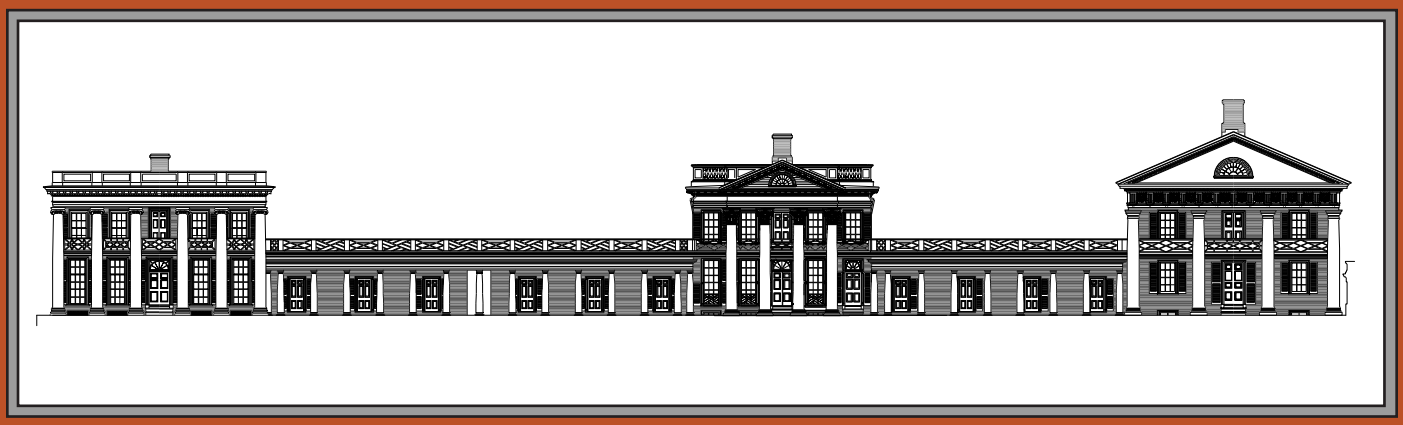
UNIVERSITY OF VIRGINIA

CHINESE RAIL INVESTIGATION



OCTOBER 2007

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Introduction

At the outset of this project, we were expected to determine, to the greatest extent possible, whether the Chinese railings restored in 1976 were accurate. To answer this question, we have consulted the archives related to the construction of the Academical Village and have made several site visits. During these visits, it became evident that in order to understand the design of the Chinese railings it is essential to understand the original construction assembly and configuration of the roofs above the student rooms along the lawn. To this end, we were provided the opportunity to photograph and measure surviving portions of Jefferson's serrated roofs encapsulated within the attic of the student room just to the south of Pavilion III and just to the south of Pavilion VII.

Summary of Field Findings

Outboard Railing Evidence

Since the archives are silent related to the construction of the Chinese rails during Jefferson's lifetime, we questioned whether it was possible that the rails were in fact installed for the first time after the serrated roofs were covered over by gabled slate roofs beginning in the early 1830s. This supposition was further supported by the fact that George W. Spooner's 1833 proposal to John Hartwell Cocke for the construction of the gabled roofs included a line item to install 6,114 lineal feet of Chinese rails (attached in full at the end of this document). A casual inspection of the flanking walls of each of the pavilions quickly substantiated the fact that Chinese rails were indeed installed along the outside edge of the student room roofs before the gabled roofs were installed. At each of the pavilion walls, paint ghosts, pockets and filled pockets were found approximately 4'-4" inches above the elevation of the rear cornice in direct alignment with the brick wall below. This is clearly evidence that the Chinese rails were installed before the serrated roofs were covered over, since the later period gable roofs did not require rails along the rear of the student rooms. Upon measurement, it was found that the original rear rails were at approximately the same elevation as the original pavilion portico deck rails on the lawn side of the pavilions. Moreover, the elevation of the original rear rail was approximately 1"- 2" higher than the rails installed in 1976. (Figures 1 & 2).

Serrated Roof

Access hatches through the gabled roof near Pavilion III allowed us to measure and photograph the original serrated roof encapsulated within the attic above the student rooms (Figures 3 & 4). Large portions of the serrated roof was removed when the gabled roofs were installed, yet the surviving portion is sufficient to gain a clear understanding of how the original roof was constructed and how it related to the Tuscan entablature of the student rooms and the portico deck of nearby Pavilion III. Further measurements and inspections since our preliminary report have revealed that the western half of the serrated roof sloped down to the west (rear) of the student rooms, while the east portion of the roof sloped toward the lawn. This observation was supported by the fact that it was found that the ceiling joists supporting the serrated roof are less deep at the east edge of the joists (they were cut off at the front face of the student room wall) than at the presumed center of their span. Moreover, other intact serrated roofs on campus (specifically, those covering the student rooms along the west range between Hotel A and C) slope from a centerline running north/south to the roof edges at the east and west (Figure 5 & 6). These roofs have a double serrated lath at the centerline of the roof; one for the eastern slope and one for the west. Double or paired serrated laths were found at the presumed centerline of the serrated roof adjacent to Pavilion III, clearly indicating that this was the high point of the roof and that all water flowed east or west of this point.

At this time, it can only be speculated how the water actually drained off of the building after it fell from the serrated roof. It is possible that the water was allowed to simply flow over the top of the cornice (possibly covered with lapped boards or metal) and onto the ground. The scenario is supported by the fact that with the exception of a few nails on the garden side of the student rooms, no evidence has yet been found of an early gutter or pipe system that may have conveyed water to the ground. Archeological findings to date appear to support the supposition that roof

water from the student rooms (at least on the rear sides) was conveyed to a series of cisterns sometime in the 1830s or after the serrated roofs were covered over with simple gable roofs.

It is also possible that water was carried to grade at the rear of the student rooms through the use of downspouts but that water was simply left to flow out onto the ground. The nicely cut sandstone splashblocks found at the rear of the student rooms may be a part of this system. The sandstone matches the stone used for steps throughout the Academical Village. If water was conveyed to the ground at the rear of the student rooms, some kind of gutter would have been necessary at or near the top of the cornice. The design for such a cornice gutter was found within the attic of Pavilion V. Although the built-in gutter along the perimeter of that roof is no longer intact, it is possible to reconstruct its original configuration by carefully measuring and drawing the cornice outrigger profile and superimposing the wood gutters reused within the framing of the upper gabled roof onto the outriggers. As our enclosed drawings reveal, this built-in gutter was an elegant solution and one that may have been utilized at the rear of the student rooms.

It is difficult to conceive of a gutter along the front of the colonnade because there is no simple and elegant way to convey water to grade. While it is possible that water may have been conveyed to grade through leader pipes

Figures 1 & 2 Evidence of original Chinese rails as found on flanking walls of pavilions. The image on the right shows how the brick was carved away where the original railing met the south wall of Pavilion IX. The image on the left displays a ghost of the original rail on the north wall of Pavilion X as a result of paint marks left on the brick. A patch of mortar covers where an iron pin would have originally been embedded in the wall to assist in securing the end of the rail.

Figure 3 Photograph looking west in the attic above the student room showing the original serrated roof.

Figure 4 The ghost line along the south stuccoed wall of Pavilion III is believed to be evidence of a deck that would have been placed over the serrated roof.

Figure 5 Serrated roof located between Hotel A and Hotel C.

Figure 6 Serrated roof located between Hotel A and Hotel C.

beneath the plaster ceiling of the colonnade and down the front walls of the student rooms, there is no evidence of early piping penetrating the student room cellar walls. Indeed, no early fasteners have been found that would indicate that early pipes were fastened to these walls, and if water was carried beneath the colonnades there must have been some means of carrying water away. Moreover, if such a system existed, it is rational to assume that it would have been reused after the serrated roofs were covered over in the 1830s. Instead, early photographs taken later in the century (Figure 7) indicate that water was piped through a series of scuppers penetrating the frieze and poured water to grade in front of the columns.

The overall thickness of the serrated roof was discovered when a very clear ghost line was found on the (stuccoed) wall of the nearby pavilion (Figure 4). This ghost runs parallel to the ridge of the serrated roof (where it meets the building) and is approximately 3" above the ridge of the last serration. This appears to be evidence of a deck that once existed over the serrated roof, and that this deck was constructed of boards approximately 1" thick.

Once the serrated roof was accurately drawn and superimposed with its presumed deck in the correct location above the student room walls, it became evident that when the ghost lines of the serrated roof deck are extended to the front of the colonnade, they line up very closely with the elevation of the front edge of the portico deck of Pavilion III. In other words, the elevation of the original student room decks appear to have been located in alignment and at the same elevation as the front edges of the portico decks. This observation is at odds with Jefferson's drawings and calculation for the student rooms, which clearly show that he intended to hide the serrated roof behind the Tuscan entablature (Figure 8). However, there is no question that the serrated roof was situated well above the top of the colonnade entablature in the same way that the serrated roof encapsulated within the attic of Pavilion V was well above the cornice of that building. The serrated roof found adjacent to Pavilion III is the same type as that found above the student rooms flanking Pavilion X and on the roof at Pavilion V. That is, the roof joists (which are also the ceiling joists of the student rooms) are cut to slope to the perimeter of the building. These joists were then fitted with a series of "serrated laths" cut into a saw-tooth profile. These laths were then covered with boards which formed a roof deck substrate that took the form of a "ridge and furrow" profile. The lower "furrows" or "gutters" were covered with 7" by 10" sheets of tin plated iron, soldered together to form a gutter liner. Two layers of random width "shingles" covered the top portion of the roof deck and overlapped the metal gutter liner by several inches. The shingles themselves were not tapered shingles in the conventional sense, but 5/8" thick along their full length. A groove was planed into the upper surface of each shingle along its long edge in an apparent attempt to discourage water from reaching the joints between the shingles.

When the later-period sloped roof was opened just to the south of Pavilion VII, it was discovered that the serrated roof encapsulated within was very different than those found elsewhere along the lawn (Figure 9). This serrated roof was constructed of "up and down" joists, or joists set at two different strata. The upper joists formed the ridge of the "ridge and furrow" system, while the lower joists (which are also the ceiling joists for the student rooms below) formed the "furrows". A roof deck was created by spanning boards between the joists, and a rolled iron gutter liner (thicker than the tin coated iron found on the other roofs) was placed in the furrows. Instead of shingles, two wide boards were placed on the roof deck parallel with the gutter liner. The purpose of using this system can only be surmised, but it is helpful to remember that this was the first serrated roof constructed at the University, and the relationship between the portico deck at Pavilion VII and the adjacent student room elevations required a much thinner roof section than Jefferson used elsewhere. The "up and down" joist type of serrated roof is much thinner than the "serrated lath" type because it disposed of the upper strata of serrated laths altogether.

The discovery of this kind of serrated roof at the University was quite surprising. The surprise was not related to the "up and down" joist system employed (this system was also used on Dinsmore and Neilson's wings at Montpelier), but that wood boards were used to keep the roof watertight in lieu of shingles. Jefferson used this same wood board roof covering on his northwest dependencies at Monticello in 1804, but abandoned the system when he constructed the southeast dependencies because the boards split and leaked. There is no archival record that records Jefferson's reasons for constructing a roof system that had proven itself to be a failure, but the board coverings have not yet been found anywhere else on the campus.

Figure 7 Late 19th century view of the iron rails above the student rooms. Albert and Shirley Small Special Collections Library, University of Virginia.

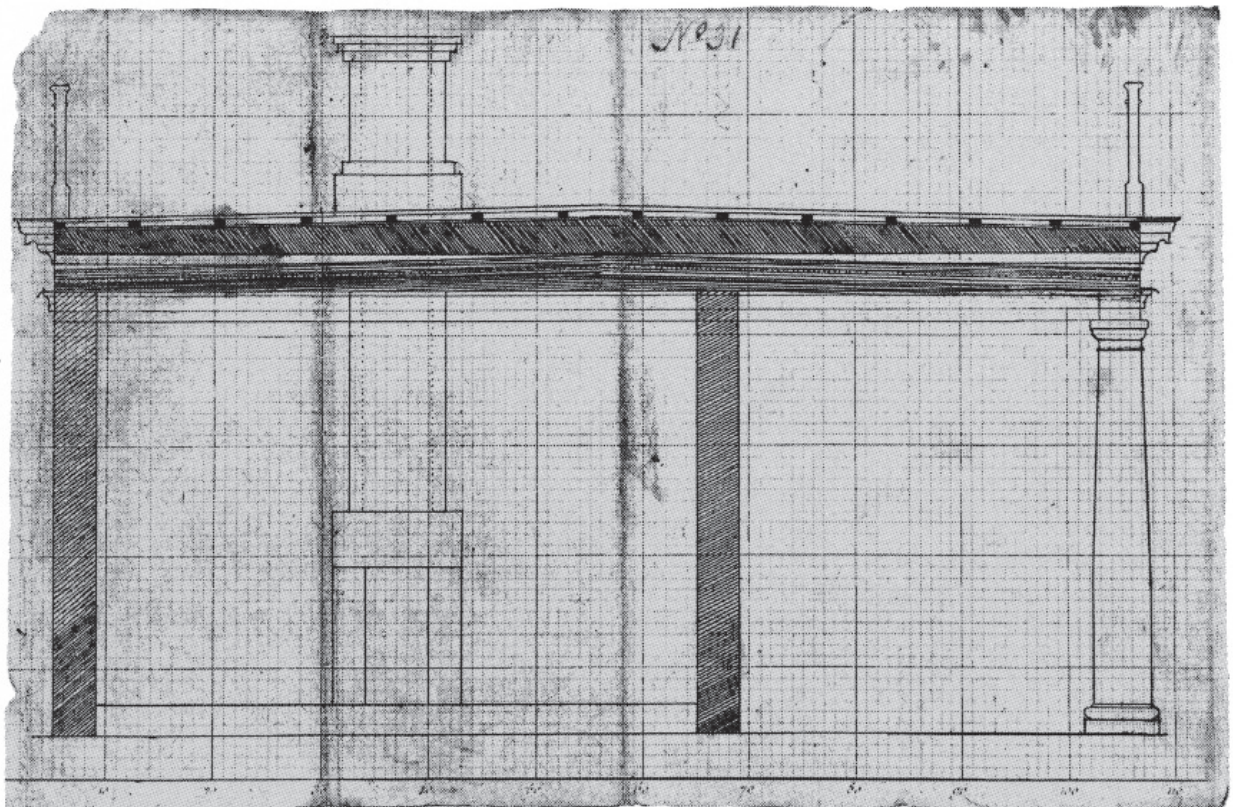


Figure 8 At the time Jefferson drew this section of the serrated roof above the student rooms, he was planning on hiding the roof behind the Tuscan entablature. The serrated roof was actually constructed well above the top of the entablature. N-367. Albert and Shirley Small Special Collections Library, University of Virginia.

Figure 9 This photograph of the exposed serrated roof above the student rooms to the south of Pavilion III was taken in the 1980s when the upper slate roof was removed.


Figures 10 & 11 Pavilion III and Pavilion V appear to still have large portions of their original Chinese rails intact.

Existing Chinese Rails

A preliminary inspection of the rails at the pavilion porticoes indicated that most of the pavilions have retained at least portions of their original Chinese rails (Figures 10 & 11). Only those pavilions (VI and IX) without a portico have lost their rails, undoubtedly because they were not protected by a portico. Preliminary measurements and a visual inspection revealed that the relationship found between the original rear Chinese rails and the existing front rails were similar to the relationship found at Pavilion III. It is important to note that only Pavilions II and V appear to retain their original edge moldings (architraves) around the front and one side of the portico decks, and these moldings match from one pavilion to another. It is therefore reasonable to assume that they matched at all of the pavilions.

Since the initial findings of this endeavor were distributed, there has been much discussion about the appropriateness of covering the edges of the serrated roofs with an architrave molding matching those found at the edges of the suspended portico decks. This covering board also forms a "plinth" beneath the Chinese rails. Although the Neilson drawings of the Chinese rails shows a simple plinth board at this location, there are several pieces of evidence that point to an architrave molding detail matching those found on the leading edges of the portico decks. The first evidence is that Jefferson generally designed serrated roofs in the way shown on the enclosed drawings. Jefferson's notes for the construction of his serrated roofs at Monticello (Figure 12) reveal that the serrated roof was covered with a deck resting on sleepers spanning over the ridges. A small notation and sketch reveals that Jefferson intended to extend the deck boards out beyond the edges of the serrations and covered the edges with a skirt board beneath the deck. This means that a great portion of rain water was expected to hit the deck and run off the edges of the roof boards. Jefferson's designs for the rails themselves reveal that he intended to simply mount the rails to the deck, likely leaving a space beneath them to allow water to flow off of the roof. This arrangement, described thoroughly in Jefferson's building notebook, could have been easily accomplished using the materials and techniques available to him, and appears to match the evidence seen on the lawn at the University. The notion that the covering or plinth board masking the ends of the serrations was planed to an architrave molding profile is born from the observation that this board is in the same precise line as the front edges of the portico decks at Pavilions II and IV, running from II all the way to Pavilion VI at its southern extent. It can be argued that since the Chinese rails along this run were in alignment, the board directly beneath the rails were similarly extruded. Indeed, it would be quite jarring to see this board switching from an architrave molding to a simple board and back again as it ran along the lawn. It should be noted that the architrave molded edge boards on the front of the porticoes at Pavilions II and IV appear to be cut at their ends (facing the student room roofs) as if the boards once extended in that direction. In any event, efforts will be made to

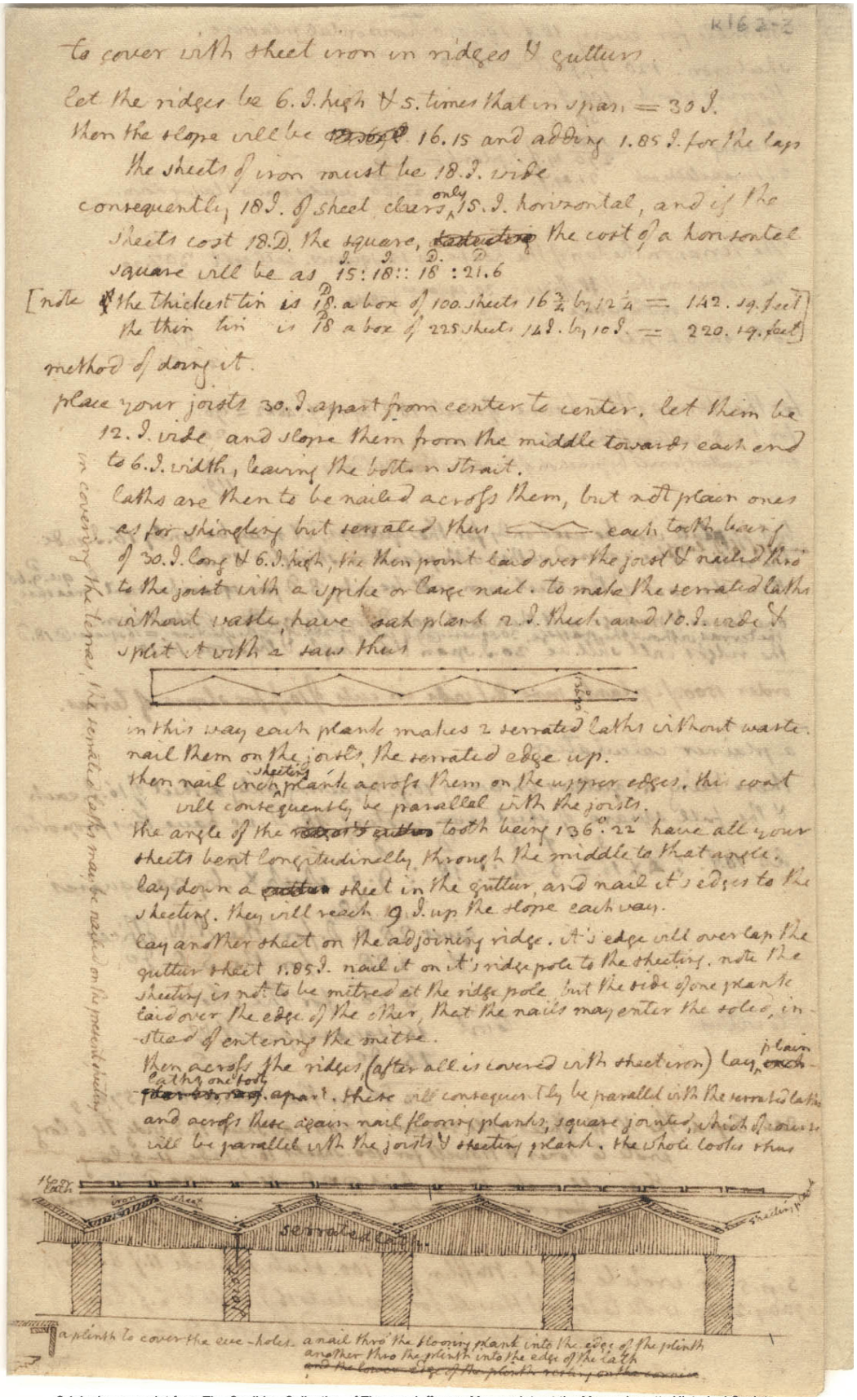


Figure 12 Jefferson, Thomas. Monticello: notebook of improvements, 14 pages (pages 6, 8-14 are blank), 1804-1807. N171; K161 and K162. Dimensions: 20.8 cm x 12.9 cm (8-3/16" x 5-1/16"). Original manuscript from the Coolidge Collection of Thomas Jefferson Manuscripts, Massachusetts Historical Society.

determine if this board was a simple plinth board or molded as an architrave by removing roof flashings that now cover the areas where possible paint ghosts of these boards may exist.

While some of the original Chinese rails have been replaced at their ends, those that do survive appear to terminate in a rather crude manner (Figure 13). They frequently terminate with a later period panel. These panels bear evidence (ghosts and mortise holes) of the iron railings installed sometime during the middle of the 19th century, but they do not appear to match the molding profiles or the quality of craftsmanship observed in the original rails. Paint analysis will help to determine when these panels were constructed, but they certainly do not appear to be original.

Summary of Archival Evidence

Archival evidence as it directly relates to the Chinese rails is scant, yet a close examination of Jefferson's original specifications (dated July 18th, 1819) has brought to light some observations that are helpful when attempting to Jefferson's intentions regarding the rails. Other studies have well documented that Jefferson planned and constructed Pavilion VII first, and his notes for that pavilion as compared to the others are therefore more thorough. It is evident that through his design of Pavilion VII Jefferson was establishing relationships that resonated throughout the entire Academical Village composition. On the specification page entitled "Dormitories to No. VII" (Figure 14), Jefferson stated that the "Covered way on front of the whole range of buildings to be Tuscan, with columns of brick rough cast. their diam. 16.I." His calculations show that the columns were to be 9'- 4" high and the entire order, including the entablature, was to be 11"- 7.86" high. As all of his calculations show, Jefferson used this height for the Tuscan order for all of his student rooms throughout the Academical Village, including the student rooms along the ranges between the hotels. On this page (Figure 15), Jefferson's notes read "the cover of the Dormitories & colonnade

Figure 13 The end post that separates the pavilion rail with the student rail appears to be later, and is believed to have been constructed when the iron rails were installed in the mid-19th century.

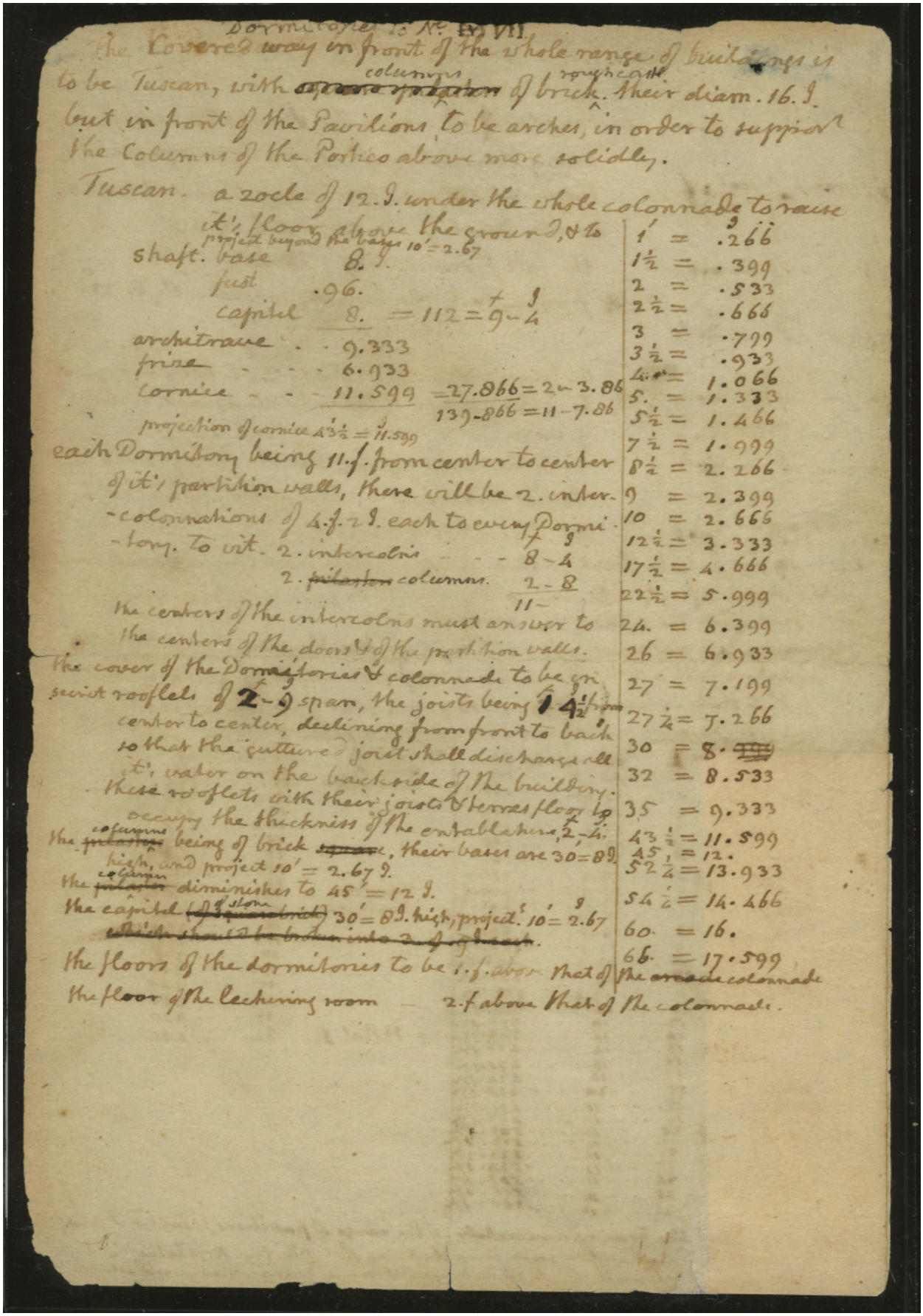


Figure 14 Jefferson's building notebook for the University of Virginia. Dated June 18th, 1819. Specification for Pavilion VII. Albert and Shirley Small Special Collections Library, University of Virginia.

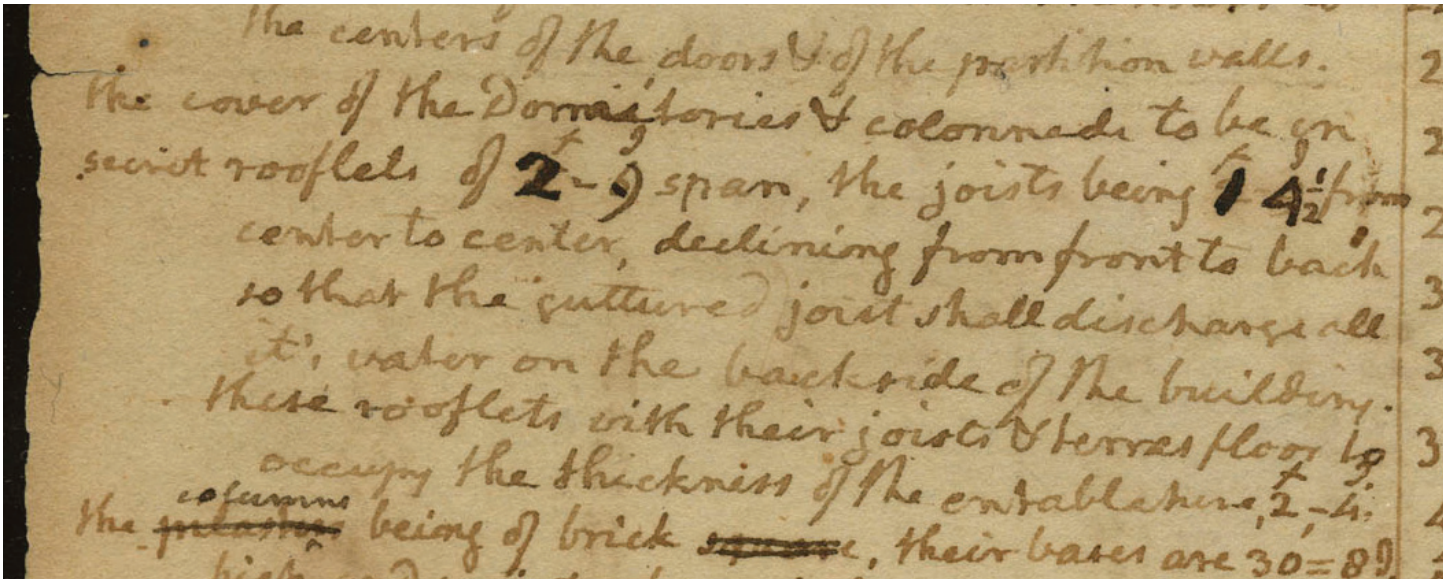


Figure 15 Jefferson's building notebook for the University of Virginia. Dated June 18th, 1819. Specification for Pavilion VII. Albert and Shirley Small Special Collections Library, University of Virginia.

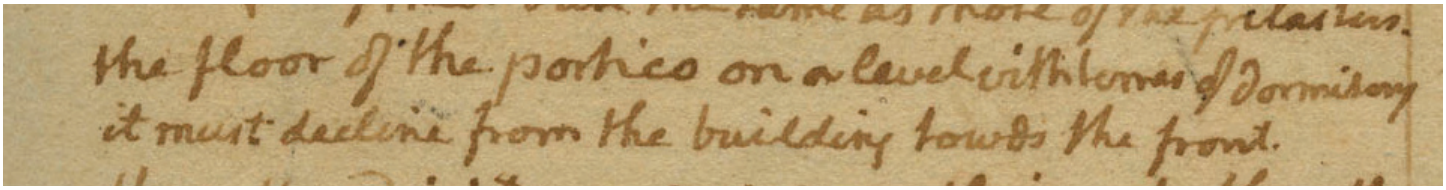


Figure 16 Jefferson's building notebook for the University of Virginia. Dated June 18th, 1819. Specification for Pavilion VII. Albert and Shirley Small Special Collections Library, University of Virginia.

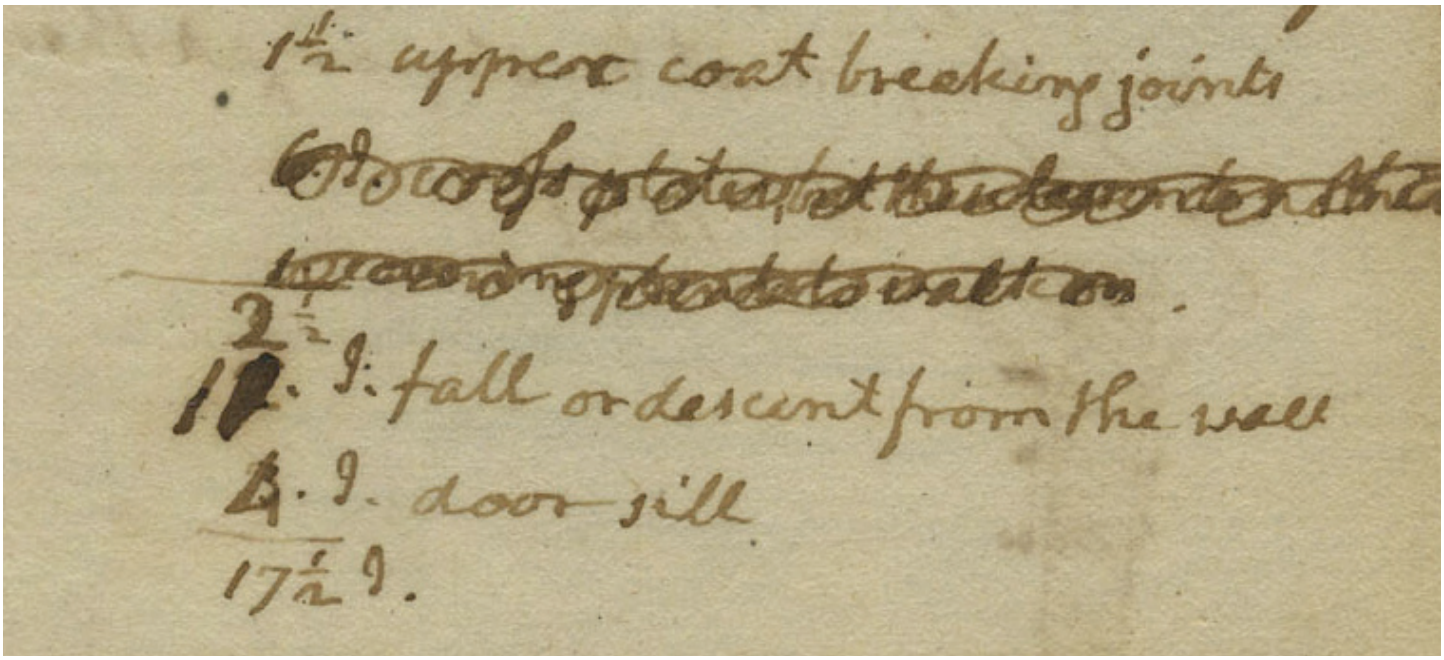


Figure 17 Jefferson's building notebook for the University of Virginia. Dated June 18th, 1819. Albert and Shirley Small Special Collections Library, University of Virginia.

to be in secret rooflets of 2'-9" span, the joists being 1'-4 ½" from center to center, declining from front to back so that the guttered joists shall discharge all it's water on the backside of the building. these rooflets with their joists & terras floor to occupy the thickness of the entablature, 2f-4I." Jefferson referred to his serrated roof as "secret rooflets" because at the time he wrote these notes he intended to place the entire roof assembly behind the Tuscan entablature. While we now know that this is not the way the roof was constructed, he appears to have retained the notion of hiding the edges of the serrated roofs.

Jefferson's intentions regarding the height of the decks above the student rooms and their relationship to the portico decks at the pavilions is found within his calculations for the vertical dimensions for each pavilion. His specifications for Pavilion VII (Figure 16) state "the floor of the portico on a level with terras of dormitory, it must decline from the building towards the front." This notation makes it clear that Jefferson intended to have the front edge of the portico deck at the same level as the top of the Tuscan order for at the student rooms, but that the water from the portico deck discharged its water to the front. He accomplished this by writing that "the guttered joists must discharge their wake thro the frize of the Tuscan by projecting 1.I. beyond its face, the opening masked by a thin square board, cutting the moldings of the architrave as the keystone of an arch does." It would be interesting to inspect the structure beneath the portico deck of Pavilion VII to see if any serrated roof was constructed beneath the decking. In any event, when the notations related to the student room roofs are considered together with these notations, it is evident that Jefferson intended to have the front edge of the decking of the portico deck at the same elevation as the top of the Tuscan entablature of the student rooms. He also intended to provide a slope to the portico decks up to the building (on the page marked "Lower story or Tuscan of Pavilion No. VII, Jefferson wrote "2 ½" fall or descent from the wall") (Figure 17), while at the same time the decks of the student rooms were intended to slope down toward the back. This would have produced a small step from the portico deck to the student room deck at the front corners of the pavilion walls. The deck would have been flush at its front edge and approximately four inches at the corner of the walls. When the decks were constructed they actually followed the portico decks up to a high point at the center of the student rooms.

Further evidence of Jefferson's intended relationship of the portico decks to the student room decks (which he assumed to be at the same level as the top of the Tuscan order of the student rooms whose dimension was planned to be 11'-7.86" high) is found on the specification page of each of the other pavilions (Figures 18-21). However, these were written with more brevity since he did not need to write out all of the relationships once they were worked out at Pavilion VII. While reviewing these dimensions, it is important to understand that at Pavilion VII, Jefferson originally called for a zocle or plinth of 12 inches "under the whole colonnade to raise it's floor above the ground." He then used this zocle as a datum and calculated the height of all of his pavilions and student rooms from the top of the zocle. From this point he determined the elevation of the second floor of each of his pavilions, then subtracted the elevation of the student room Tuscan order to determine the difference in their elevations so he could understand how many steps would be needed down from the second floor to the decks (Figure 22). His calculations for each of the pavilions read:

Pavilion I

"from the Zocle to the upper floor is 14f – 10.65I
the Tuscan order of the covered way is 11f – 7.86I
requiring steps of descent from the uppr floor 3 – 2.79"

Pavilion II

"from the zocle to th upper floor being 14f – 8I
Deduct the Tuscan of colonnade 11f – 7.86I
Leaves from upper floor to terrace of dormitories 3f – 0.14.f"

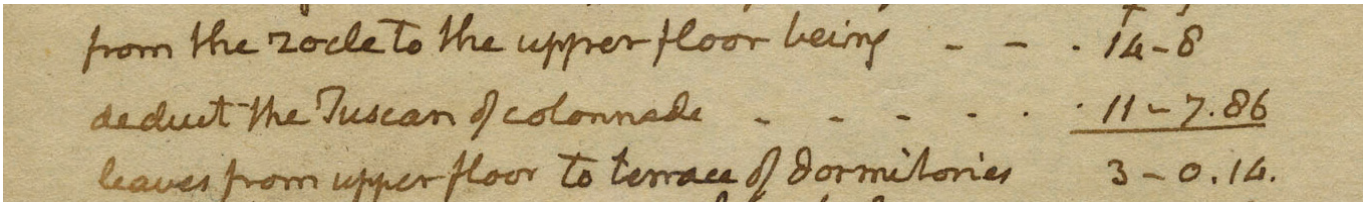


Figure 18 Pavilion II. Jefferson's building notebook for the University of Virginia. Dated June 18th, 1819. Specification for Pavilion II. Albert and Shirley Small Special Collections Library, University of Virginia.

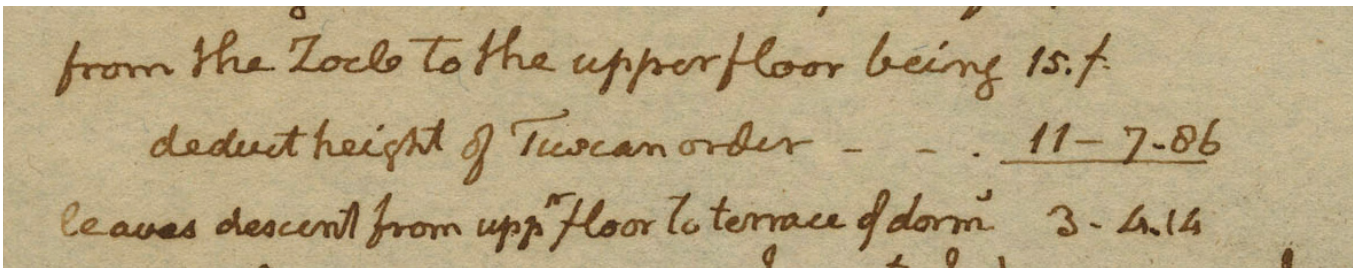


Figure 19 Pavilion IV. Jefferson's building notebook for the University of Virginia. Dated June 18th, 1819. Specification for Pavilion IV. Albert and Shirley Small Special Collections Library, University of Virginia.

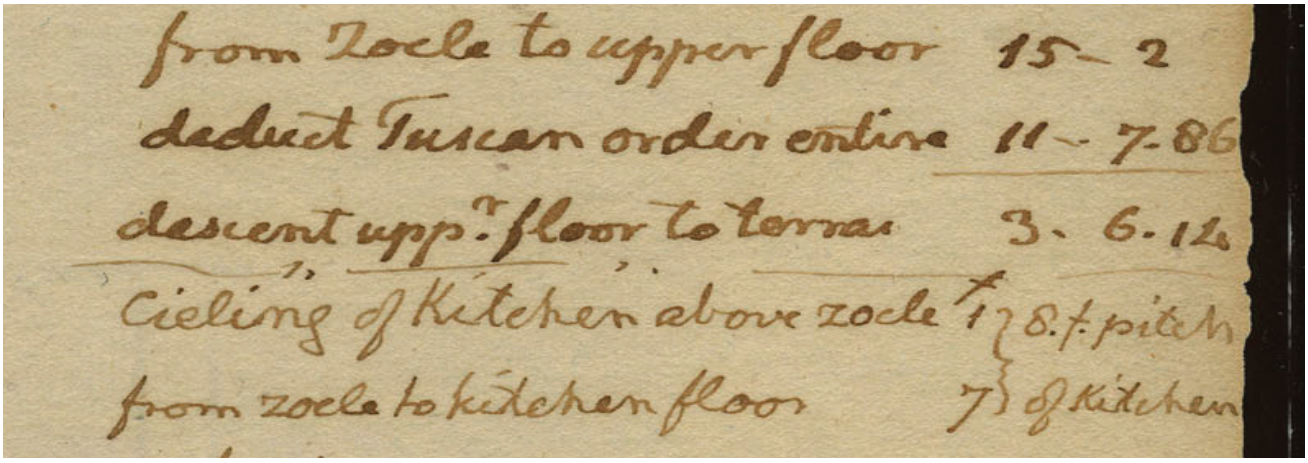


Figure 20 Pavilion VI. Jefferson's building notebook for the University of Virginia. Dated June 18th, 1819. Specification for Pavilion VI. Albert and Shirley Small Special Collections Library, University of Virginia.

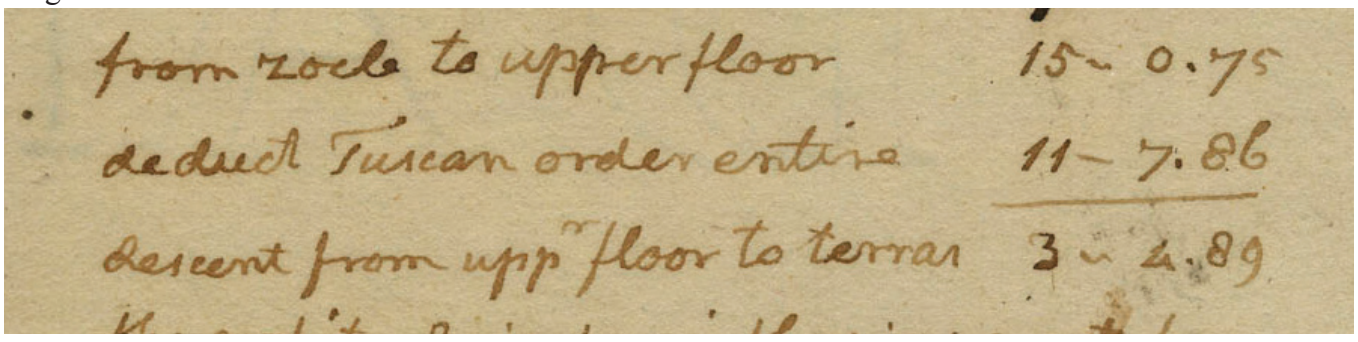


Figure 21 Pavilion X. Jefferson's building notebook for the University of Virginia. Dated June 18th, 1819. Specification for Pavilion X. Albert and Shirley Small Special Collections Library, University of Virginia.

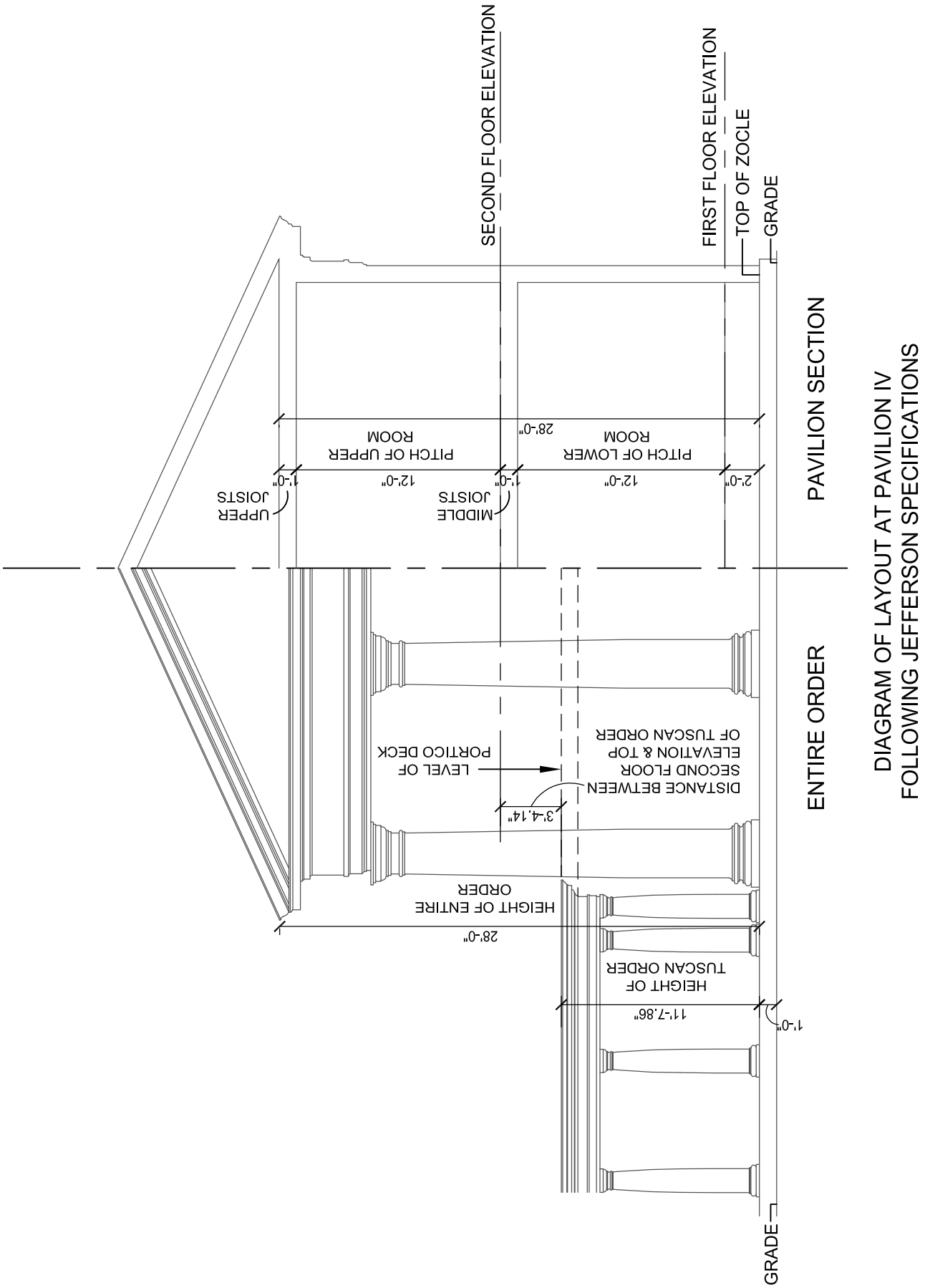


DIAGRAM OF LAYOUT AT PAVILION IV
FOLLOWING JEFFERSON SPECIFICATIONS
PAVILION SECTION
ENTIRE ORDER
SECOND FLOOR ELEVATION
FIRST FLOOR ELEVATION
TOP OF ZOCLE
GRADE
PITCH OF LOWER ROOM
PITCH OF UPPER ROOM
28'-0"
2'-0"
12'-0"
1'-0"
12'-0"
1'-0"
MIDDLE JOISTS
UPPER JOISTS
DISTANCE BETWEEN SECOND FLOOR ELEVATION & TOP OF TUSCAN ORDER
3'-4.14"
LEVEL OF PORTICO DECK
HEIGHT OF ENTIRE ORDER
28'-0"
HEIGHT OF TUSCAN ORDER
11'-7.86"
1'-0"
GRADE

Figure 22

Pavilion III

Calculation from second floor of pavilion to terras roof deck is not mentioned.

Pavilion IV

"from the Zocle to the upper floor being 15f
deduct height of Tuscan order 11f – 7.86
leaves descent from uppr floor to terrace of dorm 3 – 4.14"

Pavilion V

"from the zocle to the Upper floor being 15f
deduct the Tuscan of the colonnade 11f – 7.86
leaves from the upper floor to terras of Dormit. Decent 3 – 4.14 by steps."

Pavilion VI

"from Zocle to upper floor 15f- 4I
deduct Tuscan order entire 11f – 7.86
descent uppr. floor to terras 3.f – 6.14I"

Pavilion VII

"from top of Tuscan entablature to floor of upper rooms 1f – 5 1/2I."

Pavilion VIII

"deduct the height of the Tuscan 11f – 7.86
leaves descent from uppr. Floor to terrace 1f – 0.54I"

Pavilion IX

"Upper story 13.2f – 10I
Tuscan order entire 11f – 7.8"

Pavilion X

"from zocle to upper floor 15f - .075I
deduct Tuscan order entire 11f – 7.86I
descent from uppr floor to terras 3f – 4.89I

At some point during the design process, the zocle was dropped and the columns were placed directly on grade. The benefit to dropping the zocle was that it lowered the entire Tuscan colonnade and allowed Jefferson to raise the student room and pavilion portico decks above the top of the Tuscan cornice. This in turn created an opportunity to isolate the Tuscan entablature from the pavilion portico decks (leaving them at the same elevation would have created a situation where the Tuscan cornice would have had to form the edge of the portico decks). Jefferson appeared to use the space lost (by dropping the zocle) at the top of the entablature, where he filled the space with an edge molding that formed a covering board for the serrated roof and simultaneously provided an edge board for the portico decks.

Chinese Rail Designs

Since it is clear that Jefferson intended to have the student room decks at the same elevation as the pavilion portico decks, it is reasonable to assume that he also intended to have the Chinese rails above the student rooms the same height (and a continuation) of the Chinese rails on the pavilion portico decks. There are several period renderings that appear to substantiate this assumption. A drawing attributed to James Neilson of Pavilion VIII (Figure 23) shows the top of the Chinese rails of that pavilion at the same elevation as the flanking student rooms. The Tanner rendering (1826) of the Lawn shows the same (Figure 24), and the rails simply follow the stepping pattern of the Tuscan order at each of the three plateaus of the Lawn.

The actual pattern of the lattice within the Chinese rails must be derived from an interpretation of historic drawings and Jefferson's notes. The only drawing in Jefferson's hand showing an elevation of the Chinese rails over the student rooms is his drawing for Albemarle Academy (August, 1814) (Figure 25) which shows a simple pattern of latticework between the rails. This pattern is the same within each panel, but the pattern alternates by placing an opposite hand lattice at every other panel. An accompanying note on the drawing states that that "there is an error in this Chinese railing the panels should have been from pilaster to pilaster as is seen in the Pavilion." Since this drawing was prepared very early in the design process, it is very likely that there were many changes to the design of the rail well after this drawing was finished. However, several facts can be deduced from this drawing. The first is that Jefferson planned to have Chinese railings above the student rooms. The second is that he intended (at least when the drawing was prepared) to have some kind of potentially alternating patterned latticework between the posts, and third, that he intended the posts to be placed directly above the columns.

Jefferson's notation on his specification for Hotel B (Figure 26) reads that he intended a "flat roof with a chinese railing or parapet" above the Tuscan entablature. These specifications are of particular interest because Jefferson drew two lattice patterns for a Chinese rail at the bottom of the page. Since all of his drawings for rails at the hotels show these same alternating patterns within the Chinese rails, it is likely that he used these two alternating designs for "lower echelon" buildings such as the hotels and student rooms. Support for this supposition may be found within the Tanner engraving, where the same two alternating patterns can be seen along the lawn in that drawing. The exception to this pattern is found at terminations where smaller spaces dictated that a simple "X" pattern with a diamond was used. Although some other lattice designs may be found within the engraving at odd locations, the general pattern appears to be the alternating types of lattice found in Jefferson's notes (Figure 27 & 28). It may not be too much of a stretch to also mention that the Chinese railing at the portico deck of Pavilion VII (Figure 29) was designed and constructed with the same alternating lattice pattern, and since this pavilion was the first to be constructed, it may be that Jefferson initially intended to have the Chinese rails of the pavilions be an extension of the rails above the student rooms. Whatever the case, it is clear that Jefferson intended to have some varied design of latticework within the Chinese rails along the student rooms, and Jefferson's notes and the period renderings make a very strong case for the simple alternating pattern illustrated on the reconstruction drawings.

The final design element that must be defined is the width and location of the posts separating the panels. At this time, Jefferson's note on his 1814 Albemarle Academy drawing is the only indication we have regarding his intention for the location of the posts, which at that time was directly above each column. Other drawings of the hotels in Jefferson's hand shows that he was particularly attentive to placing Chinese rail pedestals and panels at rational locations, all forming a logical relationship to lower story piers and openings (Figures 30 & 31). These drawings, coupled with John Neilson's drawings of Pavilions VI and VIII, make a very strong case for posts directly situated over the columns below. Indeed, from an archival perspective, it is difficult to justify placing the posts at any other location.

If there is one salient feature that can be gleaned from Jefferson's notes and specifications is that his creative process was expressed through a disciplined language of order and mathematics derived from Palladian proportions and relationships. A prime example of this observation is found within Jefferson's notes for Pavilion IX (Figure

Figure 23 This drawing of Pavilion VIII has been attributed to Jefferson's builder John Neilson. Note that the Chinese rails over the student rooms are a continuation of the rails at the portico deck. Albert and Shirley Small Special Collections Library, University of Virginia.

Figure 24 Benjamin Tanner engraving of 1826. Albert and Shirley Small Special Collections Library, University of Virginia.

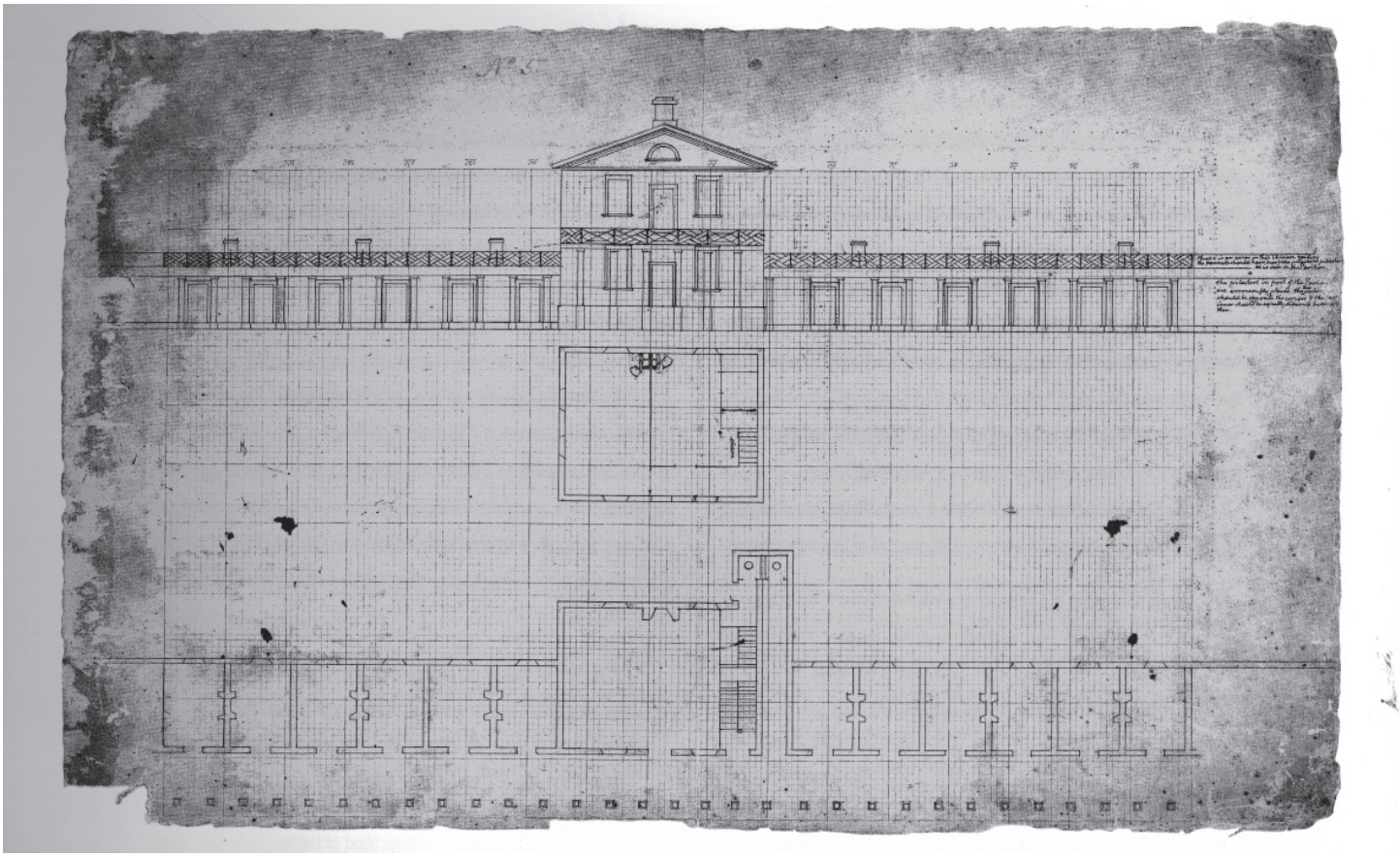


Figure 25 Jefferson's August 1814 drawing of a typical pavilion for the Albemarle Academy. N-309. Albert and Shirley Small Special Collections Library, University of Virginia.

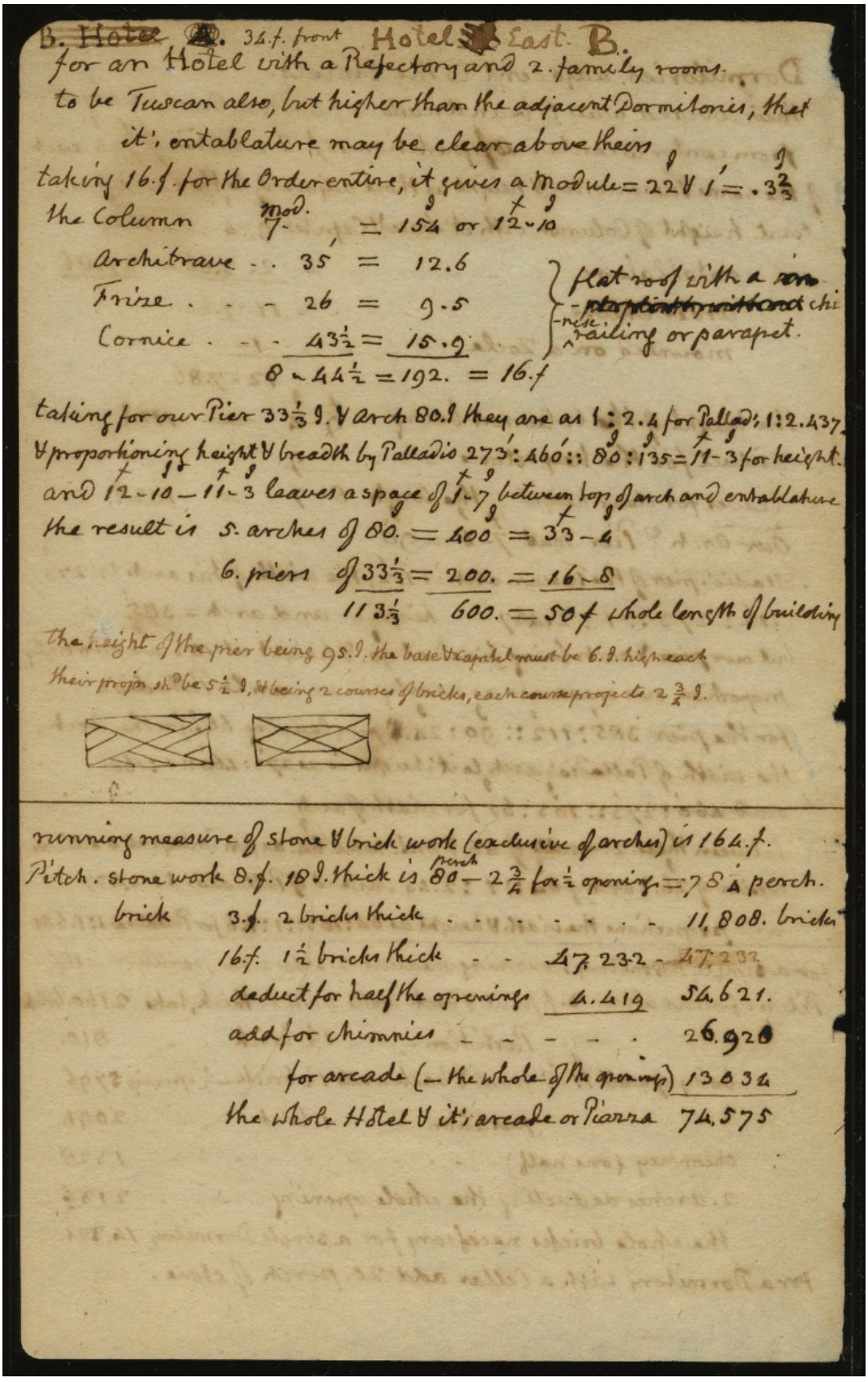


Figure 26 Jefferson's notes for Hotel B included a sketch for some Chinese rail lattice patterns. It is possible that he was considering this as an alternating pattern for the hotels and perhaps the student rooms. Jefferson's building notebook for the University of Virginia. Dated June 18th, 1819. Specification for Hotel B. Albert and Shirley Small Special Collections Library, University of Virginia.

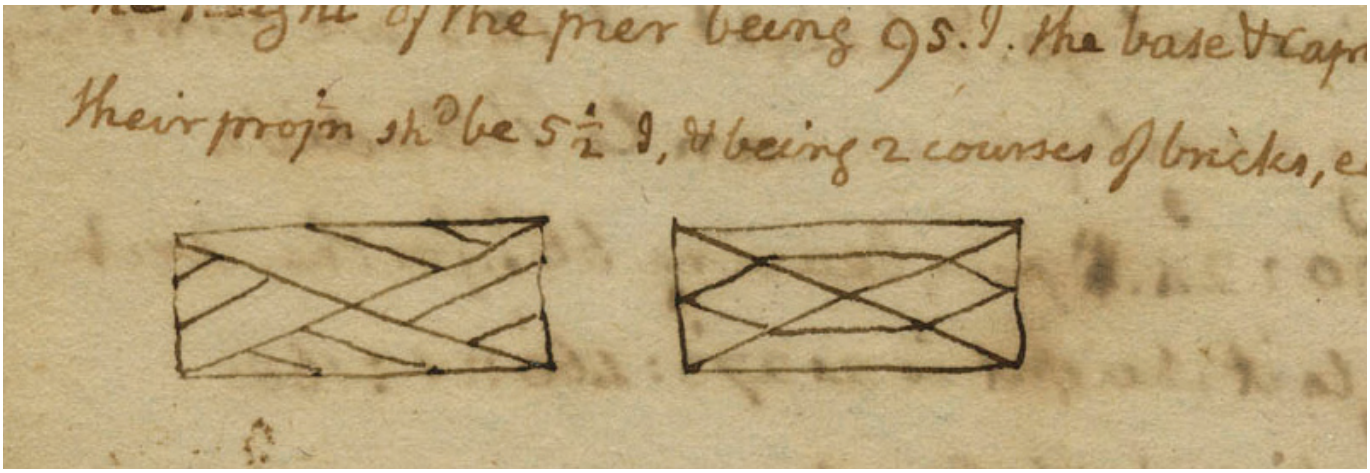


Figure 27 Jefferson's building notebook for the University of Virginia. Dated June 18th, 1819. Specification for Hotel B. Albert and Shirley Small Special Collections Library, University of Virginia.

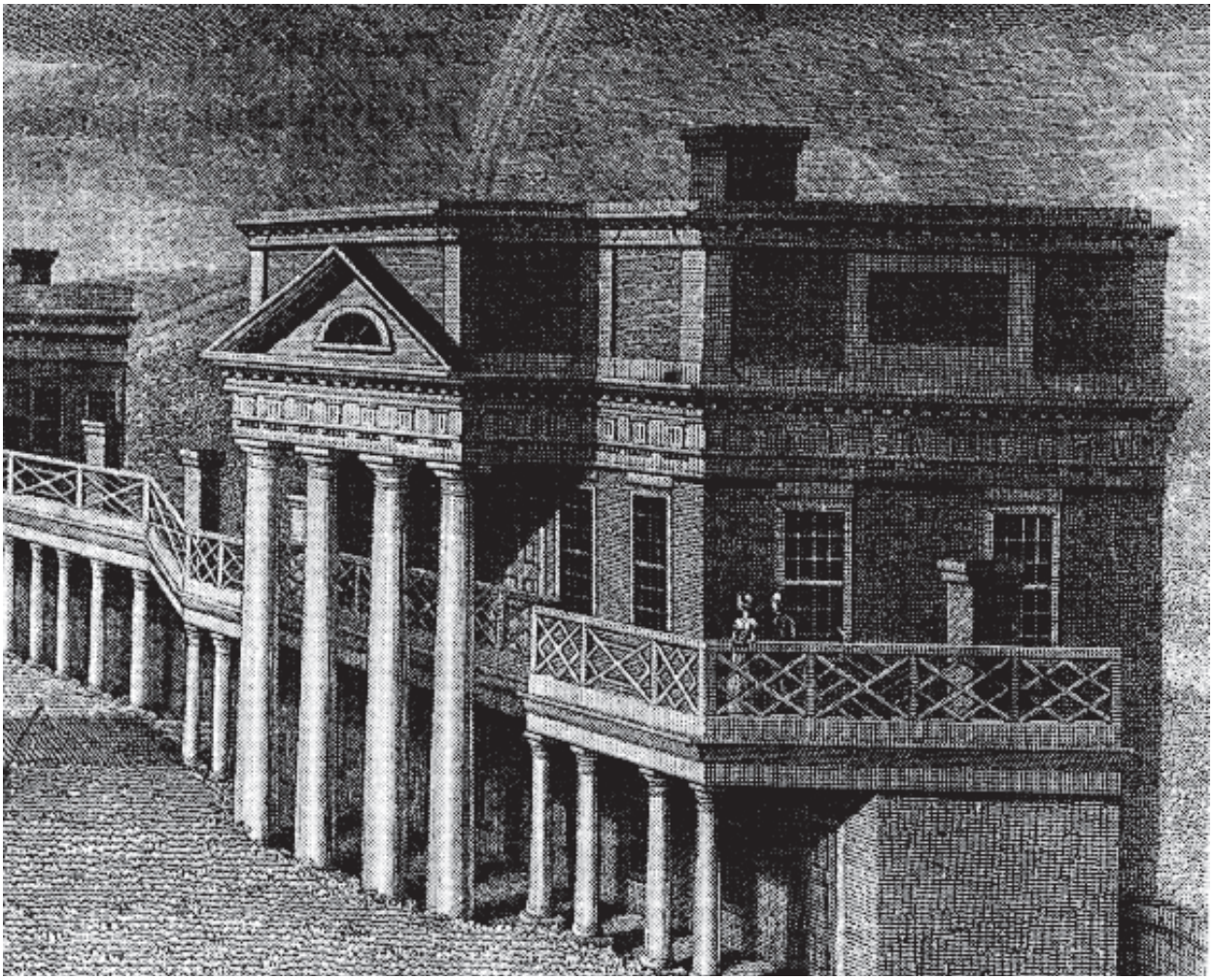
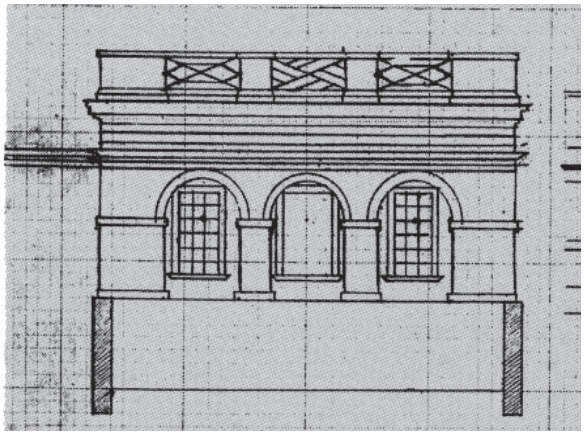
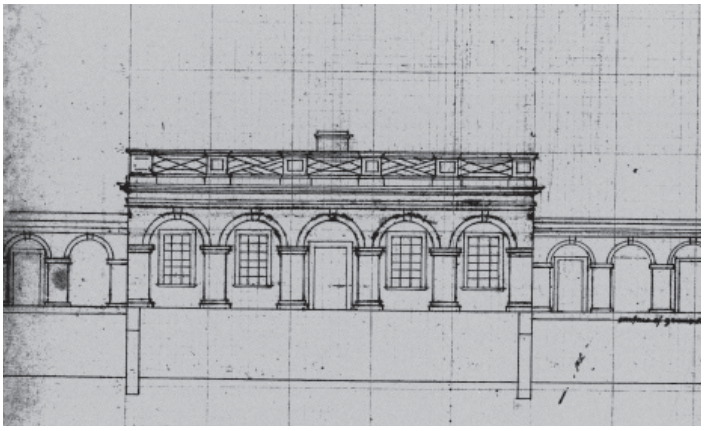


Figure 28 A detail of the Tanner engraving shows an alternating pattern to the Chinese rails similar to that shown in Jefferson's notes for Hotel B, except where smaller or transition panels are located. Note also that the height of the rails follows the height of the Tuscan colonnade. Albert and Shirley Small Special Collections Library, University of Virginia.

Figure 29 Pavilion VII before the flanking iron rails were removed. Albert and Shirley Small Special Collections Library, University of Virginia.





Figures 30 & 31 Jefferson's drawings for the Chinese rails at the Hotels reveal that he carefully spaced them in accordance with the arches below. N-360 (left) and N-362 (right). Albert and Shirley Small Special Collections Library, University of Virginia.

32), where he designed the entire upper portion of the pavilion based on the diminished column diameter of the colonnade Tuscan order. His notes for this pavilion read "The diminished diameter of the Tuscan, 12.I. fixes the module for the upper work; and although no columns above are intended, yet as they might be, and might have pedestals too, we are at liberty to take the height of an order entire of pedestal, column & entablature for the height of our upper story." This example illustrates that Jefferson relied on proportioning systems as a rational basis for his architectural compositions, even if the pedestal, column, and entablature was only imagined. In the same way, it is very likely that Jefferson relied on Palladian relationships to establish the width of his posts within the student room Chinese rails. In this case, it is logical to assume that Jefferson did not simply pick a post width out of the air, but based it on its relationship to the column below. The Neilson drawings for Pavilions VI and VIII (Figure 33) show posts that have the width of the diminished diameter of columns below, and considering the architectural language that Jefferson was speaking, this is a perfectly logical and believable solution. The surviving Chinese rails at the pavilions show that both panels and posts were included within the rail composition. Where posts exist, such as at Pavilion I, they measure 3" square and are situated so as to align with the centerlines of the main columns. Where panels exist, the panels are situated directly behind the main columns and are designed to be the same width as the column diameter. If these two options are considered to be our precedent, then there are only two post widths to be considered, 3" square and 12" (the diminished diameter of the Tuscan column).

A close examination of the Neilson drawings (Figure 34) reveals that he not only drew the posts the width of the diminished diameter of the columns, but that he appeared to draw two parallel posts measuring 12" from outside edge to outside edge. Shadow lines indicate that there was some kind of solid panel between the posts. While we have submitted schematic designs of posts measuring 3" and 12", we believe that the most plausible solution is one where there are three inch posts set six inches apart forming a solid panel 12" wide. This solution encompasses both the construction techniques and designs found at the pavilions and the concepts found in the archives. It is believed that several of these original paneled posts survive at Pavilion X (Figures 35 & 36). The railing at the portico of that pavilion extends out beyond the protection of the portico roof, but the panels terminating that rail certainly appear to be original. The panel on the south end has been recently modified and no longer retains its original dimension (although historic photographs show this panel intact, showing that it once matched the panel at the north), but the panel at the north is completely original and is precisely 12" wide.

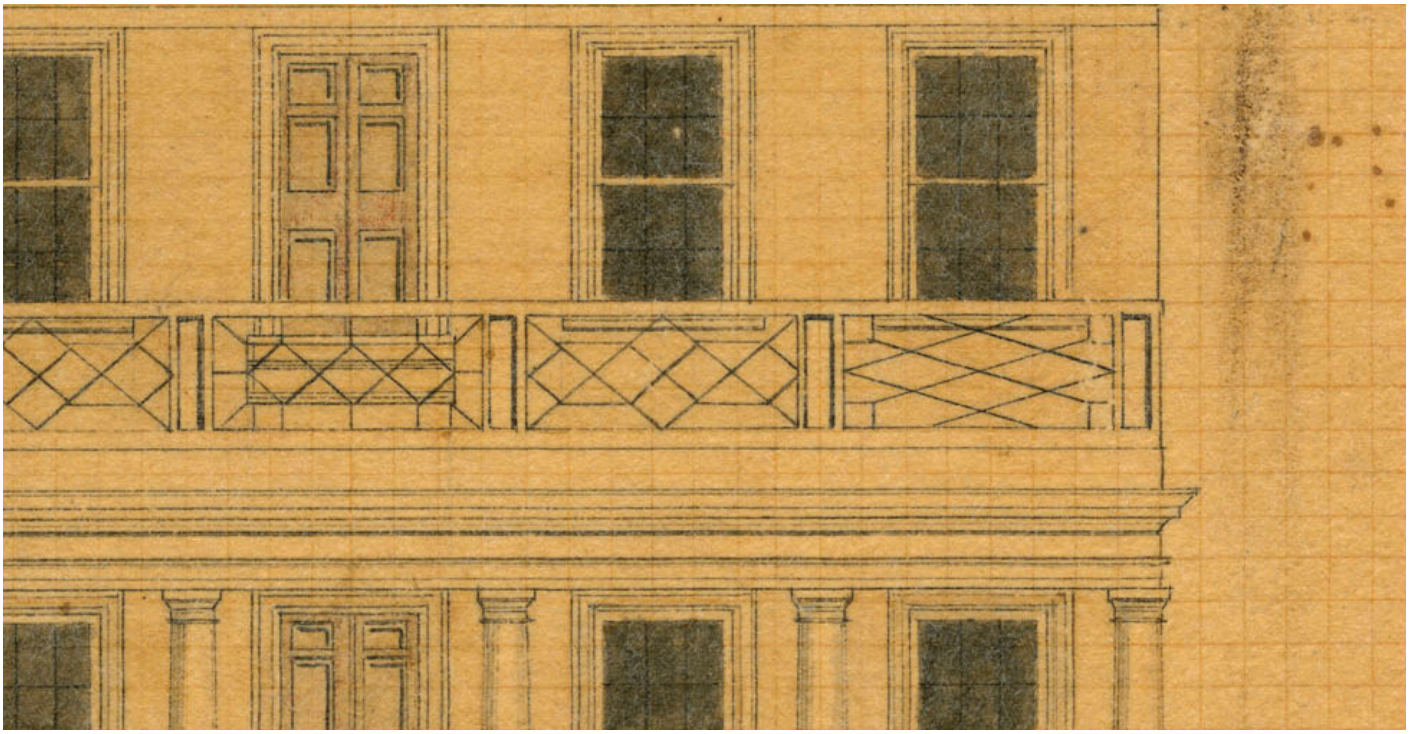
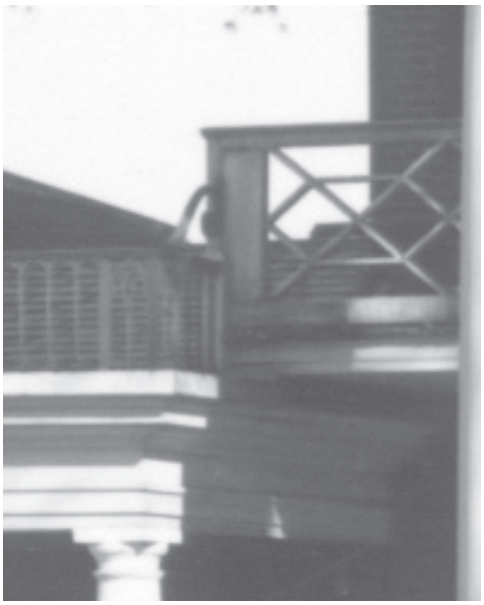


Figure 34 A detail of Nielson's drawings for Pavilion VI shows the Chinese rail posts appear to be panels with shadow lines. The panels are the same width as the diminished diameter of the Tuscan columns below. Neilson's drawing for Pavilion VIII shows the posts in a similar fashion. Albert and Shirley Small Special Collections Library, University of Virginia.



Figures 35 & 36 West elevation of Pavilion X and detail of colonnade and pavilion connection. Albert and Shirley Small Special Collections Library, University of Virginia.

John Hartwell Cocke
Report on George W. Spooner's Gymnasia Proposal
July, 1833

July 1833

Report of Mr. Spooner *Error here of About 1,000*
Total square feet of roofing at the University 57,520
Estimate Exp. pr. Square -- Measuring by <Surface> of the terrace Floor --
Sheeting, Shingling, Ridging pr Sqr. 8.
780 Shingles pr Each Square $4. pr &Mstkout; 3.12
6 lbs. Nails at 6 cts. 0.54
65 feet plank for Ridging 1.50 0.97«
150 Sheeting 1¬ thick 1.50 2.25
30 Ft. average of Bracket Facia at 6 cts. pr ft. 1.80
<50> ft. average Plinth 14 wide 14 0.49
20 ft. plank for Plinth & Facia 1« 0.30
2 lbs. nails for Do. 9 cts. 0.18
1 yd. painting Plinth *0.20*
$17.85
Exclusive of Tin or Sheet iron for the Gutters
if of tin 12 cts. pr foot -- 40 ft. pr Sq.
100 ft. running of Gutters -- ridging being 2« feet
apart & consequently 4 Gutters in every ten feet *4.00*
22.65
Slate of large Size to extend tightness on roofs of Pedts.
pitch will Cost put up here $10. pr Sqr.
framing roofs pr Sq. Sheeting & workmenship
included -- see Spooners Estimate *5.25*
15.25
57,250 575.
20.
115.00
Say 10,000 -- Extinguished on 20 yrs 500 pr. An.
14 feet wide
16 deep
Terrace over arcade
10 feet 4 Inches
16
14
64
16
224
Chinese Railing on Lawn
viz. Dormitories 6,114 feet at 25 1,528.25
Cost of Materials 19 cts. 611.40
Painting 8. 489.12
irons necessary for Securing Rails 2. *122.28*
2,751.05
Size of terrace on Each Side Rotunda 66 x 30
Framing roof at Pedt. pitch for Slating pr Sqr. 1.25
Sheeting Do. Do. Do. .75
Scantling for Do. <1.2> plank for Do. 125 Nails 20 3.37