COMPARISON OF DRAINAGE COVER COSTS IN THE RUNWAY STRIP AREA USING PRECAST CONCRETE AND CONVENTIONAL CONCRETE AT FRANS SALES LEGA AIRPORT, RUTENG

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ABSTRACT

This study discusses a cost and time comparison of drainage cover construction using conventional concrete and precast concrete methods at Frans Sales Lega Airport. The research was motivated by the presence of open drainage channels in the runway strip area, which do not comply with the 2023 regulations issued by the Directorate General of Civil Aviation. The drainage cover was designed with dimensions of 2300 mm x 600 mm for both conventional and precast concrete. The research method used is descriptive with a quantitative approach to cost and construction time analysis, starting with data collection such as drainage layout and local unit price standards (HSPK). The process continued with moment, shear, and deflection analysis, which was then used to calculate the loading. The next steps involved designing the slab thickness and comparing both cost and duration of execution. The analysis results show that the conventional concrete method requires a total cost of IDR 3,920,834,511.00, while the precast concrete method amounts to IDR 8,786,393,521.00. In terms of duration, precast concrete is more efficient with 42 days of work compared to 83 days for conventional concrete. Based on these findings, conventional concrete is more economical in terms of cost, while precast concrete is superior in time efficiency.

Keywords: *Airport Drainage, Cover Slab, Concrete, Cost Efficiency*

1. INTRODUCTION

The Frans Sales Lega Airport Operating Unit Office is located in Ruteng, Manggarai Regency, East Nusa Tenggara Province, at the coordinates 8°35'55.0’’S and 120°28'47.0"E. East Nusa Tenggara Province is one of the regions in Indonesia with abundant natural potential, both renewable and non-renewable resources. Its main commodities include coconut, coffee, fish, and spices. These commodities are expected to grow along with the availability of air transportation, particularly in the tourism sector.

Frans Sales Lega Airport, as an institution providing air transportation services, holds responsibility for all aviation facilities. Among the airside facilities are the apron, taxiway, and runway, which serve as areas for aircraft movement, parking, and passenger boarding and disembarkation. The runway measures 1,500 meters in length and 30 meters in width, with a Pavement Classification Number (PCN) of 27 F/C/Y/T. The airport also has a taxiway measuring 110 meters in length and 23 meters in width, with the same PCN rating of 27 F/C/Y/T. Furthermore, the apron at Frans Sales Lega Airport measures 60 meters by 80 meters, also with a PCN rating of 27 F/C/Y/T.

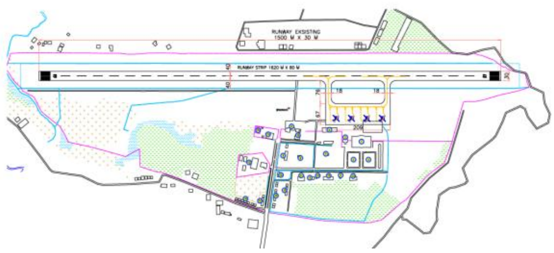

Figure 1. Layout of Frans Sales Lega Airport UPBU
Source: Frans Sales Lega Airport Master Plan, 2021

Each section of the apron, taxiway, and runway is equipped with its own drainage system. These channels function to collect rainwater and prevent waterlogging in the area, which could disrupt flight operations.

The runway-side drainage channel is constructed using river stone masonry, with a bottom width (B1) of 0.7 m, a top width (B2) of 1.5 m, a water level height (h) of 0.8 m, and a total channel height (H) of 1 m. The construction of this channel was carried out in the current year, and the drainage system discharges into a river.

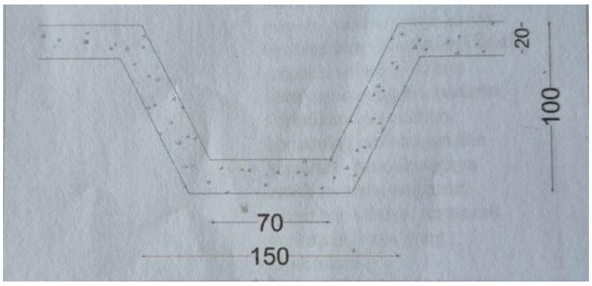

Figure 2. Dimensions of the Existing Drainage
Source: AIP Frans Sales Lega Airport, 2021

The main issue at Frans Sales Lega Airport is that the drainage channels in the runway strip area are still entirely open. In their existing condition, the runway strip drainage channels do not comply with the Directorate General of Civil Aviation Regulation Number KP 326 of 2019 and Regulation PR 21 of 2023 concerning Technical and Operational Standards for Civil Aviation Safety Regulation Part 139 (Manual of Standard CASR Part 139) Volume I Aerodromes, which stipulates that open drainage channels are not permitted within the runway strip area (Directorate General of Civil Aviation, 2023).

The research conducted by Falah (2019) focuses on the cost analysis of drainage construction work by comparing two methods: the conventional method and the precast U-Ditch method. The purpose of this analysis is to identify cost differences as well as the effectiveness of project implementation between the two approaches. The findings indicate that drainage construction using the conventional method requires higher costs compared to the precast U-Ditch method. The cost difference amounts to IDR 406,000, or approximately 10% more expensive than the precast method. Therefore, the precast U-Ditch method is considered more cost-efficient while also accelerating project implementation, as the components are already available in ready-to-install form.

The study conducted by Rabiel (2024) focused on the redesign of a closed drainage channel using precast concrete at the end of Runway 08 at Sugimanuru Airport, Muna, Southeast Sulawesi. The planning involved analyzing rainfall data as well as the existing condition of the drainage system on site. In addition, the research also prepared a method of working plan to guide the construction of the closed drainage system. This plan was designed to ensure that the construction process could be carried out smoothly while the airport remained operational, thereby maintaining both safety and efficiency in flight operations.

The study conducted by Sandra Yunita (2019) examined the use of precast concrete as an alternative to cast-in-place reinforced concrete for drainage construction in Jambi City. The research focused on comparing the two methods in terms of design, technical implementation, cost, and construction time. The findings revealed that the use of precast concrete required a total cost of Rp 4,942,080,000, while cast-in-place reinforced concrete only amounted to Rp 2,143,810,637. This shows a significant cost difference of Rp 2,789,269,363. These results indicate that although precast concrete offers advantages in terms of technical implementation and time efficiency, it is considerably more expensive compared to cast-in-place reinforced concrete.

The study conducted by Al Satria & Wulandari (2020) analyzes the comparison of costs and time in the construction of drainage channels using three types of materials: stone masonry, ready-mix concrete, and precast concrete, on the Boyolangu–Campurdarat road section, Tulungagung Regency. The purpose of this research is to identify alternative drainage materials that can reduce construction time while also minimizing labor requirements. The findings indicate that drainage construction does not necessarily have to rely on a single type of material. Instead, a combination of materials can be selected based on field conditions, making the work more flexible, cost-efficient, and time-effective.

The study conducted by Limenta (2018) analyzes the comparison between the cast in situ (conventional) method and the precast method in the improvement project of the Industrial Engineering Laboratory Building at ITS. The focus of the research is on cost and construction time analysis, considering the large volume of concrete work involved. The findings indicate that the conventional method resulted in a total cost of Rp 9,363,410,000.00 with a construction period of 92 working days. On the other hand, the precast method required a slightly higher cost of Rp 9,656,630,000.00, but offered a significant advantage in terms of time, as the construction was completed in only 56 working days. Therefore, although the precast method is more expensive, it is considerably more efficient in terms of construction duration.

Based on the background and previous research, the researcher plans a drainage cover in the runway strip area to comply with regulations and ensure it does not interfere with aircraft movements during operations. Therefore, the author presents this Final Project with the title "Cost Comparison of Drainage Covers in the

Runway Strip Area Using Precast Concrete and Conventional Concrete at Frans Sales Lega Airport, Ruteng". The objectives of this study are to evaluate the design of the planned drainage cover, compare the budget plan for the installation of the runway strip drainage cover at Frans Sales Lega Airport, and calculate the construction time required for installing the drainage cover using conventional concrete and precast concrete.

2. METHOD

2.1. Literature Review

A literature review is an activity of collecting and studying sources such as books, journals, documents, articles, archives, magazines, and others in order to obtain theories and concepts that support the implementation of this research.

2.2. Object and Subject of The Research

The research object refers to everything that becomes the main focus of a study, whether in the form of objects, individuals, or specific variables examined to obtain relevant data and information. In this research, the focus is on the planning of drainage channel covers in the runway strip area using either conventional concrete or precast concrete at UPBU Frans Sales Lega.

Meanwhile, the research subject is the part that can be studied more directly, whether in the form of individuals, institutions/organizations, or specific objects. Generally, the research subject represents the main aspect that can influence the results and conclusions of the analysis conducted. In this research, the subject under study is the cost comparison between using conventional concrete and precast concrete as materials for drainage channel covers.

2.3. Research Data

Research data refers to the information or facts collected in a study to be analyzed and used in answering research questions in order to achieve the objectives of the research. Such data may take the form of numbers, text, images, audio, or other formats, depending on the type of research conducted. In the data collection stage, the main step is to determine and gather the required information. In this study, the data needed include labor wages, the price and strength of materials used, as well as the time required to complete the drainage channel cover work using conventional concrete and precast concrete. The collected data will then be processed as research variables, particularly in the analysis of the Cost Budget Plan based on the unit price of work items in the relevant region.

2.4. Data Analysis Techniques

Data analysis is the process of collecting, interpreting, presenting, and processing data to obtain information that is useful for decision-making. The purpose of data analysis is to identify relationships, patterns, or conclusions that can assist in problem-solving and support the research. In this study, data analysis is conducted to compare the costs of planning drainage channel covers. The process aims to calculate the Cost Budget Plan for drainage channel cover work using conventional concrete and precast concrete. The results obtained will then be compared to provide a clearer understanding of the cost efficiency of each method.

2.5. Research Stages

This study involves several stages, beginning with the collection of primary data obtained directly from main sources through observation, surveys, interviews, or experiments. In this research, primary data includes the area and volume of drainage channel work in the runway strip. Secondary data is collected from existing sources such as documents, reports, books, journals, and official records, including the 2024 unit prices of materials. The data is then processed by organizing, analyzing, and interpreting it to produce structured, accurate, and meaningful information.

Following data processing, analysis is conducted to compare costs based on the Cost Budget Plan for each drainage channel cover method, including calculations of work volumes, material costs, and overall cost efficiency. Finally, conclusions are drawn to summarize the findings, answer the research questions, and provide a clear cost comparison between conventional and precast concrete, offering guidance for UPBU Frans Sales Lega and other stakeholders in selecting the most suitable material.

2.6. Research Location and Time

The planning of drainage channel cover work in the runway strip area was carried out at UPBU Frans Sales Lega, located at Jl. Satar Tacik No.1, Tenda, Langke Rembong District, Manggarai Regency, East Nusa Tenggara. The research process conducted by the author encompassed several stages, ranging from preparation to the final report writing. The study was carried out from October 2024 to June 2025.

3. RESULT AND DISCUSSION

3.1. Airport Drainage Channel Layout

The drainage channels at Frans Sales Lega Airport are divided into two main sides, namely the north and south sides of the runway strip. These channels are planned to be covered in accordance with aviation safety regulations, which prohibit open channels in the runway strip area.

Figure 3. Layout of Drainage at Frans Sales Lega Airport
(Source: KM-RTG-LAMP1 Existing Layout, 2023)

The length of the drainage channel on the north side is 1,532.56 meters, while the channel on the south side measures 1,486.13 meters. However, certain sections cannot be covered because they serve as access for vehicle and aircraft movement. These include the PKP-PK access road, which is 4.89 meters wide (rounded to 5 meters), and two taxiways, each 17.59 meters wide (rounded to 18 meters), resulting in a total reduction of 2 × 18 meters = 36 meters. Consequently, the total planned length of the drainage cover work is 2,978 meters.

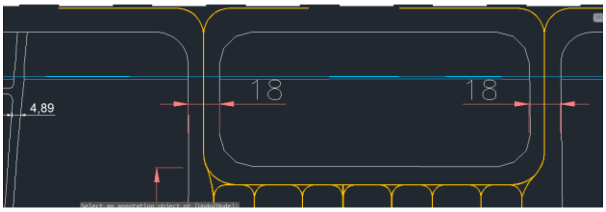

Figure 4. Reduction of Work Dimensions from Taxiway and Access Road
(Source: KM-RTG-LAMP1 Existing Layout, 2023)

Figure 5. illustrates the cross-section of the existing drainage channels on the north and south sides of the runway strip at Frans Sales Lega Airport. The channels have a trapezoidal shape with the following dimensions: a bottom width of 70 cm, a top width of 150 cm, a depth of 100 cm, wall thickness of 20 cm, and side foundations 40 cm wide. This configuration serves as a reference for determining the size of the drainage covers (concrete slabs) planned for both conventional and precast concrete methods. The dimensions are also used as the basis for structural analysis and calculation of work volumes. With a side foundation width of 40 cm, the planned cover width must match the width of the foundation edges, resulting in a total planned width of 1,500 + 400 + 400 = 2,300 cm.

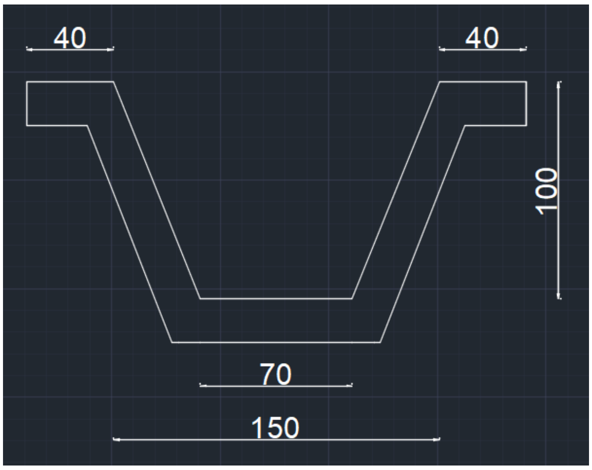

Figure 5. Existing Drainage Dimensions
(Source: Author's Processing, 2025)

3.2. Materials Used

3.2.1. Conventional Concrete

In the conventional concrete method, concrete with a grade of K-175 is used, which has a characteristic compressive strength of 14.5 MPa. The concrete's unit weight is planned to be 2,400 kg/m³, and its modulus of elasticity is calculated using the empirical formula: $Ec = 4{,}700\sqrt{fc'} = 17{,}897.07$ MPa. For the reinforcement steel, BJTP 24 grade is employed, with a yield stress of 240 MPa and an ultimate stress of 390 MPa. The unit weight of the steel is 78.5 kN/m³, and its modulus of elasticity is 200,000 MPa. These material properties serve as the basis for structural analysis and design of the drainage channel covers.

3.2.2. Precast Concrete

For the precast concrete method, precast slabs made of concrete grade K-350 are used, with a characteristic compressive strength of 31.2 MPa and the same unit weight of 2,400 kg/m³. The modulus of elasticity for the precast concrete slabs is calculated similarly to the conventional method, resulting in $Ec = 4{,}700\sqrt{fc'} = 26{,}252.77$ MPa. Complete specifications regarding the dimensions and strength of the precast slabs are adjusted according to the product catalog provided by the precast factory. All of these material technical data serve as the basis for load calculations, slab design, and structural analysis, both manually and using SAP2000 software.

3.3. Preliminary Design of Drainage Cover Plate Thickness

The determination of the initial thickness (preliminary design) of the drainage cover plates is carried out based on the existing channel conditions, the types of vehicles passing over, and the planned span of the cover. Based on the previously shown cross-section of the channel, the top width of the channel is 150 cm, which is used as the span length of the cover plates.

3.3.1. Conventional Concrete

In the conventional concrete method, the design of the cover plate thickness considers the concrete slab as a simply supported structural element subjected to both dead and live loads. The initial calculation refers to the L/h ratio, where the span-to-thickness ratio is within the limits recommended by technical standards. The preliminary plate thickness is then verified through bending moment and deflection analysis to ensure it meets allowable limits. The minimum plate thickness is calculated as $dmin = L/20 = 2{,}300/20 = 115$ mm, resulting in a conventional concrete drainage cover plate thickness of 115 mm. The plate span (L) is analyzed every 0.6 m, and the plate width is determined as the top channel width plus the foundation widths, i.e., $1{,}500 + 300 + 300 = 2{,}300$ mm, giving a total plate width of 2.3 meters.

3.3.2. Precast Concrete

In the precast concrete method, the plate design refers to commercially available manufacturer products. The dimensions and technical specifications of the precast slabs are obtained from the technical catalog provided by the precast supplier, with adjustments made to match the channel span width. The precast slabs used generally feature locking systems and internal reinforcement that have been strength-tested by the manufacturer.

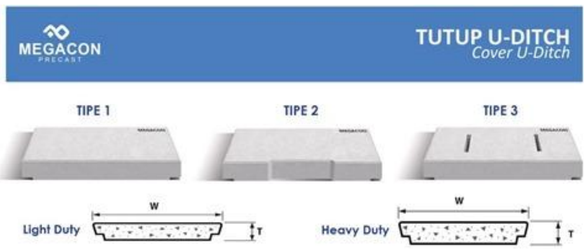

Figure 6. Precast Design
(Source: Megacon Precast Catalog, 2025)

According to the specified catalog, a cover type that matches the existing dimensions was selected, namely the U-3000 type with dimensions of 2,300 × 600 mm.

3.4. Analysis of Channel Cover Plate Structure with SAP2000 Assistance Program

3.4.1. Conventional Concrete Channel Cover Plate

The slab model is made in the form of a shell element with a shell-thin type, representing a reinforced concrete slab with a thickness of 12 cm. The slab span follows the width of the upper channel plus the width of the foundation, which is 2.3 meters, and is simply supported on both short sides with joint placement. The material used is defined according to the quality of K-175 concrete, with elastic properties and specific gravity adjusted. The model is made one-way to match the conditions of two supports, and mesh division is done sufficiently to improve the accuracy of the force distribution.

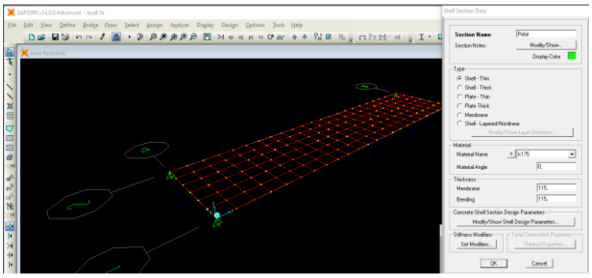

Figure 6. Modeling of a Conventional Concrete Drainage Cover Plate
(Source: Author's Editing. 2025)

The load consists of dead load (the plate's own weight), which is automatically calculated based on the material's specific gravity, rain load (LR), and live load (LL), which is a uniform pressure representing the load of vehicles or equipment on the plate. The live load is entered as a uniform load in kN/m². The load combination refers to SNI provisions.

Figure 7. Live Load Input for Conventional Concrete (LL and LR)
(Source: Author's Editing, 2025)

Live load (LL) is added to the plate at 2453N and rain load (LR) is added to the plate at 2.5N. Both loads are assumed to be in the direction of gravity.

After the loads are entered, the loads are combined using the Load Combination feature in SAP2000. This combination is essential for evaluating the structure's most severe conditions due to the combination of dead and live loads. The combination is created so that the structural calculations reflect the actual conditions occurring in the field, where the loads do not act separately but simultaneously.

The basic combination consists of dead load (DEAD) and live load (LL) with a scale factor of 1.0 for each. Used to see the response of the structure to normal conditions receiving dead and live loads.

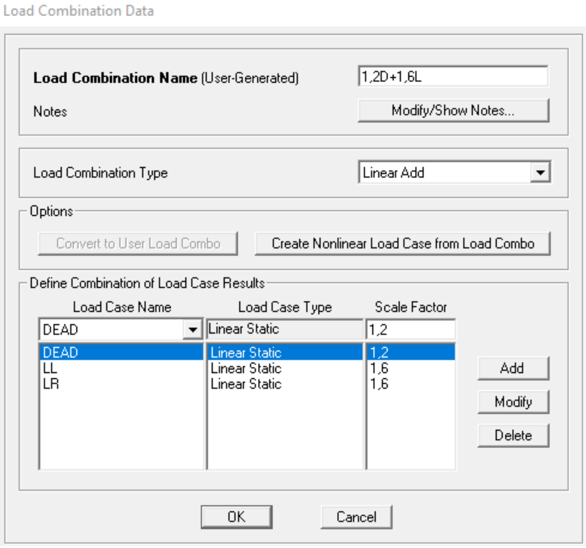

Figure 8. Load Combination Input 1
(Source: Author's Editing. 2025)

The ultimate combination consists of a dead load with a factor of 1.2 and a live load with a factor of 1.6. This combination refers to the SNI 1727:2020 standard as the basis for evaluating the structural strength against maximum moments, shears, and deflections.

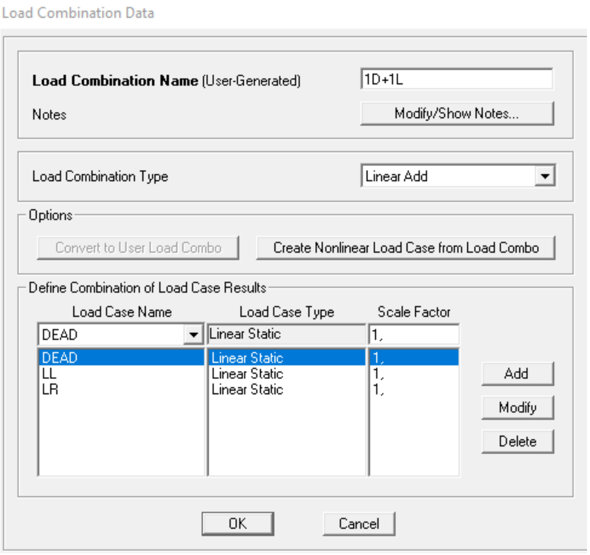

Figure 9. Load Combination Input 2
(Source: Author's Editing. 2025)

After the analysis process was carried out, the results obtained were the maximum bending moment (Mmax) = 2560 N/mm, maximum shear force (Vmax) = 138240 N, and maximum deflection (Δmax) = -0.43 mm.

3.4.2. Precast Concrete Channel Cover Plate

After the analysis process was carried out, the results obtained were the maximum bending moment (Mmax) = 2.56 N/mm, maximum shear force (Vmax) = 1382910 N, and maximum deflection (Δmax) = -0.43 mm.

3.5. Cost Budget Plan (Price Analysis)

A Cost Budget Plan (RAB) was prepared to calculate the total cost of the drainage channel closure project at Frans Sales Lega Airport. This cost analysis covers two construction methods: conventional concrete and precast concrete, with comparisons of the total costs of materials, labor, and equipment. The RAB was prepared based on the calculation of the work volume multiplied by the unit price according to the Basic Work Unit Price Analysis (HSPK) for the Ruteng region, NTT.

3.5.1. Conventional Concrete Channel Cover Plate

The work volume was calculated based on the dimensions of the planned drain cover plate, with a length of 2.3 meters and a width of 0.6 meters. For the formwork, the area of the bottom of the plate was calculated as 2.3 × 0.6 = 1.38 m². Additional areas on the right and left sides were 0.138 m² each, and on the front and rear sides 0.529 m², resulting in a total formwork area of 2.047 m².

The concrete volume was calculated by multiplying the horizontal cross-sectional area by the plate thickness, i.e., 2.3 × 0.6 × 0.115 = 0.1587 m³. The plate thickness (t) was planned to be 11.5 cm. For the reinforcement work, the total length of the reinforcement was calculated from the spacing and number of bars, which was 4.6 meters. The total amount of steel used in one module was 9.2 meters with a diameter of 8 mm. The specific gravity of the reinforcing steel was 7,850 kg/m³. Based on the formula calculation, the total weight of the reinforcement is 5.26927 kg, rounded to 5.3 kg.

The work volume calculation was performed to determine the required materials, such as formwork, concrete, and reinforcing steel, based on the planned plate dimensions. Each component was calculated using basic geometric formulas based on the actual shape and dimensions in the field.

Each stage of work in conventional methods, from cleaning, reinforcement, formwork, to casting, is detailed in a unit price analysis. This analysis includes labor, materials, and equipment adjusted to HSPK standards.

After calculations, the total cost of implementing the conventional method reached 3,734,037,626.00, including tax (11% VAT). This value reflects cost efficiency compared to the precast method and is a primary consideration in decision-making.

Table 1. Conventional Concrete Cost Budget Plan

No	Uraian Pekerjaan	satuan	Volume	Harga Satuan	Jumlah Harga
I	**PEKERJAAN PERSIAPAN**				
1	Pembersihan Lokasi	m^2	5956	Rp 9.325,00	Rp 55.539.700,00
				JUMLAH	Rp 55.539.700,00
II	**PEKERJAAN PEMASANGAN**				
1	Pemasangan Bekisting	m^2	5152	Rp 378.300,00	Rp 1.949.001.600,00
2	Pembesian	kg	26306	Rp 14.164,88	Rp 372.621.201,75
3	Beton K-175	m^3	788	Rp 1.332.626,72	Rp 1.155.120.840,90
				JUMLAH	Rp 3.532.283.342,65
PPN 11%					Rp 388.551.167,69
TOTAL					Rp 3.920.834.510,34
PEMBULATAN					Rp 3.920.834.511

(Source: Author's processing. 2025)

3.5.2. Precast Concrete Channel Cover Plate

In contrast to conventional methods, work with a precast system consists of fewer but modular activities, such as site clearing and installation of precast elements with the help of heavy equipment.

The precast method requires a budget of Rp 10,120,226,382.00, covering all activities from start to finish. Although the implementation time is shorter, the high cost is due to the cost of the plates and installation tools.

Table 1. Precast Concrete Cost Budget Plan

No	Uraian Pekerjaan	Satuan	Volume	Harga Satuan	Jumlah Harga
I.	**PEKERJAAN PERSIAPAN**				
1	Pembersihan Lokasi Sekitar Drainase	m^2	5956	Rp9.325	Rp55.539.700
				JUMLAH	Rp55.539.700
II.	**PEKERJAAN PEMASANGAN**				
1	Pemasangan Cover U-Ditch(2300 x 600)	buah	4964	Rp1.583.427	Rp7.860.130.139
				JUMLAH	Rp7.860.130.139
TOTAL					Rp7.915.669.839
PPN 11%					Rp870.723.682,27
JUMLAH TOTAL					Rp8.786.393.521,07
PEMBULATAN					Rp8.786.393.521

(Source: Author's processing. 2025)

In the conventional method, the total cost is calculated by adding up all work items, with the main costs being the formwork and casting. Meanwhile, the precast method only covers site clearance and installation costs, but the unit price of the precast slab is significantly higher. Based on the calculations, the total cost of the conventional method is lower than that of the precast method. This makes the conventional method more economical from a budget perspective.

3.6. Time Schedule

A time schedule is prepared to outline the sequence and duration of work from start to finish. This schedule is essential as a reference for project implementation in the field and as a basis for conducting S-curve analysis. The time schedule is prepared weekly based on the division of main work types performed by both conventional and precast construction methods.

3.6.1. Conventional Concrete Channel Cover Plate

In the conventional method, the drain covering work is carried out in stages at the project site, starting with area clearing, formwork installation, reinforcement, concrete pouring, and finishing. Each stage requires its own time, including waiting for the concrete to dry (cure), resulting in an estimated total implementation time of 12 weeks. The time is broken down by week and visualized in a table to illustrate the week-by-week workflow.

Conventional work takes a long time because all processes are carried out on-site, including setting, casting, and curing. Analysis of daily labor requirements and the total duration of each activity are based on technical calculations.

The S-curve depicts the accumulated weekly progress against the task weight. Because the work is gradual, the graph shows steady, gradual progress over 12 weeks.

3.6.2. Precast Concrete Channel Cover Plate

In the precast method, the cover slab is manufactured off-site, so only cleaning, channel base preparation, and installation of the slab with auxiliary tools are performed in the field. Because no casting or curing is required, the construction time is shorter, approximately 9 weeks. The precast method's time schedule is also presented in tabular form, with more concise and concise stages than the conventional method.

Time efficiency is a key advantage of the precast method. Installation times are significantly shorter because the concrete elements are precast. Time calculations are based on the number of units per day and the availability of supporting equipment.

The S-curve of precast methods shows faster progress than conventional methods. Work immediately accelerates as soon as installation begins, demonstrating tangible time savings.

3.7. Comparative Analysis of Conventional and Precast Concrete Channel Cover Plates

Comparisons were made across three main aspects: structural aspects, cost aspects, and implementation time aspects (Time Schedule). These three aspects were used as the basis for determining the most appropriate construction method for the drainage channel closure project at Frans Sales Lega Airport.

From the results of structural analysis, both manually and using SAP2000 software, both conventional and precast concrete methods were declared to meet the strength and stability requirements. In the conventional method, calculations were performed using a two-support slab approach, and the results showed that the resulting moments and shear forces were still within safe limits. Similarly, in the precast method, precast slab products are generally designed and tested in the factory according to technical standards. Therefore, in terms of structural strength, both methods are considered feasible and safe for use.

A comparison of the cost budget plan shows that the conventional method has a lower cost than the precast method. This is because the conventional method allows materials and labor to be obtained locally at a more affordable price, while the precast method includes production and distribution costs from the manufacturer per unit of slab. Although the precast method offers ease of implementation, in terms of budget efficiency, the conventional method is more economical and a more cost-effective option.

In terms of implementation time, the precast method is far superior because the slabs are readily available and only require on-site installation. The estimated implementation time for the precast method is approximately 9 weeks, while the conventional method can take up to 12 weeks, including formwork, reinforcement, casting, and curing. If a project is time-constrained or requires a faster completion, the precast method is a more efficient option in terms of implementation time.

4. CONCLUSION

Based on the results of planning, structural analysis, cost budget calculations, and preparation of a time schedule for the drainage cover on the runway strip area of Frans Sales Lega Airport, the following conclusions can be drawn:

1. Drainage cover with conventional concrete using the site mix method or direct casting in the field using K-175 concrete quality is planned with dimensions of 2300 mm x 600 mm with a plate thickness of 11.5 cm using 8 mm diameter reinforcement with a reinforcement spacing of 200 mm. while precast concrete is made by the factory with standardized quality, namely K-350 with dimensions of 2300 mm x 600 mm with a plate thickness of 175 mm.
2. Conventional concrete requires a more economical cost with a total of Rp. 3,920,834,511.00 (Three billion nine hundred twenty million eight hundred thirty four thousand five hundred and eleven rupiah) compared to precast concrete which reaches Rp8,786,393,521.00 (Eight billion seven hundred eighty six million three hundred ninety three thousand five hundred and twenty one rupiah). The considerable cost difference shows that conventional concrete is more efficient in terms of budget.
3. Precast concrete requires a shorter construction time of 42 days compared to conventional concrete, which requires 81 days. This indicates that the use of precast concrete can significantly shorten project duration, resulting in greater time efficiency and reducing potential delays in the field.

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