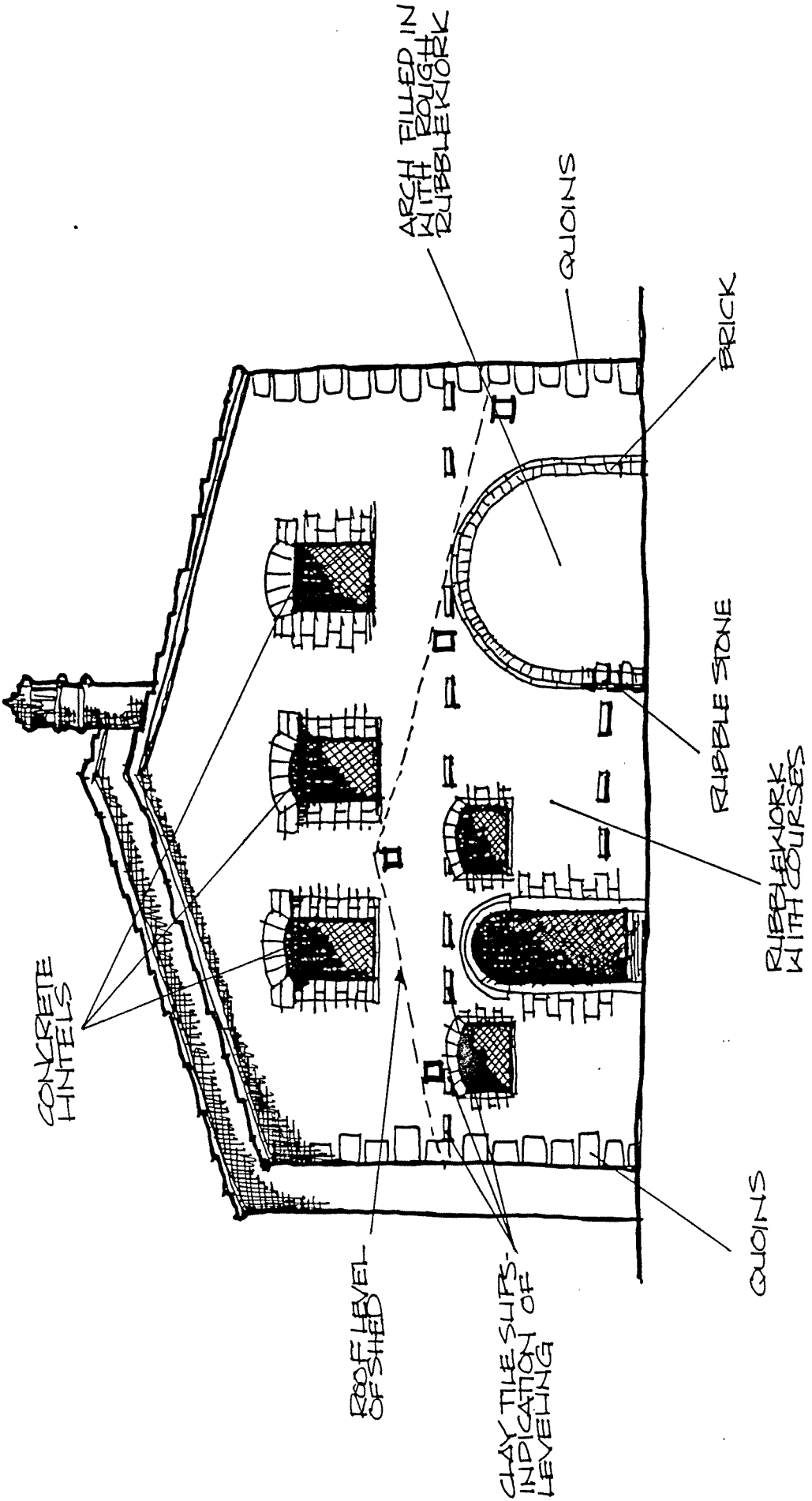


NORTH ELEVATION

EAST ELEVATION (see Figure 6)

The east elevation is a two story structure and is faced with rubble fieldstone and is framed by limestone quoins. At regular intervals the rubble work is leveled with a horizontal row of brick or stone shards. The ground level has a door in between two windows and a filled in large brick arch. It is possible the archway was used as an entrance for farm vehicles. The upper story is pierced by three segmental arch windows with concrete lintels. A modern roof extends from the back of the wall between the lower and upper story to form an outdoor shed.

FIGURE 6



EAST ELEVATION

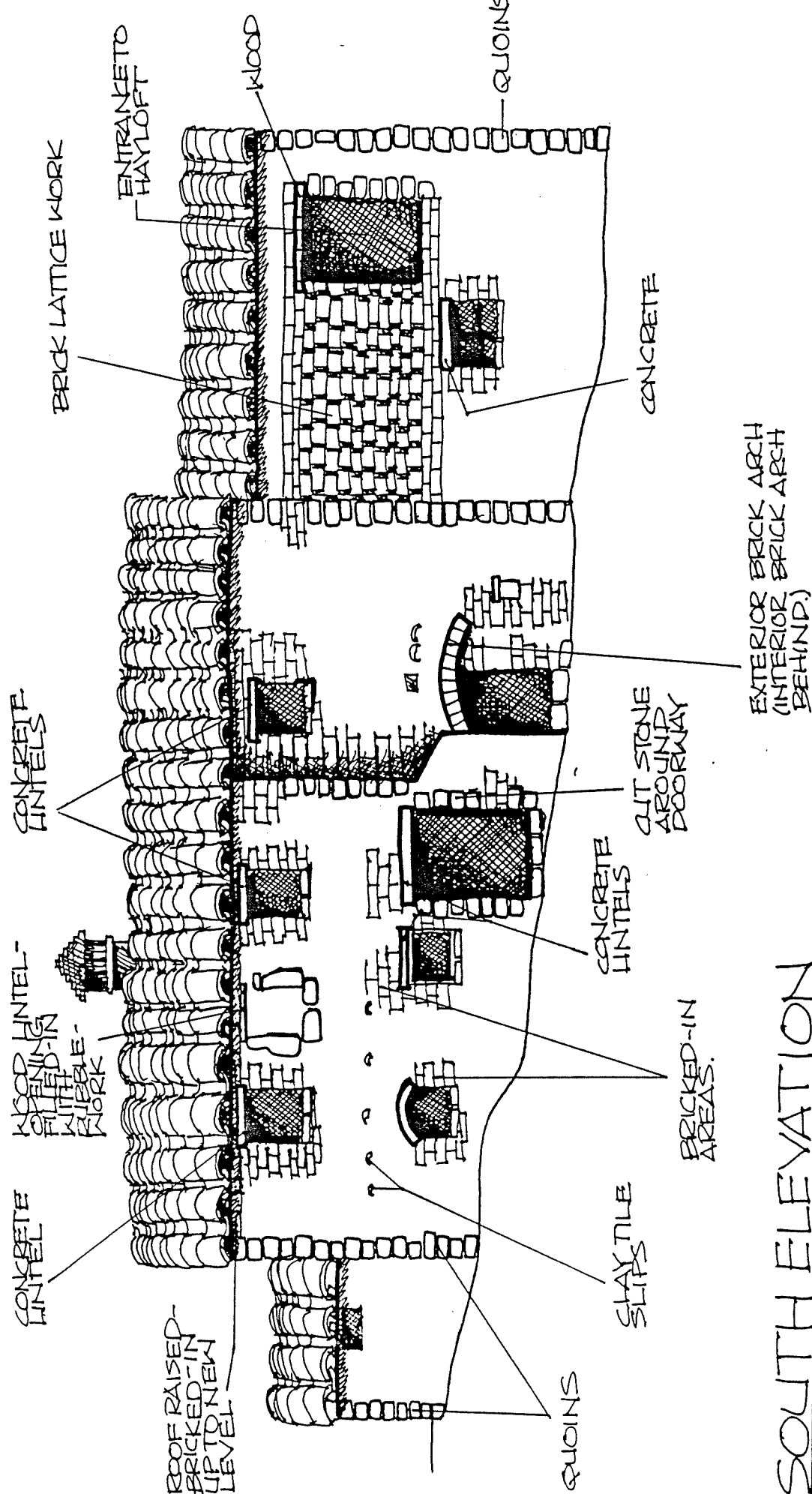
SOUTH ELEVATION (see Figure 7)

The south facade is composed of four individual units varying in construction method, height and materials. On the west end at the top of the slope stands the end wall of the pig pens. The fieldstone rubble wall is pierced by a stone framed rectangular window. The south western facade of the main building is complicated: on the second story there are two cement lintels and brick dressed windows separated by a stone dressed window in the center of the wall. The window is now bricked in. Below, on the basement level, is a mixture of openings: 1. a well-made brick dressed window with a brick arch in the western most portion of the building; 2. a square concrete window; 3. a door in the southeast corner of the building with a concrete lintel, cut stone door jambs, and a stone sill. Cut stone limestone quoins terminate this unit.

The south unit, a small wall, shows signs of alteration. This wall has been reconstructed in brick on the first level. A window on the same level is dressed in brick with a wood lintel. The door below has a large brick archway which has been half closed with stone. Between the southwest unit and the south unit is a wall abutment only to the first floor. A limestone quoin terminates this facade.

The wall construction of the southeast facade is notably different from the other facades of Padule; the fieldstone is slightly coursed or leveled. The walls of the southeast unit are a combination of rubble fieldstone and an open weave tile. The lower floor and a corner section to the roof is of rubble fieldstone. A large doorway separates the stone section from the open weave tile. The west door jamb is of brick with a wood lintel. A concrete window is in the center of the basement level wall. Cut limestone quoins terminate this section.

FIGURE 7



SOUTH ELEVATION

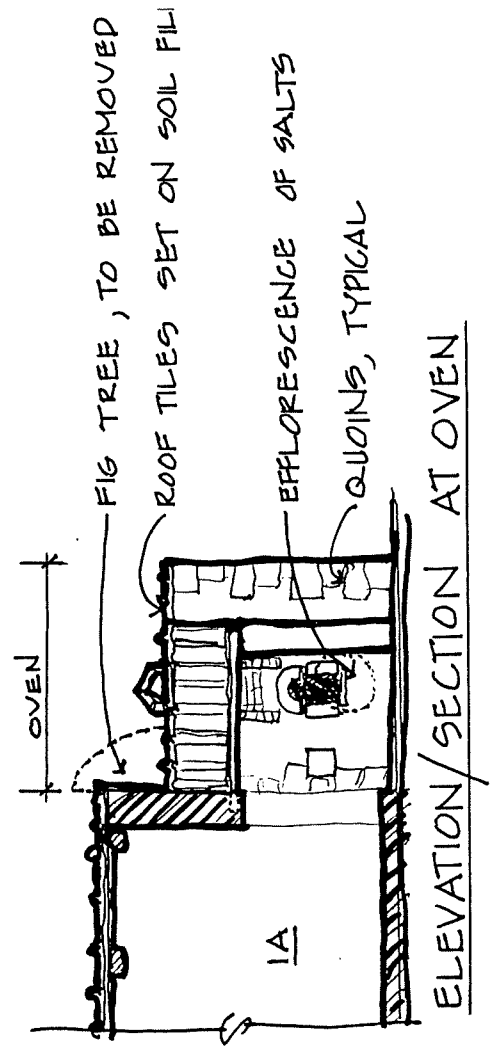
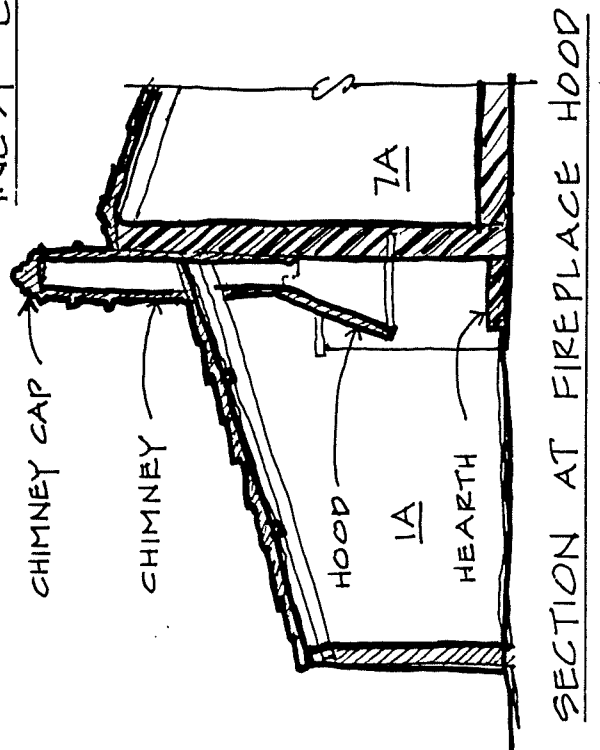
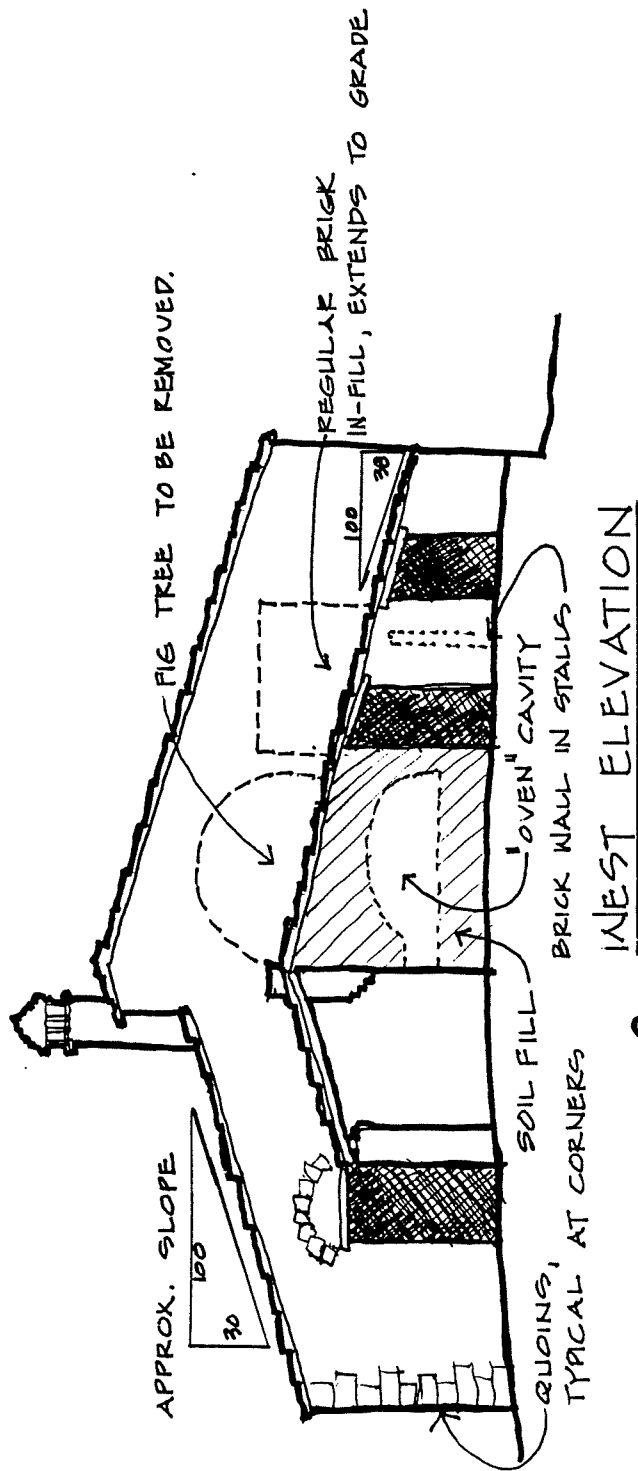
WEST ELEVATION (see Figure 8)

The west elevation is comprised of three separate and individual units. The units are: the northwest elevation, southwest elevation and the oven and the pig pens. The northwest section is of rubble fieldstone with limestone quoins on the northwest corner. A single door opening dressed in brick with a stone arch above is the main entrance to Padule. The roof slopes in a south to north direction.

The southwest elevation is also of rubble fieldstone with cut limestone quoins in the northwest and southwest corners. Within this unit evidence indicates that two openings have been infilled: a stone dressed window and a bricked in doorway. The roof slopes in a north to south direction.

The oven sits in front of the southwest elevation. It is a wall of rubble fieldstone with cut limestone quoins. A brick pillar supports a shed roof which covers a work space in front of the oven. The pig pens extend from the oven with a brick pillar dividing the space into two stalls. Limestone quoins are found on the southwest corner. All roofs are of Italian clay tiles.

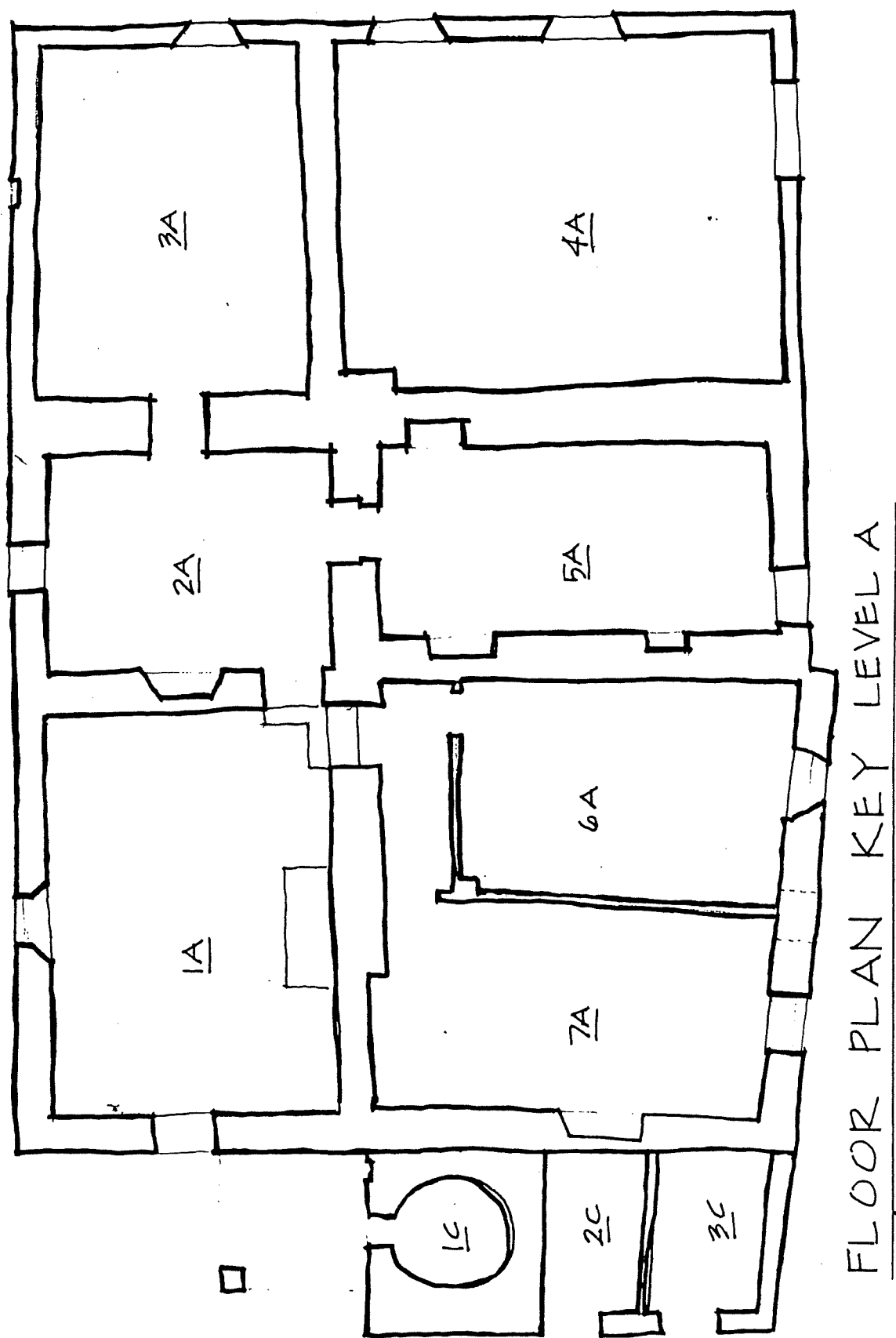
FIGURE 8



KEY TO FLOOR PLAN -- LEVEL A

FIGURE 9

FIGURE 9



FLOOR PLAN KEY LEVEL A

1A -- KITCHEN

This room, now the primary entrance to the house, is rectangular in shape and contains a large hood and hearth fireplace. The fireplace seems to support the assumption that room 1A was used as a kitchen and the main living space. The room measures approximately 6 x 4.2 meters.

WALLS AND OPENINGS

The entrance is on the west wall. There is a window opening along the north wall and the two door openings in the south and east corners of the room. From the door openings are two steps into the room, that is, the door levels are higher than the floor level. The fireplace is placed in the center of the south wall. The hood of the fireplace is supported by cantilivered timbers secured to the south wall.

The walls are rendered in a lime based material with a smooth surface.

There is a modern sink in the northeast corner. A low wall runs along the west wall of the hearth running up to the underside of the hood. A round metal pipe protrudes from the ceiling, the remains of a modern venting system.

FLOOR

The red tile floor is laid in a running bond pattern.

CEILING

The north wall is the load bearing wall for the mono-pitched roof. The ceiling is constructed of the three-tiered system: the main members from north to south. The secondary members run east to west and the three shorter or tertiary rafters support the first layer of roo between the timbers and the ceiling is white washed.

CONDITION

- No sign of structural damage.
- The render and floor tiles are virtually intact.

2A -- NORTH CENTRAL ROOM

This room, referred to by the University of Kansas study as the "Drawing Room," is rectangular in shape, approximately 4 x 3.3 meters, and is longer from north to south.

WALLS AND OPENINGS

The door opening from the kitchen is in the south corner of the west wall. In the middle of this wall is a recession of approximately doorway height with splayed walls, a wooden lintel and inside shelving. There is one window opening along the north wall with a wooden lintel exposed. There is a door opening along the east wall with a wooden lintel of several boards width above the opening. There is a door opening in the south wall recessed slightly from the wall plane. Its lintel is below the recession and there is evidence of a relieving arch in the render above the door. This door has jambs made of finely cut masonry blocks with mortar joints.

FLOOR

The red tile flooring is laid in a herringbone pattern.

CEILING

The ceiling is constructed in the standard wood and tile technique as described in the first section. It slopes downward with the high end of the pitch to the south. The apex roof beam rests on a bracket above the door.

CONDITION

- The paint is peeling.
- The render is stained and spalling above the north wall window.
- The east wall is cracking from the ceiling beam to the north corner of the door level.
- There is beetle damage over the north window lintel and the east door lintel.
- The render is generally intact throughout the room except for some discoloration and damage around the window jambs and lintels revealing structural members.
- There are major depressions in the floor creating sagging -- evidence of structural weakness below.

3A -- MAGAZINO

This room, referred to by the University of Kansas plans as the magazino or storage room is rectangular in shape and approximately 5.15 x 4.0 meters, longer from east to west.

WALLS AND OPENINGS

The doorway access from the north central room is in the center of the west wall with three brick steps down into the room. The doorway has a wooden lintel. There are no openings in the north or south walls. There is a window opening in the east wall. The render is lime based with a coarse texture primarily intact but occasional sections are missing, exposing the rubble masonry beneath.

FLOOR

The red tile floor is laid in the same running bond pattern as the kitchen.

CEILING

The ceiling is white-washed. It is constructed with the same technique as described previously but of poorer quality; there is no beam at the roof apex. The pitch is not constant, but much steeper in the southern portion. The main ceiling beam is made up of two overlapping tree trunks and the slope diminishes from this point. There is no mortar infill between the ceiling and the framing members.

CONDITION

- There is beetle damage in the doorway lintel.
- There is no beam at the apex of the roof, it opens to the outside in several sections.
- There is green moss in the NE corner of the ceiling; below this in the north wall is a major crack.
- The crack pattern throughout the room corresponds to the wooden beam placement.
- There are cracks in each corner and a large ceiling to floor crack west of center and runs diagonally producing an upper triangle on the wall and an opening through to the exterior.
- Overall spalling and discoloration of the north wall.
- The crack pattern of the east wall corresponds to that of the north wall but incorporates the window.
- The major cracks travel from the northern most ceiling beam to the north corner of the window lintel and then to the floor.
- Underneath the window the plaster is spalling.
- The crack pattern of the south wall is random.
- The render of the southern half of the west wall has a similar cob-web like pattern.
- Major cracking around the northern ceiling beam to the upper northern corner of the doorway.
- South wall has cracks only along its corners.

4A -- HAYLOFT

This room, referred to by the University of Kansas plans as the "hayloft" is a rectangular shape and is approximately 5.3 x 6.3 meters, larger from north to south.

WALLS AND OPENINGS

In the northwest corner there is a protruding rubble wall "ruin" which projects into the room approximately 2 meters from that corner. The north wall is a rubble masonry wall as is the east wall. There is a window in the east wall. The only access to the room is from the exterior by a ladder through an opening on the eastern side of the south wall. The remainder of the south wall is a brick mesh-like structure through which air circulates.

FLOOR

One layer of floor tiles (unlike the typical floor construction of two layers) is laid in the same direction as the floor below.

CEILING

The roof slopes to the south and is similar in construction to the technique described previously.

CONDITION

- The floor is seriously unstable and sagging in areas away from the edges.
- Inaccessibility due to poor floor condition limits careful inspection.

5A -- SOUTH CENTRAL ROOM

This room, probably used as a bedroom, is rectangular in shape and measures approximately 5.57 x 2.84 meters, longer from north to south.

WALLS AND OPENINGS

There are two niches on the west wall, one in the southeast corner with shelves and one in the northernmost section of a doorway shape with a wooden lintel exposed. A doorway from the north central room is in the middle of the north wall with cut stone jambs. Above the doorway is a brownish tint shadow suggesting a relieving arch under the surface. There is a small niche in the northernmost section of the east wall with an exposed wood lintel. There is a recessed window opening in the SW corner and an exposed wood lintel. The walls are rendered in a lime-based material.

FLOOR

The floor is red tile of the typical construction and in a herringbone pattern.

CEILING

The roof is the typical wood rafter and plaster construction with three major wooden beams running horizontally in an east-west direction and smaller joists in a north-south direction.

CONDITION

- The lower portion of the walls are a rough laid render, revealing the rubble work structure underneath.
- Several minor cracks appear throughout the room.
- There is a large floor to ceiling crack in the east wall.
- There are cracks from floor to ceiling in the NW and SE er.
- A patch of plaster is missing from beneath the niche on the westwall.
- Brown patches are evidence of possible water damage on the ceiling beams.

6A -- BEDROOM

This room is rectangular in shape, approximately 4.96 x 3.35 meters and was possibly used as a bedroom. The room is longer from north to south.

WALLS AND OPENINGS

There is a thin partition wall along the west wall which jogs to meet the north wall. The main access to the room is through a doorway along the north wall. There is also a thin partition wall here which jogs to meet the west wall. There are no openings along the east wall but there is a brick bracket to support the ceiling beam. There is a window in the center of the south wall.

FLOOR

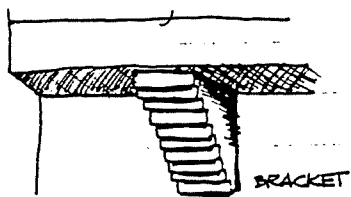
The floor is red tile laid in a regular pattern.

CEILING

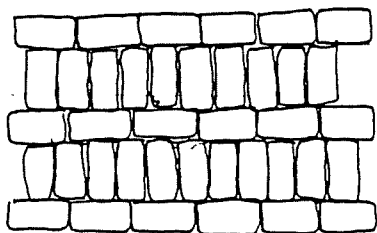
The ceiling slopes from north to south. The two large beams run east to west and the space between the beams and ceiling are filled in with plaster.

CONDITION

- All four walls have an irregular finish.
- The ceiling shows signs of rain damage in the center of the ceiling, and the floor below is also stained.
- There is a crack in the east wall, SE corner, large enough to see through.



Brick bracket along the east wall



Red tile pattern of the floor in 6A

7A -- BEDROOM

This room is rectangular in shape, approximately 3 x 5.7 meters, and is longer from north to south. The room was probably used as a bedroom.

WALLS AND OPENINGS

There is a niche the height of the doorway in the center of the west wall (also the exterior wall). There is a thicker wall protruding into the room in the northeast corner. There is a doorway in the northeast corner of the east wall, a partition wall. There is a window in the center of the south wall, also an exterior wall.

FLOOR

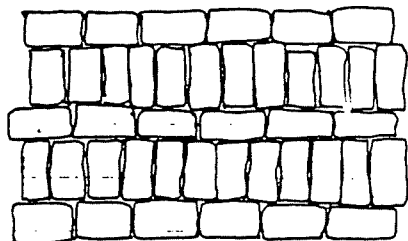
The floor is laid in a red tile pattern.

CEILING

The ceiling slopes downward to the south. There are three large supporting cross beams east to west and smaller secondary beams running north to south.

CONDITION

- Ceiling and floor are peeling and stained.
- Crack near the doorway reveals brick pier supporting rafter.
- There are interior cracks where changes in the exterior have occurred.



Red tile pattern of the floor in
7A

8A -- HALLWAY

This hallway, a passage to rooms 6A and 7A is rectangular in shape, measuring approximately 3.14 x 1.7 meters, longer from east to west.

WALLS AND OPENINGS

The west wall is completely occupied by a door opening. The north wall is very thick and probably serves as the building's main axis. There is a doorway in the northeast corner. The east wall is also thick and abuts the center wall of the building. There is a doorway in the southeast corner of the south wall, a partition wall.

FLOOR

The red tile floor is laid in a regular pattern.

CEILING

The ceiling is a flat "drop" ceiling covered with wooden planks only 2.5 meters from the door.

CONDITION

- The ceiling is in good shape and appears relatively new.
- The walls show no evidence of deterioration.

1C -- OVEN and 2C/3C -- STALLS

The oven and stalls make up a western appendage to Padule's main structure and provide places for the utilitarian functions of baking and housing animals. This section is a rectangular mono-pitched volume with a shape similar to that of the main southern-most volume of the main building of Padule.

The OVEN is separated structurally from the main house. The corners are quoined, the walls are rubble work construction. The opening of the oven on the north face consists of two large stones as jambs and a single stone cut in a semi-circular arch acting as a lintel. The interior is elliptical in plan with a single soldier course of brick along its perimeter. A beehive dome springs from this course and consists of broken bricks. The entire surrounding cavity is filled with soil which provides insulation.

CONDITION

- Heavy efflorescence of salt at the opening.
- Vegetation (fig tree) is causing disruption of the stone work.
- Missing roof tiles (laid on a soil fill) is causing water penetration.

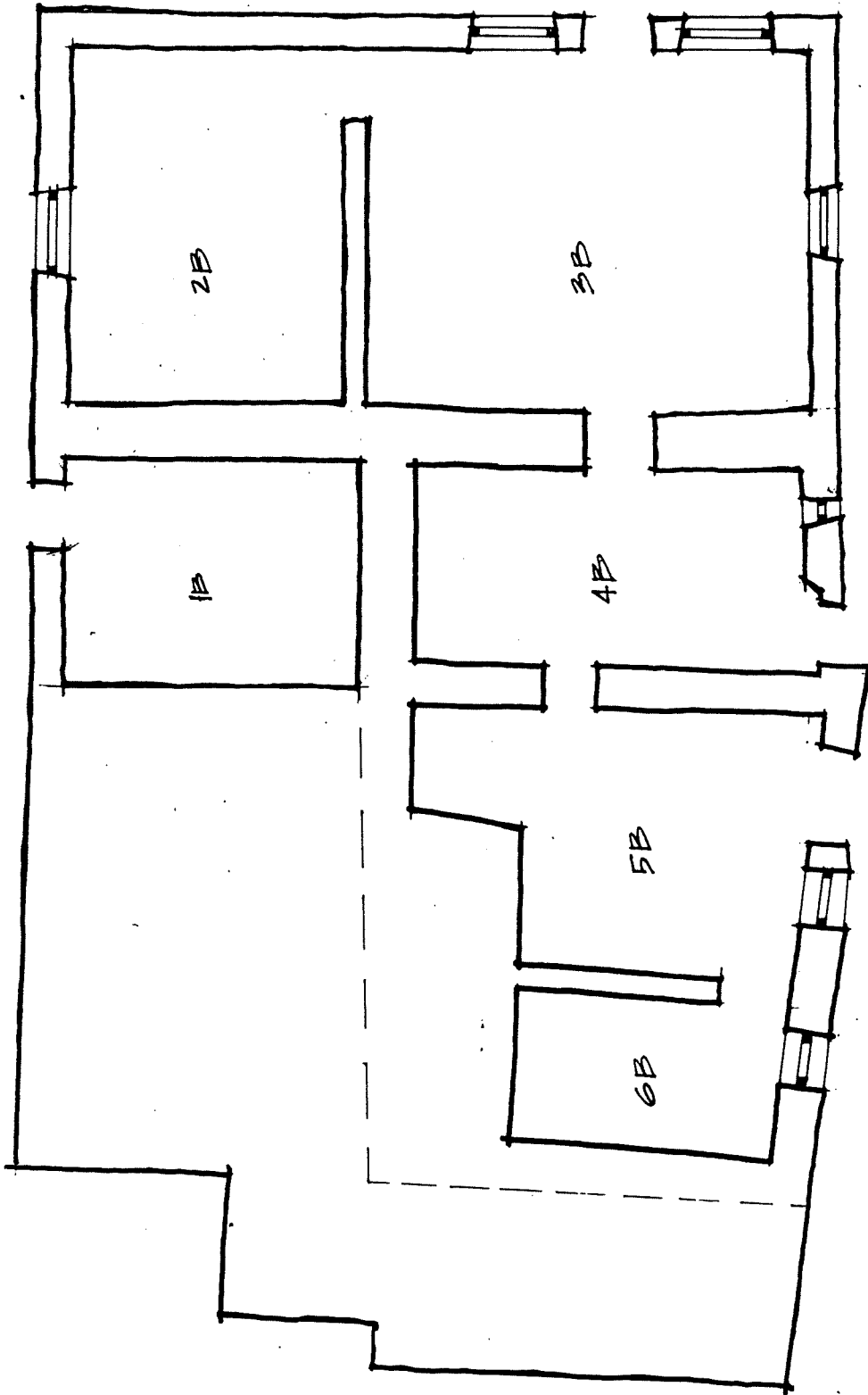
The STALLS are two small spaces separated by a low brick wall, one brick thick. Brick flooring in both stalls and roof covering is made of small wooden members with roof tiles in a single layer spanning in between.

CONDITION

- The wood members are unsound.
- Tiles are missing, causing damaging water penetration.
- Stones are missing at the bearing point of the wood lintels.

KEY TO FLOOR PLAN -- LEVEL B

FIGURE 10



LEVEL B PLAN

1B -- WINE CELLAR

This room, probably used for the production and storage of wine, is located in the north basement level of Padule. It measures approximately 3.22 x 4.19 meters, longer from north to south.

WALLS AND OPENINGS

The walls are rubble fieldstone. The north wall has a brick dressed doorway. Its arch is double coursed, the first row laid in a rowlock pattern, the second row is flat. There are no openings in the east or south walls. At the base of the south wall is a low wooden shell supported by brick stone piers. In the center of the west wall there is a filled-in-doorway. The brick dressing of the jamb and archway of this doorway are revealed as is a wooden lintel.

FLOOR

The floor is dirt.

CEILING

The roof beams run in an east to west direction, whereas the secondary beams run perpendicular to these.

CONDITION

- Beetle damage in the ceiling beams.
- Water damage along the ceiling of the north wall and around the doorway.

2B -- STABLE #2

This room, located on the northeast corner of the ground floor of Padule, was used to house and feed the animals. The room measures 3.88 x 4.98 meters, longer from east to west.

WALLS AND OPENINGS

The north wall has a large brick arch filled in with stone, within the center of the arch a cement window has been added. The east wall has a large brick arch which has been infilled and now creates a solid wall. The south wall has a doorway in the southeast corner joining this room to the other stable, 3B. The west wall has a cement trough at its base and a small trough situated in the southeast corner. The wall is rubblestone with the lower half covered with cement and the top half covered with a white render.

FLOOR

The floor is cement and begins to slope upward midway into the room in a westerly direction.

CEILING

The large beams run in the north to south direction, the smaller support system in an east to west direction.

CONDITIONS

- There are cracks on the north, east and south wall.
- There is water damage along the south wall and the north wall above the arch due to a poor roofing system and a major crack.
- The small or secondary roof supports show signs of beetle damage.

3B -- STABLE #1

This room is in the southeast corner of the building ground level. It was probably used to house and feed the animals. It is rectangular in shape and measures approximately 5 x 6.38 meters, longer from north to south.

WALLS AND OPENINGS

A doorway in the northeast corner of the north wall co-joins this room with stable #2. To the west of this doorway is a low wall and ramp. A feeding trough runs along this wall. The east wall has two window openings with a door in between. All of the openings are dressed in brick with a double coursed archway. The inner row is laid in a rowlock configuration, the outer layer is stretchers. There is a single square cement window in the center of the south wall. At the base of this wall is a cement-based trough. There is a doorway in the west wall that leads to the machine and equipment room. To reach this room you must climb three brick steps.

FLOOR

The floor is cement. It slopes up towards the trough along the north wall and is ribbed. There is a downward slope into stable #2. In front of the doorway and the east wall there is a drainage recess which runs between the two doors.

CEILING

The roof is supported along the west wall by three projecting brick brackets. The large beams run in a north to south direction. The secondary beams run perpendicular to these.

CONDITION

- The wooden lintel over the northeast window is deflected.
- On the west wall in the southwest corner is a large crack which has been refilled.
- Water damage is evident on the west wall ceiling in the northeast corner.

4B -- MACHINE AND EQUIPMENT ROOM

This room, titled on the drawings by the University of Kansas as the machine and equipment room, is rectangular in shape and measures approximately 2.84 x 5.54 meters, longer from north to south.

WALLS AND OPENINGS

There is no opening in the north wall. Along the east wall is a doorway into the stables, this doorway is framed in brick, with two wooden lintels exposed and on top of each other. There is an exterior doorway along the south wall, comprised of a row of concentric brick arches and the doorway is filled in half-width. There is also a very small window opening to its east. There is a doorway along the west wall the rooms to the west. There is a seam in the NW corner differentiating the north wall, regularly coursed, with the west wall of the rubble work.

FLOOR

The floors are dirt and rubble stone work.

CEILING

There are four major supporting beams running from west to east, the outermost beams are flush with the walls. The secondary beams run in a regular pattern perpendicular to the major beams.

CONDITION

- The walls are made of rubble work with stucco or concrete. In the southeast corner of the east wall is a large crack with concrete patching.
- There are salt spots/stains on the north and south walls.

5B -- GRAIN STORAGE

This room, referred to by the University of Kansas as "grainstorage," is an irregular L-shaped plan (see Plan: Level B) and is longer from north to south.

WALLS AND OPENINGS

The irregular shape is produced by a small 1 x 2 meter setback leading to a cut stone doorway. This doorway has been walled in, and has stone lintels and quoining. There is a door opening along the east wall which leads into the machine and equipment room, the doorway is dressed in brick with a wooden lintel. The south wall comes in at an odd (acute) angle to the west wall. There is a small window and door along the south wall, the door has a concrete lintel and cut stone dressing. The walls are rubble work partially covered with stucco. The east wall has a dark grey color render.

FLOOR

The floor is of rubble stone about 1 meter into the room; the rest is concrete.

CEILING

The ceiling is the typical rafter and plaster construction.

CONDITION

-- No comment.

6B -- POLLAIO

This room, referred to in the University of Kansas plans as the pallaio, is in the most southwestern portion of level B and measures approximately 3.73 x 2.26 meters, longer from north to south.

WALLS AND OPENINGS

There is a shelf-like projection and a brick flue-like projection along the north wall. Along the southern most portion of the east wall is a door opening from the grain storage room. A small window opening pierces the south wall with a brick relieving arch above. The walls are rubble work partially covered with stucco. There is a dark grey render particularly on the lower half of the north wall.

FLOOR

The floor is stone and earth randomly laid.

CEILING

The ceiling is similar to the ceiling configuration in the "grain storage" room.

CONDITION

- There are infill bricks directly under the ceiling rafters around the room, especially around the major beams on the north and west wall.

IV.

FINAL RECOMMENDATIONS

- We recommend that any proposed plans concerning Padule must be compatible with the long term economic goals of Spannocchia.
- The group determines the preferred use would be to return Padule to its intended utilitarian function.
- A typological study of Tuscan farmhouses would aid in the plan for a proper intervention and re-use.
- We highly recommend that this work be carried out by a preservation architect.
- Any intervention must not be contrary to the traditional construction methods and materials found at Padule.

STRUCTURAL RECOMMENDATIONS

URGENT:

- Repair roofleaks
- Repair and replace all missing doors and windows
- Reglaze windows
- Remove fig tree from oven roof
- Remove vegetation from exterior walls, and surrounding buildings
- Determine extent of salt presence around oven
- Desalinate opening and exterior of west wall of 7A
- Determine cause of water penetration in walls and correct
- Assess water run off patterns and provide new drainage where needed
- Continue crack monitoring of northeast room; stabilize
- Repair base of north wall below 1B door

IMPORTANT:

- Determine strength of roof and floor joists and replace if necessary
- Document Padule with drawings and photographs

OPTIONAL:

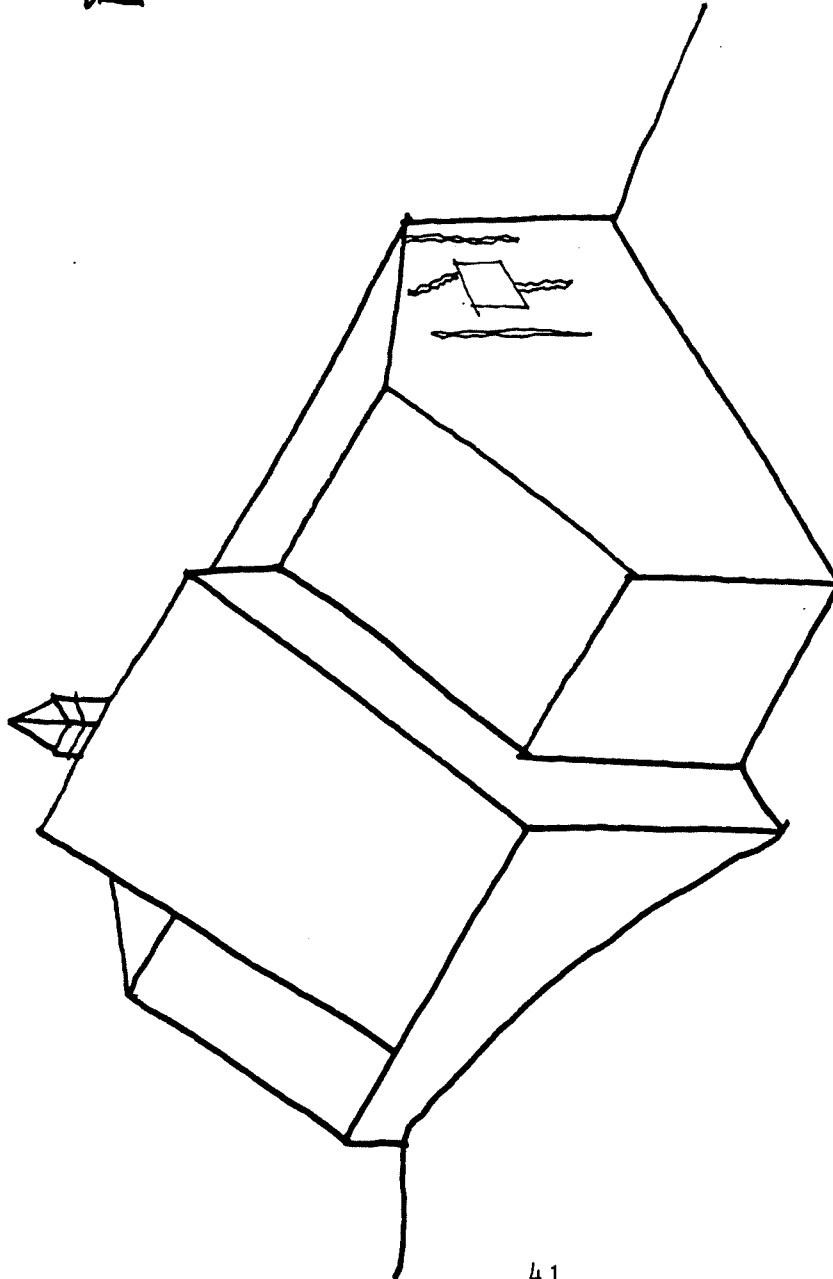
- Hire a preservation architect for design and rehabilitation of interior and exterior. Plans must include:
PLUMBING, HEATING and ELECTRICITY

APPENDIX

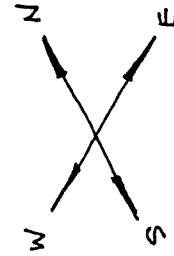
STRUCTURAL ANALYSIS

During the visual inspection of Padule a series of cracks were found in the northeast room. One large single crack was found in the east wall of 5A which penetrated into the basement. Two large cracks found in 3A which extended down into 2B were monitored with a DEMEC gauge for 5 days.

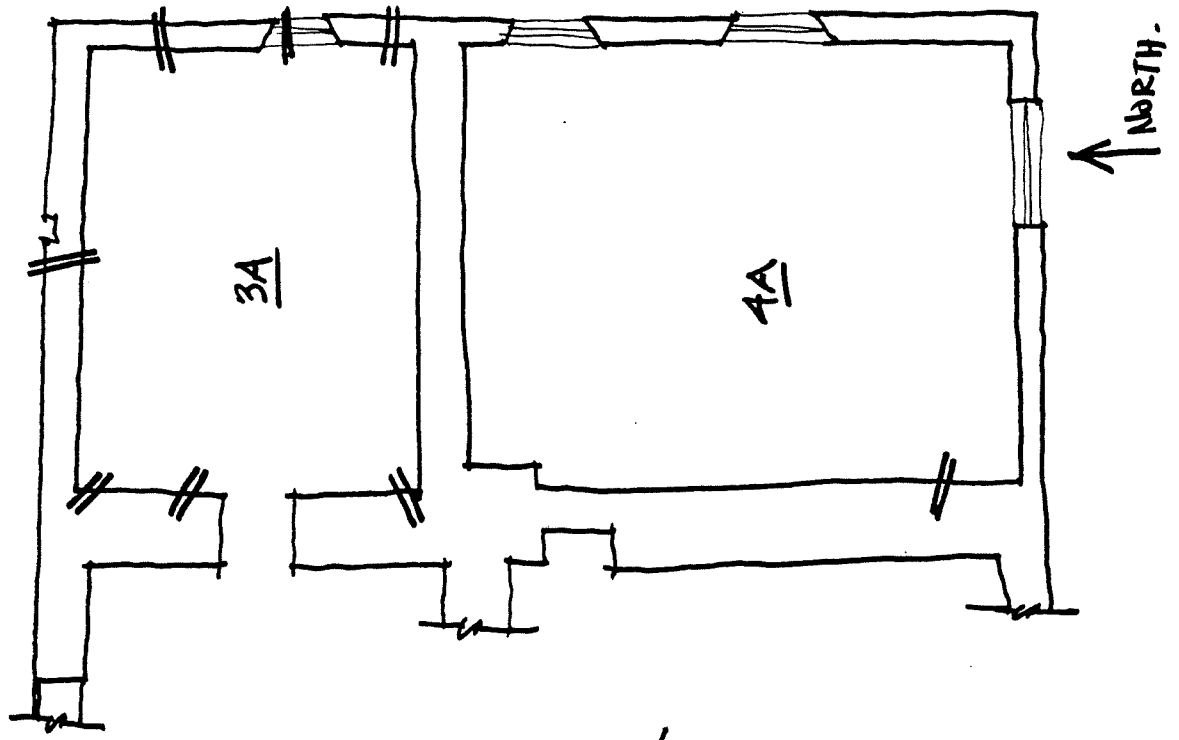
Preliminary and inconclusive findings indicate that cracks on the east wall seem to be stable while the large crack on the north wall seems to be moving. This movement may be due to thermal changes and may not indicate progressive movement in the building. Continual monitoring of these structural cracks must continue. Test results are found in Appendix B, Demec Readings.

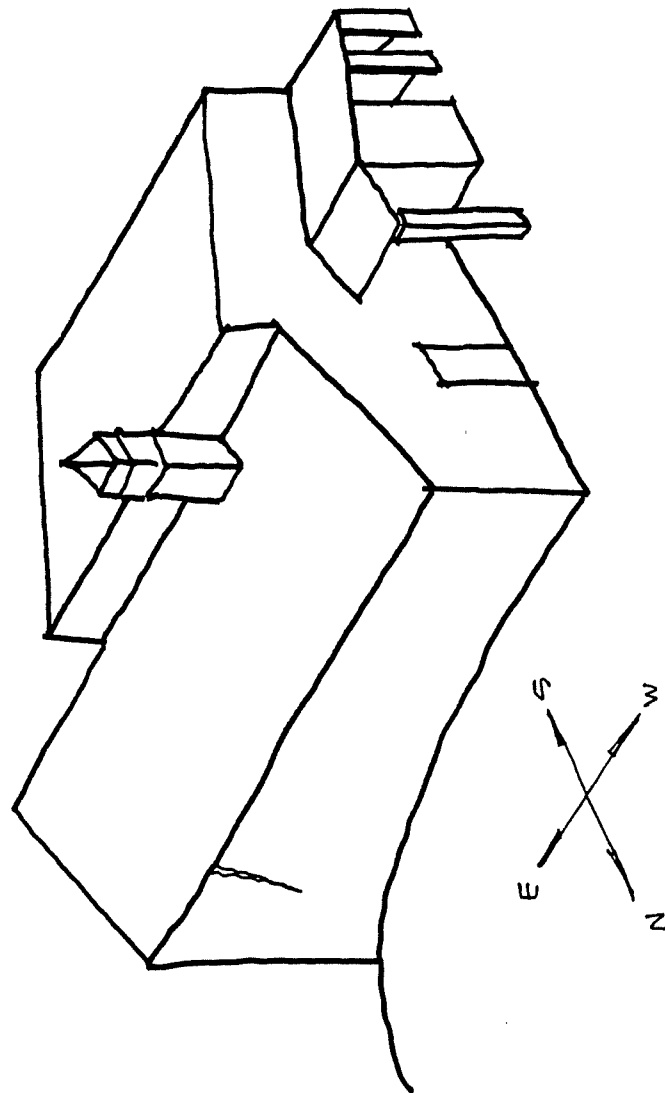
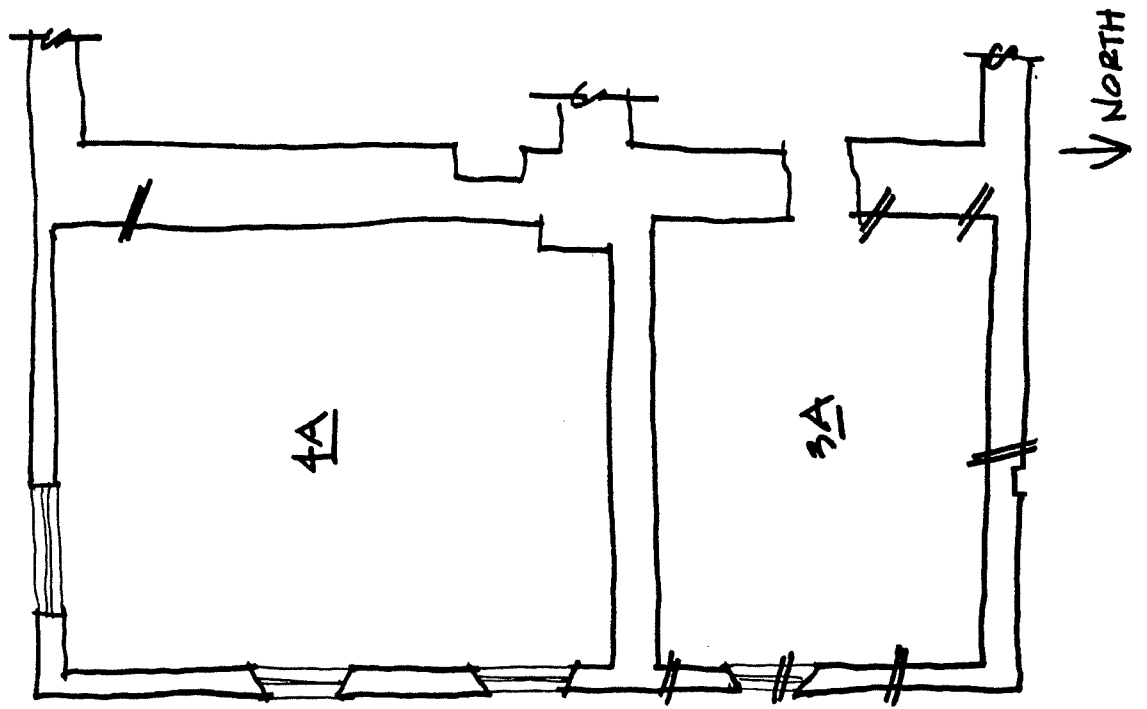


APPENDIX A



MAJOR CRACKS INDICATED BY // IN PLAN. ALL CRACKS TO BE ASSESSED BY PROFESSIONAL.





APPENDIX A

X1

INTERNATIONAL CENTRE FOR THE STUDY OF THE PRESERVATION AND THE RESTORATION OF CULTURAL PROPERTY
CENTRE INTERNATIONAL D'ETUDES POUR LA CONSERVATION ET LA RESTAURATION DES BIENS CULTURELS

ICCROM

Demountable mechanical strain gauge (DEMEC) base sheet

DEMEC N°. : 0613-H GAUGE FACTOR: .002 mm

OPERATOR(s) : Lisa Johanningsmeier SHEET N°. :

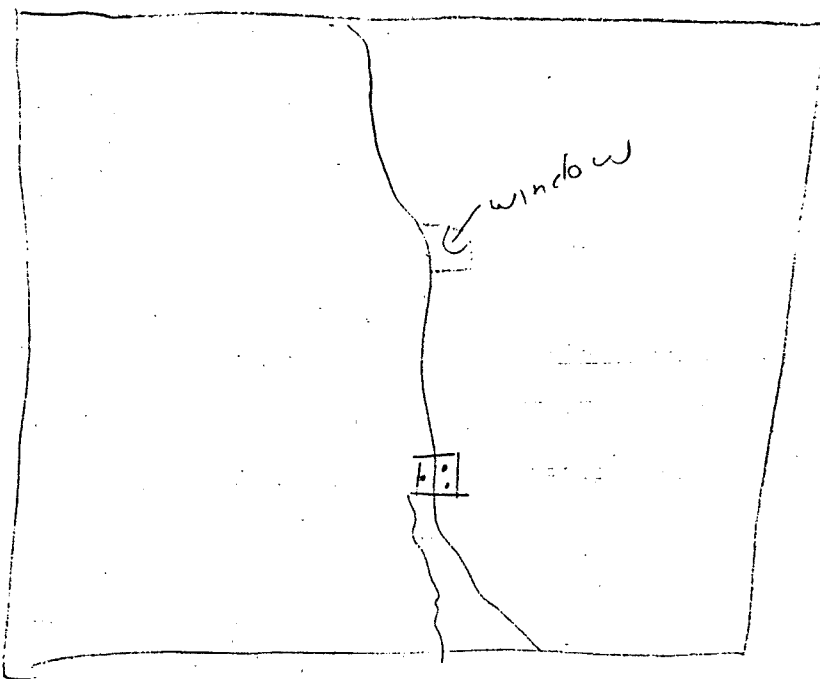
MATERIAL(s) : TERITINO STONE DISC SET N°. : #1

LOCATION : Magazine Room on north east room north wall

DESCRIPTION : Crack runs from floor to ceiling

Photograph/Drawing:

The north wall of the northeast room at floor on smaller crack develops beside this one
The crack transverses through a small window now covered over with stucco and moves along a large arch at the base of the house
Crack has been repaired many times.



CORRECTED DEMEC BASE READINGS:

DATE : AUGUST 10, 1987

a : 8.615 TIME : 2:45 PM

b : 8.89 t (°C) : Int: 25 Ext: 28.5

c : 8.18 RH(%) : Int: 19.9^{-t} Ext: 20.5

Notes

: PROBLEMS w/c RH 63% RH 48%

R E A D I N G S		SDR	d1 d2	ratio (r)	INCREMENTS	CORRECTIONS
Dummy 1a	8.205					
a1	8.62					
a2	8.619					
a3	8.605					
a4	8.615					
a5	8.615					
a6	8.615					
Dummy 2a	8.203					

a=

a=

t(°C)= 25

RH(%)= 19.9

R E A D I N G S		SDR	d1 d2	ratio (r)	INCREMENTS	CORRECTIONS
Dummy 1b	8.201					
b1	8.89					
b2	8.889					
b3	8.889					
b4	8.89					
b5	8.90					
b6	8.89					
Dummy 2b	8.20					

b=

b=

t(°C)= 25

RH(%)= 19.9

R E A D I N G S		SDR	d1 d2	ratio(r)	INCREMENTS	CORRECTIONS
Dummy 1c	8.20					
c1	8.15					
c2	8.18					
c3	8.20					
c4	8.19					
c5	8.19					
c6	8.17					
Dummy 2c	8.21					

c=

c=

t(°C)= 25

RH(%)= 19.9

Demountable mechanical strain gauge (DEMEC) base sheet

DEMEC N°. : 0613/11 GAUGE FACTOR: .002 mm

OPERATOR(s) : Lisa Janningsmeier SHEET N°. : _____

MATERIAL(s) : Tertino Disk #1 DISC SET N°. : #2

283 - on brick LOCATION : Magazine Room or

DESCRIPTION : Crack begins at

the top of the

wall under ceiling

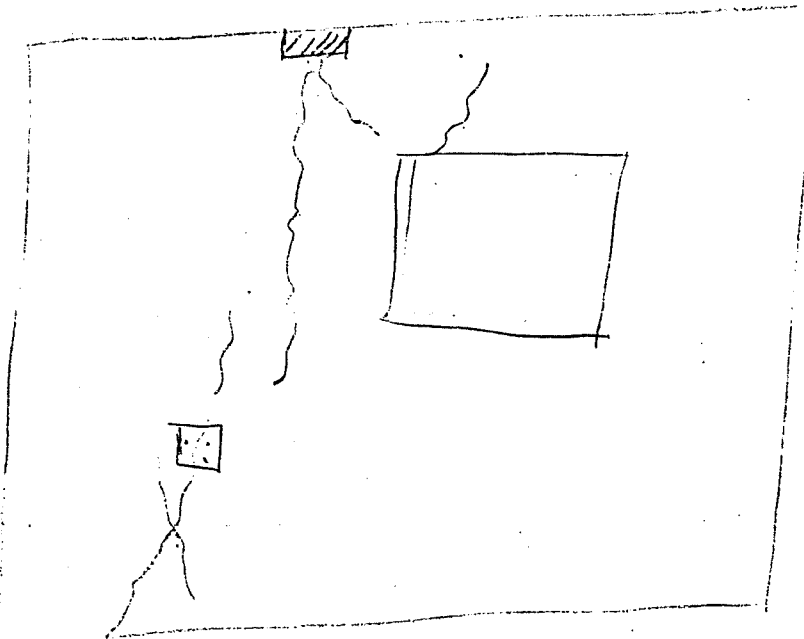
joist and goes

down moving over

3 inches to the

floor

Photograph/Drawing:



CORRECTED DEMEC BASE READINGS:

DATE : August 13, 1987

a : _____

TIME : 3:10

b : _____

t (°C) : Int: _____ Ext: 29.5

c : _____

RH(%) : Int: _____ Ext: 20

Notes : _____

CORRECTED DEMEC BASE READINGS

DISC SET N°.: 0613-H #2

ICCROM

R E A D I N G S		SDR	d1 d2	ratio (r)	INCREMENTS	CORRECTIONS
Dummy 1a	8.209					
a1	7.93					
a2	7.94					
a3	7.929					
a4	7.923					
a5	7.929					
a6	7.928					
Dummy 2a	8.204					

a=

a=

t(°C)= 27

RH(%)= 18.5

R E A D I N G S		SDR	d1 d2	ratio (r)	INCREMENTS	CORRECTIONS
Dummy 1b	8.209					
b1	7.919					
b2	8.07					
b3	8.052					
b4	8.06					
b5	8.059					
b6	8.058					
Dummy 2b	8.19					

b=

b=

t(°C)=

RH(%)=

R E A D I N G S		SDR	d1 d2	ratio(r)	INCREMENTS	CORRECTIONS
Dummy 1c	8.189					
c1	7.96					
c2	7.95					
c3	7.955					
c4	7.948					
c5	7.949					
c6	7.96					
Dummy 2c	8.20					

c=

c=

t(°C)=

RH(%)=

MORTAR ANALYSIS

Four mortar samples were taken from key areas of Padule. Within the scope of our analysis it was difficult to draw concrete conclusions, however, some generalizations may be made: each sample was essentially a lime based mortar of an extremely high aggregate content. The mortars easily crumbled from the wall while the materials were coarse and rough. The mortars ranged in color from light grey to brown.

RESULTS FOR MORTAR ANALYSIS

1. Exterior south wall, 1st floor, southwest room #5B

% SAND	64.2%
% FINES	21%
% BINDERS	14.8%

2. North wall, basement, room 4B (U of K Machines and Equipment Room)

% SAND	56%
% FINES	8%
% BINDERS	36%

3. Under oven door opening

% SAND	22%
% FINES	14%
% BINDERS	63%

** Mortar analysis thrown off by high salt content

4. East wall, basement, room 3B (U of K Stable)

% SAND	56%
% FINES	22%
% BINDERS	22%

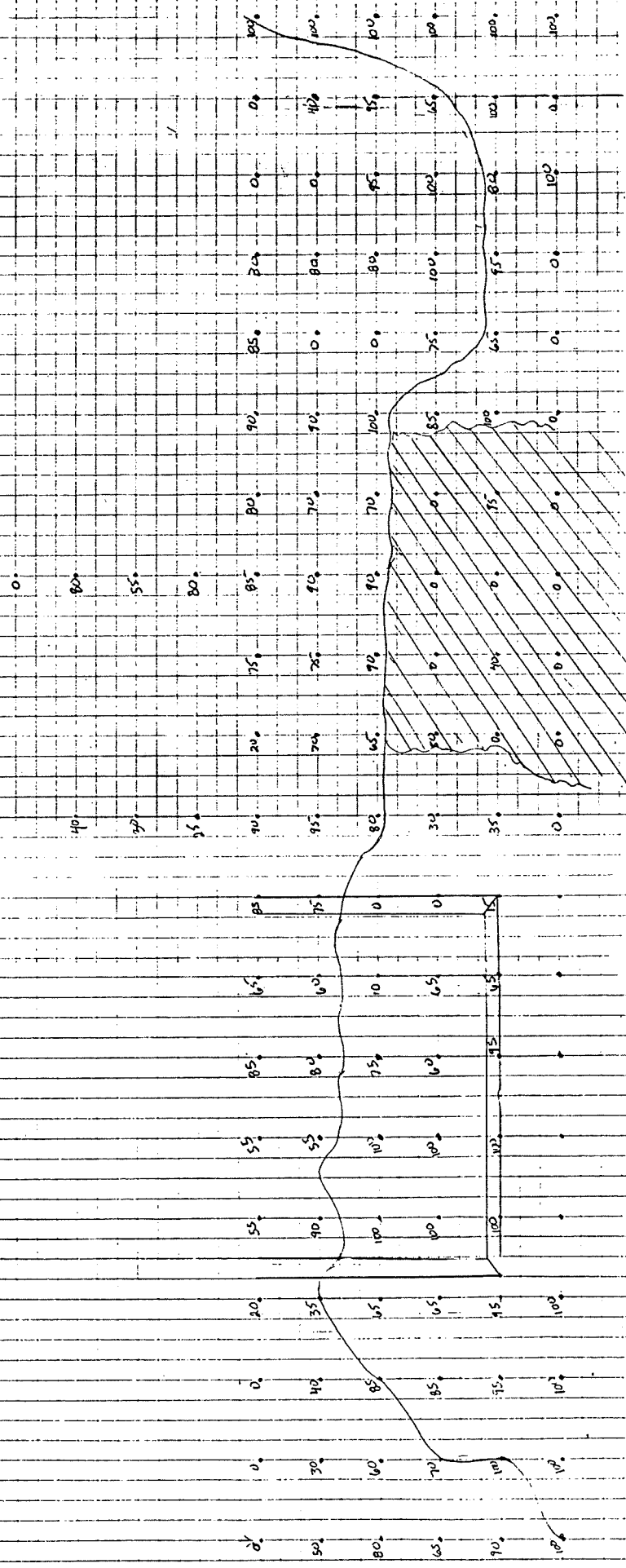
HUMIDITY STUDY

Although the Padule study was conducted for only a short period of time it was clear that throughout the building problems are occurring due to water penetration. The study revealed several roof leaks, damp walls and areas of high humidity. In the short time of the study it was impossible to identify and evaluate each source of water penetration and the extent of the damage.

The team chose the west wall of room 7A for testing with a Protimeter for moisture. Patches were found on the wall containing 100% moisture content. These high readings corresponded closely with the discoloration and spalling of the interior plaster surface (see attached Humidity Study report).

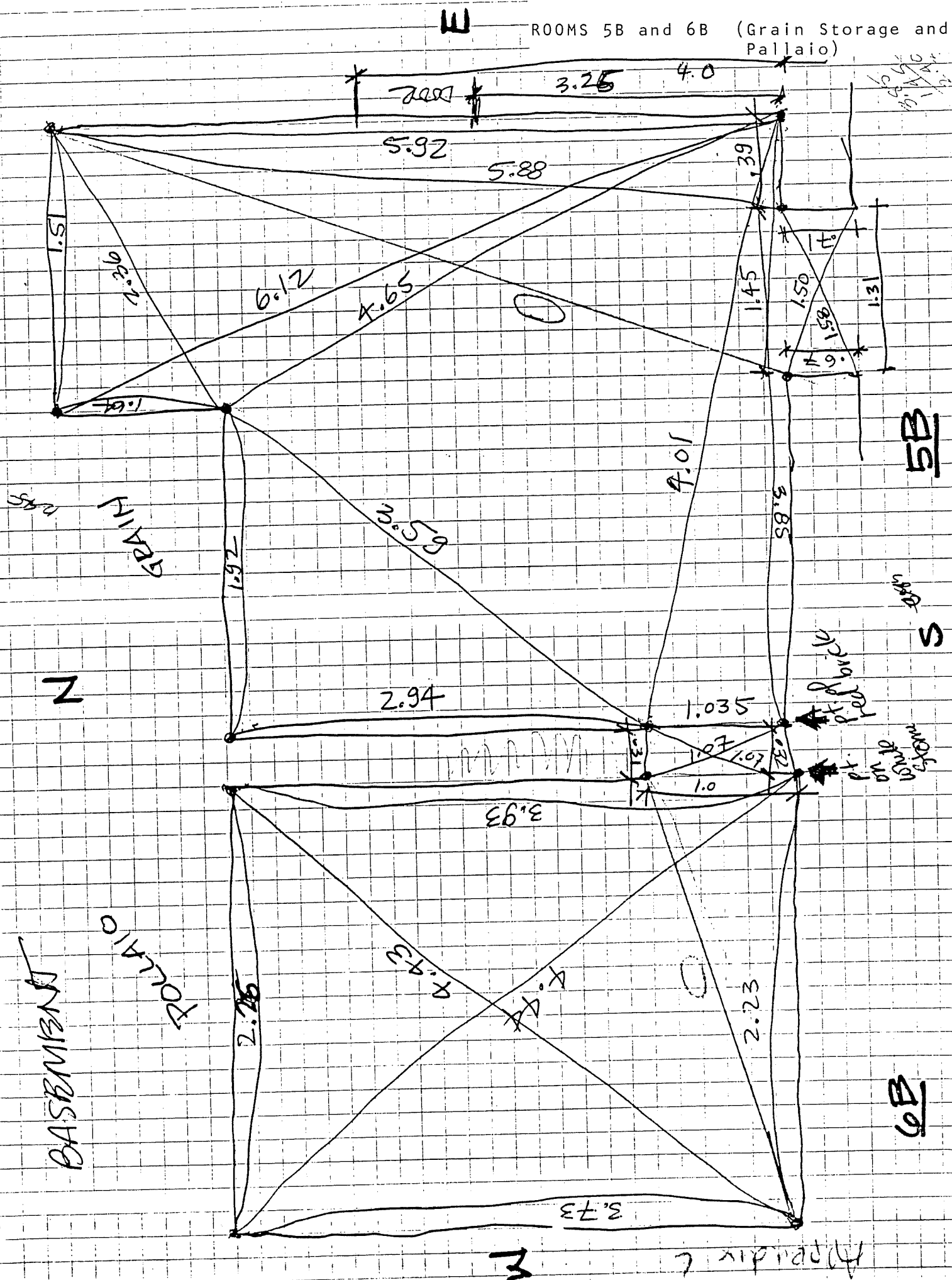
From this brief study it is evident that certain areas of Padule are being seriously damaged by water penetration. Steps should be taken immediately to eliminate the source of the water damage.

WEST WALL, ROOM 7A



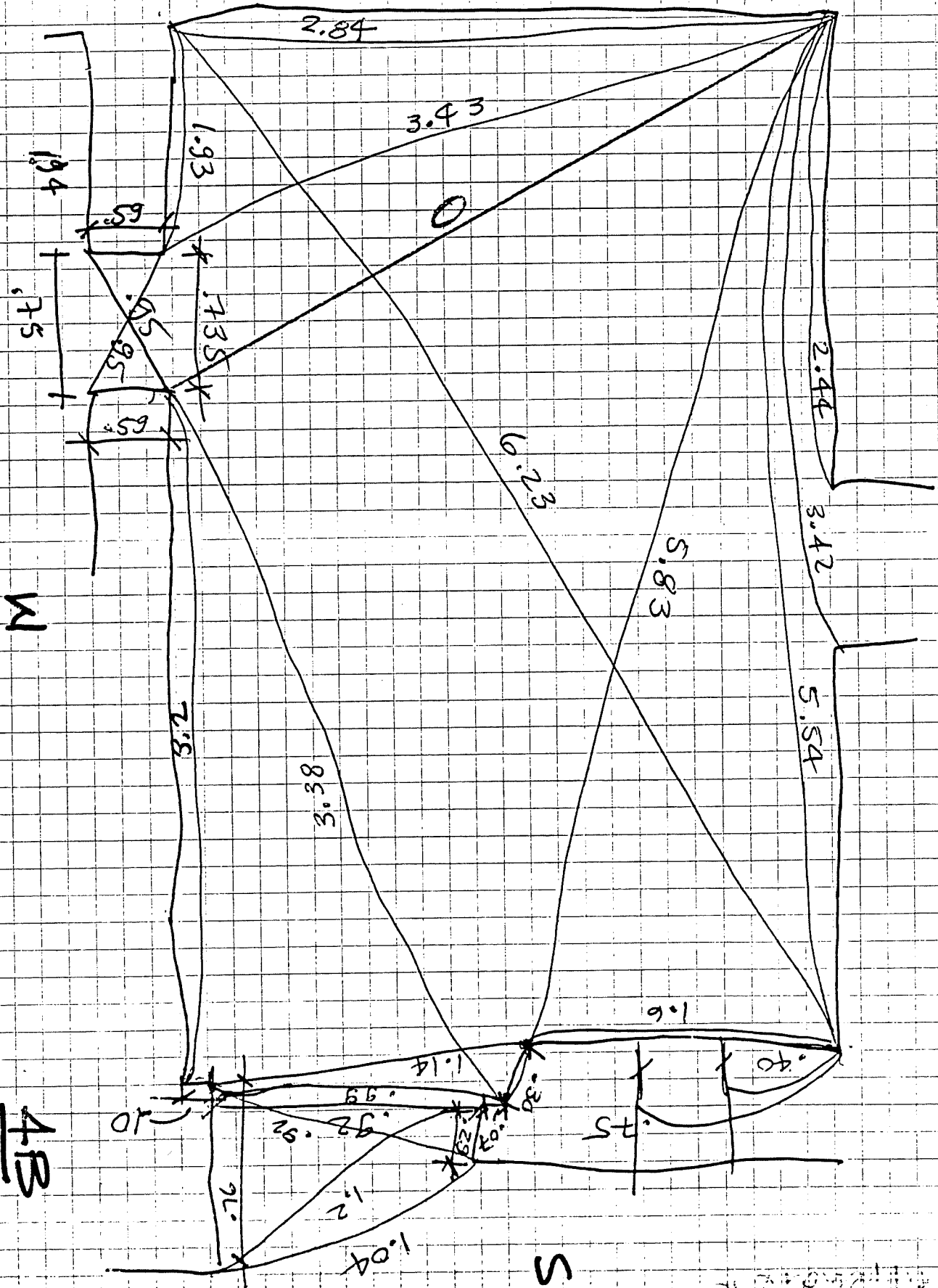
Index 14, 15, 17, 17, 1967
 numbers: Indicate % humidity in wall.
 line: percent humidity of H₂O damage
 on wall indicated by discoloration.

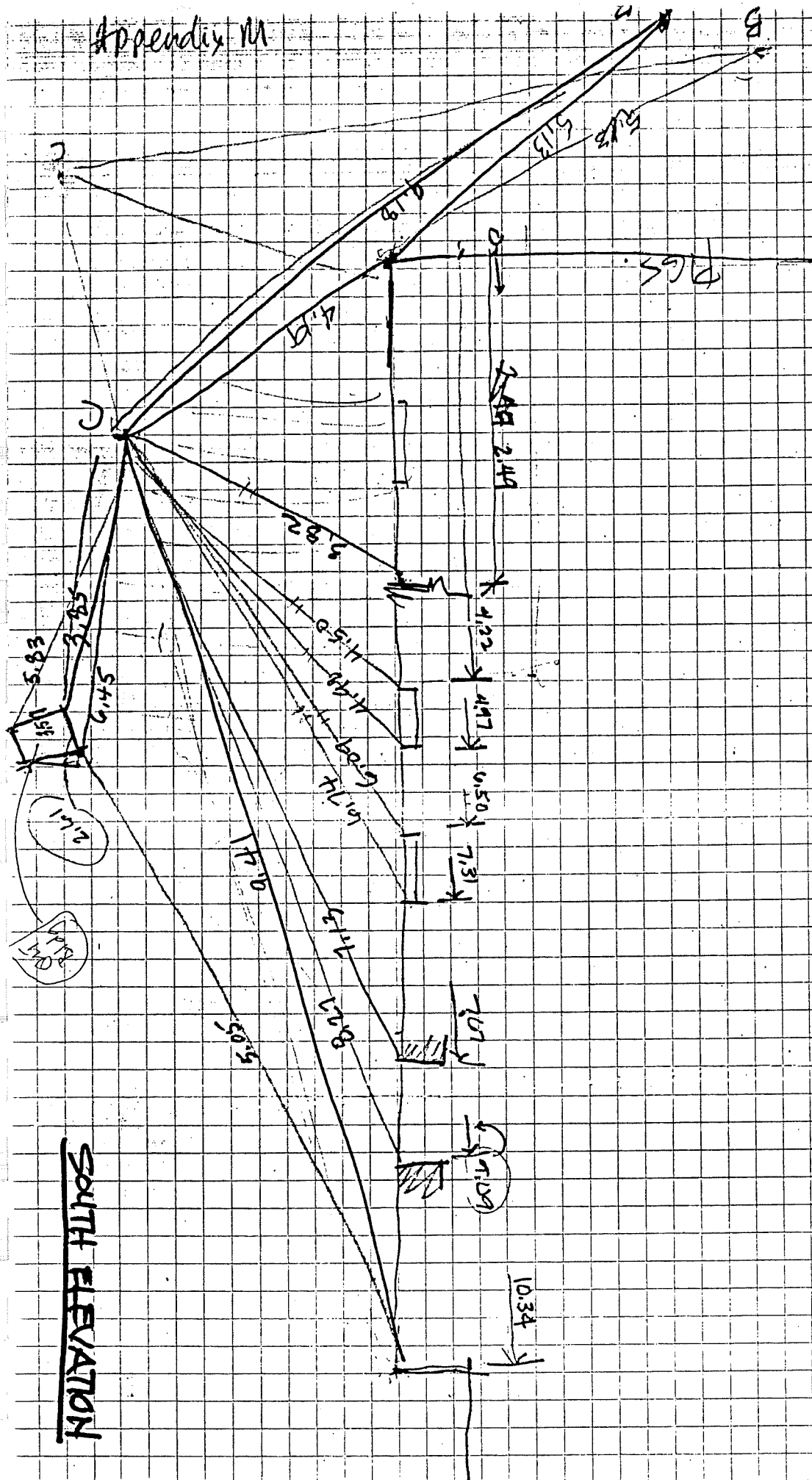
HUMIDITY STUDY



MACHINE AND EQUIPMENT ROOM

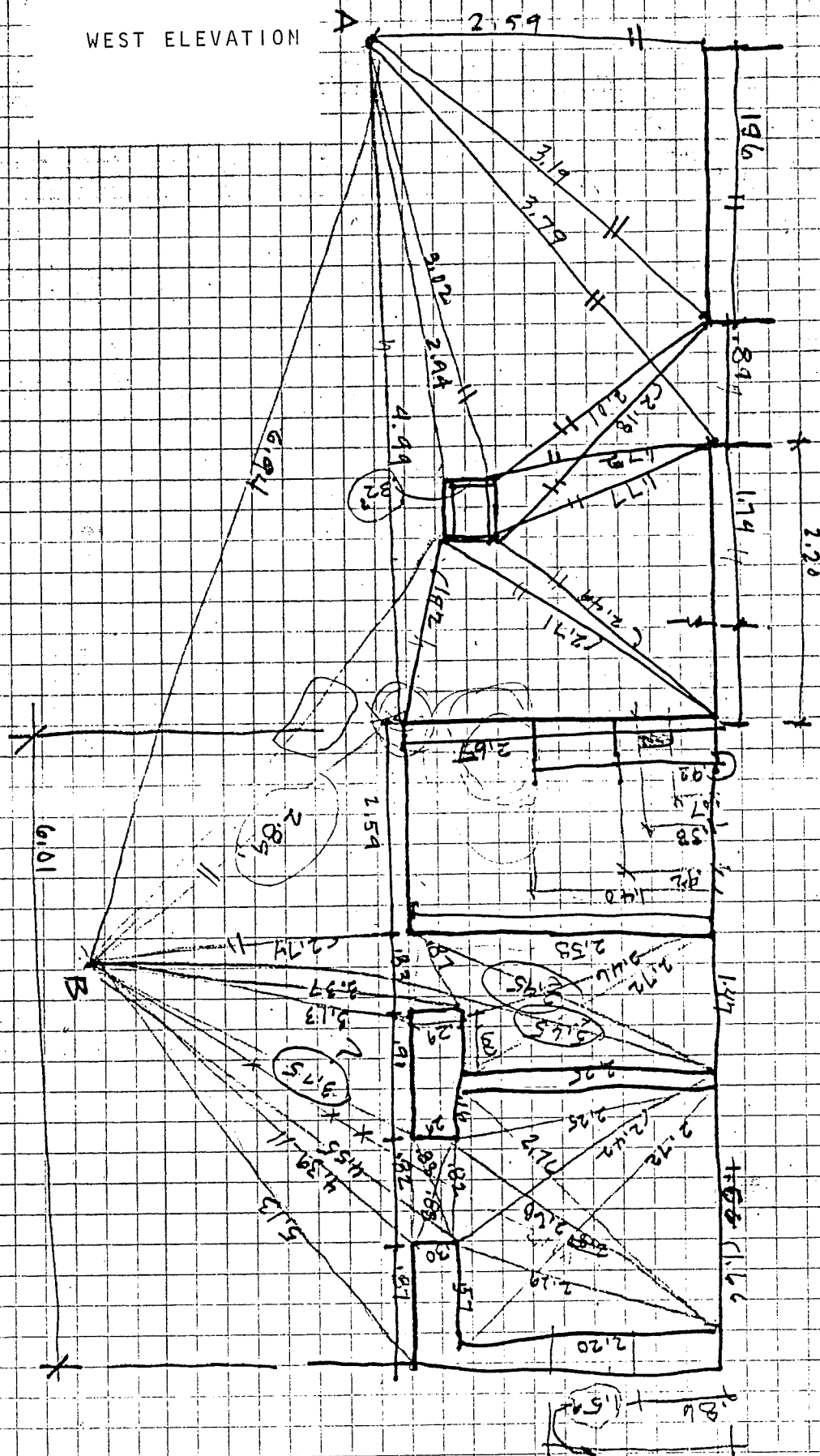
SPRINKLER - WORKED
MACHINES & EQUIP



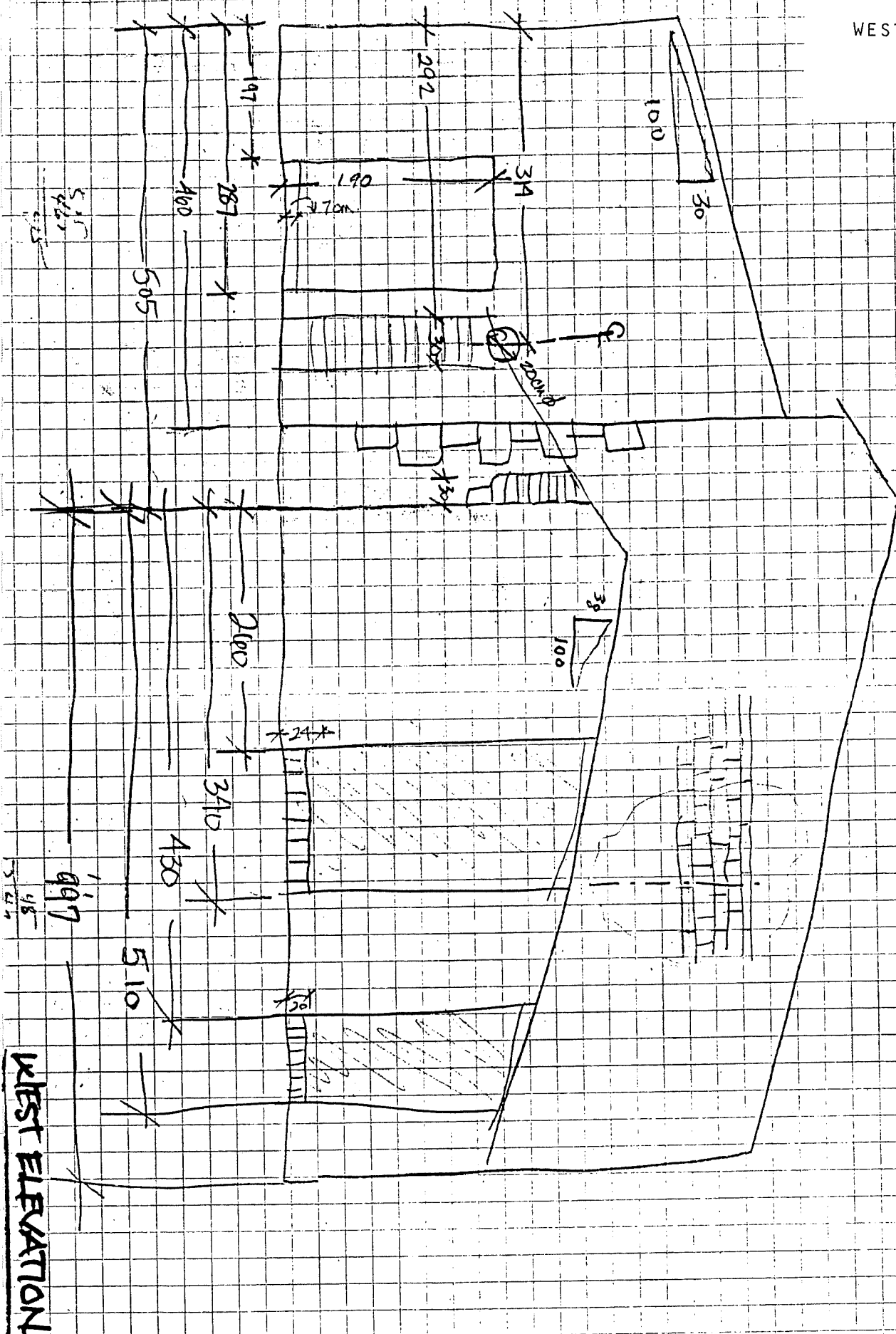


SOUTH ELEVATION

WEST ELEVATION



WEST ELEVATION



ROOM 3A, MAGAZINO

Σ

✓

515

Z

m

Room
MAGAZINE

W
A

Appendix R

HAYLOFT

APPENDIX E - 60

ROOM 4A, HAYLOFT

2

.3
.79
.70

4.81 (approx)

5.23

0.70

0.70

0.3

8.46

4.55

6.37

5.988

5.265

3.04

1.40

.71

.12

.13

.25

1.43

.31

1.38

IV

III

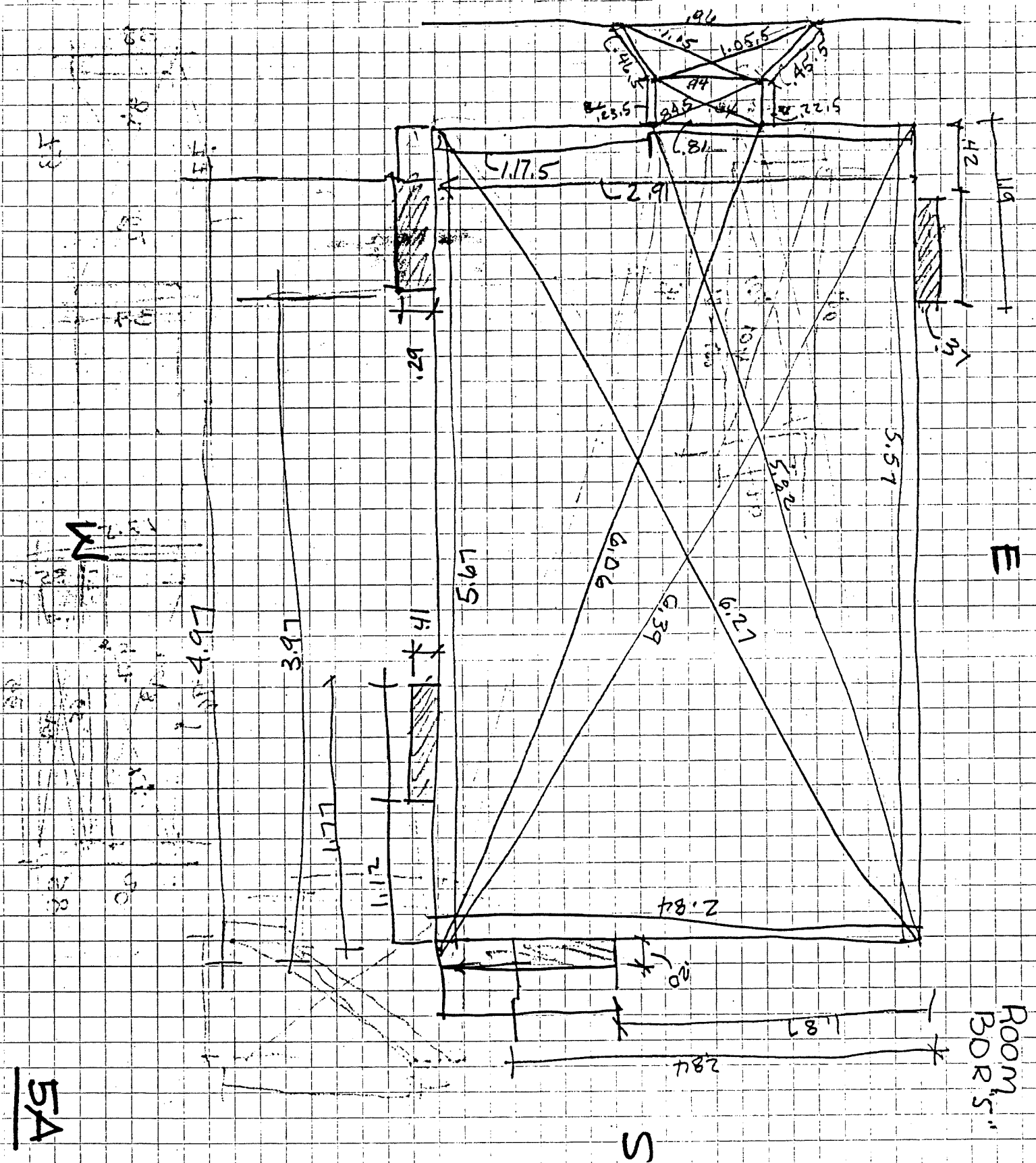
4A

U

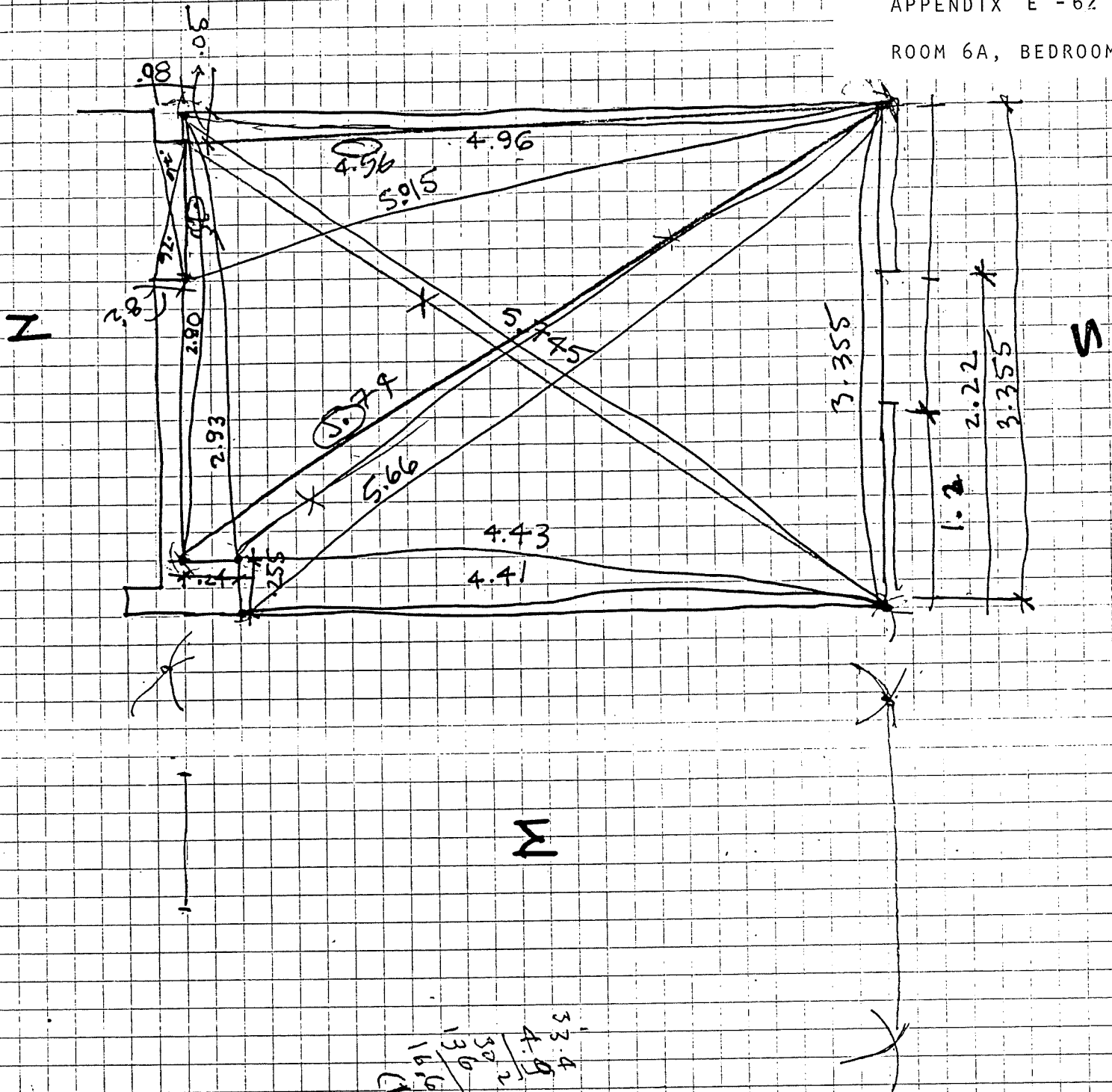
Appendix S

APPENDIX E - 61

ROOM 5A, SOUTH CENTRAL ROOM



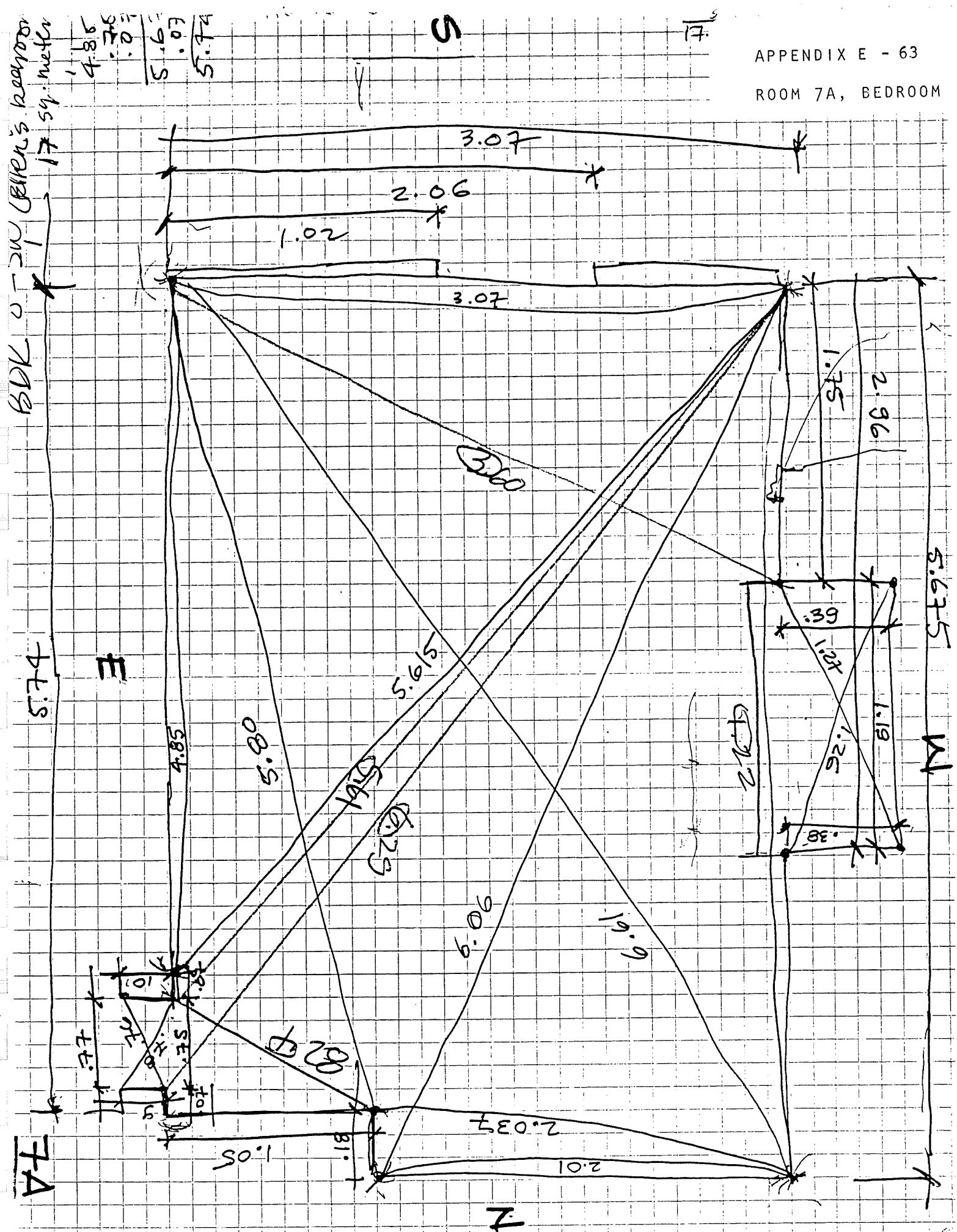
5A


$$\begin{array}{r} 33.4 \\ 4.9 \overline{) 136.6} \\ \underline{20} \\ 16.6 \\ \underline{16.6} \\ 0 \end{array}$$

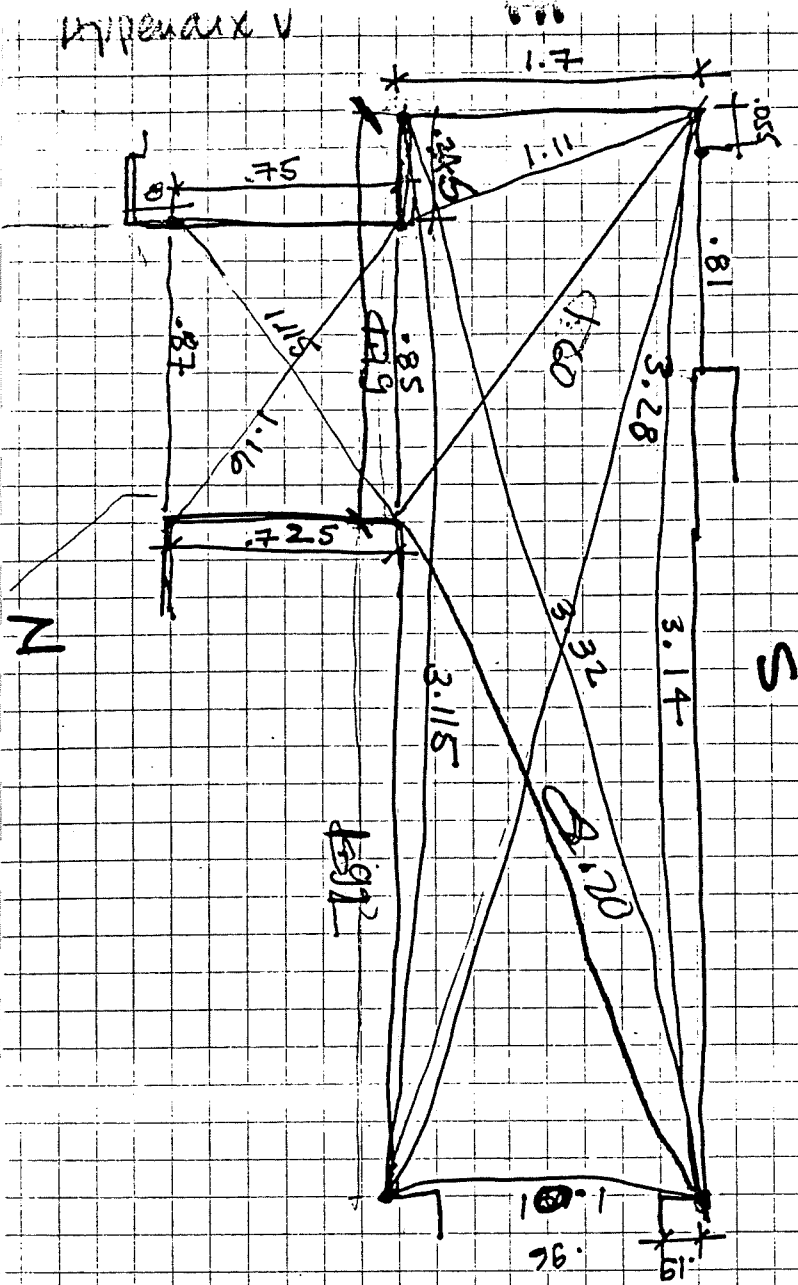
5 Nuclei waters

12/27/20

64



HALLWAY



HALLWAY

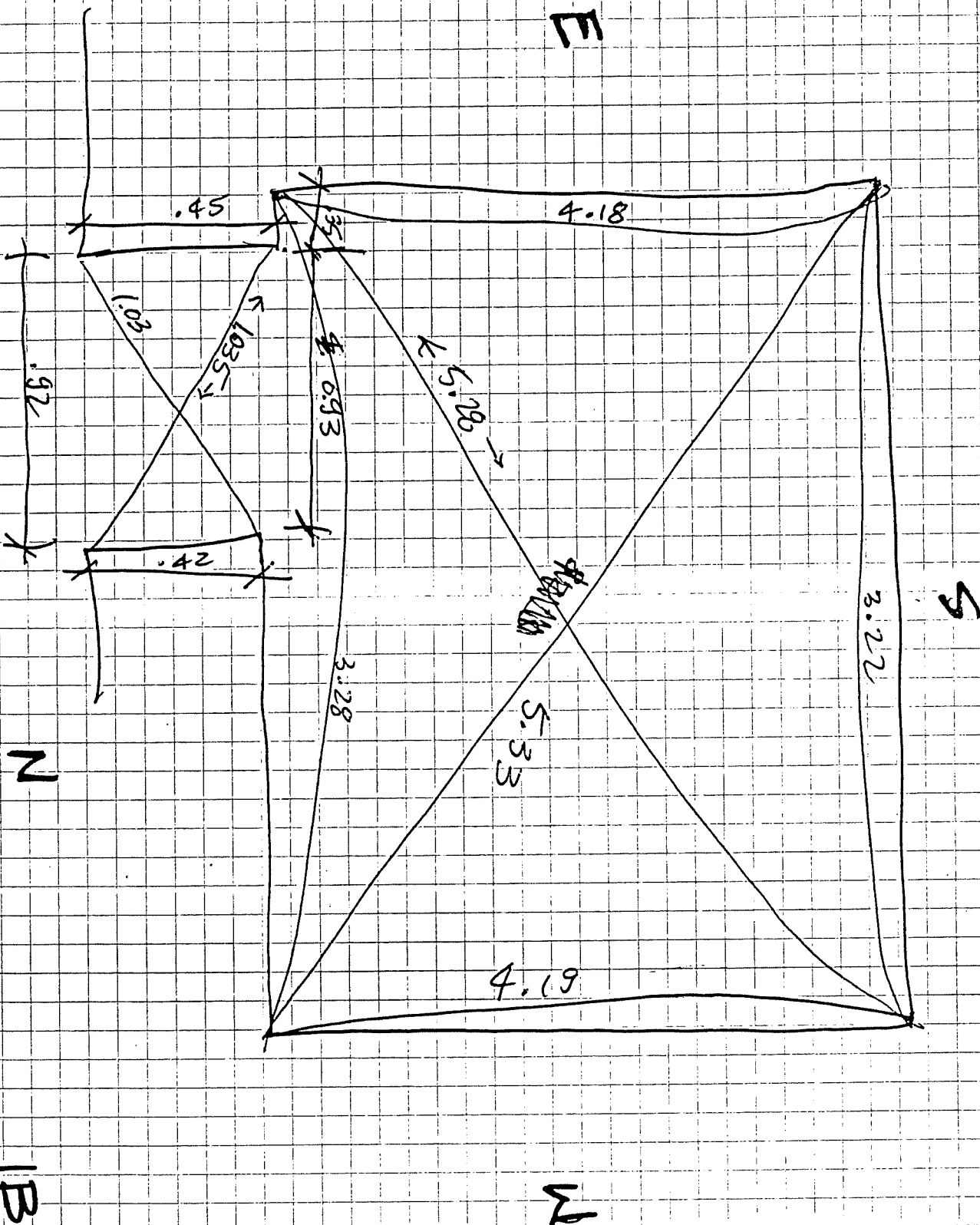
S

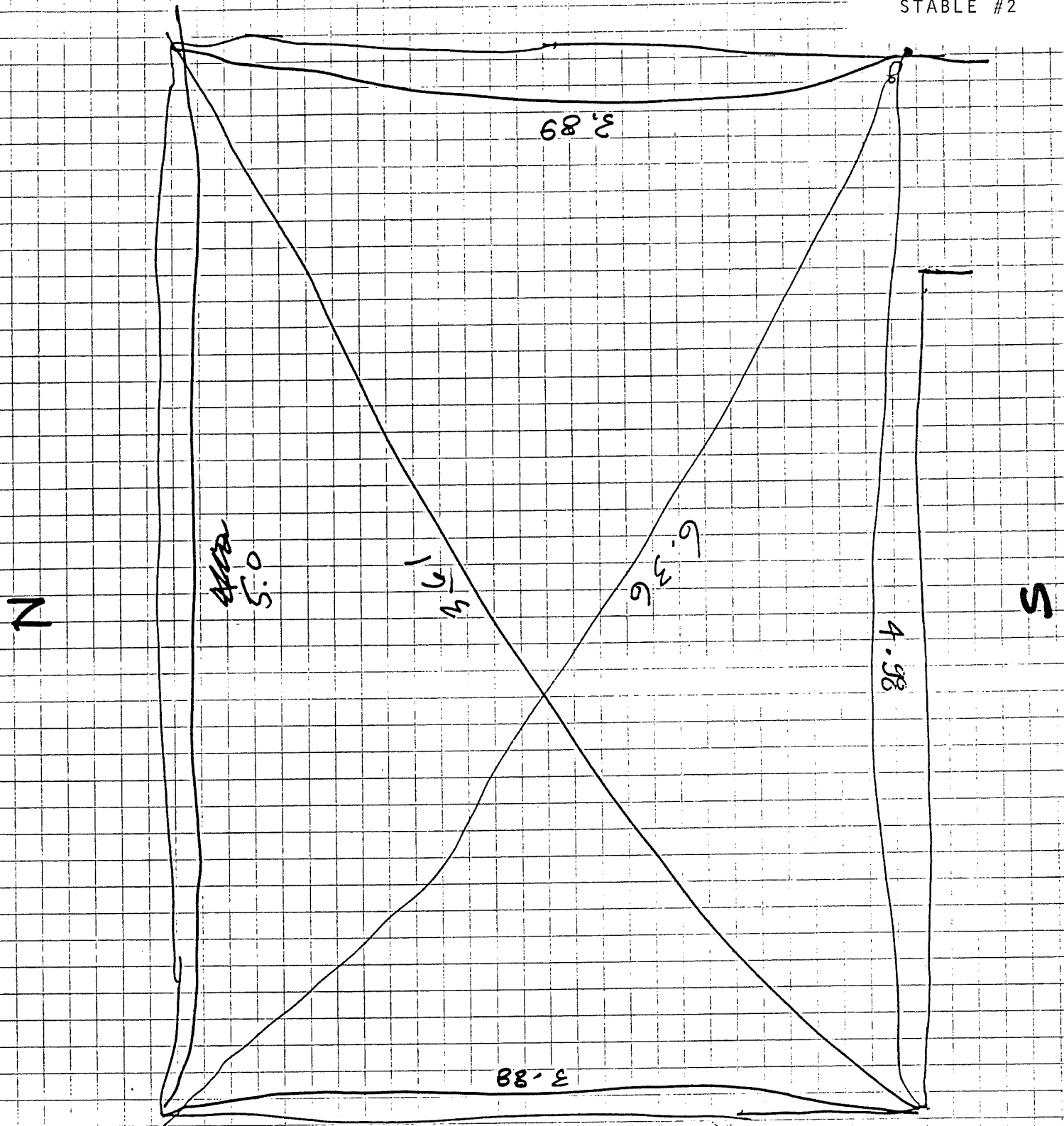
N

60 square meters

10

2000





2B

E

STABLE 2

pt. B

APPENDIX E
- 67

STABLE #1

