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PLANNING AND BUDGET OF WORK: RENOVATION OF THE INTENSIVE CARE UNIT OF SANTA CASA DE MISERICÓRDIA DE VOTUPORANGA

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ABSTRACT

The article addresses the planning and budget of the renovation of the Intensive Care Unit (ICU) of the Santa Casa de Misericórdia de Votuporanga, presenting particularities of hospital works. The study demonstrates how the integration between planning and budgeting is essential to ensure financial control, efficiency in the use of resources and predictability in civil construction, especially in projects funded with public resources. The planning of the work included the definition of objectives, analysis of projects, preparation of schedules and cost estimation. In the budget, direct and indirect costs were considered, in addition to the use of budget bases such as SINAPI and CPOS to ensure greater precision in the final values of the work. During the execution, challenges arose such as price variations, the need for contractual amendments, and modifications in the scope of the project due to unforeseen structural problems. The case study demonstrated that detailed planning, coupled with constant monitoring of the budget are determining factors for the success of a work.

Keywords: Planning. Budget. Financial control. Hospital.

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1 INTRODUCTION

Civil construction is an activity that involves a large number of variables, being developed in a dynamic and changeable environment, which makes the management of this work complex (Mattos, 2019).

According to Mattos (2019), the control and planning of a work are necessary tools to ensure the success of a project, thus allowing the prediction and management of resources and minimizing unforeseen events. The main objectives of planning are to establish costs, quality and deadlines, aiming to optimize the construction process by anticipating risks and efficiently organizing the construction stages. In this way, planning also makes it possible to analyze the impacts generated by the works, whether positive or negative, promoting effective control and contributing to a more economical execution and within the expected quality standards.

In the context of a work financed with public resources, such as the renovation of the Intensive Care Unit (ICU) of the Santa Casa de Misericórdia de Votuporanga, the object of study in this article, adequate budget planning becomes even more crucial, given the importance of ensuring that public resources are used responsibly and effectively, meeting the needs of the hospital infrastructure and respecting the established budget limits.

The absence or insufficiency of adequate planning is pointed out by several studies as one of the main factors responsible for the low productivity of the civil construction sector, directly impacting execution and productivity.

For Ferrante (2022), efficient financial management in budget planning not only ensures quality and compliance with deadlines, but also maximizes the use of resources, reduces waste, minimizing negative impacts, and ensuring that the work fully meets public health requirements.

Thus, this article examines the connection between planning and budget in the execution of hospital works, highlighting how efficient financial and strategic management can ensure the realization of successful projects and the sustainability of the hospital studied.

2 CONSTRUCTION PLANNING

Construction planning is one of the most critical and fundamental steps for the success of projects in civil construction, being responsible for organizing the necessary actions to optimize available resources, reduce costs and minimize risks and waste, in addition to evaluating the technical feasibility of the project (Silva et al., 2020).

According to the Project Management Institute (2017), planning consists of processes that define the scope, objectives, and resources of a project, promoting communication

between the parties involved and anticipating factors that may influence its execution, such as risks, constraints, and opportunities.

The link between planning and project management is inevitable, since both areas share the objective of ensuring compliance with key indicators such as deadline, cost, quality and safety. According to Kerzner (2017), effective project management must integrate the areas of knowledge from initiation to closure, promoting a structured and goal-oriented approach. This perspective allows companies, regardless of size, to increase predictability and control over construction processes, favoring decision-making and risk mitigation.

It is in the planning phase that the structure and procedures that will ensure efficient execution and compliance with previously established objectives will be defined. Factors such as scheduling, analysis of labor availability, survey of necessary materials and equipment, and definition of risk mitigation strategies are included in this phase (Machado et al., 2019).

The first stage of planning is the clear definition of the project's objectives and requirements, for this, it is essential to understand the concept of a project as a temporary undertaking with the objective of creating a unique product, service or result, conducted in a structured way and based on technical and regulatory standards (PMI, 2021).

This first stage includes a detailed analysis of the architectural, structural and installation design in general, to ensure that all specifications are met in accordance with technical and regulatory standards. From this point, it is possible to develop a schedule, dividing the works into stages and subsequently establishing deadlines for each of them, which provides the team with a clear view of the goals to be met, avoiding delays and additional costs (Costa and Fonseca, 2018).

Also in the planning, cost estimation and budget control are carried out. The preparation of an accurate budget involves a detailed analysis of all the direct and indirect costs of the work, as well as providing for a contingency margin to absorb variations in the prices of inputs or other unforeseen events (Almeida et al., 2020). During execution, constant monitoring of expenses is essential to ensure that the project does not exceed the previously established financial limits, avoiding unforeseen events and surprises that may compromise the financial viability of the work.

Another essential aspect of planning is the management of resources, which includes defining the materials, equipment that will be used, and labor. Delivery logistics, correct storage, and rational use of materials are decisive factors to avoid waste or significant delays (Oliveira and Barbosa, 2017). To make planning more efficient, it is recommended to anticipate the need for each resource, ensuring that they are available at the exact time they

are needed for use. Similarly, effective labor allocation, with clear definition of responsibilities, is vital to maximizing productivity.

The planning of works must also include a plan for control and constant monitoring of the progress of the work. During execution, it is important to have monitoring mechanisms that enable the analysis of the progress of activities in real time. This may include holding periodic follow-up meetings or evaluating the schedule. Such actions make it possible to identify deviations, implement corrections, and ensure that execution is in line with what was planned (Ferreira and Martins, 2022). In this sense, planning should be seen not as a one-off step, but as a dynamic and continuous process, which requires constant reassessment and adaptation to the real conditions of the project.

The planning of renovations in hospital environments must be carefully prepared, considering the particularities of health institutions. Reforms in sectors such as Intensive Care Units (ICUs) require detailed logistical planning, with the aim of reducing the impact on patients and health professionals, ensuring the continuity and efficiency of hospital services during the intervention period (Ferrante, 2022).

Ferrante (2022) also highlights that, due to the sensitivity of hospital environments, the control of dust, noise, and vibrations must be rigorous. The logistics of the work need to include the installation of physical barriers, exhaust systems, and even carrying out activities at alternative times to minimize impacts.

Also according to Ferrante (2022), the planning of renovations in hospital environments, such as ICUs, should integrate solutions that ensure the feasibility of future maintenance and expansions. Considering the technical and regulatory requirements required in these spaces, it is essential that the project contemplates strategies that facilitate subsequent interventions without compromising hospital operation.

3 CONSTRUCTION BUDGET

The construction budget is another fundamental step in the management of civil construction projects, being responsible for ensuring their feasibility and execution within the pre-established financial limits. A well-crafted budget should be carried out realistically and based on reliable data. Any inaccuracy or error can result in additional costs that can compromise the economic sustainability of the project (Silva *et al.*, 2020).

According to Souza and Fernandes (2017), the preparation of the budget involves the sum of direct costs, such as labor, materials and equipment, and indirect costs, such as expenses with supervision and support, construction site management, fees, among others. After this cost survey, taxes and profit margin are included, thus composing the final price of

the work. The proper definition of this value is strategic for competitiveness in bidding processes and to ensure financial return.

One of the first steps of the budget is to analyze the project and all its specifications in detail, which will be the basis for the cost estimate. These costs can be classified into two major groups: direct and indirect costs, both indispensable for an accurate estimate. What differs the two is the way they are directly related to the execution of the work. While direct costs are associated with the physical production of the work, indirect costs, although less visible, significantly influence the progress and completion of the project (Gomes and Oliveira, 2021).

Within this process, the quantitative survey stands out, a fundamental step for the effectiveness of the budget, it is through it that it is possible to accurately calculate the necessary quantity of each item that will be used, minimizing losses and delays (Carvalho and Lira, 2019).

The estimation of labor costs represents one of the most significant components in the budget of a work, being essential for the planning and feasibility of the project. According to the *Project Management Institute* (PMI, 2017), the proper forecast of labor costs, that is, costs directly related to the labor involved, must consider not only the amount of work and the time required to perform each activity, but also the types of professionals involved, such as engineers, foremen, bricklayers, and electricians. In addition to salaries, it is essential to include labor charges, benefits, and mandatory insurance. External factors, such as the availability of skilled labor and workplace conditions, can also directly influence costs and productivity. Thus, the efficient allocation of the workforce becomes decisive for the success of the enterprise, requiring a careful and up-to-date analysis of the labor market.

According to Dias and Rocha (2020), to aid in the preparation of the budget, budget bases are widely used, such as reference tables and cost composition systems, especially in public works. These tools standardize information on material consumption and average market prices, helping to obtain a more reliable estimate.

For Santos *et al*. (2022), another component that needs to be surveyed is the acquisition and logistics of materials, the cost of which can vary significantly in the final budget, according to the quality, location of the work, logistics planning, and market fluctuations. Price research and control over supply are essential to avoid delays and ensure compliance with budget targets.

Mattos (2006) argues that BDI (Bonus and Indirect Expenses) is an index applied to the direct cost of a work to calculate and arrive at the final sale price, including indirect expenses, taxes and profit margin. The BDI is nothing more than an increase that the sale

price has on the direct cost. It is through this value that the construction company will define the proposal and present it to the contracting company or make its offer in a bid.

Lima *et al.* (2018) state that in addition to all these factors, a contingency margin should be considered in the budget, which is nothing more than a reserve to compensate for the margin of error of the estimates and deal with project risks. Efficient risk management is essential to ensure the continuity and delivery of the project according to the defined parameters.

In some cases, it becomes necessary to carry out an additional component in the budget of works: contractual amendments, which involve changes in values or deadlines, usually requested when there is a change in the original project. These modifications must be justified and properly documented, ensuring the transparency and financial control of the project, especially in public contracts, where inspection and social control are more rigorous (Ferreira & Nascimento, 2019). Factors such as supplier delays and technical problems can also justify ordering an additive.

Finally, budget control during the execution of the work is as crucial as its initial preparation. Continuous monitoring of costs, through the comparison between what was planned and what was realized, allows for appropriate adjustments and more effective management of resources, contributing to the completion of the project within budget, or as close as possible, without compromising quality and/or safety (Menezes *et al*., 2023).

The budget for hospital works has particularities that differentiate it from other buildings, especially due to the degree of specialization of systems and materials present. According to Ferrante (2022), the planning and design phase must consider not only the physical aspects of the building, but also the technical and regulatory requirements related to safety and health. In this context, medical-hospital equipment and facilities represent a significant portion of the costs, requiring detailed budget forecasts and requiring specific certifications.

Another critical factor, as Ferrante (2022) points out, concerns the execution in stages, especially in renovation or expansion works of hospitals in operation. In these cases, the budget should provide for additional indirect costs with logistics, security, and isolation of areas. It is also common to need replanning during execution, requiring the budget to have flexibility and include technical reserves to deal with unforeseen events without compromising the functionality of the affected hospital sectors.

Finally, it is essential to integrate the budget with the physical planning and schedule of the work, to ensure the continuity of the construction stages. The use of tools such as BIM and project compatibility are strategies that help minimize errors and rework. In hospital

works, any mistake in the budget can compromise not only deadlines and costs, but also the safety and quality of the health services offered by the final building (Ferrante, 2022).

4 CASE STUDY

This article presents the case study regarding the renovation of the Intensive Care Unit of the Santa Casa de Misericórdia de Votuporanga, with the purpose of addressing the planning and budgeting process of this work, involving stages ranging from the conception of the projects to the financial feasibility. In addition, the study seeks to demonstrate the challenges faced during its execution.

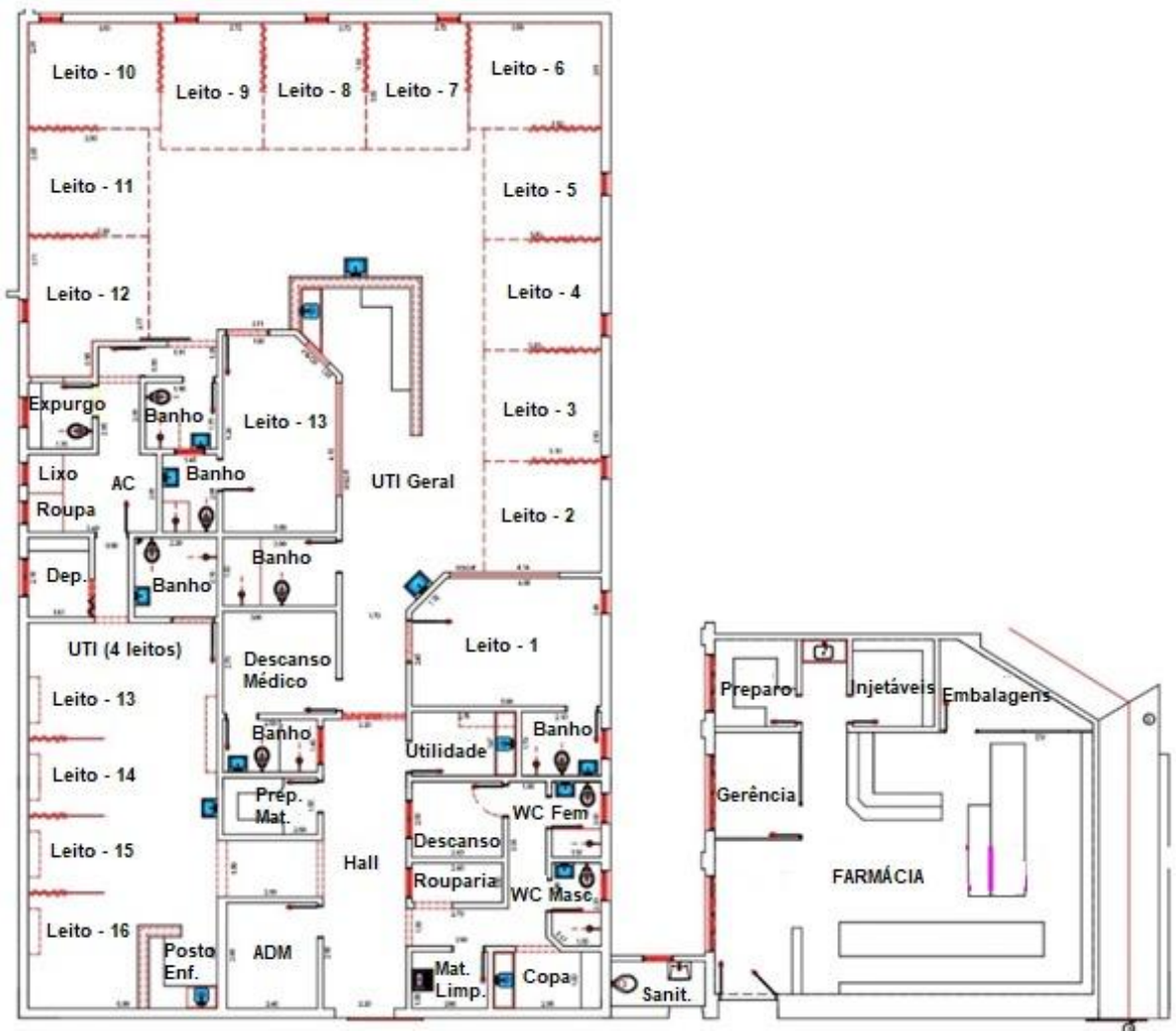
Founded in July 1946, the Santa Casa de Misericórdia de Votuporanga is a non-profit philanthropic institution, being a reference for several municipalities in the northwest of São Paulo, serving about 70% of its patients through the Unified Health System (SUS).

The project chosen for the case study was the renovation of the Intensive Care Unit (ICU) of Santa Casa de Misericórdia de Votuporanga, which now includes 11 ICU beds and 04 Semi ICU beds, in addition to 02 isolation beds and 03 apartment beds.

This project was essential for the modernization and expansion of the service capacity within the hospital unit. With the need to maintain the operation of the hospital during the execution of the work, strategies had to be put on the agenda to minimize the impacts on hospital activities.

The initial phase of the work consisted of planning, including the technical survey based on the existing structure (Figure 1), which included the ICU and, adjacent to it, the area for the hospital's pharmacy. With the modifications and development of the project, the preliminary architectural project was defined, which served as a reference for the bidding process (Figure 2).

Figure 1 – Floor plan in the existing construction.

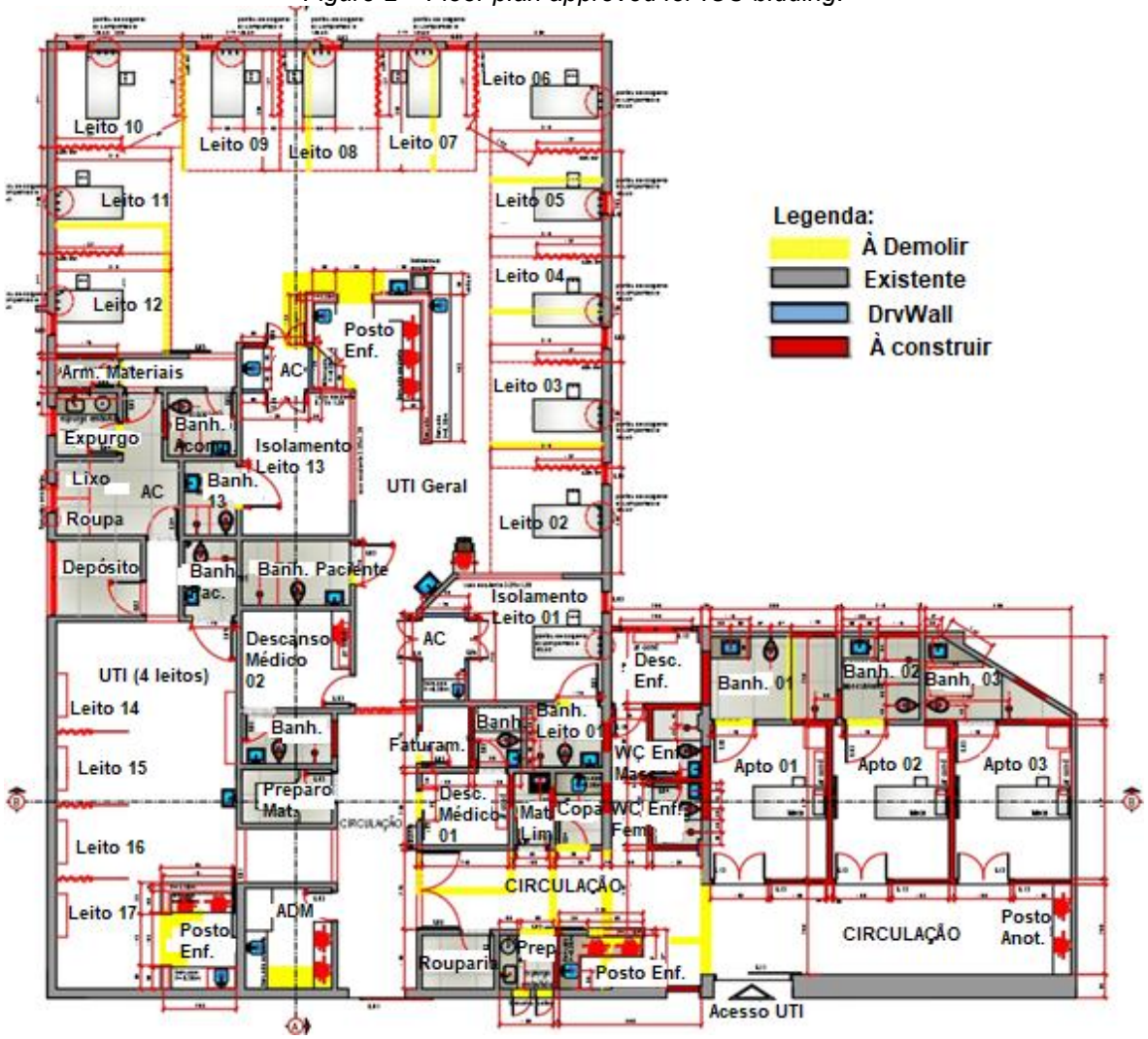


Source: Adapted from Santa Casa de Misericórdia de Votuporanga.

The first phase of project study was carried out in 2018, and was later revised in 2023, due to the changes proposed after that date. Among the modifications, the implementation of a slab in the ICU stands out, making it necessary to update the original plans.

The bidding phase, held in April 2023, was based on the following projects: architectural, structural, electrical, hydraulic, air treatment project and gas network project. All the projects mentioned were approved by the National Health Surveillance Agency (ANVISA).

Figure 2 – Floor plan approved for ICU bidding.



Source: Adapted from Santa Casa de Misericórdia de Votuporanga.

From the executive projects, budget spreadsheet and technical visits, interested companies were able to carry out the budget in a more precise way, being aligned with the requirements of the bidding, thus allowing participation in the dispute for the contract. In the case study, the company that won the bid was an Engineering, Construction and Valuation company, headquartered in the city of São José do Rio Preto, with a total value of R$2,008,121.37.

For a budget more faithful to the real one, Santa Casa used market budgets, in addition to two budget bases, one of which was developed by Caixa Econômica Federal in partnership with the Brazilian Institute of Geography and Statistics (IBGE), SINAPI (National System of Research on Costs and Indices of Civil Construction) and another base developed and maintained by government agencies, and that may vary from state to state, the CPOS (Register of Prices of Works and Services). The dates that served as a reference for the budget were February 2023 (SINAPI) and November 2022 (CPOS).

Figure 3 illustrates a part of the budget, including the detailed topics, the units of measurement, the quantities corresponding to the work, the total amount without the BDI (Indirect Benefit and Expenses) and the total amount with the BDI applied. In the case study, the percentage of BDI adopted was 20%.

Figure 3 – Part of the budget taken from the bidding file.

ITEM	DESCRIÇÃO DOS SERVIÇOS	Un.	Quant.	Valor unitário (R$)	Valor total sem BDI (R$)	Valor total com BDI (R$)
1	**SERVIÇOS PRELIMINARES**				**26.109,21**	**31.331,06**
1.1	**Retiradas e Demolições**					
1.1.1	Retirada de esquadrias metalicas	m^2	25,90	22,28	577,05	692,46
1.1.2	Retirada de portas	m^2	13,13	8,26	108,45	130,14
1.1.3	Retirada de batente	m	31,45	9,56	300,66	360,79
1.1.4	Demolição manual de alvenaria	m^3	23,70	52,09	1.234,53	1.481,44
1.1.5	Retirada de piso em granilite	m^3	11,16	247,11	2.757,75	3.309,30
1.1.6	Retirada de piso concretado	m^3	0,96	247,11	237,23	284,68
1.1.7	Demolição manual de revestimento cerâmico - piso	m^2	92,90	20,40	1.895,16	2.274,19
1.1.8	Demolição manual de revestimento cerâmico - parede	m^2	340,09	20,40	6.937,84	8.325,41
1.1.9	Remoção de forro em pvc, inclusive sistema de fixação	m^2	374,95	1,52	569,92	683,90
1.1.10	Retirada de bancadas	m^2	6,02	51,31	308,89	370,67
1.1.11	Retirada de prateleiras	vb	1,00		0,00	0,00
1.1.12	Remoção de bate maca em granito	m	106,13	2,87	304,59	365,51
1.1.13	Retirada louças sanitárias	un	21,00	31,41	659,61	791,53
1.1.14	Retirada de torneira ou chuveiro	un	20,00	5,44	108,80	130,65
1.1.15	Remoção de metais sanitários	un	30,00	8,17	245,10	294,12
1.1.16	Remoção de interruptores/tomadas elétrica	un	120,00	0,64	76,80	92,16
1.1.17	Remoção de luminárias	un	55,00	1,24	68,20	81,84
1.1.18	Remoção de telhas fibrocimento	m^2	420,06	3,09	1.297,99	1.557,59
1.1.19	Remoção de trama metálica para cobertura	m^2	420,06	6,63	2.785,00	3.342,00
1.1.20	Remoção de vidro liso	m^2	8,03	13,84	111,14	133,37
1.1.21	Retirada de entulho em caçambas metálica	m^3	150,00	36,83	5.524,50	6.629,40

Source: Adapted from Santa Casa de Misericórdia de Votuporanga.

Also within the scope of the bidding process, the participating companies presented schedules of activities planned for the execution of the work. The schedule presented in Figure 4 corresponds to that of the company that won the bidding process.

Figure 4 – Part of the schedule of activities table.

EMPRESA SOLICITANTE: Santa Casa de Misericórdia de Votuporanga	OBRA: REFORMA UTI GERAL												DATA ELABORAÇÃO: 03/2023 DATA BASE: Sinapi 02/23 e CPOS 11/22	
LOCAL DA OBRA: Votuporanga - SP														
			mes 01		mes 02		mes 03		mes 04		mes 05		mes 06	
ITEM	DESCRIÇÃO DOS SERVIÇOS	Valor total com BDI	VALOR	%	VALOR	%	VALOR	%	VALOR	%	VALOR	%	VALOR	%
	TOTAL GERAL	R$ 2.008.121,37	R$ 114.163,41	5,69%	R$ 404.495,90	20,14%	R$ 551.718,55	27,47%	R$ 655.454,50	32,64%	R$ 181.537,21	9,04%	R$ 100.751,80	5,02%
1	SERVIÇOS PRELIMINARES	R$ 31.331,06	R$ 31.331,06		R$ -		R$ -		R$ -		R$ -		R$ -	
1.1	Retiradas e Demolições	R$ 31.331,06	R$ 31.331,06	100,00	-	0,00%	-	0,00%	-	0,00%	-	0,00%	-	0,00%

Source: Adapted from Santa Casa de Misericórdia de Votuporanga.

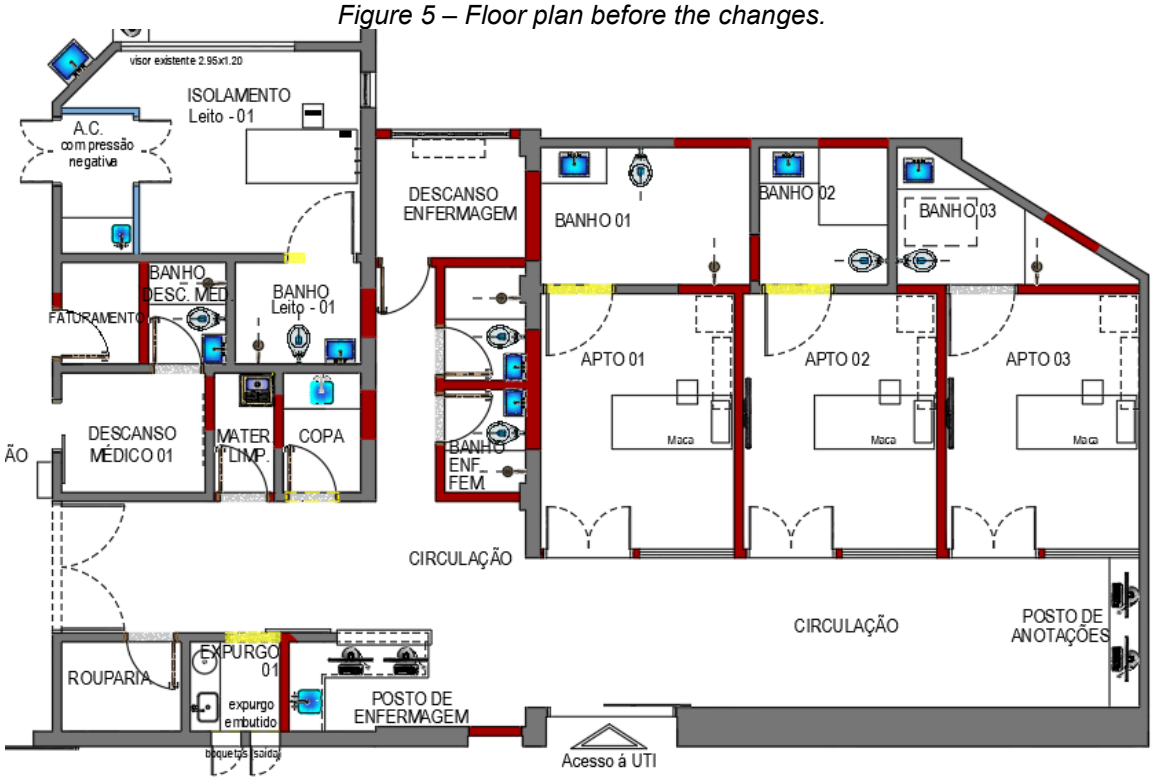
The initial Service Order (OS) was issued and duly signed at the end of May 2023, formalizing the beginning of the regulatory process for the start of the execution of the work. The deadline established for the completion of the work was six months, with the date scheduled for delivery and inauguration in November 2023.

With the established schedule and all the measures taken for the interdiction and relocation of the Intensive Care Unit, it was possible to start the work in May 2023. However, during the course of the work, it was found that the architectural project presented divergences in relation to the existing architecture in the place. Due to the fact that the hospital values the well-being of patients, precautions are taken such as limited access for technical visits. This ended up making it difficult to measure and check the existing physical spaces, which required changes in the initial planning.

Thus, in November 2023, it was necessary to formalize the request for an amendment to the deadline, which was determined and agreed upon with both parties. The amendment established a six-month extension, with the new completion deadline scheduled for June 2024.

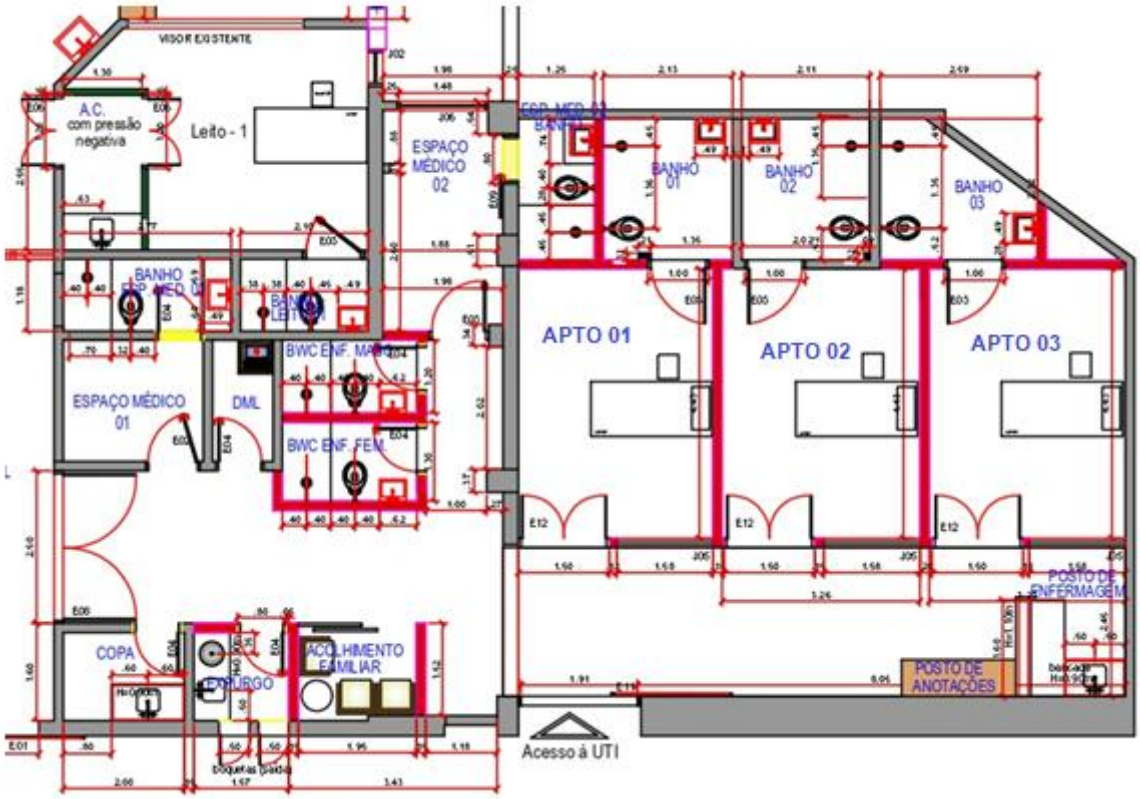
Figures 5 and 6 show, respectively, part of the project before and after the necessary changes.

Figure 5 – Floor plan before the changes.



Source: Adapted from Santa Casa de Misericórdia de Votuporanga.

Figure 6 – Floor plan after changes.



Source: Adapted from Santa Casa de Misericórdia de Votuporanga.

Despite the extension of the deadline, the contracted company was unable to complete the work within the stipulated period due to some rework they had, requiring a new addendum, formalized in June 2024 and with a new delivery deadline for December 2024.

During the course of the work, the need to build an additional room, called the Equipment Room, was identified with the purpose of storing the equipment that would be used in the daily life of the ICU. Later, after the visit of the hospital's Care Team, the Equipment Room was relocated within the project, becoming designated as the Administrative Room. In addition to this change, there was also the change of the Cup, also within the premises already provided for in the project, since it was determined that the new Cup should have a larger area than initially projected. Figure 7 presents the final project after the implementation of the changes made.

Figure 7 – Completed project.

Source: Adapted from Santa Casa de Misericórdia de Votuporanga.

It can be observed that all the necessary changes in this case study, considering the work in progress, resulted in a significant impact on the delay of the delivery time and the increase in the final cost of the work. In this case, the initially planned period of 6 months was extended to 18 months and the increase in cost will be presented next.

Throughout the execution of the work, periodic measurements were carried out, essential for technical and financial monitoring. The measurements consisted of quantifying the services performed, allowing comparison with the contract and monitoring in the schedule. This process ensured that payments were made according to the physical progress of the work, with 16 measurements being carried out during the work.

Figure 8 presents, as an example, the payment of installment 12, corresponding to measurement 12, carried out in June 2024. The table includes a column with the total value of the contract according to the bidding proposal (R$2,008,121.37) and columns that detail the amount already executed in previous measurements (Previous executed), the amount executed in the period in question (Executed in the period), the accumulated value (sum of services already performed - Accumulated executed), the unit value of each item and, Finally, the total value of the measurement in question, obtained by the product between the unit value and the quantity executed in the period, ensuring compliance with the contract and transparency in the release of payments.

It is observed, for example, that the amount of debris removal in metal buckets, initially planned at 150m³, was 178m³ in parcel 12, which represents an increase in relation to the initially estimated cost.

Figure 9 shows the proportions of each of the 16 portions of measurements made during the execution of the contract, based on the total cost of R$2,008,121.37. The values are represented in percentages. Tranche 0 refers to the advance granted for the issuance of the initial service order.

Analyzing the results, it is possible to observe that the sum of the percentages is 108.79%, that is, 8.79% higher than the amount originally bid.

Figure 8 – Example of payment of installment 12 corresponding to measurement 12.

ITEM	DESCRIÇÃO DOS SERVIÇOS	Un.	Quant.	Valor unitário (R$)	Valor total com BDI (R$)	Parcela 12 - 15/06/24				
						Executado Anterior	Executado no Período	Executado Acumulado	Valor unitário (R$)	Valor Total Medição (R$)
	TOTAL GERAL				R$ 2.008.121,37					256.696,83
1	SERVIÇOS PRELIMINARES				31.331,06					397,80
1.1	Retiradas e Demolições									
1.1.1	Retirada de esquadrias metalicas	m²	25,90	22,28	692,46	25,90	0,00	25,90	26,74	0,00
1.1.2	Retirada de portas	m²	13,13	8,26	130,14	13,13	0,00	13,13	9,91	0,00
1.1.3	Retirada de batente	m	31,45	9,56	360,79	31,45	0,00	31,45	11,47	0,00
1.1.4	Demolição manual de alvenaria	m³	23,70	52,09	1.481,44	94,11	0,00	94,11	62,51	0,00
1.1.5	Retirada de piso em granilite	m³	11,16	247,11	3.309,30	2,36	0,00	2,36	296,53	0,00
1.1.6	Retirada de piso concretado	m³	0,96	247,11	284,68	4,48	0,00	4,48	296,74	0,00
1.1.7	Demolição manual de revestimento cerâmico - piso	m²	92,90	20,40	2.274,19	92,90	0,00	92,90	24,48	0,00
1.1.8	Demolição manual de revestimento cerâmico - parede	m²	340,09	20,40	8.325,41	340,09	0,00	340,09	24,48	0,00
1.1.9	Remoção de forro em pvc, inclusive sistema de fixação	m²	374,95	1,52	683,90	374,95	0,00	374,95	1,82	0,00
1.1.10	Retirada de bancadas	m²	6,02	51,31	370,67	8,40	0,00	8,40	61,57	0,00
1.1.11	Retirada de prateleiras	vb	1,00		0,00	0,00	0,00	0,00	0,00	0,00
1.1.12	Remoção de bate maca em granito	m	106,13	2,87	365,51	106,13	0,00	106,13	3,44	0,00
1.1.13	Retirada louças sanitárias	un	21,00	31,41	791,53	23,00	0,00	23,00	37,69	0,00
1.1.14	Retirada de torneira ou chuveiro	un	20,00	5,44	130,65	21,00	0,00	21,00	6,53	0,00
1.1.15	Remoção de metais sanitários	un	30,00	8,17	294,12	30,00	0,00	30,00	9,80	0,00
1.1.16	Remoção de interruptores/tomadas elétricas	un	120,00	0,64	92,16	120,00	0,00	120,00	0,77	0,00
1.1.17	Remoção de luminárias	un	55,00	1,24	81,84	55,00	0,00	55,00	1,49	0,00
1.1.18	Remoção de telhas fibrocimento	m²	420,06	3,09	1.557,59	420,06	0,00	420,06	3,71	0,00
1.1.19	Remoção de trama metálica para cobertura	m²	420,06	6,63	3.342,00	420,06	0,00	420,06	7,96	0,00
1.1.20	Remoção de vidro liso	m²	8,03	13,84	133,37	8,03	0,00	8,03	16,61	0,00
1.1.21	Retirada de entulho em caçambas metálicas	m³	150,00	36,83	6.629,40	169,00	9,00	178,00	44,20	397,80

Source: Adapted from Santa Casa de Misericórdia de Votuporanga.

Figure 9 – Percentage per installment.

VALOR TOTAL LICITADO	R$ 2.008.121,37

Parcelas	Data	Percentual
Parcela 00	20/06/2023	15,00%
Parcela 01	20/06/2023	0,46%
Parcela 02	20/07/2023	2,40%
Parcela 03	21/08/2023	4,09%
Parcela 04	21/09/2023	3,06%
Parcela 05	20/10/2023	3,80%
Parcela 06	20/11/2023	7,62%
Parcela 07	20/12/2023	0,67%
Parcela 08	20/01/2024	3,75%
Parcela 09	20/02/2024	1,88%
Parcela 10	20/04/2024	3,76%
Parcela 11	20/05/2024	5,21%
Parcela 12	15/06/2024	12,78%
Parcela 13	20/07/2024	21,40%
Parcela 14	20/08/2024	5,27%
Parcela 15	30/10/2024	2,81%
Parcela 16	06/12/2024	14,80%

PORCENTAGEM FINAL	108,79%

Source: Prepared by the author.

The work was considered completed with the completion of all planned projects, as well as all the finishing part, including painting, planned furniture, coatings, vinyl flooring, jambs and stretcher beaters, electronic equipment, among others.

The initial cost budgeted based on the architectural, structural, electrical, hydraulic, air treatment and gas network projects, did not correspond to the final cost of the work. This occurred due to unforeseen events during the execution of the project, such as the need to adapt to the real conditions of the site, changes in the scope and project, and variations in the prices of inputs throughout the construction period.

In the case of the ICU work, in order to deal with variations and be able to ensure the continuity of the work without compromising its functionality and the quality of the hospital, an Amendment to the Contract was formalized in July 2024, in which the value of the initial contract was changed. This amount was due to adjustments arising from the execution of the reform previously agreed between the parties, which correspond to financial adjustments due to the change in some quantities.

After the completion of the work and the inauguration of the wing, in September 2024, a final addendum was formalized, based on the adequacy of the initially estimated values. In addition, the addendum contemplated the inclusion, as well as the exclusion, of previously approved services, according to the needs identified.

Figure 10 shows some of the items that underwent changes throughout the work. Items highlighted in red indicate an increase in quantities, while items in blue indicate inclusions. The item highlighted in green (1.1.19) was suppressed, being replaced by item 1.1.19.1, once it was found that there was a metal mesh instead of a wooden mesh on the ICU roof.

Figure 10 – Example of items contained in the final amendment to the contract.

ÍTEM	DESCRIÇÃO DOS SERVIÇOS	Un.	Quant.	Executado Anterior	Executado no Período	Executado Acumulado	Valor Unitário (R$)	Valor Total (R$)
1	**SERVIÇOS PRELIMINARES**							**24.193,36**
1.1	**Retiradas e Demolições**							
1.1.1	Retirada de esquadrias metalicas	m^2	25,90	25,90	35,53	61,43	26,74	950,07
1.1.4	Demolição manual de alvenaria	m^3	23,70	23,70	70,41	94,11	62,51	4.401,33
1.1.6	Retirada de piso concretado	m^3	0,96	0,96	4,01	4,97	296,54	1.189,13
1.1.10	Retirada de bancadas	m^2	6,02	6,02	13,81	19,83	61,57	850,28
1.1.13	Retirada de louças sanitárias	un	21,00	21,00	2,00	23,00	37,69	75,38
1.1.14	Retirada de torneira ou chuveiro	un	20,00	20,00	1,00	21,00	6,53	6,53
1.1.19	Remoção de trama de madeira	m^2	420,06	420,06	-420,06	0,00	7,96	-3.343,68
1.1.19.1	Remoção de trama metálica para cobertura	m^2		0,00	420,06	420,06	31,39	13.185,68
1.1.20	Remoção de vidro liso	m^2	8,03	8,03	1,81	9,84	16,61	30,06
1.1.21	Retirada de entulho em caçambas metálicas	m^3	150,00	150,00	100,00	250,00	44,20	4.420,00
1.1.22	Remoção de reboco	m^2		0,00	213,01	213,01	3,58	762,58
1.1.23	Rasgos em alvenaria - rede de gases	m		0,00	200,00	200,00	8,33	1.666,00

Source: Adapted from Santa Casa de Misericórdia de Votuporanga.

The regulation of this final amendment is based on Law No. 14,133/2021, known as the Bidding and Administrative Contracts Law. According to this legislation, in cases of renovation of buildings or equipment, the maximum limit for the increase in contractual value is 50% (fifty percent).

The value of the contractual amendment of the Santa Casa ICU resulted in 8.79% more than the amount originally tendered (as shown in Figure 9), thus remaining in compliance with the limits established by the current legislation.

For the full completion of the parameters for completion and monitoring of the work, two documents were formally signed: the Work Completion Report and the Certificate of Completion of Work, both issued in February 2025, officially consolidating the completion of the work and all its respective dependencies.

5 CONCLUSION

This article addresses specificities about the planning and budget of the Intensive Care Unit (ICU) of Santa Casa de Votuporanga, highlighting the importance of detailed strategic planning to affirm the technical and financial predictability of works such as this one in the health sector. The analysis showed that despite the preparation of a thorough budget, some inaccuracies still persisted in both planning and cost estimation, which highlights the need for an even more judicious approach in the project design phase.

During the research, it was found that factors such as fluctuations in the prices of inputs, changes in the scope of the project and unforeseen events in the execution can significantly influence the final cost of the work, resulting in the use of additives, which can be of time or value. However, the implementation of financial control tools, the continuous monitoring of the execution stages and the use of efficient management methodologies prove to be fundamental strategies to reduce risks and ensure greater budget predictability.

In the specific context of ICU reform, the complexity of the project requires highly precise planning, since it involves everything from the purchase and installation of specific hospital technologies and equipment to the need to consider strict technical, structural and sanitary standards. The absence of detailed planning can lead to delays, increased costs, and even the need for rework, impacting the efficiency of the work and the allocation of financial resources.

Thus, the experience gained from this study highlights the importance of collaboration between the areas of engineering, hospital administration and financial management for coherent decision-making that is aligned with the requirements of the health sector. An

efficient partnership between them allows for a more strategic and efficient approach, ensuring that resources are applied assertively.

Finally, it is concluded that the success of the renovation of the hospital enterprise such as the ICU of Santa Casa de Votuporanga depends not only on the correct preparation of planning and budget, but also on the flexibility to deal with adversities and the adoption of innovative and effective technologies and methodologies. The implementation of good budget management practices can play a key role in optimizing construction processes and delivering efficient projects, ensuring quality and safety in patient care.

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