American Journal of Engineering Research (AJER)
e-ISSN: 2320-0847 p-ISSN : 2320-0936
Volume-9, Issue-3, pp-77-83
www.ajer.org
Research Paper Open Access

Analysis of Changes in Overpass Bridge Project Contract (Case study Bridge Overpass at Kilometer 54 + 050 Marabahan-Margasari Road)

Raftonado Situmorang, Henry Wardhana
Student of Master Program in Civil Engineering Lambung Mangkurat University
Lecturer of Master Program in Civil Engineering Lambung Mangkurat University
Corresponding Author: Raftonado Situmorang

ABSTRACT: *Project contract for a construction work must cover matters relating to technical and non-technical factors. The intended technical factors such as design drawings, budget plans, and technical specifications. While non-technical factors such as payment caya, problem solving, and force majeure. So after completing the work contract, it was expected that any problems that occur after the contract will be resolved by the parties.*

This research case study is located on National road of Banjarmasin-Margasari. The national road has a field junction with coal crossing. According to the regulation of governor of South Kalimantan Number 3 Year 2012, that for the transportation of mining proceeds was not allowed to use public roads, so it was necessary to make a special road or a non-field junction so that public roads and special roads do not intersect. Therefore, the private party of mine transport owners made the bridge overpass at the junction of the field. In its journey, there was a problem that occurs in the volume of the pile on the implementation with the planning data. Therefore, research on the contract of the work, that the work remains completed on time. Research was conducted with interviews and questionnaires. Research to solve the problems that occur with 5 choices, that is by deliberation for consensus, mediation, conciliation, arbitration, and by going through the courts. Research on the change of contracts, conducted with 6 choices, that is to increase or decrease the volume written in the contract (the fixed contract value), increase the volume written in the contract (value of the contract increases), add and subtract Type of activity (contract value increases), change the technical specifications according to field conditions, and change the schedule of the implementation. While the research for the recommendation of the bridge contract model was carried out with 5 options that is Lumsum contracts, Unit price, joint contract of Lumsum and unit price, contract percentage, and a turnkey contract.

The results of the research on 30 respondents of experts, obtained that the first choice done to solve the problem in the case study was to use the way deliberation with consensus. Then research on the type of contract change performed on the actual type of contract that exists is by adding a volume of employment with the value of increasing contracts. The latest research on alternative contract recommendations is the combined contract type of lumsum and unit price.

Keywords: *Construction Contracts, Overpass, Alternative Contracts*

Date of Submission: 25-02-2020 Date of acceptance: 05-03-2020

I. PRELIMINARY

Banjarmasin-Margasari Road is one of the national road access that is crossed by the active coal transport road. There are at least 5 coal crossing that pass through the access road, one of which is the Kilometer Trail 54 + 050 Road Banjarmasin-Margasari. In accordance with the local regulation No. 3 year 2012 concerning mining companies that must have their own roads, if there is a crossing, it is necessary to make a walkway or overpass, the company's owner of the Coal Transportation Road Creating bridges to facilitate road users across the coal transportation Road area, in the cooperation agreement with the PUPR Ministry was named Project Bridge at Overpass Kilometer 54 + 050 Road Banjarmasin-Margasari or in the contract between The owner of the job with the service provider is named Bridge Overpass Kilometer 6 Simpang Marabahan-

Margasari and financed purely from the fund CSR (Corporate Social Responsibility) The company of the coal Transport Road.

At the planning process of the bridge overpass Kilometer 54 + 050 Road Banjarmasin-Margasari, the consultant planners conduct the investigation of the land around the project, that is using the method penetration and hand borring. The investigation of the land, took 2 points of penetration that is each one in the direction of Marabahan and direction Margasari. In the process of the Penyondiran obtained the depth of hard soil that ranges in the depths of 36 to 42 meters. In the process of construction of the bridge, the contractor has ordered a pile in accordance with the design of the planner consultant with the depth of the pile 40 meters. So it is expected that the pile erection work item will be completed on time. But when the first erection test was carried out, the pile reached hard ground at a depth of 48 (forty eight) meters. Even at some subsequent erection at some point, some reach a depth of 52 (fifty two) meters. Finally there is a significant difference that requires the contractor to order again 1 (one) to 2 (two) pile of the pile of the board of the plot.

The difference between data from a planner consultant with this contractor leads to time delays. With these differences, it is necessary to analyze the contract form of the project bridge that does not pay attention to the project area that is indicated for the difference, so there is no delay.

II. REVIEW OF LITERATURE

The contract of understanding in Article 1313 of the Civil Code is as follows, "An agreement is an act in which one or more people commit themselves to one or more other people." While in Presidential Regulation No. 54 year 2010, the definition of contract is as follows, "Contracts for the procurement of goods / services, hereinafter referred to as contracts, are written agreements between The commitmen maker official and providers of goods / services or implementers of self-management."

Article 50 paragraph (3) of Presidential Regulation number 54 year 2010 concerning Procurement of Government Goods / Services, contracts for the procurement of goods / services are divided into 5 (five) types,that is: a. Lump Sum Contract; b. Unit Price Contracts; c. Combined Lump Sum Contract and Unit Price; d. Contract Percentage; and e. Turnkey Contract.

a. Lump Sum contract is a contract whose price (contract value) is certain and remains binding, and there is no possibility of price adjustment.
b. Unit price contract is a contract in which the total unit price of each unit or element of work with certain technical specifications is fixed, but for the amount of volume or quantity of work is estimated.
c. lump sum contract and unit price is a contract which is a combination of lump sum and unit price in 1 (one) work agreed upon.
d. Percentage Contract is a contract for the procurement of consultancy services / other services, provided the compensation received is based on a percentage of the value of a particular job.
e. Turnkey contract is a contract of procurement of goods / other construction work / services for the completion of all work within a certain time limit.

Addendum or contract amendment in the Republic of Indonesia Presidential Regulation No 16 of 2018 concerning Procurement of Government Services Goods in Article 54 concerning amendments to the Contract. Paragraph 1 reads as follows, "In the event that there is a difference between field conditions at the time of implementation with drawings and / or technical specifications / TORs specified in the Contract documents, the The Comitment Maker Official together with the Provider may make changes to the contract, which includes:

a. increase and / or reduce the volume stated in the contract;
b. increase and / or reduce types of activities;
c. changing technical specifications in accordance with field conditions; and / or
d. change the implementation schedule. "

Whereas in paragraph 2 an explanation is given that, changes to the contract referred to in paragraph 1 above which result in an increase in the value of the Contract, can be carried out with the terms of adding the value of the final contract to no more than ten percent of the costs written in the initial contract.

It can be concluded that there are 6 types of addendums or contract amendments that are in accordance with this study, that is:

a. increase and decrease the volume stated in the Contract (fixed Contract Value);
b. increase the volume listed in the Contract (contract value increases);
c. increase and decrease types of activities (fixed contract value);
d. increase type of activity (Contract Value increases);
e. changing technical specifications in accordance with field conditions; and
f. change the implementation schedule.

According to Law Number 2 year 2017, in Chapter XI regarding dispute resolution, it is explained that a dispute that occurs in a Construction Work Contract can be improved with the basic principle of deliberation

to reach consensus, if no consensus is reached, then it can be resolved by taking dispute resolution efforts. The business stages for dispute resolution referred to are:

a. mediation;
b. conciliation; and
c. arbitration

III. RESEARCH METHOD

The research flowchart can be seen in Figure III.1 below:

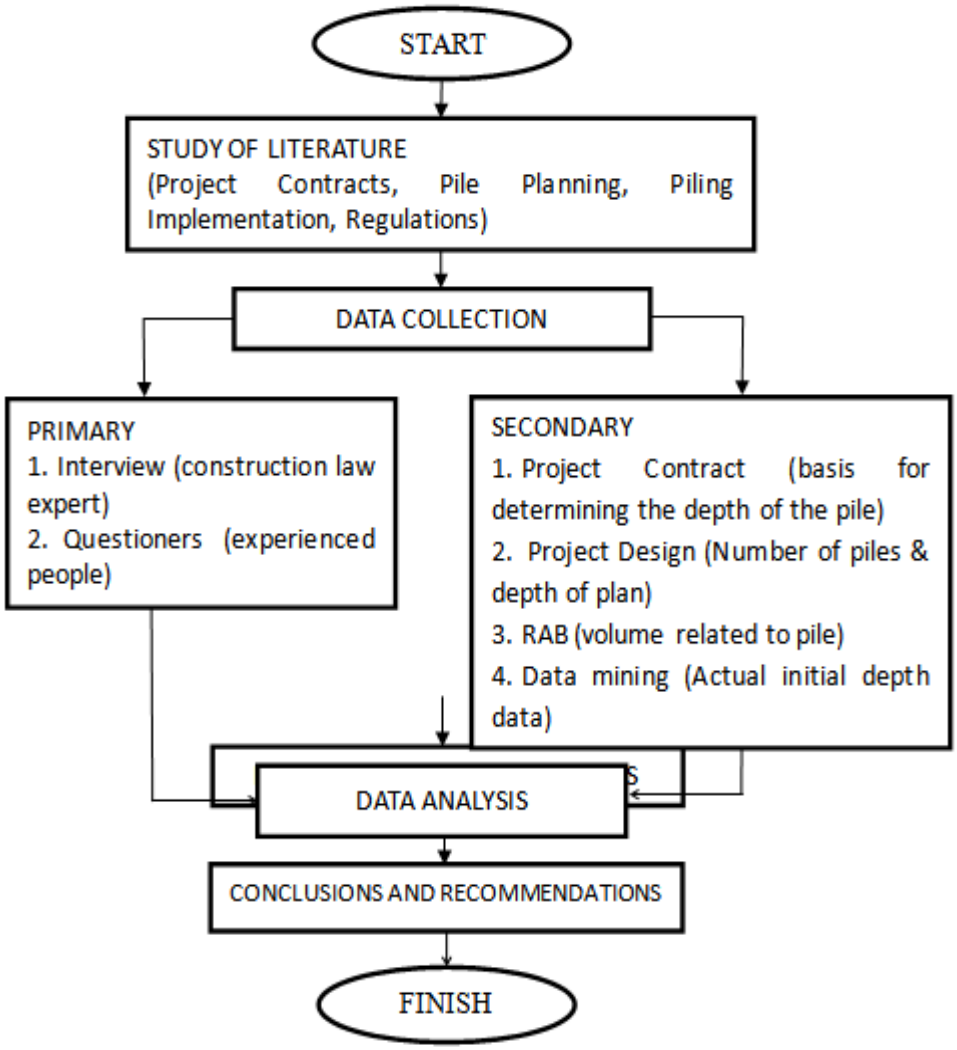

Figure III.1 Research Flowchart

IV. DATA ANALYSIS & DISCUSSION

Project Planning at Overpass Kilometer 54 + 050 Banjarmasin-Margasari Road was carried out by PT. Karya Agung Konsultan and soil investigation was carried out using a sondir method by a third party that is PT. Geo Inti Perkasa The third party carried out the sondir work on 16 February 2017. The Sondir report can be seen in Appendix 4.

The sondir process takes 2 sondir points scattered around the overpass project plan area. Point 1 (BH 1) obtained a depth of 40.4 meters. Point 2 (BH 2) obtained sondir depth reached 39.6 meters. The planner made the depth of the pile plan that is 40 meters (seen from the RAB made by the planner). The volume of spun pile piles with a diameter of 500 mm estimated by the planners is 6160 m 'and the number of pile points is 154 piles. This is then made a reference by the contractor in making the RAB and the process of procuring piles, types of piles, and the number of piles.

Piles are considered to have reached hard ground if during calendering, out of 10 beatings, the pile does not decrease by more than 5 cm. The two piles carried out, the actual depth for both points is 50 m '. This depth

is different from the depth of the plan in the design, which is 40 m. From this the parties present in the trial, that the depth of the pile must be in accordance with applicable regulations, that is to stop piling while calendering, decrease less than 2.5 cm for the last 10 blows, not based on the existing design.

The erection on the Kilometer 54 + 050 overpass project Banjarmasin-Margasari Road was held on July 2, 2017 to August 29, 2017. The total length of the piles that have been carried out is 2202.5 m '. The total volume of piles calculated by the planners is around 6160 m 'or 40 m' / pile point. If the calculation is done, then it takes about 1800 m 'for 45 pile points while from Table IV.1 it can be seen that in the implementation of piling at the first 45 points is 2202.5 m' or 48.94 m '/ pile point. When compared with the pile depth planning data, there is a difference in the total pile depth that is 402.5 m 'or about 8.94 m' / pile point. As a result of this difference, there is a change in the data between the actual data and the planned data in the original work contract, which is around 22.36% rounded up to 23%, so that further analysis needs to be done regarding the resolution of the problem.

The type of contract in the agreement between the owner and the contractor is actually not clearly seen in the contract, but when viewed in the Implementation Agreement for Overpass Kilometer 54 + 050 Bridge Construction Banjarmasin-Margasari Road it can be concluded that the Work Implementation Agreement is a type of Lump Sum contract, but space is still given to add cost or the Value of the Agreement.

The characteristics of private contracts themselves are more flexible than government contracts, because contract making is based more on the wishes of both parties. Then the responsibility for the realization and use of the budget is not as rigid as government contracts, especially the funds used by the government are public money. For the addendum itself, the private contract is easier to carry out, although the type of contract is Lump Sum, especially if there are other factors that require the holding of an addendum. Another factor in question is such as disruption of company operations, which will be more detrimental if an addendum is not carried out.

The identification of the method of completing the overpass work contract is carried out by the literature study method and interviewing the Construction Contract Expert. Then based on the identification made, it can be concluded that there are 5 types of overpass work contract settlement methods in accordance with this study, that is: deliberation to reach consensus; mediation; conciliation; arbitration; and court or litigation.

Identification of changes to this contract was carried out by the method of literature study and interviews with Construction Contract Experts. Then based on the identification made, it can be concluded that there are 6 types of addendums or contract amendments in accordance with this research, that is: increasing and reducing the volume written in the Contract (fixed Contract Value); increase the volume written in the Contract (contract value increases); add and subtract type of work activities (fixed contract value); add types of activities (Contract Value increases); changing technical specifications in accordance with field conditions; and change the implementation schedule.

This alternative identification is done by literature study methods and interviews on construction contract experts. Then based on the identification that is obtained, there are five kinds of alternative forms or contract models used in the overpass bridge project that is: Lump Sum Contracts, Unit price contracts, joint contract Lump Sum and unit price, contract Percentages, and receive contracts

The results of the questionnaires were accumulated by a total of 30 questionnaires, which answered well and correctly by respondents. The next step is the answer of the questionnaire collected, and then it is being changed to be able to see the weight of any existing problem. .

A. Problem solving

Based on the results of the research questionnaire distributed to the respondent, that is on question A, on the number 1 (one) to number 5 (five), regarding the method of completion of what can resolve the contract content disputes occurring in the project overpass at Kilometer 54 + 050 Banjarmasin-Margasari Road, the weighting result of contract dispute resolution method, the most high as a method of dispute resolution on the Overpass bridge project is through deliberation for consensus weighing 0.26 or 26 %. The second highest dispute resolution method is through mediation with a weight of 0.24 or 24%. Next is through conciliation with weights of 0.21 or 21%. Then the method of disputesresolution contracts is to use arbitrations with weights of 0.16 or 16%. While the lowest weight is through a court or litigation as a contractual dispute resolution method with a weight of 0.13 or 13%.

Method of dispute resolution which is the result of weighting the most of the 30 respondents are deliberations with consensus on the contract construction work of this overpass bridge, after analysed, has been analyzed by the regulations that apply the LAW Number 2 year 2017 and pursuant to the Agreement conducted by the parties or between the parties to the employment with the employment provider in this case the contractor overpass. It can then be applied in dispute the contents of the contract by the parties conducting the employment agreement.

B. Change of Contract

The research questionnaire was distributed to the respondent, on the question B choice number 6 (six) to number 11 (eleven), regarding the type of contract change (addendum), what can solve the problems that occurred in the project overpass at Kilometer 54 + 050 Banjarmasin-Margasari Road, can be seen that the highest weight as a method of selecting a contract change on the overpass bridge project is to increase the volume of the work with the value of the contract increased by a weight of 0.20 or 20%. The method of choosing the second highest contract change is to increase/decrease the job volume with a contract value that does not change with a weight of 0.18 or 18%. The next is to change the technical specifications according to the condition of the field with a weight of 0.17 or 17%. Then the method of selecting the fourth and fifth contract changes is to change the schedule of the implementation with a weight of 0.16 or 16% and by adding and reducing the type of activity with a fixed contract value with a weight of 0.15 or 15%. While the lowest weight is to use the selection of contract changes by adding a type of activity with a contract value that changes with a weight of 0.14 or 14%.

Then this was applied to the job contact. The initial contract value is Rp. 47,183,211,000,00 then the volume change is 23% according to the volume size that has been done from the 15 point initial pile in the work item related to the pile. The value due to change of contract volume, changed to Rp. 49,369,077,822.30, there is an increase in the contract value of 6.24% from the initial contract. It was still under the maximum requirements of the change of contract value based on Perpres No 16 year 2018 at article 54 paragraph 2. It can be concluded that the contract change by increasing the volume of the work with the value of the contract increased in the contract construction work of overpass this bridge can be used by the parties.

The results of the research by increasing the volume of the work with the value of the contract increase on the contract construction work of this overpass, after analysed, has been reviewed with the prevailing regulation of the Presidential decree No. 16 year 2018 and pursuant to the Agreement made by the parties or between the party of employment with the job provider in this case contractor overpass. So the change of contact by increasing the volume of work with the value of this increasing contract can be applied in the employment contract by the parties who have done this work alliance. It was also a major consideration by the job owner because in the cooperation agreement with the government, the owner of the job has a time commitment and it will have a bad impact if the job owner does not carry out its commitment. The real impact will be accepted by the company owner is not able to operate the company's coal transportation operations. This would certainly be a big disadvantage for the company's coal transport road owners. Therefore, carrying out a commitment well with the Government is the only way that the job owner can operate smoothly and benefit from the operation.

C. Contract Model Recommendations

The research questionnaire was distributed to respondents asked questions about the recommendation model of the Overpass bridge project contract in question C, choice of number 12 (twelve) to 16 (sixteen), on what form of contract should be Used on a project contract overpass at Kilometer 54 + 050 Banjarmasin-Margasari Road, on the project contract model of overpass recommended by the respondent, that the highest weight as a recommendation of the contract model on Overpass bridge project is to apply the type of Lump Sum joint contract with unit price at a weight of 0.26 or 26%. The second highest recommended Model is to use the unit price contract type with a weight of 0.24 or 24%. The next is to use a Lump Sum contract type and a percentage contract with the same weight of 0.17 or 17%, but the amount of weight choosing a Lump Sum contract is more than the one who chooses the percentage contract. While the lowest weight is to use the Turn Key contract model on an overpass bridge project, weighing 0.16 or 16%.

Overpass contract model can be an alternative model or recommendation model for the party that will carry out the overpass bridge project, is a type of project contract shaped combined Lump Sum and unit price. This result was done to some experts who have followed this problem that is from the Government and private parties.

The results of interviews with experts from the Government, mentioned that for the work of the bridge, the contract that is usually used is the type of contract combined Lump Sum with unit price, because in a bridge work there are 2 types of structure is the upper and lower structure, in the upper structure can be done calculations and measurements for sure. As for the lower structure, there can be no calculation and definite measurements due to the unwillingness of hard soil depth and the cost of planning is limited to Soil Investigation, at some point, cannot be thorough, There are often problems with the depth of the pile.

The results of interviews with experts from the private sector, that is the field directors of the company that owns the work, regarding the contracts that are commonly used in bridge work are types of Lump Sum contracts. This is because the owner (private) does not want this work to increase in value again, because it will increase the outgoing costs for the company, which will ultimately reduce the company's profit. Moreover, the costs already incurred are fairly large.

The results of interviews with experts from other private parties, that is a director of a contracting company, regarding contracts that are often used in overpass bridge projects are the type of Lump Sum contract and the type of combined Lump Sum contract with Unit Prices. When cooperating with the government, what is often used is the type of combined Lump Sum contract with the Unit Price. Whereas if cooperating with the private sector, then what is used is the type of Lump Sum contract. This is caused by differences in the views of the job owner, in this case the owner of the job is the government and the owner of the job is private.
Prevention needs to be done for the contractor implementing a bridge project, so there is no delay in project implementation. Prevention is as follows:

1. Include a 10% reserve fund in the work contract;
2. Using the combined type of lump sum contract and unit price;
3. Entering dispute resolution by using deliberation to reach consensus;
4. Carry out additional soil investigations (other than data from consultant planners) using machine drills;

V. CONCLUDING

Solving problems during the project implementation period must be carried out as soon as possible so that there is no project delay which will certainly harm all parties. Resolving the existing problems in this research case study, the following conclusions are obtained:

1. The best choice in this research is to solve the problem of differences in the volume of the pile during planning and project implementation, especially in the form of the project contract bridge overpass Kilometer 54 + 050 Banjarmasin-Margasari National Road between the Work Owner and the Service Provider a delay occurs when the implementation is by holding a consensus with the consensus.
2. The contract change method that can be used both in terms of the applicable regulations and the work contract in the Overpass Bridge project especially the Overpass at Kilometer 54 + 050 Banjarmasin-Margasari National Road is the method of adding work volume with the contract value increasing. This method can be applied to this project and the cost budget was engineered.
3. Experts who are struggling with the Overpass Bridge project prefer to recommend the type of project contract or work agreement, that is the Joint Lump Sum project contract at Unit Price.

Based on the conclusions that have been obtained from this study. Then suggestions can be given that can be used both for further research as well as for those who experience a similar situation in an overpass project, that is:

1. Conduct further research on other overpass projects to be able to compare the results of research on this project with other projects, in order to get good results.
2. The parties experiencing similar conditions with this overpass project can use the results of this study as reference material in carrying out a policy, but must also pay attention to its effect on the overall work.
3. The project owner, especially the overpass project, is advised to prepare a reserve of 10% of the contract value to anticipate technical problems that occur during the implementation period.
4. If the implementation time cannot be fulfilled due to the addition of the volume of the piling, both the time of ordering, mobilization and implementation, it is advisable to make changes to the contract by increasing or extending the implementation time.

REFERENCES

[1]. FIDIC, 1999. Red Book. Geneva: FIDIC.
[2]. Gay, L.R. and P.L. Diehl. 1992. Research Methods for Business and Management. New York: Macmillan Publishing Company.
[3]. Hansen, Seng. 2015. Manajemen Kontrak Konstruksi Pedoman Praktis Dalam Mengelola Proyek Konstruksi. Jakarta: Gramedia Pustaka Utama.
[4]. Japril. 2015. Tesis Analisis Bentuk Kontrak Proyek Pengeerukan Untuk Menghindari Terjadinya Perselisihan (Studi Kasus Pelabuhan Khusus PT Indocement Tunggal Prakarsa Tbk). Banjarmasin: Program Studi Magister Teknik Sipil Universitas Lambung Mangkurat.
[5]. Kitab Undang-undang Hukum Perdata Indonesia. 2014. Jakarta: Sinarsindo Utama.
[6]. Lestari, I Gusti Agung Ayu Istri. 2013. Perbandingan Kontrak Konstruksi Indonesia Dengan Kontrak Konstruksi International. Mataram: Ganec Swara
[7]. Presidential Regulation of the Republic of Indonesia Number 16 Year 2018 Concerning Procurement of Government Services (Peraturan Presiden Republik Indonesia No 16 Tahun 2018 Tentang Pengadaan Barang Jasa Pemerintah)
[8]. Presidential Regulation of the Republic of Indonesia Number 54 of 2010 concerning Procurement of Government Goods / Services (Peraturan Presiden Republik Indonesia Nomor 54 Tahun 2010 Tentang Pengadaan Barang/Jasa Pemerintah)
[9]. Presidential Regulation of the Republic of Indonesia Number 70 of 2012 concerning the Second Amendment to Presidential Regulation Number 54 of 2010 concerning Procurement of Government Goods / Services. (Peraturan Presiden Republik Indonesia Nomor 70 Tahun 2012 Tentang Perubahan Kedua Atas Peraturan Presiden Nomor 54 Tahun 2010 Tentang Pengadaan Barang/Jasa Pemerintah.)
[10]. Presidential Regulation Number 4 of 2015 concerning the Fourth Amendment to Presidential Regulation Number 54 of 2010 concerning Procurement of Government Goods / Services (Peraturan Presiden Nomor 4 Tahun 2015 Tentang Perubahan Keempat Atas Peraturan Presiden Nomor 54 Tahun 2010 Tentang Pengadaan Barang/Jasa Pemerintah)

[11]. Reksohadipradjo, Sukanto. 1997. Manajemen Proyek. Yogyakarta: BPFE.
[12]. Rizal, Fahmi. 2012. Kajian Keterlambatan Penyelesaian Pekerjaan dan Penanganannya pada proyek pembangunan dan rehabilitasi fasilitas publik studi kasus Proyek Pengembangan RSUD Datu Sanggul Kabupaten Tapin. Banjarmasin: Program Studi Magister Teknik Sipil Universitas Lambung Mangkurat.
[13]. Soeharto I. 1995. Manajemen proyek dari konseptual sampai operasional. Jakarta: Penerbit Erlangga
[14]. Undang-undang Republik Indonesia Nomor 30 Tahun 1999 Tentang Arbitrase Dan Alternatif Penyelesaian Sengketa
[15]. Undang-undang Republik Indonesia Nomor 2 Tahun 2017 Tentang Jasa Konstruksi
[16]. Yasin, Nazarkhan. 2003. Mengenal Kontrak Konstruksi di Indonesia. Jakarta: Gramedia Pustaka Utama.

Raftonado Situmorang, ET.Al "Analysis of Changes in Overpass Bridge Project Contract". *American Journal of Engineering Research (AJER)*, vol. 9(03), 2020, pp. 77-83.