
Comparative Analysis of the Costs (RAB) Budget Development Project in Surabaya

Arik Krismawanto, Fredy Kurniawan
Narotama University, Surabaya
arik.kris777@gmail.com

ABSTRACT

In the construction of a building, one of which is a mosque, it does require efficiency on the budget plan, so that development can be completed to the maximum with optimal time and little cost. The purpose of this study is to find out the ratio of labor wage coefficients between the Budget Plan (RAB), BOW and Implementation; Knowing the comparison and the difference in the number of unit prices of labor wages; Find out the cause of the difference in price. Data processing is done by literature method, documentation, conducting field observations and conducting interviews. The results of the work include formwork column K1 (thread D19) foreman coefficient ratio in RAB Offer with Implementation that is equal to 1.21, while BOW with Implementation is 0.37. Then for the wages of reinforced concrete deck work Lt. 2 12cm thick K-250 with an area of 41.05 m³ the difference between the RAB of the Offer and the Implementation of Rp. 36,263,855.91 (64.4%), while the difference between BOW and Implementation is Rp. 138,619,043.82 (87.4%). The magnitude of the ratio of ratios and differences in the budget for wage costs is influenced by many factors: labor wage prices, quantity or amount of labor used in the project, skill level and age of the workforce, and high interest in workforce employment.

Keywords: Budget plan, coefficients, wages, labor.

I. INTRODUCTION

The purpose of planning a building is to get a strong building construction, in terms of construction and development costs are cheaper and do not rule out the beauty of the building. One of them in planning the construction of mosques, construction and construction costs must be considered. Therefore the Budget Plan (RAB) must be more accurately and accurately calculated, to obtain strong construction for the next few years. Baitul Makmur Mosque UNESA Surabaya is a mosque that is within the UNESA and managed by UNESA. In connection with the growth of the population accompanied by the growth in the number of students conducting academic processes, every year the number of UNESA students increases. So that in 2014, UNESA had already drafted the development of the Baitul Makmur Mosque and was realized in 2018.

1.1 Formulation of the problem

1. What is the ratio of labor wage coefficients between RAB Offers from contractors (SNI / HSPK 2018 method), BOW and Implementation in the field in the UNESA Baitul Makmur Mosque construction project?
2. What is the ratio of labor wage coefficients between RAB Offers from contractors (SNI / HSPK 2018 method), BOW and Implementation in the field in the UNESA Baitul Makmur Mosque construction project?
3. What is the reason for the difference in the unit price of labor wage work between the RAB of Bid, BOW and Implementation in the field in the construction project of the UNESA Baitul Makmur Mosque?

1.3 Scope of problem

1. The research object will be carried out on the UNESA Baitul Makmur Mosque construction project
2. Calculation of wage coefficient and total unit price of labor wage work include: column structure work and plate structure of deck floor 2
3. This study only compares the index of labor wage coefficients and the total unit price of labor wage work based on the RAB of Bid, BOW and Implementation in the field.

II. LITERATURE REVIEW

A complete and meticulous project budget plan is a budget plan made by the contractor as the implementation of the work. This is understandable because the contractor wants to get a job with a reasonable profit. In general, the project RAB component consists of direct costs and indirect costs (Dani Hasan, H.S & Suryanto Mas, 2003:114-119).

2.1 Analysis SNI (Standard National Indonesia)

Analysis SNI (Standard National Indonesia) is an analysis which is the result of research conducted by experts in the center of settlement research and development as one of the government provisions in Indonesia in supporting the efforts of both central and regional governments in streamlining development funds as well as formulations for determining the unit price of each type of work.

2.2 Analysis Price of Field Units

According to Suryaningrum (2012), cost estimation is the process of calculating the volume of work, prices of various types of materials and work that will occur on a construction. Because estimates are made before the start of construction, the total cost obtained is estimated not the actual cost.

To determine the magnitude of the coefficient unit of labor wages, we need to pay attention to the basic assumption values. In determining the size of the wage coefficient there are a number of things to know about:

- a. Work productivity (work results)

The productivity formula defined by Suyadi (2009) is as follows:

$$\text{Productivity} = \frac{\text{Area of Work Volume}}{\text{Total of Worker}}$$

- b. Labor or workers

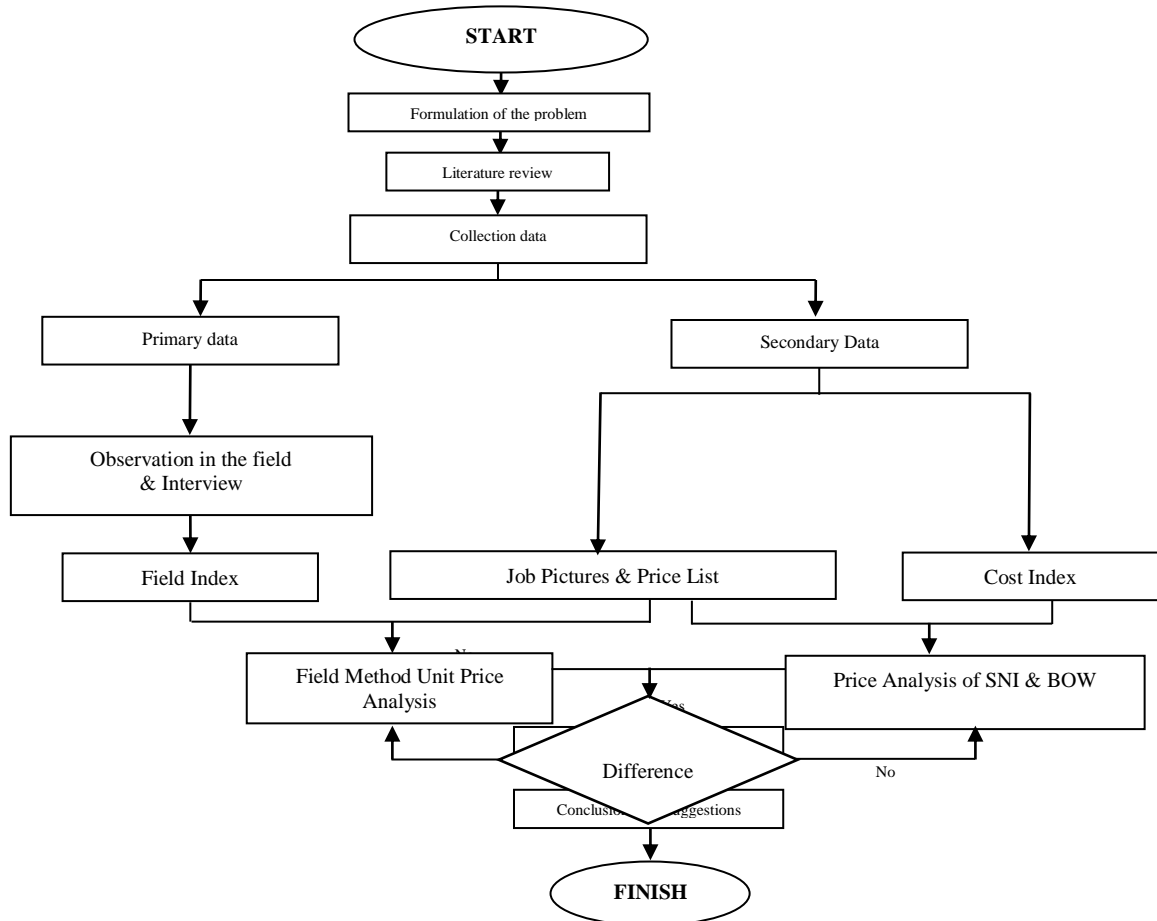
To calculate the wage coefficient value using the following formula:

$$\text{Coefficient} = \frac{\text{Total of Worker}}{\text{Area of Work Volume}}$$

III. RESEARCH METHODS

This research method uses descriptive quantitative methods.

A flow chart for problem solving can be shown in the following figure:



Picture 1. Picture of Final Project Compilation Flow Chart

IV. RESULTS AND DISCUSSION

The main objective in this study is to find out what method is most suitable for the UNESA Baitul Makmur Mosque Construction Project.

4.1 Results of Labor Productivity Analysis

When conducting a productivity calculation analysis, data collection and observation of each work in the field will first be carried out. These data include work volume of work items, length of observation in 1 day working hours, amount of area that can be completed, and the number of workers involved in implementing each item of work in the field.

Job items obtained during observations in the field :

1. Ironing column K1 with iron D19 mm
2. Ironing column K1 with iron ø10 mm
3. Formwork Column K1 (55 x 55)
4. Cast work Column K1 $f'c'=20,75$ MPa (K250)
5. Ironing Plate 2nd floor (concrete) ø10 mm

6. Ironing Plate 2nd floor (concrete) ø8 mm
7. Formwork Plate 2nd floor thick 12cm
8. Cast work Plate 2nd floor (concrete) thick 12cm f'c'=20,75 MPa (K250)

Table 1. Workforce Productivity Coefficient in the Field

A. Type of work : Ironing column K1 with iron D19 mm

Observation Date	Volume	Total of Workers				Productivity Coefficient			
		Foreman	Head of Handyman	Handyman	Prentice	Foreman	Head of Handyman	Handyman	Prentice
30/10/2018	399,79	1	1	1	2	0,0006	0,0025	0,0025	0,0050
01/11/2018	333,16	1	1	1	2	0,0008	0,0030	0,0030	0,0060
02/11/2018	373,14	1	1	1	2	0,0007	0,0027	0,0027	0,0054
03/11/2018	426,45	1	1	1	2	0,0006	0,0023	0,0023	0,0047
05/11/2018	333,16	1	1	1	2	0,0008	0,0030	0,0030	0,0060
Average productivity coefficient						0,0007	0,0027	0,0027	0,0054

B. Type of work : Ironing column K1 with iron ø10 mm

Observation Date	Volume	Total of Workers				Productivity Coefficient			
		Foreman	Head of Handyman	Handyman	Prentice	Foreman	Head of Handyman	Handyman	Prentice
30/10/2018	128,98	1	1	1	2	0,0019	0,0078	0,0078	0,0155
01/11/2018	106,84	1	1	1	2	0,0023	0,0094	0,0094	0,0187
02/11/2018	119,66	1	1	1	2	0,0021	0,0084	0,0084	0,0167
03/11/2018	136,75	1	1	1	2	0,0018	0,0073	0,0073	0,0146
05/11/2018	107,49	1	1	1	2	0,0023	0,0093	0,0093	0,0186
Average productivity coefficient						0,0021	0,0084	0,0084	0,0168

C. Type of work : Formwork Column K1 (55 x 55)

Observation Date	Volume	Total of Workers				Productivity Coefficient			
		Foreman	Head of Handyman	Handyman	Prentice	Foreman	Head of Handyman	Handyman	Prentice
05/11/2018	10,96	1	1	1	2	0,0228	0,0913	0,0913	0,1825
06/11/2018	8,22	1	1	1	2	0,0304	0,1217	0,1217	0,2434
07/11/2018	8,22	1	1	1	2	0,0304	0,1217	0,1217	0,2434
08/11/2018	10,96	1	1	1	2	0,0228	0,0913	0,0913	0,1825
09/11/2018	8,22	1	1	1	2	0,0304	0,1217	0,1217	0,2434
Average productivity coefficient						0,0274	0,1095	0,1095	0,2191

D. Type of work : Cast work Column K1 f'c'=20,75 MPa (K250)

Observation Date	Volume	Total of Workers				Productivity Coefficient			
		Foreman	Head of Handyman	Handyman	Prentice	Foreman	Head of Handyman	Handyman	Prentice
14/11/2018	19,58	1	1	3	3	0,0073	0,0511	0,1532	0,1532
Average productivity coefficient						0,0073	0,0511	0,1532	0,1532

E. Type of work : Ironing Plate 2nd floor (concrete) ø10 mm

Observation Date	Volume	Total of Workers				Productivity Coefficient			
		Foreman	Head of Handyman	Handyman	Prentice	Foreman	Head of Handyman	Handyman	Prentice
27/11/2018	175,94	1	1	2	2	0,0011	0,0057	0,0114	0,0114
28/11/2018	189,32	1	1	2	2	0,0011	0,0053	0,0106	0,0106
29/11/2018	163,79	1	1	2	2	0,0012	0,0061	0,0122	0,0122
Average productivity coefficient						0,0011	0,0057	0,0114	0,0114

F. Type of work : Ironing Plate 2nd floor (concrete) ø8 mm

Observation Date	Volume	Total of Workers				Productivity Coefficient			
		Foreman	Head of Handyman	Handyman	Prentice	Foreman	Head of Handyman	Handyman	Prentice
27/11/2018	112,69	1	1	2	2	0,0018	0,0089	0,0177	0,0177
28/11/2018	121,27	1	1	2	2	0,0016	0,0082	0,0165	0,0165
29/11/2018	104,91	1	1	2	2	0,0019	0,0095	0,0191	0,0191
Average productivity coefficient						0,0018	0,0089	0,0178	0,0178

G. Type of work : Formwork Plate 2nd floor thick 12cm

Observation Date	Volume	Total of Workers				Productivity Coefficient			
		Foreman	Head of Handyman	Handyman	Prentice	Foreman	Head of Handyman	Handyman	Prentice
27/11/2018	34,48	1	1	1	2	0,0073	0,0290	0,0290	0,0580
28/11/2018	37,85	1	1	1	2	0,0066	0,0264	0,0264	0,0528
29/11/2018	31,11	1	1	1	2	0,0080	0,0321	0,0321	0,0643
Average productivity coefficient						0,0073	0,0292	0,0292	0,0584

H. Type of work : Cast work Plate 2nd floor (concrete) thick 12cm f'c'=20,75 MPa (K250)

Observation Date	Volume	Total of Workers				Productivity Coefficient			
		Foreman	Head of Handyman	Handyman	Prentice	Foreman	Head of Handyman	Handyman	Prentice
05/12/2018	41,05	1	4	10	15	0,0008	0,0975	0,2436	0,3654
Average productivity coefficient						0,0008	0,0975	0,2436	0,3654

4.2 Comparison of Workers' Wage Coefficients between RAB Offers, BOW and Implementation

The following is the analysis of the work unit price coefficient index in 2018 on the construction project of the Baitul Makmur Unesa Mosque, Surabaya.

Table 2. Analysis of the Coefficient of Employment Unit Price Index in 2018

NO.	DESCRIPTION OF ACTIVITIES	OFFER COEFFICIENTS	BOW COEFFICIENTS	IMPLEMENTATION COEFFICIENT	UNIT	RATIO OFFERING WITH IMPLEMENTATION	RATIO BOW WITH IMPLEMENTATION
1	2	3	4	5	6	7 = 3 : 5	8 = 4 : 5
A.	Ironing column K1 with iron D19 mm				kg		
	Salary:						
	Foreman	0,0004		0,0007	M.H	0,59	0,00
	Head of Handyman	0,0007	0,0300	0,0027	M.H	0,26	11,09
	Handyman	0,0070	0,0900	0,0027	M.H	2,59	33,26
	Prentice	0,0070	0,0900	0,0054	M.H	1,29	16,63
B.	Ironing column K1 with iron ø10 mm				kg		
	Salary:						
	Foreman	0,0004		0,0021	M.H	0,19	0,00
	Head of Handyman	0,0007	0,0300	0,0084	M.H	0,08	3,56
	Handyman	0,0070	0,0900	0,0084	M.H	0,83	10,69
	Prentice	0,0070	0,0900	0,0168	M.H	0,42	5,35
C.	Formwork Column K1 (55 x 55)				m²		
	Salary:						
	Foreman	0,0330	0,0100	0,0274	M.H	1,21	0,37
	Head of Handyman	0,0330	0,0500	0,1095	M.H	0,30	0,46
	Handyman	0,3300	0,5000	0,1095	M.H	3,01	4,57
	Prentice	0,6600	0,2000	0,2191	M.H	3,01	0,91
D.	Cast work Column K1 f'c'=20,75 MPa (K250)				m³		
	Salary:						
	Foreman	0,0830	0,3000	0,0073	M.H	11,38	41,13
	Head of Handyman	0,0280	0,1000	0,0511	M.H	0,55	1,96
	Handyman	0,2750	1,0000	0,1532	M.H	1,80	6,53
	Prentice	1,6500	6,0000	0,1532	M.H	10,77	39,17
E.	Ironing Plate 2nd floor (concrete) ø10 mm				kg		
	Salary:						
	Foreman	0,0004		0,0011	M.H	0,35	0,00
	Head of Handyman	0,0007	0,0300	0,0057	M.H	0,12	5,27
	Handyman	0,0070	0,0900	0,0114	M.H	0,62	7,91
	Prentice	0,0070	0,0900	0,0114	M.H	0,62	7,91
F.	Ironing Plate 2nd floor (concrete) ø8 mm				kg		
	Salary:						
	Foreman	0,0004		0,0018	M.H	0,23	0,00
	Head of Handyman	0,0007	0,0300	0,0089	M.H	0,08	3,38
	Handyman	0,0070	0,0900	0,0178	M.H	0,39	5,07
	Prentice	0,0070	0,0900	0,0178	M.H	0,39	5,07
G.	Formwork Plate 2nd floor thick 12cm				m²		
	Salary:						
	Foreman	0,0330	0,0100	0,0073	M.H	4,52	1,37
	Head of Handyman	0,0330	0,0500	0,0292	M.H	1,13	1,71
	Handyman	0,3300	0,5000	0,0292	M.H	11,31	17,13
	Prentice	0,6600	0,2000	0,0584	M.H	11,31	3,43
H.	Cast work Plate 2nd floor (concrete) thick 12cm f'c'=20,75 MPa (K250)				m³		
	Salary:						
	Foreman	0,0830	0,3000	0,0008	M.H	98,80	357,09
	Head of Handyman	0,0280	0,1000	0,0975	M.H	0,29	1,03
	Handyman	0,2750	1,0000	0,2436	M.H	1,13	4,10
	Prentice	1,6500	6,0000	0,3654	M.H	4,51	16,42

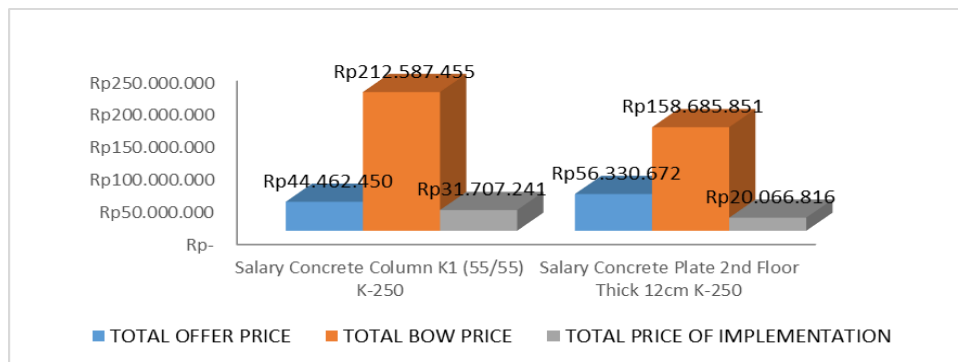
4.3 Results of Difference in Amount of Price of Work Unit between RAB of Bid, BOW and Implementation

Table 3. Offer and Implementation RAB Wage Unit Price List

NO.	DESCRIPTION OF ACTIVITIES	UNIT	OFFER COEFFICIENTS	BOW COEFFICIENTS	IMPLEMENTATION COEFFICIENT	TOTAL OFFER PRICE	TOTAL BOW PRICE	TOTAL PRICE OF IMPLEMENTATION	DIFFERENCE OFFER WITH IMPLEMENTATION	DIFFERENCE BOW WITH IMPLEMENTATION
1	2	3	4	5	7	9 = 4 X 6	10 = 5 X 6	11 = 7 X 8	12 = 9 - 11	13 = 10 - 11
A. Ironing column K1 with iron D19 mm										
Salary:										
	Foreman	M.H	0,0004		0,0007	Rp 48	Rp -	Rp 78	-Rp 30	-Rp 78
	Head of Handyman	M.H	0,0007	0,0300	0,0027	Rp 81	Rp 3.450	Rp 271	-Rp 190	Rp 3.179
	Handyman	M.H	0,0070	0,0900	0,0027	Rp 788	Rp 10.125	Rp 244	Rp 544	Rp 9.881
	Prentice	M.H	0,0070	0,0900	0,0054	Rp 770	Rp 9.900	Rp 433	Rp 337	Rp 9.467
					Total :	Rp 1.686	Rp 23.475	Rp 1.025	Rp 661	Rp 22.450
B. Ironing column K1 with iron ø10 mm										
Salary:										
	Foreman	M.H	0,0004		0,0021	Rp 48	Rp -	Rp 242	-Rp 194	-Rp 242
	Head of Handyman	M.H	0,0007	0,0300	0,0084	Rp 81	Rp 3.450	Rp 842	-Rp 761	Rp 2.608
	Handyman	M.H	0,0070	0,0900	0,0084	Rp 788	Rp 10.125	Rp 758	Rp 30	Rp 9.367
	Prentice	M.H	0,0070	0,0900	0,0168	Rp 770	Rp 9.900	Rp 1.347	-Rp 577	Rp 8.553
					Total :	Rp 1.686	Rp 23.475	Rp 3.188	-Rp 1.502	Rp 20.287
C. Formwork Column K1 (55 x 55)										
Salary:										
	Foreman	M.H	0,0330	0,0100	0,0274	Rp 3.960	Rp 1.200	Rp 3.149	Rp 811	-Rp 1.949
	Head of Handyman	M.H	0,0330	0,0500	0,1095	Rp 3.795	Rp 5.750	Rp 10.953	-Rp 7.158	Rp 5.203
	Handyman	M.H	0,3300	0,5000	0,1095	Rp 37.125	Rp 56.250	Rp 9.858	Rp 27.267	Rp 46.392
	Prentice	M.H	0,6600	0,2000	0,2191	Rp 72.600	Rp 22.000	Rp 17.525	Rp 55.075	Rp 4.475
					Total :	Rp 117.480	Rp 85.200	Rp 41.484	Rp 75.996	Rp 43.716
D. Cast work Column K1 f'c'=20,75 MPa (K250)										
Salary:										
	Foreman	M.H	0,0830	0,3000	0,0879	Rp 9.960	Rp 36.000	Rp 10.107	-Rp 147	Rp 25.893
	Head of Handyman	M.H	0,0280	0,1000	1,8237	Rp 3.220	Rp 11.500	Rp 182.366	-Rp 179.146	Rp 170.866
	Handyman	M.H	0,2750	1,0000	0,5570	Rp 30.938	Rp 112.500	Rp 50.134	-Rp 19.197	Rp 62.366
	Prentice	M.H	1,6500	6,0000	0,0928	Rp 181.500	Rp 660.000	Rp 7.427	-Rp 174.073	Rp 652.573
					Total :	Rp 225.618	Rp 820.000	Rp 250.034	-Rp 24.417	Rp 569.966
E. Ironing Plate 2nd floor (concrete) ø10 mm										
Salary:										
	Foreman	M.H	0,0004		0,0011	Rp 48	Rp -	Rp 131	-Rp 83	-Rp 131
	Head of Handyman	M.H	0,0007	0,0300	0,0057	Rp 81	Rp 3.450	Rp 569	-Rp 489	Rp 2.881
	Handyman	M.H	0,0070	0,0900	0,0114	Rp 788	Rp 10.125	Rp 1.024	-Rp 237	Rp 9.101
	Prentice	M.H	0,0070	0,0900	0,0114	Rp 770	Rp 9.900	Rp 910	-Rp 140	Rp 8.990
					Total :	Rp 1.686	Rp 23.475	Rp 2.635	-Rp 949	Rp 20.840
F. Ironing Plate 2nd floor (concrete) ø8 mm										
Salary:										
	Foreman	M.H	0,0004		0,0018	Rp 48	Rp -	Rp 204	-Rp 156	-Rp 204
	Head of Handyman	M.H	0,0007	0,0300	0,0089	Rp 81	Rp 3.450	Rp 888	-Rp 808	Rp 2.562
	Handyman	M.H	0,0070	0,0900	0,0178	Rp 788	Rp 10.125	Rp 1.599	-Rp 812	Rp 8.526
	Prentice	M.H	0,0070	0,0900	0,0178	Rp 770	Rp 9.900	Rp 1.421	-Rp 651	Rp 8.479
					Total :	Rp 1.686	Rp 23.475	Rp 4.113	-Rp 2.427	Rp 19.362
G. Formwork Plate 2nd floor thick 12cm										
Salary:										
	Foreman	M.H	0,0330	0,0100	0,0073	Rp 3.960	Rp 1.200	Rp 839	Rp 3.121	Rp 361
	Head of Handyman	M.H	0,0330	0,0500	0,0292	Rp 3.795	Rp 5.750	Rp 2.919	Rp 876	Rp 2.831
	Handyman	M.H	0,3300	0,5000	0,0292	Rp 37.125	Rp 56.250	Rp 2.627	Rp 34.498	Rp 53.623
	Prentice	M.H	0,6600	0,2000	0,0584	Rp 72.600	Rp 22.000	Rp 4.670	-Rp 67.930	Rp 17.330
					Total :	Rp 117.480	Rp 85.200	Rp 11.055	Rp 106.425	Rp 74.145
H. Cast work Plate 2nd floor (concrete) thick 12cm f'c'=20,75 MPa (K250)										
Salary:										
	Foreman	M.H	0,0830	0,3000	0,0008	Rp 9.960	Rp 36.000	Rp 97	Rp 9.863	Rp 35.903
	Head of Handyman	M.H	0,0280	0,1000	0,0975	Rp 3.220	Rp 11.500	Rp 9.745	-Rp 6.525	Rp 1.755
	Handyman	M.H	0,2750	1,0000	0,2436	Rp 30.938	Rp 112.500	Rp 21.927	-Rp 9.011	Rp 90.573
	Prentice	M.H	1,6500	6,0000	0,3654	Rp 181.500	Rp 660.000	Rp 29.236	-Rp 152.264	Rp 630.764
					Total :	Rp 225.618	Rp 820.000	Rp 61.005	Rp 164.613	Rp 758.995
I. Salary Concrete Column K1 (55/55) K-250										
	Ironing Column	kg	120,8086			Rp 407.367	Rp 5.671.965	Rp 508.952	-Rp 101.586	Rp 5.163.013
	Formwork Column	m2	7,2727			Rp 854.400	Rp 619.636	Rp 301.703	-Rp 552.697	Rp 317.934
	Cast work Column K - 250	m3	1,0000			Rp 225.618	Rp 820.000	Rp 250.034	-Rp 24.417	Rp 569.966
					Total Unit Price of Work	Rp 1.487.384	Rp 7.111.601	Rp 1.060.689	Rp 426.695	Rp 6.050.912
J. Salary Concrete Plate 2nd Floor Thick 12cm K-250										
	Ironing Plate	kg	49,7573			Rp 167.782	Rp 2.336.106	Rp 335.761	-Rp 167.980	Rp 2.000.344
	Formwork Column	m2	8,3333			Rp 979.000	Rp 710.000	Rp 92.127	-Rp 886.873	Rp 617.873
	Cast work Column K - 250	m3	1,0000			Rp 225.618	Rp 820.000	Rp 61.005	-Rp 164.613	Rp 758.995
					Total Unit Price of Work	Rp 1.372.399	Rp 3.866.106	Rp 488.893	Rp 883.506	Rp 3.377.212

Table 4. Recapitulation of Employment Wage Budget

No	TYPE OF WORK	VOLUME	UNIT	OFFER UNIT PRICE	BOW UNIT PRICE	IMPLEMENTATION UNIT PRICE	TOTAL OFFER PRICE	TOTAL BOW PRICE	TOTAL PRICE OF IMPLEMENTATION	DIFFERENCE OFFER WITH IMPLEMENTATION	DIFFERENCE BOW WITH IMPLEMENTATION
1	2	3	4	5	6	7	8 = 3 X 5	9 = 3 X 6	10 = 3 X 7	11 = 8 - 10	12 = 9 - 10
1	Salary Concrete Column K1 (55/55) K-250	29,89	m ³	Rp 1.487.384	Rp 7.111.601	Rp 1.060.689	Rp 44.462.450	Rp 212.587.455	Rp 31.707.241	Rp 12.755.209	Rp 180.880.214
2	Salary Concrete Plate 2nd Floor Thick 12cm K-250	41,05	m ³	Rp 1.372.399	Rp 3.866.106	Rp 488.893	Rp 56.330.672	Rp 158.685.851	Rp 20.066.816	Rp 36.263.856	Rp 138.619.035
Total Price							Rp 100.793.122	Rp 371.273.305	Rp 51.774.057	Rp 49.019.065	Rp 319.499.249



Picture 2. Graph of Recapitulation of Employment Wage Budget

4.4 Factors affecting the Price of the Implementation Work Unit

1. List of labor wage unit prices
2. Quantity or amount of labor used in the project
3. The level of expertise and age of the workforce
4. High interest in labor for the work they are engaged

V. SUMMARY AND CONCLUSION

In the results of the research that has been carried out it can be concluded that :

1. Work on It deck and column deck structure. 2 has a comparison of the magnitude of the ratio of the labor coefficient value is greater and smaller including the Work Formwork Column K1 (threaded D19) foreman coefficient ratio in RAB Offer with Implementation that is equal to 1.21 (greater RAB Offer), while BOW with Implementation 0.37 (smaller BOW). Work Formwork Column K1 carpenter head coefficient ratio on RAB Offer with Implementation that is equal to 0.3 (smaller RAB Bid), while BOW with Implementation is 0.46 (smaller BOW). Concrete Work Column K1 mason coefficient ratio on RAB Offer with Implementation that is equal to 1.8 (greater RAB Offer), while BOW with Implementation is 6.53 (greater BOW). Concrete Deck Plate Concrete Work Lt. 2 ratio of coefficients of worker / maid assistants to RAB Bidding with Implementation that is equal to 4.52 (greater RAB Bid), while BOW with Implementation is 16.42 (greater BOW)
2. The value of the unit price of labor wages also experiences a price comparison. Difference in unit price of labor wages between RAB Offer and Implementation in reinforced concrete work Column K1 55X55 K-250 with an area of 29.89 m³ of Rp. 12,755,208.79 (28.7% of RAB Offer) while the difference in the unit price of work between BOW and Implementation is Rp. 180,880,213.70 (85.1% of BOW). Then for the wages of reinforced concrete deck work Lt. 2 12cm thick K-250 with an area of 41.05 m³ the difference in the unit work price between the RAB of the Bid and the Implementation of Rp. 36,263,855.91 (64.4% of RAB Offer), while the difference in the unit price of work between BOW and Implementation is Rp. 138,619,043.82 (87.4% of BOW).
3. The magnitude of the ratio of the ratio and the difference in the budget for wage costs can be influenced by many factors, including the price of labor wages, the quantity or amount of labor used in the project, the level of expertise and age of the workforce, and the high interest in employment that he practiced.

Suggestions and Recommendations: In the results of the study it is known that there is a comparatively large value of wage unit prices between BOW analysis and Implementation, for project practitioners it is expected not to use BOW analysis in preparing a budget plan, but compiling using the latest SNI 2008 or

HSPK, so that the total the cost of work in the RAB that has been prepared by the contractor can compete and win the tender.

REFERENCES

- [1] Abd. Rahman, 2013. *Perbandingan Estimasi Anggaran Biaya Antara Metode Sni Dan Bow Pada Proyek Pembangunan Gedung Joang/Legiun Veteran Republik Indonesia.*
- [2] Aulia Q. Sukamto, Dkk, 2013. *Analisa Perbandingan Harga Satuan Pekerjaan Beton Bertulang Berdasarkan Sni Dan Software MS Project dani Hasan, H.S & Suryanto Mas. 2003. Manajemen Proyek 1. Surabaya Jurusan Teknik Sipil Fakultas Teknik Universitas Negeri Surabaya.*
- [3] Dhani & Endang 2014. *Studi Perbandingan Koefisien Upah Kerja Dan Bahan Di Lapangan Dan Standar Nasional Indonesia (Sni) Pada Proyek Pembangunan Gedung Kuliah Stikes Pamenang Pare Kediri.*
- [4] Ibrahim, B, 1993. *Rencana dan Estimate Real of Cost.* Jakarta: Bumi Aksara.
- [5] J. A. Mukomoko, 1985. *Dasar Penyusunan Anggaran Biaya Bangunan.* Jakarta: Gaya Media Pratama.
- [6] M2S, 1983. *Analisis BOW (Analisa Upah dan Bahan).* Bandung.
- [7] Mufaris, dkk, 2014. *Perbandingan Estimasi Anggaran Biaya antara BOW, SNI dan Metode Perhitungan Kontraktor pada Proyek Rumahy Susun (Rusun) Pulogebang Jakarta Timur.*
- [8] Sompie, dkk, 2014. *Analisis Koefisien Harga Satuan Tenaga Kerja Di Lapangan dengan Membandingkan Analisis Sni dan Analisis Bow Pada Pembesian Dan Bekisting Kolom.*
- [9] Suryaningrum Endang Larasati, Mahardhika Dhani, 2012. *Studi perbandingan koefisien upah kerja dan bahan di lapangan dan standar nasional Indonesia (SNI) pada proyek pembangunan gedung kuliah stikes pamenang pare Kediri.* Sekolah Tinggi Teknik Malang: Repository.
- [10] Suyadi, 2009. *Analisis Nilai Koefisien Pekerjaan Pasangan Batu Bata.* Universitas Narotama: Repository.