

## The external façade of the Monastery of El Escorial: Traces of a process

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The Monastery of the Escorial offers, at first sight, a harmonious image. Its façades seem regular. On the other hand, it is well known that the organisation of the work in the stone quarries, established by Juan de Herrera, was designed in terms of rationalisation of the procedures so that it could be done in the shortest possible time. The blocks of stone arrived partially cut from the quarry.

The internal distribution of the Monastery is complex. Inside the exterior shell, all the same height and with a rectangular floor plan, there is a great diversity of elements that have not lost their characteristic types: the church, the cloister, the hospital, etc. As a consequence, a perfect correspondence between the harmonious concept and the interior is impossible. There is, for example, a great degree of obliqueness in the openings between the exterior and interior axes. There are even «false» spaces. From a compositional point of view, the central façade is, as has been pointed out, a scenographic and mannerist manoeuvre. (Chueca 1981).

The autonomy of the façade is also rendered from a constructional point of view, as one only has to contemplate Hatfield's sketch to realise how the shell was constructed independently, generally, before the bays that rest upon it.

However, the construction of the facades is less harmonious than the independent and balanced composition appears. In fact, on contemplation of the details of the bonding, it is possible to notice at first

sight the signs of the changes in the criteria of construction, the signs of changes of composition that occurred during the building, and also the signs of changes that occurred during the XVIII century. These irregularities are reflected in appearance of the joints and have been noted by various authors. This communication will try to demonstrate the results of the elevation work done on the facades, (Fig. 1), in order to contribute to their analysis by synthesising these signs and also to bring forth new data on the construction. We have been working on the three most important facades in our objectives and we will continue with the fourth.

In some aspects, our elevation work was done with precision, but in general we decided that in order to present the most interesting information, the position of the joints —at times considerably thick— it wasn't necessary to be so precise. On the contrary, presenting the actual limits of the joints, many times reconstructed, would only distract the attention of the reader from the configuration of the bonding pattern.

Stereoscopic photogrammetry was employed on the south facade and photographic rectification on the north and west facades, obtaining the bearing points by laser. The photographic shots to obtain were made with a calibrated semi-metric Bronica, with grill and a 40mm lens and photograms of 636. The photogrammetric restoration was made with an ADAM MPS2 restorer. For the photographic restitution, shots of each of the spaces between the pilasters were taken, and the images were restored

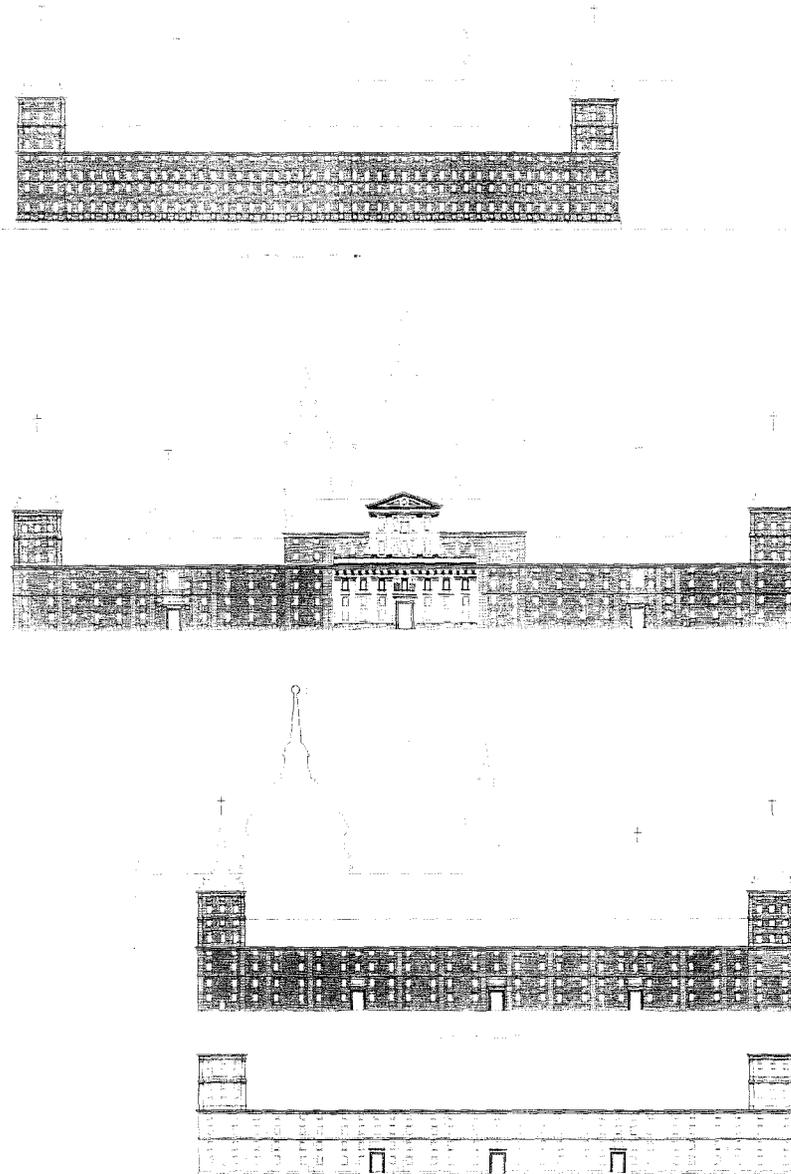


Figure 1

From top to bottom, the elevation work done on the south, west and north facades and the original distribution of the spaces and pilasters in the north façade

with four bearing points whose coordinates were obtained by laser. The drawings thus obtained were revised in situ, in order to eliminate possible errors or omissions.

The data, well known by all, are the following. During the construction, there was a change of management from Juan Bautista de Toledo to Juan de Herrera, and also a change in the plans. The original division in four posterior floors and two anterior ones was changed to a uniform height of four floors, in addition to the corresponding increase of the anterior bays, which can be seen in the front towers, whose floor plan is L-shaped. In the main façade, there are signs of two pilasters, which were removed. In the north façade, there is evidence of a more important change in the distribution of the pilasters and secondary openings, made by Juan de Villanueva (Sambricio 1988; Ortega 2000) (Fig. 2). On the south facade, which has no pilasters, one can see the signs of the middle tower that was removed, the horizontal separation between spaces is slightly different from

one side to the other and many irregularities in the position of the ashlars is visible.

Once the relief of the pilasters was eliminated, in order to erase the marks, the constructors had recourse to diverse tricks of the trade. False joints were used, that is, joints worked over the stones and re-joined with a superficial braid of mortar (which has frequently fallen off). They also tried to dissimulate the presence of real joints, regrouping them with a special mortar of granite sand that looked like stone. When the lines of the elevation were registered, in addition to these two situations, it was necessary to add the lines that separate two parts of a same stone with different relieves, as occurs in the teetted stones of the pilasters or in the windowsills. (Fig. 3).

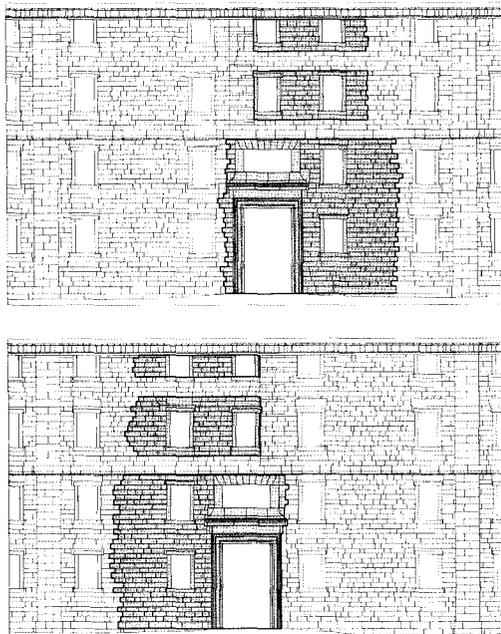


Figure 2  
Area in which the ashlars are new or are displaced from their original position

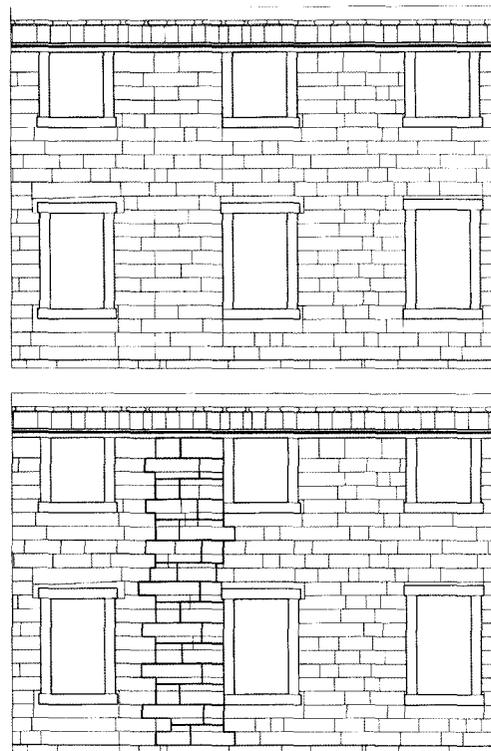


Figure 3  
Apparent joints and actual quartering in the space where a pilaster was eliminated

## NORTH FACADE

In the north and west facades, there are pilasters formed by ashlars of stone a foot and a half high, and between the pilasters there are slightly recessed wall sections, formed by courses a foot high, in such a way that three courses of wall section correspond to two courses of pilasters. This difference cannot be physical, as the rules of good construction advise one to link the pilasters and wall sections, avoiding a continuous vertical joint between them. In all cases, there is a bond between the pilasters and the wall. The stones of the pilasters are one and a half feet tall, but do not end at the edge of the pilaster. They continue, teethered, through the wall section, even though these toothing stone are one foot tall. Some courses of wall section correspond to these «teeth» and others reach the pilasters. In elevation, these possibilities follow a rhythm that is almost always regular, but different in the inferior, up to the first impost (two floors), and at the top (another two floors). This difference can be observed in the figure 4. The east tower of the north façade evidences a noticeable change in this rhythm.

The elevation has established that the heights of the first impost and the superior cornice are practically constant. The number of courses that can be counted in each of these two parts is the same as in the entire façade, but the stones of the pilasters, as well as the rows of wall section, show some changes in height at the top in each part. This is due, on occasion, to the fact that the slight differences in the width of the

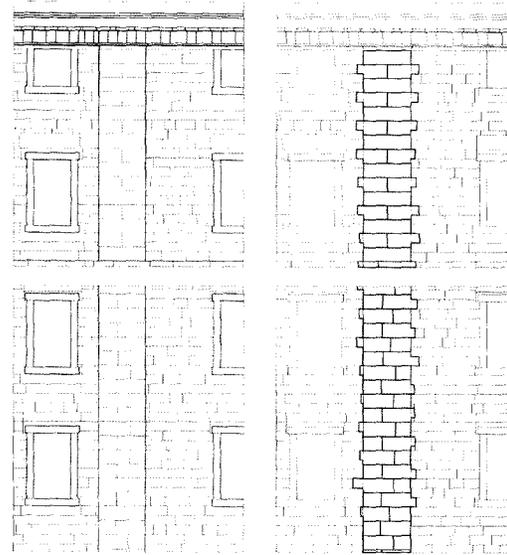


Figure 4

joints or in the heights of the pieces made rectification necessary on reaching the mid- or final level. However, there is an additional conceptual problem. The sections at the bottom have a number of rows, which is a multiple of three, so that the last layer of wall section coincides with a bed joint of pilasters. At the top, however, this does not happen, as the total height corresponds to a cardinal number of pilaster

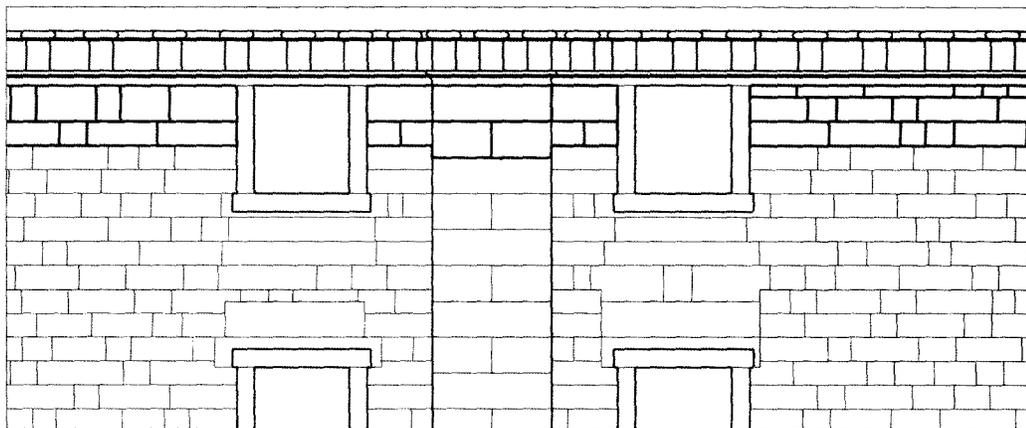


Figure 5

stones, but, in order to reach this level, the wall sections must end with a row whose height is half, in some cases, or, in others, fifty percent larger, than the rest (Fig. 5).

The changes effected by Villanueva, i.e., the translocation of the secondary axes of the north façade, can be seen, as known, in the modillions of the upper cornice. These modillions come closer together when they coincide with a pilaster. However, on altering the rhythm of the axes and the pilasters, the cornice was maintained, so the change is obvious. In addition, there are signs of «shaved» pilasters. There are other data which confirm the conservation of the stones as far as possible. The spaces in this façade usually present a windowsill, of only one piece, which covers the entire width of the window and more. On this piece, there is a base, the height lower than the row into which it is fitted, which has been worked in relief. Now that the relieves have been eliminated, the presence of these longer pieces is evident in the spaces where a window once existed (Fig. 6).

It is therefore clear that Villanueva's work was

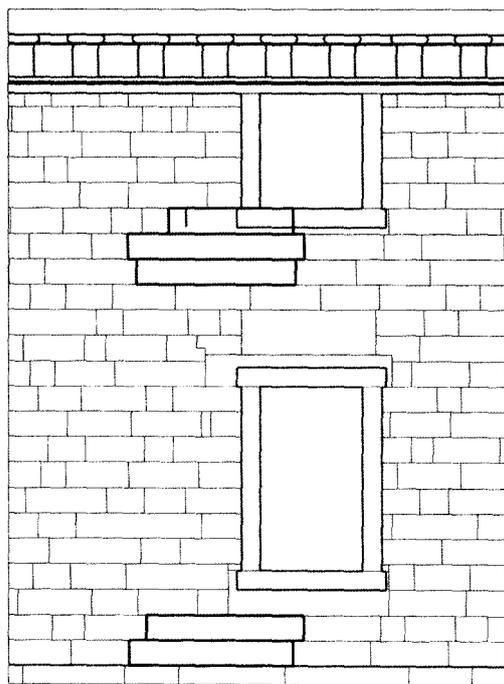


Figure 6

carried out with exquisite care in order to not remove one stone more than was strictly necessary, in spite of the fact that it required dismantling the entire height of the façade. A new stairway, which does not seem essential, was introduced, and the direct entry to the patio of the palace with horse-drawn carriages was achieved.

When referring to the length of the pieces, it is also evident that some of them are quite a bit shorter than the rest. But this never occurs under a window. It is probably a question, therefore, of perpend stones, which connect the two faces of the wall.

In the sill under the windows, in the top openings in the north façade (Fig. 7), sometimes the top of the base coincides with the top bed joint of the row of wall section to which it belongs, in such a manner that the carving on the bottom of the base stands out. But on other occasions, the bottom of the base coincides with the bed joint of its corresponding row, and then this element remains hollow in the centre in order to obtain the adequate height for the base. The height of the final cornice is, as we stated, constant, and the height of the openings also. Once again, these differences show that the errors in the height of the rows and in the width of the layers kept accruing.

The horizontal distances between the axes of the spaces are noticeably regular, but in the north façade, the towers, higher than the general cornice, show different total widths in the east and in the west. This is achieved with a different correspondence of the axes of the pilasters which limit them. In one case, the central axes are made to coincide and in the other, the internal limits. This difference, practically unperceived by passer-by, derives from the composition. If one observes the west tower at a slant (Fig. 8), looking at the front and the side, the window of the side wall is closer to the corner than the window of the front wall. In order to reduce this difference, the front of the tower is narrowed. But the towers are different, as the east tower has a square floor plan and the west one has an L-shaped one. That is the reason why the problem does not exist in the east tower, and as a consequence, the narrowing was not necessary.

#### WEST FACADE

The differences between heights of the rows are difficult to appreciate in the north façade, but no so in

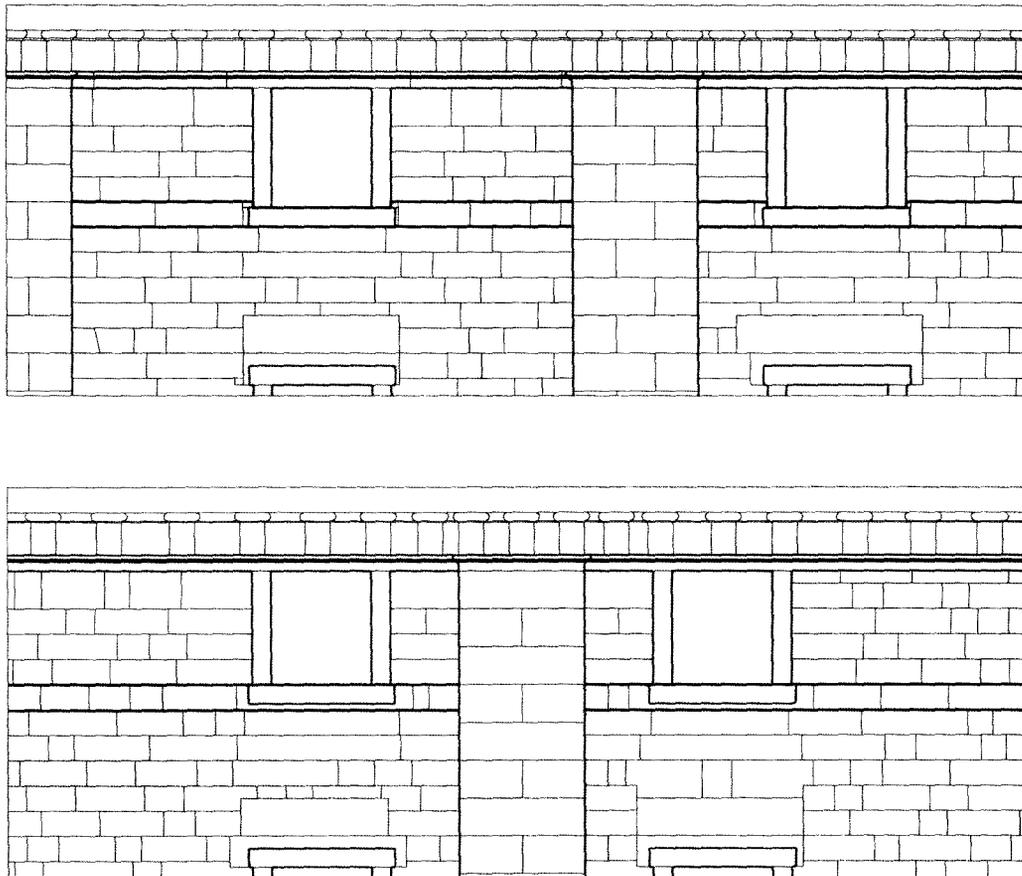


Figure 7

the west façade, where the rows are ostensibly higher or lower than the norm. In general, in the west façade, there are more constructive irregularities, deriving from less harmonious, and less exigent work. Referring to the heights of the rows, it must be added that, in the centre, where a composition proper to the façade of a temple is observed, the execution is more carefully carried out, (and thick joints filled in with mortar and pieces of slate are not seen as in the rest), but the pieces of wall section enclosed at the top do not continue the rhythm of the rest of the wall sections.

The false or dissimulated joints, however, are not limited to the area of the suppressed pilasters. At the bottom of west façade, the presence of one-pieced

parapets, upon which the false joints continue the design of the wall, is noteworthy (Fig. 9).

Here one could add the irregularities that you have observed. There also seems that there is a certain continuity of vertical joints, as a constructive limit, in the space that there is just to the left of the last windows with a full parapet.

#### SOUTH FACADE

Here the disorder increases, especially in the bottom half, contrasting notably with the apparent harmony which has characterized the monastery. Exception must be made of the asloped base, which follows the

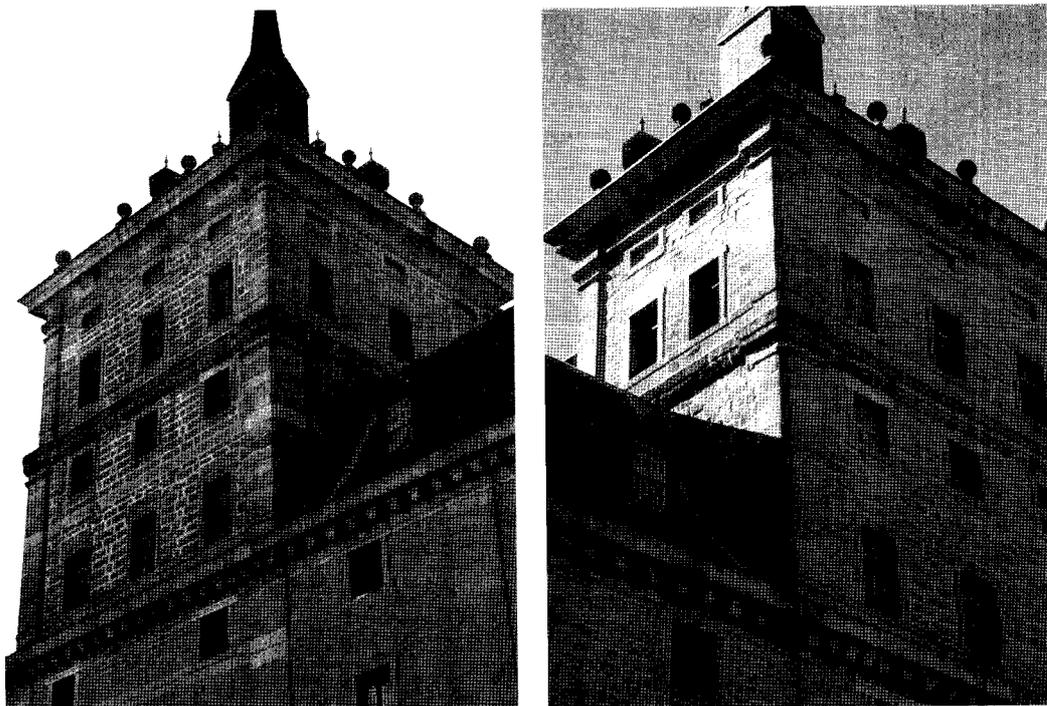


Figure 8

entire facade, completely uniform and perfectly carried out, although the height of the rows has been adapted to the composition of its moldings and spaces.

The rows vary frequently from the standard one-foot height. Their dimensions vary continually, and it is not difficult to find joints that visibly lose the

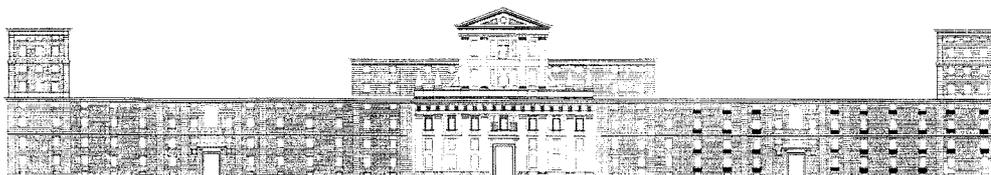
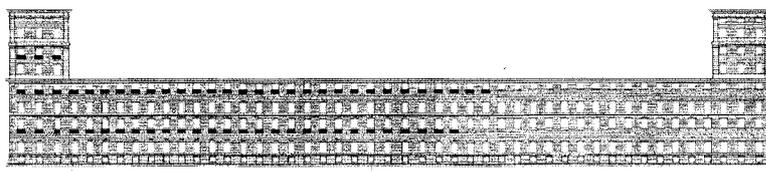


Figure 9

One-pieced parapets, in west and south facades

horizontality or that recuperate it abruptly with one step (Fig. 10).

On the left, the spaces are not finished off with a full lintel, rather a relieving arch. As you proceed to the right, flat arches replace the bearing arches (Fig. 11).

On the left, under the tower, one can see an ample zone of false or dissimulated joints (Fig. 12.) The correction seems to have no other end than to hide the excessive height that one of them has.

In this same area, the stone parapets of the second and fourth row of windows are made of only one rectangular piece with false joints, as in the lower spaces on the west facade (Fig. 9). This does not occur in the entire façade, but in a great part of it: in the second row from the extreme left up to the second

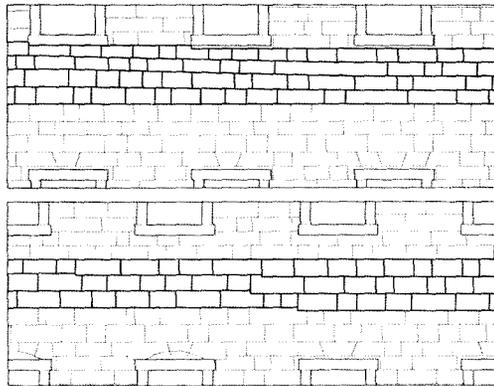


Figure 10

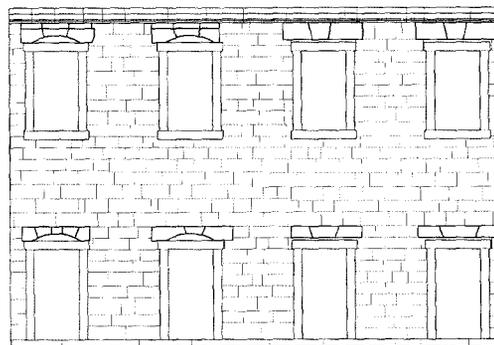


Figure 11

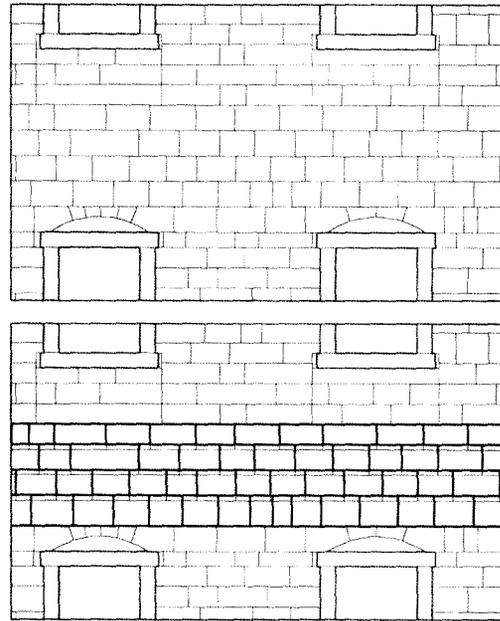


Figure 12

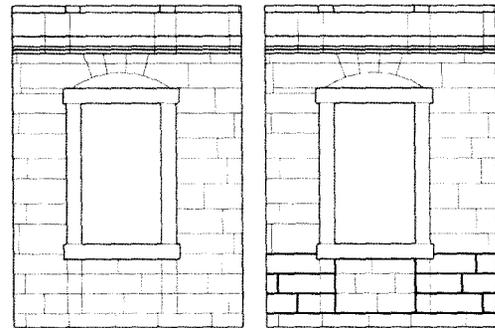


Figure 13

window after the original central tower, and in the fourth row up to the fourth window after the tower.

These great pieces reach from the width of the space, including the door jamb; in one of the spaces, however, the entire piece is limited to the free light of the space, furthermore, here one can see the signs of some jambs that went down to floor level (Fig. 13), as if at some moment one had thought of designing a

space equal to that of the third row with a banister, or a similar space in which the wrought iron banister would be substituted for a piece of stone.

Under the cornice, there is a band which becomes a lintel of the windows of the top row, as occurs on the other façades. When pilasters exist, this band links to them. Nevertheless, on the south façade, to avoid reaching the corner, the band disappears a little before, as it planes down little by little (Fig. 14).

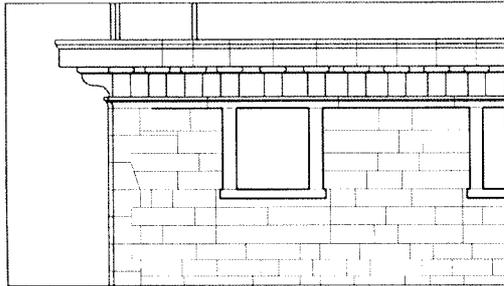


Figure 14

The suppressed tower separates the façade in two parts and the horizontal separations between the windows are slightly wider to the left than to the right. As a consequence, the three windows are not centered in the left tower.

Counting from this suppressed central tower, between the fourth and fifth space, that is, coinciding with the end of a series of full parapets, the vertical joints coincide, especially at the bottom half, which makes one think of a provisional vertical limit. But, in addition, this construction joint has become a crack in the wall, which, at the mercy of settlements, has broken at the weakest line (Fig. 15).

#### COMPARISON

In general, greater indecision in the south-west zone, where the work was begun, is evident, as is a greater regularity in the north, where the work ended. Juan de Herrera's changes made the work proceed faster and more harmoniously.

However, as we have seen, the north facade originally presented some constructive irregularity.

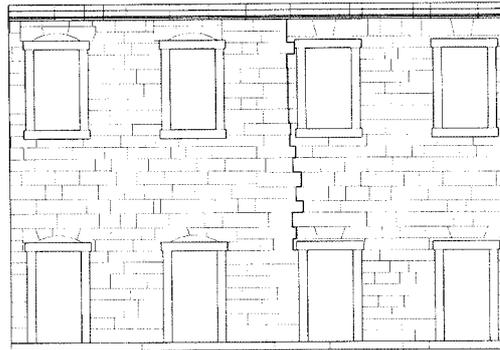


Figure 15

Inside the basilica, to the contrary, the heights of the rows are more rigorously kept. In fact, there is a row which is ostensibly lower and follows all the interior parameters of the temple. If we follow it carefully, we can observe that it corresponds to the lower part of the band which delimits some decorative rectangles above the arches of the lower floor. That is, the bond was carefully adapted to the molding, which was not so necessary in the exterior.

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