

A Study of Milanese Architectural Officers in the 15th Century: the Engineers of the Municipality of Milan

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Abstract The research started from the consideration that, although many aspects of the Milanese Early Renaissance are well known today, thanks to a vast literature, only few studies, so far, have paid attention to the ordinary world of architectural work - and its obscure protagonists - of this area and this period. Moving from the belief that this topic is crucial for a complete understanding of the 15th century architectural world, characterized by a progressive overlapping of roles and responsibilities in the worksites, this study aims to provide a contribution to expand the understanding of this matter, by focusing on a particular aspect of it: the role of the public administration in the architectural activity. In particular, the paper analyzes the characteristics of the "Office of the engineers of the Municipality of Milan", one of the major public architectural institution of the Duchy of Milan in the 15th century. Through an extensive archival survey, conducted in the major archives of Milan and Lombardy, the research achieves two main findings: a) the reconstruction of the complete Office staff throughout the 15th century and, b) an outline of the role and identity of the Office and its officers, through the elaboration of data collected. In particular, professional roles, technical duties, cultural background and tasks of the officers, together with Office management, appointment procedures and salary conditions are highlighted. This research, not meant as an ultimate study on the topic discussed, is intended to provide some material and reference points for further researches that will aim to expand the understanding of this matter.

Keywords: Milan, Municipality, Duchy, 15th Century, Renaissance, Office, Engineers, Public

1. INTRODUCTION

The Milanese Early Renaissance is quite well known today, thanks to a vast literature that has its roots in the mid-19th century. Old and recent studies, however, have mainly focused on two periods, and their extraordinary protagonists: the years of Francesco Sforza and Filarete (1450-66); and the two decades of Ludovico il Moro, Bramante and Leonardo (1480-99). The recent work of Patetta (1987) represents one of the few exceptions.¹

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¹ According to a historiographical tradition that originated in early 19th century, the term "Milanese" Renaissance is not limited to the territory of the city, but comprises artistic and cultural phenomena of the whole Duchy of Milan and its area of influence (e.g. the current Lombardy, Liguria and part of Emilia region). For a complete review of the above mentioned literature on this topic, see References in Patetta, L. (1987), *L'architettura del Quattrocento a Milano*, Milan: Cittastudi.

Nevertheless, beside those exceptional figures, records testify the presence and names of many obscure local masters, in the position of directors of the works of their buildings, administrators, or technical counselors.² No known organic studies exist that focus on this ordinary professional environment and its unknown characters. Some articles, published at the turn of the 19th century on specialized reviews ("Archivio Storico Lombardo", "Bollettino Storico della Svizzera Italiana"), provided some fragmental information, but rarely produced critical analysis. The relatively recent quantitative works of Santoro (1929, 1945, 1961, 1968), on the other hand, made a fundamental contribution to the understanding of Visconti and Sforza public offices organization, but were not focused on architectural issues.

Yet, the study of the ordinary world of architectural work (i.e. the labor organization, institutions and minor professional roles) is crucial for a full understanding of periods like the Renaissance - not only the Milanese one. During the Renaissance, in fact, major architects, like Bramante, progressively reduced their active presence in worksites, according to the change that their professional role was undergoing. In the 15th century, due to the lack of standardized means of communication, this new situation

² Synthetic information on local masters and their relationship with renowned architects are provided in: Dacarro, F. (2001), "I *magistri inzieri* attivi a Milano al tempo di Bramante", in Patetta, L. (ed.), *Bramante e la sua cerchia a Milano e in Lombardia 1480-1500*, Milan: Skira, pp. 83-93. and in Dacarro, F. (2005), "Figure professionali minori nei cantieri milanesi del XV secolo. Appunti su San Vittore nella prima metà del XVI secolo", in Rossari, A. and Scotti, A. (eds), *Aspetti dell'abitare e del costruire a Roma e in Lombardia tra XV e XIX secolo*, Milan: Unicopli, pp. 13-17.

often led to an unclear breakdown of responsibilities and to final results coming from multiple and overlapping decisions, often made by minor figures who were not directly involved in the original design process.³ These factors always make it difficult for historians of this period to define the exact origins of certain solutions, even those that had a great impact on the history of architecture. For this reason, the knowledge of the environment where these phenomena happened becomes important to understand the phenomena themselves.

According to this premise, the purpose of this research is therefore to provide a contribution to expand the understanding of the ordinary world of architectural work in Milan in the 15th century. Given the extent of this topic, the study has limited its scope to a particular aspect of it: the role of the public administration in the architectural activity. In particular, the paper analyzes the characteristics of one of the major public architectural institutions of the Duchy of Milan: the "Office of the engineers of the Municipality of Milan" (*Officium ingeniariorum Communis Mediolani*). The identity and role of this Office is reconstructed through the analysis of its tasks and activities, organization and management and background of its officers. Bureaucratic issues such as procedures of employment and salary conditions are also investigated.

The research has been conducted through a survey of targeted fonds in the major archives of Milan (see Appendix I, Table 1), and a parallel analysis of secondary sources. Primary sources consist mainly of official registers, letters of officers and other documents regarding ducal and municipal bodies linked to the Office of municipal engineers. Secondary sources consist of: a) collections of primary source transcriptions (e.g. *Annali della Fabbrica del Duomo* 1877-85, Baroni, 1940, 1968; Santoro, 1929, 1961; Schofield, 1989), and b) relevant literature. Relevant data collected (i.e. names, dates, titles, official assignments, reports etc.) have been put in a database, and then cross-checked and elaborated. More than 4,000 documents have been classified. The analysis of the results has been discussed, where possible, in relation with the few existing studies mentioned above.⁴

This research is not meant as an ultimate study on the topic discussed, but intends to provide some material and reference points for further researches that will aim to expand the understanding of this matter. For this purpose, the study has adopted the following conceptual and methodological limits:

- 1) the cases of renowned figures like Filarete, Bramante, or the Solaris - all enrolled in the Duchy public offices too - or that of Leonardo, are not included in the scope of the research. The main purpose of this analysis, in fact, is to outline the identity of the Office of municipal engineers - i.e. of an institution - thus, it is believed that the investigation of strong individual personalities would compromise the balance of data provided

³ See, among others, Ackermann, J. (1954), "Architectural Practice in the Italian Renaissance", *Journal of the Society of Architectural Historians*, VIII, pp.3-11.

⁴ A first collection of data, later expanded by this research, was included, in the form of a biographical dictionary, in Dacarro, F. (1989), *Architetti-ingegneri poco noti e capomaestri nei cantieri milanesi del XV secolo*, (Master's Thesis, Politecnico di Milano, Milan, Italy, unpublished).

by the cases of average professionals.⁵

- 2) This work is structured to provide two different types of material:

- a) *quantitative data*, namely the reconstruction of the Office staff throughout the 15th century, with punctual and analytical reference to archival records (see Appendix II, Table 2);
- b) *data elaboration*, namely, an outline - organized in a synthetic and descriptive form - of the role and identity the Office and the officers, obtained by the elaboration data collected (see section 3).

This agile approach seems suitable for a study of this extent and whose findings, as mentioned, are intended to serve as a base for future researches.⁶

In this paper, the analysis of the Office and officers' roles (section 3) will be preceded by a lexical premise on the use of the terms "architect" and "engineer" in Visconti-Sforza period (section 2) and followed by two Appendices providing, as mentioned, archival information and analytical data (Appendices I and II).

2. LEXICAL PREMISE: ARCHITECTS AND/OR ENGINEERS, A CLARIFICATION ABOUT TERMINOLOGY.

All the sources analyzed testify that, in the Visconti-Sforza period, "engineer" (*ingeniarius*) was the term commonly in use to indicate an architectural designer dealing both with esthetic and technical issues. This title clearly distinguished a designer proper (who could use *ingenium*), from master builders and carpenters (*magistri a muro* and *magistri a lignamine*), who were mere works executors, and called simply "masters".

In the Sforza period, however, the term "architect" (*architectus*) made its appearance in Milanese documents. Sometimes it was used solo, but more often in the combined form "architect or engineer" (*architectus sive ingeniarius*).⁷ Although the latter title occurs in several official documents, it statistically never prevails against the traditional "engineer", which, also in the second half of the century, seems to remain the most popular term to indicate a designer.

From records and that mentioned above, it is clear that, at least in

⁵ The above mentioned major figures, in fact, represent an exception in the Milanese environment. According to a vast literature (see Patetta, L. (1987), *op.cit.*, ad indicem and References) Filarete and Bramante's public position, for example, was served more as a private architectural adviser of the Duke than as a real officer or technician. Similar is the case of Leonardo, who, moreover, was probably never enrolled in any public office of the Duchy: see Baroni, C. (1937), "Una rettifica in tema di biografia vinciana: Leonardo da Vinci fu ingegnere ducale in Milano?", *Rendiconti del R. Istituto Lombardo di Scienze e Lettere*, 70.

⁶ The recent work of Schofield, Shell, Sironi (1989) on Giovanni Antonio Amadeo - based on a similar dual approach - has successfully stimulated further studies aimed at putting the controversial figure of Amadeo into focus. The research, in fact, led to the fundamental achievements of the 1992 International Conference (see Shell, Castelfranchi, 1993)

⁷ Ambrogio da Senago, for example, was appointed in 1492 as "*architectum sive ingeniarium Communis n.ri Mediolani*" while Antonio Maino, in his 1494 municipal license, figures as "*architectus*". For archival sources see Appendix II, table 2, where all the engineers' names cited from here onwards are listed.

15th century Milan, “architect” and “engineer” were synonyms, and did not indicate, as they do today, different roles and competences.⁸ In this study, it will be therefore preferable to use the term “engineer”.

3. THE OFFICE OF THE ENGINEERS OF THE MUNICIPALITY OF MILAN

3.1 Role of the Office, and tasks and activities of the officers.⁹

As reconstructed by Santoro (1968), in the 15th century there were two public architectural offices in Milan: the “Office of ducal engineers” (*Officium ingeniariorum Ducalium*), whose officers were architectural professionals in the payroll of the Duke, and the already mentioned “Office of the engineers of the Municipality of Milan” (*Officium ingeniariorum Communis Mediolani*) - object of this study - whose officers were employed by municipal officials. The two offices were presumably created by Visconti, at the end of the 14th century.

The Office of the engineers of the Municipality of Milan was ruled by the major officials of the city: the *Vicario di Provvisione* (whose role was similar to that of a contemporary mayor), the *Dodici di Provvisione* (a sort of town council) and the *Sindaci* (an administrative committee), which provided the ducal approval of every act. There were similar offices in every town of the Duchy (Santoro, 1968, 89).

Records analyzed testify that the Office had the main responsibility of architectural and engineering works regarding public properties in Milan and its territory. Municipal engineers dealt with design and works direction, works test and approval, building maintenance and professional advice, and also with private individuals.¹⁰

⁸ In 15th century records, Bramante himself, for example, is almost always called “*ingeniarius*”.

⁹ Information provided by this and the following sections (from 3.2 to 3.5) comes from the elaboration of data achieved from the archival survey (see Introduction and Appendix I) Official registers (*Lettere ducali, Registri ducali*) have been the main source of information, since they contain transcriptions of several “ducals licenses” (*patente ducale*), the document that formalized the enrollment of engineers in the Office. Although licenses’ texts are mostly standardized, they often provide basic information about the Office’s activity and management, and officers’ backgrounds.

From this note onwards archives’ names are abbreviated according to the legend of Table 2, in Appendix II.

¹⁰ Among other cases, the documented activity of Ambrogio da Cernusco, enrolled in the Office from the 50’s to the 70’s, can provide an emblematic example of these engineers’ tasks. In 1455, 1456 and 1461 he figures as having appraised a private house, computed construction costs of a church and given technical advice on buildings under construction (among which was the Ospedale Maggiore). He also designed and built a staircase in the “Casa del Podesta” in Broletto (Municipality headquarters) in 1457, tested the works of a church in 1459 and designed and built two mills in an undefined period (sources: record from 1455, *Annali della Fabbrica del Duomo di Milano dall’origine fino al presente*, (1877-1885), Milan, II, p.156; records from 1456, 1457, 1459, *Litterarum Ducalium*, 1450-1487, pp.73, 92, ASC; records from 1456, 1459, Archivio Diplomatico, folder 351, Sant’Ambrogio archive; record 9 July 1461, *Ordinazioni Capitolari*, Ospedale Maggiore Archive, Milan; undated records, *Autografi, Ingegneri-Architetti*, box 86, folder 8, ASM)

One of the fields they specialized in was hydraulics, a crucial discipline in the area of Milan, which was rich in ditches, canals and rivers (Bartolomeo della Valle, for example, it was told, was “very



Figure 1. Palazzo della Ragione, (“Palace of Reason”), Milan, built in 1233.

Central building of the complex of Piazza Mercanti (“Merchants’ square”), where, in the 15th century, the major offices of the Municipality of Milan had their headquarters.

(Source: Ricci, G (ed) (1990), *Guida di Architettura, Milano*, Milan: Allemandi)

skilled in water conveying,” and practiced in this sector for most of his life¹¹)

The main duties of the municipal engineers are synthetically but clearly listed in the 1492 preface of Domenico da Rosate’s license, with the purpose of emphasizing the importance of the Office. “Through their discernment and their work,” the document tells us, “buildings are built” (*quorum iudicio et opera edificata fabricantur*), “public ditches and waterworks are realized” (*rugie et aqueductus ad publicum beneficium construuntur*), and “lands and other goods are measured, appraised and their value is assessed” (*terre et bona mesurantur, estimantur, eorumque pretia taxantur*). Also, “if it raises any controversy about buildings, waters or waterworks, they smooth it out or make a decision and declare it” (*si de hedificiis vel aquis, et aquarum ductibus oriri contigat controversia, ii aut componunt, aut iudicio suo decernunt, superinde et declarant*).¹²

3.2 Office management: positions and terms of employment.

In a 1401 letter to the Duke, the *Vicario* and the *Sindaci* (see section 3.1) affirm that The Municipality of Milan “is in the habit of having two salaried engineers.”¹³

According to the license of Pietro da Lonate, the remunerated positions remained two until the early 70’s, but, from that time, this and other sources start recording the existence of additional staff without salary. In Pietro’s document, in fact (1472), we read that: since “by ancient habit and tradition the Municipality of Milan provides a salary only to two municipal engineers,” Pietro

¹¹ See: record dated 19 March 1493, *Litterarum Ducalium*, 1489-1496, p. 136v, ASC; records from 13 August 1494 and 30 June 1498, *Autografi*, folder 83, ASM. See also: Pagnano, C. (1520), *Decretum super flumine Abduae reddendo navigabili Mediolanum usque cum testificatione Christianissimi Regis in hac urbe liberalitatis et munificentiae*, Milano, pp. 10, 48 and Beltrami, L. (1891), “Sul valore dei terreni in Milano al principio del 1500”, *Archivio Storico Lombardo*, pp. 875-76.

¹² Transcription of Domenico’s license, 16 February 1492, *Litterarum Ducalium*, 1489-1496, p.93v.

¹³ “*Hoc comune... Mediolani duos solitus est habere inzignerios salariatos per dictum comune*”; transcription of a letter dated April the 26th 1401, *Litterarum Ducalium*, 1401-1403, p.12v, ASC. A modern copy of this document in: box 85, folder 54, *Autografi, Ingegneri-Architetti*, ASM. See also the transcription of a letter dated August the 8th 1409, *Litterarum Ducalium*, 1408-1409, p.141, ASC (a copy in: box 83, folder 66, *Autografi, Ingegneri-Architetti*, ASM.)

will be enrolled, but he “is not supposed to get a salary from the Municipality” until the two salaried engineers in charge are alive.¹⁴

On a certain date between 1472 and 1474, the number of salaried positions was reduced from two to one, and many engineers were working in the Office without remuneration. In fact, on October the 11th 1474, the *Vicario* writes the Duke about the newly hired Arasmino Solari: “... a salary will be not assigned to Arasmino, since, as a rule, the Municipality of Milan must have only one salaried engineer, although at the moment it has many non-salaried engineers... so that Municipality affairs are done better and more efficiently”¹⁵

The terms of the employment in the Office were undefined: almost all the archival records investigated state that the holder of the municipal license was supposed to remain in charge “up to the Duke's will” (*usque ad Nostrum beneplacitum*). The above mentioned document about Pietro da Lonate leads to think that officers were normally granted a lifelong position, but the only evidence of this is provided by the license of Antonio Maltagliati da Casorate, who in 1498 was explicitly hired: “as long as he shall live” (*quoad ipse vixerit*).¹⁶

In the Visconti period, on the other hand, we can notice several cases of engineers who were fired (see, in Appendix II, Table 2: Beltramo da Orsenigo, Marcolo de Petortis, Antoniolio da Melzo, Giovanni Magatti, Boneto Mozanica and Marcolo de Turri).

3.3 Eligibility and background of the officers.

The majority of records investigated lead to think that the Office usually enlisted its engineers from the ranks of master builders or carpenters. Mafiolo da Giussano and Domenico de Magistris, for example, are cited in records prior to their employment in the Office, respectively, as a master builder, and a carpenter.¹⁷ In other documents, the term “master builder” frequently occurs, although in many different forms. Stefano dell'Acqua, for example, is mentioned as “*cementario*” in his 1477 license. The 1482 license of Bartolomeo della Valle affirms he used to be a “*faber edium*”. Pietro Rottora, who will later become municipal engineer in 1481, is mentioned in a 1472 document as Abbot of the Guild of master builders and carpenters. In a 1493 recommendation letter, Giuliano da Comerio is called “*m[agist]ro da muro*” (he will obtain the position few months later). Finally, in his 1498 license, Antonio da

Casorate is called “*murorum et hedificandi magister*”.¹⁸

It was not unusual, on the other hand, for the Office to hire masters who already held a position in the Office of ducal engineers (see below: Burato Bascapè, section 3.4).

3.4 Appointment procedure.

The document that formalized the enrollment in the Office of the engineers of the Municipality of Milan was, as already mentioned, the official license issued by the Duke (*patente ducale*, see Fig. 2).

Some licenses report - directly or indirectly - some basic information on the appointment procedure. Usually, the first step of the process consisted of an application letter sent to the Duke by masters who wanted to be hired: almost all the texts of the licenses, in fact, begin with the sentence: “Since master... has submitted a request...” Some original requests, whose Latin name was “*supplicatio*” (“supplication”), were found through the archival survey (see Fig.3). In them, masters used to summarize their experience, skills, and sometimes, their salary demand. The *supplicatio* of the already mentioned Domenico de Magistris (cf. section 3.3) is a typical example of this kind of document. In it, he affirms that he is from a very long time expert in the art of master builders and carpenters (and Abbot of the Guild), and very famous in Milan for his ability. He says he has already worked in several public worksites, so that the Duke can take information about him from the municipal officials. He concludes his letter with some precise requests about salary and benefits.¹⁹

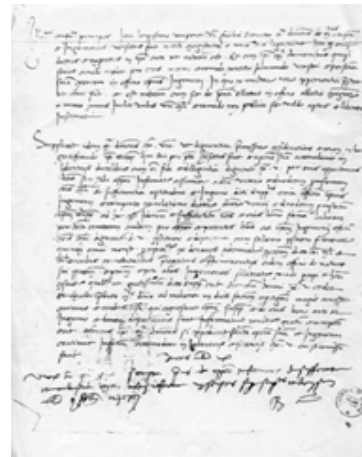


Figure 2. Licence as engineer of the Municipality of Milan issued to Mafiolo da Giussano, dated 8 April 1491 and signed by the ducal secretary's office.

Original document found during the archival survey (Source: Municipal Historical Archive / Trivulziana Library, Milan)

¹⁴ “*Ex antiquo more et consuetudine per eandem Comunitatem Mediolani non solvitur sallarium nisi duobus ex ingeniariis ipsius Comunitatis*”... “*nullum ab ipsa Comunitate habere debere sallarium*”, transcription of Pietro's license, 17 September 1472, *Litterarum Ducalium*, 1473-1478, p. 6v, ASC.

¹⁵ Letter dated October the 11th 1474, *Litterarum Ducalium*, 1473-1478, p.144, ASM. Other engineers who were issued a license “without a salary” were: Pietro de Faino da Malpaga (1474), Domenico de Magistris (1479), Bartolomeo della Valle (1482, who was provided a salary in 1485); for sources see Appendix II, Table2.

¹⁶ Transcription of Antonio's license, for sources see Appendix II, Table 2.

¹⁷ Domenico de Magistris, in particular, writes in a letter to the Duke to be hired as municipal engineer that he is Abbot (the chairman) of the Guild of master builders and carpenters of Milan. Transcription of Mafiolo's license, 8 April 1491, *Fondo Belgioioso*, folder 306, ASC. Letter by Domenico, undated, box 83, folder 38, *Autografi, Ingegneri-Architetti*, ASM.

¹⁸ For sources about Stefano, Bartolomeo and Antonio's licenses see Appendix II Table 2. Ducal letter mentioning Pietro, 22 April 1472, *Litterarum Ducalium*, 1462-1472, p.234, ASC; record mentioning Pietro as a municipal engineer, 2 July 1481, *Litterarum Ducalium*, 1450-1487, pp.163v, 164, ASC. Recommendation letter for Giuliano written by Vicario di Provvisione, 9 January 1493, box 83, folder 14, *Autografi, Ingegneri-architetti*, ASM

¹⁹ Unlike Domenico, some masters could skip the *supplicatio* because they were hired on the recommendation of some influential person: Pietro da Lonate (1472), for example, was supported by Tristano Sforza, Pietro da Sant'Ambrogio (1485) by the Duke himself and his brother, Giuliano da Comerio (1493) by the Vicario di Provvisione (for Pietro da Lonate license transcription, see Appendix II, Table 2. Duke's recommendation letter for Pietro da Sant'Ambrogio, 1 June 1485, *Litterarum Ducalium*, 1478-88, p.202v, ASC. For Giuliano da Comerio cfr. note 17) Other masters took over from their fathers, like Bernardino Ghiringhelli (1493) from Andrea (Transcription of Bernardino's license, see Appendix II, Table 2)



Figure 3. “Supplication” sent to the Duke by Domenico de Magistris, to be hired in the Office of the engineers of the Municipality of Milan, undated.

Original document found during the archival survey. (Source: National Archive of Milan, Milan)

After receiving the application, the Duke used to ask the *Vicario di Provvisione* to test the actual ability of the applicant. If the applicant was positively assessed, the Vicario gave notice to the Duke by letter, so that ducal officers could issue the license. The whole process could take more than a month, as clearly recorded in the license of Burato Bascapè: on September the 1st 1497, the Duke had asked the *Vicario* to check the skills of Burato, already in charge as a ducal engineer; on September the 20th, the Vicario replied Burato had been tested by “architectural experts,” and positively assessed; on October the 8th, the Duke issued his municipal license.²⁰

According to archival records, masters used to be given a copy of their license, which was later transcribed in official registers.²¹ A few days after the license was issued, an official appointment ceremony used to be held. During the ceremony, masters took their oath of office, in front of all the Municipality officials.²²

Some records testify that, at the beginning of the century, this procedure was sometimes skipped, and masters were directly hired by municipal officials, who later asked for ducal approval. This is the case, for example, for Marcolo de Petortis, who was hired on October the 27th 1400, and approved on December the 31st; and of Antoniolo da Melzo, who was hired in 1401, after a poll from a list of candidates, and approved on May the 2nd.²³

²⁰ Transcription of Burato’s license, see Appendix II, Table 2. The check-up of masters’ ability could consist of gathering evidence from people who knew their work: the 1498 license of Antonio Malatagliati da Casorate, for example, says he had been positively assessed “after hearing some witnesses (Transcription of Antonio’s license, see Appendix II, Table 2).

²¹ Domenico de Magistris is said to have “presented his license” to municipal officials on February the 16th 1479 (Domenico’s license text, 13 February 1479, *Litterarum Ducalium*, 1479-1488, p.12, ASC; report of employment formalization, 16 February 1479, *Ibidem*, p.12v). See also the case of the more famous Lazzaro Palazzi (1478) in *Litterarum Ducalium*, 1473-1478, p.202v, ASC.

²² Bartolomeo della Valle obtained his license on January the 18th 1482 and was officially appointed on January the 23rd; Domenico da Rosate was granted a license on February the 16th 1492 and took the oath two days after, Antonio Maino was licensed on June the 25th 1494 and officially appointed on July the 5th (Bartolomeo della Valle: 18 January 1482, 23 January 1482, *Litterarum Ducalium*, 1479-1488, p.110v, ASC. Domenico da Rosate: 16 February 1492 – 18 February 1492, *Litterarum Ducalium*, pp.93v, 94, ASC. Antonio Maino: 25 June 1494-5 July 1494, *Litterarum Ducalium*, 1489-1496, p.167v).

²³ Marcolo’s confirmation letter mentioning the employment’s date: 31 December 1400, *Litterarum Ducalium*, 1401-1403, p.12v, ASC. Antoniolo’s license transcription, see Table 2 (a modern copy is conserved in *Autografi*, box 85, folder 54, ASM); Antoniolo’s ducal confirmation, 2 May 1401, *Litterarum Ducalium*, 1401-1403, p.13.

3.5 Salary conditions.

It is not easy to reconstruct with certainty the salary conditions of municipal officers, since most of the licenses affirm the holder is supposed to be paid “the usual salary” (*cum salario consueto*), but don’t provide information on the actual amount. Some records, however, allow us to make some hypotheses.

It is likely “the usual salary” consisted of 3 florins per month, and didn’t change over the whole century. Licenses, in fact, confirm 3 florins were paid to Boneto Mozanica in 1409 (“the same salary as the other engineer of the office”) and again in 1410; to Marcolo de Turri in 1413; to Giovanni Solari in the 70’s; and to the aforementioned Bartolomeo della Valle, who received Giovanni’s wages and charges after his death, in 1485.²⁴

There are, however, some exceptions: in 1401, Pietro de Villa is mentioned as recently dead, and formerly receiving a salary of 4 florins; in the same document Marcolo de Petortis is said to be receiving a 7 florins salary, and also “to keep a horse to go out of the city by order of the Municipality.”²⁵ Domenico de Magistris, in his aforementioned undated supplication, asked to be hired “with the usual salary of 5 florins.”

In addition to their fixed salary, municipal engineers were provided with some benefits, since all licenses granted to the holder the “usual advantages and benefits,” and some additional remuneration (*commoditatibus et preminentibus eidem officio de nature sui spectantibus and emolumenta solita*), although the records do not clarify what they consisted of.²⁶

The salary of the engineers of the Municipality of Milan was far below salaries granted to the members of the major offices of the Duchy, and was similar to that of middle-low level ducal and municipal officers. In the Sforza period, for example, the *Vicario di Provvisione* (major office of the Municipality) earned 33 florins per month, the “duc general horseshoers” (*sescalchi generales ducales*, high-middle level office) 12 to 18 florins per month, the “officers of health care” (*Officiales super sanitate*) 4 to 15 florins per month, and “officers of munitions” (*Officiales munitionum*) 6 florins per month (the two latter being middle / middle-low offices). The purchasing power of 3 florins per month was also low, since the expense of maintaining a horse, in 1476, was about 13 florins per month, and the price of a sack of wheat, at the end of the century, 3

²⁴ The Italian golden florin (*florino d’oro*, from Florence, the first town where it was struck) was, at that time, the dominant trade coin of Western Europe. The Duchy of Milan adopted it as a trade currency in the 14th century, beside the official coin Milanese *lira*, cf. Crippa, C. (1986), *Le monete di Milano dai Visconti agli Sforza dal 1329 al 1535*, Milan, pp.76 ff.. For Giovanni Solari’s sources: *Litterarum Ducalium* 1462-1472, pp.54, 211; *Ibidem*, 1473-1479, p.149v, ASM. *Autografi*, box 86, folder 39, ASM. For the other engineers here cited see Appendix II, Table 2. Santoro (1939, p.36) had noticed that officers’ salaries didn’t change during the Sforza period, but the results of this research allow us to extend the phenomenon to the first half of the 15th century.

²⁵ Letter to the Duke dated April the 26th 1401, *Litterarum Ducalium*, 1401-1403, p.12v, ASC.

²⁶ Sometimes, licenses specify the means to pay the salaries: in 1410, Boneto Mozanica’s salary was paid with the “extraordinary revenues of the Municipality” and Bartolomeo della Valle’s, in 1485, with money from “convictions related to roads or other convictions (for sources see Appendix II, Table 2). Money obtained from convictions was distributed among all the Duchy offices, according to Santoro (1945, XVIII).

florins.²⁷

Nevertheless the position was highly coveted for its prestige (in 1494, Antonio Maino asked to be hired “to show his value and how much he can be useful to others”), so that, as we have seen, many masters agreed to hold the office, even without a salary.²⁸ Municipal engineers could supplement their salaries by covering other positions. Some of them, as mentioned (in section 3.4), were also in charge as ducal engineers; Antoniolo da Melzo, from 1397, was “engineer, officer, guardian and maintenance technician” of the streams and rivers of Milan; in 1485, Bartolomeo della Valle was assigned an additional 2 florins salary to take care of the roads (*pro cura stratarum*), a role covered before him by Giovanni Solari and Arasmino Solari.²⁹

In the late Sforza period, some masters were hired with the title of “engineer and appraiser” (*ingenierius et extimator*), but the records do not specify if their salary was different; in this period, in official documents, the Office is also called “Office of Engineers and Appraisers of the Municipality of Milan” (*offitium architectorum, et extimatorum Comunis Mediolani*).³⁰

4. CONCLUSION

This research started from the consideration that, although many aspects of the Milanese Early Renaissance are well known today, thanks to a vast literature, only few studies paid attention to the

²⁷ Data from Porro, G. (1878), “Pianta delle spese per l’università di Pavia nel 1498”, in ASL, p.507ff. According to a relatively recent study, in the 15th century, the golden florin was worth approximately 200 modern US Dollars (Spufford, P. et al (1986), *Handbook of medieval exchange*, London: Offices of the Royal Historical Society, p.87). Milanese currency *lira* devalued by 400% over the 15th century (according to Crippa, C. (1986), *Op.cit.*, p.76 ff.) and, although licenses usually assigned salaries in florins, actual salaries were paid in liras, at the same exchange rate (32 *soldi*- a fraction of *lira* - per florin) during the whole century: cfr. records in 1405, *Annali ...*, cit., Appendice II, p.272 with record in 1488, *Registri Ducali*, no.90 , p.146v, ASM.

²⁸ They were only provided with “usual advantages and benefits”. For Antonio’s sources see Table 2. The prestige of their position often made them to be called for extra-paid professional advice on worksites out of Milan, as explicitly said in a letter by Bartolomeo Gadio, general responsible of ducal worksites: “I was looking for Municipal engineers in Milan [to order some works] but I couldn’t find any, since they keep on going here and there to earn money”: letter dated 24 November 1473, *Autografi*, folder 88, ASM.

²⁹ Others conducted some side activities: Ambrogio da Cernusco (cfr. note 10) and his brother Pietro were merchants of timber and stones; the same as Mafiolo da Giussano who, with his son Gerolamo Bernardino, was also notary. For Antoniolo: letter dated 31 March 1397, *Fondo Trotti, Litterarum Ducalium*, 1397-1400, p.15, Biblioteca Ambrosiana (Ambrosiana Library, Milan). For Arasmino and Giovanni: ducal letter 18 February 1480, *Litterarum Ducalium*, 1479-1488, p.41, ASM. Bartolomeo’s license transcription, Table 2. For Ambrogio and Pietro: Undated supplication, *Autografi, Ingegneri-Architetti*, box 81, folder 20. For Mafiolo cfr. note 7 and letter dated March the 5th, *Autografi, Ingegneri-Architetti*, box 87, folder 1, ASM. Gerolamo Bernardino is mentioned as “notary” in his 1505 license (see Appendix II, Table 2).

³⁰ See cases and sources of Pietro da Lonate, Giovanni da Bellusco, Andrea Ghiringhelli, Arasmino Solari, Domenico da Rosate, Antonio da Casorate and Gerolamo Bernardino da Giussano in Appendix II, Table 2

ordinary world of architectural work - and its obscure protagonists - of this area and this period. Moving from the belief that this topic is crucial for a complete understanding of the 15th century architectural world, characterized by a progressive overlapping of roles and responsibilities in the worksites, this study aimed to provide a contribution to expand the understanding of this matter, by focusing on a particular aspect of it: the role of the public administration in the architectural activity. In particular, the paper analyzed the characteristics of the “Office of the engineers of the Municipality of Milan”, one of the major public architectural institution of the Duchy of Milan in the 15th century. Through an extensive archival survey, conducted in the major archives of Milan and Lombardy, the research has achieved two main findings: a) the reconstruction of the complete Office staff throughout the 15th century and, b) an outline of the role and identity of the Office and its officers, through the elaboration of data collected. In particular, professional roles, technical duties, cultural background and tasks of the officers, together with Office management, appointment procedures and salary conditions have been highlighted.

This research, not meant as an ultimate study on the topic discussed, is intended to provide some material and reference points for further researches that will aim to expand the understanding of this matter. It must be recognized, nevertheless, that this characteristic of preliminary study could be, at the same time, the main limitation of the research. If this first step of investigation, in fact, is not followed by further analysis aimed at deepening its contents, the scope of this paper might remain sterile. Future studies are needed, in particular, to verify, through more in depth surveys, some achievements testified, so far, by relatively few records, which prevented this paper from drawing firm conclusions (the question of salary conditions, for example, or the problem of the cultural background of the officers). Further investigation might then explore more in depth the role and actual activity of public officers in renowned Milanese worksites, or the links between officers and major figures active in Milan in the 15th century, topics only mentioned or briefly covered by in this paper. This would lead to a second phase of the research, aimed at expanding the chronological boundaries of the study – by investigating, for example, the public architectural activity in Milan in the 16th century- or the territorial limits of the investigation – by analyzing analogous institutions in environments closely linked to the Duchy of Milan (e.g. the states of Venice, Mantua or Ferrara).

The ordinary Renaissance world of architectural work - especially the Milanese one - is still a partially unexplored field. It deserves to be researched in more depth in future studies, because the achievements of even partial aspects of that topic may lead to a revision of the historical perspective of broader matters.

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APPENDIX I

Main Archives and archival fonds surveyed

Table 1 provides the names of the main archives surveyed by the research. Name of the archives are cited both in local (Italian) spelling and English; funds that don't have an international denomination are in italics.

Table 1. Main Archives and archival fonds surveyed

Archive	Archival fonds
Archivio di Stato di Milano (National Archive of Milan, Milan)	<i>Registri Ducali</i> <i>Autografi</i> <i>Sforzesco</i> <i>Registri Missive</i> <i>Notarile</i>

Archivio Storico Civico / Biblioteca Trivulziana, (Municipal Historical Archive / Trivulziana Library, Milan)	<i>Litterarum Ducalium</i> <i>Miscellanea</i>
Archivio della Fabbrica del Duomo (Archive of the Cathedral of Milan, Milan)	<i>Giornali di cassa</i> <i>Ordinazioni Capitolari</i>
Archivio dell'Ospedale Maggiore (Archive of Maggiore Hospital, Milan)	<i>Ordinazioni Capitolari</i>

APPENDIX II

The Office staff throughout the 15th century.

Table 2 displays the chronology of the officers enrolled in the Office of the engineers of Municipality of Milan over the 15th century (15 years before and 15 years after), as reconstructed through the archival survey. The table provides names of the officers, death date (when available), dates concerning their employment (i.e. recruitment, dismissal, etc.), punctual citation of archival sources, and information about salary (when available). The engineers' names are cited both in the Italian current spelling, and the original Medieval Latin (the latter in italics).

Table 2. Office staff throughout the 15th century

Name	Dates of employment and archival sources	Monthly salary in florins
Nicola de Agazis [<i>Nicolaus de Agazijs</i>]	TO: 1387 (Dicasteri, f217, p52v, ASC)	nm
Pietro de Conigo [<i>Petrus de Conigo</i>] d before 1390.12.30	TO: 1387-1390 (Dicasteri, f217, p52v, ASC - Santoro, 1929, p18, doc64)	nm
Beltramo de Conigo (or de Orsenigo) [<i>Beltramus de Conigo or de Orsanigo</i>]	TO: 1390 (Santoro, 1929, p187, doc64) F: 1392.03.30 (Santoro, 1929, p27 doc120)	nm
Pietro de Villa [<i>Petrus de Villa</i>] d 1401.04.24	TO: 1390-1401 (Santoro, 1929, p15, doc 48 - LD, r1401-1403, p12v)	nm
Carnevario dalla Chiesa [<i>Canevarius de Ecclesia</i>]	TO: 1390 (Santoro, 1929, p15 doc48)	nm
Domenico dalla Chiesa [<i>Dominicus de Ecclesia</i>]	TO: 1390-1400 (Santoro, 1929, p15 doc48-p117, doc279)	nm
Masetto Maineri [<i>Masetto Majneri</i>]	H: 1391.05.28 (Dicasteri, f217, p49, ASC)	nm
Simone Magatti [<i>Simon de Magattis</i>] d before 1393.06.03	H: 1392.03.30 (Santoro, 1929, p27 doc120)	nm
Tommaso da Bernareggio [<i>Thomas de Bernadigio</i>]	TO: 1392.07.14 (AFD, r1, p73)	nm
Domenico Graziano [<i>Dominicus Gratianus</i>]	TO: 1398.09.16 (Ambrosiana, Codex Della Croce)	nm
Francescolo Corognolla [<i>Franciscolus de Corognolla</i>] d before 1400.12.31	TO: before 1400.12.31 (LD, r1401-03, p8v, ASC)	nm
Marcolo de Petortis [<i>Marcholus de Petortis</i>]	A: 1400.12.31 (LD, r1401-03, p8v, ASC) F: 1405.06.16 (Santoro, 1929, p187, doc64)	nm

Antoniolo da Melzo [<i>Antoniolus de Melzio</i>]	A: 1401.05.02 (Ambrosiana, Fondo Trotti, LD, r1397-1400, p15) F: 1402 (LD, r1401-1403, p80, ASC)	nm	Elia Reina [<i>Ellia de Regnis</i>]	TO: 1458-1468 (LD, r1450-87, p101, ASC - R.B., BIII, 23; AII, 2, ASM)	nm
Tommaso del Conte [<i>Thomas de Comitè</i>]	TO: 1401-1402 (LD, r1489-96, p143, ASC)	nm	Prandino Cattaneo da Novara [<i>Prandinus de Cataneis de Novaria</i>]	H: 1461.12.09 (L: LD, r1456-61, p276v, ASC) TO: 1478.08.19 (LD, r1450-87, p153v, ASC)	nm
Rodolfo Ferrari da Cinisello [<i>Rudolfus de Ferrariis de Cinixelle</i>]	H: 1402 (L: LD, r1401-1403, p80, ASC)	nm	Pietro da Lonate [<i>Petrus de Lonate</i>]	H: 1472.09.17 (L: LD, r1473-78, p6v, ASC) C: 1477.07.30 (L: LD, r1473-78, p168v, ASC) H: 1481.02.10 [E+A] (L: LD, r1479-88, p 72, ASC)	ws ws
Giovanni Sgiapati [<i>Johannolus Sgiapatus</i>]	TO: 1402 (LD, r1489-96, p143, ASC)	nm	Francesco da Lonate [<i>Franciscus de Lonate</i>]	H: 1474.04.21 (L: LD, 1473-78, p52, ASC)	nm
Giovanni Magatti [<i>Johannes de Magattis</i>]	H: 1404.10.10 (L: LD, r1395-09, p136, ASC) F: 1406.02.27 (LD, r1395-09, p159v, ASC) H: 1406.12.24 (LD, r1395-09, p164, ASC) TO: 1411.09.10 (LD, 1410-13, p102, ASC)	nm	Pietro de Faino detto da Malpaga [<i>Petrus de Fayno dictus de Malpaga</i>]	H: 1474.08.22 (L: LD, r1473-78, p73v, ASC. L: RD, r179, p120, ASM)	ws
Antonio de Conigo (or de Orsenigo) [<i>Antonius de Conigo or de Orsanigo</i>] d before 1408.01.22	H: 1405.07.16 (Santoro, 1929, p18 doc 64)	nm	Arasmino Solari [<i>Arasminus de Solario</i>]	H: 1474.10.13 (L: LD r1473-78, p79v, ASC. L: RD, r135, pp143-143v, ASM) C&H: 1492.09.05 [E+A] (L: LD, r1489-96, p120v, ASC. L: RD, r186, p43v, ASM)	nm
Boneto Mozanica [<i>Bonetus de Mozanicha</i>]	F: 1406.12.24 (LD, r1395-09, p164) TO: 1408.03.28 (Dicasteri, f218, pp47v-49, ASC) F: 1409.04.13 (LD, r1408-09, p126, ASC) H: 1409.08.08 (L: LD, 1408-09, p141, ASC) H: 1410.01.07 (L: LD, 1410-13, p 9, ASC) F: 1413.03.15 (LD, r1410-13, p163v, ASC) H: 1413.12.15 (L: LD, r1410-13, p187v, ASC)	nm 3* 3 3	Giavanni Pellizzoni [<i>Johannes de Pelizonibus</i>] d before 1476.09.18	TO: before 1476.09.18 (LD, r1473-78, p133v, ASC)	nm
Petrolo da Sant'Ambrogio [<i>Petrolus de Sancto Ambrosio</i>]	H: 1406.02.27 (LD, r1395-09, p159v, ASC)	nm	Stefano dell'Acqua [<i>Stefanus de l'Aqua</i>]	H: 1477.06.18 (L: LD, r1473-78, p162, ASC) TO: 1492.09 (Au, b87, f1, ASM. RD, r92, p89, ASM. LD, r1489-96, p120v, ASC)	nm
Paolo da Osnago [<i>Paulus de Oxnago</i>]	TO 1408-1411 (Dicasteri, f218 pp47v-49, ASC - LD, 1410-13, pp102- 104v, ASC)	nm	Domenico de Magistris [<i>Dominicus de Magistris</i>]	H: 1479.02.13 (L: LD, r1479-88, pp12, 12v)	ws
Lorenzo Donato [<i>Laurentius Donatus</i>]	C: 1409.02.11 (L: LD, 1408-09, p98, ASC)	nm	Giovanni da Bellusco [<i>Johannes de Belusco</i>]	H: 1480.01.12 (L: LD, r1479-88, p54, ASC) H: 1486.01.01 [E+A] (L: LD, r1479-88, p240v, ASC)	nm
Franzino da Albairate [<i>Franzinus de Albayrate</i>]	H: 1409.04.13 (L: LD, 1408-09, p126, ASC)	3	Pietro Rottora [<i>Petrus de Rottoris</i>]	TO: 1481.07.02 (LD, r1450-87, pp163v-164, ASC)	nm
Marcolo de Turri [<i>Marcholus de Turri</i>]	H: 1413.03.15 (L: LD, r1410-13, p163v, ASC) F: 1413.12.15 (L: LD, r1410-13, p187v, ASC)	3	Bartolomeo della Valle [<i>Bartholomeus de Valle</i>]	H: 1482.01.23 (LD, r1479-88, p110v, ASC) C: 1485.01.31 (L: LD, r1479-88, p194, ASC) TO: 1519.10.27 (AFD, rIII, p210)	ws 3
Antonio da Novate [<i>Antonius de Novate</i>]	TO: 1450*** (LD, r1450-87, pp10,18v, ASC)	nm	Pietro da Sant'Ambrogio [<i>Petrus de Sancto Ambrosio</i>]	H: 1485.06.14 [L: LD, r1478-88, pp202v, 203, ASC]	nm
Giovanni della Porta [<i>Johannes de la Porta</i>]	TO: 1455-1461 (LD, r1456-61, p120, ASC - Ordinazioni Capitolari, 9 July 1461, AOM)	nm	Ambrogio della Valle [<i>Ambrosius de la Valle</i>]	H: 1485.06.30 [E+A] (L: LD, r1479-88, p209, ASC) TO: 1519.11.14 (Pagnano, 1520, p48)	nm
Ambrogio da Cernusco [<i>Ambrosius de de Cisnusculo</i>]	TO: 1455-1469 (LD, r1450-87, p73, ASC - AnFD, II, p267)	nm	Pietro Carminati Brambilla [<i>Petrus de Carminatis de Brambilla</i>]	H: 1485.07.16 (L: LD, r1479-88, p217, ASC) TO: 1493 (Au, b82, f44, ASM. RD, r92, p127, ASM)	nm
			Pietro da Gorgonzola [<i>Petrus de Gorgonzola</i>]	TO: 1488.05.31 (AnFD, III, p63)	nm

Gervaso da Gallarate [<i>Gervaxe da Galarate</i>]	TO: 1492.09 (Au, b87, f1, ASM. RD, r92, p89, ASM. LD, r1489-96, p120v, ASC)	nm
Maffeo Balaroto or Bagaroto [<i>Mafeus Balarotus or Bagarotus</i>] d before 1492.09.20	TO: 1492.09 (Au, b87, f1, ASM. RD, r92, p89, ASM. LD, r1489-96, p120v, ASC)	nm
Maffeo da Como [<i>Mafeus de Cumis</i>] d 1496.02.18	TO: 1492.09 (Au, b87, f1, ASM. RD, r92, p89, ASM. LD, r1489-96, p120v, ASC. Au b85, f1, ASM)	nm
Gabriele Ghiringhelli [<i>Gabriel de Ghiringelis</i>] d before 1490.05.15	TO: before 1490.05.15 [E+A] (LD, r1489-96, p33, ASC)	nm
Antonio Sarturius [<i>Antonius Sarturius</i>]	F: 1490.05.15 [E+A] (LD, 1489-96, p33, ASC)	nm
Andrea Ghiringhelli [<i>Andreas de Ghiringelis</i>] d before 1493.04.30	H: 1490.05.15 [E+A] (L: LD, r1489-96, p33, ASC) TO: before 1493.04.30 (RD, r92, p126v, ASM)	nm
Mafiolo da Giussano [<i>Mafiolus de Gluxiano</i>] d before 1515.11.17	H: 1491.04.08 [E+A] (L: Fondo Belgioioso, f306, ASC. Au, b85, f2)	nm
Antonio da Villanova [<i>Antonius de Villanova</i>]	H: 1491.04.30 (L: LD, r1489-96, p71v, ASC. RD, r186, p25v, ASM)	nm
Domenico da Rosate [<i>Dominicus de Roxate</i>]	H: 1492.02.16 [E+A] (L: LD, r1489-96, pp93v, 94)	nm
Ambrogio da Senago [<i>Ambrosius de Senagus</i>]	H: 1492.12.15 (L: LD, r1489-96, p124, ASC. RD, r92, p106v)	nm
Giuliano da Comerio [<i>Iulianus de Comerio</i>]	H: 1493.04.15 (L: LD, r1489-96, p136, ASC. L: RD, r92, p124v)	nm
Bernardino Ghiringhelli [<i>Bernardinus de Ghiringelis</i>]	H: 1493.04.30 [E+A] (L: RD, r92, p126, ASM)	nm
Giovanni Carminati Brambilla [<i>Johannes de Carminatis de Brambilla</i>]	H: 1493.05.12 [E+A] (L: LD, r1489-96, p138v, ASC)	nm
Antonio Maino [<i>Antonius de Mayno</i>]	H: 1494.07.05 (L: LD, r1489-96, p167v, ASC)	nm
Burato Bascapè [<i>Buratus de Baxilicapetri</i>]	H: 1497.10.08 (L: LD, r1497-02, p2v, ASC)	nm
Antonio Maltagliati da Casorate [Antonius Maletaleatus de Casorate]	H: 1498.01.22 (L: RD, r189, p 239v, ASM)	nm
Antonio da Casorate [Antonius de Caxorate]	H: 1498.12.10 [E+A] (L: LD, 1497-02, p129v, ASC. RD, r124, p51 ASM)	nm
Bartolino Cozzi da Casorate [<i>Bartholinus Cotius de Casorate</i>]	H: 1499.08.14 (L: LD, r1497-02, p143, ASC. RD, r124, p115, ASM)	nm
Gerolamo Bernardino da Giussano [<i>Hieronymus Bernardinus de Gluxiano</i>]	H: 1505.12.14 (L: LD, r1503-12, p58, ASC) TO: 1519.11.14 (Pagnano, 1520, 48)	nm

Pietro da Busto [<i>Petrus de Busti</i>]	TO: 1512.09.23 (Notarile 3340, Melchiorre Agrati, ASM)	nm
Benedetto da Missaglia [<i>Benedictus de Massalia</i>]	TO: 1516-1519 (Pagnano, 1520, p10 foll)	nm

LEGEND

H	hired
F	fired
C	confirmed
A	approved by the Duke
TO	testified in office
[E+A]	engineer and appraiser
ws	in charge “without a salary”, according to cited records (cf. section 3.5)
nm	amount of the salary not mentioned in cited records
L	license
LD	<i>Litterarum Ducalium</i> (fond)*
RD	<i>Registri ducali</i> (fond)
Au	<i>Autografi, ingegneri-architetti</i> (fond)
b	box
r	register / volume
f	folder
p	page
ASM**	Archivio di Stato di Milan (National Archive of Milan, Milan)
ASC	Archivio Storico Civico–Biblioteca Trivulziana (Municipal Historical Archive / Trivulziana Library, Milan)
AFD	Archivio della Fabbrica del Duomo (Archive of the Cathedral of Milan, Milan)
AnFD	<i>Annali della Fabbrica del Duomo</i> (1477-85)

* For the value and purchasing power of this sum, see section 3.5

** Only major fonds and archives are abbreviated. Other sources are cited in full.

*** In the period from 1413 to 1450 (more or less the years of Filippo Maria Visconti's rule of Milan, 1412 to 1447), records testify to the activity of ducal engineers, while no municipal engineers are cited in official documents. It is possible - but not proven - that, at that time, the two offices were merged (see *Litterarum Ducalium*, ad annum).

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