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Rehabilitation Methods of Rasuna Said House in Agam Regency, West Sumatra

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Abstract

Efforts to preserve buildings, especially cultural heritage buildings, can be carried out in various ways depending on the type of damage to the building. Likewise, the damage to the building is caused by many factors, and if the cause of the damage is known, then it is necessary to find out how to carry out rehabilitation/treatment that is most appropriate to the type of damage that occurred. Meanwhile, in Indonesia, the manual for repairing cultural heritage buildings does not yet have the same standard. For this reason, research is needed to determine how to rehabilitate cultural heritage buildings, because the way the work is done has a different method from buildings in general. Rasuna Said's house is one of the cultural heritage buildings located in Agam Regency, West Sumatra Province. Historically, this building was once the home of Hj. Rasuna Said, a well-known National Hero who was persistent in fighting for the independence of the Indonesian people during the Dutch colonial period. To honor his struggle and preserve the history of this house building, in 2017 the Government has designated Rasuna Said's house as a National Rank cultural heritage by decree of the Minister of Education and Culture Number 370/M/2017 [1]. Tela (2021), stated that from the results of previous research, regarding Rasuna Said's house, it was stated that this house suffered a lot of damage, both on the roof, roof wood frame, and building walls. Therefore, to follow up on the results of the research, the researcher considers it necessary to conduct research on the work method of repairing damage to the cultural heritage building of Rasuna Said's house in Agam Regency, West Sumatra. This research is devoted to examining the method of repairing architectural components. Because the building of Rasuna Said's house based on the results of previous research, damage occurred to architectural components consisting of roofs, ceilings, walls, windows, doors and floors of the building. By using the method of collecting data through field observations/observations and the desk study method, namely the method of collecting data and information through the study and analysis of data and information using secondary data, either in the form of reports, references, photos and maps. The analysis that will be carried out is data processing to produce a plan document for the rehabilitation of cultural heritage buildings by considering the data from measurements, descriptions, identification, photography and research that has been carried out. This rehabilitation method is to obtain results that are in accordance with the initial building, both in terms of form, material and the way the rehabilitation works. The results of this study are the basis for the preparation of a building improvement plan which includes the concept of improvement and recommendations on how to carry out repairs to the Rasuna Said house as a cultural heritage building.

Keywords
rehabilitation methods; culture heritage; rasuna said house

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I. Introduction

The method of rehabilitating buildings in order to maintain the preservation of Cultural Conservation buildings is an absolute thing that must be done. Because the building has a period of time for different treatments depending on the quality of the material used for the building in question. Based on the regulation of the Minister of Public Works number 24 of 2008 concerning Guidelines for Building Maintenance and Maintenance [1]. Building maintenance is an activity to maintain the reliability of the building along with its infrastructure and facilities so that the building is always functional, while building maintenance is an activity to repair and/or replace building parts, components, building materials, and/or infrastructure and facilities so that the building remains intact. decent function. Cultural heritage buildings have a specialty in carrying out repairs, meaning that repairs cannot be carried out like repairs in general. In the regulation of the Minister of Public Works and Public Housing of the Republic of Indonesia Number 01 of 2015 concerning preserved cultural heritage buildings, it is stated in article 8 paragraph 2, the building safety requirements consist of: a. structural components must be able to guarantee the fulfillment of the building's ability to support loads, prevent and overcome fire hazards, lightning hazards, and natural disasters; b. the use of flammable original materials must receive certain treatment (fire retardant treatment); and c. the use of new materials must be non-combustible. The rehabilitation method for Cultural Conservation buildings is not the same as the general building implementation method. Cultural Conservation Law No. 11 of 2010 Chapter VII Article 53 paragraph (3), the procedure for preserving cultural heritage must consider the possibility of returning to its initial condition as before conservation activities. When carrying out rehabilitation, it must be carried out through efforts to restore the condition of a cultural heritage building so that it can be used efficiently for its current function by means of certain repairs or changes while maintaining historical, architectural, and cultural values. In maintaining the originality of the building as it was in its original state, it is necessary to take appropriate rehabilitation steps, such as making repairs using wood materials, repairing walls using a mixture of cement, lime.

From the research conducted by Tela, et al (2021) stated that the condition of the damage to the building of Rasuna Said's house can be categorized into moderate damage. The components that were damaged were architectural elements, with the percentage of damage below 35%. While the structural elements can be categorized as still functioning properly. As a result of changes made to the building so that it is no longer in accordance with its original condition, the Cultural Conservation building is categorized as moderately damaged. Research conducted such as Arief Subakti Ariyanto 2020 in his article entitled Analysis of Types of Damage to High-rise Buildings. Research by Eko Sudarmono, (2010). Analysis of prioritizing the rehabilitation of public elementary school buildings in regional development planning in Tulung Agung Regency. This research is how the working method to restore this building to its original state. For this reason, this research takes the title "Method of rehabilitation of Rasuna Said's house as a Cultural Heritage Building in Agam Regency, West Sumatra".

II. Review of Literature

2.1 Rehabilitation

The rehabilitation or maintenance referred to in this study is the technical planning of cultural heritage buildings in the context of restoration efforts by restoring the condition of a cultural heritage building so that it can be used efficiently for its current function by means of certain repairs or changes while maintaining historical, architectural and cultural values. [7] In Law No. 11 of 2010 concerning Cultural Conservation in article 77 it is stated, Restoration of damaged Cultural Conservation Buildings and Cultural Conservation Structures is carried out to restore physical conditions by repairing, strengthening, and/or preserving them through reconstruction, consolidation, rehabilitation, and restoration. Rehabilitation is repairing partially damaged buildings with the intention of using them according to certain fixed functions, both architecture and building structures are maintained as before, while utilities can be changed. The research will guide the existing regulations to analyze the damage and determine the method of rehabilitation of Rasuna Said's house, as well as other theories in accordance with the planning for the rehabilitation of cultural heritage buildings. Based on previous research, namely the analysis of the restoration of the Rasuna Said house as a cultural heritage building, it is known the types of damage to the building, both structural damage and architectural damage. 2.2 Degree of Building Damage According to the Regulation of the Minister of Public Works Number 24 of 2008, that building damage is the non-functioning of the building or building components due to shrinkage/expiration of the age of the building, or due to human activities or natural behavior such as overloading of functions, fire, earthquake, or other similar causes. . The intensity of damage to buildings can be classified into three levels of damage, namely: 1.Minor Damage a). Minor damage is damage, especially to non-structural components, such as roof coverings, ceilings, floor coverings, and infill walls. b). Treatment for minor damage, the maximum cost is 35% of the highest unit price for the construction of a new building that applies, for the same type/class and location. 2.Medium damage a). Moderate damage is damage to some non-structural components, and or structural components such as roof structures, floors, and others. b). Treatment for moderate damage, the maximum cost is 45% of the highest unit price for the construction of new buildings that apply, for the same type/class and location. 3.Heavy damage a). Serious damage is damage to most of the building components, both structural and non-structural, which, after being repaired, can still function properly.

The maximum fee is 65% of the highest unit price for the construction of a new building that applies, for the same type/class and location. Based on the directorate general of education and culture that the level of damage to each building component is determined in 5 (five) categories, namely very lightly damaged, lightly damaged, moderately damaged, heavily damaged and very heavily damaged. Damage to buildings can occur in building elements such as in; a.Foundation The foundation is the main structural component located at the bottom which serves to support a building period. b.Column Column is an element that is formed vertically in the form of support poles that resist the axial compressive forces of the building. The percentage of column damage in one mass of the building is the resultant damage to the columns of the building. c.Beam Beam is an element that is formed horizontally which is also known as a flexural element that resists the transverse force and transmits it to the column. The percentage of beam damage in 1 building mass is the resultant damage to the beams of the building. d.Floor Plate Floor slab is a floor that is not located above the ground directly, is a floor level that divides between one level and another level. e.Roof Roof damage is the sum of the damage to the roof covering and the

roof truss structure, including the curtains. The percentage of roof damage in 1 building mass is the resultant percentage of the damaged roof compared to the entire roof of the building. f.Wall The percentage of wall damage in 1 building mass is the resultant percentage of the damaged wall area compared to the total number of walls in the building. g. Ceiling Damage to the ceiling is the sum of the damage to the ceiling and the ceiling frame structure. The percentage of roof damage in 1 building mass is the resultant percentage of the damaged roof compared to the entire roof of the building. h.Window (glass), door, Kosen Percentage of work.

The use of windows, doors and frames in 1 building mass is the resultant sum of the number of windows, doors and frames in that building. i.Floor The percentage of floor damage in 1 building mass is the resultant area of the damaged floor compared to the total floor area of the building. Based on the level of damage to the building, further rehabilitation will be carried out to restore it according to the level of distress. Rehabilitation is the restoration of a previous state so that it can function properly in its former state. Rehabilitation is defined as a recovery process to reach its original state when an object has been damaged or destroyed (Subramaniam, 2016) [12]. The reasons for an object or building to rehabilitate are; damage due to environmental effects, functional requirements or new loading which includes modifications to the structure, accidental damage.

As stated in the Burra Charter (ICOMOS), [17] preservation must maintain, repair or show as much historical traces as possible on a historical object, whether it is a building or an artifact. In addition, the preservation must also consider the safety, maintenance and future of these historical objects. The final use of a preserved building is also very important. In the Cultural Conservation Law number 11 of 2010, article 77 states that the Restoration of Cultural Conservation Buildings and Structures is carried out to restore physical conditions by repairing, strengthening, and/or preserving them through reconstruction, consolidation, rehabilitation, and restoration works. Furthermore, in the restoration of the Cultural Conservation must pay attention to: a) the originality of the material, shape, layout, style, and/or workmanship technology; b) original condition; c) use of techniques, methods, and materials; and d) competence of implementers in the field of restoration.

III. Research Method

3.1 General pproach

Planning for the restoration of Rasuna Said's house is carried out through a conservation approach and principles by considering the important value of the building and the technical principles of preservation as follows:

1) The authenticity of the material, the authenticity of the design, the authenticity of the workmanship, and the authenticity of the setting are maintained as much as possible.
2) The original part of the object that has been damaged or weathered and has high archaeological value, as far as possible is maintained by means of conservation; replacement with new material is only done if it is technically impossible to do it by means of conservation and must be distinguished from the original and properly documented.
3) The method of preservation must be "reversible", meaning that the materials and methods of preservation must be corrected, if in the future better materials and technology are found and guarantee the condition of their sustainability.

4) Conservation handling techniques must be effective, efficient, durable and safe for objects and the environment.

3.2 Implementation Method

The stages of work in the Rasuna Said House Rehabilitation Planning are carried out in the following stages:

a) Initial measurement and identification

This stage is the research and documentation stage which consists of collecting data such as photos of the location and its surroundings, the existing condition of the house and its environment. The existing conditions will be taken into consideration in future planning.

b) Architectural Recovery Plan and Structural Improvement

At this stage the planning team will provide an overview of the existing condition of the damaged building, the factors causing it, the extent of the damage, and the plan for its handling. Each damage condition is informed in detail accompanied by photos, pictures and required information. Management plans in the form of architectural restoration and structural repairs are also informed in detail along with photos, drawings and required information, required costs, implementation methods, and implementation schedule.

c) Development of plans

At this stage, sketch drawings are finalized in the form of planning drawings, already containing cost calculations and technical specifications including architectural material elements.

d) Finalization of the Design

All planning stages have been completed including previous reports, it is only a matter of perfecting if there are revisions. Technical drawings and 3D visualizations must be completed together with the final collection of all reports.

e) Implementation of Rehabilitation

Carry out rehabilitation together with lecturers, students and the local community.

IV. Result and Discussion

Rasuna Said's house is located at Jalan Udin Rahmani No. 135 Panyinggahan Jorong Kubu Baru Nagari Maninjau, Tanjung Raya District, Agam Regency, West Sumatra Province. According to some sources, this house was completed in 1917 and the number 1917 was also found on the concrete pillar of the fence to the right of the entrance. The plan of the house is rectangular, with a two-story building. The building materials are made of wood and concrete, such as the roof with zinc material, the first floor with ceramic material on the front and middle, the back floor using cement. While the second floor of this house building uses boards with wood construction materials. Tela (17).

Methods of Rehabilitation of Rasuna Said's House The planning for the rehabilitation of Rasuna Said's house was made based on the results of previous research, where one of the recommendations from the research results was to make a method for the rehabilitation or maintenance of Rasuna Said's house as a Cultural Heritage Building. The following will explain the method of each element of the house that will be rehabilitated.

Floor Rehabilitation Methods. The first floor of the house will be returned to its original position, namely the stage-shaped floor is under the floor. For the first floor, the material will also be returned by reinstalling the wooden floor. Because the current condition of the floor is to use a ceramic floor that has been changed from the shape and material of the floor when the building was first built. To restore the condition of the floor

to its original shape, it is done by raising the middle floor so that it is parallel to the floor at the front. The position of the floor beams is right above the rectangular foundation that protrudes above the tiled floor now. Installation of wooden floors by not dismantling the existing ceramic floors. The floor framework uses wood with good quality, no defects and selected wood in a completely dry condition. Before installing all wooden frames must be sprayed against termites. The condition of the floor is now as shown in Figure 1.

***Figure 1**. Existing condition of the 1st floor.*

The method of working on the 1st floor, namely the wooden floor framework is installed on an existing foundation with a height of 80 cm from the current floor surface or the floor level is parallel to the surface of the front porch floor. The floor framework uses wooden beams with a size of 8 x 15 cm, mounted on the foundation on the column and the foundation on the wall mounted transversely from the floor plan position. Furthermore, the wooden beam frame above the transverse beam is installed with a transverse beam measuring 6 x 15 cm with a distance of 60 cm between one beam and another. The detailed drawing of the wooden floor installation is shown in Figure 2.

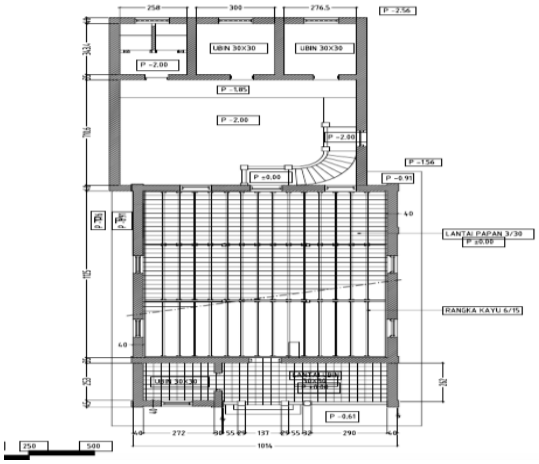

***Figure 2.** Details of wood floor installation*

Furthermore, on the beam measuring 6 x 15 cm, a floor plank with a size of 3 x 30 cm is installed as a floor covering. The boards are installed parallel to the neat, tight, no gaps between one board with another board. So that the installation is neat and there are no gaps or cavities, the board is formed with a groove and tongue system, as shown in Figure

3. As a finishing of the wooden floor, then the board is polished and polished, the floor polishing material is a coating layer of solvent base type, the method of use follows manufacturer's instructions.

The method of working on the second floor, to restore the floor material to its original condition, is to use boards, as in Figure 4.5, the floor that currently uses plywood will be demolished. The demolition must be carried out very carefully so that the wooden floor frame is not damaged. After the plywood floor has been dismantled, a careful inspection of the floor framework is carried out to determine if there is any damage to the wooden frame. If it is found that there is a damaged wooden frame such as being eaten by termites, repairs will be carried out, both minor repairs and moderate repairs.

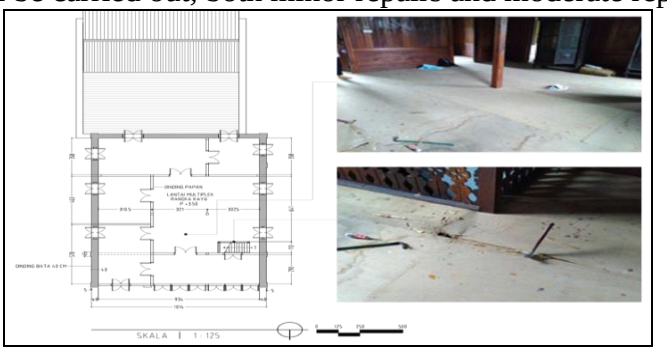

Figure 3. *2nd floor using plywood finishing*

The method of carrying out the work on the wooden floor on the second floor is the same as the installation on the first floor, because on the second floor, a frame made of wood is used. The replacement of the wooden frame is carried out on damaged wood, while the plywood as a floor covering is replaced by all, by dismantling all the installed plywood. After all the plywood is dismantled, then check all the wooden frames carefully. If a damaged wooden frame is found, whether lightly damaged, moderately damaged, or heavily damaged, it must be repaired first before the floor covering is installed.

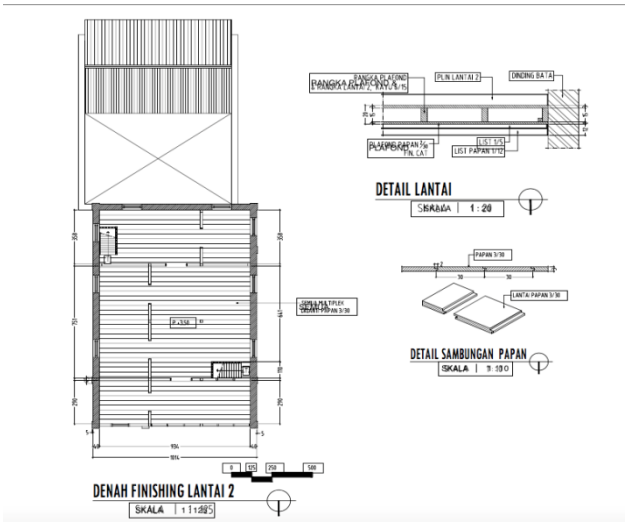

Figure 4. *Second Floor Rehabilitation Plan*

Wall Rehabilitation Method The walls of Rasuna Said's house are made of wood and bricks. The walls with brick material are installed on the first floor, while the walls on the second floor use wood or boards. The condition of the exterior brick walls of the house, the

plaster is porous and the paint is peeling off. For porous walls, repairs must be made using the same material. How to repair a porous wall, first stripping the layer of porous brick walls until the masonry is visible. After stripping, the wall is ready to be plastered using a mixture of cement, sand and water. A mixture of cement and sand with a ratio of 1 to 4, namely 1 cement and 4 sand or following the requirements specified in the concrete standard.

Figure 5. *Damage to brick walls*

In carrying out the rehabilitation of the brick wall, the first work to be done is the work of stripping the layer of porous walls or plaster. After all layers of porous walls are opened, plastering materials are prepared, plastering materials, namely good quality sand, cement and clean water so that the cement and sand mixture binds perfectly. The working tools for plastering are; A hoe is used to make stucco mortar, a mortar / mortar spoon is used to attach the stucco mortar to a brick wall, a bucket is used to measure the mortar and is used to take water and to carry the stucco mortar, thread is used as a tool for workers to guide workers so that the plaster wall is flat and smooth. perpendicular, nails are used as thread hooks and a reference after the measurement is complete, hammer is used to drive nails, lot is used as a tool to ensure flatness or perpendicularity, water tanks are used to collect water for plastering needs, sand sieve is used to cover sand from dirt and stones, ondrong a tool that functions to flatten the stucco mixture when it is attached to a brick wall, pauser a tool that functions to flatten the stucco mixture that has been affixed using a mortar or mortar spoon, this tool is usually made of long rectangular wood, or of aluminum.

Stairs Rehabilitation Method There are two types of stairs in Rasuna Said's house, namely stairs made of concrete and stairs made of wood. Stairs made of concrete are stairs from the main house building which is in the middle to the kitchen at the back. The condition of the concrete stairs is still good, it's just that maintenance needs to be done because the paint on this staircase has been peeling off a lot. This concrete staircase maintenance method is first carried out by stripping all existing layers of paint by brushing with an iron brush and assisted by sanding so that the paint layer is completely clean. Cleaning with sandpaper so as not to release a lot of dust can be done by watering or wetting it when sanding. After all the layers of paint have been removed or are clean, the next step is painting. If there are pores or small holes on the stairs wall, the pores are closed first with dompol and followed by plastering the entire surface of the staircase wall. Finally, a painting job is done with good quality wall paint as desired.

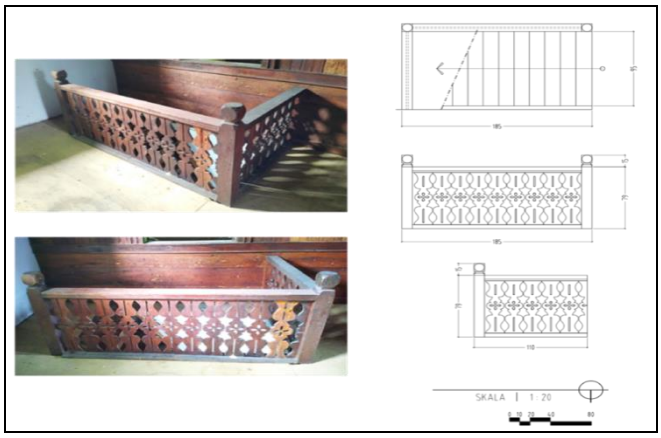

Figure 6*. wooden stair railing*

The rear middle staircase currently does not exist because it was opened during renovations in 2013 by PT. Garuda Indonesia through its CSR funds. The rear ladder will be reassembled according to the original position of the ladder, and will use the same wood material with good quality and strength. The wood chosen is wood that is completely dry so that there is no shrinkage of the wood when the ladder is installed. The last job as finishing the stairs was done by painting with the same paint color and paint quality as the existing wooden stairs paint.

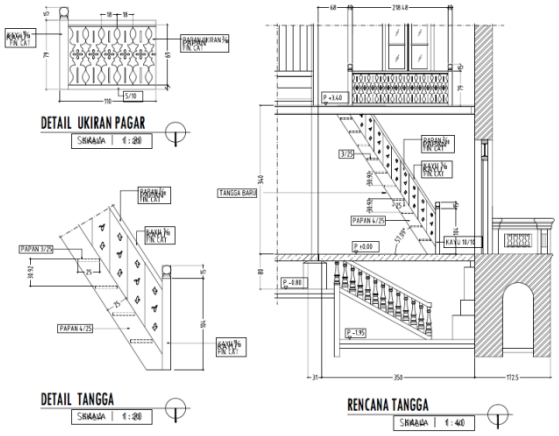

Figure 7. *The wooden staircase of Rasuna Said's house.*

V. Conclusion

Based on research conducted on the building of Rasuna Said's house, it has been produced in accordance with the expected objectives, that the method of rehabilitation of Rasuna Said's house is carried out based on the level of damage from each building element, both architectural elements and structural elements of the building. The principle that needs to be considered in carrying out rehabilitation is to make changes to the shape as minimal as possible. After this research is conducted, it is hoped that the results of this research can be used as a guide in carrying out the rehabilitation of Rasuna Said's house and other similar buildings. Furthermore, when carrying out rehabilitation so that it can run as well as possible, serious supervision must be carried out so that the desired results are achieved and the authenticity of this house is maintained.

References

Arief Subakti Ariyanto. (2020). in his article entitled Analysis of Types of Damage to High-rise Buildings.

Cultural Conservation Preservation Center. (2020). Feasibility Study Report on the Restoration of Rasuna Said's House for Fiscal Year 2020. BPCB West Sumatra

Directorate General of Early Childhood Education, Ministry of Education and Culture of the Republic of Indonesia, (2020). Analysis of Building Damage Levels.

Eko Sudarmono, (2010). Analysis of prioritizing activities for the rehabilitation of public elementary school buildings in regional development planning in Tulung Agung Regency

ICOMOS, A. (2013). Understanding And Assessing Cultural Significance. Practice Notes, Versions, 1.

Jambi, BPCB. 2019. What is Cultural Heritage?. https://kekulturan.kemdikbud.go.id/. Accessed on January 28, 2022

Ministry of Education and Culture. (2011). Law of the Republic of Indonesia Number 11 of 2010 concerning Cultural Conservation. Jakarta: Directorate General of History and Culture.

Ministry of Education and Culture. (2011). Law of the Republic of Indonesia Number 11 of 2010 concerning Cultural Conservation. Jakarta: Directorate General of History and Culture.

Ministry of Public Works and Public Housing, (2015). Regulation of the Minister of Public Works and Public Housing of the Republic of Indonesia Number 01/PRP/M/2015 concerning Preserved Cultural Heritage Buildings.

Ministry of Public Works and Public Housing, (2015). Regulation of the Minister of Public Works and Public Housing of the Republic of Indonesia Number 01/PRP/M/2015 concerning Preserved Cultural Heritage Buildings.

Ministry of Public Works and Public Housing. (2008). Ministerial Regulation No. 4 of 2008 concerning Guidelines for the Maintenance and Maintenance of Buildings.

Ministry of Public Works and Public Housing. (2021). Technical Guidelines for the Implementation of Cultural Conservation Buildings to be Preserved by the Republic of Indonesia No. 19 of 2021.

Ministry of Public Works, (2008). Ministerial Regulation Number 24 /PRT/M/2008 concerning Guidelines for Building Maintenance and Maintenance.

Ministry of Public Works. (2008). Ministerial Regulation Number 24 of 2008 concerning Guidelines for Building Maintenance and Maintenance.

Regulation of the Minister of Culture and Tourism Number: PM.49/UM.001/MKP/2009 concerning Guidelines for the Preservation of Cultural Conservation Objects and Sites.

Subramaniam, S. R. (2016). A review on repair and rehabilitation of heritage buildings. International Research Journal of Engineering and Technology, 3(4), 1330-1336.

Tela, et al. (2021). Analysis of the Restoration of the Rasuna Said House as a Cultural Heritage Building (Agam Regency, West Sumatra). www.bircu-journal.com/index.php/birci

Wirastari, V. A., & Suprihardjo, R. (2012). Community Participation-Based Cultural Conservation Area Preservation (Case Study: Bubutan Cultural Heritage Area, Surabaya). Journal of ITS engineering, 1(1), C63-C67.

Zulkarnain. (2017). Be a Part of the Preservation of World Cultural Heritage. Journal of Architecture NALARs Volume 13