

Peningkatan Kompetensi Aparatur Desa Melalui Sosialisasi Teknologi Tepat Guna serta Pelatihan RAB dan DED

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Enhancing Village Officials Competence Through the Socialization of Appropriate Technology and Training on RAB and DED

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Abstract

Improving the capacity of village officials in development planning is very important to support the effectiveness of budget management and program implementation at the village level. This community service activity aims to improve the competence of village officials through the socialization of the application of appropriate technology and training in the Budget Plan (RAB) and Detail Engineering Design (DED). The monitoring results show that the level of participation of village officials in this activity is quite high, with a value of 90% of participants attending all training sessions, the initial evaluation through a pre-test showed that participants' understanding of the preparation of RAB and DED was still limited. However, after participating in the training, there was an increase in understanding of 75% based on the results of the Post-test. In addition, 80% of participants

understand the basic stages of making simple RAB and DD as the final task of the training.

Keywords

Village Apparatus, Appropriate Technology, RAB, DED

Abstrak

Peningkatan kapasitas aparatur desa dalam perencanaan pembangunan sangat penting untuk mendukung efektivitas pengelolaan anggaran dan implementasi program di tingkat desa. Kegiatan pengabdian ini bertujuan untuk meningkatkan kompetensi aparatur desa melalui sosialisasi penerapan teknologi tepat guna serta pelatihan Rencana Anggaran Biaya (RAB) dan Detail Engineering Design (DED). Hasil monitoring menunjukkan bahwa tingkat partisipasi aparatur desa dalam kegiatan ini cukup tinggi, dengan nilai 90 % peserta mengikuti seluruh sesi pelatihan, evaluasi awal melalui pre-test menunjukkan pemahaman peserta terhadap penyusunan RAB dan DED masih terbatas. Namun setelah mengikuti pelatihan, terjadi peningkatan pemahaman sebesar 75 % berdasarkan hasil Post-test. Selain itu, 80 % peserta memahami tahapan dasar pembuatan RAB dan DED sederhana sebagai tugas akhir pelatihan.

Kata Kunci

Aparatur Desa, Teknologi Tepat Guna, RAB, DED



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1. Introduction

The improvement of human resources is the most crucial aspect of sustainable village development. Village governments hold a strategic role in planning and implementing various programs aimed at enhancing community welfare (Ramadhani & Kudus, 2024). However, limited understanding of appropriate technology (TTG) as well as the preparation of Budget Plans (RAB) and Detail Engineering Designs (DED) often becomes an obstacle to optimizing village development.

Although design and technical drawings are typically prepared by professionals in their respective fields, it is more beneficial to train and empower local technical cadres so that village officials are able to independently prepare RAB documents (Citra Pradipta Hudoyo & Diyah Ayu Widayanti, 2024). Moreover, budget planning and technical design are essential components in the success of village development projects (Sartono, Erni Qomariyah, Liwaul, Sitti Hairani Idrus, La Ode Muhammad Elwan, & Taufik, 2024).

RAB and DED serve as

guidelines for determining cost requirements as well as technical specifications needed for infrastructure projects and other programs. This aligns with the findings of Aryani et al. (2020), who emphasized the importance of human resource competencies—particularly among village officials—in managing village funds. The lack of understanding of RAB and DED preparation often leads to inaccuracies in budget allocation and mismatches in project implementation (Aryani et al., 2020).

RAB and DED serve as guidelines for determining cost requirements as well as technical specifications needed for infrastructure projects and other programs. Both RAB and DED are indispensable instruments in development management. These documents are not merely administrative appendices but act as primary references to ensure that every project proceeds according to plan, budget, quality standards, and applicable regulations.

In the context of village development—especially in Buata Village, Atinggola District, North Gorontalo Regency—the preparation of RAB (Budget Plan) and DED (Detail Engineering Design) provides a foundation for improving professionalism in village governance. RAB

is used to calculate all direct and indirect cost requirements, while DED provides detailed technical illustrations of shapes, dimensions, material specifications, and implementation methods. With these two documents, development can be measurable, transparent, and well-directed.

1.1.The Importance of RAB in Development

RAB functions to identify and calculate all costs required in a project. Without a clear RAB, a project is vulnerable to cost overruns, miscalculations, or even failure to complete. A well-prepared RAB must be based on realistic calculations, refer to prevailing unit prices, and take into account potential increases in material costs in the field.

For example, in constructing a village office signboard, the RAB includes labor costs (wages), material costs (raw materials for the signboard, aluminum partitions, acrylic letters, paint, etc.), and supporting costs such as transportation and honoraria for executors. With RAB, the village government can clearly determine how much budget is required, how funds will be allocated, and

which components absorb the most costs. This is vital for achieving transparent and accountable budget management.

In addition, RAB also serves as a basis for the procurement of goods and services. With RAB documents, the village can compare prices, select the right service providers or contractors, and prevent budget manipulation. A clear RAB also facilitates monitoring by auditors and the community in supervising development projects.

1.2.The Role of DED in Ensuring Technical Quality

DED (Detail Engineering Design) is a technical document containing detailed design drawings, material specifications, dimensions, and methods of implementation. DED plays a crucial role in providing both visual representation and technical guidance for field implementers.

For instance, in constructing a village office signboard, DED includes three-dimensional (3D) design drawings of the signboard, foundation sections, and details of supporting structures. The foundation section drawings, for example, show the dimensions of beams,

anchors, brickwork, and plaster layers. This information is highly useful for builders or contractors in carrying out work according to standards, ensuring that the final result meets expectations.

DED also minimizes the risk of technical errors in the field. Without detailed drawings, project implementers may improvise in ways that deviate from the plan. This can lead to reduced building quality, wasted materials, or even structural safety risks. Therefore, DED is an essential instrument for guaranteeing quality standards, safety, and compliance with applicable construction regulations.

1.3. The Synergy between RAB and DED

RAB and DED are interrelated and inseparable documents. RAB provides an overview of cost requirements, while DED provides the technical blueprint of the work to be carried out. Without DED, the cost calculations in RAB risk being inaccurate due to the absence of clear technical references. Conversely, without RAB, DED remains only a set of drawings without corresponding cost estimations.

In practice, the synergy

between RAB and DED is evident. For example, if DED specifies the use of aluminum material of certain dimensions for a signboard, then RAB must align by including the appropriate unit price per volume or weight for aluminum. If DED determines that the foundation uses K-225 grade concrete with 15/20 cm beams, then RAB will calculate the required cement, sand, gravel, and reinforcing steel accordingly. Thus, these two documents complement each other to ensure efficient and high-quality development.

1.4. Benefits of RAB and DED for Village Governments

For village governments, the existence of RAB and DED offers numerous strategic benefits, including:

A. More Measurable Planning

Village governments can prepare more focused development plans since cost and technical requirements are determined from the outset.

B. Transparency and Accountability

RAB and DED serve as accountability instruments for village fund utilization, making it easier for both the community and relevant institutions to conduct

supervision.

C. Implementation Efficiency

With technical documents in place, project implementers can work faster and more accurately without frequent changes in the field.

D. Cost Control

RAB helps prevent budget inefficiencies since all cost components are detailed clearly.

E. Capacity Building for Village Officials

Through the preparation of RAB and DED, village officials gain valuable technical experience that may be useful for future development projects.

1.5.Challenges in Preparing RAB and DED at the Village Level

Despite their importance, the preparation of RAB and DED at the village level often faces several challenges. First, there is a shortage of human resources with the technical capacity to compile these documents. Many village officials are not yet familiar with the standards for preparing RAB or DED, and therefore require assistance from experts or academics. Second, there is limited availability of unit price data for materials in the field, as prices may vary

between regions. Third, a lack of understanding of applicable construction standards may lead to errors in both design and cost estimation.

To overcome these challenges, guidance from universities, technical institutions, and experts is essential. For example, Gorontalo University, through its community service programs, plays an important role in providing training, mentoring, and examples of RAB and DED documents that comply with established standards. In this way, village officials can learn and gradually acquire the ability to prepare documents independently.

A. Positive Impacts on Village Governance

The application of RAB and DED in village development affects not only ongoing projects but also the overall governance of the village. With clear planning documents, village governments can enhance their credibility in the eyes of the community. This, in turn, encourages community participation in development activities, as residents can see transparency in budget utilization.

Furthermore, professional governance enhances the

competitiveness of a village. Villages that demonstrate good development management are more likely to receive support from regencial, provincial, and national governments. They may also attract assistance from private entities or donor agencies, since they are perceived as capable of managing funds transparently and accountably.

Buata Village is one of 14 villages in Atinggola District, North Gorontalo Regency, consisting of three hamlets: Tenilo, Batudinding, and Dewu. Most of its residents are farmers. The village covers an area of 7,500 m² and is located at an elevation of 1,000 meters above sea level. Buata is also known for its cultural tourism event, mandi safar.

Buata Village is bordered to the north by the Andagile River, to the west by Posono Village, to the south by Tombilato Village, and to the east by Tombulilato Village. The village office is located in Dewu Hamlet. Infrastructure and facilities developed in recent years include drainage systems, a cultural stage, and the village hall (Sorga Desa). Buata has a population of approximately 446 people.

Table 1. Population of Buata Village

No	Gender	Population
1	Male	239
2	Female	227
Total		446

Source: Buata Village Government, 2024



Figure 1. Topography of Buata Village

Source: Google Earth, 2024

Through this community service activity, it is expected that the officials of Buata Village, Atinggola Subdistrict, North Gorontalo Regency, will gain deeper understanding of Appropriate Technology (TTG) and acquire the skills to prepare accurate RAB and DED documents. In turn, the village's technical cadres will be able to improve the quality of planning and implementation of development projects, thereby realizing more professional and competitive village governance.

Expected Outputs of the Community Service Program:

1. Enhanced Capacity of Village Officials

Buata village officials will acquire knowledge and a deeper understanding of Appropriate Technology (TTG), enabling them to identify, select, and apply technology suited to village development needs.

2. Skills in Preparing RAB and DED

Village officials and technical cadres will gain practical skills in accurately preparing Budget Plans (RAB) and Detail Engineering Designs (DED) in compliance with technical standards, ensuring that each development plan can be accounted for.

3. Formation of Village Technical Cadres

Competent technical cadres will emerge in Buata Village to support the planning, monitoring, and implementation of development projects with improved quality.

4. Availability of RAB and DED Documents

The provision of sample RAB and DED documents as tangible outputs that can serve as references for preparing future village development documents.

5. Strengthening of Village Governance

The creation of more professional, transparent, and competitive village governance, particularly in participatory-based planning and implementation of development programs.

2. Methods

This community service activity was conducted in Buata Village, Atinggola District, North Gorontalo Regency, on December 19, 2024.

The main focus was on enhancing the capacity of Buata Village officials, particularly in understanding and applying the use of Appropriate Technology (TTG), as well as in developing technical skills for preparing the Budget Plan (RAB) and Detail Engineering Design (DED). This activity is considered highly significant, given the strategic role of village officials in preparing development plans, managing programs, and ensuring that every development activity complies with regulations while providing tangible benefits to the community.

Village development is an integral part of national development that emphasizes independence, sustainability, and

community participation. In practice, the success of village development is strongly influenced by the ability of village officials to plan, implement, and evaluate activities that align with community needs. For this reason, this program was designed to provide a learning environment that not only emphasized theory but also prioritized hands-on practice, so that the knowledge gained could be immediately applied in the real context of Buata Village.

During the activity, participants received interactive material presentations. The first session focused on understanding Appropriate Technology (TTG)—technology developed with attention to local needs, simplicity, efficiency, and ease of application. In the context of village development, TTG may include simple innovations that support economic activities, public services, and the improvement of villagers' quality of life. Through this session, village officials were encouraged to identify the potentials and challenges in their surroundings, then match them with technologies that could serve as appropriate solutions.

The next session focused on preparing the Budget

Plan (RAB) and Detail Engineering Design (DED). These two documents are essential instruments in every development plan. The RAB serves to provide an accurate, transparent, and regulation-compliant cost estimate, while the DED is a technical document containing detailed plans for a development project, serving as a reference for both implementation and monitoring. Skills in preparing RAB and DED are therefore critical, as mistakes in planning can lead to problems in implementation, both financially and technically.

The learning process combined lectures, group discussions, and practical exercises. In the discussion sessions, participants had the opportunity to express the challenges they faced in preparing village development documents. Identified challenges included limited technical knowledge of document standards, difficulty in making realistic cost estimates, and a lack of reference documents to serve as guidelines. Through this forum, participants not only exchanged experiences but also received solutions from the community service team, which consisted of academics from the Faculty

of Engineering, Gorontalo University.

Practical exercises involved case examples of simple village development projects, such as constructing neighborhood roads, repairing drainage systems, or providing public facilities. Participants were guided to prepare RAB and DED documents based on these cases. During this process, participants received direct mentoring so they could understand the workflow of document preparation, from needs identification, calculation of work volumes, determination of unit prices, to the preparation of the final report format.

The mentoring did not end with the training sessions but continued through active communication between village officials and the service team. This ongoing support ensured that any emerging problems could be immediately discussed and resolved. In this way, the sustainability of the program's benefits could be guaranteed, while village officials maintained broader access to the university's knowledge resources.

Beyond the technical aspects, this community service activity also

emphasized the importance of transparency and accountability in village governance. RAB and DED are not merely administrative documents but also forms of accountability from the village government to the community. By preparing documents accurately and according to standards, village development can proceed more transparently, reduce the risk of mismanagement, and enhance community trust in village officials. This, in turn, promotes more professional and competitive village governance.

The outcomes of the program demonstrated a significant improvement in the capacity of village officials. Officials in Buata Village who previously lacked understanding of the technical aspects of RAB and DED preparation now possessed improved knowledge and practical skills that could be directly applied in village planning. Some participants even succeeded in producing sample documents that could serve as references for future village development planning. This indicates that the program not only provided short-term benefits but also long-term capacity building for village planning quality.

Furthermore, the program fostered positive

collaboration between the village government and the university, particularly Gorontalo University. It is expected that this partnership will continue through various mentoring programs and applied research initiatives that can help the village address diverse development challenges. With the support of academics and practitioners, villages will gain easier access to relevant knowledge and innovations that relevant to their needs.

From the community's perspective, the ability of village officials to prepare sound RAB and DED documents directly impacts the quality of development outcomes. The community benefits from facilities and infrastructure that are suited to their needs, with good quality, and supported by well-prepared planning. Ultimately, this community service program is expected to contribute to the realization of villages that are more independent, advanced, and prosperous.

Overall, the community service program in Buata Village can be summarized as a strategic effort to strengthen the capacity of village officials through the transfer of relevant knowledge and skills. The success of this activity was due to the active involvement of all

stakeholders, including the Community Service Institute of Gorontalo University, the Faculty of Engineering of Gorontalo University, the Buata Village Government, and the enthusiastic participants. Going forward, similar programs can be replicated in other villages, with necessary local adjustments, so that the benefits can be extended more widely in support of sustainable village development.

3. Results and Discussion

The implementation of the community service program for Buata Village officials began with the provision of foundational knowledge on the Budget Plan (RAB) and Detail Engineering Design (DED). After the material presentation, a discussion session was conducted to explore and identify the problems faced by the village officials.

Several activities carried out by the team included observations and interviews regarding the planning preparations undertaken in Buata Village. From these activities, it was revealed that the preparation of RAB and DED still heavily relied on external parties. Therefore, this training activity was initiated by Buata Village with the aim

of enabling greater independence in the preparation of Budget Plans (RAB) in the future. Another issue identified relates to RAB preparation, particularly concerning infrastructure maintenance, repair, and construction—problems that are commonly faced by village officials.

Several activities carried out by the team included observations and interviews regarding the planning preparations conducted in Buata Village. From these activities, various important insights were obtained regarding the processes of drafting and preparing Budget Plans (RAB) and Detail Engineering Designs (DED) at the village level. The observations revealed that, up to now, the preparation of RAB and DED for development programs and infrastructure improvements has remained heavily dependent on external parties or third parties. This indicates that village officials still do not fully possess the capacity and skills needed to prepare RAB and DED independently. Such dependence on external actors carries several implications, particularly in terms of time efficiency, costs, and the overall quality of planning.

Recognizing this issue, Buata Village took the initiative to organize training as a strategy to strengthen the internal capacity of village officials. The training was designed to enable participants to understand key stages of RAB and DED preparation, including initial planning, needs identification, cost estimation, and evaluation and validation of planning documents. In this way, it is expected that in the future, RAB and DED preparation can be carried out independently, without over-reliance on external assistance. Independence in this context does not only mean the ability to prepare technical and financial documents, but also the ability to assess project feasibility, predict realistic costs, and anticipate potential challenges during infrastructure development or maintenance.

Furthermore, the observations and interviews revealed several recurring problems related to RAB preparation. These included issues in maintenance, repair, and infrastructure construction, which village officials often struggled to address effectively. For instance, in maintaining village facilities such as roads, irrigation channels, and public infrastructure,

officials encountered difficulties in setting repair priorities, estimating required costs, and preparing RAB documents that reflected real needs in the field. Such conditions risk creating inefficiencies in the use of village budgets and could negatively affect the quality of overall infrastructure development.

Similar problems were found in the planning of new infrastructure projects. In some cases, village officials faced difficulties in developing accurate plans due to limited technical experience and knowledge. These challenges included determining technical specifications, selecting appropriate materials, estimating work volumes, and calculating realistic costs. Another challenge was the coordination with external parties who had previously been responsible for preparing RAB and DED. This dependency limited the village officials' understanding of the planning process, thereby restricting their capacity to manage development projects effectively (Rahman A. Djau et al., 2024).

The training initiated by Buata Village was therefore aimed at addressing these constraints by providing fundamental knowledge on planning, budgeting,

monitoring, and project evaluation. Through a practical approach, participants were equipped with essential technical skills, such as calculating material needs, preparing accurate and transparent RAB documents, and understanding DED procedures that conform to construction standards. The training also emphasized the importance of proper documentation, ensuring that every stage of planning and implementation could be accounted for. With these skills, village officials are expected to be able to plan independently, on time, and in line with community needs (M. Fauzhan Algiffari et al., 2023).

Beyond technical aspects, the team's observations and interviews also highlighted issues related to resource management and coordination among village officials. Limited human resources often resulted in slow or suboptimal planning processes. Some officials still lacked adequate skills in cost estimation, choosing project implementation methods, and monitoring project execution. Consequently, the training played a strategic role in strengthening internal capacity, enabling village officials to be better prepared to face various

infrastructure development challenges.

Additionally, observations revealed that common infrastructure issues in the village included damaged public facilities, clogged waterways, deteriorated roads, and delayed new facility construction due to inaccurate budget planning. This underscores the critical importance of accurate RAB preparation and detailed DED design to ensure the sustainability of village development. With training, village officials are expected to be able to formulate more systematic and professional solutions to infrastructure problems, whether routine or strategic.

Besides technical skills, the training was also designed to build awareness of the importance of transparency and accountability in RAB and DED preparation. Village officials were reminded that clear and detailed planning documents are not only useful for project implementation but also serve as accountability instruments for the community and relevant stakeholders. This fosters better village financial governance, ensuring that available funds are used efficiently and effectively.

In conclusion, the training initiated by Buata

Village has dual benefits. First, it enhances the technical capacity of village officials to independently prepare RAB and DED, thereby reducing reliance on external parties. Second, it strengthens managerial and internal coordination capacities, allowing development projects to be better planned, monitored, and evaluated. Moreover, the training serves as a medium for knowledge transfer and hands-on experience, enabling village officials to manage infrastructure projects more professionally and sustainably.

Overall, through observation, interviews, and this training program, Buata Village is expected to build stronger internal capacity. Village officials will become more independent in planning, budgeting, and implementing infrastructure development, thereby ensuring the quality and sustainability of village projects. Long-standing issues—such as maintenance, repairs, and infrastructure construction—can be addressed in a more systematic, efficient, and accurate manner. Thus, this initiative not only provides short-term solutions but also establishes a stronger foundation for more professional village

development management in the future.



Figure 2. Opening of the Activity

In this activity, planning and budgeting for the repair of the village office were carried out, including the following steps:

1. Analyzing the condition of the village office building
2. Preparing a repair plan for the village office
3. Preparing a repair plan for the office building
4. Determining the sequence of tasks for the village office project, starting with preparatory work such as re-measurements and related activities.
5. Determining the work volume
6. Compiling a summary of all work and preparing a budget proposal for the village, as presented in the format shown in the figure.



Figure 3. Material Delivery to the Village Officials

The benefits and contributions of this activity, in terms of applying science and technology, are particularly significant for village officials in Buata Village, Atinggola District, North Gorontalo Regency, and more generally for the community at large. The activity illustrates the development and application of science and technology. Monitoring was conducted throughout the socialization and training process to ensure that the activities ran as planned, to identify challenges that emerged, and to determine indicators of participants' success in understanding the material.

The results of monitoring and evaluation showed that participants demonstrated a very high level of enthusiasm in joining the appropriate technology socialization and training

on the preparation of Budget Plans (RAB) and Detail Engineering Designs (DED). This enthusiasm was evident from their attendance, active participation in discussions, and eagerness to ask questions and explore the material in greater depth. Of all participants involved, 90% attended every training session in full, both theoretical and practical. This shows that village officials are highly motivated to strengthen their capacity and skills in development planning, especially in preparing RAB and DED documents, which have long posed challenges for them.

Before the training began, participants underwent a pre-test and initial observation to assess their understanding of RAB and DED. The pre-test results indicated that most village officials still had limited knowledge. Some participants were not yet fully familiar with the proper stages of RAB preparation, work volume calculations, or realistic cost estimations in line with on-the-ground needs. This clearly highlights the urgent need for capacity building and competency development so that each village official can carry out planning tasks

independently and accurately.

During the training, participants were provided with materials in stages, starting with the basic concepts of development planning, principles of RAB preparation, and techniques for producing DED in accordance with applicable standards. Beyond theoretical material, participants were also given opportunities for hands-on practice, such as calculating material requirements, preparing cost estimates, and drafting planning documents that matched real conditions in the village. This interactive training method was applied to ensure that participants not only grasped the concepts but were also able to apply them in practice.

In addition, the training team conducted monitoring throughout each session. They recorded participant engagement, ability to answer questions, and initiatives to apply the knowledge gained. The monitoring results indicated that participants gradually began to recognize the importance of careful planning, accurate RAB documents, and clear DED as the foundation for implementing village development projects. This improvement was reflected in participants' growing

ability to prepare cost estimates, predict material needs, and draft more systematic technical documents compared to before the training.

The observations also revealed changes in participants' attitudes and awareness. Most village officials realized that being able to prepare RAB and DED independently would reduce dependency on external parties, improve budget efficiency, and accelerate project implementation. They also understood that proper documentation would make supervision, evaluation, and accountability of development projects easier, both to the community and to other stakeholders.

The various forms of documentation collected during the training—ranging from photos of participants during theoretical sessions, practical exercises, and group discussions, to monitoring and evaluation activities—illustrated a positive atmosphere full of active participation. This documentation served as concrete evidence that the training was carried out successfully and met its objectives: enhancing the capacity of village officials in preparing RAB and DED. The active participation and strong

enthusiasm of the participants are indicators of the program's success, as well as a basis for continuing similar training initiatives in the future, to further strengthen the village's internal capacity and ensure that village development proceeds in a more independent, efficient, and well-targeted manner (Rifaldo Pido, et al., 2021).

Overall, the results of monitoring and evaluation provide a clear picture that the socialization and training on RAB and DED successfully enhanced village officials' understanding. The high level of enthusiasm, strong attendance, and active participation in every session serve as proof that village officials are ready to apply the knowledge gained to village development planning in a more professional and independent way. This is expected to create sustainable positive impacts on project management and infrastructure development in Buata Village.

Several documentation from the training activities are presented below.



Figure 4. Planning Product
– 3D Design (Village
Office Signboard)

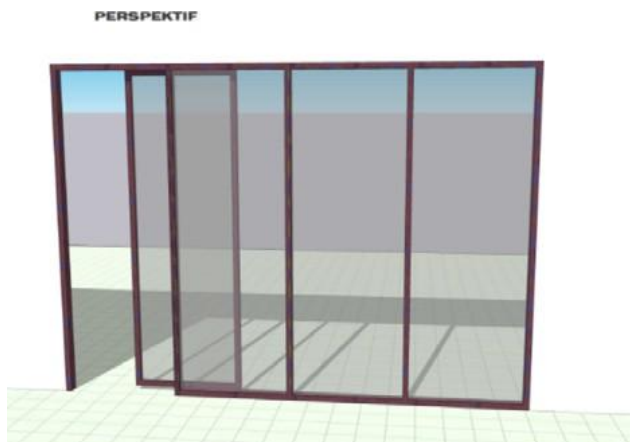


Figure 5. Planning Product
– 3D Design (Village
Head's Office
Partition)

Figures 4 and 5 display three-dimensional (3D) visualizations of the design for the village office signboard. These visualizations serve to provide a more concrete and detailed illustration of the shape, size, and final appearance of the signboard to be constructed in the field.

The perspective drawings show the following

elements:

1) Main Structure

- a. The signboard frame uses metal or light steel material, arranged vertically to ensure strength and stability.
- b. The design is kept simple yet modern, with clean and symmetrical straight lines.

2) Signboard Panel

- a. The main panel surface is designed using transparent material (glass or acrylic), giving a clean, lightweight, and modern impression.
- b. The panel can later be fitted with village identifiers such as the village name, regional emblem, and other important information in line with the standard format for village office signboards.

3) Aesthetic and Informational Function

- a. The 3D design highlights not only the signboard's informational function but also its aesthetic aspect, so the village office building appears more representative and professional.
- b. The simple form was chosen to ease

construction and maintenance, while still reflecting a formal image as the official identity of the village administration office.

4) Advantages of 3D Planning

- c. Provides a clearer picture to village officials and the community about the final result before moving to the construction stage.
- d. Facilitates discussion and decision-making regarding materials, dimensions, and the final appearance of the signboard.
- e. Reduces the risk of design errors since all details are visualized from the outset.

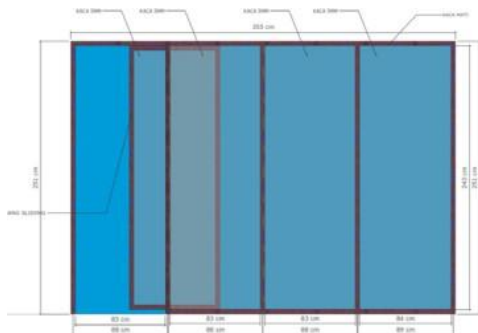


Figure 6. Planning Product
– 3D Design (Village
Head's Office
Partition)

The section drawing presented here is part of the Detail Engineering Design (DED) for the

foundation of the village office signboard. It illustrates the cross-sectional details of the foundation, serving as a technical reference for construction in the field.

1) Foundation Function

The signboard foundation is designed to:

- a. Support the weight of the signboard structure so it stands firm and stable.
- b. Resist horizontal forces (wind, vibration, or pressure), preventing the signboard from swaying.
- c. Prevent settlement or shifting due to soil conditions.

2) Construction Components (based on Section A drawing)

a. Anchor Bolts

Function as connectors between the upper structure (signboard frame) and the concrete foundation, ensuring strength and prevent movement.

b. Mortar Layer (Spesi)

Serves to bond the brickwork and evenly distribute the load from the structure above.

c. Steel Plate 15 × 50 × 600 mm

Acts as a support or additional connector to

reinforce the bond between the signboard structure and the foundation.

d. Brickwork

Installed around the concrete foundation to reinforce the structure and protect the foundation for a neater, more durable finish.

e. Plastering

A finishing layer of cement and sand applied over the brickwork, to smooth the surface, protect it from weather, and increase strength of the structure.

f. Backfilled Soil

Soil compacted around the foundation after installation to secure its position and prevent movement.

g. Sloof 15/20 cm

A reinforced concrete beam with dimensions of 15 × 20 cm, functioning to unify the foundation and serve as a load-bearing element for the signboard structure above.

3) Foundation Dimensions

- Total foundation width: 60 cm (15 cm brickwork left + 30 cm concrete core + 15 cm brickwork right).
- Foundation height from base to ground level: approx: **±70 cm** (20 cm

sloof + 35 cm brickwork + 15 cm plaster top).

- Sloof dimensions: **15 cm × 20 cm**, in accordance with the standard for light foundations for signboards.

4) Technical Considerations

- Foundation material uses reinforced concrete with a minimum grade of K-225 to ensure structural strength.
- Steel anchor bolts are embedded to firmly lock the signboard into the foundation.
- All foundation parts in direct contact with soil are plastered to reduce damage risk due to moisture.
- The design is adapted to soil conditions in Buata Village to ensure stability and long-term durability of the signboard.

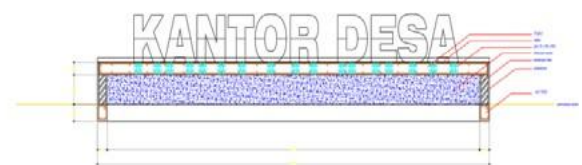


Figure 7. DED Product - Village Office Signboard

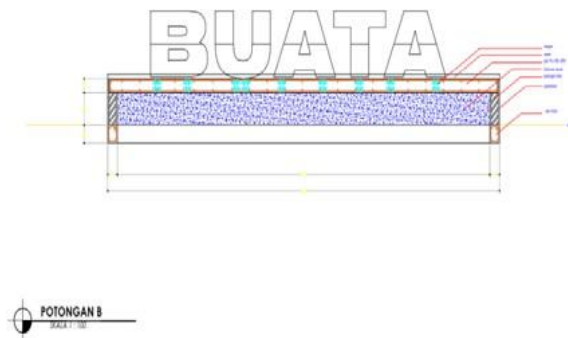


Figure 8. DED Product - Village Office Signboard

Budget Plan (RAB)					
WORK UNIT	Buata Village				
WORK	Planning of Village Office Renovation and Public Park Maintenance				
LOCATION	Buata Village, Atinggola District, North Gorontalo				
FISCAL YEAR	2024				
NO	WORK DETAILS	UNIT	VOLUME	UNIT PRICE (Rp)	TOTAL COSTS (Rp)
I WAGES FOR LETTERING WORK					
1	Mason's Wage	Workday	40,00	130.000,00	5.200.000,00
2	Worker's Wage	Workday	27,00	110.000,00	2.970.000,00
3	Cleaning and Finishing Wage	Ls	1,00	1.000.000,00	1.000.000,00
4	Welding and Letter Casting Wage	Ls	1,00	4.000.000,00	4.000.000,00
II RAW MATERIALS / SIGNBOARD MATERIALS					
1	Fill Soil	m3	3,00	85.000,00	255.000,00
2	Sand	m3	3,50	150.000,00	525.000,00
3	Gravel	m3	3,00	165.000,00	495.000,00
4	Standard Brick	Pieces	850,00	1.000,00	850.000,00
5	Class II Wooden Boards	Sheet	7,00	85.000,00	595.000,00
6	Cement	Sack	40,00	78.000,00	3.120.000,00
7	Plain Steel Bar Ø 10	End	16,00	115.000,00	1.840.000,00
8	Plain Steel Bar Ø 6	End	16,00	50.000,00	800.000,00
9	Binding Wire	Kg	4,00	30.000,00	120.000,00
10	Plywood 6 mm	Sheet	9,00	80.000,00	720.000,00
11	Plywood Nails	Kg	3,00	30.000,00	90.000,00
12	Class II Wooden Battens 55	Bar	20,00	25.000,00	500.000,00
13	Common Nails 5-10 cm	Kg	1,50	30.000,00	45.000,00
14	Exterior Paint	Kg	25,00	20.000,00	500.000,00
15	Paint Brush	Pieces	10,00	15.000,00	150.000,00
16	Paint Roller	Pieces	2,00	27.500,00	55.000,00
17	Stainless Steel Mesh Wire 50	m2	20,00	75.000,00	1.500.000,00
18	Welding Wire	Kg	5,00	35.000,00	175.000,00
III WAGES FOR ALUMINUM PARTITION WORK					
1	Mason's Wage	m2	9,00	285.000,00	2.565.000,00
2	Material Modification for Partition	Ls	1,00	1.000.000,00	1.000.000,00
IV RAW MATERIALS / PARTITION MATERIALS					
1	3-Inch Glass Tube	Mt	23,20	44.166,67	1.024.666,67
2	Tube Cap	Mt	16,04	22.333,33	358.222,67
3	Sliding Post	Mt	12,00	40.833,33	490.000,00
4	Stopper	Mt	3,00	95.000,00	285.000,00
5	1/4 Rail	End	1,00	225.000,00	225.000,00
6	Recessed Handle	Pieces	2,00	45.000,00	90.000,00
7	Black Glass 5 mm	m2	8,16	275.000,00	2.245.320,00
8	Fischer (wall plug/anchor)	Box	1,00	125.000,00	125.000,00
9	Spigot (glass clamp fitting)	End	1,00	125.000,00	125.000,00
10	Spigot Bolt	Box	1,00	100.000,00	100.000,00
V HONORARIUM FOR PROJECT IMPLEMENTATION					
1	Honorarium for Design and Budget Plan Preparation (2%)	Ls	1,00	580.000,00	580.000,00
2	Supervision Design Fee (0.5%)	Ls	1,00	145.000,00	145.000,00
3	Honorarium, Operations, and Administration of Project Committee (2.5%)	Ls	1,00	725.000,00	725.000,00
4	Procurement Committee Honorarium (0.5%)	Ls	1,00	145.000,00	145.000,00
				TOTAL	35.733.213,33
				ROUNDED TO	35.733.000,00

Figure 9. Budget Plan (RAB) Product

This Budget Plan (RAB) document serves as a cost estimate for constructing the village office signboard, covering labor wages, procurement of raw materials, and activity implementation fees. With the RAB, the construction

process can be planned more systematically, transparently, and accountably.

5) Lettering Work Wages

- This component includes costs for producing and installing the letters on the signboard.
- Costs cover cutting, shaping, finishing, and attaching letters according to the design.

c. Total cost: **IDR 3,170,000**

6) Village Signboard Raw Materials

- Covers costs for procuring the main materials for signboard construction.
- Materials may include base plates, acrylic, glass, or other items according to the design specifications.

c. Total cost: **IDR**

2,835,000

7) Aluminum Partition Work Wages

- Includes labor costs for aluminum partition work, such as cutting, assembly, welding, and installation.
- Aluminum was chosen for its lightweight, strong, and corrosion-resistant properties, suitable for outdoor

construction.

c. Total cost: **IDR
3,655,000**

8) Partition Raw Materials

a. Covers costs for purchasing additional partition materials besides aluminum, such as glass/acrylic panels, screws, bolts, and other fittings.

b. Partition materials are essential for ensuring the signboard is both neat and sturdy.

c. Total cost: **IDR
5,052,133**

9) Project Implementation Honorarium

a. Allocated for the village signboard construction project implementation team, covering preparation, supervision, and completion stages.

b. Provided as compensation for their services and efforts in carrying out the activity.

c. Total biaya: **Rp
1.650.000,-**

10) Total Costs

a. Grand total of all components: **IDR
36,732,133.**

b. Rounded: **IDR 36,732,000**

The RAB for the construction of the Buata Village Office signboard shows that the largest

portion of costs comes from partition raw materials, followed by lettering work wages and aluminum partition work. With this RAB, the Buata Village Government has a clear reference for budget allocation, ensuring that the construction of the signboard can be carried out efficiently, on target, and accountably.



Figure 10. Group Photo at Closing Ceremony

4. Conclusion

Based on the results of the community service activities related to the socialization and training on RAB (Budget Plan) and DED (Detail Engineering Design), it can be concluded that this program has had a positive impact on improving the competence of village officials. However, to ensure the sustainability of the program, several follow-up steps are required, including:

a. Organizing advanced training sessions to deepen participants' understanding.

- b. Establishing cooperation with relevant institutions so that the program can continue to run and develop.
- c. Preparing standardized guidelines for the preparation of RAB and DED, which can be used by all village officials as a reference.

Overall, this program has successfully strengthened the capacity of village officials in preparing RAB and DED, as well as in understanding appropriate technology (TTG) that can be applied for more effective and efficient village development.

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activity and prepared the socialization program. The support, cooperation, and enthusiasm of all parties were the key to the successful implementation of this community service activity. It is hoped that the outcomes of this program will provide tangible benefits in improving the capacity of village officials and encourage the creation of village development governance that is more professional, effective, and competitive.

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