Critical study of the Specifications for the construction of the nuns’ monastery of Chinchón, a contribution to the knowledge of Spanish constructive system in the construction time of El Escorial

L. de Villanueva
I. Salto-Weis

Many Specifications of architectural works of the period, even from Nicolás de Vergara, the author of this Specifications document, have lasted through time until the present. Marías (1985, 55–100) states that different Specifications were granted more than fifteen times. Specifications, was a fairly common document which was submitted with the drawings and plans of architecture projects in the second half of the 16th century.

A critical analysis of this Specifications is of a high interest value for the study of the history of architecture; an approach that has not much been practiced up to now. The fact that the transcription of the Specifications has already been published (Marías 1980), together with the possibilities of checking the works done «in situ», has motivated us to choose for this study, the Specifications of the nuns’ monastery of Chinchón,1 village which has already been of interest for other studies in the history of architecture (Villanueva 1998).

HISTORICAL BACKGROUND

On July 26th, 1597, Diego Fernández de Cabrera y Bobadilla, 3rd Count of Chinchón, and the stoneworkers and masonry masters Juan de las Heras, Pedro de Pedrosa and Juan de Bozarraiz signed the Specifications document for the construction of a nuns’ monastery which the Count wanted to found in Chinchón.

Fernando Marías (1980) has published the transcription of such Specifications entitling it as «Condiciones como se a de hacer la obra del monasterio de monjas en la villa de Chinchon por mandato de sus señoría el Conde de Chinchon conforme a unas traças plantas y montes firmadas por su señoría que son de Niculas de Vergara»2 (Condiciones 1597, 1).

The process had been initiated years before, since there are news as early as from the beginning of the 16th century of the founding wishes of the 1st Count, Fernando de Cabrera and grandfather of Diego. Nevertheless, his desires did not come true until the end of that century (Marías 1980, 258).

On October 22nd, 1596 a first contract was signed between Count Diego and Juan de Bozarraiz or Bozarraez, mason master (Protocolos 1596 a; Condiciones 1597, 12). Shortly after that, Bozarraiz handed the work over to Heras and Pedrosa, stoneworker and masonry masters, so that after signing a new contract with Count Diego, they would work as a company (Protocolos 1596 b). This new contract was delayed until the 29th of July 1597 (Protocolos 1597), that is, three days after the signature of the Specifications (Condiciones 1597, 45).

Diego, 3rd Count of Chinchón since 1575, who died in 1607, was a close friend of Philip the 2nd and member of the Council for Business and Difficult Matters. He advised the king on architectural matters, and therefore he had been his councilor in the works of El Escorial (Villanueva 1998).
Nicolás de Vergara, Jr., named so to distinguish him from his father Nicolás de Vergara, Sr., was the master builder of the cathedral of Toledo, between 1575 and 1582 and later, from 1587 up to his death in 1606. He was also the master builder of the town council of this city since 1576. He occupies the most relevant position in the architecture of Toledo in the last quarter of the 16th century, linking together Covarrubias with Monegro. (Villanueva 1970; Marías 1983). He follows the tendency of Juan de Herrera, from the moment he visited him in El Escorial to consult him about the plans of the church of Santo Domingo el Antiguo, church which would become the model of the Manneristic period. As the master builder of the cathedral in Toledo, he designed numerous churches in the archdiocese. His major works are the Sacristy of Tavera, Saint Peter Martyr and the Shrine in the Cathedral of Toledo. According to Marías: «he stands out among his contemporaries due to his quality as great innovator, starting off from Juan de Herrera but achieving unexpected accomplishments of great originality» (Marías 1986).

In 1593, Nicolás de Vergara visited Chinchón, to inspect the works done of the parish church, built under the patronage of the Count of Chinchón after an agreement with the villagers in 1586. There is a possibility that in this first visit he would have started the draft from the monastery (Marías 1980, 258–259: Cuentas 1653–1685).

The chronological events related to the different counts and the main architectural works, which took place during the construction of the nuns’ monastery, are briefly stated in Table 1.

**Specifications analysis**

The original transcription done by Fernando Marías has been used for this critical study of the Specifications. The text has been divided into versicles, numbered in Arabic numbers, and coinciding with the different paragraphs, except in the first part of the text where paragraphs are too long and therefore the subdivision has been shorter (Condiciones 1597).

**General characteristics**

The text is written in a direct style, with a concise prose, and with a language for experts in the construction trades. It is written without any didactic purpose, using the minimum necessary to fulfill its purpose. It details the rights and obligations of each party and fixes the procedures to solve the interpretation problems, measurements and bill of quantities. It describes the compound work units and fixes the prices for the piecework tenders. It corresponds to the documents we use presently in the construction practice in Spain, the Specifications and the bill of quantities. It is a concise and simplified example of the redundancy and sometimes overwhelming legislation that pervades present times.

The text does not have subtitles or subdivisions, although in general, each paragraph corresponds to a different compound work unit.

It is dated on July 26th 1597, and it refers to the construction of a nuns’ monastery in Chinchón. 

in 1611 and 1613. There is a bill paid in 1619 to the masonry master Hernando de la Cruz, friend of all the builders who signed the Specifications and were also contracted in the works of El Escorial. Once the monastery was founded, it was occupied by nuns and there are records of the payments in the accounts book done in between 1654 and 1661 to fit some of the rooms, such as kitchens, dining room of the infirmary (Marías 1980, 258–259: Cuentas 1653–1685).

The chronological events related to the different counts and the main architectural works, which took place during the construction of the nuns’ monastery, are briefly stated in Table 1.
Table 1. Chronology

<table>
<thead>
<tr>
<th>Counts of Chinchón monastery</th>
<th>Architecture in Chinchón</th>
<th>Nuns</th>
</tr>
</thead>
<tbody>
<tr>
<td>1480–1511</td>
<td>Convent of the Agustiniens (late 15th century)</td>
<td></td>
</tr>
<tr>
<td>Andres Cabrera married to Dª Beatriz de Bobadilla, 1475 Marquis and marquise of Moya 1480 Lord of Chinchón</td>
<td>1499 first town hall placed in the same present location in the main square First castle construction (before 1521)</td>
<td></td>
</tr>
<tr>
<td>1511–1522</td>
<td>Possible construction of the Palace</td>
<td>Founding wishes</td>
</tr>
<tr>
<td>Fernando, 3rd son, Lord of Chinchón, married to Teresa de la Cueva since 1520, 1st Count of Chinchón</td>
<td>1534 Beginning of new church 1559–75, Castle construction for some authors</td>
<td></td>
</tr>
<tr>
<td>1522–1575</td>
<td>1586 Agreement between Count and townspeople to continue the construction of the new church 1593 Nicolás de Vergara visits the construction works of the new church 1598 Castle finished</td>
<td>1596 Stonework contract for the church body 1597 Specifications 1597 Masonry and bricklayer contract. Construction works begin</td>
</tr>
<tr>
<td>Pedro Fernández de Cabrera y Bobadilla, 2nd Count, married to Mencía de Mendoza y de la Cerda</td>
<td>1606 first news of construction works 1619 first news of payment for construction works done</td>
<td></td>
</tr>
<tr>
<td>1575–1607</td>
<td>1626 Construction of the new church finishes 1626 Removal of Agustiniens convent to the present location of the Parador</td>
<td>1563 Founding of the Monastery of the Order of St. Clare 1654–61 Improvement works</td>
</tr>
<tr>
<td>Diego, 3rd Count married to Inés Pacheco</td>
<td>1654–58 Worship in the new church, due to works in the old one</td>
<td></td>
</tr>
<tr>
<td>1607–1647</td>
<td>1683 Main Square is closed completely 1668 Construction of the chapel of St. Roque</td>
<td>Burial of the 5th Count in the choir Burial of a son of the 13th Count in the choir.</td>
</tr>
<tr>
<td>Luis Jerónimo, 4th Count, Viceroy of Perú (1629–41) married to Francisca Enriquez (La Chinchona)</td>
<td>1713 Church tower is rebuilt 1713 Main Square is opened again 1740 Palace destroyed</td>
<td></td>
</tr>
<tr>
<td>1647–1665</td>
<td>1738 Sale of the County to the Infant Felipe, 12th Count 1761 Sale of the County to the Infant, Luis, 13th Count</td>
<td></td>
</tr>
<tr>
<td>Francisco Fausto, 5th Count, since 1640 1st Marquis of San Martín de la Vega. Married to Francisca de Cordoba y Velasco Not direct heirs.</td>
<td>18th century Chapel of the Misericordia, initially chapel of the Hospital</td>
<td></td>
</tr>
</tbody>
</table>
without specifying the religious order for which it was built.

The construction is ordered by the Count of Chinchón, although it does not specify exactly who he is, not even in the signature (Condiciones 1597, 1, 34, 40, 42, 45). Inferring from the date we know that it is Diego, 3rd Count since the death of his father in 1575 until 1607.

The document refers to the drawing, plans and sections, by Nicolás de Vergara, signed also by the Count, which probably were attached to the document or were handed to the contractor masters. In the transcription of the document, it does not mention that the Specifications are also from this architect, although Fernando Marías, who has a lot of experience in interpreting this type of documents, has assumed so (Condiciones 1597, 1; Marías 1980).

The construction works are commissioned to three stoneworker and masonry masters: Juan de Eras, Pedro de Pedrosa and Juan de Bozarraiz, who sign the specifications together with the Count of Chinchón (Condiciones 1597, 34, 42, 45).

In two occasions, there are references to some specifications signed previously, which had been lost (Condiciones 1597, 24, 26). It seems, from the context, that those documents refer to the stoneworkers’ work in the monastery courtyard.

In various places, the text distinguishes between the church masonry of, from the others in the rest of the monastery. At a certain point, it indicates that the church masonry is already agreed upon, and commissioned to Bozarraiz (Condiciones 1597, 12).

In the description of compound work units it follows the common logical order of the construction process, from the foundations to the roof covering.

There are advices and indications given to avoid possible conflicts with other trades. Therefore, a new plotting is asked over the trenches previously opened, before starting the foundation masonry (Condiciones 1597,2). Precise conditions for the materials supply and auxiliary means are given, both supplied by the Count. The tools and utensils are to be supplied by the contractor masters (Condiciones 1597, 40, 41). The time and place for fitting the collar beams in the masonry, needed for the carpentry work, are also stated (Condiciones 1597, 8, 10).

In relation to the work units, indications of their geometry are given, sometimes referring to the plans, and some other times referring to the commands to be given during the construction. In some other cases, in the simplest ones, a direct description with the measurements is recorded. The finishings are also included: the type of stonework in the ashlar and the renderings for the masonry. Measurement criteria are shown for the openings and the wallings. Also, prices are given for the different work units.

A system of appraisal of the works was established, done by two quantity surveyors: one chosen by the Count and another one by the contractors, and a third one from the trade named by law in case they did not reach an agreement (Condiciones 1597,12). The father, Friar Antonio de Villacastín and the surveyor Pedro Sánchez were named to solve the conflicts or doubts in the interpretations of the Specifications (1597, 34).

The beginning of the works was established for September of the same year (Condiciones 1597, 34), mentioning the costs and the tenders to be paid, with an initial payment on account (Condiciones 1597, 33, 34). A safeguard was included, which allowed the Count to contract building masters, officials and laborers, on behalf of the contractors’ if they did not carry their orders out correctly, specifically according to number of workers in the construction and perfection quality of the works (Condiciones 1597, 42). Also, the document specified that in the event of an interruption of works due to lack of supplies — during six months — it was possible to clear the works done (Condiciones 1597, 44).

Masonry materials condition and masonry work units

The materials which the Count has to supply are listed: «stone, lime, brick, plaster, water, sand, shingles, mud for walling, timbers, nailing, roof tiles and stones to be worked». The document specifies that the materials should be supplied on site, providing easy accessibility for the transportation (Condiciones 1597, 40).

The ceramic bricks of the time were solid and had a large rectangular size, with an approximate proportion of 3 to 4. In the text, the dimensions are called «frente», head and «asta», stretcher. The head corresponds to the smaller dimension of the brick bed and the stretcher to the larger one («frente» corresponds to the word tizón nowadays and «asta» is
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By the study made of the bricks used in the monastery, the workers used one foot for the header (barely 28 cm) and a quarter of a stick for the stretcher (21 cm).

Regarding the conglomerates, the texts states that the lime should be supplied «burnt and sieved», whereas the dead lime should be made by the masters who should «slake, mix and beat» and soften it again when they are going to use it, fixing the time of this last preparation having in mind that it shall be «mixed and beaten twelve or fifteen days before its use» (Condiciones 1597, 14).

Each masonry wall of the foundations, as well as the walls of the underground vaults shall be of two hundred square feet modules (10 in length by five in height by four in thickness) (Condiciones 1597, 14).

Underground vaults shall be made with brick and lime, one foot thick, plastered and scratched on the part below. They will be constructed in modules or walls of fifty feet measured from the interior. The contractors, with timbers and nails supplied by the Count, will make the archway centerings. The third part shall be clad and the other two filled with sand, provided by the Count (Condiciones 1597, 15).

The walls with the openings shall be constructed according to the plans and elevations, both for the thickness of the walls as for the length and height of doors and windows. The masonry walls shall be plumbed and leveled, using lime, stone and brick (Condiciones 1597, 3).

In relation to the openings, Figure 1, the «sides of doors and windows shall be built with brick pillars and brick arches». The window sills should have one header in height and half a foot overhang.

The splay shall have a rebate at the lower part coinciding with that of the jambs to house the carpentry. It should have a rise of half a foot.

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Figure 1
Wall opening, according to the description in the Specifications
minimum. The trabeated arch shall be one stretcher thick by one header high. The thickness of the splay shall be equal to the wall thickness ((Condiciones 1597, 5).

The pillars separating openings or between the walls shall be made of bricks with set-ins or steps. In the set-ins the smallest part should have a width equal to that of the wall, and the greater part will project from the smallest part, one header on each side. The pillars should be always started by their greater side. Every four feet, they shall have a binding brick course, both in the openings, and in the mud and masonry walls. The binding brick courses, which have to be built between enclosures, are not considered (Condiciones 1597, 6, 7).

Once the first slab is reached, the collar beams will be set correctly leveled at the appropriate height (Condiciones 1597, 7, 8).

The walls shall be built after that, with their openings, up to the second slab, with the length, height and width according to the plans and elevations, and built in the same manner as in the previous case (Condiciones 1597, 9).

All the masonry, be it stone, brick or bonding shall be made regarding the previous conditions (Condiciones 1597, 12).

For quantity purposes a module of enclosure of two hundred square feet is considered, which would be the common dimension of the caissons. The walls shall be plastered and scratched inside and outside, both brick and stone (Condiciones 1597, 12).

The mud walls are also mentioned, high or low, which shall be three feet wide by four feet high and ten feet long, giving prices accordingly to whether they are black walls, or concrete walls on the two faces. The tie rows and the bondings are to be measured together with the corresponding walllings (Condiciones 1597, 16).

The vertical divisions are mentioned, made by double partitions (Condiciones 1597, 32).

The main arches of the church shall be built with brick and lime or gypsum as ordered and must be three feet wide, including the width of the pillar and the projecting ridge. Included within the price are the scaffolding and the arch centerings, as well as the removal of the false arch. They must be measured from the interior part. They must be left plastered, and whitewashed as well as finished (Condiciones 1597, 17).

The ridges must be set again at the height of the roof rafters and the roof chambers (Condiciones 1597, 10).

Bricks must be used for the cornices according to the plans except in the church exterior which shall be of stone, as is later specified (Condiciones 1597, 11).

The church vault must be of sardinel brick, three brick thick, plastered and whitewashed with white gypsum. They must be measured from the inside in squared sticks, and a thickness of one partition and two double ones (Condiciones 1597, 18). In the vault extrados, at both ends and every eight feet, one foot thick abutments must be built, which will reach up to two thirds, packing the vault belly about two feet (Condiciones 1597, 19).

If the vaults include fascias, they must be plain, without moldings or fillets, and must be measured in all their width and skewback, in squared sticks (Condiciones 1597, 20).

The prices distinguish between the «jaharrardo», whitewash and washing finishing, differentiating whether the last one has been done with white gypsum or with black gypsum (Condiciones 1597, 21).

Two ways of placing the tiles are distinguished. On the church roof, the tiles shall be placed «a cama llenas» with the channel tile doubled and rendered, «los lomos llenos», the ridges rendered and the roof pendant nailed. On the other roofs, the tiles must be fitted in the same way, but without nailing the pendant (Condiciones 1597, 22, 23).

Finally, the contractors shall supply the tools and utensils cited in the Specifications. The utensils, more than the tools are detailed, maybe due to the fact that it was there which problems arose more often. Therefore utensils like, tool baskets, sieves bath box, wooden bowls, handbarrows, buckets, scaffolding, arch centerings and ropes are stated (Condiciones 1597, 41).

**Specifications for the stonework**

When the text mentions the materials, which the Count has to supply, it indicates that «the stone shall be supplied dressed and «cajas rompidas» according to the gages and molds given to the stoneworkers as it was the use in the stone quarry» (Condiciones 1597, 40).
The stone units refer to the courtyard façade and to the church cornice, with the hand drawing of the Count on the side, as well as to the generic units such as ashlar, plinth, and slabs.

The courtyard façade is composed by a series of arches and columns, with windows in the upper level. The stonework of the arches is described in detail, with its column, base capital and its brick spout, as well as the stone fascia over the arches, all of it according to the drawings. The openings for the upper windows are also detailed, with window jamb and lintels also made of stone. Although the type of stone is not expressed, the tools used for hewing, the axe and the tooth axe are detailed (Condiciones 1597, 24, 25, 26). The corner pillars are mentioned, indicating that «... the over sizing would be paid» (Condiciones 1597, 35).

For the church, the stonework units are also described. The exterior cornice of stone, according to the drawing on the side, mentioned above. The plinths or internal bases, with «work stones of one foot and a half in length and half a foot in height», with its seen face axed and tooth axed, «it should be well dressed and perfectly fitted to be inside the church» And the slabs for the paving must be of «picón» (Condiciones 1597, 24, 26, 27).

In three of the work units described, there are interferences with an earlier lost contract signed by the Count, to which the prices are to be referred in case it appears (Condiciones 1597, 24, 26, 27).

At last, generic prices are given of «any stonework ... such as ashlar, plinths, and other things for such a work» hewed superficially with a small pick, to be used in any part of the work (Condiciones 1597, 28, 39).

**Bill of quantities**

Together with the working specifications, several criteria for surveying and plotting are given. The units for measurements are the foot and its submultiples: half a foot and a quarter foot. The stick is also used, which equals three feet.

In masonry, to measure the volumetric units, a reduction to superficial units is made, considering the common thickness of 3 to 4 feet. Therefore, units of 200, 120 or 50 square feet or surface units are used, coinciding with the common units for enclosures.

There are also valued by thousands, when dealing with the tile placing.

In stonework the tendency is to reduce the unit to linear units, using the stick, or calculating by the work units

The unitary prices are given in «reales», half «reales» and «cuartillos», as well as in «ducados».

Unitary prices for laborer’s piece work are shown on table 2. The figures have been obtained from the Specifications, and expressed in the modern way, unifying the units to feet and the prices to «maravedies», so as to compare them. (Font 2000).

**Comparative analysis with the existing work**

Two main elements of great interest are considered in this analysis. The Northern wall, which is the exterior enclosure, and corresponds to the sites occupied by the sacristy, church, choir and novitiate, and the cloister façade, considered of great singularity by all the different critics (Marías 1980, 263; Serrano 2000, 69) Fig. 2.

Regarding the materials used, white limestone of Colmenar de Oreja is used, which was a commonly used stone in Chinchón, extracted from the nearby quarries. Nevertheless, it is not specified in the Specifications document the type of stone to be used, as the Count would supply it.

**Northern façade of the monastery**

When studying the Northern walling, the constructive change at the cornice level of the choir strikes our attention. In fact, under the cornice, stonework is used for the plinth, corners and voids packing with ashlar and random rubble, cyclopean in the lower part and of medium size in the upper part. Nevertheless, the body of the choir and novitiate is crowned with a brick cornice and from that level upwards, the walling is made of masonry, with the corners, void packing and cornices made of brick and the rest with mixed bond or bond in the style of Toledo with piers ranging from bigger to smaller and brick rows underlying the stone masonry blocks of rubble stone and medium sized, similar to the upper masonry of the quarry area (Figure 3).
Table 2. Bill of quantities for the work units contracted in the Specifications

Listing of the trade tenders obtained from the bill of quantities cited in the Specifications. So as to standardize and make comparisons, the prices are given in maravedies and the units are reduced to feet, square feet or cubic feet. The prices refer to the construction work only, since the materials were supplied by the owner.

<table>
<thead>
<tr>
<th>Unit of measurement</th>
<th>Description of trade work</th>
<th>Price in maravedies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cubic feet</td>
<td>Wall of stone masonry, or of any brick type, in modules of 10 feet in length, by 5 feet high and 4 feet thick, in foundation or wallings, rendered and stripped on both sides, measured all along (openings included as solid), intermediate rows included.</td>
<td>2.75</td>
</tr>
<tr>
<td>Cubic feet</td>
<td>Black earth walling in modules of 10 feet in length, by 4 feet high and 3 feet thick, in any type of walling, rendered and stripped on both sides, measured all along (openings included as solid), intermediate rows included.</td>
<td>0.85</td>
</tr>
<tr>
<td>Cubic feet</td>
<td>Concrete walling on both sides, in modules 10 feet long, by 4 feet high by 3 feet thick, brick rows included.</td>
<td>1.13</td>
</tr>
<tr>
<td>Cubic feet</td>
<td>Concrete walling on one side, in modules 10 feet long, by 4 feet high by 3 feet thick, brick rows included.</td>
<td>0.99</td>
</tr>
<tr>
<td>Squared feet</td>
<td>Double partition wall, for vertical divisions, neither plastered nor rendered.</td>
<td>2.89</td>
</tr>
<tr>
<td>Squared feet</td>
<td>Underground vault walling of brick and lime of one foot thick, rendered and stripped on the lower part, and cladded at the bottom third part, and also the proportional part of the arch centering measured from the interior part.</td>
<td>14.96</td>
</tr>
<tr>
<td>Linear feet</td>
<td>Main arch, 3 feet thick, measured by the internal part, with its total width of 3 feet projecting part included. Rendered with black gypsum and whitewashed with white gypsum. Proportional part of scaffolding false arch and mounting and dismounting included.</td>
<td>283.33</td>
</tr>
<tr>
<td>Squared feet</td>
<td>Brick vault of 3 feet in thickness, rendered in black gypsum and washed and whitewashed in white gypsum, measured from the interior. It also includes the proportional part of the abutment, one foot thick every 8 feet long on both sides of the vault up to 2/3 in height, and compaction of the spandrel up to two feet.</td>
<td>32.11</td>
</tr>
<tr>
<td>Linear feet</td>
<td>Flat outstanding fascia over the vault, without moldings nor fillet, measured throughout the width and with the protrusion specified, for a widthness of 3 feet.</td>
<td>14.05</td>
</tr>
<tr>
<td>Squared feet</td>
<td>Black gypsum rendering and washing and whitewashing with white gypsum over any type of walling.</td>
<td>3.40</td>
</tr>
<tr>
<td>Squared feet</td>
<td>Black gypsum rendering and plastering and washing with black gypsum over any type of walling.</td>
<td>2.72</td>
</tr>
<tr>
<td>Squared feet</td>
<td>Black gypsum rendering over any type of walling.</td>
<td>1.36</td>
</tr>
<tr>
<td>Unit</td>
<td>Tile fitting packing, including proportional part of channel tile doubled and rendered, filling, compacting and rendering of ridges.</td>
<td>1.02</td>
</tr>
<tr>
<td>Unit</td>
<td>Tile fitting packing including proportional part of channel tile doubled and rendered, filling, compacting and rendering of ridges, and also proportional part of nailing of the eaves.</td>
<td>1.50</td>
</tr>
</tbody>
</table>
Table 2. Cont.

<table>
<thead>
<tr>
<th>Unit of measurement</th>
<th>Description of trade work</th>
<th>Price in maravedises</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td>Arch with its corresponding plain pillar, base and capital, according to the project, all worked in stone, hewed with axe and tooth axe, placed, including the brick mouths which are in the extrados of the arch, up to the stone fascia, and also the paving under the arches, projecting a little over the width of the base.</td>
<td>8,812.50</td>
</tr>
<tr>
<td>Linear feet</td>
<td>Stone fascia, hewed with axe and tooth axe, with protruding parts and height according to the section plans, over the previous arches.</td>
<td>39.66</td>
</tr>
<tr>
<td>Unit</td>
<td>Stone balcony opening with its jambs and lintel having all the thickness of the wall, hewed with axe and tooth axe, according to the plans, including interior and exterior caissons and projecting parts.</td>
<td>3,264.00</td>
</tr>
<tr>
<td>Linear feet</td>
<td>Church external stone cornice, according to plans, measured along the length of the mouchette.</td>
<td>204.00</td>
</tr>
<tr>
<td>Squared feet</td>
<td>Ashlar stonework, parapets, plinths, and similar parts, except jambs and lintels, hewed plainly with small point with a height of ( \frac{1}{2} ) feet, measured from the exterior.</td>
<td>11.33</td>
</tr>
<tr>
<td>Squared feet</td>
<td>Plinth with ashlar of ( \frac{1}{2} ) feet long and ( \frac{1}{2} ) feet high, in the inside of the church, finely hewed with axe and tooth axe and tightly placed, measured by the protruding parts.</td>
<td>22.66</td>
</tr>
<tr>
<td>Squared feet</td>
<td>Plinth with ashlar stones ( \frac{1}{2} ) feet long and ( \frac{1}{2} ) feet high, picked.</td>
<td>18.88</td>
</tr>
<tr>
<td>Linear feet</td>
<td>Picked stone slabs for the church floor, measured in length, with whatever the width they have.</td>
<td>17.00</td>
</tr>
<tr>
<td>Squared feet</td>
<td>Stone ashlar hewed with axe and tooth axe with a seen surface of ( \frac{3}{2} ) feet, outside the church plinth.</td>
<td>18.88</td>
</tr>
</tbody>
</table>

Figure 2
Monastery of the Inmaculate Conception, of St. Clare nuns, in Chinchón. Plan of the whole building. 1) Church, b) choir, c) chapel, d) sacristy, e) new choir, f) courtyard, g) novitiate, h) staircase, i) access porch, j) janitor's house, k) vegetable garden
This change in the type of walling, probably to decrease the costs, is already mentioned in the Specifications. It incorporated a bricklayer and the corresponding working units, in the piecework, whereas in the first contract referring to the body of the church, it was made exclusively by a stoneworker. On the other hand this will be the general trend in the 17th century in Spain.

In the Specifications, the beginning of the construction is not mentioned, although nothing is said either about the opposite. A project of Nicolás de Vergara is mentioned as well as the existence of a previous bidder for the piecework of the stonework in the church body. Up to the level previously mentioned, the Northern walling was made of stonework, and probably made according to that piecework. It is stated in the Specifications that the construction of the church vaults should be made of masonry, with three feet thick bricks in the ribbed arches and the brick sardinel vaults made of three feet thick bricks, as apparently was made. That greatly reduced the prices in relation to the ashlar vaults (Specifications 1597, 17, 18).

It is difficult to verify the correct execution of all the work units. It is clear that it was not carried out correctly in the church cornice, since it is made of brick instead of stone. On the other hand, the change from the stonework to the mixed bond masonry in the church body, built from the cornice level of the choir, was not planned in the Specifications. It looks like a simplification to make equal with the other walls of the monastery, described with several different types of masonry, the mixed bond or Toledo style included (Specifications 1597, 6, 7, 13).

It is also to notice the important inclination of the crowning stone fascia of the plinth in the church adapting to the slope of the site, using a bad constructive solution, as opposed to the leveled foundations of the Specifications. Maybe this was so because they corresponded to the body of the church previously assigned (Specifications 1597, 2). In the choir plinth the defect is corrected and the voids corresponding to the foundation vaults are shown. In the novitiate area, the ashlar plinth disappears.

This different treatment of the plinth throughout the Northern façade, can only be justified, because it corresponds to different parts of the body of the building, probably built in progression to the West and with time differences, during the two long years that the construction lasted. The singular crowning of the building in the Western corner supports this idea, showing an intention of continuity, which did not take place. Nevertheless, the façade has a distinguishable unity, produced especially by the masonry treatment previously mentioned.

In the Specifications, there are no norms given for the stone openings in that façade. Probably it will have been a modification done after the construction works. The window sills, jambs and lintels built project slightly from the façade, which would allow the masonry rendering, announced in the Specifications (Condiciones 1597, 13). Its simple but correct carrying out, with an upper discharging arch and lintels with small side projections, parallels the voids of the
Chinchón castle. The openings of the choir plinth are uneven though being very closed to each other. The left one with the adornments standing out, and the right one, of a smaller height, leveled up with the wall corresponds to a crypt under the choir, covered by a barrel vault with different cells for each opening. The two openings of the choir are rectangular, and the ones of the novitiate area are quadrangular and placed in two levels, three on each level.

The church portal is not mentioned either in the Specifications. The door is made of simple ashlar, in line with the openings previously referred to. The jambs and lintel of one stone, slightly overhanging from the façade wall, made of ashlar near the opening, with a flat discharging arch the threshold also one stone, overhangs a little more than the jambs. These all indicates, that the stonework, except for the adornment of the openings, was prepared to be rendered. Over the door is a brick niche with a simple design, and over it we can find a superb marble coat of arms, with the arms of the Cabrera and Bobadilla family, and the small shield of two cauldrons, over the St. Jacob’s cross with a crown at the top, similar to that of the castle. The small shield with the two cauldrons corresponds, according to Cooper (1980, 700), to the arms of Inés Pacheco, wife of Diego the 3rd, count of Chinchón. Therefore, the coat of arms corresponds to this count. Over the monastery entrance door, by the Southern porch, protected with a small roof, there is another coat of arms, with the same motif, but smaller and made of sandstone or limestone.

The masonry church openings have the jambs made of bricks, they lack any type of sills, and are directly supported by a masonry caisson and crowned at the upper part with trabeated arches made of brick, slightly pointed at the keybrick position, a characteristic of a masonry of early baroque style. It was carried out according to the Specifications for the openings, jambs and crownings.

The cornice of the body of the church, and the corresponding one of the choir and the novitiate, are very similar, made of brick, in successive rows, with a quarter brick bead sardinel coarse of pressed bricks and as crowning another header brick row.

The masonry corresponding to the body of the sacristy, which fits into the floor plan in the overhanging left by the transept, is intended to combine with the rest by using stonework masonry, but it lacks a plinth in some parts, as well as lacking ashlar opening and cornice adornments. Therefore, it could well be a later addition.

Regarding the interior church plinth, it can be seen that it corresponds with the Specifications, although it is two feet high instead of one and half as stated in the Specifications. Nevertheless, the paving proposed in the Specifications does not exist: or it was never built, or it has disappeared. There is only one perimetral stone border, at the level of the pavement, which could have belonged to a stone paving at the encounter of the wallings or at the foundations crowning as support to the plinth.

Courtyard façade

In this enclosure wall, the Specifications are strictly followed, and therefore, we can assume that the project by Nicolás de Vergara was followed too. Figure 4.

From a constructive point of view, it is interesting to note the intelligent combination of stonework and

![Figure 4](image-url)
masonry, in order to solve the enclosure of the upper cloister. The arches and pillars with its bases and plain capitals, in the lower floor, are worked in stone of Colmenar, preserved in good conditions. Nevertheless, the mouth of the openings, which built in the extrados of the interior arches are made of brick according to the Specifications. Presently, the openings have been closed with wooden framed windows and doors and brickwork rendered externally and plastered internally.

As the specifications indicate, a stone row crowns the lower part of the building. Over it, openings with stone jambs and lintels, slightly standing out of the brick parapet are laid, in line with the arches. The opening disposition is that of a balcony, but nowadays it has a walled up parapet made of masonry with a stone cladding serving as a window. There is testimony of the balustrade up to recent times, because of the open caissons at the jambs to fit in the sleeper and the top rail, as well as from some of the balusters reused now as handrails at the choir tribune. The wallings between the jambs are made of seen brick and their joints, in a more intense red are clearly defined at pointings and perpends. It may be the «work of joined in brick» indicated in the Specifications (1597, 37). Over the stone lintels, with small side overhangings, brick trabeated arches are placed. A masonry cornice, different and more elaborated than the exterior ones, crowns the whole. It is built with an overhang sardinel row of bricks with a soffit, and over it another row in an ogee shape.

NOTES

1. We greatly appreciate the help of the nuns of the order of St. Clare and especially the Abess for her kindness in our visits to the monastery, allowing and helping in the collection of data and photographs taken.

2. «Specifications for the Construction of the nuns monastery in the village of Chinchón by order of his Lordship the Count of Chinchón complying to the plans, sections, and elevations signed by his Lordship, made by Nicolás de Vergara».

3. Nicolás de Vergara, el Viejo (1517–1574) was a master builder and sculpturer, glass window master and sculpture master of the Cathedral of Toledo, since 1542.

4. The foot of Burgos, or Castillian foot was 27.873 cm long. Phillip II unified the different dimensions coexisting at the time in Spain, in order to coordinate the work of El Escorial. Each stick was three feet long, that is 83,619 cm. The stick was divided in four quarters, therefore each quarter was 20,905 cm long.

5. Instead of using cubic feet to measure the walls, a modular wall of two hundred square feet was used, which equals four juxtaposed walls of $5 \times 4 \times 1$ feet.

6. A masonry opening is described with its pillar jambs or brick pillars and the lintel built with trabeated arches and splayes of the same material.

7. Literally, «los alfeizares serán de un frente de ancho y medio pie de salida».

8. The text says: «el arco o el capiçácil que tenga diente a la parte de abajo conforme al pie derecho» (Condiciones 1597, 5)

9. The text literally says «Capiçácil», that is elevated at the head. The word «capiçaisal» refers both to the geometric figure that crowns the upper part of an opening when the external part is more elevated than the internal part, as in the arch rise.

10. Literally «y tenga de grueso el arco o capiçácil una hasta y una frente de alto y el ancho del grueso de la pared» (Condiciones 1597, 5)

11. This masonry is called literally as «pies derechos (studs)» and are «de mayor y menor», of greater and smaller. «The smaller will be the wall width and the greater, the head bonding» (Condiciones 1597, 6)

12. In the text, the word rufa is used, that is, bonding made with rubble and gypsum, placed in between the mud wall units, curved on the side.

13. Ten feet long by five feet high and four feet wide, which cover two hundred square feet and one foot thick, equal two hundred square feet mentioned.

14. Black walls: Mud walls

15. Concrete: Paste composed by small stone, lime and bitumen, which lasts endlessly. It is also made without bitumen (Rejón 1788, 120)

16. The alternative stated between lime and gypsum seems very interesting, to fit the three feet wide brick, onto tan important part of the structure such as the main arches. The final decision is left to the builder who shall determine and value the specific circumstances in order to choose the most appropriate one.

17. Literally it says «cintrel». It may be referring to the cintrel: the rope or stick used in the centre of the vault in order to arrange and rebuilt the brick rows. (Rejón 178, 60)

18. Abutment: arch abutment, which receives the thrust of the building.

19. The arch abutments stabilize the thrusts of the barrel vault, produced in the spandrels.

20. Jaharrado: First coat of interior finishing, equivalent to rough rendering, usually made with paste or black gypsum mortar.
21. Whitewashed: Finishing coat of the interior rendering, equivalent to fine plastering, made with white gypsum paste. It can also be made with black sieved gypsum passed through a very fine sieve.

22. Washing finishing: Finishing coat by means of a humid cloth. From the text, it is implied that it is done over the whitewash or plastering.

23. White gypsum: traditional gypsum made by calcinating crude gypsum and crushing the stones finely, selecting the best burnt and the whitest.

24. Black gypsum: traditional gypsum manufactured by calcinating crude gypsum and coarse crushing the stones, adding the ashes and remains of the calcination giving it a greying colour.

25. Set «a cama llena» is an expression, which means that the channel tile should be fitted with mortar over the board.

26. Lomos llenos: This expression seems to indicate that the cover tile must be packed with mortar over the channel tiles.

27. Cajas rompidas: It may refer to the insertions in the hewed stones, possibly to facilitate their transportation.

28. Axe: hammer like tool, with two cutting edges for hewing (Rejón 1788, 96). It is used with one hand and the cutting edges are horizontal, producing lines when hitting the stone.

29. Tooth axe: iron tool with two vertical indented cutting edges, with a wooden handle that could be used with both hands.

30. Bed: upper horizontal side of a workstone, perpendicular to the wall face, over which the next row stands.

31. Coarse dressed with a point.

32. A maravedí is a counting unit (it was not a coin) since the time of the Catholic Kings, and it includes the whole period considered. The real is a silver coin, which valued 34 maravedíes. The ducado was a gold coin of 23.5 carats, which was equivalent to 375 maravedíes. In 1537, with Charles V, to homologue with the European coins, the escudo was introduced, which was a gold coin of lesser value, 22 carats, equivalent to 350 maravedíes. And later, in 1604 up to 440 maravedíes. Nevertheless in the Specifications, the currency cited is the escudo (Font 2000).

33. Right at this place there is a failure in the foundation, which causes presently many important damages.

34. Maybe it is related with the remains of a bay in front of the Western façade which had not been finished.

35. On the Eastern façade of the monastery, there are remains of this rendering, which would confirm this idea.

36. All of this shows the initial surveys at the foundations level, something similar, although in a smaller proportion to what happens in the basements of El Escorial.

37. It has a white bluish marble frame and the main part in white marble. Unfortunately, the overhanging crown, at the top, is broken. Its stonework is much finer and with more baroque adornments than the coat of arms located in the castle. It has not got the Isabellinian eagle which crowns the one at the castle.

The sculptural group of the grave of Francisco Fausto, the 5th Count, situated at the back wall of the choir, has a crowning of a shield held by two angels, but the two cauldrons do not appear. The sculptural remains of the burial, presently very destroyed, are of a very fine stonework, made in white marble. Apparently they were made in Italy with Carrara marble.

38. Nevertheless, the scene of the exterior coat of arms is more related, possibly, to the burying of the 5th Count.

39. The nuns have told us that in the recent works done to install the air heating, under the floor of the church, no remains of stone paving have appeared. The present paving is of terrazzo tiles and was laid in between 1961 and 1964.

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