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RESEARCH OF CIVIL CONSTRUCTION COSTS AND INDEXES IN THE MUNICIPALITY OF GURUPI - TO: A COMPARATIVE ANALYSIS BETWEEN THE DATA OBTAINED FROM 2020 TO 2021

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Abstract: Tisaka (2006) guarantees that professionals in the area of Civil Construction must always be aware of the variations that occur in economic and organizational spheres of the country, in order to ensure that their attitudes are taken based on reliable data. In addition to this issue, the pandemic caused by the pathological agent Sars-CoV-2, between the years 2020 and 2021, added to the ordinary changes in the price of construction materials, reached such indices in an important way, also being concomitant with the lack of information, in digital media and bibliographic databases (even more so when there is a focus on the state of Tocantins and the city of Gurupi), on the price variations of these items. Between March, April and May 2020, the indexes of Civil Construction works, belonging to the Brazilian Standard 12,721/2006 "Evaluation of construction costs for real estate development and other provisions for condominiums", were searched and had their values listed and tabulated. Also in March, April and May 2021, the Basic Unit Cost indices were revisited in companies in the region. In this research, the data obtained in the city of Gurupi will be presented, the evolutions and disparities of values that have occurred, the reasons (commented by representatives of establishments in the municipality) of the variations and calculations of Basic Unit Cost per input and square meter, following the guidelines of the Standard 12,721/2006, of Law 4,591/64 and based on procedures carried out by the Brazilian Chamber of the Civil Construction Industry (CBIC) and the National System for Research on Civil Construction Costs and Indexes (SINAPI).

Keywords: Covid-19 and construction materials, basic unit cost, construction materials in Gurupi, budget in civil construction, price variation between 2020 and 2021.

INTRODUCTION

Tisaka (2006) and Duarte & Lamounier (2007) affirm the existing importance of professionals being aware of the changes that occur in the economic and organizational spheres of the country, since those who refrain from making decisions based on truthful information and reliable data tend to lose space in the competitive environment that is Civil Construction. Having this statement as a starting point, it is guaranteed that less privileged people, companies, cities, regions and locations (when it comes to the availability of data and accurate information) are more susceptible to errors and disparities in the budget of any activity. involved and, in this case, Civil Construction. Aiming at updating information and disseminating financial awareness in the works, the Brazilian Chamber of Construction Industry (CBIC) deals with issues related to the Civil Construction Industry and the Real Estate Market, being the institutional representative of the sector in Brazil and abroad. The chamber gathers 92 unions, located in the 27 units of the Federation. Under the CBIC, there is the CUB (Basic Unit Cost) indicator, which, for almost fifty years, has helped the engineering sectors by reflecting the prices of a work by analyzing materials, labor, administrative expenses and equipment rental. The CUB is published by Sinduscon (Civil Construction Industry Union) of each state, under the guidelines of Law 4,591/64 and NBR 12,721/2006. SINAPI (National System for Research on Civil Construction Costs and Indexes), a system of Caixa Econômica Federal, has also been present in the Brazilian market since its implementation in 1969, in addition to informing and publishing systematic data about civil construction materials and the salaries paid in this area, sought by the Brazilian Institute of Geography and Statistics (IBGE, 2015). Although very present in budget tables and research on input prices, the information obtained by SINAPI, in order to represent the entire state, focuses only on the values and cost compositions found in the capital, Palmas, which can cause disparity in terms of the actual budget. of a work, in addition to the fact that, in Tocantins, there is a great lack of current information related to the Basic Unit Cost (CUB), due to the fact that the data found, both on the CBIC online address and on the SindusconTO website, are outdated and do not present the current condition of the economy in the country.

Without major events and/or sudden changes in the country's economy as a whole, variations in material prices are likely to occur. If these variations are added to adverse circumstances, it is logical that the values of data, indices, inputs and masses are impacted. Between the years 2020 and 2021, the spread of the pathological agent Sars-CoV-2, among the Brazilian population, must be taken as a situation that has great capacity to reach the economy of large areas of the country, adding to the variations of price that already occur normally thanks to currency inflation and minor factors. According to data from the World Health Organization (2020), the first occurrence of the Covid-19 virus in Brazilian lands was recorded on February 26, 2020, in the city of São Paulo. In the capital of Tocantins, Palmas, the first reported case occurred on March 18, 2020 and, as guaranteed by Fundação Oswaldo Cruz (Fiocruz) (2020), in addition to Bessa & Da Luz (2020), on April 19, 2020, the state of Tocantins reported the highest rate of virus rates among the rates found in Brazilian states. Aiming to reduce the contagion of Covid-19 in cities, Lockdown plans were applied across the country, impacting, among other areas, the economy of municipalities and the country as a whole, as Ribeiro (2020) also cites. In view of the

growing cases of the disease, José Carlos Martins, president of the Brazilian Chamber of the Civil Construction Industry (CBIC), highlights the increase in values related to raw materials in the fourth quarter of 2020, saying "The increase in the price of inputs generates insecurity, especially for already contacted sales". In addition to this speech, Ieda Vasconcelos, economist at the CBIC Database, also expresses that "These increases are harmful to civil construction activities, as no statistics projected such a significant increase in prices, which compromises the budget of the works". When searching, in bibliographic bases and in digital media, data about how and how much the values of the inputs of works and real estate developments varied, still added to the impacts of the Covid-19 Pandemic in the country (with a focus on the state of Tocantins and the city Gurupi), there is a total lack of information. This situation makes the margin of errors and the aforementioned disparities even greater, depriving professionals and workers in the field of making safer decisions with an established and grounded bias. The science of current prices and their evolution, in these situations, are even more lacking and studies. The focus of this research is born with this question.

During the months of March, April and May 2020, the civil construction indices, listed in Brazilian Standard 12,721/2006 and in Law 4,591/64: "Evaluation of construction costs for real estate development and other provisions for condominiums", were searched, aiming at gauging the basic price of each of these materials in Gurupi and there was the realization of the Basic Unit Cost per square meter of a construction in the city. Besides, during this period, cases arising from the Covid-19 Coronavirus Pandemic began in the state, as stated by Bessa and Da Luz (2020). After that, these numbers grew and spread, causing the Covid-19 Pandemic in the city of Gurupi to impact the social and commercial areas of the municipality. In 2021, this survey became even more important due to the wide variation in financial indicators, which directly affect the results obtained when analyzing the situation addressed as a whole. During March, April and May 2021, the Basic Unit Cost indices were revisited in companies in the region. This way, this study seeks to show, in a precise way, the disparity of the values found in the previous year when compared to the 2021 data, showing its evolutions during the period and how this influenced the scope of Civil Construction in the city of Gurupi, located in the state from Tocantins.

GENERAL PURPOSE

Conducted in the city of Gurupi, Tocantins, this study has as main objective to analyze the evolution of the basic unit price of each of the Civil Construction inputs and indexes that are available in the basic lot of inputs of ABNT 12.721:2006 (Basic Unit Cost - CUB), in the period from 2020 to 2021.

SPECIFIC OBJECTIVES

a) Search, in 2021, the price of each item on the list of basic elements of the CUB in warehouses, construction material stores and distributors related to civil construction, in addition to using SINAPI values, as auxiliary information, in order to obtain the values of labor in the Gurupiense area;

b) Carry out the Basic Unit Cost calculation, per square meter, with the data obtained in 2021 in the city of Gurupi;

c) Make comparisons between the data on materials and services, found in 2020 in Gurupi, pre-impact of Covid-19, with the information obtained in the last check of values in 2021, when the implications increased;

d) Check the disparity in Basic Unit Costs, per square meter, between the years of research;

e) Ask, know and discuss the greatest difficulties faced by the owners of companies and stores of civil construction materials, given the variation of prices in the analyzed period;

f) Report the dissimilarities or similarities between the items and values analyzed in the mentioned time interval;

g) Compare the data found in Gurupi to the Basic Unit Cost prices of the states next to Tocantins (Bahia, Goiás, Maranhão, Mato Grosso, Pará and Piauí);

METHODOLOGY

In the preliminary investigation period, research on electronic addresses focused on the economy in the Civil Construction Industry, such as the Brazilian Chamber of the Civil Construction Industry (CBIC) and the National System for Research on Costs and Indexes of Civil Construction (SINAPI) were carried out., aiming for the previously mentioned information to be correctly based, as well as future ones. Searches on academic websites, such as SciElo, ERIC and Google Scholar, were jointly carried out (using the keywords "Civil Construction Costs and Indexes", "Civil Construction Economy", "Civil Construction Inputs and Covid-19 ", "Prices of civil materials between 2020 and 2021" and the like) and it was found that, similarly to what happened in the previous year, searches aimed at inland cities, Tocantins and globalizing these construction materials are scarce.

The indices that form the Basic Unit Cost table are: Item 1: 18 mm plastified plywood sheet 2.20 x 1.10 m; Item 2: CA-50 steel ø 10 mm; Item 3: Concrete fck=25 MPa slump 5±1cm,.br. 1 and 2 pre-dosed; Item 4: Cement CP-32 II; Item 5: Medium sand; Item 6: Gravel No. 02; Item 7: Ceramic block for sealing masonry 9 cm x 19 cm x 19 cm; Item 8: Concrete block without structural function 19 x 19 x 39 cm; Item 9: 6 mm 2.44 x 1.10 m corrugated fiber cement tile; Item 10: Semi-hollow inner door for painting 0.60 x 2.10 m; Item 11: Sliding frame size 2.00 x 1.40 m, in 4 sheets (2 sliding), without bascules, in natural anodized aluminum, profiles of line 25; Item 12: Sliding window size 1.20 m x 1.20 m in 2 sheets, in bent sheet iron profile nº20, with anti-corrosion treatment; Item 13: Lock for interior door, moderate traffic, type IV (55 mm), in iron, chrome finish; Item 14: Ceramic plate (tile) measuring 30 cm x 40 cm, PEI II, light color, imitating natural stones; Item 15: White marble sink countertop 2.00m x 0.60 x 0.02m; Item 16: Plain plasterboard 0.60 x 0.60 m; Item 17: 4 mm clear smooth glass filled with putty; Item 18: PVA latex paint; Item 19: Asphalt waterproofing emulsion; Item 20: Flameproof copper wire, insulation 750 V, # 2.5 mm^2; Item 21: 70 A three-pole circuit breaker; Item 22: White toilet with attached box; Item 23: Chromed pressure valve ø 1/2"; Item 24: Seamed galvanized iron tube ø 2 1/2"; Item 25: Reinforced rigid PVC-R pipe for sewage ø 150 mm; Item 26: Bricklayer; Item 27: Servant; Item 28: Engineer and Item 29: 320l Concrete Mixer Rental.

In 2020, 43 companies collaborated for research. Thanks to the searches, carried out in 2021, six new companies were found and met the requirement to sell some of the basic materials. However, 11 companies (those analyzed in 2020) stopped selling indexes on the list and/or closed in 2021. Thus, for the 2021 data search, only 38 stores and businesses participated and contributed to the research. The data found monthly were separated and placed in tables, with the help of Microsoft Excel software. In the software, the price of each item was introduced, already in their respective units of measurement, consistent

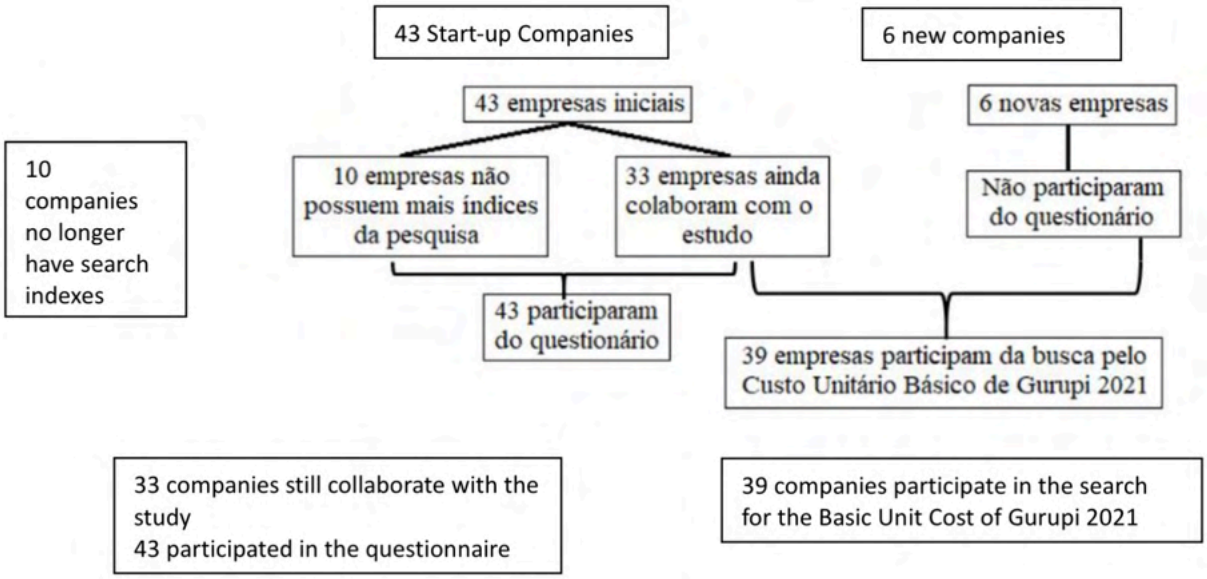

Figure 1 - Participation of companies in the survey.

Source: authors.

with the parameters required by ABNT NBR 12.721:2006. This research is characterized as quantitative.

RESULTS AND DISCUSSIONS

The Basic Unit Cost table can be basically divided into three groups: materials (25 items), labor (3 items) and machine rental (1 item). In the 2021 search in Gurupi, of these 25 materials, only one item was not found in the city. This item is input 8 (Concrete block without structural function 19 x 19 x 39 cm), since, as the representatives of the establishments stated, in the municipality there is a prevalence of buildings that use traditional masonry with the use of ceramic blocks. The first difference when comparing with the 2020 data appears there: input 3 (Concrete fck=25 MPa slump 5±1cm, 1 and 2 pre-dosed) was included in the cost survey, thanks to the discovery of new companies that collaborated with this material. In the previous year, this index, as well as input 8, was not part of the Basic Unit Cost calculation.

Comparing the data from 2020 to 2021, it can be seen that 23 of the 29 items (79.3%) had their prices raised. Among them, the biggest changes occurred, respectively, with materials 2 (Steel CA-50 ø 10 mm), 20 (Flame-resistant copper wire, insulation 750 V, # 2.5 mm²) and 7 (Ceramic block for masonry sealing 9 cm x 19 cm x 19 cm). These indices had their values more than doubled between March 2020 and March 2021, with changes of 122.98%, 109.63% and 102.86%, in that order.

On the other hand, it appears that items number 28 (Engineer), 22 (White toilet with attached box), 11 (Sliding frame size 2.00 x 1.40 m, in 4 sheets (2 sliding), without scales, in natural color anodized aluminum, profiles of line 25) and 23 (chrome pressure register ø 1/2") suffered a decrease, varying -0.54%, -2.80%, -16.00% and -16.80%, respectively.

In the table above, column (A) presented the coefficients of each of the inputs. Each of these coefficients must be multiplied by the average price found for each material. This way, it can be verified that the CUB/

Price variation of Civil Construction indices in Gurupi							
Item	Material/Service	un.	mar, april and may 2020	mar/21	apr/21 and may/21	variation % 2020 to mar/21	variation % mar/21 to abr/21
1	Plasticized plywood sheet 18 mm 2.20 x 1.10 m	m²	**39,50**	**54,24**	**54,24**	**37,32**	**0,00**
2	Steel CA-50 ø 10 mm	kg	**4,09**	**9,12**	**9,98**	**144,01**	**-9,43**
3	Concrete fck=25 MPa slump 5±1cm, 1 and 2 pre-dosed	m³	*	**397,50**	**397,50**	*	**0,00**
4	Cement CP-32 II	kg	**0,52**	**0,68**	**0,68**	30,77	0,00
5	medium sand	m³	**91,00**	**96,25**	**96,25**	**5,77**	**0,00**
6	Gravel n° 02	m³	**127,50**	**170,00**	**170,00**	**33,33**	**0,00**
7	Ceramic block - sealing masonry 9 cm x 19 cm x 19 cm	un.	**0,70**	**1,42**	**1,42**	**102,86**	**0,00**
8	Concrete block without structural function 19 x 19 x 39 cm	un.	**	**	**	**	**
9	Concrete block without structural function 19 x 19 x 39 cm	m²	**51,83**	**61,25**	**61,25**	18,17	0,00
10	Semi-hollow inner door for painting 0.60 x 2.10 m	un.	**151,86**	**158,50**	**158,50**	**4,37**	**0,00**
11	Sliding frame size 2.00 x 1.40 m, in 4 sheets, without tipping points, in natural color anodized aluminum	m²	**343,68**	**288,69**	**301,19**	**-12,36**	**-4,33**
12	Sliding window size 1.20 m x 1.20 m in 2 sheets, in bent sheet iron profile n° 20	m²	**307,00**	**387,70**	**371,50**	**21,01**	**4,18**
13	Lock for interior door, moderate traffic, type IV (55 mm), in iron, chrome finish	un.	**42,62**	**75,10**	**83,64**	**96,25**	**-11,37**
14	Ceramic plate (tile) measuring ~30 cm x 40 cm, PEI II, light color, imitating natural stones	m²	20,62	27,00	27,00	30,94	0,00
15	White marble sink countertop 2.00 m x 0.60 x 0.02 m	un.	**368,00**	**492,00**	**492,00**	**33,70**	**0,00**
16	Plain plasterboard 0.60 x 0.60 m	m²	**15,00**	16,00	16,00	6,67	0,00
17	4 mm clear clear glass placed with putty	m²	**106,45**	**199,60**	**225,60**	**111,93**	**-13,03**
18	PVA latex paint	l	**8,08**	**8,65**	**7,45**	**-7,80**	**13,87**
19	Asphalt waterproofing emulsion	kg	**8,92**	**14,72**	**15,00**	**68,16**	**-1,90**
20	Flameproof copper wire, insulation 750 V, # 2.5 mm²	m	**1,35**	**2,83**	**2,83**	**109,63**	**0,00**
21	Three-pole circuit breaker 70 A	un.	**100,75**	127,00	127,00	26,05	0,00
22	White toilet bowl with attached box	un.	**246,40**	**239,50**	**239,50**	**-2,80**	**0,00**
23	Chrome pressure valve ø 1/2"	un.	**52,85**	**43,97**	**43,97**	**-16,80**	**0,00**
24	Galvanized iron pipe with seam ø 2 1/2"	m	**47,68**	**89,00**	**89,00**	**86,66**	**0,00**
25	Reinforced rigid PVC-R pipe for sewer ø 150mm	m	**23,40**	**35,46**	**35,46**	**51,54**	**0,00**
26	Bricklayer	h	**15,17**	15,24	15,24	0,46	0,00
27	Auxiliar	h	**10,32**	**10,91**	**10,91**	**5,72**	**0,00**
28	Engineer	h	**106,79**	**106,21**	**106,21**	**-0,54**	**0,00**
29	Concrete mixer rental 3201	day	**21,43**	**25,71**	**25,71**	**19,97**	**0,00**

Table 1 - Price variation of Civil Construction indices in Gurupi.

Source: authors.

Basic Unit Cost per square meter of Gurupi, March 2020 X March 2021 (R$)							
Ind.	**materials**	**Un**	**(A) Coefficient of materials and services per square meter**	**(B) Average of values searched (R$) in Gurupi - March 2020**	**(C) Average searched values (R$) in Gurupi - March 2021**	**(A x B) Basic Unit Cost per square meter in March 2020**	**(A x C) Basic Unit Cost per square meter in March 2021**
1	Plasticized plywood sheet 18 mm 2.20 x 1.10 m	m²	**1,77034**	**39,50**	**54,24**	**69,93**	**96,02**
2	Steel CA-50 ø 10 mm	kg	**12,71468**	**4,09**	**9,12**	**52,00**	**115,96**
3	Concrete fck=25 MPa slump 5±1cm. 1 and 2 pre-dosed	m³	**0,15752**	**	**397,50**	**	**62,61**
4	Cement CP-32 II	kg	**91,21954**	**0,52**	**0,68**	**47,43**	**62,03**
5	medium sand	m³	**0,2929**	**91,00**	**96,25**	**26,65**	**28,19**
6	Gravel n° 02	m³	**0,07256**	**127,50**	**170,00**	**9,25**	**12,34**
7	Ceramic block for sealing masonry 9 cm x 19 cm x 19 cm	un	**85,94536**	**0,70**	**1,42**	**60,16**	**122,04**
8	Concrete block without structural function 19 x 19 x 39 cm	un	**0**	**	**	**	**
9	Corrugated fiber cement tile 6 mm 2.44 x 1.10 m	m²	**2,10228**	**51,83**	**61,25**	**108,96**	**128,76**
10	Semi-hollow inner door for painting 0.60 x 2.10 m	un	**0,22341**	**151,86**	**158,50**	**33,93**	**35,41**
11	Sliding frame size 2.00 x 1.40 m, in 4 leaves (2 sliding), without tilts, in natural color anodised aluminium, profiles in line 25	m²	**0,09457**	**343,68**	**288,69**	**32,50**	**27,30**
12	Sliding window size 1.20 m x 1.20 m in 2 sheets, in bent sheet iron profile n° 20, with anti-corrosion treatment	m²	**0,01171**	**307,00**	**387,70**	**3,59**	**4,54**
13	Lock for interior door, moderate traffic, type IV (55 mm), in iron, chrome finish	un	**0,11696**	**42,62**	**75,10**	**4,98**	**8,78**
14	Ceramic tile (tile) measuring ~30 cm x 40 cm, PEI II, light color, imitating natural stones	m²	**3,4656**	**20,62**	**27,00**	**71,46**	**93,57**
15	White marble sink countertop 2.00 m x 0.60 x 0.02 m	un	**0,03095**	**368,00**	**492,00**	**11,39**	**15,23**
16	Plain plasterboard 0.60 x 0.60 m	m²	**0**	**15,00**	**16,00**	**0,00**	**0,00**
17	4 mm clear glass placed with putty	m²	**0,09062**	**106,45**	**199,60**	**9,65**	**18,09**
18	PVA latex paint	l	**2,26706**	**8,08**	**8,65**	**18,32**	**19,61**
19	Asphalt waterproofing emulsion	kg	**0,71196**	**8,92**	**14,72**	**6,35**	**10,48**
20	Flameproof copper wire, insulation 750 V, # 2.5 mm²	m	**21,55887**	**1,35**	**2,83**	**29,10**	**61,01**
21	Flameproof copper wire, insulation 750 V, # 2.5 mm²	un	**0,12142**	**100,75**	**127,00**	**12,23**	**15,42**
22	White toilet bowl with attached box	un	**0,0825**	**246,40**	**239,50**	**20,33**	**19,76**
23	Chrome pressure valve ø 1/2"	un	**0,33226**	**52,85**	**43,97**	**17,56**	**14,61**
24	Galvanized iron pipe with seam ø 2 1/2"	m	**0,00811**	**47,68**	**89,00**	**0,39**	**0,72**

25	Reinforced rigid PVC-R pipe for sewer ø 150 mm	m	**0,66394**	**23,40**	**35,46**	**15,54**	**23,54**
Ind.	**Manpower**	**Un**	**(A) Coefficient per m²**	**(B) Value (R$)**	**(C) Value (R$)**	**A x B**	**A x C**
26	Bricklayer	h	**31,44957**	**15,17**	**15,24**	**477,09**	**479,29**
27	Auxiliar	h	**20,75851**	**10,32**	**10,91**	**214,23**	**226,48**
Ind.	**Administrative costs**	**Un**	**(A) Coefficient by m²**	**(B) Value (R$)**	**(C) Valoue(R$)**	**A x B**	**A x C**
28	Engineer	H	**1,55264**	**106,79**	**106,21**	**165,81**	**164,91**
Ind.	**Equipment**	**Un**	**(A) Coefficient by m²**	**(B) Value (R$)**	**(C) Value (R$)**	**A x B**	**A x C**
29	320 l concrete mixer rental	Day	**0,01955**	**21,43**	**25,71**	**0,42**	**0,50**
			TOTAL SUM (R$):			1519,26	1867,21

Table 2 - Basic Unit Cost per square meter of Gurupi, March 2020 X March 2021.

Source: authors.

m² of March 2020 was conceived by the product between column (A) and column (B). Similarly, the March 2021 CUB/m² was obtained by multiplying columns (A) and (C). At the end of these multiplications, all products are added.

In this table, the data found in the city of Gurupi in March 2020 and March 2021 can be compared. In direct analysis, it can be observed that, in addition to 23 of the 29 items, their values were increased. The presence of index 3 (Concrete Fck =25Mpa, slump 5±1cm, 1 and 2 pre-dosed), which in 2020 was not found in the municipality, is one of the determining factors for this increase. Materials number 2 (CA-50 steel ø 10 mm), 7 (Ceramic block for sealing masonry 9 cm x 19 cm x 19 cm) and 20 (Flame-resistant copper wire, insulation 750 V, # 2.5 mm²) had their values more than doubled, also influencing the increase in construction prices in the city.

In addition to what was mentioned, the disparity between the CUB/m² itself must also be noted. The Basic Unit Cost per square meter of Gurupi in March 2021 was R$1867.21, 18.63% higher than the previous year, which had a price of R$1519.26.

Regarding the questions presented to the representatives of the companies, the following answers were obtained in relation to the 26 items classified as construction materials:

• Broadly, did the value of items sold in 2020 increase or decrease?

Of the 43 companies that participated in the questionnaire, 40 of these (93%) stated that the prices of construction materials had increased in relation to the months of March, April and May 2020. Only three of these 43 companies (7%) ensured that either prices experienced a decrease or did not change. These companies are focused on the production of glass.

• Does the company continue to sell, in 2021, all the items it sold in 2020?

In general, many companies stopped selling some products, reducing their work to providing services and materials that did not require much investment (so that they could have a financial return). Of those 43 initial companies in 2020, 26 stores (60.5%)

stopped selling certain inputs, which collaborated with the research. Within these 26 stores, where there was a decrease in items (in 2021), 10 no longer contribute with any index. Of the 43 companies analyzed in the previous period, 14 (32.6%) remained stable (in relation to the materials sought after sold) and continued to corroborate the same items as in 2020. The minority (6.9%), formed by three stores, acquired more products and helped in the search with more indexes.

• If you no longer sell some of the items, why is this happening?

24 of the 43 stores analyzed (55.8%) reported that they buy materials from companies in other cities, so that they can be resold in Gurupi. Aiming to make a profit, these companies chose to stop selling certain items, because, this way, the expenses with purchases would decrease.

In addition, other answers most given by the questioned stores were the increase in the price for transportation of the means of transport, which take the inputs to the destination, and the increase in the value of the workforce of the professionals involved, who, in the midst of the Covid-19 pandemic, are more exposed to the risks of the disease.

The following Basic Unit Cost per square meter prices refer to the six states closest to Tocantins: Bahia, Goiás, Maranhão, Mato Grosso, Pará and Piauí, respectively, in March 2021. These values were obtained from the online address of the Brazilian Chamber of the Civil Construction Industry, so that there could be a better understanding of how the city of Gurupi and its construction price per square meter behave in the region.

As verified, the CUB/m² found for the city of Gurupi, in March 2021, was R$1867.21. This value is very close to the Basic Unit Cost issued for the state of Pará: only R$3.08 of difference, and that of the city under analysis is more expensive. The value of the square price in Gurupi is considered to be lower than in Bahia and Mato Grosso, however, it is higher when compared to the states of Goiás, Maranhão, Pará and Piauí.

When the indices were individually analyzed, the following information was obtained. (Table 3).

PADRÃO NORMAL	
R-1	1.959,07
PP-4	1.879,02
R-8	1.640,89
R-16	1.584,08

PADRÃO NORMAL	
R-1	1.810,95
PP-4	1.685,19
R-8	1.470,47
R-16	1.419,62

PADRÃO NORMAL	
R-1	1.677,01
PP-4	1.604,31
R-8	1.402,38
R-16	1.362,52

PADRÃO NORMAL	
R-1	2.120,23
PP-4	2.078,19
R-8	1.800,27
R-16	1.738,82

PADRÃO NORMAL	
R-1	1.864,13
PP-4	1.786,05
R-8	1.587,35
R-16	1.542,67

PADRÃO NORMAL	
R-1	1.768,04
PP-4	1.698,30
R-8	1.490,63
R-16	1.458,11

Normal Pattern

Figure 2: CUB/m²: Bahia, Goiás, Maranhão, Mato Grosso, Pará and Piauí in March 2021.

Source: : Sinduscon BA, GO, MA, MT, PA and PI.

Comparison of input values found in Gurupi with average prices in neighboring states to Tocantins										
Input	Unit	Bahia	Goiás	Maranhão	Mato Grosso	Pará	Piauí	Average States	Gurupi	Disparity %
1	m²	60,55	49,00	46,50	48,00	51,46	77,50	**55,50**	**54,24**	**-2,33**
2	kg	7,26	4,48	6,28	10,16	8,46	9,05	**7,62**	**9,12**	**16,50**
3	m³	330,11	323,00	389,73	440,00	452,50	376,50	**385,31**	**397,50**	**3,07**
4	kg	0,59	0,44	0,65	0,66	0,69	0,51	**0,59**	**0,68**	**13,24**
5	m³	56,71	89,00	78,68	70,50	55,00	40,00	**64,98**	**96,25**	**32,49**
6	m³	90,02	100,00	96,83	103,05	141,25	115,25	**107,73**	**170,00**	**36,63**
7	un	0,85	0,80	0,65	1,23	1,27	0,70	**0,92**	**1,42**	**35,45**
8	un	2,97	3,50	3,05	3,14	3,95	4,00	**3,44**	**	**
9	m²	25,86	31,50	32,06	27,10	31,42	39,69	**31,27**	**61,25**	**48,94**
10	un	105,67	110,00	181,36	139,00	228,00	385,00	**191,51**	**158,50**	**-20,82**
11	m²	407,13	400,00	385,85	636,90	459,21	535,00	**470,68**	**288,69**	**-63,04**
12	m²	363,33	210,00	326,59	313,30	330,00	203,76	**291,16**	**387,70**	**24,90**
13	un	57,39	70,00	72,73	73,14	72,85	61,00	**67,85**	**75,10**	**9,65**
14	m²	19,76	30,00	26,83	30,20	24,17	35,00	**27,66**	**27,00**	**-2,44**
15	un	366,78	400,00	409,14	459,00	575,30	317,00	**421,20**	**492,00**	**14,39**
16	m²	11,40	20,00	30,75	37,20	16,00	7,35	**20,45**	**16,00**	**-27,81**
17	m²	133,35	65,00	115,21	150,00	110,00	198,00	**128,59**	**199,60**	**35,57**
18	l	9,74	6,94	10,29	16,00	7,44	7,54	**9,66**	**8,65**	**-11,66**
19	kg	12,14	8,50	8,75	9,07	11,45	16,20	**11,02**	**14,72**	**25,15**
20	m	1,97	1,89	1,19	1,98	2,24	1,90	**1,86**	**2,83**	**34,22**
21	un	74,33	82,00	83,96	96,00	93,50	97,00	**87,80**	**127,00**	**30,87**
22	un	201,52	220,00	313,11	329,90	285,64	301,50	**275,28**	**239,50**	**-14,94**
23	un	42,44	32,20	89,36	61,10	39,95	93,00	**59,68**	**43,97**	**-35,72**
24	m	76,24	67,95	58,80	71,00	70,09	91,67	**72,63**	**89,00**	**18,40**
25	m	49,35	27,00	30,97	43,93	45,30	67,00	**43,93**	**35,46**	**-23,87**
26	h	24,53	23,51	16,94	20,98	19,35	14,85	**20,03**	**15,24**	**-31,41**
27	h	14,59	12,59	11,93	16,40	14,01	10,56	**13,35**	**10,91**	**-22,33**
28	H	75,24	59,07	71,99	112,55	38,63	52,63	**68,35**	**106,21**	**35,64**
29	Dia	17,68	15,00	68,00	40,00	16,00	30,00	**31,11**	**25,71**	**-21,02**

Table 3: Comparison of input values found in Gurupi with average prices in neighboring states to Tocantins.

Source: authors.

FINAL CONSIDERATIONS

For this research project in the year 2021, there was the collaboration of 49 companies, which helped about the values of the inputs sought or with the participation in the questionnaire. Of these 49 companies, six are new (compared to the study carried out in 2020) and the other 43 were part of the previous foundation. Within these 43 initial establishments, 10 no longer have indices that contribute to the project, however, they participated in the questionnaire (along with the other 33 old ones) commenting on the factors influencing the price change and on the reasons that caused certain materials not were top sellers. Among the justifications presented, the price increase in the purchase of other states (aiming for resale), greater financial losses for the locomotion of these inputs, the Covid-19 Coronavirus pandemic and the inflation of the values of the items were marked as the most present.

The Basic Unit Cost calculated for the city, in March 2021, was R$1867.21, very close to the value issued for the state of Pará: only R$3.08 of difference, being that of the city under analysis it's more expensive. The Basic Unit Cost per square meter of Gurupi in March 2021 was R$1867.21, 18.63% higher than the previous year, which had a price of R$1519.26.

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