



IX GOVERNO CONSTITUCIONAL
MINISTÉRIO DO PLANEAMENTO E INVESTIMENTO ESTRATÉGICO
FUNDO DAS INFRAESTRUTURAS



**Conselho de
Administração**

DELIBERASAUN N. 134/IX/CAFI/2025

Conselho de Administração do Fundo das Infraestruturas – CAFI, bazeia ba artigo 10º (1) e (3) DL Nº. 25/2024, de 22 de maio, Primeira Alteração ao DL Nº.13/2016, 18 de Maio, realiza reuniaun extraordinária iha loron Quinta-feira, 25 de Setembro de 2025, e halo deliberasaun ba assunto tuir mai ne'e:

Asuntu: Entrega dos Resultados de Verificação de Propostas aos projetos abaixo na lista da proposta:

Proponente: Ministério Planeamento e Investimento Estratégico – MPIE

Notas/justifikasiun:

- Bazeia ba despacho husi Ministro MPIE ho karta no. Ref.: 1354/CG-GMPIE/VIII/2025, data 28 de Agosto de 2025, ho asuntu Encaminha Despacho husi Ministra MPIE-Interina ba karta husi ADN, I.P. ho no. Ref.: 1651/ADN, I.P./VIII/2025, data 26 de Agosto de 2025, ho asuntu: Entrega dos Resultados de Verificação de Propostas;
- Bazeia ba reuniaun CAFI dia 25 de setembro de 2025 Ministro do Planeamento e Investimento Estratégico hanesan mos Presidente CAFI entrega resultadu verifikasiun projetu;
- Presidente CAFI informa mos katak Iha proposta projetu hamutuk 11 ne'ebe submete mai MPIE atu ADN, I.P. halo verifikasiun;
- Ministro do Planeamento e Investimento Estratégico - MPIE entrega resultadu verifikasiun ADN, I.P. ba MOP atu halo verifikasiun. Bainhira verifika hotu ona, MOP sei submete fali mai CAFI hodi hetan aprovisaun. Presidente CAFI solisita projetu refere atu alinha ho despaxu S.E. PM.;
- Lista Proposta:

No.	Naran Projeto	Resultadu Verifikasiun ADN, I.P./referencia	Alokasaun FI 2025/ Kodigu Atividade
1	Reabilitation Urban Road Lautem;	\$24,083,088.64; No. Ref.: 465/ADN, I.P./VIII/2025, data 19 de agosto de 2025	<ul style="list-style-type: none">• Alokasaun FI: \$ 500,000.00• Programa 977: Manutenção, Reabilitação e Resposta as Estruturas Danificadas Calamidades• Kodigu atividade 02605B2: Rehabilitasaun estrada Urbana Lautem (Lospalos) 10 Km
2	Projeto Urban Road Baucau Vilage;	\$16,517,454.01;	<ul style="list-style-type: none">• Alokasaun FI: \$ 500,000.00

DELIBERASAUN N.º134/IX/CAFI/2025

Página 1 hosi 7

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IX GOVERNO CONSTITUCIONAL
MINISTÉRIO DO PLANEAMENTO E INVESTIMENTO ESTRATÉGICO
FUNDO DAS INFRAESTRUTURAS



**Conselho de
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		No. Ref.: 466/ADN, I.P./VIII/2025, data 19 de agosto de 2025	<ul style="list-style-type: none"> Programa 977: Manutenção, Reabilitação e Resposta as Estruturas Danificadas Calamidades Kodigu atividade 02605A9: Rehabilitasaun estrada Urbana Baucau 23 Km
3	Konstrusaun Muro Protesaun Cyclope Mota Wenunuk, Metinaro Municipio Dili;	\$2,437,229.80; No. Ref.: 422/ADN, I.P./VII/2025, data 29 de Julho de 2025	<ul style="list-style-type: none"> Alokasaun FI: \$ 16,342,157.08 Programa 977: Manutenção, Reabilitação e Resposta as Estruturas Danificadas Calamidades Kodigu atividade 9770668: New Construction of Cyclop Concrete in Hera River Kiik Wenunuk Up stream, Section river Heta Sta. 0+000 - Sta. 0+530, Dili Municipality
4	Konstrusaun Muro Protesaun Cyclope Mota Wetuku, Bekarin, Município Viqueque;	\$2,160,815.44; No. Ref.: 423/ADN, I.P./VII/2025, data 29 de Julho de 2025	<ul style="list-style-type: none"> Alokasaun FI: \$16,342,157.08 Programa 977: Manutenção, Reabilitação e Resposta as Estruturas Danificadas Calamidades Kodigu atividade 9770659: Construction of wall Protection in Wetuku River, Bekari, Viqueque.
5	Cyclope for Slope Protection at Akanuno River,Suco Camea, Municipio Dili;	\$998,601.03; No. Ref.: 380/ADN, I.P./VII/2025, data 29 de Julho de 2025	<ul style="list-style-type: none"> Alokasaun FI: \$ 120,000.00 Programa 977: Manutenção, Reabilitação e Resposta as Estruturas Danificadas Calamidades Kodigu atividade 9770657: Construction of Cyclope Wall Protection in Acanunu River
6	Konstrusaun Bronjong iha Modo Laran Assirimou, Suku Aisirimou, Município Aileu;	\$1,068,000.59; No. Ref.: 424/ADN, I.P./VII/2025, data 29 de Julho de 2025	Laiha Linha Atividade nesesita aprovasaun CAFI atu bele alista iha sistema GRP/DBFTL iha tinan 2026
7	Construção Gabion, Mota Karau-Ulun, Pakote 1, Município Covalima;	\$ 2,119,539.76	<ul style="list-style-type: none"> Alokasaun FI: \$16,342,157.08 Programa 977: Manutenção, Reabilitação e Resposta as Estruturas Danificadas Calamidades Kodigu atividade 9770665: Construction of Gabion for Karau-ulun River, Same Manufahi
8	Construção Gabion, Mota Karau-Ulun,	\$1,865,828.25;	<ul style="list-style-type: none"> Alokasaun FI: \$16,342,157.08

DELIBERASAUN N.º134/IX/CAFI/2025

Pájina 2 hosi 7



IX GOVERNO CONSTITUCIONAL
MINISTÉRIO DO PLANEAMENTO E INVESTIMENTO ESTRATÉGICO
FUNDO DAS INFRAESTRUTURAS



Conselho de
Administração

	Pakote 2, Município Covalima;	No. Ref.: 480/ADN, I.P./VIII/2025, data 25 de agosto de 2025	<ul style="list-style-type: none"> Programa 977: Manutenção, Reabilitação e Resposta as Estruturas Danificadas Calamidades Kodigu atividade 9770664: Construction of wall protection Karau-ulun River package 2 Suai, Covalima Municipality
9	New Construction of Gabion, Right Side, Mota Cairui, Laleia, Section 1, Municipality Manatuto;	\$931,885.77; No. Ref.: 478/ADN, I.P./VIII/2025, data 25 de agosto de 2025	Laiha Linha Atividadenesesita aprovasaun CAFI atu bele alista iha sistema GRP/DBFTL iha tinan 2026
10	New Construction of Gabion, Right Side, Mota Cairui, Laleia, Section 2, Municipality Manatuto;	\$628,572.65; No. Ref.: 479/ADN, I.P./VIII/2025, data 25 de agosto de 2025	Laiha Linha Atividadenesesita aprovasaun CAFI atu bele alista iha sistema GRP/DBFTL iha tinan 2026

Desizaun:

- Ministro do Planeamento e Investimento Estratégico hanesan mos Presidente CAFI entrega resultadu verifikasiadaun ADN, I.P. ba Ministério das Obras Publicas hanesan Projetu nain;
- Ministro do Planeamento e Investimento Estratégico - MPIE entrega resultadu verifikasiadaun ADN, I.P. ba MOP atu halo verifikasiadaun. Bainhira verifika hotu ona, MOP sei submete fali mai CAFI hodi hetan aprovasaun. Presidente CAFI solisita projetu refere atu alinha ho despaxu S.E. PM;
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IX GOVERNO CONSTITUCIONAL
MINISTÉRIO DO PLANEAMENTO E INVESTIMENTO ESTRATÉGICO
FUNDO DAS INFRAESTRUTURAS



Conselho de
Administração

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IX GOVERNO CONSTITUCIONAL
MINISTÉRIO DO PLANEAMENTO E INVESTIMENTO ESTRATÉGICO
FUNDO DAS INFRAESTRUTURAS



Conselho de
Administração

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FUNDO DAS INFRAESTRUTURAS



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Aprovado husi CAFI iha loron 25 de Setembro de 2025.

O Conselho de Administração do Fundo das Infraestruturas
O presidente,



Gastão Francisco de Sousa
Ministro do Planeamento e Investimento Estratégico

Santina José Rodrigues Ferreira Viegas Cardoso

Ministra das Finanças
(La Participa iha Reunjaun)



Miguel Marques Gonçalves Manetelu
Ministro dos Transportes e Comunicações



Samuel Marçal
Ministro das Obras Públicas



IX GOVERNO CONSTITUCIONAL
MINISTÉRIO DO PLANEAMENTO E INVESTIMENTO ESTRATÉGICO
FUNDO DAS INFRAESTRUTURAS



**Conselho de
Administração**

Annexo:



MINISTÉRIO DO PLANEAMENTO
E INVESTIMENTO ESTRATÉGICO
IX GOVERNO CONSTITUCIONAL
GABINETE DO MINISTRO



Dili, 28 de Agosto de 2025

Nu. Ref : 1354/CG-GMPIE/VIII/2025

Hato' o ba : Diretur Executivo SGP
Sr. Mauricio Borges

Asuntu : Encaminha Despacho Ministra MPIE-Interina

Ho Respeito

Komforme assunto iha leten Gabinete do Ministro encaminha despacho Ministra MPIE em Exercício kona ba karta ho No. Ref: I651/ADN,I.P./VIII/2025, data 26 de Agosto de 2025 husi Diretor Adjunto e Diretor Executivo Interino, ADN ho assunto **Entrega dos resultados de verificação de propostas** no despacho Ministra MPIE em Exercício iha anexo.

Despacho Ministra MPIE em Exercício : Para Director SGP

Verificar e processar de acordo c/ os procedimentos existentes

Data despaço : 08.26.2025

Mak ne'e deit ba atensaun, lahaluha hato'o obrigado wain.

Hau nia melhores Kumprimentos


Tomás de Fátima da Silva
Chefe do Gabinete do MPIE



AGÊNCIA DE DESENVOLVIMENTO NACIONAL, I. P.

Data: 26 de Agosto de 2025

N.º de Referência : 1651 /ADN,I.P./VIII/2025

26/08/2025 Director SEP
Coordena ero unidades especiais
MOP ba implementar verifica
verificação ADN na project
muri year reabilitação estrada
urbana iha Lospalos.

Para : Sua Excelência Eng. Gastão Francisco de Sousa
Ministro do Planeamento e Investimento Estratégico

Assunto : Entrega dos resultados de verificação de propostas

Excelência,

Santina V. Cardoso
MPE Interin

Com base no Despacho de V. Exa., a Agência de Desenvolvimento Nacional (ADN, I.P.) procedeu à verificação no terreno das propostas abaixo elencadas:

1. Reabilitação da Estrada Urbana de Lospalos;
2. Reabilitação da Estrada Urbana de Baucau;
3. Construção do Muro de Proteção Gabion Mota Uatuwa, Município de Baucau;
4. Construção do Muro de Proteção Cyclop, Mota Wenunuuk, Metinaro;
5. Construção do Muro Proteção Cyclop, Mota Wetuku-Bekarin, Municipio Viqueque;
6. Construção Muro Proteção, Mota Akanuno, Camea – Hera;
7. Construção do Muro de Proteção Gabion, Modo Laran, Suku Aisirimou, Municipio Aileu;
8. Construção do Muro de Proteção Gabion, Mota Karau Ulun, Pakote 2, Municipio Covalima;
9. Construção do Muro de Proteção Gabion Right side, section 2 Mota Cairui, Laleia, Municipio Manatuto;
10. Construção do Muro de Proteção Gabion Right side section 1 iha Mota Cairui, Municipio Manatuto.

GABINETE DO
Ministro do Planeamento e
Investimento Estratégico

RECIDIDO
DIA 25 / 8 / 2025
POR Inocentia 2066

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Assim, a ADN vem, por via deste ofício, remeter a V. Exa. os resultados inerentes às supra identificadas verificações, com vista à obtenção de uma decisão tendente à continuação do processo.

Sem mais de momento e agradecendo a atenção de V. Exa., despeço-me com os meus melhores cumprimentos.



Januário Mata Guterres

Diretor Adjunto e Diretor Executivo Interino, ADN. IP.



AGÊNCIA DE DESENVOLVIMENTO NACIONAL, I. P.

(1)

Dili, 19 de Agosto de 2025

Ref : 465 /ADN, I.P./VIII/2025

Hato' o ba : **Januario Maia Guterres**
Director Adjunto e Director Executivo Interino - ADN, I.P.

Assunto : Resultado da Verificação – Projeto Rehabilitation Urban Road Lautem

Com os nossos Respeitos,

Com base no assunto mencionado acima, vimos, por meio desta, informar que a equipa de verificação da Unidade de Avaliação de Projetos – ADN, I.P. já realizou a verificação Boq do **Projeto Rehabilitation Urban Road Lautem**, os resultados da verificação encontram-se em anexo para conhecimento e apreciação.

Agradecemos a vossa atenção e subscrevemo-nos com a mais elevada consideração.

Arch. José Fernando Liu Soares
Koordenador UAP - ADN, I.P.



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Bedik-Hun, Fatuhad
Dili - Timor-Leste
info@mpie.gov.tl
+670 3310 289



AGENCIA DE DESENVOLVIMENTO NACIONAL - P

NAME OF PROJECT : REHABILITATION URBAN ROAD LAUTEM.

LOCATION OF PROJECT : MUNICIPALITY GU LAUTEM.

SECTION : 12+570.035 FOR NATIONAL ROAD 22+176.586 KM FOR LOCAL ROAD.

SUMMARY

PAY ITEM NO	DESCRIPTION	PROPOSTA	ADN REVIEW
		TOTAL COST	TOTAL COST
100	GENERAL REQUIREMENTS	\$ 194,331.88	\$ 252,620.20
200	EARTHWORK	\$ 1,502,876.33	\$ 636,689.20
300	SUBBASE AND BASE COURSE	\$ 7,733,980.55	\$ 4,973,509.72
400	SURFACE COURSE	\$ 8,396,332.15	\$ 5,714,217.74
500	BRIDGE CONSTRUCTION	\$ 5,811,332.09	\$ 6,039,435.73
600	DRAINAGE AND SLOPE PROTECTION STRUCTURES	\$ 2,793,580.48	\$ 3,400,413.18
700	MISCELLANEOUS STRUCTURES	\$ 46,913.96	\$ 330,069.88
A	CONSTRUCTION COST	\$ 26,479,347.44	\$ 21,347,155.65
B	CONTRACTOR FEE (A X 10%)	\$ 2,647,934.74	\$ 2,134,715.57
C	OVER HEAD	\$ 355,350.00	\$ 129,000.00
D	TAX 2% (A+B+C)	\$ 589,652.64	\$ 472,217.42
TOTAL CONTRACT AMOUNT		\$ 30,072,284.83	\$ 24,083,088.64

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NAME OF PROJECT : REHABILITATION URBAN ROAD LAUTEM.

LOCATION OF PROJECT : MUNICIPALITY OF LAUTEM.

SECTION : 12+570.035 FOR NATIONAL ROAD 22+176.596 KM FOR LOCAL ROAD.

BILL OF QUANTITY

ITEM NO	DESCRIPTION	PROPOSTA				ADN REVIEW			
		UNIT	QUANTITY	UNIT COST	TOTAL COST	UNIT	QUANTITY	UNIT COST	TOTAL COST
100 GENERAL REQUIREMENTS									
102.1	Contractor's Mobilization	l.s.	1.00	\$ 151,340.94	\$ 151,340.94	l.s.	1.00	\$ 102,666.27	\$ 102,666.27
102.3	Contractor's Demobilization	l.s.	1.00	\$ 9,099.94	\$ 9,099.94	l.s.	1.00	\$ 39,350.00	\$ 39,350.00
103.1	Relocation of Public Utilities (Electrical pole)	Mts.	17.00	\$ 2,000.00	\$ 34,000.00	Ncs.	17.00	\$ 2,000.00	\$ 34,000.00
103.2	Relocation of Public Utilities (Telephone pole)	Mts.	9.00	\$ 1,300.00	\$ 11,700.00	Ncs.	9.00	\$ 1,300.00	\$ 11,700.00
103.3	Relocation of Public Utilities (Compensation for water line)	l.s.	6.00	\$ 1,000.00	\$ 6,000.00	l.s.	6.00	\$ 6,000.00	\$ 6,000.00
104	Traffic Management System & Safety	l.s.	1.00	\$ 3,000.00	\$ 3,000.00				
105	Provision of Laboratory Testini Equipment Apparatus	l.s.	1.00	\$ 3,000.00	\$ 3,000.00	l.s.	1.00	\$ 58,903.93	\$ 58,903.93
112.3.2	Monthly Progress Report and Photographs	l.s.	1.00	\$ 10,800.00	\$ 10,800.00				
109	Survey, Shop Drawings and As Built Drawing	l.s.	1.00	\$ 10,260.00	\$ 10,260.00				
TOTAL OF 100					\$ 239,191.88				\$ 252,620.20
200 EARTHWORK									
201(1)	Clearing and Grubbing	ha.	25.14	\$ 1,652.60	\$ 41,546.36	ha.	25.14	\$ 1,571.23	\$ 39,500.66
201(3)	Individual Removal of Trees, Small (150mm dia-900mm dia)	each	1,842.00	\$ 28.66	\$ 52,791.72	each	1,842.00	\$ 11.52	\$ 21,214.27
201(4)	Individual Removal of Trees, Large (over 900mm dia)	each	22.00	\$ 54.71	\$ 1,203.62	each	22.00	\$ 64.37	\$ 1,416.20
202(3)b	Removal and Disposal of Existing AC Pavement	sq.m.	66,812.84	\$ 4.10	\$ 273,932.64	sq.m.	66,812.84	\$ 2.73	\$ 182,358.05
SPL 202(4)a	Removal of Existing RCPC (1000 mm.dia. and above)	l.m.	5.00	\$ 4.07	\$ 20.35	l.m.	5.00	\$ 14.70	\$ 73.48
SPL 202(4)b	Removal of Existing Box Culvert	l.m.	100.00	\$ 156.54	\$ 15,654.00	l.m.	100.00	\$ 15.99	\$ 1,598.56
202(4)g	Removal of Existing Lined Ditch	l.m.	5,203.00	\$ 4.70	\$ 24,454.10	l.m.	5,203.00	\$ 3.27	\$ 17,006.84
203(2)	Surplus Common Excavation	cu.m.	98,626.50	\$ 4.15	\$ 409,299.98	cu.m.	98,626.50	\$ 2.68	\$ 264,400.64
204(1)a	Structure Excavation, Common Materials	cu.m.	9,792.95	\$ 4.72	\$ 46,222.72	cu.m.	9,792.95	\$ 3.52	\$ 34,512.00
204(7)	Structural Backfill	cu.m.	1,224.72	\$ 26.12	\$ 31,989.69	cu.m.	1,224.72	\$ 18.87	\$ 23,112.50
205(1)a	Embankment from Roadway Excavation, Common Materials	cu.m.	79,081.09	\$ 7.66	\$ 605,761.15	cu.m.	79,081.09	\$ 0.65	\$ 51,798.00
TOTAL OF 200					\$ 1,502,876.33				\$ 636,689.20
300 SUBBASE AND BASE COURSE									
301	Aggregate Subbase Course	cu.m.	81,526.41	\$ 58.96	\$ 4,806,797.13	cu.m.	81,526.41	\$ 20.36	\$ 1,661,135.67
303	Crushed Aggregate Base Course, Grading A	cu.m.	46,752.65	\$ 62.61	\$ 2,927,183.42	cu.m.	46,752.65	\$ 70.65	\$ 3,312,374.06
TOTAL OF 300					\$ 7,733,980.55				\$ 4,973,509.72
400 SURFACE COURSE									
402(1)	Bituminous Prime Coat, MC-70 Cut-Back Asphalt	sq.m.	203,292.37	\$ 3.89	\$ 790,807.32	sq.m.	203,292.37	\$ 1.51	\$ 307,818.89
411	Asphalt Concrete Binder Course (ACBC), 60mm thick	sq.m.	187,466.72	\$ 40.57	\$ 7,605,524.83	sq.m.	187,466.72	\$ 28.84	\$ 5,406,398.85
TOTAL OF 400					\$ 8,396,332.15				\$ 5,714,217.74
500 BRIDGE CONSTRUCTION									
505(1)a	Reinforcing Steel, Grade 40	kg.	404,317.00	\$ 1.85	\$ 747,986.45	kg.	404,317.00	\$ 1.87	\$ 756,072.79
506(1)a	Structural Concrete Class A, fc' : 25 Mpa	cu.m.	17,645.96	\$ 254.35	\$ 4,488,249.93	cu.m.	17,645.96	\$ 271.79	\$ 4,795,933.93
506(6)	Lean Concrete fc 10 Mpa	cu.m.	4,255.87	\$ 135.13	\$ 575,095.71	cu.m.	4,255.87	\$ 114.53	\$ 487,429.02
TOTAL OF 500					\$ 5,811,332.09				\$ 6,039,435.73
600 DRAINAGE & SLOPE PROTECTION STRUCTURES									
601(1)a	Reinforced Concrete Pipe Culvert (1 - 1000mm dia.)	l.m.	204.00	\$ 307.47	\$ 62,723.88	l.m.	204.00	\$ 357.46	\$ 72,920.88
605	Stone Masonry	cu.m.	37,540.71	\$ 70.99	\$ 2,665,015.00	cu.m.	37,540.71	\$ 86.76	\$ 3,257,139.47
610(1)	Gabions	cu.m.	1,160.00	\$ 56.76	\$ 65,841.60	cu.m.	1,160.00	\$ 60.65	\$ 70,352.83
TOTAL OF 600					\$ 2,793,580.48				\$ 3,400,413.18
700 MISCELLANEOUS STRUCTURES									
701(1)	Concrete Curb	l.m.	3,435.00	\$ 5.44	\$ 18,686.40	l.m.	3,435.00	\$ 20.63	\$ 70,858.41
706(1)	Warning Signs	each	74.00	\$ 251.44	\$ 18,606.56	each	74.00	\$ 144.04	\$ 10,658.96
706(2)	Regulatory Signs	each	36.00	\$ 251.44	\$ 9,051.84	each	36.00	\$ 144.04	\$ 5,185.44
706.3	Informatory Sign	each	2.00	\$ 271.89	\$ 543.78	each	2.00	\$ 144.04	\$ 288.08
707	Reflectorized Thermoplastic Pavement Markings	sq.m.	9,758.58	\$ 25.38	\$ 249.11	sq.m.	9,758.58	\$ 24.91	\$ 243,078.99
TOTAL OF 700					\$ 46,913.96				\$ 330,069.88
TOTAL CONTRACT AMOUNT					\$ 26,524,207.44				\$ 21,347,155.65

L



NAME OF PROJECT : REHABILITATION URBAN ROAD LATUM, SEGMENT I.

LOCATION OF PROJECT : MUNICIPALITY OF LATUM.

SECTION : 4-832 KM FOR NATIONAL ROAD, I-1380 KM FOR LOCAL ROAD.

OVERHEAD

NO	DESKRISAUN	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	PROJECT TEAM	Ls	1.00	\$ 27,600.00	\$ 27,600.00
	Project Manager	Ls	1.00	\$ 18,000.00	\$ 18,000.00
	Site Manager	Ls	1.00	\$ 18,000.00	\$ 18,000.00
	Site Engineer	Ls	1.00	\$ 9,000.00	\$ 9,000.00
	Quality Control	Ls	1.00	\$ 9,000.00	\$ 9,000.00
	Health, Safety and Environment	Ls	1.00	\$ 9,000.00	\$ 9,000.00
I	Surveyor	Ls	1.00	\$ 9,000.00	\$ 9,000.00
	Logistics	Ls	1.00	\$ 4,500.00	\$ 4,500.00
	Administration	Ls	1.00	\$ 3,600.00	\$ 3,600.00
	Cleaning Staff	Ls	1.00	\$ 2,700.00	\$ 2,700.00
	Security	Ls	1.00	\$ 2,700.00	\$ 2,700.00
2	KUSTU OPERASIONAL	Ls	1.00	\$ 1,800.00	\$ 1,800.00
	Stationary	Ls	1.00	\$ 2,700.00	\$ 2,700.00
	Communication	Ls	1.00	\$ 1,800.00	\$ 1,800.00
	Meetings	Ls	1.00	\$ 5,400.00	\$ 5,400.00
	Electricity	Ls	1.00	\$ 5,400.00	\$ 5,400.00
	Water	Ls	1.00	\$ 1,800.00	\$ 1,800.00
	Daily, weekly, monthly reports	Ls	1.00	\$ 1,000.00	\$ 1,000.00
	Shop drawings, as built drawings	Ls	1.00	\$ 1,000.00	\$ 1,000.00
3	KUSTU SERVISU APOLO NIAM	Ls	1.00	\$ 3,600.00	\$ 3,600.00
III	Personal protective equipment (PPE)	Ls	1.00	\$ 1,000.00	\$ 1,000.00
4	KUSTU SOSIAL	Ls	1.00	\$ 1,000.00	\$ 1,000.00
	Launching ceremony	Ls	1.00	\$ 1,000.00	\$ 1,000.00
IV	Completion ceremony	Ls	1.00	\$ 1,000.00	\$ 1,000.00
					\$ 129,000.00
					TOTAL OVERHEAD

f

FORMULAR DESPASHO

Data entrada : 13/1/25

Assunto : Venglasaun BUP & Despacho proposta

Naran Projecto : Proposta multi-year ba rehabilitação estrada urbana Ira Lospalos

Projecto Nain : MPIE

Naran Companhia :

Clasifikasioun : Urgente Normal ✓

Despacho : EKIPA GIM

Eng Roger Koordoka ho eng. Verifikator
/AN Verifica / Relate Historio Observasau
15/25 JMW

Eng. Fisanduo atu ob verifika, no relater resultado
observasau

R 15/25



Agencia de Desenvolvimento Nacional
Timor-Leste
Ministério da Administração



AGÊNCIA DE DESPACHO VIDENTE - ADN - PORTUGAL

FORMULARIO DESPACHO

Data de Entrada Documentos: 13 / Jan / 2025

Data do Documentos: 13 / Jan / 2025

Husi: MINISTERIO DO PLANEAMENTO INVESTIMENTO ESTRATEGICO

No Ref : 44/CG-GMPIE/I/2025

Projeto :

Quantidade Documentos : 1

Anexo :

Assuntos :

Encaminha Despacho Ministro, MPIE (Proposta Multi Year ba Reabilitação Multi Year ba Reabilitação Multy Year ba Estrada Urbano iha Lospalos Vila - Municipio Lautem)

No. Tlf : 77241156

Companhia : Divita Group

Despacho :

- Unidade de Gestão Administrativa
- Unidade de Avaliação de Projectos
- Unidade de Controlo e Validação de Qualidade
- Unidade de Estudo e Desenvolvimento de Competências

- Adjunto
- Assessor/a
- Gabinete DE / Base de Dadus
- Other

Bz Sm Fernando L
Até haver -

Data: 13/01/2025

Rui Lourenço da Costa
Director Executivo ADN



MINISTÉRIO DO PLANEAMENTO
E INVESTIMENTO ESTRATÉGICO
IX GOVERNO CONSTITUCIONAL
GABINETE DO MINISTRO



Dili, 13 Janeiro de 2025

Nu. Ref : 44...../CG-GMPIE/1/2025

Hato'o ba : Directur Executivo ADN IP
Sr. Rui Lourenço da Costa

Asunto : Encaminha Despacho Ministro, MPIE

Ho Respeito

Liu husi ofício ida ne'e hakarak encaminha despacho Ministro MPIE kona ba karta husi Chefe de Gabinete do Primeiro Ministro Sra. Elizabeth Exposto ho Assunto Encaminhamento de Despacho, Proposta Multi Year ba reabilitação multy year ba Estrada Urbano iha Lospalos Vila-Município Lautém, no despacho Ministro iha anexo .

Despacho Ministro : Para ADN.IP- MPIE

Proceder de acordo c/ o despacho do PM

Data despacho : 01.10.2025

Mak ne'e deit ba atensaun, lahaluha hato'o obrigado wain.

Hau nia melhores cumprimentos

Tomás de Fátima da Silva
Chefe Gabinete do MPIE



PRIMEIRO
MINISTRO
Ex-Gabinete Constitucional

ADM + S6 P

Proceder de acordo c/o
despacho do P.M.

Ordem de
Primeiro-Ministro

No. 011 /GPM/1/2025
Dili, 6 de Janeiro de 2025

01.01.2025

Sua Exceléncia Senhor
Gastão Francisco de Sousa
Ministro do Planeamento e Investimento Estratégico

Assunto : Encaminhamento de Despacho
Proposta Multi Year para reabilitação multi year da estrada urbana ilha Lospalos
Vila - Município Lautém

Aproveitando para transmitir a V.Exa os cumprimentos de Sua Exceléncia o Senhor Primeiro-Ministro em Exercício, Mariano Assanamí Sabino, juntamente com os termos do despacho por ele exarado, relativo ao assunto em epígrafe, que a seguir se transcreve.

Despacho:

Para MPIE considerar a viabilidade de execução!

Data do despacho : 24/12/2024

Grata pela atenção, subscrevo-me com os melhores cumprimentos

Elizabeth Esposto
Chefe de Gabinete do Primeiro-Ministro

Palácio do Gabinete
Avenida Marginal
Dili, Timor-Leste

GABINETE DO
Ministro do Planeamento e
Investimento Estratégico
RECIBIDO
DIA 10 / 1 / 2025
POR Inocentia A1



DIVITA GROUP



Nota
bit de
a
consideraç
de
2024
der
da

**PROPOSTA MULTI YEAR BA REHABILITASAUN BA
ESTRADA URBANO IHA LOSPALOS VILLA -
MUNICIPIO LAUTEM**

2024





GENERAL CIVIL CONSTRUCTION & INSTALLATION FOR ELECTRICITY & WATER SUPPLY

Rua Becon - Ex. Restorant Tropical / Mobile: +670.77241156 - +67073333888

Email: Divita_co_ltd@yahoo.com / Posto Admin - Cristo Rei - Dili-Timor Leste

Ns. Ref.:01/ET-U/LPS/24

Hato'o ba : Sua Exceléncia Sr. Kay Rala Xanana Gusmão, Primeiro Ministro -- RDTL

Cc : Sua Exceléncia Sr. Eng Gastao de Sousa - Ministro do Planeamento e Investimento Estratégico -- RDTL

: Sua Exceléncia Sr. Samuel Marçal, Ministro das Obras Públicas -- RDTL

Assuntu : Proposta Multi Year ba Rehabilitasaun Multi Year ba Estrada Urbano iha Lospalos Villa -- Municipio Lautem

Data : 23/12/2024

Exmo Sr. Primeiro Ministro RDTL mak hau respeito,
Liu husi biban ida ne'e hau nudar Timor Oan nebe durante ne lahetan oportunidade hanesan sira seluk tanba durante ne'e Divita Group hetan proyek hanesan Sub Contract (ajuda veteranos sira nebe hetan proyek hau fo persen ba sira) hau hetan osan oituan mesmo que laos Main Contract maibe ho oportunidade Sub Contract sira ne'e hau hetan lukru oituan e hau Re - invest fali iha ita nia rai laran hodi bele loke campo de trabahlo e apoio Guverno iha dezenvolvimento iha ita nia rai, mesmo que kiik tebes compara ho cidadaun sira seluk. Divita Group re-invest ba osan ou lukru nebe hetan hahu husi 2009 ate 2017 iha area oin2 hanesan :

1. Corrotranst Taxi : Taxi iha Capital atende pasageiros durante 24 horas
2. Divita Fuels Lda : lokasi iha Tibar
3. Divita Residencia : Delta - Pasir Putih
4. Timor Airways : GSA ba Citilink Indonesia
5. Dili Post - Media
6. Agricultura Buah Naga Maubara
7. Divita Water Park and Resort – (deseign pronto hotu ona soke orsamento sedauk iha)

Tanba ho Invesimento nebe hau temi hau laiha oportunidade hodi hetan obra nebe bot hodi bele ajuda hau nia kbiit e hau mos la deve banku tanba ho funan nebe bot



GENERAL CIVIL CONSTRUCTION & INSTALLATION FOR ELECTRICITY & WATER SUPPLY
Rua Becora - Ex. Restoran Tropical / Mobile: +670 77241156 - +670 73333889
Email: Divita_co_id@yahoo.com / Posto Admin - Cristo Rei - Dili-Timor Leste

hau tauk atu deve banku tanba hau mos laiha proyek ruma. Nune ho investimento hanesan ne susar tebes atu hau bele selu funan ba banku. E nune hahu husi 2017 ate data hau nunika hetan proyek mesmo que iha oportunidade maibé hau nia Compania labele hetan, hodi nume implika hau nia kbit ba finansieiro hodi bele ajuda hau atu finaliza investimento balu nebe hau gastos ona osan lubuk ida.

Tanba ne'e hau laiha dalan seluk e hau atan hato'o hau nia Proposta ba Exmo Sr. Primeiro Ministro hodi bele fo despacho/autorizasaun hodi halo investimento multi year ba projecto rehabilitasaun estrada Lospalos Villa hanesan tuir mai ne'e:

1. Savarika – Motolori – Natura – Monumento Tchaifaca – Kaut – Ira ara – Laru Ara – Lulira – Belta 3 – Central – Kampung China – 30 de Agustus – Benori – Mercado Antigo – Kartini.
2. Total KM 39,182.

Hanesan Exmo Sr. Primeiro Ministro hatene katak, kuaze estrada iha Lospalos Villa 98% at hotu ona e implika movimento transporte publicu e ema lao ain tanba ne'e nudar Capital do Municipio Lautem persija tau prioridade mos ba estrada refere. (BoQ – Dezenho – nebe halo husi Consultant nebe hetan supervisor direita husi Obras Publico iha Anneco).

Karik proposta ida ne'e Exmo Sr. Primeiro Ministro fo Autorizasaun, hau nudar Timor oan e Lospalos oan hau pronto atu hahu Invesimento ba projecto rehabilitasaun estrada Lospalos Villa iha tempu badak nia laran e tuir hau nia proposta ne hau se halo iha tinan 4 nia laran.

Mak ne'e deit e ba Exmo Sr. Primeiro Ministro nia atensaun hau hau hato'o obrigado wain.

Fernando da Silva
Director



AGÊNCIA DE DESENVOLVIMENTO NACIONAL, I. P.

(2)

Dili, 19 de Agosto de 2025

Ref : 466 /ADN, I.P./VIII/2025

Hato' o ba : **Januario Maia Guterres**
Director Adjunto e Diretor Executivo Interino - ADN, I.P.

Assuntu : **Resultado da Verificação – Projeto Urban Roads Baucau Village**

Com os nossos Respeitos,

Com base no assunto mencionado acima, vimos, por meio desta, informar que a equipa de verificação da Unidade de Avaliação de Projetos – ADN, I.P. já realizou a verificação Boq do *Projeto Urban Roads Baucau Village*, os resultados da verificação encontram-se em anexo para conhecimento e apreciação.

Agradecemos a vossa atenção e subscrevemo-nos com a mais elevada consideração.


Arch. José Fernando Liu Soares
Koordenador UAP - ADN, I.P.



EN

Bedik-Hun, Fatuhad
Dili – Timor-Leste
info@mpie.gov.tl
+670 3310 289



AGENCIA DE DESARROLLO NACIONAL, I.P.

SUMMARY BILL OF QUANTITY

NAME OF PROJECT : URBAN ROADS BAIKAU VILLAGE.

LOCATION OF PROJECT : MUNICIPALITY BAIKAU.

SECTION : 1526 KM.

PAY ITEM NO.	DESCRIPTION	OWNER'S STIMATE			ADN REVIEW
		QUANTITY	UNIT COST	TOTAL	
(1)	(2)	(4)	(5)	(6)	
200	GENERAL REQUIREMENTS			69,237.95	86,553.93
200	EARTHWORKS			2,458,241.70	809,847.59
300	SUB BASE AND BASE COURSE			2,058,782.92	2,066,716.53
400	SURFACE COURSE			6,554,549.29	6,347,930.90
500	BRIDGE CONSTRUCTION			2,172,163.46	1,411,490.94
600	DRAINAGE AND SLOPE PROTECTION STRUCTURES			4,507,513.02	1,879,963.54
700	MISCELLANEOUS STRUCTURES			4,042,096.89	2,001,662.36
1000	DAY WORKS			29,545.71	360.00
A	CONSTRUCTION COST			21,952,140.94	14,604,165.78
B	ADP PROVISION FOR CONTINGENCIES ALLOWANCE			100,000.00	
C	CONTRACTOR FEE (A X 10%)			2,195,214.09	1,460,416.58
D	OVER HEAD				129,000.00
E	TAX 2% (A+B+C)			482,947.10	323,871.65
	TOTAL CONTRACT AMOUNT			24,730,302.13	16,517,454.01

J

NAME OF PROJECT : URBAN ROADS BAUCAM VILLAGE
 LOCATION OF PROJECT : MUNICIPALITY BAUCAU.
 SECTION : 1:56236 KM.

BILL OF QUANTITIES

PAY ITEM	ITEM DESCRIPTION	PROPOSAL				UNIT RATE US \$	QUANTITY	UNIT RATE US \$	AMOUNT US \$
		UNIT	QUANTITY	UNIT RATE US \$	AMOUNT US \$				
GENERAL REQUIREMENTS									
100	Nobilization & Demobilization	Ls	1.00	10166.00	\$	10,166.00	Ls	1.00	\$ 10,166.00
102	Traffic Management System & Safety	Ls	21531.16	Ls		21,531.16	Ls	1.00	\$ 21,531.16
103	Provisional laboratory Testing Equipment Apparatus	Ls	1.00	3000.00	\$	3,000.00	Ls	1.00	\$ 3,000.00
114	Environmental Sustegrand	Ls	1.00	34546.77	\$	34,546.77	Ls	1.00	\$ 34,546.77
<i>Sub Total 100</i>						69,237.95			\$ 69,237.95
EARTHWORKS									
200	Cleaning and Grubbing	Hectare	7.53	2832.40	\$	21,481.72	Hectare	7.53	\$ 165,433
201.1	Individual Removal of trees, Small 150-200mm(dia)	Each	224.00	25.21	\$	5,646.74	Each	223.00	\$ 10,219
201.3	Individual Removal of Trees, Large over 200 mm(dia)	Each	31.00	56.71	\$	1,831.73	Each	31.00	\$ 62.19
201.4	Removal of Bricks, Concrete, and other Debris/Surfaces	Each	31.00	48.00	\$	1,488.00	Each	31.00	\$ 1,488.00
202.2	Removal of Pavements, Curbs, and other Debris/Surfaces	Sqm	4,620.00	11.79	\$	54,544.11	Sqm	4,620.00	\$ 33,495.00
202.3a	Removal of Sidewalks	Sqm	48,482.30	1.51	\$	73,232.76	Sqm	48,482.30	\$ 129,260.76
202.3b	Removal of Existing Asphalt Pavement	Sqm	1,736.40	7.87	\$	14,017.37	Sqm	1,736.40	\$ 2,085.5
203.2	Surplus Common Excavation	Cubic	14,484.54	20.98	\$	305,997.68	Cubic	14,484.54	\$ 5,693.71
203.3	Surplus Rock Excavation	Cubic	914.51	55.48	\$	21,789.90	Cubic	914.51	\$ 1,173.5
204.1	Structural Excavation	Cubic	1,135.31	19.00	\$	21,076.25	Cubic	1,135.31	\$ 3,410
204.3	Foundation Fill	Cubic	11,536.39	19.22	\$	22,546.80	Cubic	11,536.39	\$ 2,546
204.6	Pipe, Culverts and Drain Excavation	Cubic	13,338.33	17.45	\$	23,4025.81	Cubic	13,338.33	\$ 2,380
205.1	Circular Pipe/Selected Endothelium	Cubic	4,525.58	17.45	\$	15,6019.21	Cubic	4,525.58	\$ 1,73
205.1	Common Embankment	Cubic	98,976.40	2.45	\$	243,830.67	Sqm	98,976.40	\$ 0.65
<i>Sub Total 200</i>						2,452,241.70			\$ 2,452,241.70
SLAB BASE AND BASE COURSE									
300	Aggregate Subbase Course	Cubic	14,209.32	52.37	\$	750,825.62	Cubic	14,202.32	\$ 3,25
301	Aggregate Base, Class A	Cubic	16,209.00	30.13	\$	1,307,597.30	Cubic	16,209.00	\$ 95,09
<i>Sub Total 300</i>						2,055,422.92			\$ 1,551,399.22
SURFACE COURSE									
400	Prime Coat	Sqm	116,3016.2	2.91	\$	331,413.03	Sqm	105,1010.2	\$ 1,345
402	Prime Coat	Sqm	138,942.43	2.78	\$	380,209.34	Sqm	138,942.43	\$ 0.53
403	Tack Coat	Sqm	137,707.5	20.56	\$	2,657,232.41	Sqm	137,707.5	\$ 21,06
411.54	Asphaltic Concrete- Wearing Course (ACWC) 4 cm	Cubic	6,335.33	46.00	\$	2,995,623.51	Cubic	6,335.33	\$ 3,161,31
411.6a	Asphaltic Concrete- Binder Course (AC-BC)	Cubic	37,040.3	187.60	\$	6,655,539.29	Cubic	37,040.3	\$ 6,847,596.09
<i>Sub Total 400</i>						9,611,162.80			\$ 9,611,162.80
BRIDGE CONSTRUCTION									
500	Reinforcing Steel	Ls	762,315.93	2.50	\$	1,952,514.11	Ls	762,315.93	\$ 1,73
501.1a	Structural Concrete Class "A" (C15/20)	Cubic	692.36	243,16	\$	16,270.06	Cubic	692.36	\$ 126.35
501.1b	Lean Concrete	Cubic	37,040.3	187.60	\$	6,939.30	Cubic	37,040.3	\$ 121,00
<i>Sub Total 500</i>						21,723,661.46			\$ 21,723,661.46
DRAINAGE AND SLOPE PROTECTION STRUCTURES									
600	Pipe Culvert (1000 unit Class "A"	Lumin	6,407.16	737.97	\$	47,223.56	Lumin	6,407.16	\$ 355,65
601.8	Structural Concrete Class A, 25 Mpa	Cubic	6,220.03	30.30	\$	2,345,74.90	Cubic	6,220.03	\$ 200,69
602.8	Stone Masonry	Cubic	100.73	62.65	\$	6,261,52.03	Cubic	100.73	\$ 91,85
<i>Sub Total 600</i>						4,567,716.02			\$ 1,579,563.54
MISCELLANEOUS STRUCTURES									
700	Concrete Curb	Lumin	297,030.0	35.77	\$	1,442,26.03	Lumin	297,030.0	\$ 1,199
701.1	Concrete Gutter	Lumin	17,286.90	32.39	\$	56,856.73	Lumin	17,286.90	\$ 13,99
701.2	Sidewalk	Sqm	17,286.0	99.25	\$	1,715,721.30	Sqm	17,286.0	\$ 52,61
701.3	Kilometer Post	Each	6.00	101.13	\$	6,067.70	Each	6.00	\$ 76,70
701.3	Gated Rail (Metal Beam)	Lumin	40.00	150.03	\$	6,061.21	Lumin	40.00	\$ 103.12
701.6	Reinforced Slab	Each	158.0	102.43	\$	15,840.0	Each	158.0	\$ 146,37
7010	Reinforced Thermoplastic Pavement Markings	Sqm	7423.92	39.12	\$	29,901.17	Sqm	7423.92	\$ 25,13
<i>Sub Total 700</i>						4,642,096.89			\$ 2,091,623.50
DAY WORKS									
1001.2	Labor	Hour	360.00	107.5	\$	385.71	Hour	360.00	\$ 1,00
1001.9	Water Tank Truck	Hour	216.00	45.00	\$	9,720.00	Hour	216.00	\$ 200,00
1001.11	Excavator	Hour	216.00	90.00	\$	19,340.00	Hour	216.00	\$ 3,800
<i>Sub Total 100</i>						29,515.71			\$ 2,600,00
<i>TOTAL OF BILL CURRED FOR THIRD TO STANDBY</i>						\$ 21,052,446.91			\$ 1,694,525.75
<i>Add Provision for Configurations, Allowance</i>						\$ 10,000.00			\$ 14,664,525.75
<i>TOTAL</i>						\$ 22,052,446.91			\$ 14,664,525.75



AGÊNCIA DE DESENVOLVIMENTO DA MACAU

NAME OF PROJECT : URBAN ROADS BAUCAU VILLAGE.

LOCATION OF PROJECT : MUNICIPALITY BAUCAU.

SECTION : 15+236 KM.

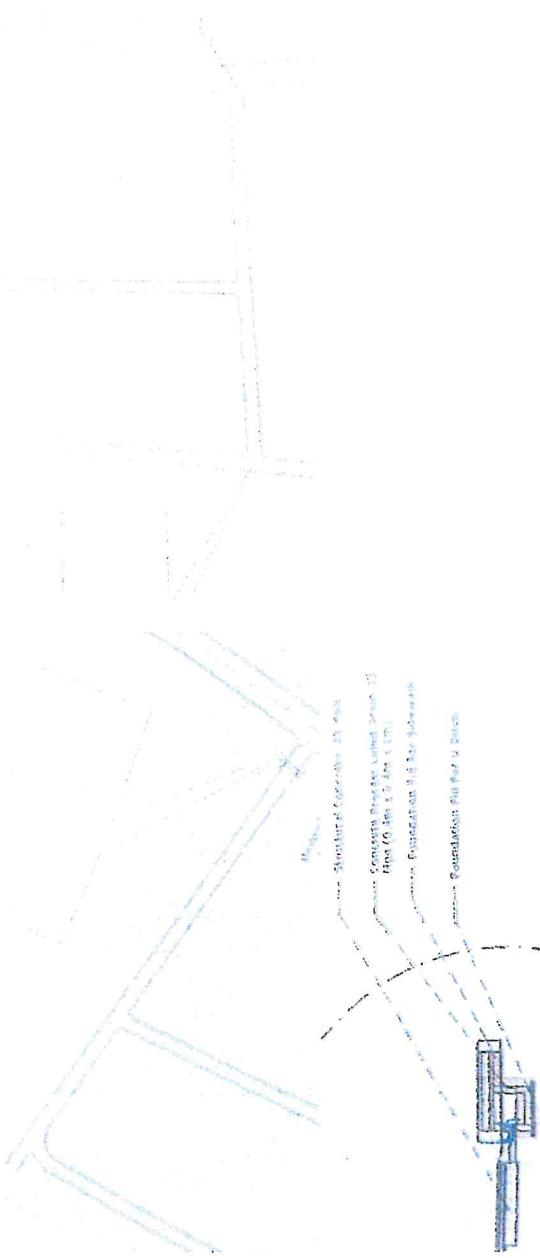
OVERHEAD

		OVERHEAD			TOTAL	
NO	DESKRISAIN	UNIT	QUANTITY	UNIT PRICE		
1	PROJECT TEAM					
	Project Manager	Ls	1.00	\$ 27,000.00	\$ 27,000.00	
	Site Manager	Ls	1.00	\$ 18,000.00	\$ 18,000.00	
	Site Engineer	Ls	1.00	\$ 18,000.00	\$ 18,000.00	
	Quality Control	Ls	1.00	\$ 9,000.00	\$ 9,000.00	
	Health, Safety and Environment	Ls	1.00	\$ 9,000.00	\$ 9,000.00	
	Surveyor	Ls	1.00	\$ 9,000.00	\$ 9,000.00	
	Logistics	Ls	1.00	\$ 4,500.00	\$ 4,500.00	
	Administration	Ls	1.00	\$ 3,600.00	\$ 3,600.00	
	Cleaning Staff	Ls	1.00	\$ 2,700.00	\$ 2,700.00	
	Security	Ls	1.00	\$ 2,700.00	\$ 2,700.00	
2	KUSTU OPERASIONAL					
	Stationary	Ls	1.00	\$ 1,800.00	\$ 1,800.00	
	Communication	Ls	1.00	\$ 2,700.00	\$ 2,700.00	
	Meetings	Ls	1.00	\$ 1,800.00	\$ 1,800.00	
	Electricity	Ls	1.00	\$ 5,400.00	\$ 5,400.00	
	Water	Ls	1.00	\$ 5,400.00	\$ 5,400.00	
	Daily, weekly, monthly reports	Ls	1.00	\$ 1,800.00	\$ 1,800.00	
	Shop drawings, as built drawings	Ls	1.00	\$ 1,000.00	\$ 1,000.00	
3	KUSTU SERVISU APOIO NIAM					
	Material Sampling & Testing	Ls	1.00	\$ 3,600.00	\$ 3,600.00	
	Personal protective equipment (PPE)					
4	KUSTU SOSIAL					
	Launching ceremony	Ls	1.00	\$ 1,000.00	\$ 1,000.00	
	Completion ceremony	Ls	1.00	\$ 1,000.00	\$ 1,000.00	
	TOTAL OVERHEAD				\$ 129,000.00	

A



SENCIA DE DESARROLLO NACIONAL, L. P.

NO	DESPACHO	PROYECTOS	PROBLEMA	RECOMENDACIONES
		EMERGENCY PROJECT : Baucau Urban Roads Rehabilitation (Ulam Kotai)	ALREADY VERIFICATION BY ADM-IP. 1. Pada Gambar Topografi belum ada arah aliran air dari saluran samping jalan, cross drain dan outletnya. Perlu dilengkapi karena setuju? 2. Pada Gambar typical belum dilengkapi gambar marka 3. Pada area pelebaran dengan perkerasan belum ada ketebalan struktural concrete dan detail ukurannya	
				
		ACESSOR ERIK ALDRIN	Location: Villa Nova - Baucau Villa Design By: CONSTRUCTION COST:	

PAGE : 1/1
RESIVED DOCUMENT
RESIVED COMPLETE DOCUMENT
RELEASE DOCUMENT

DATE : 25 June 2025
PREPARED BY : 
(ERIK ALDRIN SINGAMBEBI)
ASSESSOR TECHCO

ASU

www.BIBG.de

Q9enfifeson
8/9/2025

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Maren Compeltia

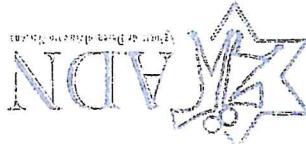
Wien obojde

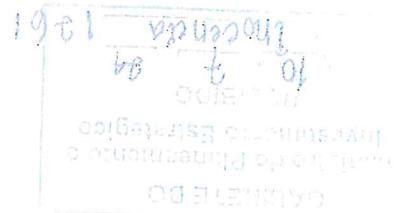
National Projecto: *Proyecto de Desarrollo Rural en la Provincia de La Rioja*

Lesson Objectives

202 /

<p align="center">FORMULARIO DESPACHO</p> <hr/>	
<p>Hist: MINISTÉRIO DO PLANEAMENTO INVESTIMENTO ESTRATÉGICO</p>	
Data de Entrada Documentos: 16 / JUL / 2024	Data do Documentos: 16 / JUL / 2024
No Ref: 1287/C-G-MPIE/VI/2024	
<p>Projeto:</p> <p>Quantidade Documentos: 2</p> <p>Anexo:</p> <ul style="list-style-type: none"> - Bill of Quantity Engineer Estimate = 1 - Design Drawings = 1 	
<p>Assuntos:</p> <p>Dokumentos Projeto Reabilitasau Estradas Urbanas na Arredor Municipal Baucau.</p> <p>Encaminha Despacho Ministro, MPE (Apresentasau</p>	
<p>No. Tlf: 3310320</p> <p>Companhia:</p>	
<p>Despache:</p> <p>O Unidade de Gestão Administrativa <input type="checkbox"/> O Adjunto <input type="checkbox"/> O Assessor/a <input type="checkbox"/> O Unidade de Availagão de Projetos <input type="checkbox"/> O Unidade de Controlo e Validagão de Qualidade <input type="checkbox"/> O Gabinete DE / Base de Dados <input type="checkbox"/> O Unidade de Desenvolvimento da Competências <input type="checkbox"/> O Unidade de Estudo e Desenvolvimeto da Gestão <input type="checkbox"/> O Unidade de Gestão da Qualidade ADN <input type="checkbox"/> Outro</p>	





Presidente Autarquía Municipal Baucau
Veneranda E. V. Lemos Alves

Baucau, 8 July 2004

Respeitosamente,

Assessoria.

Agredese no apresia Escolástica nia etensu apoio, anil reitera votos ho elevarde esfima no

Municipal Baucau sei dispoñivel ba qualidá estandartes aditivais lexitik necessaria.

Municipal Baucau nia mobilidade ubana no mos ba qualidá mors komunitáde Baucau. Autarquía melloramento mobiliadade ubana no mos ba qualidá estandartes aditivais lexitik necessaria.

Autarquía Municipal Baucau far kestak projectu ida ne'e saí messan matala sigrifikanate lha

intervenciónes necessaria holdi garante qualidá no disponibilidade estrada nian.

oba referer. Debeniu ne'e elabora normas teknikas viñente no relata mos

b. Dokumentu Desenho Detallado: Ne'ebe make ilustra espesifikasiasson detallada kona-ba

espesifikasiassun ba materiais, manu-de-obra, ekspamento rekrusiu necessariu seluk projectu

previstu ba reabilitasun estradas ubanas nia arder Municipal Baucau, inkui mos

a. Dokumentu Estimativa Engenharia: Dokumentu ne'e, hálbur analize detallada ba kustus

Dokumentus lha anexu mak hanessan:

Municipal Baucau ho kodifikasiassun teknika "Road Section: Baucau Villa Roads (22.663 km)".

Estategikku nian, dokumentu sita ne'ebe refere ba Projeto Reabilitasun Estradas Ubana

bo'ot preferende submete ba apresiasiassun teknika Ministério Planeamento no horas

considerações ba melloramento infraestrutura ubana, Autarquía Municipal Baucau ho

Habitu ba kumpimento diretrizes ne'ebe establecese kona-ba ezekiliassun projectu Municipal no

Exelenzia,

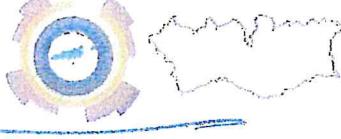
Municipal Baucau,

Assunto: Apresentaçao Dokumentu Projeto Reabilitasun Estradas Urbanas lha Aréa.

Senhor Gasto F. de Sousa.

Hatoo ba: Sua Exelenzia Ministério Planeamento no Investimento Estategikku

Municipal de BAUCAU
Presidencia da Autarquia



AUTORIDADE
MUNICIPAL DE
BAUCAU



AN + MAF

Tel: (55) 3310-3339

Sua Sede: Belo Horizonte, Minas Gerais, Brasil

Endereço: Rua das Laranjeiras, 1000 - Centro

CEP: 31010-000 - Telefone: (31) 3229-1000

E-mail: mpie@mpie.mt.br

Chefe Gabinete do Ministério-MPIE Interina

Presidente do Conselho de Contas

Assessor

Hau nia melhores cumprimentos

Ba aresanun no kolabarasan lahalha hato' o obrigado wain.

Data Despacho : 07.12.2024

Vetor + teletext

Despacho Ministro : Para, ADN, IP-MPIE

Konforme assunto iha lecen, Gabinete do Ministério emcaminha Despacho Ministério kontra Projeto Reabilitasun Estradas Urbanas iha Arredor Município Baucau. Despacho Baucau, Senhora Venecanda E. M. Lemos Martins ho assunto Apresentasun Dokumentos Baucau, Senhora Venecanda E. M. Lemos Martins ho assunto Apresentade Município ba Karta apresentasun dokumentos projeto huii Presidente Autarquia

Ho Respeito,

Assunto : Encaminha Despacho Ministro MPIE

Senhor Rui Lourenço da Costa

Hato' o ba : Diretor Executivo da ADN, IP

Nu. Ref : 1287/CG-GMPIE/VII/2024

Dit, 16 de julho de 2024



FORMULARIO DE DESPASO

Datas entradas : 8/4/2008

Ausunto :

Materia Projeto :

Projecto Naini :

Naran Companhia : Jovia Construccións

Materia Projeto : Oficina de Estudos Urbano, Sustentabilidade

Assunto : Oficio / Resan Rodo

Materia Projeto :

Projecto Naini :

Classificação : Urgeñeira

Despesa : ECPA ECU

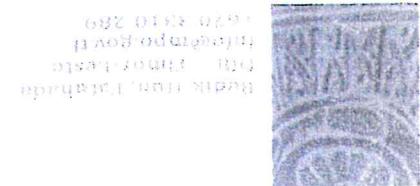
V Normal

Normal

Normal

Eu suggere a construcao de uma estrada que liga a sede da
MUNICIPAL a sua sede descentralizada na zona a W

Poderia pedir-se as opções



FORMULARIO DESPAÑOL

HUSA JOVA CONSTRUCTION LTD

Data de Entrada Documentos: 26 / Mar / 2024

Data do Documento: 20 / Feb / 2024

Quantidade Documentos : 1

Projekt:

Alexo

Assumptions:

NO. 111 : 77241484

Digitized by srujanika@gmail.com

- Unidade de Gestão Administrativa
 - Unidade de Admuntro
 - Unidade de Avaliação de Projetos
 - Unidade de Assessoria
 - Unidade de Controle e Validação de Qualidade
 - Unidade de Desenvolvimento de Competências
 - Outra

ଓপুন্ডে

Companhia Jova Construction Ltda

NO. III : 777241484

Baucau Vila
Republikanische Partei der Esudada Dhebaria, Muhameplio de Baucau Posto

Assumptions:

Assunções:

Company : Jova Construction Ltd

DILI, 29 de Julho de 2025

Ref : 425 /ADN, I.P./VII/2025

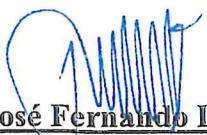
Hato'ea ba : Januario Maia Guterres
Director Adjunto e Director Executivo Interino - ADN, I.P.

Assunto : Resultado da Verificação – Projeto Konstrusaun Moru Protesaun Gabion
Wall Mota Uatuwa, Minicipio Baucau

Com os nossos Respeitos,

Com base no assunto mencionado acima, vimos, por meio desta, informar que a equipa de verificação da Unidade de Avaliação de Projetos – ADN, I.P. já realizou a verificação do BoQ e o Desenho do *Projeto Konstrusaun Moru Protesaun Gabion Wall Mota Uatuwa, Minicipio Baucau*, os resultados da verificação encontram-se em anexo para conhecimento e apreciação.

Agradecemos a vossa atenção e subscrevemo-nos com a mais elevada consideração.


Arch. José Fernando Liu Soares
Koordenador UAP - ADN, I.P.



AGENCIA DE DESENVOLVIMENTO NACIONAL - I.P.

SUMMARY

NAME OF PROJECT : KONSTRUSAUN MORU PROTESAUN GABION WALL MOTA UATUWA

LOCATION OF PROJECT : SUCU GARIWAI MUNICIPIO BAUCAU

SECTION NO.	DESKRISAUN	VERIFIED BY ADN, I.P. AMOUNT (USD)
100	GENERAL REQUIREMENTS	\$ 5.350,00
200	EARTHWORKS	\$ 181.015,37
600	DRAINAGE AND SLOPE PROTECTION STRUCTURES	\$ 1.346.111,28
800	BIOENGINEERING	\$ 47.003,95
A	CONSTRUCTION COST	\$ 1.579.480,60
B	Provit (10% x A)	\$ 157.948,06
C	Overhead	\$ 7.700,00
D	Tax (2% x (A + B + C)	\$ 34.902,57
E	Grand Total (A + B + C + D)	\$ 1.780.031,23



AGÊNCIA DE DESENVOLVIMENTO NACIONAL I.P.

BILL OF QUANTITIES

NAME OF PROJECT : KONSTRUSAUN MORU PROFESAUN GABION WALL MOTA UAUWA

LOCATION OF PROJECT : SUCU GARIWAI MUNICÍPIO BAUCAU

PAY ITEM	ITEM DESCRIPTION	VERIFIED BY ADN, I.P.			
		UNIT	QUANTITY	UNIT RATE US \$	AMOUNT US \$
100	GENERAL REQUIREMENTS				
102,1	Mobilization	Ls	1,00	\$ 3.400,00	\$ 3.400,00
102,3	Demobilization	Ls	1,00	\$ 1.950,00	\$ 1.950,00
	<i>Sub Total 100</i>				\$ 5.350,00
200	EARTHWORKS				
201	Clearing and grubbing	Ha	8,82	0,11	\$ 0,93
204,1	Structure Excavation	Cu.m	43.415,47	\$ 3,40	\$ 147.470,98
205,1	Back Fill (material)	Cu.m	21.707,74	\$ 1,55	\$ 33.543,46
	<i>Sub Total 200</i>				\$ 181.015,37
600	DRAINAGE AND SLOPE PROTECTION STRUCTURES				
610	Gabions	Cu.m	26.400,00	\$ 50,99	\$ 1.346.111,28
	<i>Sub Total 600</i>				\$ 1.346.111,28
800	BIOENGINEERING				
808,2	Geotextile Surface	Sq.m	21.060,00	\$ 2,23	\$ 47.003,95
	<i>Sub Total 800</i>				\$ 47.003,95
	TOTAL				\$ 1.579.480,60



AGENCIA DE DESENVOLVIMENTO NACIONAL - I.P.

OVERHEAD

NAME OF PROJECT : KONSTRUSAUN MORU PROTESAUN GABION WALL MOTA UATUWA

LOCATION OF PROJECT : SUCU GARIWAI MUNICIPIO BAUCAU

NO	DESKRISAUN	UNIT	QUANTITY	UNIT PRICE	TOTAL
1 PROJECT TEAM					
	Site Engineer	Ls	1,00	\$ 3.000,00	\$ 3.000,00
	Surveyor	Ls	1,00	\$ 750,00	\$ 750,00
	Logistics	Ls	1,00	\$ 750,00	\$ 750,00
	Administration	Ls	1,00	\$ 600,00	\$ 600,00
	Security	Ls	1,00	\$ 900,00	\$ 900,00
2 KUSTU OPERASIONAL					
	Stationary	Ls	1,00	\$ 120,00	\$ 120,00
	Communication	Ls	1,00	\$ 180,00	\$ 180,00
	Meetings	Ls	1,00	\$ 120,00	\$ 120,00
	Electricity	Ls	1,00	\$ 360,00	\$ 360,00
	Water	Ls	1,00	\$ 360,00	\$ 360,00
	Daily, weekly, monthly reports	Ls	1,00	\$ 120,00	\$ 120,00
	Shop drawings, as built drawings	Ls	1,00	\$ 200,00	\$ 200,00
3 KUSTU SERVISU APOIO NIAN					
	Personal protective equipment (PPE)	Ls	1,00	\$ 240,00	\$ 240,00
TOTAL OVERHEAD					\$ 7.700,00



AGÊNCIA DE DESENVOLVIMENTO NACIONAL

FORMULARIO DESPACHO

Data de Entrada Documentos: 20 / Mar / 2024

Data do Documentos: 19 / Mar / 2024

Husi: MINISTERIO DO PLANEAMENTO INVESTIMENTO ESTRATEGICO

No Ref : 530/CG-GMPIE/M/2024

Projetu :	Quantidade Documentos : 0 Anexo :
Assuntos : Encaminha Despacho Ministro. MPIE (Dezenho e BOQ da Proposta bareira Protesaun Natar, Aldeia Uatuwa, Suco Gariuai P.A Baucau Villa.	
No. Tf : 331020	
Companhia : -	
Despacho :	<ul style="list-style-type: none"><input type="radio"/> Unidade de Gestão Administrativa<input type="radio"/> Unidade de Avaliação de Projectos<input type="radio"/> Unidade de Controlo e Validação de Qualidade<input checked="" type="radio"/> Unidade de Estudo e Desenvolvimento de Competências<input type="radio"/> Adjunto<input type="radio"/> Assessor/a<input type="radio"/> Gabinete DE / Base de Dadus<input type="radio"/> Other
<p><i>Br. Et. da, Fernando L.</i> <i>alho L.</i></p> <p>Data: <i>(30/03/2024)</i></p>	
<p>Rui Lourenço da Costa Director Executivo ADN</p>	



E PLANEAMENTO
E INVESTIMENTO ESTRATÉGICO
IX GOVERNO CONSTITUCIONAL



GABINETE
MÍNISTRO

Dili, 19 de Março de 2024

Nu. Ref : 5555/CG-GMPIE/III/2024

Hato'ó ba : Directur Executivo ADN IP
Sr. Rui Lourenço da Costa

Assunto : Encaminha Despacho Ministro, MPIE

Ho Respeito

Liu husi oficio ida ne'e hakarak encaminha despacho Ministro MPIE kona ba karta husi Ministerio da Administração Estatal , ho assunto Desenho e BoQ do Proposta bareira Protesaun Natar, Aldeia Uatuwa, Suco Gariuai, P.A Baucau Vila, No Despacho Ministro iha anexo.

Despacho Ministro : Para ADN

[Ver este assunto](#)

Data despacho : 03.I9.2024

Ba atensaun no kolaborasaun lahaluha hato'ó obrigado wain.

Hau nia melhores cumprimentos

Tomás de Fátima da Silva
Chefe do Gabinete do MPIE



MINISTÉRIO DA
ADMINISTRAÇÃO

Gabinete do
Ministro

DIL, 19 MAR 2024

Ref./M.MAE /III/2024

Sua Excelência
Ministro do Planeamento e Investimento Estratégico
Senhor Gastão Francisco de Sousa
Dili, Timor-Leste

Assunto: Desenho e BoQ da Proposta barreira Protesaun natar, aldeia Uatuwa, suco Gariuai, PA Baucau vila.

Excelência,

Venho pelo presente encaminhar à Vossa Excelência Senhor Ministro, uma proposta da Presidente da Autoridade de Baucau sobre Barreira Protesaun natar, aldeia Uatuwa, suco Gariuai, PA Baucau vila, endereçada ao MAE por carta Ref N°.85/PAM-AMBCU/III/2024, datado de 18 de março de 2024 para consideração de Vossa Excelência.

Solicito à Vossa Excelência que esta proposta seja considerada e agendada para discussão, apreciação e aprovação em reunião do CAFI, com os seguintes documentos em anexo:

1. Mapa mota Uatu-Ua;
2. Site Existing;
3. Cross Section;
4. General Items;
5. Bill of Quantities
6. Summary

Ciente da atenção, merecimento e aceitação da Vossa Excelência, Senhor Ministro, aproveito o ensejo para lhe apresentar os protestos da minha mais elevada consideração.

Dili, 19 de março de 2024

Tomás do Rosário Cabral
Ministro

Ministério da Administração Pública
Avenida 20 de maio No. 01
Dili, Timor-Leste
+670 3362 0000
gabinete@mae.gov.tl

Sua Excelénsia
Ministru Administrasaun Estatal,
Senor Tomás do Rosário Cabral

Ministériu Administrasaun Estatal

Dili

Asuntu : Submisaun Proposta Bareira Protesaun Natar, Aldeia Uatuwa, Suku Gariuai, Postu Administrativu Baucau Vila.

Klasifikasiadaun: Urjente

Ho respeitu,

Husi biban ne'e ami informa ba Vossa Exelensia katak, natar komunidade iha aldeia Uatuwa suku Gariuai, Postu Administrativu Baucau Vila hetan estragus husi korente mota efeitu husi udan bo'ot iha fulan hirak ne'e nia laran.

Bazeia ba informasaun ne'e, Prezidente Autoridade Munisipal Baucau hamutuk ho ekipa tékniku husi Diresaun Servisu Munisipál, Obras Públika no Transporte hala'o ona levantamentu iha terenu iha loron 10 fulan Marsu tinan 2024 hodi identifika akontesimentu refere ho rezultadu hanesan tuir mai ne'e:

1. Natar ne'ebé Estragus hamutuk 85,47 Hektares
2. Natar ne'ebé atu normaliza hikas hamutuk 149,16 hektares
3. Levantamentu tékniku atu proteje maka Uza Hada Fatuk ho Simentu (Stone Masonry) ho distânsia 2,220 Km²

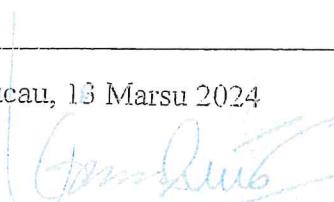
Hare'e katak, udan sei tau nafatin ne'ebe bele fó prejuízo estragus ne'ebé bot no grave liu tan ba natar komunidade nian, Autoridade Munisipál Baucau solisita ba Vossa Exselénsia atu hala'o normalizasauna área afetadu hanesan bareira protesaun hodi proteze no satán rai.

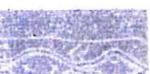
Ami informa mos karak, nedar meius am faciliza servisu, tekniku SMT-Obras Públicas e Transporte Baucau prepara ona BoQ no dezeno ba área aferiadu.

Autoridade Munisipiu Baucau husu tebes alta konsiderasaun ho karakter urjénsia ba ami nia pedidu ne'e.

Maka ne'e de'it ami nia biban, ba atensaun no konsiderasaun ami hato'o Obrigadu wa'in.

Baucau, 13 Marsu 2024


Veneranda Lemos Martins
Prezidente Autoridade Munisipál - Baucau



PROBLEMS

RECOMMENDATIONS

Construction work
BNSCO - proposed bridge
was made unsafe
back.

Minor lift calm by ADM, IP
or, with note:

V. Check Tropic Mantis

(Proper title & construction name)

21. Check the location of the construction
plan. (The construction must not be built
on river segment).

July 14, 2025

RECEIVED
DEPARTMENT OF ENVIRONMENT
REVIEWED AND APPROVED
RELEASE TO OWNER

Nº	RESPAÇO	PROJECTOS	PROBLEMA	RECOMENDASAUN
			ALREADY VERIFICATION BY AND - IP.	
		EMERGENCY PROJECT CONTRUSAUN MORU PROTESAUN GABION WALL MOTA UATUWA, GARIWAI, BAUCAU		
		DATA PENGUKURAN		
		Location:		
		GARIWAI, BAUCAU		
		Deskripsi Peta Lokasi		
		ACESSOR IRWAN SANTOSA		
		Design By:		
		COMPANIA		
		MINISTÉRIO DO PLANEAMENTO E INVESTIMENTO ESTRATÉGICO		
				

Dili, 19/07/2025

PREPARED BY


(IRWAN SANTOSA)
ACESSOR TECNICO

REGISTRO DE DOCUMENTO
REGISTER OF APPROPRIATE DOCUMENT
REGISTRO DE DOCUMENTO
: : : : :

BAB I

INTRODUCTION

1. Background

As a country located in the Pacific Ring of Fire, Timor Leste will not be separated from the threat of natural disasters. Natural disasters that occur in Timor Leste are varied, one of which is landslides. Landslides that occur in Timor Leste usually occur due to several problems in each region. Areas in Timor Leste also have uneven land contours that can cause natural disasters. The solution so that the soil does not landslide due to a tilt angle that is too high, it is necessary to do several things or methods to deal with it. The method commonly used to overcome landslides is to make terraces and plan retaining constructions such as soil retaining walls (DPT).

Soil retaining walls (DPT) are constructions that must be installed on building structures on sloping land. Generally used for dwellings on the banks of slopes or rivers, the use of soil retaining walls (DPT) is very effective in preventing hazards such as landslides.

Slope stability is closely related to landslides and is also known as the natural displacement of soil quality from higher to lower positions (Korach and Sarajar, 2014). One of the solutions for land development with these factors is to use soil retaining walls and ground anchors as reinforcement to trigger landslides due to construction excavations.

The Gariwai River Uatuua Baucau is an area that is prone to slope collapse due to erosion of the banjr. In the period of 2000 – 2023, there was a landslide in the Gariwai River area of Uatuua Baucau. The landslide occurred because the rain continued to pour over the area and there was no reinforcement on the slope. However, this landslide did not cause casualties, only material damage. If the driving force is greater than the holding force, then the ground will collapse and there will be a collapse of the soil along the straight plane and the soil mass above this straight plane will landslide. This event is referred to as slope collapse and this continuous plane is called a slip plane. Therefore, to prevent slope collapse on the object "SOIL RETAINING WALL WITH CONCRETE GABION IN THE UATU_UA GARIWAI_ OF BAUCAU, TIMOR LESTE USES PLAXIS SOFTWARE

1. Problem Formulation

1. How to plan a soil reinforcement design using a soil retaining wall (DPT) type of CONCRETE GABIONS program
2. What is the value of the safety factor (SF) of the CONCRETE GABION type soil retaining wall (DPT) in the Plaxis program

1. Purpose

1. Analyzing the soil in MOTA UATU UA.

2. To know the value of the safety factor (SF) on the soil retaining wall (DPT) of the Concrete Gabions type before being reinforced with the *Plaxis* program.
3. Designed a soil retaining wall (DPT) to improve safety factors (SF) using the help of the *Plaxis* program.

1. Problem Limitations

1. The soil data used is soil data in the Gariwai River Area, Uatuua Baucau.
2. Planning of soil retaining walls (DPT) using Concrete Cyklop.
3. Using the *Plaxis* program for stability analysis and security factor (SF) values.,
4. Groundwater levels are not taken into account.
5. Benefits of analysis
6. The benefit of this final project research is to be able to carry out a good soil reinforcement design, and to understand the impact of different types of soil reinforcement on safety factors (SF), shear forces

BABII

OVERVIEW

1. Soil

According to Bowles (1989) in Fautizek et al. (2018), soil is

A mixture of particles consisting of one or all of the following types:

1. *Boulders*, are large pieces of rock, usually more than 250 mm to 300 mm. When the size is 150 mm to 250 mm, these rock fragments are called *cobbles*.
2. *Gravel*, a rock that has a size of 5 mm to 150 mm.
3. *Sand*, a rock that has a size of 0.074 mm to 5 mm, ranging from coarse (3-5 mm) to fine (less than 1 mm).
4. *Silt*, a rock with a size of 0.002 mm to 0.074 mm.
5. Clay is a mineral that is smaller than 0.002 mm. These particles are the main source of cohesion in cohesive soils. f. *Colloids (colloids)*, "still" mineral particles smaller than 0.001 mm in size.

Soil has an important role in the field of construction, because soil is the basis in construction work.

1. Soil Stabilization

Soil stabilization is an effort made to improve the physical properties of the soil. There are 2 widely used soil stabilization methods, namely mechanical stabilization and chemical stabilization. Mechanical stabilization is a method to increase the carrying capacity of the soil by improving the structure and improving the mechanical properties of the soil, while chemical stabilization is to increase the strength and strength of the soil by reducing or eliminating the technical properties of the soil that are less favorable by mixing the soil with chemicals.

2. Soil Classification System

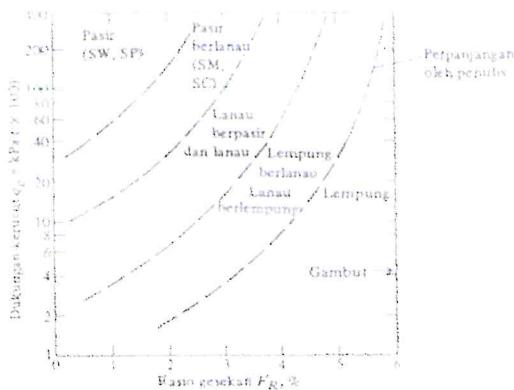
The classification system is important in determining the type of soil. This classification is useful for classifying soils based on the characteristics and physical properties of the soil. The classification system is divided into two, namely based on texture and usage. The classification by texture is the USDA classification, while the classification by use is AASHTO and USCS. For USDA it is usually used in agriculture, while AASHTO and USCS are usually used for geotechnical fields related to the field of Civil Engineering.

3. Soil Classification

The purpose of soil classification is to determine suitability for a particular use, as well as to provide information related to the condition of the soil from one area to another in the form of basic data such as compaction characteristics, soil strength, content weight, and so on (Bowles, 1989).

To determine the type of soil, you can also use a graph of the relationship between the cone pressure (Q_c) and the shear resistance (F_r) as in

Figure 2.1 is as follows:



Gambar 2.1 Hubungan Q_c dengan Fr Menurut Robertson dan Campanella
(Bowles, 1997)
(Sumber : Google Image)

Menurut sistem klasifikasi USCS (*Unified Soil Classification System*), tanah diklasifikasikan kedalam tanah berbutir kasar (kerikil dan pasir) apabila kurang dari 50 % lolos saringan nomor 200, dan sebagai tanah berbutir halus (lanau/lempung) jika lebih dari 50 % lolos saringan nomor 200. Selanjutnya, tanah diklasifikasikan dalam sejumlah kelompok dan sub-kelompok dengan simbol :

G	= Kerikil (gravel)
S	= Pasir (sand)
C	= lempung (clay)
M	= lanau (silt)
O or clay	= lanau atau lempung organik (<i>organic silt</i>)
W	= gradasi baik (<i>well - graded</i>)
P	= gradasi buruk (<i>poorly - graded</i>)
H <i>(high - plasticity)</i>	= plastisitas tinggi
L <i>(low - plasticity)</i>	= plastisitas rendah
Pt	= tanah gambut dan tanah organik tinggi (<i>peat and highly organic soil</i>).

Prosedur untuk menentukan klasifikasi tanah sistem unified adalah :

- Tentukan apakah tanah merupakan butiran halus atau kasar secara visual atau dengan cara menyaringnya dengan saringan nomor 200.
- Jika tanah berupa butiran kasar :
 - Saring tanah tersebut dan gambarkan grafik distribusi butiran
 - Tentukan persen butiran lolos saringan nomor 4. Apabila presentase butiran yang lolos kurang dari 50%, klasifikasi tanah tersebut sebagai kerikil. Bila butiran yang lolos lebih dari 50%, klasifikasikan sebagai

Pasi.

Tabel 2.1 Sistem Klasifikasi Tanah USCS

(Sumber : Hadiyatmo, 2002, Mekanika Tanah I, hal. 57)

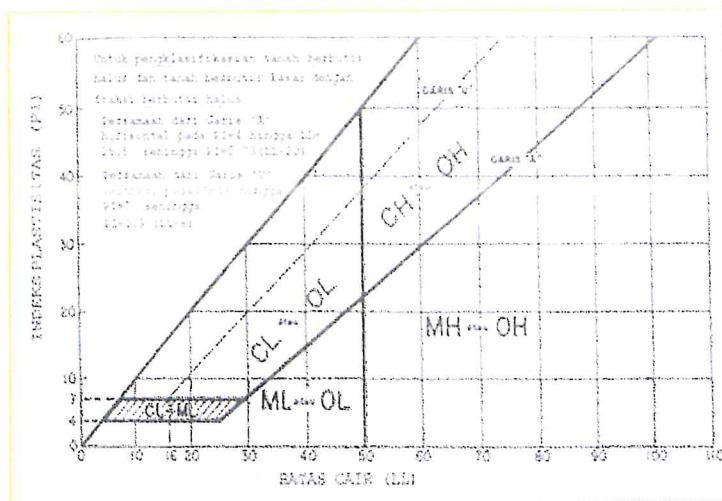
1. Count the number of granules that pass the number 200 filter. If the percentage of grains that pass is less than 5%, check the shape of the grain distribution graph again by calculating Cu and Cc. If it is graded well, then classify it as GW (if gravel) or SW (if sand). If it is poorly graded, classify it as GP (if gravel) or SP (if sand).
 2. If the percentage of soil grains that pass the sieve number 200 is between 5 – 12 %, the soil has a double symbol and has plasticity properties (GW – GM, SW – SM, etc.).
 3. If the percentage of grains that pass the sieve number 200 is > 12%, the Atterberg Limits Test or the ATL Test must be carried out by removing the soil grains left in the sieve number 40. Then, using a plasticity diagram, the classification will be determined (GM, GC, SM, SC, GM – GC or SM – SC).

If the soil is fine-grained:

- Perform the Atterberg Limits Test or ATL Test by removing soil grains left in the number 40 sieve. If the limit is > 50, classify it as H (High Plasticity) and if < 50, classify it as L (Low Plasticity).
 - For H (High Plasticity), if the ATL Test plot on the plasticity graph is below line A, determine whether the soil is organic (OH) or inorganic (MH), if the plot falls on line A, classify it as CH.
 - For L (Low Plasticity), if the ATL Test plot on the plasticity graph

is below line A and the shaded area, determine the classification of the soil as organic (OL) or inorganic (ML), based on color, odor, and changes in its liquid and plastic limits by drying it in the oven.

- If the ATL Test boundary plots on the plasticity graph fall in a shaded area, close to the A line or the LL value is around 50, use a double symbol.



Gambar 2.2 Grafik Indeks Plastisitas

(Sumber : PUSDIKLAT JALAN, PERUMAHAN, PERMUKIMAN, DAN PENGEMBANGAN INFRASTRUKTUR WILAYAH)

In the AASHTO (*American Association Of State Highway and Transporting Official*) classification system, it is made by considering the following criteria:

1. Soil Grain Size

- *Gravel*

The fraction passes through a 75 mm (3-inch) sieve and is held at the number 10 (2 mm) sieve

- *Sand*

The fraction passes through the number 10 (2 mm) filter and is held at the number 200 (0.075 mm) filter

- *Mud and Silt*

Faction passes the number 200

1. Plasticity

Muddy soil (*silt*) is soil when a fine fraction of soil has a plasticity index of 10 or less. Clay is when a fractional, fine soil has a plasticity index of 11 or more.

If the rocks or blocks have a size of more than 75 mm that is tested, it will be separated from the part of the soil sample from which the classification was made. However, the percentage of material is recorded.

Tabel 2.2 Sistem Klasifikasi Tanah menurut AASHTO

Table 2.2 Classification of Highway Subgrade Materials							
General classification	Granular materials more than 50% of total sample passing No. 200						
	A-1	A-1.1	A-2	A-2.4	A-2.5	A-2.6	A-2.7
Soil analysis percentage passing:							
No. 10	0 max	0 max	0 max	0 max	0 max	0 max	0 max
No. 20	0 max	0 max	0 max	0 max	0 max	0 max	0 max
No. 30	0 max	0 max	0 max	0 max	0 max	0 max	0 max
Characteristics of fractions passing No. 4:							
Liquid limit				4 max	10 max	40 max	20 max
Plasticity index				10 max	10 max	10 max	10 max
Unconfined compressive strength				0.1 max	0.1 max	0.1 max	0.1 max
Coarse-grained materials				gravel and sand	gravel	gravel	gravel
General subgrade rules	Evaluation required						
General classification	SPT class materials more than 25% of total sample passing No. 200						
	A-4	A-5	A-6	A-7	A-8	A-9	
Soil analysis percentage passing:							
No. 10							
No. 20							
No. 30							
Characteristics of fractions passing No. 4:							
Liquid limit		40 max	40 max	40 max	40 max	40 max	
Plasticity index		10 max	10 max	10 max	10 max	10 max	
Four types of granular contained materials		Silt/sand	Silt/sand	Silt/sand	Silt/sand	Silt/sand	
General subgrade rules	Evaluation required						
(See A-7.8, II-7.7, VI-7.6)							
(See A-7.8, II-7.7, VI-7.6)							

(Sumber : www.ilmutekniksipil.com)

1. Soil Bearing Capacity

Soil Bearing Capacity is the ability of soil to safely withstand the pressure or load of buildings on the ground without causing shear collapse and excessive subsidence (Najuan, 2020).

1. Soil Bearing Capacity Analysis

The calculation of the carrying capacity of the soil is necessary to determine the ability of the soil as the use of the foundation structure. The bearing capacity value is limited by a bearing capacity limit of *the ultimate bearing capacity*, which is the state when the collapse begins. Before determining the type of foundation to be used, it is necessary to determine the permit carrying capacity (q_a) which is the result of dividing the carrying capacity limit (q_{ult}) with the safety factor ($SF = 3$)

$$q_a = \frac{q_{ult}}{SF}$$

Where

q = Carrying capacity of permits

q_{ult} = Ultimate carrying capacity

FK = Safety Factor

1. Hansen's analysis

Hansen (1970) in Bowles (1992) suggested the following bearing capacity equation:

$$Df = 0$$

$$dc = dq = dy$$

$$Sc = Sq = Sy$$

$$Qu = iq \times c \times Nc + iy \times 0.5 \times B' \times \gamma \times Ny$$

Where

Qu = Ultimate Bearing Capacity of the Foundation (kN)

γ = Weight of Soil Volume (kg/cm³)

c = Soil Cohesion (kN/m²)

B = Width or Diameter of the Foundation (m)

Table 2.3 Value of Hansen Carrying Capacity Factor

Angle of Friction $\phi (^\circ)$	TERZAGHI			CERES 1970			SOIL TEST		
	N_c	N_q	N_y	M_c	M_q	M_y	N_c	N_q	N_y
0	5.70	1.00	0.00	5.10	1.00	0.00	5.10	1.00	0.00
2	6.30	1.22	0.18	5.62	1.20	0.01	5.63	1.20	0.01
4	6.97	1.49	0.38	6.18	1.43	0.03	6.19	1.43	0.03
5	7.34	1.64	0.50	6.49	1.57	0.07	6.49	1.57	0.07
6	7.73	1.81	0.62	6.81	1.72	0.11	6.81	1.72	0.11
8	8.60	2.21	0.91	7.58	2.06	0.21	7.58	2.06	0.21
10	9.60	2.60	1.21	8.34	2.47	0.37	8.34	2.47	0.39
12	10.76	3.23	1.70	9.28	2.97	0.60	9.26	2.97	0.63
14	12.11	4.02	2.28	10.37	3.59	0.92	10.37	3.59	0.97
15	12.06	4.45	2.50	10.93	3.94	1.13	10.92	3.94	1.18
16	13.08	4.92	2.94	11.68	4.34	1.27	11.63	4.34	1.23
18	15.92	6.04	3.87	13.10	5.28	2.00	13.10	5.26	2.08
20	17.69	7.44	4.97	14.83	6.40	2.87	14.83	6.40	2.95
22	20.27	9.19	6.61	16.88	7.82	4.07	16.88	7.82	4.13
24	23.36	11.40	8.58	19.31	9.60	5.72	19.32	9.60	5.75
25	25.13	12.72	9.70	20.71	10.66	6.77	20.72	10.66	6.76
26	27.09	14.21	11.35	22.25	11.65	8.00	22.25	11.65	7.94
28	31.61	17.81	16.35	25.80	14.72	11.19	25.80	14.72	10.94
30	37.16	22.40	19.73	30.14	18.40	15.67	30.14	18.40	15.07
32	44.04	28.52	27.49	35.49	23.18	22.02	35.49	23.18	20.79
34	52.64	36.50	36.96	42.16	29.44	31.15	42.16	29.44	28.77
35	57.75	41.44	42.40	46.12	33.30	37.35	46.12	33.30	33.92
36	63.53	47.16	51.70	50.59	37.75	44.43	50.59	37.35	40.03
38	77.50	61.56	73.47	61.35	48.93	64.07	61.35	49.93	56.17
40	95.63	81.27	103.59	75.31	54.20	58.69	75.31	54.20	78.54
42	119.67	108.75	165.64	93.71	86.37	109.32	93.71	85.37	113.90
44	151.95	147.74	249.29	118.37	115.31	211.41	118.37	115.31	165.58
45	172.29	173.29	294.50	133.67	134.87	202.74	133.67	134.87	203.81

(Sumber : Jurnal UMMI, 2019)

1. Slope

- Definition of Slope

A slope is the surface of the earth with an angle of inclination to the horizontal. Due to geological processes, slopes can form naturally, such as slopes that form hills or slopes on river banks. Slopes can also be formed by human activities, including digging slope embankments and slopes needed to build roads and buildings, railroads, dams, river

embankments, and canals.

- Slope Angle or Slope

Slope slope is a state where the measure of the slope of land relative to a flat plane. It is caused by energy from inside the earth (endogenous) and energy from outside the earth (exogenous) so that there is a difference in altitude points on earth, and can be expressed in units of percent or degrees. According to (Van Zuidam, 1985) the classification of slopes based on field characteristics and conditions is as follows:

Tabel 2.4 Klasifikasi Lereng Menurut (Van Zuidam, 1985)

Kelas Lereng (%)	Characteristics and Field Conditions	Recommended colors
0 – 2	Flat (<i>flat</i>) or almost flat. Denudation process not large enough and surface erosion is not intensive under dry conditions.	Dark Green
2 – 7	Gently sloped movement process low-velocity masses of various perigacial, solifluction, and fluvia processes.	Bright Green
7 – 15	Sloping has almost the same conditions as gently soft, but it's easier subjected to surface erosion with intensive surface erosion.	Bright Yellow
15 – 30	Moderately steep all types of movement occur, especially perigacial solifluction, creeping, erosion and landslides.	Yellow Orange

30 – 70	Steep denudation processes of all types occur intensively (erosion, creeping, etc.). slope movement).	Bright Red
70 – 140	The very steep denudation process occurs intensively.	Merah Gelap
>140	The extreme steep denudational process is very strong, especially <i>wall denudational</i> .	Dark Purple

• Slope Stability

Slope stability is an important factor in work related to excavation and stockpiling of soil, rocks and quarrying materials, as it concerns human safety as well as equipment safety and smooth production. According to Duncan, et al, 2004, Slope stability is a steady or stable state of the shape and dimensions of a slope.

Gambar 2.3 Stabilitas Lereng
(Sumber : eprints.undip.ac.id)



Tabel 2.5
Classification of slope slopes according to the Spatial Planning Law by the Department of Settlement and Regional Infrastructure (Kimpraswil)

NO	CLASS (Slope in percent)	KLASIFIKASI
1	0 – 8	DATAR
2	8 – 15	RAMPS
3	15 – 25	AGAK CURAM

4	$25 - 45$	CURAM
5	≥ 45	VERY STEEP

Meanwhile, the classification of slope according to SNI 03-1997-1995 is also divided into several classes according to slope in degrees, namely:

Table 2.6 Classification of slope according to SNI 03-1997-1995

KELAS (Kemiringan dalam derajat)	KLASIFIKASI
45	SEDANG
60	CURAM
90	CURAM

a. Factors that cause slope slides

Slope landslides occur due to increased pore water pressure on the slope. This results in a decrease in the shear strength of the ground (c) and the angle of deep shear (ϕ) which will subsequently cause landslides.

There are factors that make analyzing slope stability difficult, namely: layered soil conditions, anisotropic shear strength, water seepage flow in the soil, and others.

Therefore, precision is needed in making calculations.

b. Determining the Strength of the Base Soil

The subsoil is planned in the form of rigid pavement parameters with a CBR plan of 4%. The modulus of subgrade reaction (k) uses calculation through the formula :

$$— k = M_r$$

19.4

The results of the calculation are connected to the effective modulus of subgrade reaction correction graph.

c. Determining the Elasticity of Concrete

According to AASHTO 1993, normal concrete has a modulus value of elasticity taken as :

$$E_c = 57.000 \sqrt{f'_c}$$

a. Determining the Drainage Coefficient (C_d).

b. Determine the values of the Load Transfer coefficient (J), Standard Deviation (S_o), Reliability (R) and Standard Normal Deviation (Z_R).

c. Determining the Initial Serviceability (P_0) value, then the Terminal

Servability and Service Ability of the APSI

d. Soil Research Test

The Soil Investigation Test used for this final project research is soil testing at the Public Works Soil Mechanics Laboratory, with the soil test carried out is a *soil test*.

e. Soil retaining wall

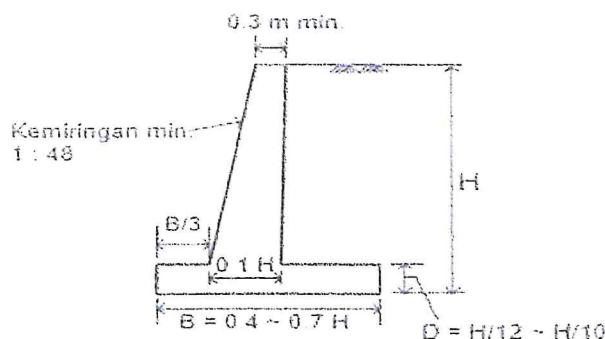
A retaining wall (DPT) or *retaining wall* is a construction that functions to hold loose or natural soil and prevent the collapse of sloping or sloped soil whose stability cannot be guaranteed by the slope of the land itself (Sudarmanto 1996).

The construction of soil retaining walls has an important role on the slope, namely: resisting active lateral pressure that has the potential for landslides, resisting the lateral pressure of water that has the potential for landslides due to large water pressure, and preventing water flow seepage due to high enough elevation on the slope. A slope on it will be given a structure and needs to be strengthened using a retaining wall (DPT).

Types of Soil Retaining Wall (DPT)

1. Cantilever Ground Retaining Wall (DPT)

Cantilever retaining wall (DPT) is a soil retaining wall that is usually used in the area of a mound or cliff. This DPT has a working principle by controlling the clamping force on the structure of the wall body. There are 3 parts of the structure that function as cantilevers, namely the vertical wall (*steem*), the heel of the tread, and the toe (Tacap, 2016).

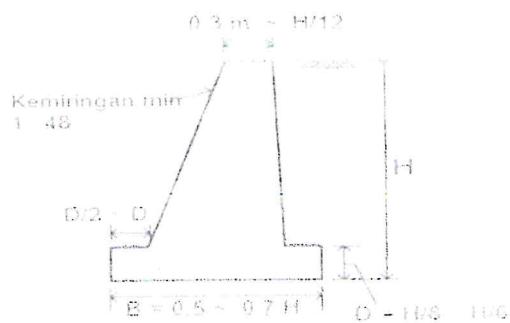


Gambar 2.18 Cantilever Type Ground Retaining Wall (DPT)
(Sumber : Google Image)

2. Ground Retaining Wall (DPT) Gravity Wall

The material that makes up *this gravity retaining wall* is usually in the form of a pair of kali stones or reinforced concrete.

The working principle of *gravity retaining wall* is to rely on the weight of the mass of the construction body, so that the stability level of the structure is higher due to its heavy weight in resisting lateral ground pressure.



Gambar 2.19 Ground Retaining Wall (DPT) Gravity Wall Type

(Sumber : <https://www.pengadaanbarang.co.id/2020/09/dinding-penahan-tanah-retaining-walls.html>)

a. Gabions

Gabions are often used to create soil retaining walls on slopes or cliffs. This structure serves to prevent landslides and erosion, as well as create terraces for agriculture or development.

Gabions or commonly called gabions are a basic construction for a building or embankment. That's why, we can usually easily find this construction in the riverbank area.

In shape, gabions are formed from woven steel wire coated with zinc or galvanized. The woven steel wire is then bonded to each other, until it forms like a box/block.

The above technique is also known as the double twisting technique, the weaving is tied firmly to form a hexagonal pattern. This is intended so that gabions do not decompose easily and are able to resist erosion.

Even though it is close to river water, the wire webbing used to tie gabions is not easy to rust, because the basic material of the wire is in the form of galvanized coated steel that is waterproof.

Types of gabions:

1. Gabion Box



Gambar 2.19a Gabion box

2. Cylinder Gabions



Gambar 2.19b Brenchion Cylinder

- 3. gabions Reno mat
- 4. Gabions PVC Coated
- 5. Gabions Galvalum



Gambar 2.19c Bronjong Galvalum

b. Stability of Soil Retaining Wall

Several factors affect the stability of the soil retaining wall (DPT), namely: lateral soil pressure, soil pressure can result in the stability of rolling and shear. The shape and weight of the construction of the soil retaining wall (DPT) is also influenced by the stability of the soil retaining wall (DPT). Therefore, precise calculations are required to calculate the stability of the soil retaining wall. Some of them are: rolling stability, shear stability, and soil bearing capacity (Ramdhani, 2010). These factors are said to be good and safe if they are able to meet the safety factor (SF) value.

c. Bolster Stability

The equation below applies to the gravitational wall where the moment of the rolling comes from the ground pressures, and the moment of resistance of the rolling comes from the weight of the construction itself.

According to PPIURG 1987, the stability factor of the boling is taken as 1.5 for granular soil and ≥ 2.0 for cohesive soil. Formula:

$$F_{gl} = \frac{M_b}{M_o} > 1.5$$

F_{gl} = Rollover Safety Factor M_b = Moment

against self-weight (kNm)

M_o = Moment against active ground pressure (kNm)

d. Sliding Stability

Active ground forces in addition to causing moments also cause thrust so that the walls will shift. Resistance to this thrust occurs in the field of contact between the soil and the foundation base (Suryolelono, 1994).

According to PPIURG 1987, the shear stability factor is taken as 1.5 for granular soils and ≥ 2.0 for cohesive soils.

Formula:

$$F_{gs} = \frac{V_b}{V_o} > 1.5$$

F_{gs} = Friction safety factor V_b =

Vertical Force (kN)

V_o = Horizontal Force (kN)

e. Lateral Ground Pressure

Lateral soil pressure is the pressure that occurs due to the push of the soil towards the soil retaining structure, the magnitude of the lateral force is influenced by the type of soil, the soil itself and the location of the soil retaining wall. The magnitude of lateral soil pressure can affect friction resistance (Jamin, 2005).

f. Active Ground Pressure

The active pressure value is smaller than the pressure value at idle. The movement of the earth wall away from the soil eliminates the defenses behind the wall (Hardiyatmo, 2003).

As a result, the soil will move landslides towards the retaining wall and will press on the retaining wall.

Expressed by equation:

$$P_a = K_a \times \gamma \times H$$

Where,

P_a = Active soil pressure

K_a = Active soil pressure coefficient

γ = Soil content weight
(kN/m³) H = Height (m)

g. Passive Ground Pressure

Passive soil pressure indicates the maximum value of the force that the

soil can develop on the movement of the retaining structure against the soil in question, i.e. the soil must withstand the movement of the retaining wall before it collapses.

Expressed in the equation :

$$P_p = K_p \times \gamma \times H$$

Where,

P_p = Passive ground pressure

K_p = Passive ground pressure coefficient

γ = Soil content weight
(kN/m³) H = Height (m)

h. Plaxis

Plaxis is a geotechnical analysis program that works to

Analyze soil stability using the element method until it is able to perform an analysis that can be close to the actual behavior.

The conditions in the field that are taken into account with the Plaxis program aim to be applied from the program work to the implementation stage in the field. So that the results of the program make it easier to process data which is expected to save time but the results are in accordance with manual calculations.

i. Analysis Using the Plaxis 2.0 Application

The data required for the Plaxis application input, are:

1. Soil research that produces soil parameter values.
2. Landslides and allocated loads.
3. Landslides and water seepage.

BAB III

DATA

1. Data Primer

Primary data is data obtained from direct observations (surveys) in the field. Direct observation in the field includes several things, namely:

- Identify soil data at the Job Site
- Soil Retaining Wall (DPT) Dimensions

2. Data Seconds

Secondary data is data obtained from literature studies in the form of pre-existing journals. Below are the secondary data used, namely:

1. Topographic survey data and soil test data

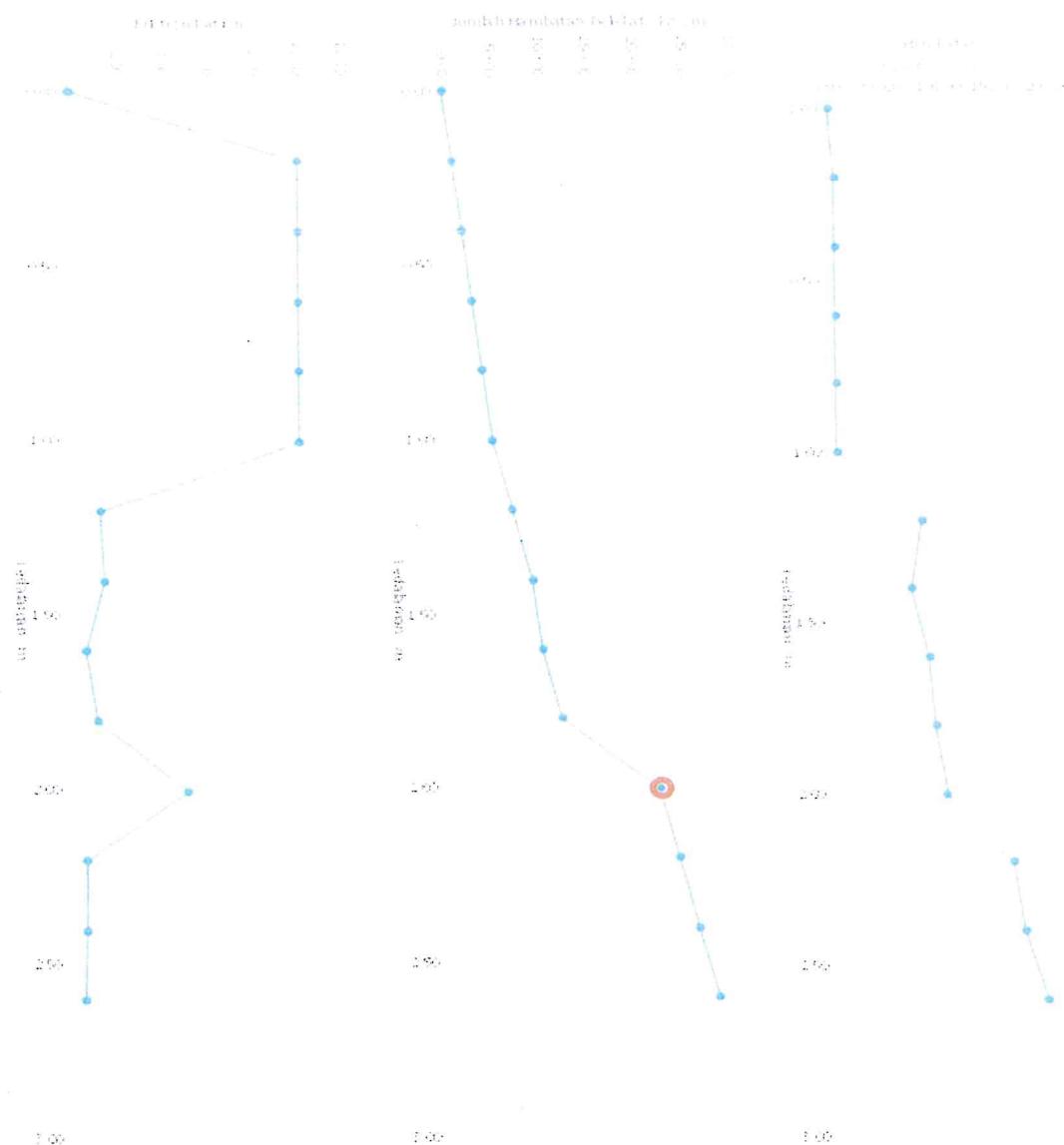
Tabel 3.1

ANALISA DATA HASIL SONDIR									
HASIL PENGAMATAN ALAT SONDIR		E (m)	Ex (kg/cm²)	Tw (kg/cm²)	Sg (kg/cm²)	fs,cm (kg/cm²)	Ps,cm (kg/cm²)	Ps (kg/cm²)	Tt (kg/cm²)
R	Rf								
0,00	0,00	0,00	0,00	0,00	0,000	0,000	0,000	0,000	0,000
0,20	5,00	10,00	10,00	0,667	13,333	13,333	13,333	13,333	13,333
0,40	5,00	10,00	10,00	0,667	13,333	13,333	13,333	13,333	13,333
0,60	5,00	10,00	10,00	0,667	13,333	13,333	13,333	13,333	13,333
0,80	5,00	10,00	10,00	0,667	13,333	13,333	13,333	13,333	13,333
1,0	5,00	10,00	10,00	0,667	13,333	13,333	13,333	13,333	13,333
1,20	8,00	30,00	18,00	1,333	16,667	16,667	16,667	16,667	16,667
1,40	7,00	80,00	14,00	1,333	16,667	16,667	16,667	16,667	16,667
1,60	8,50	90,00	17,00	1,333	16,667	16,667	16,667	16,667	16,667
1,80	9,00	100,00	19,00	1,333	16,667	16,667	16,667	16,667	16,667
2,00	10,00	150,00	24,00	1,333	16,667	16,667	16,667	16,667	16,667
2,20	16,00	17,00	32,00	1,333	16,667	16,667	16,667	16,667	16,667
2,40	17,00	18,00	34,00	1,333	16,667	16,667	16,667	16,667	16,667
2,60	19,00	20,00	36,00	1,333	16,667	16,667	16,667	16,667	16,667

Keterangan

Qd	=	Pertaritian kloritid (kg/cm²)
Cv	=	Pembacaan manometer untuk nilai pertaritian kloritid, kg/cm²
Tw	=	Pembacaan manometer untuk nilai pertaritian kloritid dan geser, kg/cm²
Ps	=	Pertaritian geser lokal, kg/cm²
Ps	=	Angka banding geser, %
Tt	=	Geseran total, kg/cm²
Ap	=	Luas penampang piston (20 cm²)
Ak	=	Luas penampang kloritid (10 cm²)
Ag	=	Luas selimut geser (180 cm²)

Tabel 3.2
Grafik



Tabel 3.3

Tabel interpretasi hasil sondir	
<10 kg / cm ²	Lapisan Tanah sangat lunak - lunak
10 - 20 kg / cm ²	Lapisan Tanah Teguh
20 - 40 kg / cm ²	Lapisan Tanah Kenyal
40 - 80 kg / cm ²	Lapisan Tanah sangat Kenyal
80 - 200 kg / cm ²	Lapisan Tanah Keras

Tabel 3.4
SONDIR (SPT/ Standart Penetration Test)

Nomor	Kedalaman Lokasi 1	Ketinggian Gunung	Jumlah Hambatan	Hambatan Pada R	Tabel 3.4		Jumlah Hambatan Pada R	Hambatan Vertikal	Rata-rata			
					Tabel 3.4							
					Lokasi 1	Lokasi 2						
1	0,00	0,00	0,00	0,00	0	0	0,00	0,00	0,00			
2	0,20	0,00	10,00	3,00	10	20	20,00	3,00	22,00			
3	0,40	0,00	10,00	3,00	10	20	20,00	0,00	10,00			
4	0,60	0,00	10,00	3,00	10	20	20,00	0,00	10,00			
5	0,80	0,00	10,00	3,00	10	20	20,00	0,00	10,00			
6	1,00	0,00	10,00	3,00	10	20	20,00	0,00	10,00			
7	1,20	0,00	10,00	3,00	10	20	20,00	0,00	10,00			
8	1,40	0,00	10,00	3,00	10	20	20,00	0,00	10,00			
9	1,60	0,00	10,00	3,00	10	20	20,00	0,00	10,00			
10	1,80	0,00	10,00	3,00	10	20	20,00	0,00	10,00			
11	2,00	100,00	150,00	50,00	100	220,00	5,00	5,00	5,00			
12	2,20	160,00	170,00	3,00	21	240,00	1,02	0,02	0,02			
13	2,40	170,00	180,00	3,00	21	260,00	1,02	0,02	0,02			
14	2,60	180,00	200,00	3,00	22	260,00	1,02	0,02	0,02			

- Literature study
- Books from supporting journals

3. Data Processing

Processing the data obtained to plan the calculation technically and completely, then using the data obtained for the next process. The process includes:

- Topographic data processing and Drawing with 3d civil application



- Processing soil test data to obtain soil carrying capacity and stability

BAB IV

ACCOUNT

1. Selection of types of structures

A. Ground Retaining Wall (DPT) Gravity Wall

The material that makes up *this gravity retaining wall* is usually in the form of a pair of kali stones or reinforced concrete.

The working principle of *gravity retaining wall* is to rely on the weight of the mass of the construction body, so that the stability level of the structure is higher due to its heavy weight in resisting lateral ground pressure.

Gabions are often used to strengthen ground slopes, prevent landslides in disaster-prone areas, and maintain the stability of buildings standing on them. Installing gabions on soil that has a tendency to landslide can prevent soil shifts that can damage buildings or other infrastructure

Gambar 4.1



Gravity of Gabion Soil Retaining Wall (DPT)

The specific gravity of the gabion wall is: $1700 \text{ kg/m}^3 - 2200 \text{ kg/m}^3$

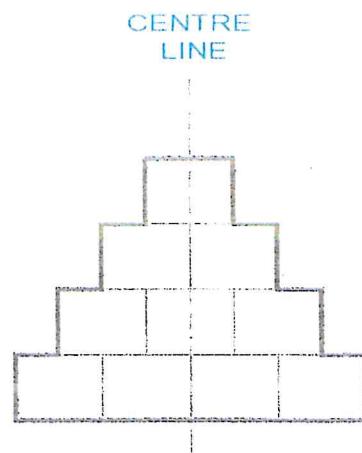
2. Determining the dimensions of the Gravity Wall Soil Retaining Wall (DPT)

Known:

1. Average existing wall height (from wet cross-section) $h1 = 2.50 \text{ m}'$
2. Depth reaching hard ground (Table 3.3) $h2 = 1.50 \text{ m}'$
3. Total $H = h1+h2 = 2.50 + 1.50 \text{ Meters}$ $H = 4.00 \text{ m}'$
4. Wall Type = Landslide Easy
5. The proposed feeding model recalls that landslide-prone landslides force the

centre line to be in the middle

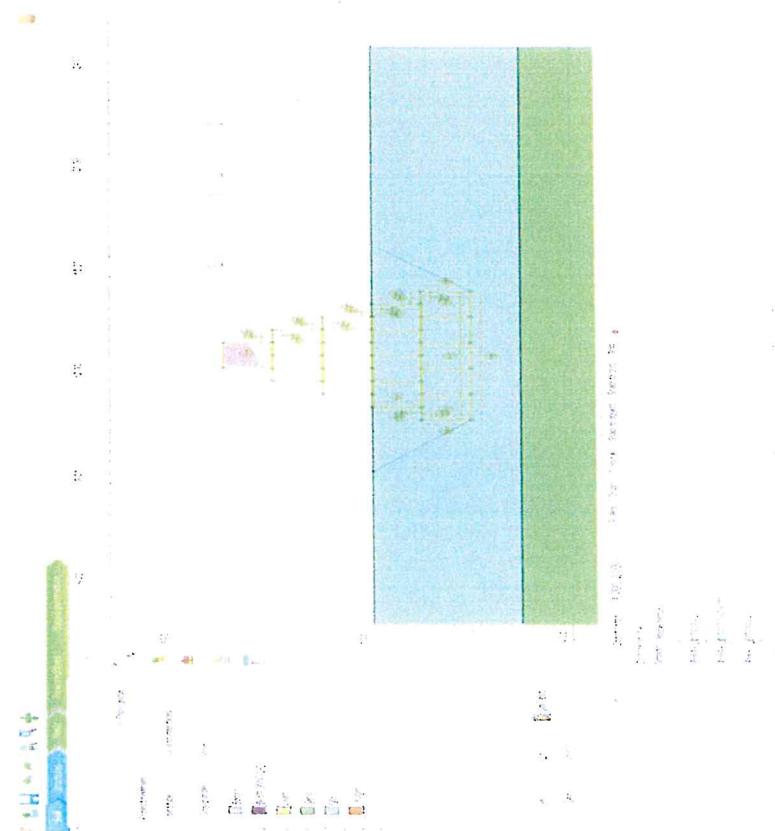
Figure 4.2

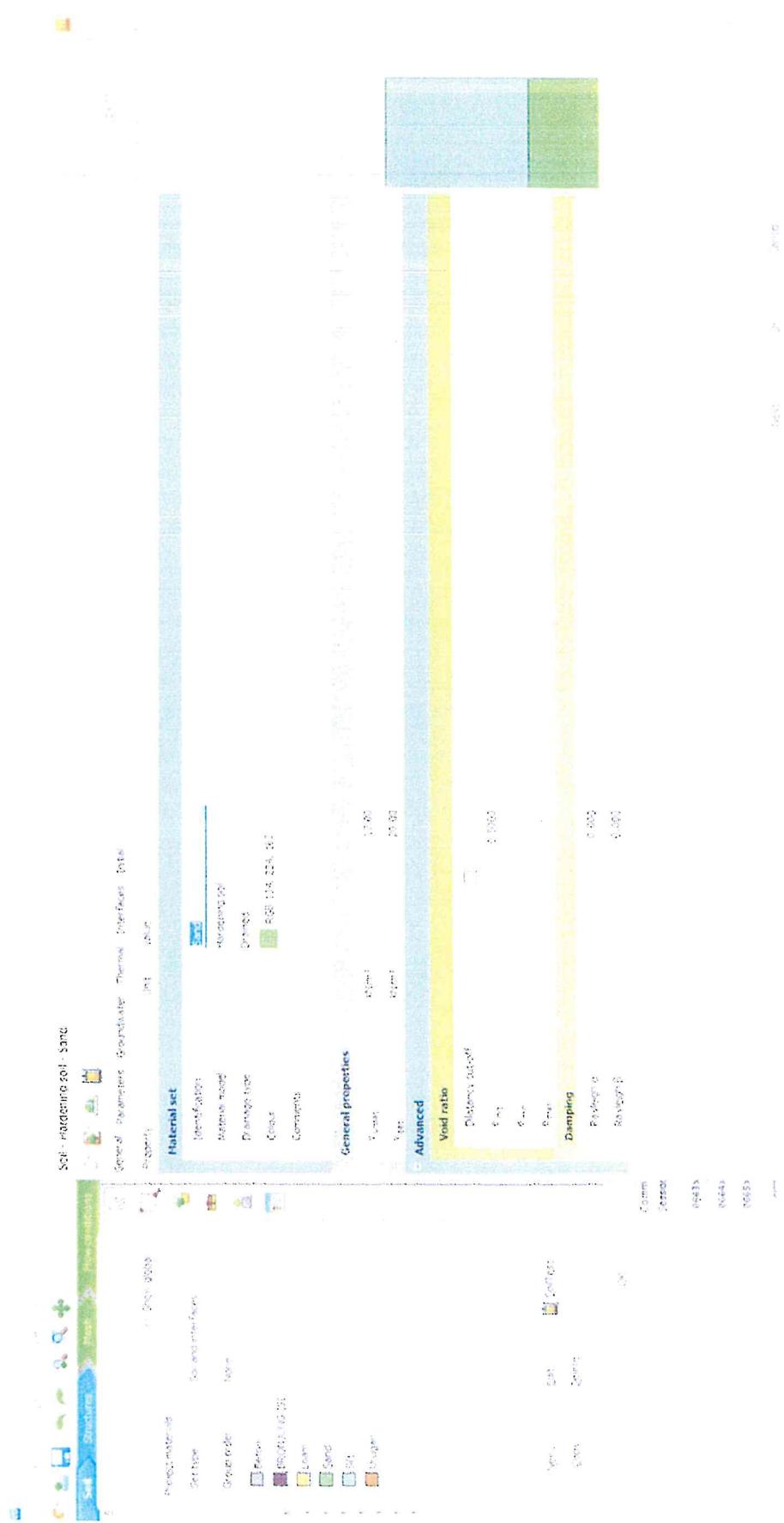


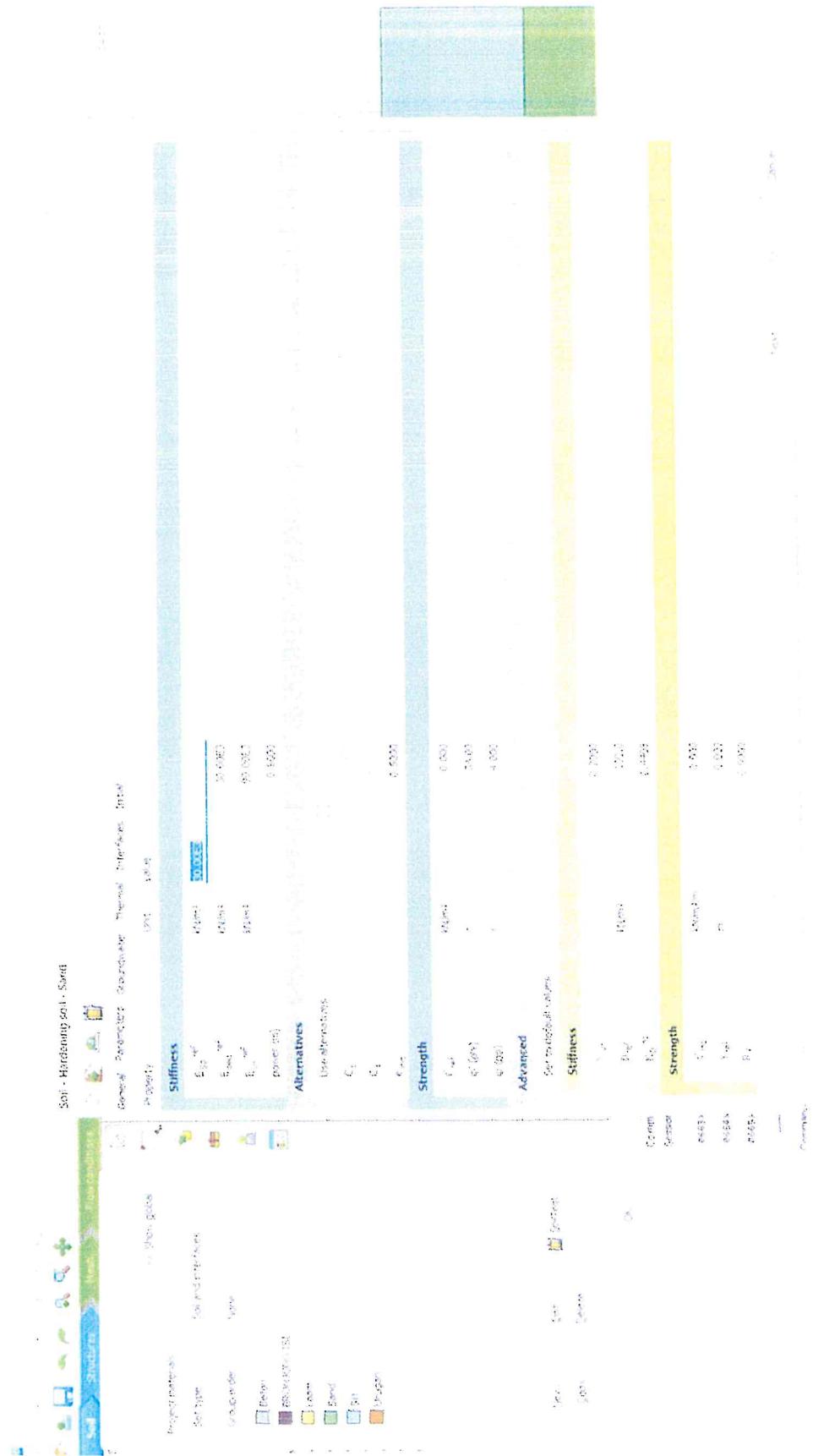
3. Calculation with Plaxis

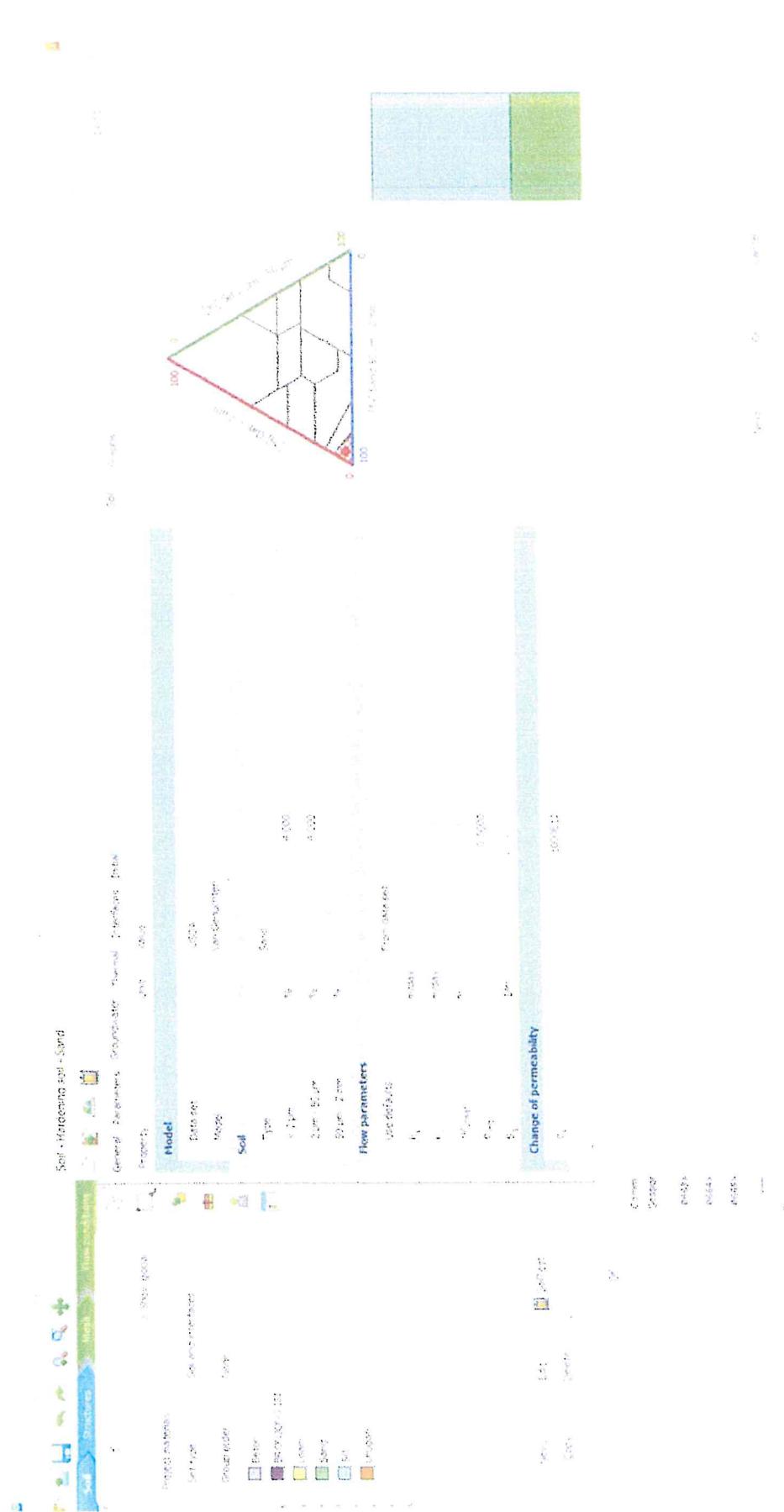
- Reference

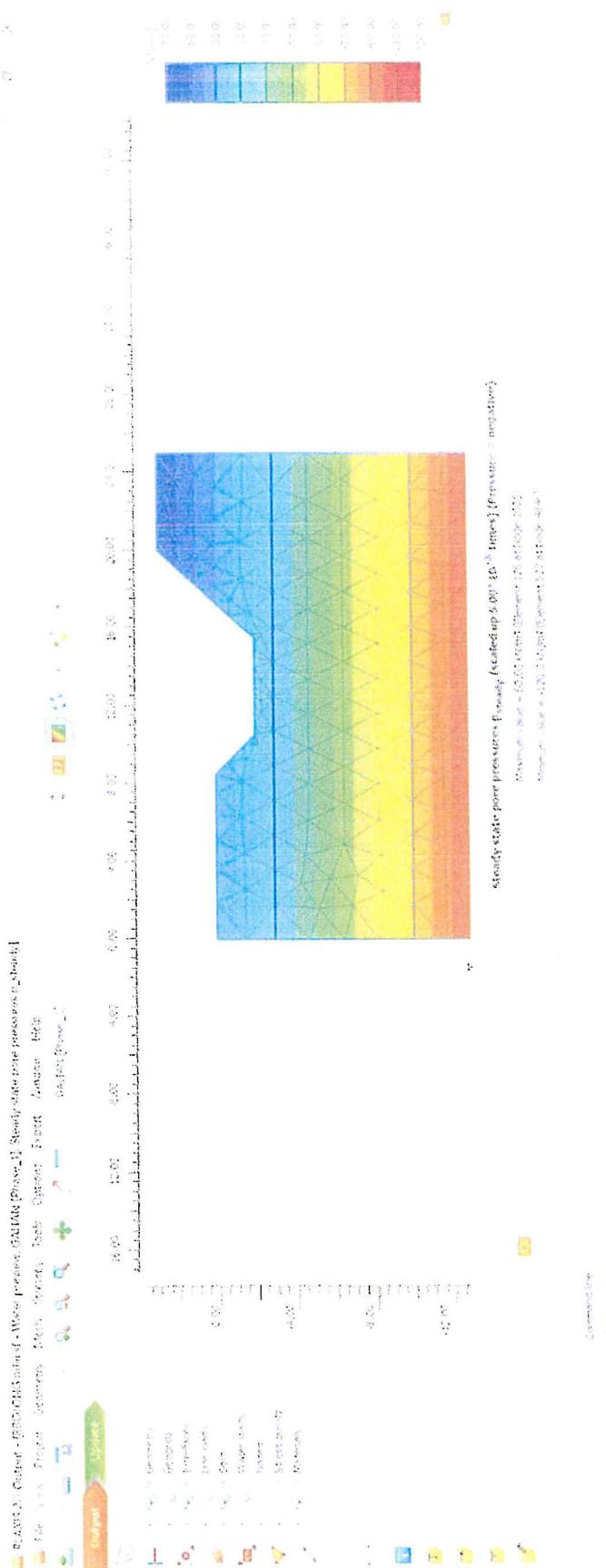
Gambar 4.2
Gambaran lapisan Tanah





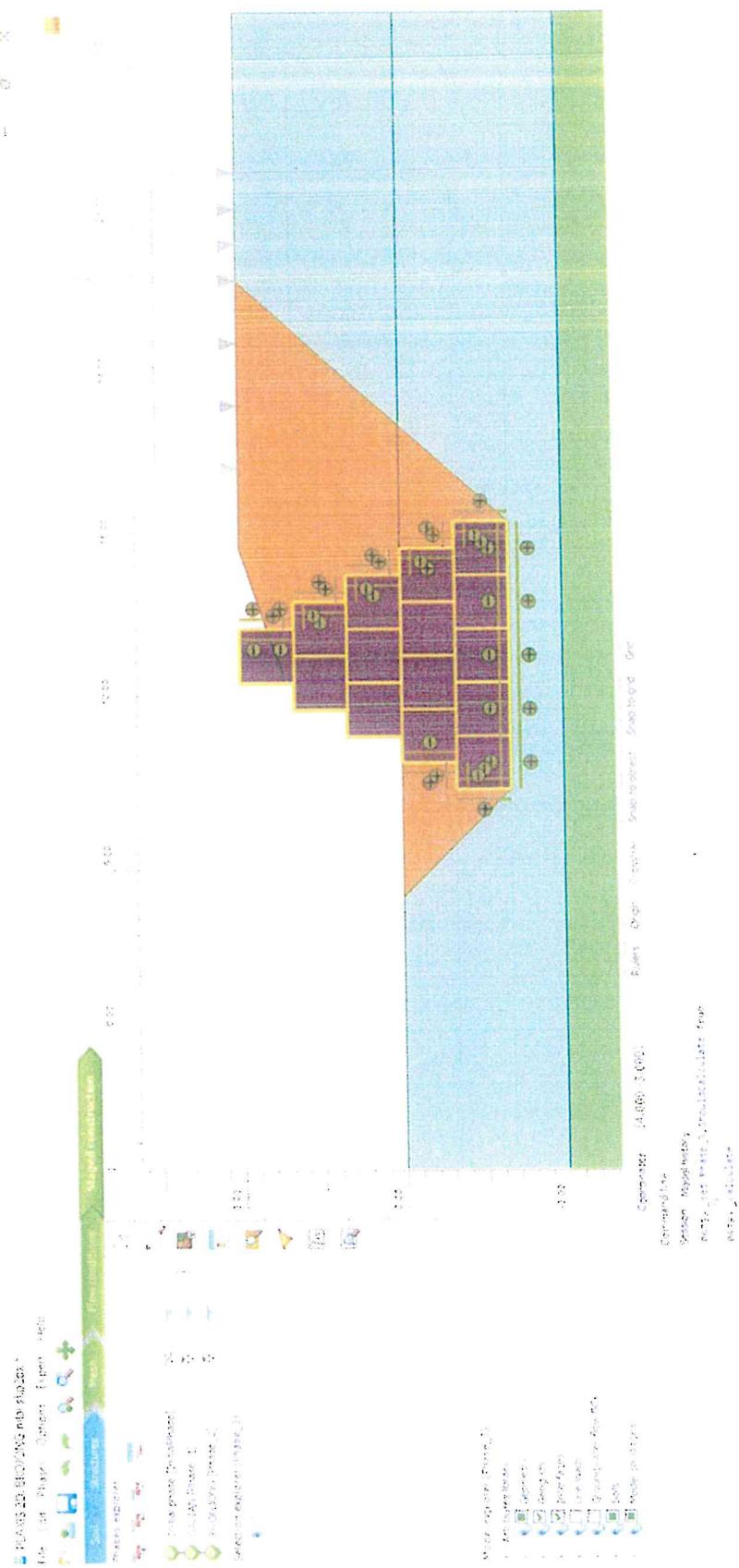


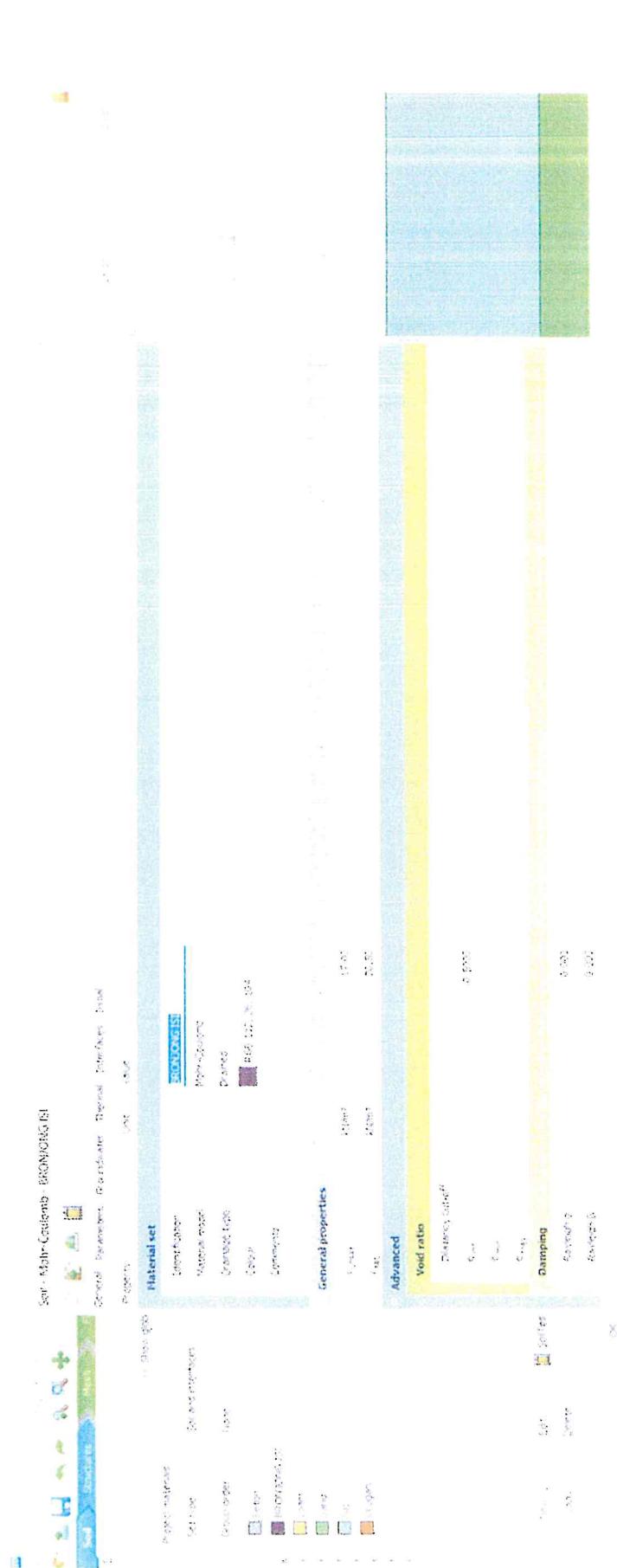


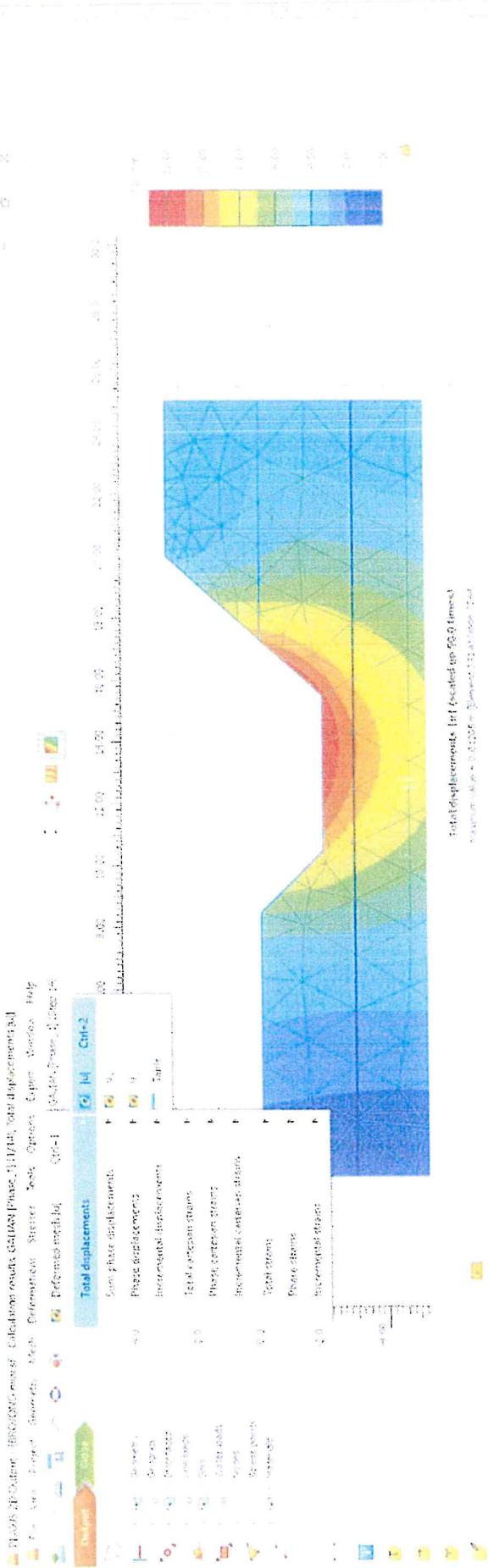


Comments:
Source: Negative
Comments can be added as text boxes.
Comments can be added as text boxes.

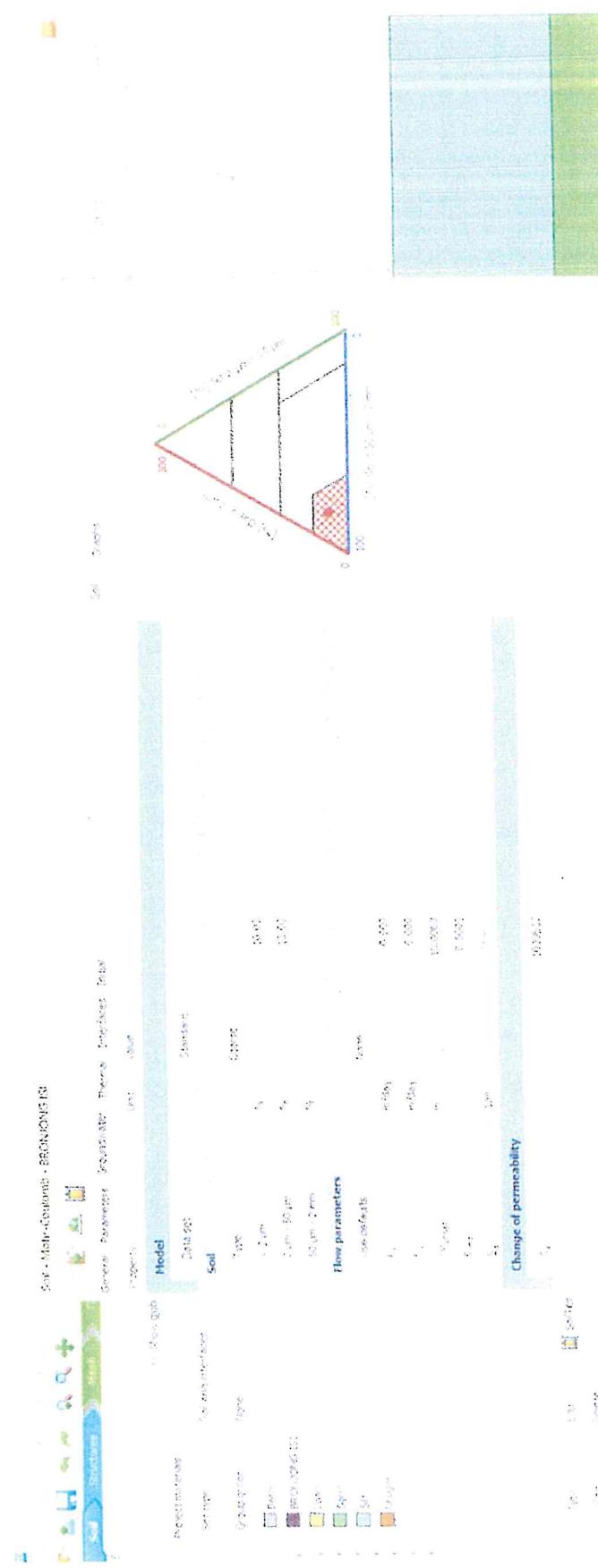
Comments

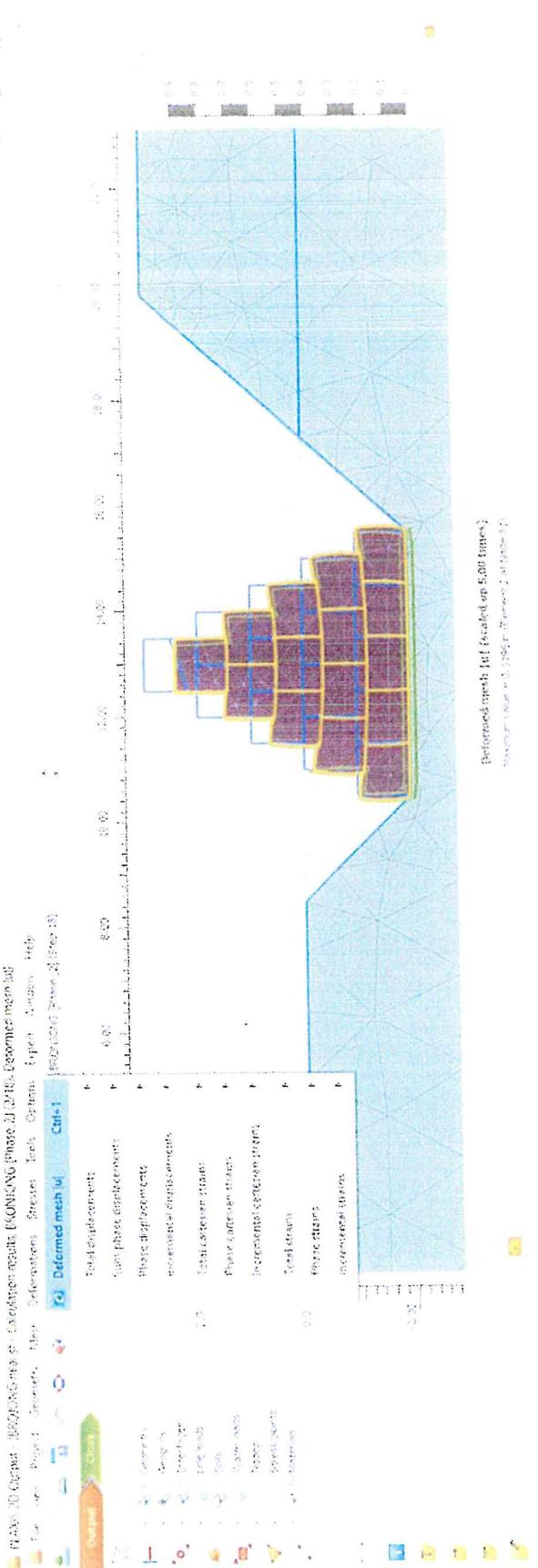




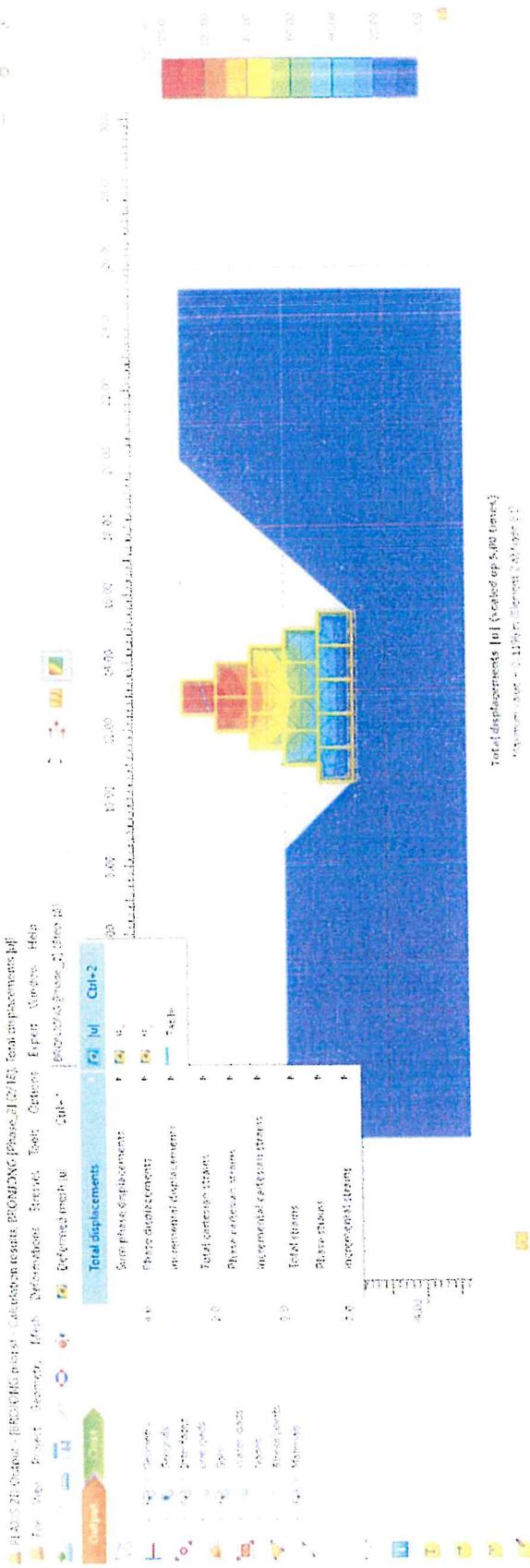


1970-71 学年上学期，我班开展了“学雷锋”活动。通过这次活动，同学们对雷锋精神有了更深刻的理解，对学习雷锋有了更高的热情。在活动中，大家积极参与，表现出了良好的精神风貌。这次活动不仅增强了班级凝聚力，也培养了同学们的集体主义精神和奉献精神。

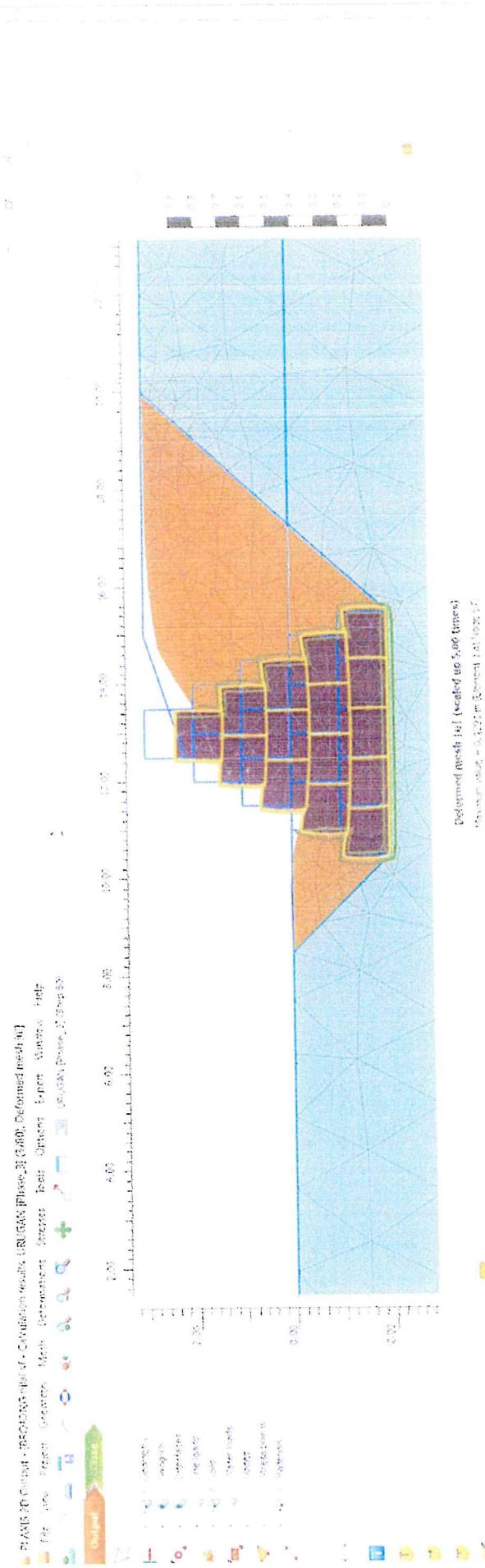




Preferred method of presentation (multiple times)



Command line
Version: Model: 0.0.0
Commands can be issued as follows:
Command: `RIGHT` (cancel current command)
Key commands: `l` (left), `r` (right), `u` (up), `d` (down), `z` (zoom in), `z` (zoom out), `h` (help), `q` (quit)
Annotations: `ctrl` (cancel current annotation), `ctrl` (cancel all annotations), `ctrl` (cancel all annotations and zoom to fit)
Info: `ctrl` (cancel current info), `ctrl` (cancel all info), `ctrl` (cancel all info and zoom to fit)
List: `ctrl` (cancel current list), `ctrl` (cancel all lists), `ctrl` (cancel all lists and zoom to fit)
File: `ctrl` (cancel current file), `ctrl` (cancel all files), `ctrl` (cancel all files and zoom to fit)



474

Committee of labelled patients
Committee of unlabelled patients
Committee of unlabelled patients
Committee of unlabelled patients
Committee of unlabelled patients

Designated model set (used as 50% time)



AGÊNCIA DE DESENVOLVIMENTO NACIONAL, I.P.

(4)

Dili, 29 de Julho de 2025

Ref : 422 /ADN, I.P./VII/2025

Hato'eo ba : Januario Maia Guterres
Director Adjunto e Director Executivo Interino - ADN, I.P.

Assunto : Resultado da Verificação – Konstrusaun Moru Protesaun Cyclope Mota
Wemunue - Metinaro, Municipio Dili

Com os nossos Respeitos,

Com base no assunto mencionado acima, vimos, por meio desta, informar que a equipa de verificação da Unidade de Avaliação de Projetos – ADN, I.P. já realizou a verificação do BoQ e Desenho do *Projeto Konstrusaun Moru Protesaun Cyclope Mota Wenumuc - Metinaro, Municipio Dili*, os resultados da verificação encontram-se em anexo para conhecimento e apreciação.

Agradecemos a vossa atenção e subscrevemo-nos com a mais elevada consideração.


Arch. José Fernando Liu Soares
Koordenador UAP - ADN, I.P.



MINISTÉRIO DO PLANEAMENTO,
E INVESTIMENTO ESTRATÉGICO
IX GOVERNO CONSTITUCIONAL



GABINETE
MINISTRO

Dili, 13 de Maio de 2024

Nu. Ref 832/CG-GMPIE/V/2024

Hato'ó ba : Directur Executivo ADN I.P
Sr. Rui Lourenço da Costa

Asuntu : Encaminha Despacho Ministro, MPIE

Ho Respeito

Liu husi oficio ida ne'e hakarak encaminha despacho Ministro MPIE kona ba karta husi Kompanhia Damenia Unipesoal Lda ho assunto Proposta Construsaun Emergencia ba Protesaun Mota Suco Wenunuk iha Posto Administrativo Matinaro, Municipio Dili. Despacho Ministro iha anexo.

Despacho Ministro : Para ADN I.P

Data despacho : 05.13.2024

Ba atensaun no kolaborasaun lahaluha hato'ó obrigado wain.

Hau nia melhores cumprimentos


Tomás de Fatima da Silva
Chefe do Gabinete do MPIE





AGENCIAS DE DESENVOLVIMENTO NACIONAL

FORMULARIO DESPACHO

Data de Entrada Documentos: 13 / May / 2024 | Data do Documentos: 13 / May / 2024

Husi: MINISTERIO DO PLANEAMENTO INVESTIMENTO ESTRATEGICO

No Ref : 832/CG-GMPIE/V/2024

Projetu :	Quantidade Documentos : 1 Anexo :
Assuntos : Encaminha Despacho Ministro, MPIE (Proposta Construsaun Emergencia ba Protesaun Mota Suco Wenunuk iha Posto Administrativo Metinaro, Muinicipio Dili).	
No. Tf : 3310320	
Companhia : Damenia Unip, Lda	
Despacho :	<input type="radio"/> Unidade de Gestão Administrativa <input type="radio"/> Unidade de Avaliação de Projectos <input type="radio"/> Unidade de Controlo e Validação de Qualidade <input type="radio"/> Unidade de Estudo e Desenvolvimento de Competências <input type="radio"/> Adjunto <input type="radio"/> Assessor/a <input type="radio"/> Gabinete DE / Base de Dadus <input checked="" type="radio"/> Other <i>Sr. Jose Fernando</i> <i>Afir Hace</i>
	Data: <i>13/5/24</i> <i>Rui Lourenço da Costa</i> <i>Director Executivo ADN</i>



SOCIEDADE DE CONSTRUÇÕES E INVESTIMENTOS NACIONAL, S.P.

SUMMARY

Name Of Project : Konstrusaun Moru Protesaun Cyclop Mota Wenunuc Metinaro

Location Of Project : Metinaro - Timor Leste

PAY ITEM	DESCRIPTION	AMOUNT (\$)
100	GENERAL REQUIREMENT	\$ 9.090,34
200	EARTH WORKS	
	Upstream	\$ 28.887,44
	Downstream Left and Right Side	\$ 37.500,28
500	BRIDGE CONSTRUCTION (Pay Item Name)	
	Upstream	\$ 707.212,43
	Downstream Left and Right Side	\$ 1.359.982,62
600	DRAINAGE AND SLOPE PROTECTION	
	Upstream	\$ 2.236,92
	Downstream Left and Right Side	\$ 5.602,13
A	CONSTRUCTION WORKS	\$ 2.150.512,15
B	PROFIT & OVERHEAD 10 % X A	\$ 215.051,22
C	OVERHEAD	\$ 23.877,61
D	TAX 2 % X (A + B + C)	\$ 47.788,82
E	TOTAL (A + B + C + D)	\$ 2.437.229,80



AGÊNCIA DE DESENVOLVIMENTO DA NAVEGAÇÃO

COST ESTIMATION

NAME OF PROJECT : Cyclope Protection in Metinaro, Dili Municipality

LOCATION OF PROJECT : Metinaro - Timor Leste

Upstream

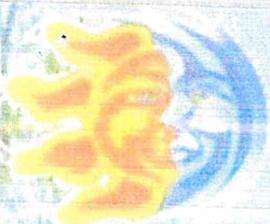
PAY ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT RATE US\$	AMOUNT US\$
100	GENERAL REQUIREMENTS				
102,1	Mobilization	Ls	1,00	\$ 5.440,34	\$ 5.440,34
102,2	Demobilization	Ls	1,00	\$ 3.650,00	\$ 3.650,00
	<i>Sub Total 100</i>				\$ 9.090,34
200	EARTH WORKS				
204,1	Structure Excavation	Cu.m	4.277,50	\$ 2,78	\$ 11.875,10
204.3 a	Ordinary backfill from excavation	Cu.m	1.683,91	\$ 2,57	\$ 4.327,44
205,1	Common Embankment	Cu.m	6.619,90	\$ 2,57	\$ 17.012,34
	<i>Sub Total 200</i>				\$ 28.887,44
500	BRIDGE CONSTRUCTION (Pay item Name)				
506.1e	CYCLOPS (K175)	Cu.m	4.550,00	\$ 150,77	\$ 686.005,75
506 (2)	Lean Concrete (K175 /14.5 Mpa)	Cu.m	196,00	\$ 108,20	\$ 21.206,69
	<i>Sub Total 500</i>				\$ 707.212,43
600	DRAINAGE AND SLOPE PROTECTION				
604.4a	PVC 2" Dia	Ln.m	910,00	\$ 2,34	\$ 2.124,85
612	Geotextile	Sq.m	54,21	\$ 2,07	\$ 112,07
	<i>TOTAL</i>				\$ 2.236,92
					\$ 747.427,13



NAME OF PROJECT : Cyclope Protection in Metinaro, Dili Municipality
LOCATION OF PROJECT : Metinaro - Timor Leste

OVERHEAD

NO	DESKRISAUN	UNIT	QUANTITY	UNIT PRICE	TOTAL
1 PROJECT TEAM					
	Site Engineer	Ls	1,00	\$ 3.000,00	\$ 3.000,00
	Surveyor	Ls	1,00	\$ 750,00	\$ 750,00
	Logistics	Ls	1,00	\$ 750,00	\$ 750,00
	Administration	Ls	1,00	\$ 600,00	\$ 600,00
	Security	Ls	1,00	\$ 900,00	\$ 900,00
2 KUSTU OPERASIONAL					
	Stationary	Ls	1,00	\$ 120,00	\$ 120,00
	Communication	Ls	1,00	\$ 180,00	\$ 180,00
	Meetings	Ls	1,00	\$ 120,00	\$ 120,00
	Electricity	Ls	1,00	\$ 360,00	\$ 360,00
	Water	Ls	1,00	\$ 360,00	\$ 360,00
	Daily, weekly, monthly reports	Ls	1,00	\$ 120,00	\$ 120,00
	Shop drawings, as built drawings	Ls	1,00	\$ 200,00	\$ 200,00
3 KUSTU SERVISU APOIO NIAN					
	Material Sampling & Testing	Ls	1,00	\$ 16.177,61	\$ 16.177,61
	Personal protective equipment (PPE)	Ls	1,00	\$ 240,00	\$ 240,00
TOTAL OVERHEAD					\$ 23.877,61



DAMENIA

UNIPESSOAL LDA

Avenida de Beçora - Culuhun California, Dili - Timor Leste
Phone : +(670) 3311432, Mobile +670 7774 5074, +670 920 020 000
Email : damenia2008@gmail.com

ADN


S. B. B. M.
02.13.2014

PROPOSAL

**CONSTRUÇÃO BA RECUPERAÇÃO CALAMIDADE
CONSTRUÇÃO MÓRU PROTEÇÃO CYCLOP
(STA 0+000 - STA 0 +177.29)
SUÇO WENUNUK, POSTO ADM. METINARO,
MUNICIPIO DILI**

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SUBMIT TO : MINISTRY OF PLANNING & STRATEGY (MIPF)
RUA HUDILARAN,
DILI - TIMOR LESTE

Dil. 29 de Julho de 2025

Ref : 423 /ADN, I.P./VII/2025

Hato'óba : Januario Maia Guterres
Director Adjunto e Director Executivo Interino - ADN, I.P.

Assunto : Resultado da Verificação – Konstrusaun Moru Protesaun Cyclope Mota Wetuku, Bekarin, Município Viqueque

Com os nossos Respeitos,

Com base no assunto mencionado acima, vimos, por meio desta, informar que a equipa de verificação da Unidade de Avaliação de Projetos – ADN, I.P. já realizou a verificação do BoQ e Desenho do *Projeto Konstrusaun Moru Protesaun Cyclope Mota Wetuku, Bekarin, Município Viqueque*, os resultados da verificação encontram-se em anexo para conhecimento e apreciação.

Agradecemos a vossa atenção e subscrevemo-nos com a mais elevada consideração.


Arch. José Fernando Liu Soares
Koordenador UAP - ADN, I.P.



Berlilio Lúcio, Estrela,
Dil. Técnico de
infraestrutura.gov.pt



AGENCIA DE DESARROLLO NACIONAL | P

SUMMARY

NAME OF PROJECT : Konstrusaun Moru Protesaun Cyclope mota Wetuku. Buicaren, Viqueque
LOCATION OF PROJECT : Wetuku. Bahalarua uain, Viqueque

ITEM No.	DESCRIPTION	ADN REVIEW
100	GENERAL	\$ 18.740,34
200	EARTHWORKS	\$ 118.258,10
500	BRIDGE CONSTRUCTION	\$ 51.105,34
600	DRAINAGE AND SLOPE PROTECTION STRUCTURES	\$ 1.713.283,05
A	TOTAL CONSTRUCTION COST	\$ 1.901.386,83
B	PROFIT (10% x A)	\$ 190.138,68
C	OVERHEAD	\$ 26.921,00
D	TAX (A + B + C) x 2%	\$ 42.368,93
E	GRAND TOTAL (A+B+C)	\$ 2.160.815,44



AGENCIA DE DESARROLLO NACIONAL, I. P.

BILL OF QUANTITY

NAME OF PROJECT : Konstrusaun Moru Prosesaun Cyclope mota Wetuku. Buicaren. Viqueque

LOCATION OF PROJECT : Wetuku. Bahalara uain. Viqueque

ITEM No.	DESCRIPTION	ADN REVIEW		
		QUANTITY	UNIT PRICE (USD)	AMOUNT (USD)
100	GENERAL			
101 (1)	Mobilization	LS	1,00	\$ 10.190,34
102	Demobilization	LS	1,00	\$ 8.550,00
	SUB TOTAL 100			\$ 18.740,34
200	EARTHWORKS			
204,1	Structure Excavation + Normalization	Cu.m	15.224,21	\$ 2,73
205,1	Common Embankment (Back Fill)	Cu.m	33.805,46	\$ 2,27
	SUB TOTAL 200			\$ 118.258,10
500	BRIDGE CONSTRUCTION			
506.(6)	Lean Concrete Fc. 10 Mpa	Cu.m	477,90	\$ 106,94
	SUB TOTAL 500			\$ 51.105,34
600	DRAINAGE AND SLOPE PROTECTION STRUCTURES			
600 (1)	Gabions Installation	Cu.m	768,00	\$ 50,51
604. 4a	PVC 2" dia	Ln.m	885,00	\$ 2,65
609 (2)	Cyclopean Concrete with Concrete 21 Mpa	Cu.m	11.970,00	\$ 139,69
	SUB TOTAL 600			\$ 1.713.283,05
	TOTAL CONSTRUCTION COST			\$ 1.901.386,83



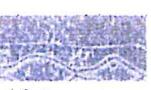
AGENCIA DE DESENVELOVIMENTO NACIONAL - P

OVERHEAD

NAME OF PROJECT : Konsurasam ivoru Prosesau Cyclope mota Wetuku, Buncaren, Viqueque

LOCATION OF PROJECT : Wetuku, Bahalara uain, Viqueque

NO	DESKRISAUN	UNIT	QUANTITY	UNIT PRICE	TOTAL
1 PROJECT TEAM					
	Site Engineer	Ls	1,00	\$ 6.000,00	\$ 6.000,00
	Quality Control	Ls	1,00	\$ 3.000,00	\$ 3.000,00
	Surveyor	Ls	1,00	\$ 1.500,00	\$ 1.500,00
	Logistics	Ls	1,00	\$ 1.500,00	\$ 1.500,00
	Administration	Ls	1,00	\$ 1.200,00	\$ 1.200,00
	Security	Ls	1,00	\$ 1.800,00	\$ 1.800,00
2 KUSTU OPERASIONAL					
	Stationary	Ls	1,00	\$ 240,00	\$ 240,00
	Communication	Ls	1,00	\$ 360,00	\$ 360,00
	Meetings	Ls	1,00	\$ 240,00	\$ 240,00
	Electricity	Ls	1,00	\$ 720,00	\$ 720,00
	Water	Ls	1,00	\$ 720,00	\$ 720,00
	Daily, weekly, monthly reports	Ls	1,00	\$ 240,00	\$ 240,00
	Shop drawings, as built drawings	Ls	1,00	\$ 200,00	\$ 200,00
3 KUSTU SERVISU APOIO NIAN					
	Material Sampling & Testing	Ls	1,00	\$ 8.721,00	\$ 8.721,00
	Personal protective equipment (PPE)	Ls	1,00	\$ 480,00	\$ 480,00
TOTAL OVERHEAD					\$ 26.921,00



Universidad
de Costa Rica

Facultad de
Ingeniería

RESUMEN

PROYECTOS

PROBLEMA

RECOMENDACIONES

• Estudio de la situación actual del
sector minero en Costa Rica.
• Propuesta de recomendaciones.

• Estudio de la situación actual del
sector minero en Costa Rica.
• Propuesta de recomendaciones.

Implementación ley 4001, 1990
de Minas:

1. Must include workup summary. ✓
2. Must include unit wise analyses ✓
3. Initial construction estimate, the min max
design must be prepared & approved by
the Minister late. (cycle T. 21 M).

MANIFIESTO AÑO: 1.301.986.9.

RECIBIDO DOCUMENTO
RECIBIDO DOCUMENTO
RECIBIDO DOCUMENTO

JULY 16 2015 .

D.D., JULY 10, 2015
Prepared By,

Yamil M. M.
Assessor in M.R.S.O.

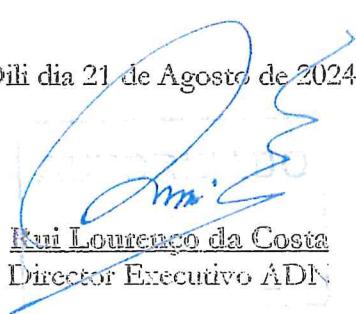
DESPACHO DE ADN N.º 0175 /GAB/DR/PL/11, 2024

Notaria hei adunsaun ne che subante mai tucu Sr. José Freitas da Costa. Lai adunsaun konseidera ne proponeca emergency no che mai heara despacho busu Muzikuru MTFI, ba kia ule konseruam Dili, com a Executivo ADN I.P. despacho dokumentos referi ba parte Unidade Administrativa Projeto (UAP) ADN I.P. busu ba Kooideadora UAP ADN I.P. atu konseidera no kontraua ba proceso verifikasiun. (dokumentos Anexo)

Lista projeto mak hanesan uit mai ne'e :

№	NARAN PROJETO	KOMPANHIA
1.	Konstrusaun Ponte Mota Lebos, Gildapil, Bobonaro	Safira Mountain, Unip Lda
2.	Konstrusaun Moru Protesaun Uai-mo	Husi Chefe Suco Uai-Laha
3.	Konstrusaun Moru Protesaun Mota Rembor	Cramat Unip Lda
4.	Konstrusaun Moru Protesaun no Irigasaun ba Natar Hae-Gala	Administrador Posto Vendale
5.	Konstrusaun Moru Protesaun Mota Wetuku	Enigma Unip Lda

Dili dia 21 de Agosto de 2024


Rui Lourenço da Costa
Director Executivo ADN



AGÊNCIA DE DESENVOLVIMENTO NACIONAL

Data : 29/08/2024

Hato'eo ba : Sr. Rui Lourenco da Costa
Direitor Executivo ADN,IP

Husi : Jose Fernando Liu Soares
Teknik Unidade de estudos e desenvolvimento de competencias (UEDC)

Assuntu : Relatorio observasaun ba proposta moru protesaun mota wetuku, Viqueque.

Ho respeito,

Baseia ba Despacho ho Nu. Ref : 361/CG-GMPIE/V/2024 Relaciona ho proposta nebe
submete ho assuntu pedido atu Konstrui moru protesaun ba mota wetuku., iha biban ida ne'e
hakarak informa ba Sr. Direitor Executivo katak Ekipa halo ona observasaun iha terreno no hore
katak mota refere refere Sedimentasaun makas no presija atu konstrui moru protesaun hodi proteje
rai no natar. Manutensaun ba mota wetuku konsidera hanesan Pridodade (Relatorio Aneksu). Hare
ba mota nian kompleksidade Presija Prepara Detailed engineering design (DED) ho diak, atu bele
assegura kualidade iha faze implementasaun.

Nota Informasaun

Proposta husi : Enigma.unip.Ida.
Naran Proposta : Konstrusaun Moru protesaun mota wetuku
Montante proposta : \$735,423.66
Distansia Proposta : 1,6 km
Item Proposta : Moru protesaun (Cyclope)
Durasaun proposta konstrusaun :

Ba Sr. Direitor Executivo nia atensaun no kolaborasaun obrigado wain.

Data : 20 / 08 /2024



Jose Fernando Liu Soares

Teknik: UEDC



AGÊNCIA DE DESENVOLVIMENTO NACIONAL, I.P.

Data : 20/08/2024

Hato'o ba : Sr. Rui Lourenco da Costa
Direitor Executivo ADN.IP

Husi : Jose Fernando Liu Soares
Teknik Unidade de estudos e desenvolvimento de competencias (UEDC)

Assuntu : Relatorio observasaun ba proposta moru protesaun mota wetuku, Viqueque.

Ho respeito,

Baseia ba Despacho ho Nu.Ref : 361/CG-GMPIE/V/2024 Relasiona ho proposta nebe submete ho assuntu pedido atu Konstrui moru protesaun ba mota wetuku., lha biban ida ne'e hakarak informa ba Sr. Direitor Executivo katak Ekipa halo ona observasaun iha terreno no hare katak mota refere refere Sedimentasaun makas no presija atu konstrui moru protesaun hodi proteje rai no natar. Manutensaun ba mota wetuku konsidera hanesan Pridodade (Relatorio Aneksu). Hare ba mota nian komplexidade Presija Prepara Detailed engineering design (DED) ho diak, atu bele assegura kualidade iha faze implementasaun.

Nota Informasaun

Proposta husi : Enigma.unip.Ida.

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Ba Sr. Direitor Executivo nia atensaun no kolaborasaun obrigado wain.

Data : 20 / 08 / 2024


Jose Fernando Liu Soares
Teknik UEDC

Dili, 09 de Agosto de 2024

Nota Informativa Técnica

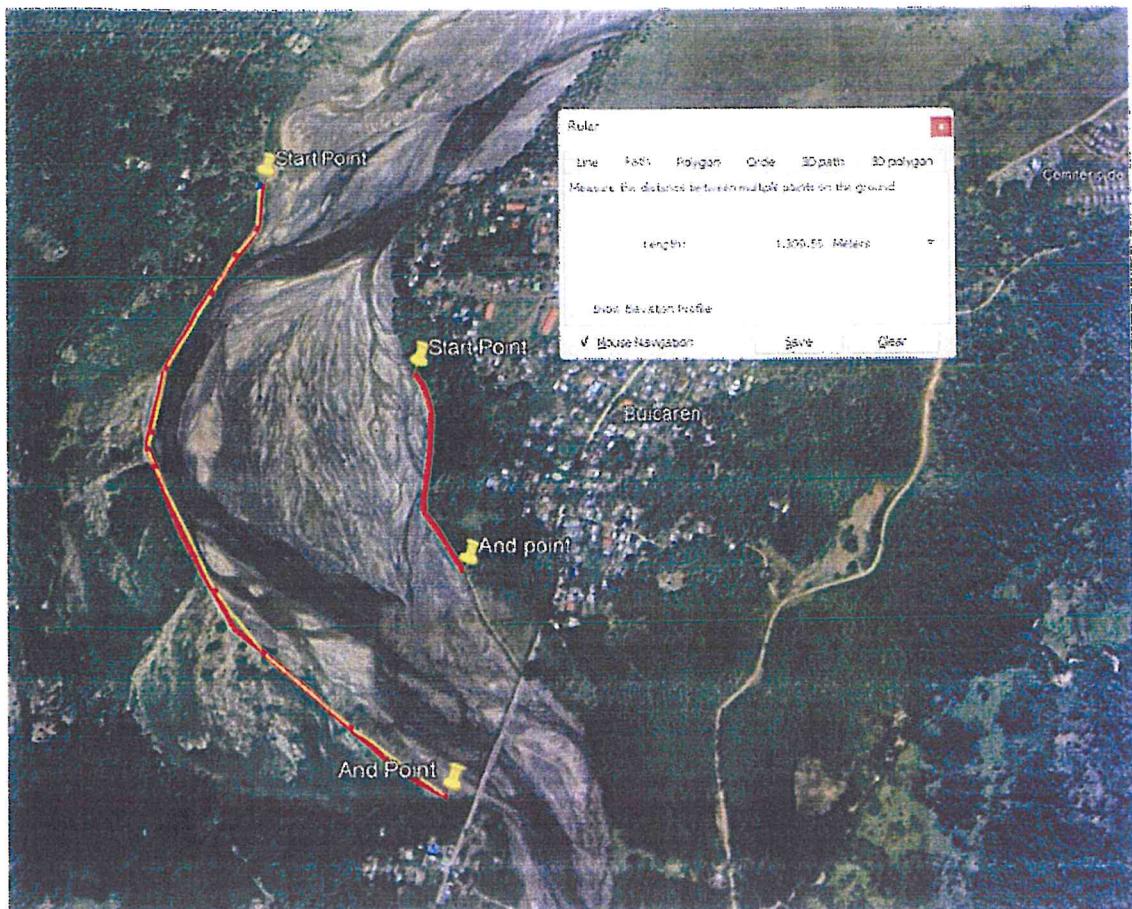
Hato'ba : Sr. Rui Lourenço da Costa

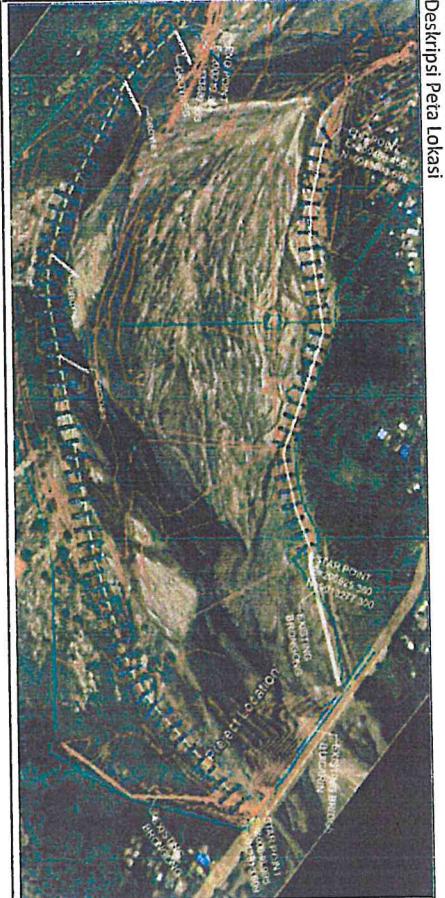
Directur Executivo ADN IP.

Assunto : Nota informativa Técnica - Proposta Konstrusaun Barreira mota Wetuku Suku Bahalara Uain, Posto Administrativo Viqueque Munisipio Viqueque.

Baseia ba Despacho No. 361 / CG-GMPIE/III/2024 data 03 de Junho 2024, iha data 10 de Julho 2024 ekipa verifikador halo ona verifikasiasaun tereno ba Proposta Konstrusaun Barreira mota Wetuku Suku Bahalara Uain, Posto Administrativo Viqueque Munisipio Viqueque. observa katak mota refere wainhira udan boot bee mota sobu komunidade nia Hela fatin natar no toos husi parte mota ulun.

Fatin projeto iha Aldeia Bikarin Suco Bahalara Uain Posto. Adm Viqueque Munisipio Viqueque.



PROBLEMA	RECOMENDAÇÃO
PROJETOS	
EMERGENCY PROJECT KONTRUSAUN MORU PROTESAUN CYCLOPE MOTA WETUKUKU,BEKARIN,VIQUEQUE LEFT SIDE,STA 0+00-1+200,RIGHT SIDE, STA 0+570.60	<p>ALREADY VERIFICATION BY AND - IP.</p> <ol style="list-style-type: none"> 1. Data koordinat sudah sesuai dengan lokasi yang akan dikerjakan. 2. Gambar plan profile sudah diperbaiki dan diperjelas. 3. Peta situasi, koordinat star point dan end point ada. 4. Data koordinat di file auto cad sesuai dengan di gambar plan profile. 5. Data cross section sudah diperbaiki dan lengkap.
DATA PENGUKURAN	
Location:	
BAHALARA UAIN, POSTO ADMINISTRATIVO VIQUEQUE.	
Desing By:	
COMPANIA	
MINISTÉRIO DO PLANEAMENTO E INVESTIMENTO ESTRATÉGICO	
	

Dili, 19/12/2025

PREPARED BY


(IRWAN SANTOSA)
 ACESOR TECNICO

RECEIVED DOCUMENT
RECEBIDO DOCUMENTO
COMPLETED DOCUMENT
DOCUMENTO COMPLETO
RECEIVED DOCUMENT

ANALYSIS STRUCTURE CYCLOPEAN CONCRETE

CYCLOPEAN CONCRETE 24 MPa (60:40)

Top wall level	=	5.00 m
River bed level	=	1.80 m
Ground water level	=	1.50 m
River water level	=	2.00 m
Foundation level	=	4.00 m

(unit length),

Dimension	B	L
H = 4.00 m	2.50 m	1.00 m
b ₁₁ = 0.00 m	b ₁₂ = 0.50 m	b ₁₃ = 2.00 m
b ₂₁ = 0.00 m	b ₂₂ = 2.00 m	b ₂₃ = 0.50 m
b ₃₁ = 5.00 m	b ₃₂ = 1.00 m	b ₃₃ = 0.00 m
b ₄₁ = 2.00 m	b ₄₂ = 3.00 m	b ₄₃ = 2.50 m

Backfill soil

γ_{soil} = 1.80 t/m^3	α = 0.00 °	K_h = 0.18 kN/m^3
γ_{sat} = 2.00 t/m^3	ϕ = 0.00 °	γ_w = 1.00 kN/m^3
ϕ = 30.0 °	c = 0.00 t/m^2	
C = 0.00 t/m^2	β = 0.00 °	

(normal) (seismic)

$\gamma_s = 1.00 \text{ t/m}^3$

$\phi_s = 30.0^\circ$

$C_s = 0.00 \text{ t/m}^2$

$f_s = 0.00$

$\text{Friction coefficient}$

$f_s = 0.50$

$j_s = 0.50$

$\text{Uplift coefficient}$

$U_p = 1.00$

Allowable stress

$\sigma_{sa} = 60 \text{ kg/cm}^2$

$\sigma_{sa} = 90 \text{ kg/cm}^2$

$\sigma_{sa} = 2775 \text{ kg/cm}^2$

$\sigma_{sa} = 1850 \text{ kg/cm}^2$

$\tau_a = 5.5 \text{ kg/cm}^2$

$\tau_a = 8.25 \text{ kg/cm}^2$

$\text{Young's modulus ratio}$

$24 / 16$

Section of Cyclopedan

Cong. of Wall

Ground Water Level

River Water Level

Foundation Level

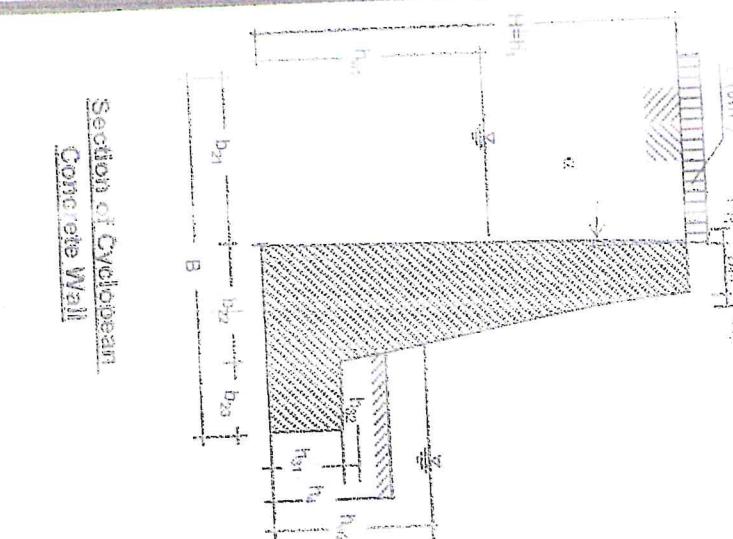
Top Wall Level

River Bed Level

Water Level

Ground Level

Soil Level



STABILITY : CYCLOPEAN CONCRETE 21 MPA (60:40)

Normal Condition

a) Stability against overturning

$$|e| = 0.69 \text{ m} < B/6 = 0.42 \text{ m} \quad \text{OK!}$$

b) Stability against sliding

$$F_S = 2.73 > 1.00 \quad \text{OK!}$$

Seismic Condition

a) Stability against overturning

$$|e| = 0.43 \text{ m} < B/3 = 0.83 \text{ m} \quad \text{OK!}$$

b) Stability against sliding

$$F_S = 0.64 > 0.50 \quad \text{OK!}$$

c) Reaction of foundation soil

$$\begin{aligned} q_1 &\approx 6.63 \text{ } \text{N/m}^2 < q_a = 23.67 \text{ } \text{N/m}^2 & \text{OK!} \\ q_2 &\approx 9.63 \text{ } \text{N/m}^2 < q_a = 23.67 \text{ } \text{N/m}^2 & \text{OK!} \end{aligned}$$

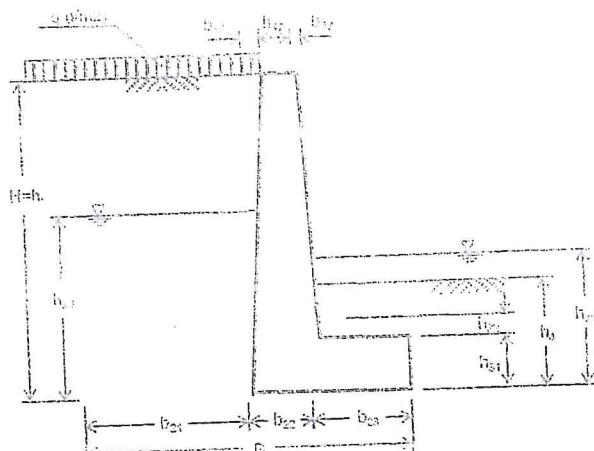
c) Reaction of foundation soil

$$\begin{aligned} q_1 &= 13.43 \text{ } \text{N/m}^2 < q_{ae} = 35.50 \text{ } \text{N/m}^2 & \text{OK!} \\ q_2 &= 2.89 \text{ } \text{N/m}^2 < q_{ae} = 35.50 \text{ } \text{N/m}^2 & \text{OK!} \end{aligned}$$

1. Design Data

1.1 Dimensions

B	=	2.50	m	H	=	6.00	m
L	=	1.00	m	(wall length)			
b_{11}	=	0.00	m	b_{21}	=	0.00	m
b_{12}	=	0.50	m	b_{22}	=	2.00	m
b_{13}	=	2.00	m	b_{23}	=	0.50	m
h_1	=	5.00	m	R_1	=	2.00	m
h_{51}	=	1.00	m	h_{51}	=	3.00	m
h_{52}	=	0.00	m	h_{52}	=	2.50	m



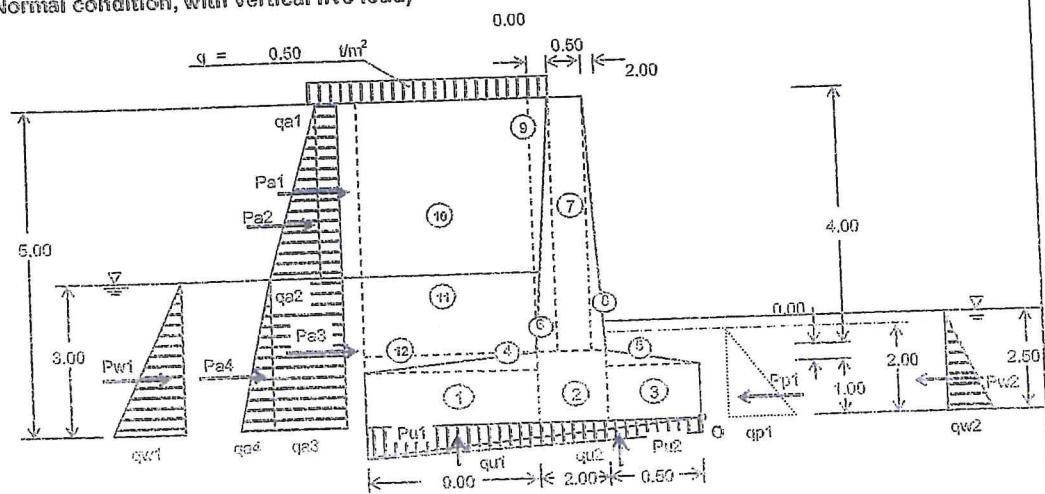
1.2 Parameters

Backfill soil	Foundation soil			Safety factor
	γ_{soil}	γ'_{soil}	c_s	
γ_{soil}	=	1.80	t/m^3	$\gamma'_{soil} = 1.00 \text{ t/m}^3 (= \gamma_{soil} - \gamma_w)$
γ_{sat}	=	2.00	t/m^3	$c_s = 0.00 \text{ t/m}^2$
c	=	0.00	t/m^2	$\phi_s = 30.00^\circ$
ϕ	=	30.00	$^\circ$	$\mu = 0.50$ (Friction coefficient)
				$U_p = 1.00$ (Uplift coefficient)
β	=	0.000	$^\circ$	
α	=	0.000	$^\circ$	(for stability analysis)
	=	0.000	$^\circ$	(for structural analysis)
δ	=	0.000	$^\circ$	(for stability analysis in normal condition, $\delta = \beta$)
	=	20.00	$^\circ$	(for structural analysis in normal condition, $\delta = 2/3 \phi$)
	=	24.23	$^\circ$	(for stability analysis in seismic condition, see Section 2.3)
	=	15.00	$^\circ$	(for structural analysis in seismic condition, $\delta = 1/2 \phi$)
Φ	=	10.204	$^\circ$	(= Arc tan(K_h))
				$K_h = 0.18$

Section of Retaining Wall

2. Stability Calculation

2.1 Case 1 (Normal condition, with vertical live load)



Acting Load in Case 1

(1) Vertical Load

SL No.	q (kN/m)	x (m)	y (m)	z (m)	W (kN)	S (kN)	T (kN)			
1	1.00	x	0.00	x	2.40	0.000	2.500	0.00		
2	1.00	x	2.00	x	2.40	4.000	4.000	7.20		
3	1.00	x	0.50	x	2.40	1.200	0.250	0.30		
4	0.50	x	0.00	x	0.00	x	2.40	0.000	2.500	0.00
5	0.50	x	0.00	x	0.50	x	2.40	0.000	0.167	0.00
6	0.50	x	4.00	x	0.00	x	2.40	0.000	3.000	0.00
7	4.00	x	0.50	x	2.40	4.800	2.750	13.20		
8	0.50	x	4.00	x	2.00	x	2.40	0.600	1.833	17.60
9	0.50	x	4.00	x	0.00	x	1.80	0.000	3.000	0.00
10	0.00	x	2.00	x	1.80	0.000	2.500	0.00		
11	0.00	x	2.00	x	2.00	0.000	2.500	0.00		
12	0.50	x	0.00	x	0.00	x	2.00	0.000	2.500	0.00
13	0.50	x	0.00	x	0.00	0.000	3.000	0.00		
Total (1 to q)					20.400		38.30			
Pu1	3.00	x	2.50	x	0.50	x	-1.00	-3.750	1.867	-6.25
Pu2	2.50	x	2.50	x	0.50	x	-1.00	-3.125	0.833	-2.00
Total (1 to Pu2)					13.525		29.45			

(2) Horizontal Load

Coefficient of Active earth pressure

$$K_a = \frac{\cos^2(\phi - \alpha)}{\cos^2\alpha \times \cos(\alpha + \delta) \times \left[1 + \sqrt{\frac{\sin(\phi + \delta) \times \sin\phi}{\cos(\alpha + \delta) \times \cos\alpha}} \right]^2}$$

(for stability analysis)

$$\begin{aligned} \alpha &= 0.000^\circ & \delta &= 0.000^\circ \\ \cos^2(\phi - \alpha) &= 0.750 & \sin(\phi + \delta) &\approx 0.500 \\ \cos^2\alpha &= 1.000 & \sin\phi &= 0.500 \\ \cos(\alpha + \delta) &= 1.000 & \cos\alpha &= 1.000 \end{aligned}$$

$$K_a = 0.333 \text{ for stability analysis}$$

(for structural analysis)

$$\begin{aligned} \alpha &= 0.000^\circ & \delta &= 20.000^\circ \\ \cos^2(\phi - \alpha) &= 0.750 & \sin(\phi + \delta) &\approx 0.766 \\ \cos^2\alpha &= 1.000 & \sin\phi &= 0.500 \\ \cos(\alpha + \delta) &= 0.940 & \cos\alpha &= 1.000 \end{aligned}$$

$$K_a' = 0.297 \text{ for structural analysis}$$

Coefficient of Passive earth pressure

$$K_p = \frac{\cos^2(\phi + \alpha)}{\cos^2\alpha \times \cos(\alpha - \delta) \times \left[1 - \sqrt{\frac{\sin(\phi + \delta) \times \sin\phi}{\cos(\alpha - \delta) \times \cos\alpha}} \right]^2}$$

$$\begin{aligned} \alpha &= 0.000^\circ & \delta &= 0.000^\circ \\ \cos^2(\phi + \alpha) &= 0.750 & \sin(\phi + \delta) &\approx 0.500 \\ \cos^2\alpha &= 1.000 & \sin\phi &= 0.500 \\ \cos(\alpha - \delta) &= 1.000 & \cos\alpha &= 1.000 \end{aligned}$$

$$K_p = 3.000$$

$$\begin{aligned} qa1 &= K_a \times q & &= 0.167 \text{ ton/m} \\ qa2 &= K_a \times (h_{w1} - h_{w2}) \times \gamma_{sat} & &= 1.200 \text{ ton/m} \\ qa3 &= qa1 + qa2 & &= 1.367 \text{ ton/m} \\ qa4 &= K_a \times h_{w1} \times (\gamma_{sat} - \gamma_w) & &= 1.000 \text{ ton/m} \\ qw1 &= h_{w1} \times \gamma_w & &= 3.000 \text{ ton/m} \\ qw2 &= h_{w2} \times \gamma_w & &= 2.500 \text{ ton/m} \\ qp1 &= K_p \times h_4 \times (\gamma_{sat} - \gamma_w) & &= 6.000 \text{ ton/m} \end{aligned}$$

No.	Description	H	V	HxV
Pa1	0.167 x 2.00	0.333	4.000	1.33
Pa2	1.200 x 2.00 x 0.60	1.200	3.667	4.40
Pa3	1.367 x 3.00	4.100	1.800	7.45
Pa4	1.000 x 3.00 x 0.60	1.000	1.000	1.00
Pw1	3.000 x 3.00 x 0.60	4.500	1.000	4.50
Pw2	-2.600 x 2.50 x 0.50	-3.125	0.667	-2.00
Sum	8.000 x 2.00 x 0.60	6.000	0.667	-4.00
Total		2.666	1.166	

(3) Stability Calculation

a) Stability against overturning

a)-1 Without Uplift

$$B = 2.50 \text{ m}$$

$$X = \frac{\Sigma W x X - \Sigma H x Y}{\Sigma W} = \frac{38.30 - 11.28}{20.400} = 1.325 \text{ m}$$

$$e = \frac{B}{2} - X = \frac{2.50}{2} - 1.325 = -0.075 \text{ m} < B/6 = 0.417 \text{ m} \quad \text{OK!}$$

a)-2 With Uplift

$$B = 2.50 \text{ m}$$

$$X = \frac{\Sigma W x X - \Sigma H x Y}{\Sigma W} = \frac{29.45 - 11.28}{13.525} = 1.343 \text{ m}$$

$$e = \frac{B}{2} - X = \frac{2.50}{2} - 1.343 = -0.093 \text{ m} < B/6 = 0.417 \text{ m} \quad \text{OK!}$$

b) Stability against sliding

b)-1 Without Uplift

Sliding force : $\Sigma H = 2.508 \text{ ton}$

Resistance : $HR = \mu \times \Sigma W = 0.50 \times 20.400 = 10.200 \text{ ton}$

(friction coefficient : $\mu = 0.50$)

$$Fs = \frac{HR}{\Sigma H} = \frac{10.200}{2.508} = 4.066 > 1.00 \quad \text{OK!}$$

b)-2 With Uplift

Sliding force : $\Sigma H = 2.508 \text{ ton}$

Resistance : $HR = \mu \times \Sigma W = 0.50 \times 13.525 = 6.763 \text{ ton}$

(friction coefficient : $\mu = 0.5$)

$$Fs = \frac{HR}{\Sigma H} = \frac{6.763}{2.508} = 2.696 > 1.00 \quad \text{OK!}$$

c) Reaction of foundation soil

$$q_{1,2} = \frac{\Sigma W}{B} \times \frac{6 \times e}{B}$$

$$q_1 = \frac{20.400}{2.50} \times \left(1 + \frac{6 \times -0.075}{2.50}\right) = 6.691 \text{ t/m}^2 < q_a = 23.667 \text{ t/m}^2 \quad \text{OK!}$$

$$q_2 = \frac{20.400}{2.50} \times \left(1 - \frac{6 \times -0.075}{2.50}\right) = 9.629 \text{ t/m}^2 < q_a = 23.667 \text{ t/m}^2 \quad \text{OK!}$$

Reaction of Foundation Soil in Case 1

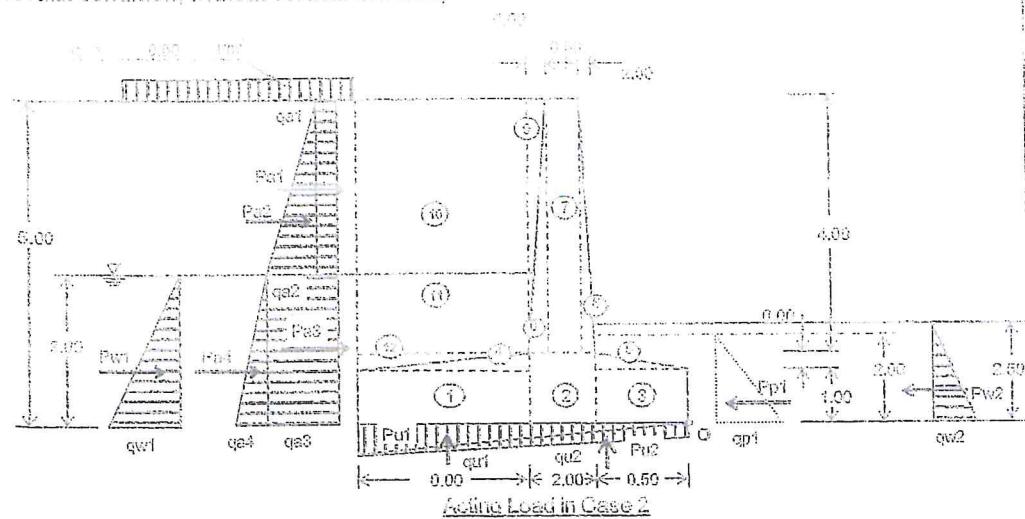
- 6.691 t/m²

9.629 t/m²

In case, $e \geq 0$
(not applicable)

In case, $e < 0$
(applicable)

2.2 Case 2 (Normal condition, without vertical live load)



(1) Vertical Load

No.	Description					W	X	WxX
1	1.00	x	0.00	x	2.40	0.000	2.500	0.00
2	1.00	x	2.00	x	2.40	4.800	1.500	7.20
3	1.00	x	0.50	x	2.40	1.200	0.250	0.30
4	0.50	x	0.00	x	0.00	0.000	2.500	0.00
5	0.50	x	0.00	x	0.50	0.000	0.167	0.00
6	0.50	x	4.00	x	0.00	0.000	3.000	0.00
7	4.00	x	0.50	x	2.40	4.800	2.750	13.20
8	0.50	x	4.00	x	2.00	0.600	1.833	17.60
9	0.50	x	4.00	x	0.00	0.000	3.000	0.00
10	0.00	x	2.00	x	1.80	0.000	2.500	0.00
11	0.00	x	2.00	x	2.00	0.000	2.500	0.00
12	0.50	x	0.00	x	0.00	0.000	2.500	0.00
Total (1 to 12)						20.400		38.30
Pu1	3.00	x	2.50	x	0.50	-3.750	1.667	-6.25
Pu2	2.50	x	2.50	x	0.50	-3.125	0.833	-2.60
Total (1 to Pu2)						13.525		29.45

(2) Horizontal Load

Coefficient of Active earth pressure

$$K_a = 0.333 \text{ (for stability analysis)}$$

$$K_a' = 0.297 \text{ (for structural analysis)}$$

Coefficient of Passive earth pressure

$$K_p = 3.000$$

$qa_1 = K_a \times q$	=	0.167 ton/m
$qa_2 = K_a \times (h_1 - h_{w1}) \times \gamma_{soil}$	=	1.200 ton/m
$qa_3 = qa_1 + qa_2$	=	1.367 ton/m
$qa_4 = K_a \times h_{w1} \times (\gamma_{soil} - \gamma_w)$	=	1.000 ton/m
$q_w1 = h_{w1} \times \gamma_w$	=	3.000 ton/m
$q_w2 = h_{w2} \times \gamma_w$	=	2.500 ton/m
$qp1 = K_p \times h_2 \times (\gamma_{sat} - \gamma_w)$	=	6.000 ton/m

No.	Description					H	Y	HxY
Pa1	0.167	x	2.00			0.333	4.000	1.33
Pa2	1.200	x	2.00	x	0.50	1.200	3.667	4.40
Pa3	1.367	x	3.00			4.100	1.500	6.15
Pa4	1.000	x	3.00	x	0.50	1.500	1.000	1.50
Pw1	3.000	x	3.00	x	0.50	4.500	1.000	4.50
Pw2	-2.500	x	2.50	x	0.50	-3.125	0.833	-2.60
Pp1	-6.000	x	2.00	x	0.50	-6.000	0.667	-4.00
Total						2.606		11.26

(3) Stability Calculation

a) Stability against overturning

a)-1 Without Uplift

$$B = 2.50 \text{ m}$$

$$X = \frac{\Sigma W \times X - \Sigma H \times Y}{\Sigma W} = \frac{56.50 - 11.28}{20.400} = 1.325 \text{ m}$$

$$e = \frac{B}{2} - X = \frac{2.50}{2} - 1.325 = -0.075 \text{ m} < B/6 = 0.417 \text{ m} \quad \text{OK!}$$

a)-2 With Uplift

$$B = 2.50 \text{ m}$$

$$X = \frac{\Sigma W \times X - \Sigma H \times Y}{\Sigma W} = \frac{29.45 - 11.28}{13.625} = 1.343 \text{ m}$$

$$e = \frac{B}{2} - X = \frac{2.50}{2} - 1.343 = -0.093 \text{ m} < B/6 = 0.417 \text{ m} \quad \text{OK!}$$

b) Stability against sliding

b)-1 without Uplift Pressure

$$\text{Sliding force : } \Sigma H = 2.508 \text{ ton}$$

$$\text{Resistance : } HR = \mu \times \Sigma W = 0.50 \times 20.400 = 10.200 \text{ ton}$$

(friction coefficient : $\mu = 0.5$)

$$Fs = \frac{HR}{\Sigma H} = \frac{10.200}{2.508} = 4.07 > 1.00 \quad \text{OK!}$$

b)-2 with Uplift Pressure

$$\text{Sliding force : } \Sigma H = 2.508 \text{ ton}$$

$$\text{Resistance : } HR = \mu \times \Sigma W = 0.50 \times 13.625 = 6.763 \text{ ton}$$

(friction coefficient : $\mu = 0.5$)

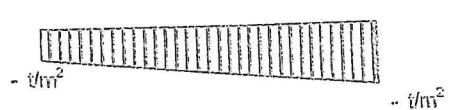
$$Fs = \frac{HR}{\Sigma H} = \frac{6.763}{2.508} = 2.70 > 1.00 \quad \text{OK!}$$

c) Reaction of foundation soil

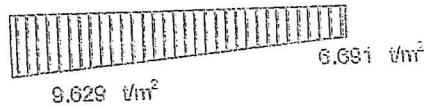
$$q_{1,2} = \frac{\Sigma W}{B} \times \left(1 \pm \frac{6 \times e}{B} \right)$$

$$q_1 = \frac{20.400}{2.50} \times \left(1 + \frac{6 \times -0.075}{2.50} \right) = 6.691 \text{ t/m}^2 < q_a = 23.667 \text{ t/m}^2 \quad \text{OK!}$$

$$q_2 = \frac{20.400}{2.50} \times \left(1 - \frac{6 \times -0.075}{2.50} \right) = 9.629 \text{ t/m}^2 < q_a = 23.667 \text{ t/m}^2 \quad \text{OK!}$$



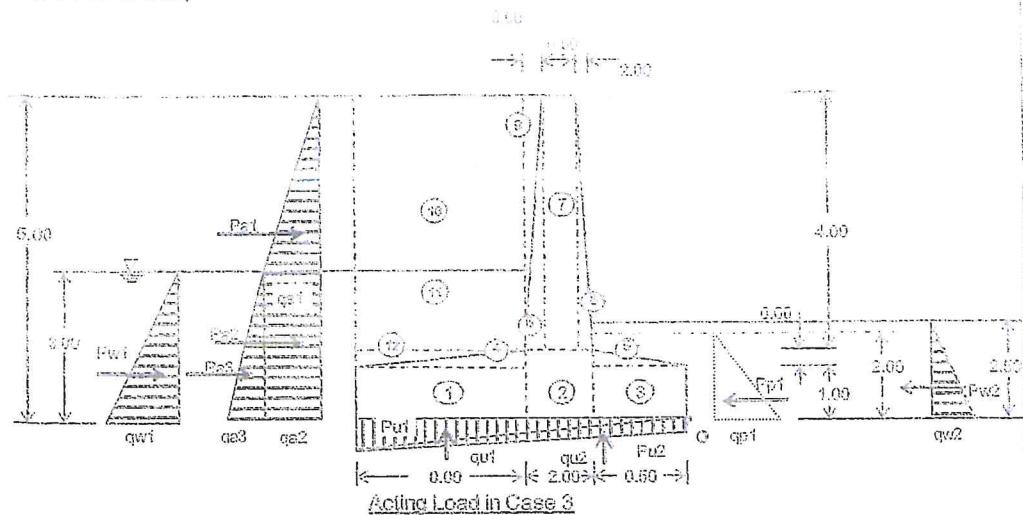
In case, $e \geq 0$
(not applicable)



in case, $e < 0$
(applicable)

Reaction of Foundation Soil in Case 2

2.3 Case 3 (Seismic condition)



(1) Vertical Load = Same as Case 2

(2) Horizontal Load

$$\begin{aligned}\phi &= 30.00^\circ & \alpha &= 0.000^\circ \quad (\text{for stability analysis}) \\ \beta &= 0.00^\circ & \alpha &= 0.000^\circ \quad (\text{for structural analysis}) \\ q &= 0.00 \text{ kN/m}^2 \quad (\text{for seismic condition})\end{aligned}$$

$$\begin{aligned}\Phi &= 10.204^\circ \\ (\Phi &= \text{Arc tan}(Kh)) \\ Kh &= 0.18\end{aligned}$$

Coefficient of Active earth pressure

$$Kae = \frac{\cos^2(\phi - \Phi - \alpha)}{\cos\Phi \times \cos^2\alpha \times \cos(\alpha + \delta + \Phi) \times \left[1 + \sqrt{\frac{\sin(\phi + \delta) \times \sin(\phi - \beta - \Phi)}{\cos(\alpha + \delta + \Phi) \times \cos(\alpha - \beta)}} \right]^2}$$

(for stability analysis)

$$\alpha = 0.000^\circ \quad \delta = 24.23^\circ$$

$$\tan \delta = \frac{\sin \phi \sin(\Phi + \Delta - \beta)}{1 - \sin \phi \cos(\Phi + \Delta - \beta)}$$

$$\sin \Delta = \frac{\sin(\Phi + \beta)}{\sin \phi}$$

$$\sin(\Phi + \beta) = 0.177 \quad \sin \phi = 0.500$$

$$\sin \Delta = 0.354 \quad \text{then} \quad \Delta = 20.73$$

$$\sin(\Phi + \Delta - \beta) = 0.514 \quad \cos(\Phi + \Delta - \beta) = 0.858$$

$$\tan \delta = 0.450$$

$$\cos^2(\phi - \Phi - \alpha) = 0.885 \quad \sin(\phi + \delta) = 0.811$$

$$\cos \Phi = 0.984 \quad \sin(\phi - \beta - \Phi) = 0.339$$

$$\cos^2 \alpha = 1.000 \quad \cos(\alpha - \beta) = 1.000$$

$$\cos(\alpha + \delta + \Phi) = 0.825$$

$$Kae = 0.438 \quad (\text{for stability analysis})$$

(for structural analysis)

$$\alpha = 0.000^\circ \quad \delta = 15.00^\circ$$

$$\cos^2(\phi - \Phi - \alpha) = 0.885 \quad \sin(\phi + \delta) = 0.707$$

$$\cos \Phi = 0.984 \quad \sin(\phi - \beta - \Phi) = 0.339$$

$$\cos^2 \alpha = 1.000 \quad \cos(\alpha - \beta) = 1.000$$

$$\cos(\alpha + \delta + \Phi) = 0.905$$

$\gamma_{sat} = 19.6 \text{ kN/m}^3$ (for saturated clay 2.0)

Coefficient of Passive earth pressure

$$K_{pe} = \frac{\cos^2(\phi - \delta + \alpha)}{\cos^2\alpha \times \cos^2\beta \times \cos(\alpha + \beta - \Phi) \times \left[1 - \sqrt{\frac{\sin(\phi - \delta) \times \sin(\phi + \beta - \Phi)}{\cos(\alpha + \beta - \Phi) \times \cos(\alpha - \beta)}} \right]^2}$$

$$\begin{aligned} \alpha &= 0.000^\circ & \beta &= 24.23^\circ \\ \cos^2(\phi - \delta + \alpha) &= 0.865 & \sin(\phi - \delta) &= 0.101 \\ \cos^2\beta &= 0.864 & \sin(\phi + \beta - \Phi) &= 0.330 \\ \cos^2\alpha &= 1.000 & \cos(\alpha - \beta) &= 1.000 \\ \cos(\alpha + \beta - \Phi) &= 0.970 \end{aligned}$$

$$K_{pe} = 1.406$$

$$\begin{aligned} q_{a1} &= K_{pe} \times (h_1 - h_{w1}) \times \gamma_{sat} & = 1.577 \text{ ton/m} \\ q_{a2} &= q_{a1} & = 1.577 \text{ ton/m} \\ q_{a3} &= K_{pe} \times h_{w1} \times (\gamma_{sat} - \gamma_w) & = 1.314 \text{ ton/m} \\ q_{w1} &= h_{w1} \times \gamma_w & = 3.000 \text{ ton/m} \\ q_{w2} &= h_{w2} \times \gamma_w & = 2.500 \text{ ton/m} \\ q_{p1} &= K_p \times h_1 \times (\gamma_{sat} - \gamma_w) & = 2.812 \text{ ton/m} \end{aligned}$$

No.	Description				H	Y	H x Y
1	0.18	x	0.00		0.000	0.500	0.00
2	0.18	x	4.80		0.864	0.500	0.43
3	0.18	x	1.20		0.216	0.500	0.11
4	0.18	x	0.00		0.000	1.000	0.00
5	0.18	x	0.00		0.000	1.000	0.00
6	0.18	x	0.00		0.000	2.333	0.00
7	0.18	x	4.80		0.864	3.000	2.59
8	0.18	x	9.60		1.728	2.333	4.03
Pw1	0.50	x	3.00	x	4.500	1.000	4.50
Pw2	0.50	x	-2.50	x	-3.125	0.833	-2.60
Pa1	0.50	x	1.58	x	1.577	3.667	5.78
pa2	1.58	x	3.00		4.730	1.500	7.10
Pa3	0.50	x	1.314	x	1.971	1.000	1.97
Pp1	-2.812	x	2.00	x	-2.812	2.000	-5.62
Total					10.513		18.28

(3) Stability Calculation

a) Stability against overturning

a)-1 Without Uplift

$$B = 2.50 \text{ m}$$

$$X = \frac{\sum W \times X - \sum H \times Y}{\sum W} = \frac{38.30 - 18.28}{20.400} = 0.961 \text{ m}$$

$$e = \frac{B}{2} - X = \frac{2.50}{2} - 0.961 = 0.269 \text{ m} < B/3 = 0.833 \text{ m} \quad \text{OK!}$$

a)-2 With Uplift

$$B = 2.50 \text{ m}$$

$$X = \frac{\sum W \times X - \sum H \times Y}{\sum W} = \frac{29.45 - 18.28}{18.525} = 0.825 \text{ m}$$

$$e = \frac{B}{2} - X = \frac{2.50}{2} - 0.825 = 0.425 \text{ m} < B/3 = 0.833 \text{ m} \quad \text{OK!}$$

b) Stability against sliding

b)-1 Without Uplift

Sliding force : $\Sigma H = 10.513 \text{ ton}$

$$\text{Resistance : } HR = \mu \times \Sigma W = 0.50 \times 20.400 = 10.200 \text{ ton}$$

(friction coefficient : $\mu = 0.50$)

$$F_s = \frac{HR}{\Sigma H} = \frac{10.200}{10.513} = 0.97 > 0.50 \quad \text{OK!}$$

b)-2 With Uplift

Sliding force : $\Sigma H = 10.513 \text{ ton}$

$$\text{Resistance : } HR = \mu \times \Sigma W = 0.50 \times 13.525 = 6.763 \text{ ton}$$

(friction coefficient : $\mu = 0.50$)

$$F_s = \frac{HR}{\Sigma H} = \frac{6.763}{10.513} = 0.64 > 0.50 \quad \text{OK!}$$

c) Reaction of foundation soil

c-1) In case, $|e| \leq B/6$ (applicable)

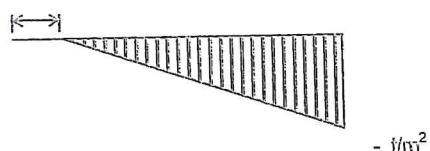
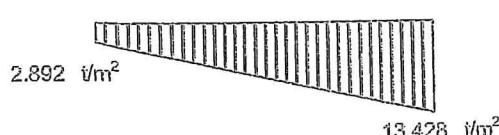
$$q_{1,2} = \frac{\Sigma W}{B} \times \left(1 \pm \frac{6 \times e}{B}\right)$$

$$q_1 = \frac{20.400}{2.50} \times \left(1 + \frac{6 \times 0.269}{2.50}\right) = 13.428 \text{ t/m}^2 < q_{ae} = 36.500 \text{ t/m}^2 \quad \text{OK!}$$

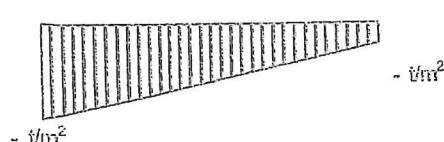
$$q_2 = \frac{20.400}{2.50} \times \left(1 - \frac{6 \times 0.269}{2.50}\right) = 2.892 \text{ t/m}^2 < q_{ae} = 36.500 \text{ t/m}^2 \quad \text{OK!}$$

c-2) In case, $B/6 < |e| \leq B/3$ (not applicable)

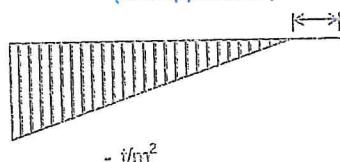
$$q_1' = \frac{2 \times \Sigma W}{3 \times (B/2 - |e|)} = \dots \text{ t/m}^2 \quad q_{ae} = \dots \text{ t/m}^2$$



In case, $e \geq 0$ and $e \leq B/6$
(applicable)



In case, $e \geq 0$ and $B/6 < e \leq B/3$
(not applicable)



In case, $e < 0$ and $|e| \leq B/6$
(not applicable)

In case, $e < 0$ and $B/6 < |e| \leq B/3$
(not applicable)

2.4 Bearing Capacity of soil

(1) Design Data

c_s	=	30.00	c_s	=	0.00	Vm^2		γ_{soil}	=	1.00	Vm^3 ($\text{m} \times \text{Vm}^2$)
B	=	2.00	m	L	=	2.00	m	L	=	1.00	m (width:length)

(2) Ultimate Bearing Capacity of soil, (qu)

Calculation of ultimate bearing capacity will be obtained by applying the following Terzaghi's formula :

$$qu = (\alpha \times c \times N_c) + (\gamma_{\text{soil}} \times z \times N_q) + (\beta \times \gamma_{\text{soil}} \times B \times N_f)$$

Shape factor (Table 2.5 of KP-06)

$$\alpha = 1.00 \quad \beta = 0.50$$

Shape of footing : 1 (strip)

Shape of footing	α	β
1 strip	1.00	0.50
2 square	1.30	0.40
3 rectangular, $B \times L$	1.17	0.40
($B \leq L$)	$(= 1.09 + 0.21 B/L)$	
($B > L$)	$(= 1.09 + 0.21 L/B)$	
4 circular, diameter = B	1.30	0.30

Bearing capacity factor (Figure 2.3 of KP-06, by Capper)

$$N_c = 36.0 \quad N_q = 23.0 \quad N_f = 20.0$$

ϕ	N_c	N_q	N_f
0	5.7	0.0	0.0
5	7.0	1.4	0.0
10	9.0	2.7	0.2
15	12.0	4.5	2.3
20	17.0	7.5	4.7
25	24.0	13.0	9.5
30	36.0	23.0	20.0
35	57.0	44.0	41.0
37	70.0	60.0	55.0
39 >	82.0	50.0	73.0

$$(\alpha \times c \times N_c) = 0.000$$

$$(\gamma_{\text{soil}} \times z \times N_q) = 46.000$$

$$(\beta \times \gamma_{\text{soil}} \times B \times N_f) = 25.000$$

$$qu = 71.000 \text{ Vm}^2$$

(3) Allowable Bearing Capacity of soil, (qa)

$$qa = qu / 3 = 23.667 \text{ Vm}^2 \quad (\text{safety factor} = 3, \text{normal condition})$$

$$qa_e = qu / 2 = 35.500 \text{ Vm}^2 \quad (\text{safety factor} = 2, \text{seismic condition})$$

(4) Distribution vertical load to wooden pile, (Vp)

(Not applicable for this Project)

a) Normal condition

$$W_s = \frac{qa \times B}{(1 + (6 \times e)/B)} = 72 \text{ ton}$$

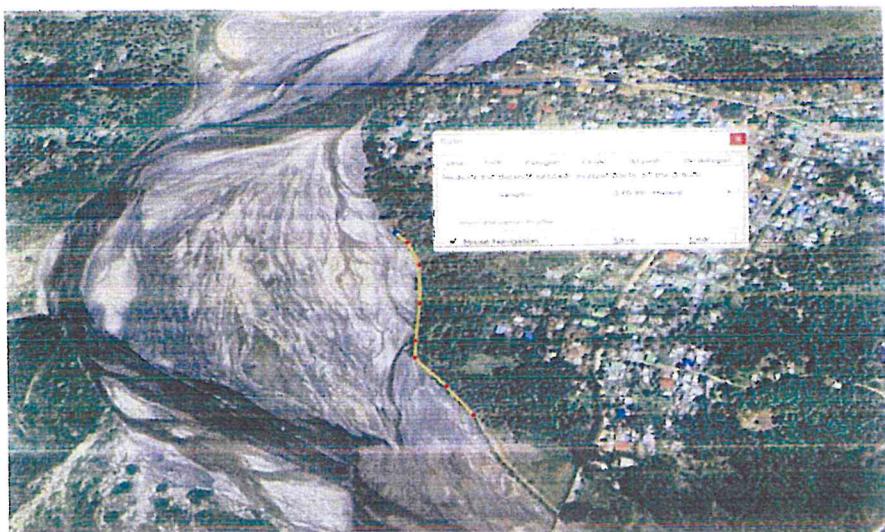
$$V_p = W - W_s = 42 \text{ ton} \quad (\text{Wooden pile: not necessary})$$

b) Seismic condition

$$W_s = \frac{qa_e \times B}{(1 + (6 \times e)/B)} = 54 \text{ ton}$$

$$V_p = W - W_s = 34 \text{ ton} \quad (\text{Wooden pile: not necessary})$$

A. Observasaun terreno



- A. Observasaun ida nce ho objective atu halo evaluasaun kondisaun mota Borowai ho Observasaun ida nee karakteristic kualitatif, no informasaun nebe mak detecta iha terreno sei utiliza hanesan baze informasaun hodi atu bele foti medidas no halo avaliaun.
- B. Identifikasiun : Wainhira iha tempo udan Bee sae a'as Husi parte mota ulun no mota ninin rabat ho tos no natar. Mota nia luan +/- 200 m,
- C. TOTAL AREA AFEITADU = +/- 40.314 Ha

Baseia ba dadus nebe mak rekolha iha terreno sedimentasaun iha mota refere as's., wainhira udan boot bee mota makaas liu iha parte mota ulun no sobu rai komunidade nia natar no toos. Hare ba kondisaun mota nebe naruk ho luan. Presija Prepara DED "Detailed engineering design" no estudus seluk ho didiak iha antes tama iha faze implementasaun atu bele assegura





FORMULARIO DESPACHO

Data de Entrada Documentos: 07 / Mar / 2024

Data do Documentos: 06 / Mar / 2024

Hist: MINISTERIO DO PLANEAMENTO INVESTIMENTO ESTRATEGICO

No Ref : 361/CG-GMPIE/III/2024

Quantidade Documentos : 1

Projeto :

Anexo :

Assuntos :

Encaminha Despacho Ministro, MPIE (Karta Pedido).

No. Tif : 77253262

Companhia : Enigma Unp,Lda

Despacho :

- Unidade de Gestão Administrativa
- Unidade de Avaliação de Projectos
- Unidade de Controlo e Validação de Qualidade
- Unidade de Estudo e Desenvolvimento de Competências
- Adjunto
- Assessor/a
- Gabinete DE / Base de Dadus
- Other

Ba Dr. Fernando L.
Rui Lourenço da Costa

Data: 06/03/2024

Rui Lourenço da Costa
Director Executivo ADN



MINISTÉRIO DO PLANEAMENTO
E INVESTIMENTO ESTRATÉGICO

IN GOVERNO CONSTITUCIONAL



GABINETE
MINISTRO

Dili, 6 de Março de 2024

Hau' o ba,
Director Executivo do ADN, I.P.
Sr. Rui Lourenço da Costa

Nu. Ref : 361/CG-GMPIE/III/2024

Assunto : Encaminha Despacho Ministro, MPIE

Ho Respeito

Konforme husi assunto iha leten, encaminha despacho Ministro MPIE, kona ba karta pedido husi Xefe de Suco Bahalara-uain Sr. Angelo N. Dos Santos D.L.Pinto ho Assunto, Karta Pedido. Despacho Ministro iha anexo.

Despacho Ministro : Para ADN I.P

Data Despacho : 3.06.2024

Hau nia melhores cumprimentos

Tomás de Fátima da Silva

Chefe Gabinete do Ministro MPIE



Dili, 29 de Julho de 2025

Ref : 380 /ADN, I.P./VII/2025

Hato'oba : **Januario Maia Guterres**
Director Adjunto e Diretor Executivo Interino - ADN, I.P.

Assuntu : Resultado da Verificação -- Emergency Project Cyclope for Slope
Protection at Akanunu River Suco Camea, Municipio Dili

Com os nossos Respeitos,

Com base no assunto mencionado acima, vimos, por meio desta, informar que a equipa de verificação da Unidade de Avaliação de Projetos – ADN, I.P. já realizou a verificação do BoQ e Desenho do *Projeto Emergency Project Cyclope for Slope Protection at Akanunu River Suco Camea, Municipio Dili*, os resultados da verificação encontram-se em anexo para conhecimento e apreciação.

Agradecemos a vossa atenção e subscrevemo-nos com a mais elevada consideração.


Arch. José Fernando Liu Soares
Koordenador UAP -ADN, I.P.



AGÊNCIA DE DESenvolvimento da Administração

FORMULARIO DESPACHO

Data de Entrada Documentos: 09 / May / 2024

Data do Documentos: 08 / May / 2024

Hist: MINISTERIO DO PLANEAMENTO INVESTIMENTO ESTRATEGICO

No Ref : 812/CG-GMPIE/V/2024

Projeto :

Quantidade Documentos : 2

Anexo :

- Profil Kompanhia = 1

- Summary + Approval Sheet = 1

Assuntos :

Encaminha Despacho Ministro, MPIE (Emergency Project Cyclope for Slope protection at Akanunu River, Dili).

No. Tlf : 3310320

Companhia : Helfia Unip, Lda

Despacho :

- Unidade de Gestão Administrativa
- Unidade de Avaliação de Projectos
- Unidade de Controlo e Validação de Qualidade
- Unidade de Estudo e Desenvolvimento de Competências
- Adjunto
- Assessor/a
- Gabinete DE / Base de Dadus
- Other

Solicita Sr. Fernando
Luis Alves Mendes.

Data: 10/05/2024

Rui Lourenço da Costa
Director Executivo ADN



Dili, 08 de Maio de 2024

Nu. Ref : **812/CG-GMPIE/V/2024**

Hato' o ba : Director Executivo da ADN, I.P
Senhor Rui Lourenço da Costa

Asunto : Encaminha Despacho Ministro, MPIE

Ho Respeito

Konforme husi assunto iha leten, encaminha despacho Ministro MPIE, kona ba karta husi Kompanhia Helfia Unip Lda ho Assunto, Emergency Project Cyclope for slope protection at Akanunu River, Dili. Despacho Ministro iha anexo.

Despacho Ministro : Para, ADN, I.P -MPIE,

Verificar c/ urgência e relatar.

Data Despacho : 05.08.2024

Ba atensaun no kolabarasau lahaluha hato'o obrigado wain.

Hau nia melhores cumprimentos

Tomás de Fátima da Silva
Chefe Gabinete do Ministro-MPIE





NAME OF PROJECT : EMERGENCY PROJECT CYCLOPE FOR SLOPE PROTECTION
LOCATION OF PROJECT : HERA - AIGANNU

SUMMARY

PAY ITEM No.	DESCRIPTION	AMOUNT (US)
100	GENERAL ITEM	\$ 3,910.00
200	EARTH WORK	\$ 68,781.02
500	DRAINAGE AND SLOPE PROTECTION	\$ 804,210.83
A	TOTAL CONSTRUCTION COST	\$ 876,901.85
B	PROFIT (10% x A)	\$ 87,690.19
C	OVERHEAD	\$ 14,428.58
D	TAX 2% x(A+B+C)	\$ 19,580.41
E	GRAND TOTAL (A+B+C+D)	\$ 998,601.03



AGÊNCIA DE DESenvolvimento NACIONAL

NAME OF PROJECT : EMERGENCY PROJECT CYCLOPE FOR SLOPE PROTECTION AT AKANUNU RIVER,DILI
LOCATION OF PROJECT : HERA - AKANUNU

COST ESTIMATION

PAY ITEM No.	DESCRIPTION	UNIT	QUANTITY	UNIT COST \$	AMOUNT \$
100	GENERAL ITEM				
101(1)	Mobilization	LS	1,00	\$ 2.660,00	\$ 2.660,00
102	Demobilization	LS	1,00	\$ 1.250,00	\$ 1.250,00
	<i>Sub - Total</i>				\$ 3.910,00
200	EARTH WORK				
204 (1)	Structure Excavation	Cu.m	16.968,14	\$ 2,75	\$ 46.709,58
205(1)	Common Embankment	Cu.m	8.588,51	\$ 2,57	\$ 22.071,44
	<i>Sub - Total</i>				\$ 68.781,02
300	DRAINAGE AND SLOPE PROTECTION				
305(1)	Retaining Wall Concrete Cyclope 21 Mpa	Cu.m	5.130,73	\$ 151,62	\$ 777.942,23
306(1)	PVC 2" Dia	Ln.m	1.212,32	\$ 2,49	\$ 3.021,70
307(1)	Lean Concrete 10 Mpa	Cu.m	242,66	\$ 95,80	\$ 23.246,91
308(1)	Formwork	Sq.m	7.008,00	\$ -	\$ -
	<i>Sub - Total</i>				\$ 804.210,83



AGÊNCIA DE DESENVOLVIMENTO NACIONAL - ADN

NAME OF PROJECT : EMERGENCY PROJECT CYCLOPE FOR SLOPE PROTECTION AT AKANUNU RIVER, DILI
LOCATION OF PROJECT : HERA - AKANUNU

OVERHEAD

NO	DESKRISAUN	UNIT	QUANTITY	UNIT PRICE	TOTAL
1 PROJECT TEAM					
	Site Engineer	Ls	1,00	\$ 3.000,00	\$ 3.000,00
	Surveyor	Ls	1,00	\$ 750,00	\$ 750,00
	Logistics	Ls	1,00	\$ 750,00	\$ 750,00
	Administration	Ls	1,00	\$ 600,00	\$ 600,00
	Security	Ls	1,00	\$ 900,00	\$ 900,00
2 KUSTU OPERASIONAL					
	Stationary	Ls	1,00	\$ 120,00	\$ 120,00
	Communication	Ls	1,00	\$ 180,00	\$ 180,00
	Meetings	Ls	1,00	\$ 120,00	\$ 120,00
	Electricity	Ls	1,00	\$ 360,00	\$ 360,00
	Water	Ls	1,00	\$ 360,00	\$ 360,00
	Daily, weekly, monthly reports	Ls	1,00	\$ 120,00	\$ 120,00
	Shop drawings, as built drawings	Ls	1,00	\$ 200,00	\$ 200,00
3 KUSTU SERVISU APOIO NIAN					
	Material Sampling & Testing	Ls	1,00	\$ 6.728,58	\$ 6.728,58
	Personal protective equipment (PPE)	Ls	1,00	\$ 240,00	\$ 240,00
TOTAL OVERHEAD					
					\$ 14.428,58

Dili, 29 de Julho de 2025

Ref : 424 /ADN, I.P./VII/2025

Hato' o ba : **Januario Maia Guterres**
Director Adjunto e Diretor Executivo Interino - ADN, I.P.

Assunto : **Resultado da Verificação – Konstrusaun Bronjong iha Modo Laran
Aissirimou, Suco Aissirimou, Municipio Aileu**

Com os nossos Respeitos,

Com base no assunto mencionado acima, vimos, por meio desta, informar que a equipa de verificação da Unidade de Avaliação de Projetos – ADN, I.P. já realizou a verificação do BoQ e Desenho do *Projeto Konstrusaun Bronjong iha Modo Laran Aissirimou, Suco Aissirimou, Municipio Aileu*, os resultados da verificação encontram-se em anexo para conhecimento e apreciação.

Agradecemos a vossa atenção e subscrevemo-nos com a mais elevada consideração.


Arch. José Fernando Liu Soares
Koordenador UAP - ADN, I.P.



Recebido em dia
Dili - Timor-Leste
Intendente para o
país



MINISTÉRIO DO PLANEAMENTO
E INVESTIMENTO ESTRATÉGICO
IX GOVERNO CONSTITUCIONAL
GABINETE DO MINISTRO



Dili, 09 de Janeiro de 2025

Nu. Ref : .30./CG-GMPIE/I/2025

Hato' o ba : Directur Executivo ADN, IP
Sr. Rui Lourenço da Costa

Asunto : Encaminha Despacho Ministro, MPIE

Ho Respeito

Liu husi oficio ida ne'e hakarak encaminha despacho Ministro MPIE kona ba karta husi Autoridade Municipal de Aileu Posto Administrativo Aileu Vila Suco Aissirimou, ho assunto Proposta konstrusaun Bronzon iha Modolaran, Suco Aissirimou, Posto Administrativo Aileu Vila, Municipio Aileu no despacho Ministro iha anexo.

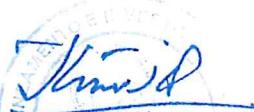
Despacho Ministro : Para ADN - MPIE

Coordenar C/ MOP

Data despacho : 01.09.2025

Mak ne'e deit ba atensaun, lahaluha hato'o obrigado wain.

Hau nia melhores cumprimentos


Tomás de Fátima da Silva
Chefe do Gabinete do MPIE



AGÊNCIA DE DESENVOLVIMENTO NACARÉ - ADN

FORMULARIO DESPACHO

Data de Entrada Documentos: 10 / Jan / 2025

Data do Documentos: 09 / Jan / 2025

Husi: MINISTERIO DO PLANEAMENTO INVESTIMENTO ESTRATEGICO

No Ref : 38/CG-GMPIE/I/2025

Projetu :

Quantidade Documentos : 1

Anexo :

Assuntos :

Proposta Konstrusaun Bronzon iha Modolaran, Suco
Aissirimou, Posto Administrativo Aileu Vila, Municipio Aileu).

No. Tlf : 3310320

Companhia : -

Despacho :

- Unidade de Gestão Administrativa
- Unidade de Avaliação de Projectos
- Unidade de Controlo e Validação de Qualidade
- Unidade de Estudo e Desenvolvimento de Competências
- Adjunto
- Assessor/a
- Gabinete DE / Base de Dadus
- Other

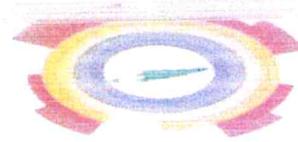
*Be So Fernando Lasc
lasc*

Data: 09.01.2025


Rui Lourenço da Costa
Director Executivo ADN



Administração
Municipal de
Aileu



Autoridade Municipal de Aileu
Posto Administrativo Aileu Vila
Soco Aissirimou

ADN

Ho Respeito

Hato' o ba : Sua Excelencia Ministro do Planeamento e Investimento Estratégico
Sr. Eng. Gastão Francisco de Sousa

Huel : Chefe Soco Aissirimou

Klasifikasiasaun: Emerjensia

Asunto : Proposta konstrusaun Bronzon Iha Modolaran, Soco Aissirimoti, Posto Administrativo Aileu Vila, Municipio Aileu.

Saudações Compatriotas

Liu husi biban ida ne'e hakarak solisita ba Sua Excelencia Ministro katak mota Manufoni no ermeti iha Aileu Vila, Municipio Aileu fo ameasa ba komunidade aldeia Hudilaran, bairro Modolaran wainhira iha tempo udan, kada tinan iha tempo udan estraga komunidade nia toos no fo ameasa bo'ot ba hokomunidade nia uma. Ho razaun hirak maka nudar Autoridade local Soco Aissirimou hamutuk ho kompanhia Local Aileu Numan Unipessoal Lda. halo hela Dezenho no kontagem BoQ ba Bronzon/Bareira ne'ebe ami anexa mos iha proposta ida ne'e.

Maka nee deit ami proposta ida ne'e ami halo ho responsabilidade tomak ba ita boot nia laran luak la haluha hatoo obrigado wain .

Aileu, 25 de Novembro de 2024

Rekerente

Kompanhia Numan Unipessoal Lda,

(Abrel Borges)

Diretor Kompa No. Telf: +67075241238 / 76559842



Autoridade local Soco Aissirimou

(Hélio Maufelu)

Chefe do Soco Aissirimou

(João Bosco dos Santos)

Presidente Autoridade Municipal



Visto husi

Autoridade Municipal de Aileu



(Abraão Nascimento da Costa)

Adm. Posto Administrativo Aileu Vila

GABINETE DO		
Ministro do Planeamento e Investimento Estratégico		
RECIDIDO		
DIA	09	01
POR	Inocência	36



AGÊNCIA DE DESENVOLVIMENTO NACIONAL - I.P.

SUMMARY

NAME OF PROJECT : KONSTRUSAUN BRÖNJONG IHA MODO LARAN SUCU ASSIRIMOU
LOCATION OF PROJECT : SUCU ASSIRIMOU, POSTU ADMINISTRATIVU AILEU VILA

SECTION NO.A9:E	DESKRISAUN	VERIFIED BY ADN, I.P. AMOUNT (USD)
100	GENERAL REQUIREMENTS	\$ 4.829,35
200	EARTHWORKS	\$ 70.980,52
600	DRAINAGE AND SLOPE PROTECTION STRUCTURES	\$ 869.062,32
A	CONSTRUCTION COST	\$ 944.872,18
B	Profit (10% x A)	\$ 94.487,22
C	Overhead	\$ 7.700,00
D	Tax (2% x (A + B + C))	\$ 20.941,19
E	Grand Total (A + B + C + D)	\$ 1.068.000,59



AGENCIA DE DESENVOLVIMENTO NACIONAL I.P.

BILL OF QUANTITIES

NAME OF PROJECT : KONSTRUSAUN BRONJONG IHA MODO LARAN SUCU AISSIRIMOU
LOCATION OF PROJECT : SUCU AISSIRIMOU, POSTU ADMINISTRATIVU AILEU VILA

PAY ITEM	ITEM DESCRIPTION	VERIFIED BY ADN, I.P.			
		UNIT	QUANTITY	UNIT RATE US \$	AMOUNT US \$
100	GENERAL REQUIREMENTS				
102 (1)	Mobilization	Ls	1,00	\$ 2.979,35	\$ 2.979,35
102 (2)	Demobilization	Ls	1,00	\$ 1.850,00	\$ 1.850,00
	<i>Sub Total 100</i>				\$ 4.829,35
200	EARTHWORKS				
204(1)	Structure Excavation	m3	10.706,75	\$ 3,40	\$ 36.368,01
205(2.1)	Back Fill (material)	m3	11.116,63	\$ 2,34	\$ 26.040,86
205(3)	River Normalisation	m3	4.181,42	2,05	\$ 8.571,65
	<i>Sub Total 200</i>				\$ 70.980,52
600	DRAINAGE AND SLOPE PROTECTION STRUCTURES				
610	Gabions	Cu.m	17.150	\$ 50,67	\$ 869.062,32
	<i>Sub Total 600</i>				\$ 869.062,32
	TOTAL				\$ 944.872,18



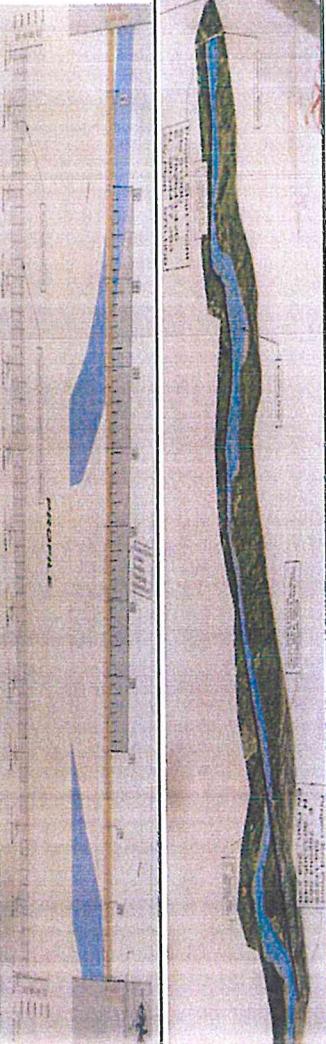
AGÊNCIA DE DESENVOLVIMENTO NACIONAL - T. P.

OVERHEAD

NAME OF PROJECT : KONSTRUSAUN BRONJONG IHA MODO LARAN SUCU AISSIRIMOU

LOCATION OF PROJECT : SUCU AISSIRIMOU, POSTU ADMINISTRATIVU AILEU VILA

NO	DESKRISAUN	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	PROJECT TEAM				
	Site Engineer	Ls	1,00	\$ 3.000,00	\$ 3.000,00
	Surveyor	Ls	1,00	\$ 750,00	\$ 750,00
	Logistics	Ls	1,00	\$ 750,00	\$ 750,00
	Administration	Ls	1,00	\$ 600,00	\$ 600,00
	Security	Ls	1,00	\$ 900,00	\$ 900,00
2	KUSTU OPERASIONAL				
	Stationary	Ls	1,00	\$ 120,00	\$ 120,00
	Communication	Ls	1,00	\$ 180,00	\$ 180,00
	Meetings	Ls	1,00	\$ 120,00	\$ 120,00
	Electricity	Ls	1,00	\$ 360,00	\$ 360,00
	Water	Ls	1,00	\$ 360,00	\$ 360,00
	Daily, weekly, monthly reports	Ls	1,00	\$ 120,00	\$ 120,00
	Shop drawings, as built drawings	Ls	1,00	\$ 200,00	\$ 200,00
3	KUSTU SERVISU APOIO NIAN				
	Personal protective equipment (PPE)	Ls	1,00	\$ 240,00	\$ 240,00
	TOTAL OVERHEAD				\$ 7.700,00

NO	DESPACHO	PROJETOS	PROBLEMA	RECOMENDAÇÃO
		EMERGENCY PROJECT NEW GABION CONSTRUCTION		ALREADY VERIFICATION BY AND - IP.
		DATA PENGUKURAN	1. Data koordinat sudah sesuai dengan lokasi yang akan dikerjakan . 2. Gambar plan profile sudah diperbaiki dan diperjelas,STA 0+925 sampai STA 1+176 3. Peta situasi dan koordinat BM ada 4. Data koordinat di file auto cad sesuai dengan di gambar plan profile	
	Location:	ALEU VILA	1. Data Koordinat 2. Peta Lokasi Deskripsi Peta Lokasi	
	Desing By:	ACESSOR IRWAN SANTOSA		
	COMPANIA	NUMA, UJNIP,Lda		

Dili, 15./.../2025

PREPARED BY


(IRWAN SANTOSA)
 ACESSOR TECNICO

RESERVED DOCUMENT
 RESERVED COMPLETE DOCUMENT
 RELEASE DOCUMENT



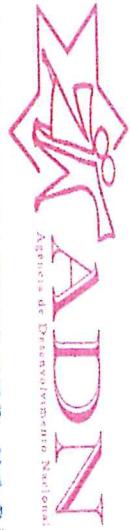
AGÊNCIA DE DESENVOLVIMENTO NACIONAL, IN

ALREADY VERIFICATION BY ADN-IP.

RECOMENDASAU

Dil., 1 July 2025
PREPARED BY

ERIK ALDRIN SINGARIMBUN
ASSESSOR TECNICO



AGENCIA DE DESENVOLVIMENTO NACIONAL, I. P.

(ERIK ALDRIN SINGARIMBUN)
ASSESSOR TECNICO

ERIK ALDRIN SINGARIMBUN
ASSESSOR TECNICO

Dili, 1 July 2025

PREPARED BY

2025

GABION ANALISYS REPORT

Gabion analysis

Input data

Project

Date : 2/27/2026

Settings

Standard - safety factors

Wall analysis

Active earth pressure calculation : Coulomb
Passive earth pressure calculation : Caquot-Kerisel
Earthquake analysis : Mononobe-Okabe
Shape of earth wedge : Calculate as skew
Allowable eccentricity : 0.333
Verification methodology : Safety factors (ASD)

Safety factors	
Permanent design situation	
Safety factor for overturning :	SF _o = 1.50 [-]
Safety factor for sliding resistance :	SF _s = 1.50 [-]
Safety factor for bearing capacity :	SF _b = 1.50 [-]
Safety factor for mesh strength :	SF _n = 1.50 [-]

Reduction coefficients	
Permanent design situation	
Reduction coeff. of friction between blocks :	γ_f = 1.50 [-]

Material of blocks - filling

No.	Name	γ [kN/m ³]	ϕ [°]	c [kPa]
1	Material No. 1	18.00	30.00	0.00

Material of blocks - mesh

No.	Name	Strength overh. R _t [kN/m]	Spacing of vert. meshes v [m]	Bear.cap. of front joint R _s [kN/m]
1	Material No. 1	40.00	1.00	40.00

Geometry of structure

No.	Width b [m]	Height h [m]	Offset a [m]	Material
5	1.00	1.00	1.00	Material No. 1
4	2.00	1.00	1.00	Material No. 1
3	3.00	1.00	1.00	Material No. 1
2	4.00	1.00	0.00	Material No. 1
1	4.00	1.00	-	Material No. 1

Gabion slope = 0.00 °

Overall height = 5.00 m

Overall wall volume = 14.00 m³/m

Soil parameters

Sandy clay (CS), firm consistency

Unit weight : $\gamma = 18.50 \text{ kN/m}^3$

Stress-state : effective

Angle of internal friction : $\phi_{ef} = 24.50 \text{ }^\circ$

Cohesion of soil : $c_{ef} = 14.00 \text{ kPa}$

Angle of friction struc.-soil : $\delta = 0.35 \text{ }^\circ$

Soil : cohesionless

Saturated unit weight : $\gamma_{sat} = 18.50 \text{ kN/m}^3$

Backfill

Assigned soil : Sandy clay (CS), firm consistency

Slope = 45.00 °

Geological profile and assigned soils

No.	Thickness of layer t [m]	Depth z [m]	Assigned soil	Pattern
1	-	0.00 .. ∞	Sandy clay (CS), firm consistency	

Foundation

Type of foundation : soil from geological profile

Terrain profile

No.	Coordinates x [m]	Depth z [m]
1	0.00	0.00
2	2.00	0.00
3	3.00	3.00
4	4.00	3.00

Origin [0,0] is located in upper right edge of construction.

Positive coordinate +z has downward direction.

Water influence

GWT behind the structure lies at a depth of 3.00 m

GWT in front of the structure lies at a depth of 0.00 m

Subgrade at the heel is not permeable.

Uplift in foot, bottom due to different pressures is not considered.

Resistance on front face of the structure

Resistance on front face of the structure: at rest

Soil on front face of the structure - Sandy clay (CS), firm consistency

Soil thickness in front of structure $h = 2.00 \text{ m}$

Terrain in front of structure is flat.

Global settings

Minimum dimensioning pressure is considered as $\sigma_{a,\min} = 0.20\sigma_z$

Settings of the stage of construction

Design situation : permanent

Verification No. 1

Forces acting on construction

Name	F _{hor} [kN/m]	App.Pt. z [m]	F _{vert} [kN/m]	App.Pt. x [m]	Design coefficient
Weight - wall	0.00	-2.36	172.00	2.52	1.000
FF resistance	-9.95	-0.67	0.00	0.00	1.000
Active pressure	42.25	-1.76	0.01	4.00	1.000
Water pressure	-105.00	-1.86	0.00	4.00	1.000
Uplift pressure	0.00	-5.00	0.00	4.00	1.000

Verification of complete wall

Check for overturning stability

Resisting moment $M_{res} = 434.05 \text{ kNm/m}$

Overturning moment $M_{ovr} = -127.22 \text{ kNm/m}$

Safety factor = $3.41 > 1.50$

Wall for overturning is **SATISFACTORY**

Check for slip

Resisting horizontal force $H_{res} = 134.39 \text{ kN/m}$

Active horizontal force $H_{act} = -72.70 \text{ kN/m}$

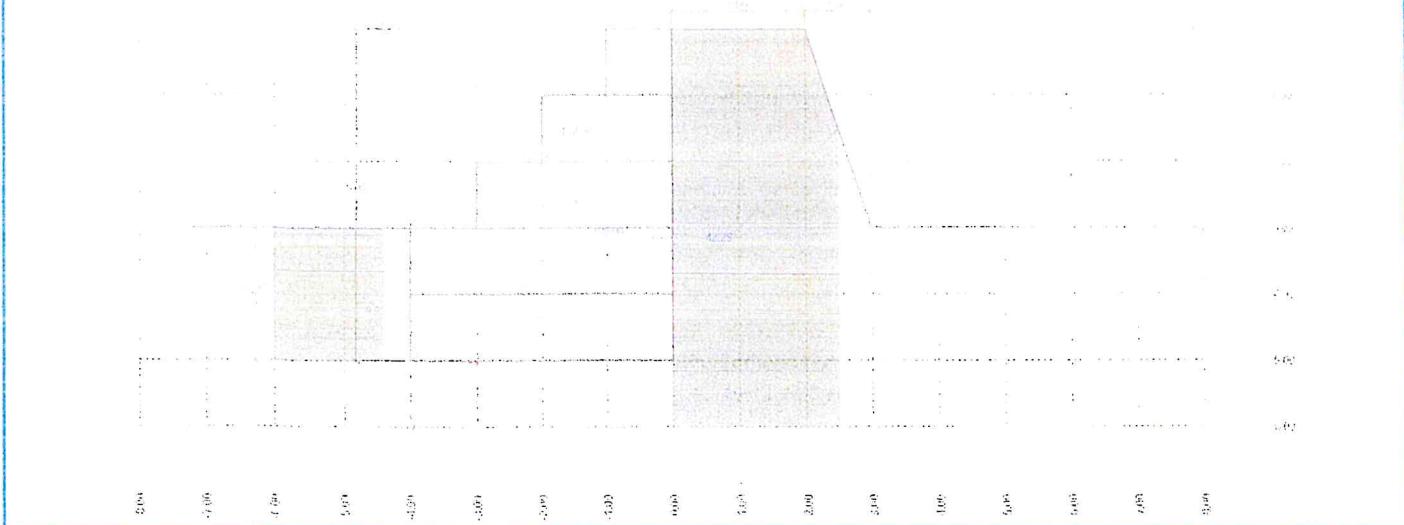
Safety factor = $1.85 > 1.50$

Wall for slip is **SATISFACTORY**

Overall check - WALL is **SATISFACTORY**

Name : Verification

Stage - analysis : 1 - 1



Bearing capacity of foundation soil

Design load acting at the center of footing bottom

No.	Moment [kNm/m]	Norm. force [kN/m]	Shear Force [kN/m]	Eccentricity [-]	Stress [kPa]
1	-217.24	172.01	-72.70	0.000	43.00

Service load acting at the center of footing bottom

No.	Moment [kNm/m]	Norm. force [kN/m]	Shear Force [kN/m]
1	-217.24	172.01	-72.70

Dimensioning No. 1

Forces acting on construction

Name	F _{hor} [kN/m]	App.Pt. z [m]	F _{vert} [kN/m]	App.Pt. x [m]	Design coefficient
Weight - wall	0.00	-1.79	140.00	2.64	1.000
FF resistance	-2.49	-0.33	0.00	0.00	1.000
Active pressure	28.60	-1.37	0.01	4.00	1.000
Water pressure	-75.00	-1.40	0.00	4.00	1.000
Uplift pressure	0.00	-4.00	0.00	4.00	1.000

Verification of construction joint above the block No.: 1

Check for overturning stability

Resisting moment $M_{res} = 370.05 \text{ kNm/m}$

Overturning moment $M_{ovr} = -66.70 \text{ kNm/m}$

Safety factor = $5.55 > 1.50$

Joint for overturning stability is **SATISFACTORY**

Check for slip

Resisting horizontal force $H_{res} \approx 30.84$ kN/m

Active horizontal force $H_{act} = -40.68$ kN/m

Safety factor = $1.65 > 1.50$

Joint for slip is **SATISFACTORY**

Maximum pressure on the bottom block = 35.00 kPa

Red.Coeff. by offset of top block = 1.00

Average value of pressure on face = 18.33 kPa

Shear force transferred by friction = 53.89 kN/m

Bearing capacity against transverse pressure:

Joint bear.capacity = 40.00 kN/m

Computed stress-state = 9.17 kN/m

Safety factor = $4.36 > 1.50$

Transverse pressure check is **SATISFACTORY**

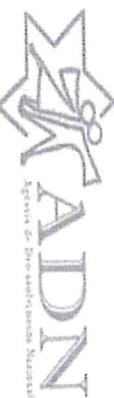
Joint btw. blocks check:

Mesh material bear.capacity = 40.00 kN/m

Computed stress-state = 9.17 kN/m

Safety factor = $4.36 > 1.50$

Joint between blocks is **SATISFACTORY**



AGÊNCIA DE DESENVOLVIMENTO NACIONAL, I. P.

SUMMARY

NARAN PROJEKTI
FATIN PROJEKTI
SECTION
KONS.IKUSAINTI GABUNGAN MELAKA (M) SDN BHD
: Konsultan dan Pengurusan Projek
: Mukatara Sraii (Municipality of Covallima)
(PARTE LOS 0+000 - 3+356) & (PARTE KARUK STA 0+700 - 1 + 500)

SECTION		PROPOSTA		ADN REVIEW	
No	Deskripsiaw	Total (USDS)	No	Deskripsiaw	Total (USDS)
100	GENERAL REQUIREMENTS	\$ 20,090.00	100	GENERAL REQUIREMENTS	\$ 12,525.75
200	EARTHWORKS	\$ 254,207.92	200	EARTHWORKS	\$ 233,022.71
600	DRAINAGE AND SLOPE PROTECTION STRUCTURES	\$ 1,569,367.52	600	DRAINAGE AND SLOPE PROTECTION STRUCTURES	\$ 1,592,453.50
800	BIOENGINEERING	\$ 50,738.40	800	BIOENGINEERING	\$ 46,980.00
A	CONSTRUCTION COST	\$ 2,194,403.84	A	CONSTRUCTION COST	\$ 1,884,981.96
B	CONTRACTOR FEE (10% x A)	\$ 219,440.38	B	CONTRACTOR FEE (10% x A)	\$ 188,498.20
C	OVERHEAD	\$ 20,000.00	C	OVERHEAD	\$ 4,500.00
D	TAX (2% x (A+B+C))	\$ 48,676.88	D	TAX (2% x (A+B+C))	\$ 41,559.60
GRAND TOTAL		\$ 2,482,521.11	GRAND TOTAL (A+B+C+D)		\$ 2,119,539.76

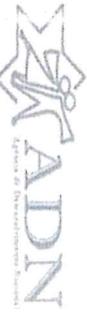
Verified by:

(Eng. Hugo Jonas Boavida de Fátima)
Civil Engineer UAP-ADN, IIP

Checked By: 
(Eng. Rodolfo Matias Pires)
Head Department for ITIAS of UAP.
ADN,IP.

Certified By: 
(Eng. Jose Fernando Soares)
Coordinator for UAP-ADN,IP
2

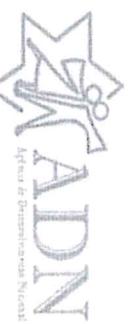
Certified By:
(Eng. Jose Fernando Soares)



BILL OF QUANTITIES

NARRAN PROJETU
FATIN PROJETU
SECTION : (PARTE LOS 0+000 - 3+356) & (PARTE KARUK STA 0+700 - 1+500)
: KONSTRUSAUN GABION K'OTA KARAU ULUN PAKOTE 1, SUAL, COAHUILA
: Municipio Sul (Municipality of Coahuila)

PAY ITEM	ITEM DESCRIPTION	UNIT	QUANTITY	OWNER'S ESTIMATE		VERIFY BY ADM/P
				UNIT RATE US \$	AMOUNT US \$	
100 GENERAL REQUIREMENTS						
102 Mobilization	Ls	1.00	\$ 11,170.00	Ls	1.00	\$ 8,225.75
103 Demobilization	Ls	1.00	\$ 8,920.00	Ls	1.00	\$ 4,300.00
	Sub Total 100			\$ 20,090.00		\$ 12,525.75
200 EARTHWORKS						
203.4 Unstable Excavation	Cum	39,378.41	\$ 3.12	Cum	122,640.63	\$ 2.99
203.1 Embankment	Cum	41,434.48	\$ 3.17	Cum	131,347.29	\$ 2.78
	Sub Total 200			\$ 254,007.92		\$ 115,288.82
600 DRAINAGE AND SLOPE PROTECTION STRUCTURES						
610 Gabions	Cum	33,328.00	\$ 56.07	Cum	33,328.00	\$ 47.78
	Sub Total 600			\$ 1,869,357.52		\$ 1,592,453.50
800 BIOENGINEERING						
804.30 Geotextile Filter for Subs. Face	Sqm	20,850.00	\$ 2.43	Sqm	50,739.40	\$ 2.25
	Sub Total 800			\$ 50,738.40		\$ 45,990.00
	TOTAL			\$ 2,194,403.84		\$ 1,864,981.96



AGÊNCIA DE DESENVOLVIMENTO NACIONAL, I. P.

NARAN PROJEITU
FATIN PROJEITU
SECTION
: KONSTRUSAUN GABION MOTA KARRAU ULUN PAKOTE 1, SUAI, COVALIMA
: Maucatar Suai (Municipality of Covalima)
: (PARTE LOS 0+000 - 3+356) & (PARTE KARUK STA 0+700 - 1+500)

OVERHEAD

PAY ITEM	ITEM DESCRIPTION	VERIFY BY ADN, I.P.			
		UNIT	QUANTITY	UNIT RATE (US \$)	AMOUNT (US \$)
1	Site Engineer	Ls	1.00	\$ 3,000.00	\$ 3,000.00
2	Site Security	Ls	1.00	\$ 900.00	\$ 900.00
3	Health & Safety Protection	Ls	1.00	\$ 300.00	\$ 300.00
5	Report & Documentation As Built Drawing	Ls	1.00	\$ 300.00	\$ 300.00
	TOTAL				\$ 4,500.00



AGÊNCIA DE DESENVOLVIMENTO NACIONAL, I.P.

(g)

Dili, 15 de Agosto de 2025

Ref.: 180 /ADN, I.P./VIII/2025

Para : Januario Maia Guterres
Director Adjunto e Director Executivo Interino - ADN, I.P.

Assunto : Resultado da Verificação – Projeto Konstrusau Gabion Mota Karau Ulun
Pakote 2, Suai, Covalima

Com os nossos Respeitos,

Com base no assunto mencionado acima, vimos, por meio desta, informar que a equipa de verificação da Unidade de Avaliação de Projetos – ADN, I.P. já realizou a verificação Boq do *Projeto Konstrusau Gabion Mota Karau Ulun Pakote 2, Suai Covalima*, os resultado a verifikasiçan encontram-se anexo para conhecimento apreciação.

Agradecemos a vossa atenção e subscrevemo-nos com a mais elevada consideração.

Arch. José Fernando Liu Soares
Koordenador UAP - ADN, I.P.



ok

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Dili - Timor-Leste
info@mptc.gov.tl
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RELATORIO OBSERVASAUN TERENO

Gabion protection in Suai, Covalima Municipality

1. INTRODUSAUN

Baseia ba despacho husi Ministro ho numero referencia 108CG-GMPIE/V/2025 Data .15 de Marsu 2025. ho despacho Verificar e relatar. Iha biban ida nee hakarak informa ba sua.ex. katak Ekipa verifikasiasaun hala' o ona visita ba tereno hodi halo observasaun. Hakarak mos atu informa ba iha visita ne'e ekipa hala' o observsaun hamutuk ho Autoridade local hanésan Chefe Aldea no Komunidade. balun ne'ebé hela besik iha area refere Ho ida ne'e ami hakarak relata relatorio badak kona ba observasaun iha tereno.

Naran Mota : Carau Ulun.
Suco : Holbelis.
Posto Administrativo : Suai Vila.
Aldeia : Camanasa.
Municipio : Covalima.



Mota Carau Ulun, Suco Holbelis, Suai, Covalima, Sta. 0+000 – 3+ 800 km km.

+/-

2. INFORMASAUN AREA NEBE MAK ATU PROTEJE

a. Karakteristika komunidade nia hela fatin

- Kondisaun Sosial dan Ekonomia.

Nivel Ekonomia Baixa.

- Maioria komunidade nia toos besik hotu iha mota ninin ho nia ninia kategoria komunidade ho nivel ekonomia baixa.
- Komunidade barak mak servico iha nu'udar vida agricultor no comersiante.

Densidade populasauan a'as.

- Kuaze komuidade barak mak nia natar afeita ba iha mota refere.
- Kada tinan bainhira akontese udan bot bee sempre tama ba iha komunidade nia tos no tama mos ba iha Aeroportu internasional Suai.
- Ho razaun hira tamba ne'e urjentemente atu proteje no tau mota refere hodi nune tempu tuir bee labele afeta nafatin ho problema kada tinan akontese.

• Area refere risko ba inundasaun

- Iha fatin refere kada tinan sempre akontese udan boot no sempre tama iha komunidade nia uma no mos sobu komunidade sira nia tos ne'ebé besik.
- Bainhira akontese udan bo'ot sempre akotese udan sempre mosu inundasaun nune halo tama ba iha aeroporto.

3. KONDISAUN MOTA

a. Korente Mota.

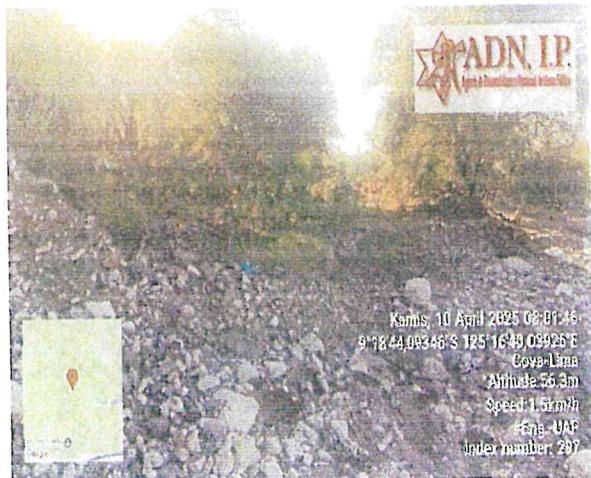
- Korente mota ne'ebé makas tamba ne'e presija proteje.
- Afeita sobu komunidade nia toos sira.

b. Be'e suli instavel

- Debitu be'e ne'ebe flutuante : marang iha tempu Bailoron to iha fulan Oktober no mota bo'ot iha tempu udan.
- Baihira akontesc udan boot sempre hamosu korete mota boot hodi afeita mos iha infrastrutura basica sira hanesan ponte no dalam assesu nia bele hare iha figura sira iha kraik.

Imagen Mota.

➤ Foto Kondisaun mota atual.



➤ Foto kondisaun atual



4. Identifikasi kasauun problema

NO.	PROBLEMA	KAUSA
1	Sobu Comunidade nia natar tos	Debit bee aumenta makas wainhira tempo udan hodi tama ba iha komunidade nia toos no no tama mos iha fatin .

5. OBSERVASAUN TEKNIK

1. Normalizasaun

Objetivo: Atu nune'e be'e mota labele transporta (overflowing)./mantein kapasidade be'e mota suli labele overflowing

Teknika

- excavasaun sedimentasaun (dredging) atu haklean mota laran
- loke luan no endireitamento canal mota



Mota nakonu ho Sendimentasaun tamaba ne'e presija halo normalizasaun.

2. Konstrusaun Aterru (Levee) no Moru protesaun (Retaining Wall)

Objetivu: Prevene bee overflowing ba komunidade nia hela fatin.

Teknika:

- Moru protesaun Gabion Wall hodi nune belc proteje fatin refere.
- Moru protesaun iha kurva mota nian atu prevene erosaun.



3. Revitalizasaun no Restorasaun Mota

Objectivo: Restaura funsaun ekologia e equilíbrio natural mota nian.

Tekniku:

- Kuda vegetasaun/ai iha mota ninin
- Kriasaun zona fronteiricas fluviais (zonas tampão).

4. Konstrusaun estruturas atu controle sedimentasun

Funsaun: Kontrola erosaun no sedimentasaun iha mota ninin

- Tamba mota refere iha vila laran presija tau mos cek dam hodi kontola sendimentasaun.
- Bele mos kada tinan bainhira inundasaun sae makas tenke halo normalizasaun ba mota refere.
- Krib dan spurs iha mota

Observasaun dokumentus proposta

1. Dezenho prepara husi companha.
2. Boq prepara husi companha.

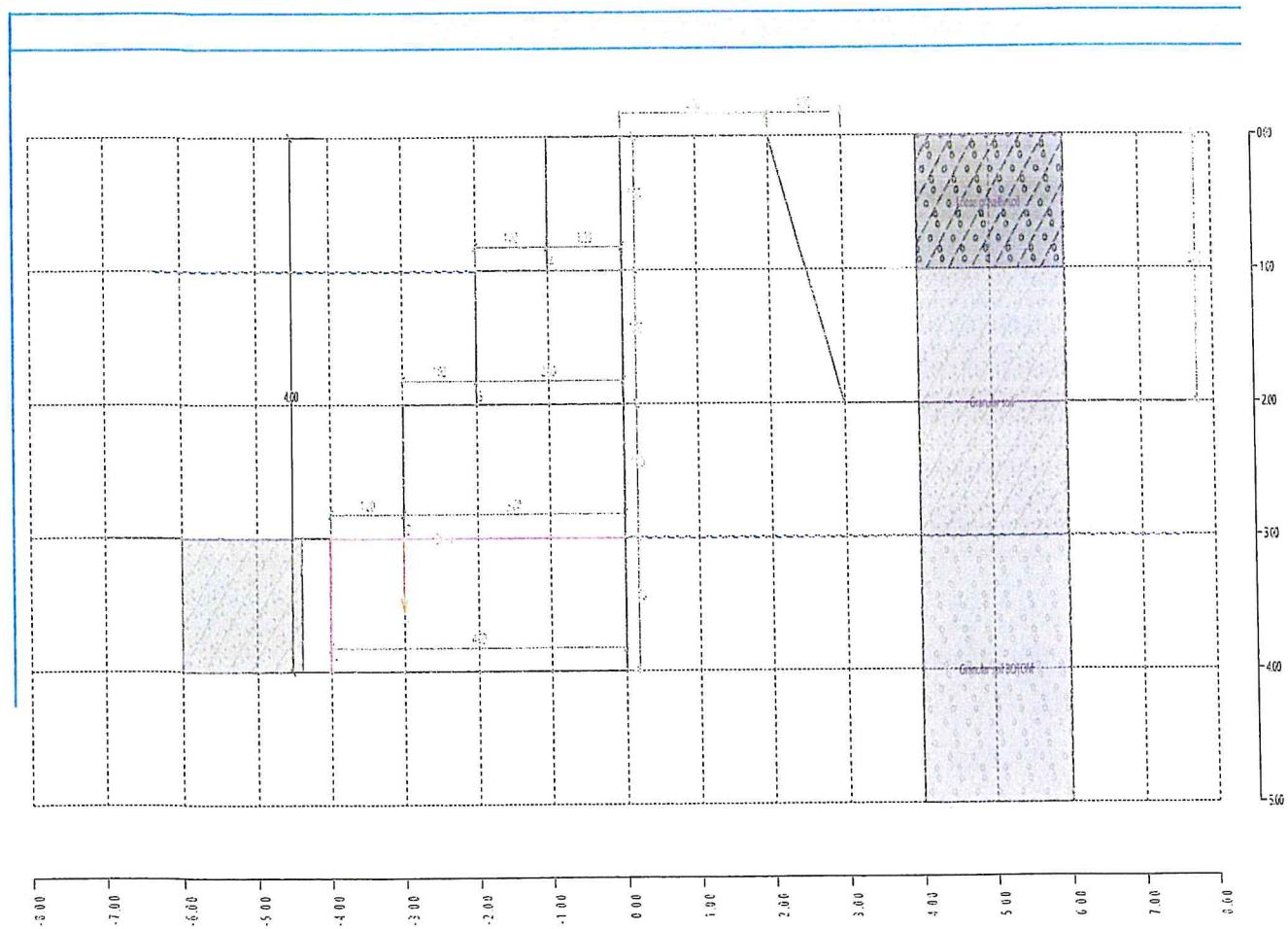
Konklusam.

Baseia ba observasaun iha tereno , Ekipa observasaun fundamento kaiak mota refere presija urjente atu kria kondisaun ba mota refere hodi bele fasilita be'e mota wainhira tempo udan be'e mota bele suli ho diak nune ba futuru bee labele kria inundassaun hodi bee tama ba iha Aeroportu internasional Kairala Xanana Gusmão no presija mos halo normalizasaun mota refere.

Ekipa Verifikador

1. Hugo Jonas Boavida de Fatima (.....).
Enginheiro AND.

2. Irwan Santosa
Assessor Técnico
(.....).

GABION ANALISYS REPORT

SUAI GABION

Gabion analysis

Input data

Project

Task : SUAI GABION

Date : 5/25/2025

Settings

Standard - safety factors

Wall analysis

Active earth pressure calculation : Coulomb
 Passive earth pressure calculation : Caquot-Kerisel
 Earthquake analysis : Mononobe-Okabe
 Shape of earth wedge : Calculate as skew
 Allowable eccentricity : 0.333
 Verification methodology : Safety factors (ASD)

Safety factors		
Permanent design situation		
Safety factor for overturning :	$SF_o =$	1.50 [-]
Safety factor for sliding resistance :	$SF_s =$	1.50 [-]
Safety factor for bearing capacity :	$SF_b =$	1.50 [-]
Safety factor for mesh strength :	$SF_n =$	1.50 [-]

Reduction coefficients		
Permanent design situation		
Reduction coeff. of friction between blocks :	$\gamma_f =$	1.50 [-]

Material of blocks - filling

No.	Name	γ [kN/m ³]	ϕ [°]	c [kPa]
1	Material No. 1	18.00	30.00	0.00

Material of blocks - mesh

No.	Name	Strength overh. R_t [kN/m]	Spacing of vert. meshes v [m]	Bear.cap. of front joint R_s [kN/m]
1	Material No. 1	40.00	1.00	40.00

Geometry of structure

No.	Width b [m]	Height h [m]	Offset a [m]	Material
4	1.00	1.00	1.00	Material No. 1
3	2.00	1.00	1.00	Material No. 1
2	3.00	1.00	1.00	Material No. 1
1	4.00	1.00	-	Material No. 1

Gabion slope = 0.00 °
 Overall height = 4.00 m
 Overall wall volume = 10.00 m³/m

Soil parameters

Loose gravelly soil

Unit weight : γ = 18.00 kN/m³
 Stress-state : effective
 Angle of internal friction : φ_{ef} = 28.00 °
 Cohesion of soil : c_{ef} = 0.00 kPa
 Angle of friction struc.-soil : δ = 21.00 °
 Soil : cohesionless
 Saturated unit weight : γ_{sat} = 21.00 kN/m³

Granular soil

Unit weight : γ = 19.50 kN/m³
 Stress-state : effective
 Angle of internal friction : φ_{ef} = 32.00 °
 Cohesion of soil : c_{ef} = 5.00 kPa
 Angle of friction struc.-soil : δ = 24.00 °
 Soil : cohesionless
 Saturated unit weight : γ_{sat} = 22.00 kN/m³

Granular soil BOTOM

Unit weight : γ = 20.00 kN/m³
 Stress-state : effective
 Angle of internal friction : φ_{ef} = 36.00 °
 Cohesion of soil : c_{ef} = 10.00 kPa
 Angle of friction struc.-soil : δ = 27.00 °
 Soil : cohesionless
 Saturated unit weight : γ_{sat} = 22.50 kN/m³

Geological profile and assigned soils

No.	Thickness of layer t [m]	Depth z [m]	Assigned soil	Pattern
1		1.00	0.00 .. 1.00	Loose gravelly soil
2		2.00	1.00 .. 3.00	Granular soil
3		4.00	3.00 .. 7.00	Granular soil BOTOM
4		-	7.00 .. ∞	Granular soil BOTOM

Foundation

Type of foundation : soil from geological profile

Terrain profile

No.	Coordinates x [m]	Depth z [m]
1	0.00	0.00
2	2.00	0.00
3	3.00	2.00
4	4.00	2.00

Origin [0,0] is located in upper right edge of construction.
Positive coordinate +z has downward direction.

Water influence

GWT behind the structure lies at a depth of 3.00 m
GWT in front of the structure lies at a depth of 1.00 m
Subgrade at the heel is not permeable.
Uplift in foot. bottom due to different pressures is not considered.

Resistance on front face of the structure

Resistance on front face of the structure: at rest
Soil on front face of the structure - Granular soil
Soil thickness in front of structure h = 1.00 m

Terrain in front of structure is flat.

Global settings

Minimum dimensioning pressure is considered as $\sigma_{a,min} = 0.20\sigma_z$

Settings of the stage of construction

Design situation : permanent

Verification No. 1

Forces acting on construction

Name	F _{hor} [kN/m]	App.Pt. z [m]	F _{vert} [kN/m]	App.Pt. x [m]	Design coefficient
Weight - wall	0.00	-1.79	140.00	2.64	1.000
FF resistance	-2.82	-0.33	0.00	0.00	1.000
Active pressure	30.34	-1.40	7.28	4.00	1.000
Water pressure	-40.00	-1.08	0.00	4.00	1.000
Uplift pressure	0.00	-4.00	0.00	4.00	1.000

Verification of complete wall

Check for overturning stability

Resisting moment $M_{res} = 399.12 \text{ kNm/m}$ Overturning moment $M_{ovr} = -1.80 \text{ kNm/m}$

Safety factor = 1000.00 > 1.50

Wall for overturning is **SATISFACTORY**

Check for slip

Resisting horizontal force $H_{res} = 147.01 \text{ kN/m}$ Active horizontal force $H_{act} = -12.48 \text{ kN/m}$

Safety factor = 1000.00 > 1.50

Wall for slip is **SATISFACTORY**Overall check - WALL is **SATISFACTORY****Bearing capacity of foundation soil**

Design load acting at the center of footing bottom

No.	Moment [kNm/m]	Norm. force [kN/m]	Shear Force [kN/m]	Eccentricity [-]	Stress [kPa]
1	-106.36	147.28	-12.48	0.000	36.82

Service load acting at the center of footing bottom

No.	Moment [kNm/m]	Norm. force [kN/m]	Shear Force [kN/m]
1	-106.36	147.28	-12.48

Dimensioning No. 1

Forces acting on construction

Name	F _{hor} [kN/m]	App.Pt. z [m]	F _{vert} [kN/m]	App.Pt. x [m]	Design coefficient
Weight - wall	0.00	-1.17	108.00	1.83	1.000
Active pressure	17.69	-1.06	5.63	3.00	1.000
Water pressure	-20.00	-0.67	0.00	3.00	1.000
Uplift pressure	0.00	-3.00	0.00	3.00	1.000

Verification of construction joint above the block No.: 1**Check for overturning stability**Resisting moment $M_{res} = 214.90 \text{ kNm/m}$ Overturning moment $M_{ovr} = 5.34 \text{ kNm/m}$ Safety factor = $40.28 > 1.50$ **Joint for overturning stability is SATISFACTORY****Check for slip**Resisting horizontal force $H_{res} = 65.61 \text{ kN/m}$ Active horizontal force $H_{act} = -2.31 \text{ kN/m}$ Safety factor = $1000.00 > 1.50$ **Joint for slip is SATISFACTORY**Maximum pressure on the bottom block = 37.88 kPa Red.Coeff. by offset of top block = 0.00 Average value of pressure on face = 3.75 kPa Shear force transferred by friction = 43.74 kN/m **Bearing capacity against transverse pressure:**Joint bear.capacity = 40.00 kN/m Computed stress-state = 1.88 kN/m Safety factor = $21.33 > 1.50$ **Transverse pressure check is SATISFACTORY****Joint btw. blocks check:**Mesh material bear.capacity = 40.00 kN/m Computed stress-state = 1.88 kN/m Safety factor = $21.33 > 1.50$ **Joint between blocks is SATISFACTORY**

人間の心の底に潜む潜在能力の発揮を助けるための精神的訓練法上、この



SUMMARY

KARAU PROJEKTI : KONSTRUSAN GABION MOTA KARAU ULUN PAKOTE 2, SUAI, COVALIMA
KATIN PROJEKTI : SUAI MAUCATAR

PROPOSTA			ADN REVIEW		
No	Descripción	Total (USD\$)	No	Descripción	Total (USD\$)
400	GENERAL REQUIREMENTS	\$ 20,000.00	100	GENERAL REQUIREMENTS	\$ 12,525.75
200	EARTHWORKS	\$ 142,797.32	200	EARTHWORKS	\$ 127,736.80
600	DRAINAGE AND SLOPE PROTECTION STRUCTURES	\$ 1,978,594.38	600	DRAINAGE AND SLOPE PROTECTION STRUCTURES	\$ 1,451,345.25
800	BIOENGINEERING	\$ 64,540.80	300	BIOENGINEERING	\$ 63,654.36
A	CONSTRUCTION COST	\$ 2,395,106.61	A	CONSTRUCTION COST	\$ 1,655,312.16
B	CONTRACTOR FEE (10% x A)	\$ 239,510.66	B	CONTRACTOR FEE (10% x A)	\$ 165,531.22
C	OVERHEAD	\$ 20,000.00	C	OVERHEAD	\$ 3,400.00
D	TAX (2% x (A+B+C))	\$ 53,092.35	D	TAX (2% x (A+B+C))	\$ 36,584.87
GRAND TOTAL			GRAND TOTAL (A+B+C+D)		\$ 1,865,828.25

本草綱目卷之三十一



BILL OF QUANTITIES

**NARASI PEMERINTAH : KONSERUSAU GABION MOTA-KARAU ULLIN PAKOTE 2,SUAI, COVALIMA
WALI PEMERINTAH : SUAI MAUCATAR**



ADMISIONES Y DESARROLLO DE NEGOCIOS, S.A.C.

OVERHEAD

NAPAN PROJEITU : KONSTRUSAUN GABION MOTA KARAU ULUN PAKOTE 2, SUAI, COVALIMA
FATIN PROJEITU : SUAIMAUCATAR

PAV ITEM	ITEM DESCRIPTION	VERIFY BY ADN, I.P.			
		UNIT	QUANTITY	UNIT RATE (US \$)	AMOUNT (US \$)
1	Site Engineer	Ls	1.00	\$ 6,000.00	\$ 6,000.00
2	Site Security	Ls	1.00	\$ 1,800.00	\$ 1,800.00
3	Health & Safety Protection	Ls	1.00	\$ 500.00	\$ 500.00
5	Repor & Documentation As Built Drawing	Ls	1.00	\$ 100.00	\$ 100.00
	TOTAL			\$ 8,400.00	



FORMULARIO DESPACHO

Data de Entrada Documentos: 19 / Feb / 2025

Data do Documentos: 18 / Feb / 2025

Hist: MINISTERIO DO PLANEAMENTO INVESTIMENTO ESTRATEGICO

No Ref : 208/CG-GMPIE/H/2025

Projetu :	Quantidade Documentos : 1
	Anexo :
Assuntos :	
Enkaminha Despacho Ministro MPIE (Enkaminhado de Despacho, Moru Protesaun Stone Mansory Wall Suco Camanasa, Postu Administrativo Suai)	
No. Tf : 77173979	
Companhia : Zan'iella Lda	
Despacho :	
<ul style="list-style-type: none"><input type="radio"/> Unidade de Gestão Administrativa<input checked="" type="radio"/> Unidade de Avaliação de Projectos<input type="radio"/> Unidade de Controlo e Validação de Qualidade<input type="radio"/> Unidade de Estudo e Desenvolvimento de Competências<input type="radio"/> Adjunto<input type="radio"/> Assessor/a<input type="radio"/> Gabinete DE / Base de Dadus<input type="radio"/> Other	
<p><i>Aho mosela documentu refere tus procedimento uele tha -</i></p>	
<p>Data: 17/02/25</p>	
<p><i>Rui Lourenço da Costa Director Executivo ADN</i></p>	



MINISTÉRIO DO PLANEAMENTO
E INVESTIMENTO ESTRATÉGICO
IX GOVERNO CONSTITUCIONAL
GABINETE DO MINISTRO



Dili, 18 de Fevereiro de 2025

Nu. Ref : 208 /CG-GMPIE/H/2025

Haro'ò ba : Directur Executivo ADN IP
Sr. Rui Lourenço da Costa

Asumtu : Encaminha Despacho Ministro, MPIE

Ho Respeito

Liu husi oficio ida ne'e hakarak encaminha despacho Ministro MPIE kona ba karta husi Chefe de Gabinete do Primeiro-Ministro Sra. Elizabeth Exposto ho assunto Encaminhamento de Despacho, Moru Protecao Stone Masonry Wall and no despacho Ministro iha anexo.

Despacho Ministro : Para ADN- IP
Proceder de acordo C/ os procedimos existente
Data despaçho : 02.18.2025

Mak ne'e deit ba atensaun, lahaluha hato'o obrigado wain.

Hau nia melhores Kumprimentos

Tomás de Fátima da Silva
Chefe do Gabinete do MPIE



PRIMEIRO
MINISTRO
Ex-Governo Constitucional

A A 2 4
11/20

Proceder de acordo
com o procedi-
mento instituído
Gabinete
Primeiro-Ministro

No. 166 /GPM/I/2025

Dili, 10 de Fevereiro de 2025

02.18.2025

Sua Excelência Senhor
Gastão Francisco de Sousa
Ministro do Planeamento e Investimento Estratégico

Assunto : Encaminhamento de Despacho
Moru Protecao Stone Masonry Wall and

Aproveitando para transmitir a V.Exa os cumprimentos de Sua Excelência o Senhor Primeiro-Ministro em Exercício, Mariano Assanami Sabino, junto envio, a pedido deste, os termos do despacho por ele exerado, relativo ao assunto em epígrafe, que a seguir se transcreve.

Despacho:

Para MPIE, Min. Gastão para Considerar!

Data do despacho : 10/2/2025

Grata pela atenção, subscrevo-me com os melhores cumprimentos

Elizabeth Exposto
Chefe de Gabinete do Primeiro-Ministro

Ministério do Planeamento e
Investimento Estratégico

RECIBIDO
DIA 18 02 2025
POR HIL 4210 321

Palácio do Governo
Avenida Marginal
Dili, Timor-Leste

ZANIELLA UNIPESSOAL,LDA



Rua Comoro 1 Camenasa, Timor-Leste

Email : zaniella.96@gmail.com

No telemóvel : +670 91180799 - 66 91180799

NAME OF PROJECT : MORU PROTECAO STONE MASONRY WALL AND
 LOCATION OF PROJECT : Suco Camenasa, Posto Adm. Sual.
 CONTRACTOR : Zan'ella Unipessoal, Lda

SUMMARY

*Vila Gastão pl
Com destr.
fim fio*

ORIGINAL CONTRACT			
PAY ITEM NUMBER	Description Work	Contract Amout (US\$)	WEIGHT %
100	GENERAL REQUIRMENT	\$ 5,000.00	0.21%
200	EARTH WORK	\$ 279,635.01	11.97%
500	BRIDGE CONSTRUCTION	\$ 4,005.19	0.17%
600	DRAINAGE AND SLOPE PROTECTION STRUCTURES	\$ 1,785,440.68	76.46%
800	BIO ENGINERRING	\$ 58,512.50	2.51%
TOTAL CONSTRUCTION COST		\$ 2,074,080.88	91.32%
A	CONSTRUCTION COST	\$ 2,074,080.88	88.82%
B	PROFIT AND OVERHEAD 10% (of A)	\$ 207,408.09	8.88%
C	OVERHEAD	\$ 8,000.00	0.34%
D	TAX 2% of (A+B+C)	\$ 45,789.78	1.96%
E	GRAND TOTAL (A+B+C+D)	\$ 2,335,278.74	100.00%

Prepared by

✓ seen.

ENG. VALERIO A. F. SARMENTO

Tekniku Kontraktor

Submitted by :

ZANIELLA

ROSANTINA CORNELIA DO REGO

Directora Com.

ZANIELLA

UNIPESSOAL, LDA.





AGÊNCIA DE DESENVOLVIMENTO NACIONAL, I.P.

(10)

Dili, 25 de Agosto de 2025

Ref : 178 /ADN, I.P./VIII/2025

Para : Januário Maia Guterres
Director Adjunto e Director Executivo Interino - ADN, I.P.

Assunto : Resultado da Verificação – Projeto New Construction of Gabion Right Side, Mota Cairui, Lalaeia, Section 1, Municipality Manatuto

Com os nossos Respeitos,

Com base no assunto mencionado acima, vimos, por meio desta, informar que a equipa de verificação da Unidade de Avaliação de Projetos – ADN, I.P. já realizou a verificação Boq do *Projeto New Construction of Gabion Right Side, Mota Cairui, Lalaeia, Section 1, Municipality Manatuto*, os resultado a verifikasioun encontram-se anexo para conhecimento apreciação.

Agradecemos a vossa atenção e subscrevemo-nos com a mais elevada consideração.


Arch. José Fernando Liu Soares
Koordenador UAP - ADN, I.P.



th

Bedik-Hun, Fatuhada
Dili – Timor-Leste
info@mpic.gov.tl
+670 3310 289



AGÊNCIA DE DESENVOLVIMENTO NACIONAL - ADN

SUMMARY

Project : New Construction of Cyclop and Gabion (0+000 - 1+050) Right Side.
Location : Cairu, Laféia, manatuto
Sector : 14

ITEM	DESCRIPTION	PROPOSTA AMOUNT US\$	ADN REVIEW AMOUNT US\$
I	GENTRAL ITEM	\$ 1,850.00 US	6,450.00
II	EARTH WORKS	\$ 191,457.81 US	146,846.09
III	BIDGE CONSTRUCTION	\$ 64,615.32 US	48,589.50
IV	DRAINAGE AND PROTECTION STRUCTURES WORKS	\$ 698,989.08 US	612,713.05
A	CONSTRUCTION COST	\$ 900,111.21 US	814,898.63
B	FEE CONTRACTOR 10%	\$ 96,011.22 US	81,489.86
C	OVER HEAD	\$ 2,020.00 US	17,225.00
D	TAX 7%	\$ 11,162.87 US	18,227.37
E	GRAND TOTAL A+B+C+D	\$ 1,079,306.31 US	934,888.77

f



BILL OF QUANTITY

Project : New Construction of 4500sqm - 14065) Right Side
Location : Cawth Valley, Darjeeling

Section	Description	Unit	Quantity	Unit price (USD)	Rate (USD)	Unit	Quantity	Unit price (USD)	Rate (USD)
I	GLASS & FENESTRA	kg	1	\$ 1,850.00	\$ 1,850.00	kg	1	\$ 0.450.00	\$ 0.450.00
I	Metal Sheet & Profile	kg	1	\$ 1,850.00	\$ 1,850.00	kg	1	\$ 0.450.00	\$ 0.450.00
II	Earth Works	kg	1	\$ 2,71	\$ 2,71	kg	1	\$ 2,71	\$ 2,71
III	Brick & Cement	kg	0.99	\$ 6,053.13	\$ 6,053.13	kg	0.201.00	\$ 1,52	\$ 9,881.97
IV	Corrugated Iron	kg	0.20	\$ 0.201.00	\$ 0.201.00	kg	2.27	\$ 12,577.25	\$ 27,665.69
V	Brick & Sand	kg	0.60	\$ 6,053.13	\$ 6,053.13	kg	0.201.00	\$ 121,653.61	\$ 24,330.88
				Sub Total				194,957.84	
VI	BIGE CONSTRUCTION	kg	1	\$ 31,518.31	\$ 31,518.31	kg	1	\$ 1,06.5	\$ 10,65.5
VI	Reinforced Steel	kg	1	\$ 121,518.30	\$ 121,518.30	kg	1	\$ 242.55	\$ 242.55
VI	Steel Rod & Wire	kg	1	\$ 35,296.52	\$ 35,296.52	kg	1	\$ 64,815.32	\$ 64,815.32
VII	DIA MASONRY & PAVING STONE & BRICKS	kg	1	\$ 202,900.00	\$ 202,900.00	kg	1	\$ 124.19	\$ 124.19
VII	Cement & Sand	kg	1	\$ 9,540.00	\$ 9,540.00	kg	0.50	\$ 47,713.00	\$ 23,856.50
VII	Brick & Sand	kg	1	\$ 698,959.00	\$ 698,959.00	kg	1	\$ 37,489.63	\$ 13,995.50
				Sub Total				960,412.23	
				TO TAL COST					



AGÊNCIA DE DESENVOLVIMENTO NACIONAL

Project : New Construction of Cyclop and Gabion (II+000 - II+065) Right Side
Location : Calauit, Latafai, manafuto
Section : I.

OVERHEAD

NO	DESKRISAUN	UNIT	QUANTITY	UNIT PRICE	TOTAL
1 PROJECT TEAM					
	Site Engineer	Ls	1.00	\$ 6,000.00	\$ 6,000.00
	Quality Control	Ls	1.00	\$ 1,500.00	\$ 1,500.00
	Surveyor	Ls	1.00	\$ 1,500.00	\$ 1,500.00
	Truckee	Ls	1.00	\$ 750.00	\$ 750.00
	Administration	Ls	1.00	\$ 752.00	\$ 752.00
	Security	Ls	1.00	\$ 1,800.00	\$ 1,800.00
2 KUSTU OPERASIONAL					
	Stationary	Ls	1.00	\$ 240.00	\$ 240.00
	Communication	Ls	1.00	\$ 360.00	\$ 360.00
	Meetings	Ls	1.00	\$ 240.00	\$ 240.00
	Electricity	Ls	1.00	\$ 720.00	\$ 720.00
	Water	Ls	1.00	\$ 720.00	\$ 720.00
	Daily, weekly, monthly reports	Ls	1.00	\$ 240.00	\$ 240.00
	Shop drawings, as built drawings	Ls	1.00	\$ 200.00	\$ 200.00
3 KUSTU SERVISU APOIO NIAN					
	Material Sampling & Testing	Ls	1.00	\$ 1,683.00	\$ 1,683.00
	Personal protective equipment (PPE)	Ls	1.00	\$ 480.00	\$ 480.00
4 KUSTU RUMAH					
TOTAL OVERHEAD					\$ 17,225.00

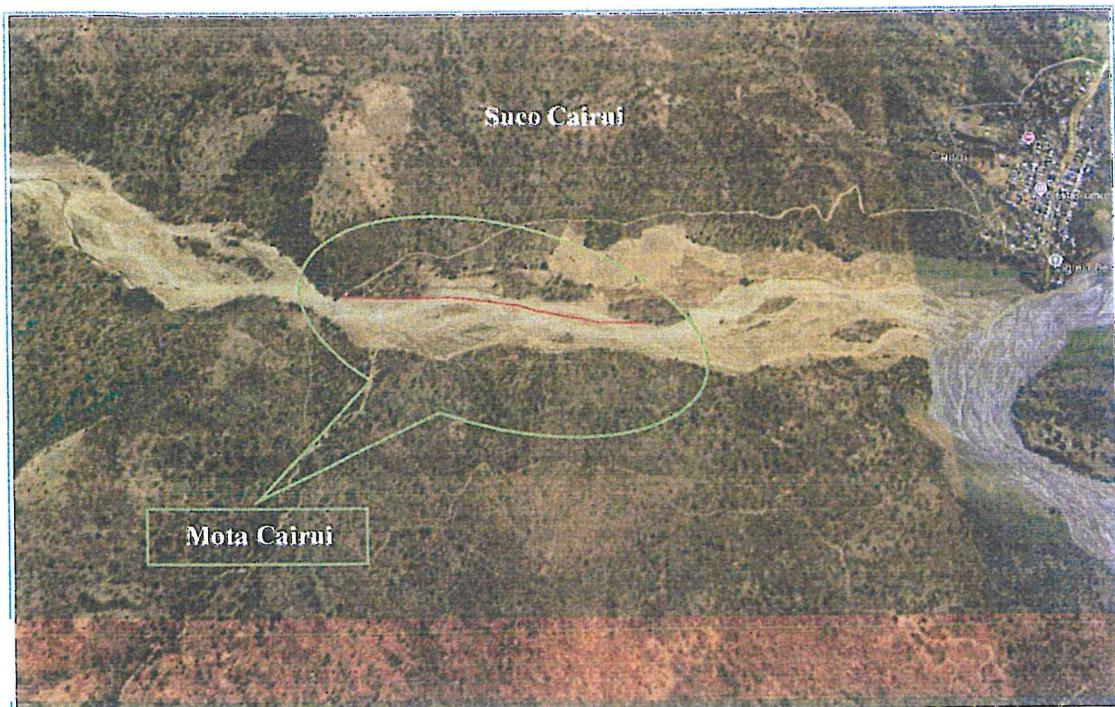
RELATORIO OBSERVASAUN TERENO

Gabion protection in Laleia, Manatuto Municipality

I. INTRODUSAUN

Baseia ba despacho husi Ministro ho numero referencia 504/CG-GMPIE/V/2024 Data 18 de Marsu 2024 ho despache Verificar e relatar. Iha biban ida nee hakarak informa ba sua.ex. katak Ekipa verifikasi saun hala'o ona visita ba tereno hodi halo observasaun. Hakarak mos atu informa ba iha visita ne'e ekipa hala'o observsaun hamutuk ho Autoridade local hanesan Chefe Aldeai no Komunidade. balun ne'ebé hela besik iha area refere Ho ida ne'e ami hakarak relata relatorio badak kona ba observasaun iha tereno.

Naran Mota : Mota Carui.
Soco : Cairui.
Posto Administrativo : Laleia.
Aldeia : Cairui.
Municipio : Manatuto.



Mota Cairui, Soco Cairui, Laleia, Manatuto 0+000 – 1+050 km.

2. INFORMASAUN AREA NEEBE MAK ATU PROTEJE

a. Karakteristika komunidade nia hefa fatfn

- Kondisaun Sosial dan Ekonomia.

Nivel Ekonomia Baixa.

- Maioria komunidade nia natar besik hotu iha mota ninin ho nia ninia katoria komunidade ho nivel ekonomia baixa.
- Komunidade barak mak servico iha nu'udar vida agricultor no comersiante.

Densidade populasauan a'as.

- Kuaze komuidade barak mak nia natar afeita ba iha mota refere.
- Iha tinan 2024-2025 komunidade natar labele ona halo ona tamba hetan estragusu husi mota.
- Ho razaun hira tamba ne'e urjentemente atu proteje no tau chek hodi nune sira bele foti be husi mota hodi nune natar tinan ida bele halo dala rua (*inforsaun husi komunida*).

• Area refere risiko ba inundasaun

- Iha Parte Upstrim nian bainhira akontese udan ho intesidade bo'ot sei fo amesa ba iha intake irigasaun nia tamba sobu halo luan husi nia win wall nian tamba ne'e presija atu proteje.
- Iha parte Upstrim nian baihira korente mota makas afeta direntamente ba komunidade sira nia natar no bee mos tama ba iha komunidade nia natar.

3. KONDISAUN MOTA

a. Korente Mota.

- Korente mota ne'ebé makas tamba ne'e presija proteje.
- Afeita sobu komunidade nia natar sira.

b. Re'e suli instavel

- Debitu be'e ne'ebe flutuante : marang iha tempu Bailoron to iha fulan Oktober no mota bo'ot iha tempu udan.
- Fungsaun Absorsaun Natural (resapan Alami) ne'ebe ki'ik liu tanba iha superficie impermeável (alkatraun no Betaun).

Imagen Mota.

➤ Foto Kondisaun mota atual.



➤ Foto kondisi tanah aktual



4. Identifikasi kasauun problema

NO.	PROBLEMA	KAUSA
1	Sobu Komunitade nia natar tos	Debit bee aumenta makas wainhira tempo udan hodi tama ba iha komunitade nia toos no nia natar.

5. OBSERVASAUN TEKNIK

1. Normalizasaun

Objetivo: Atu nune'e be'e mota labele transbordante (overflowing)./mantain kapasidade be'e mota suli labele overflowing

Teknika

- excavasaun sedimentasaun (dredging) atu haklean mota laran
- loke luan no endireitamento canal mota



Mota nakonu ho Sendimentasaun tamaba ne'e presija halo normalizasaun.

2. Konstruasaun Aterru (Levee) no Moru protesaun (Retaining Wall)

Objetivu: Prevene bee overflowing ba komunidade nia bela fatin.

Teknika:

- Moru protesaun betaun iha mota ninin
- Moru protesaun iha kurva mota nian atu prevene erosaun.



3. Revitalizasaun no Restorasaun Mota

Objectivo: Restaura funsaun ekologia e equilíbrio natural mota nian.

Tekniku:

- Kuda vegetasaun/ai iha mota ninin
- Kriasaun zona fronteiricas fluviais (zonas tampão).

4. Konstrusaun estruturas atu controle sedimentasun

Tujuan: Kontrola erosaun no sedimentasaun iha mota ninin

Teknika:

- Konstruasaun Check dam
- Krib dan spurs iha mota
- Terasering iha area bee suli nebe rapido/rapid.

Observasaun dokumentus proposta

1. Karta husi authorityde local faixa/seidauk assina
2. Dezenho prepara husi companha.
3. Boq prepara husi companha.

Konklusaun.

Baseia ba observasaun iha tereno , Ekipa observasaun fundamento katak mota refere presija urjente atu kria kondisaun ba mota refere hodi bele fasilita be'e mota wainhira tempo udan be'e mota bele suli ho diak.

Nota informativu.

husu parte dono do projetu katak proposta refere mai ho kontactor rua ne'ebé iha fatin ne'ebé hanesan kontractor sira mak hanesa : Ulfavigio'07 Unipessoal Lda no Maferdi Unipessoal Lda no mos husi parte Obras Publicas nian. Kona inforsaun seluk bele hare iha anexo.

Ekipa Verifikador

1. Hugo Jonas Boavida de Fatima (.....).
Enginheiro AND.



AGENCIA DE DESARROLLO NACIONAL - P.

NO	DESPACHO	PROYECTOS	PROBLEMA	RECOMENDASAUH
		<p>EMERGENCY PROJECT : Konstrusau Gabion Mota Kaiudi</p>	<p>1. Konstruksi bronjong digunakan agar masuk fleksibel bisa mengikuti perubahan desainya. 2. Granular revertment menggunakan material sungai sekaligus melaukar noemalasi sungai sudah OK 3. Dibuatkan akses penyeberang menyebabkan sifat khas masyarakat saat air naik terlalu tinggi 4. Ketinggian jalan akses memperhitungkan aliran air yang akan lewat dan sedimentasi yang akan terjadi</p>	<p><i>[Handwritten notes: Sudah dihitung]</i></p>
<p>ALREADY VERIFICATION BY ADN-IP.</p> <p>Existing Point Path</p> <p>Existing Ground</p> <p>Desired Point Alignment Profile Path</p> <p>Desired Environment Using Material From River Normalization Excavation</p> <p>L = 100m</p>				
<p>PROFILE</p> <p>Existing Ground</p> <p>Finish Ground</p>				
<p>Desing By:</p> <p>ACESSOR ERIK ALDRIN</p> <p>CONSTRUCTION COST,</p>				

Olli, 25 July 2025
PREPARED BY

1/1

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REVISED DOCUMENT
REVISED COMPLETE DOCUMENT
RELEASE DOCUMENT

[Signature]
(ERIK ALDRIN SIME WIMBULU)
ASSESSOR TE/ NICO

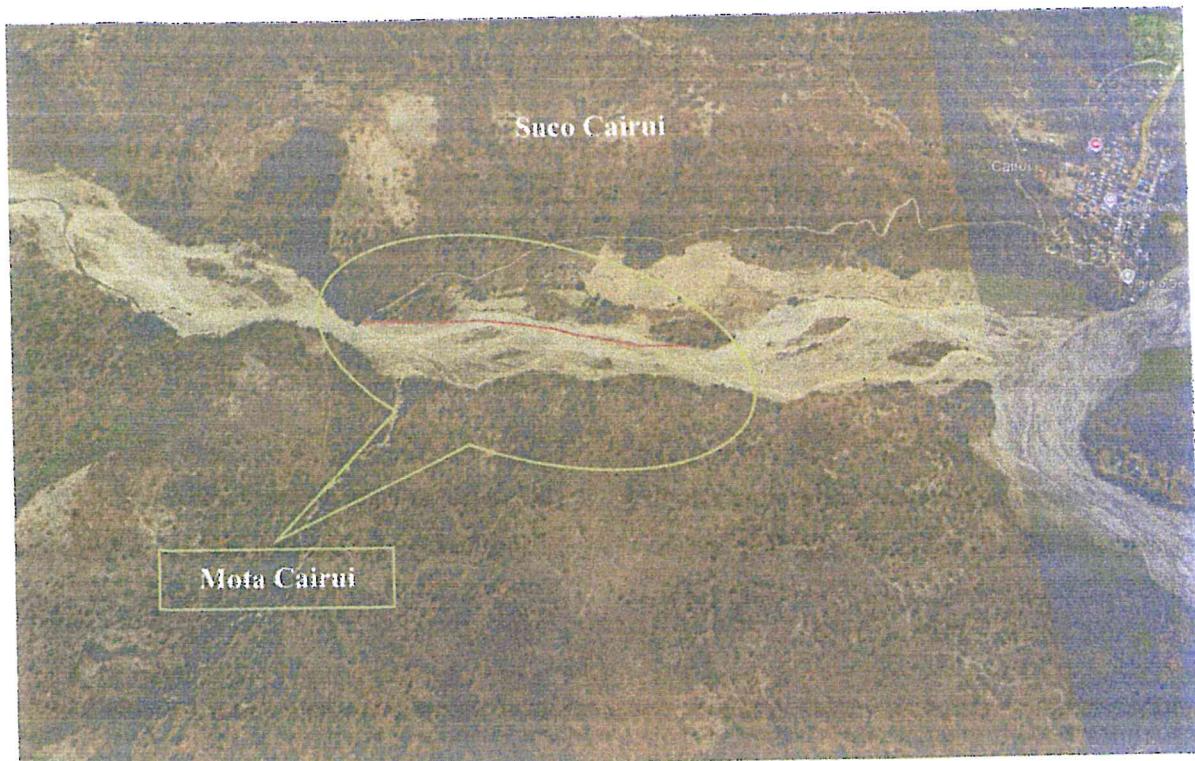
RELATORIO OBSERVASAUN TERENO

Cyclone protection in Ulinucarben, Flavetane Municipality

1. INTRODUSAUN

Baseia ba despacho husi Ministro ho numero referencia 504/CG-GMPE/V/2024 Data 18 de Maio 2024 ho despacho Verificar e relatar. Iha biban ida nee hakarak informa ba sualex, katak Ekipa verifikasiasaun hala'o ona visita ba tereno hodi hafó observasaun. Hakarak mos am informa ba iha visita ne'e ekipa hala'o observasaun hamutuk ho Autoridade local hanegan Chefe Aldéia no Komunitáde, batun ne'ebé hela besik iha area refere. Ho ida ne'e ami hakarak relata relatorio badak kona ba observasaun iha tereno.

Noran Mota	: Mota Cairui.
Suco	: Cairui.
Posto Administrativo	: Laleia.
Aldéia	: Cairui.
Municipio	: Manatuto.



Mota Cairui, Suco Cairui, Laleia, Manatuto 0+000 – 1+050 km.

2. INFORMASAUN AREA NEBE MAK ATU PROTEJE

a. Karakteristika komunidade nia hela fatih

- Kondisaun Sosial dan Ekonomia.

Nivel Ekonomia Baixa.

- Majorito komunidade nia natar besik hou iha mota níntin ho nia ómida kategoría komunidade ho nível ekonomia baixa.
- Komunidade barak mak serviso iha nu'udor vida agricultor do conservante.

Densidade populasatan a'as.

- Kuaze komuidade barak mak nia natar afesta ba iha mota refere.
- Iha tinan 2024-2025 komunidade natar labele ona halo ona tamba heter estragusu husi mota.
- Ho razau hira tamba ne'e urgjentemente atu proteje no tau chek hodi nune sira bele foti be husi mota hodi nune natar tinan ida bele halo dala rua (*inforsatu husi komunidade*).

• Area refere risiko ba intundasatum

- Iha Parte Upstrim nian bainhira akontese udan ho intesidade bo'ot sei fo amesa ba iha intake irigasaun nia tamba sobu halo luan husi nia win wall nian tamba ne'e presija atu proteje.
- Iha parte Upstrim nian baihira korente mota makas afeta direntamente ba komunidade sira nia natar no bee mos tama ba iha komunidade nia natar.

3. KONDISAUN MOTA

a. Korente Mota.

- Korente mota ne'ebé makas tamba ne'e presija proteje.
- Afesta sobu komunidade nia natar sira.

b. Be' e suli instavel

- Debitu be' e ne'ebe flutuante : marang iha tempu Baiforou to iha sulan Oktober no mota bo'or iha tempu udan.
- Fungsain Absorsau Natural (resupan Altum) ne'ebe kiflik liu tanba iha superficie impermeável (alkatram no Betaun).

Imagen Mora.

➤ Foto Kondisau mota atual.



➤ Foto kondisi awal



4. Identifikasiun problema

NO.	PROBLEMA	KAUSA
1	Sobu Komunitade ma natar tes	Debit bee aumenta makas wainlira tempo uuan houli natare ba'ba komunitade ma toos no nia natar.

5. OBSERVASAUN TEKNIK

1. Normalizasaun

Objetivo: Atu nunc'e be'e mota labele transbordante (overflowing)./mantain kapasidade be'e mota sulu labele overflowing

Teknikal

- excavasatu sedimentasatu (dredging) aru haklean mota laran
- loke luan no endireitamento canal mota



Mota nakonu ho Sedimentasatu fumaba ne'e presija halo normalizasaun.

2. Konstrusauun Aterru (Levee) no Moru protesaun (Retaining Wall)

Objetivu: Prevente bee overflowing ba komunitade iha helá fatim.

Tekniku:

- Moru protesaun beratun iha mota ninin
- Moru protesaun iha kurva mota nian atu prevente erosauun.



3. Revitalizasauun no Restorasauun Mota

Objectivo: Restaura funsaun ekologia e equilibrio natural mota nian.

Tekniku:

- Kuda vegetasaun/ai iha mota ninin
- Kriasaun zona fronteiricas fluviais (zonas tampão).

4. Konstrusauun estruturas atu controle sedimentasun

Tujuan: Kontrola erosauun no sedimentasaun iha mota ninin

Tekniku:

- Konstrusauun Check dam
- Krib dan spurs iha mota
- Terasering iha area bee suli nebe rapido/rapid.

Observasam dokumentus proposita

1. Boq hodi e authoidade locai lulu/kelank avine
2. Dezenho prepara husi companha.
3. Boq prepara husi companha.

Konklusam.

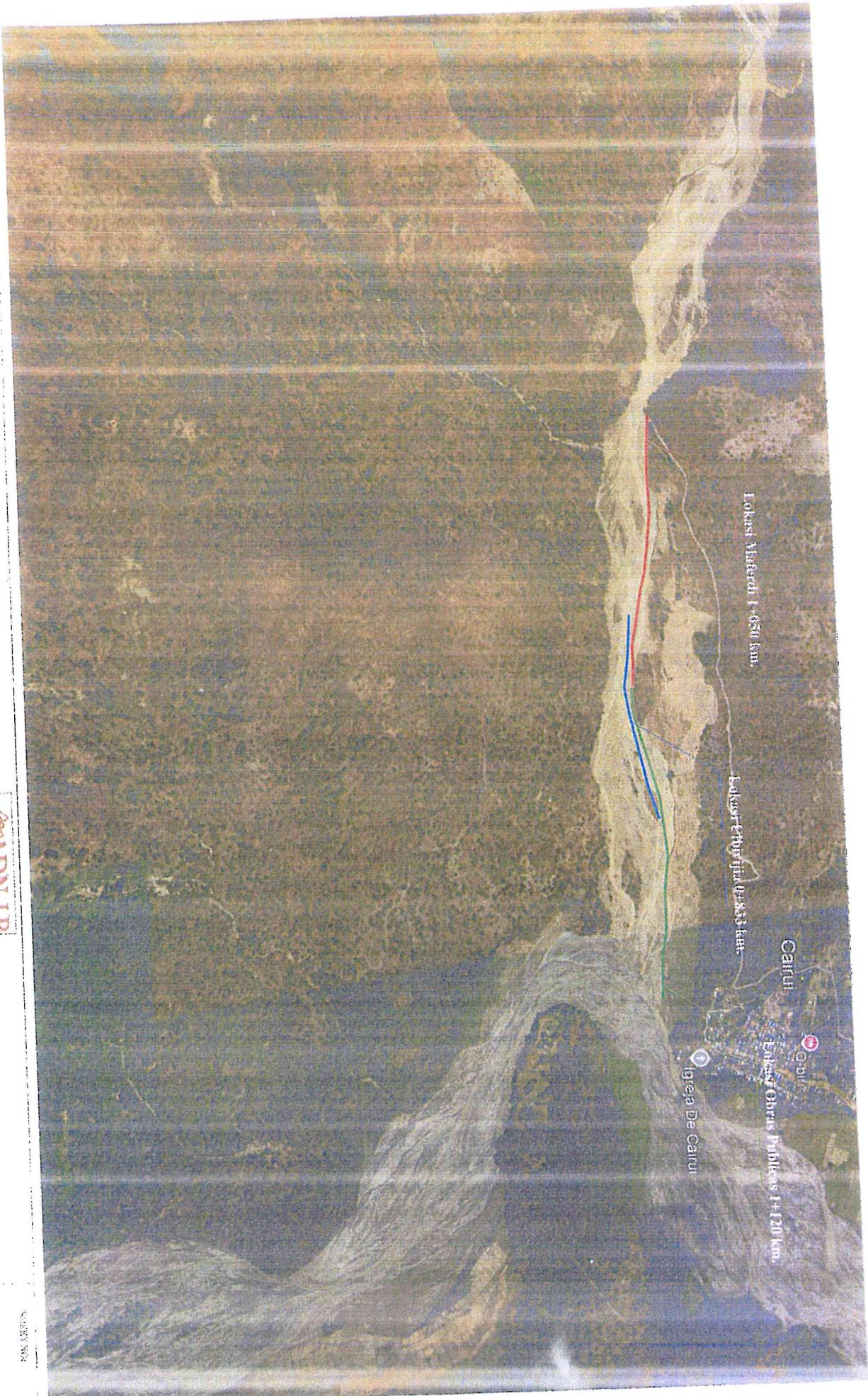
Buscia bu observasam iha tereno, Ekipa observasam fundamento krik, mota refere presija urjente atu kria kondisaun ba mota refere hodi bele fasilita be'e mota waiuthira tempo iran. De'e mota bele suli ho diak.

Nota informativa.

Insu parte doce do projeto katak proposta refere mai ho kontaktor sua ne'ebe iha satiu ne'ebe hanesan kontaktor sira mak hanesa : Uffavigio'07 Unipessoal Lda no Maferdi Unipessoal Lda no mos husi parte Obras Publicas nian. Kona inforsaun seluk bele hare iha anexo.

Ekipa Verifikador

1. Hugo Jonas Boavida de Fatima (.....).
Enginheiro AND.
2. Lisandro Manuel (.....).
Enginheiro AND.





AGÊNCIA DE DESENVOLVIMENTO NACIONAL, I.P.

(1)

Dili, 25 de Agosto de 2023

Ref

: 479 /ADN, I.P./VII/2023

Para

: Januario Mala Guterres
Director Adjunto e Director Executivo Interino - ADN, I.P.

Assunto

: Resultado da Verificação – Projeto New Construction of Gabion Right Side, Mota Cairui, Lalaeia, Section 2, Municipality Manatuto

Com os nossos Respeitos,

Com base no assunto mencionado acima, vimos, por meio desta, informar que a equipa de verificação da Unidade de Avaliação de Projetos – ADN, I.P. já realizou a verificação Boq do Projeto New Construction of Gabion Right Side, Mota Cairui, Lalaeia, Section 2, Municipality Manatuto, os resultado a verifikasiçao encontram-se anexo para conhecimento apreciação.

Agradecemos a vossa atenção e subscrevemo-nos com a mais elevada consideração.

Arch. José Fernando Liu Soares
Koordenador UAP - ADN, I.P.



Bedik-Hun, Fatuhada
Dili - Timor-Leste
info@impiegov.tl
+670 2210226



AGÊNCIA DE DESENVOLVIMENTO NACIONAL - ADN

SUMMARY

Project : New Construction of Gabion Right Side
Location : Cairof, Lutcia, Manatuto
Section : 22.

ITEM	DESCRIPTION	PROPOST		ADN REVIEW	
		AMOUNT US\$	AMOUNT US\$	AMOUNT US\$	AMOUNT US\$
I	GENERAL ITEM	\$ 6850.00	\$ 6850.00	\$ 6850.00	\$ 6850.00
II	EARTH WORKS	\$ 604,467.81	\$ 604,467.81	\$ 677,744.82	\$ 677,744.82
III	DRAINAGE AND PROTECTION STRUCTURES WORKS	\$ 698,030.08	\$ 698,030.08	\$ 80,972.08	\$ 80,972.08
A	CONSTRUCTION COST	\$ 1,000,111.22	\$ 1,000,111.22	\$ 1,000,111.22	\$ 1,000,111.22
B	FEES CONTRACTOR 10%	\$ 96,011.32	\$ 96,011.32	\$ 11,609.61	\$ 11,609.61
C	OVER HEAD	\$ 2,020.00	\$ 2,020.00	\$ 15,547.00	\$ 15,547.00
D	TAX 2%	\$ 21,162.87	\$ 21,162.87	\$ 12,324.85	\$ 12,324.85
E	GRAND TOTAL A+B+C+D	\$ 1,079,506.41	\$ 1,079,506.41	\$ 626,572.65	\$ 626,572.65



INSTITUCIONES DE DESARROLLO NACIONAL S.A.

BILL OF QUANTITY

Project : New Construction of Chilón Right Side,
 Location : Catia, La Cota, Miranda
 Section : 2.2.

Item	Description	Unit	Quantity	Unit price (USD)	Price (USD)	Unit	Quantity	Unit price (USD)	Price (USD)
GENERAL TYPE									
1.1	Mobilization	LS	1	\$ 6,820.00	\$ 6,820.00	LS	1	\$ 400.00	\$ 400.00
1.2	Permitation	LS	1	\$ 1,800.00	\$ 1,800.00	LS	1	\$ 175.00	\$ 175.00
1.3	Furniture and Utilities for the engineer	LS	1	\$ 18,275.00	\$ 18,275.00	LS	1	\$ 15.00	\$ 15.00
1.4	Offices and Access conditions for the engineer	LS	1	\$ 25,450.00	\$ 25,450.00	LS	1	\$ 15.00	\$ 15.00
1.5	Safety Equipment	LS	1	\$ 2,320.00	\$ 2,320.00	LS	1	\$ 15.00	\$ 15.00
1.6	As Built Drawing	LS	1	\$ 2,600.00	\$ 2,600.00	LS	1	\$ 15.00	\$ 15.00
	Sub Total			\$	\$ 61,825.00			\$	\$ 300.00
EARTHWORKS									
1.1	Strategic Services	Cum	6,270.00	\$ 3.50	\$ 21,945.00	Cum	6,270.00	\$ 3.50	\$ 21,945.00
1.2	Compound Servant	Cum	6,187.50	\$ 3.50	\$ 21,655.25	Cum	6,187.50	\$ 3.50	\$ 21,655.25
1.3	Compound Enclosure	Cum	12,375.00	\$ 3.50	\$ 43,312.50	Cum	12,375.00	\$ 3.50	\$ 43,312.50
	Sub Total			\$	\$ 106,612.75			\$	\$ 66,810.00
DRAVAGE AND PROTECTION STRUCTURES WORKS									
1.1	Excavation Box	Cum	9,540.00	\$ 65.00	\$ 625,260.00	Cum	9,540.00	\$ 65.00	\$ 625,260.00
1.2	Excavation	Sqm	2,387.50	\$ 1.50	\$ 3,581.25	Sqm	2,387.50	\$ 1.50	\$ 3,581.25
	Sub Total			\$	\$ 635,261.25			\$	\$ 626,841.25
	TOTAL COST			\$	\$ 772,612.75			\$	\$ 746,661.25

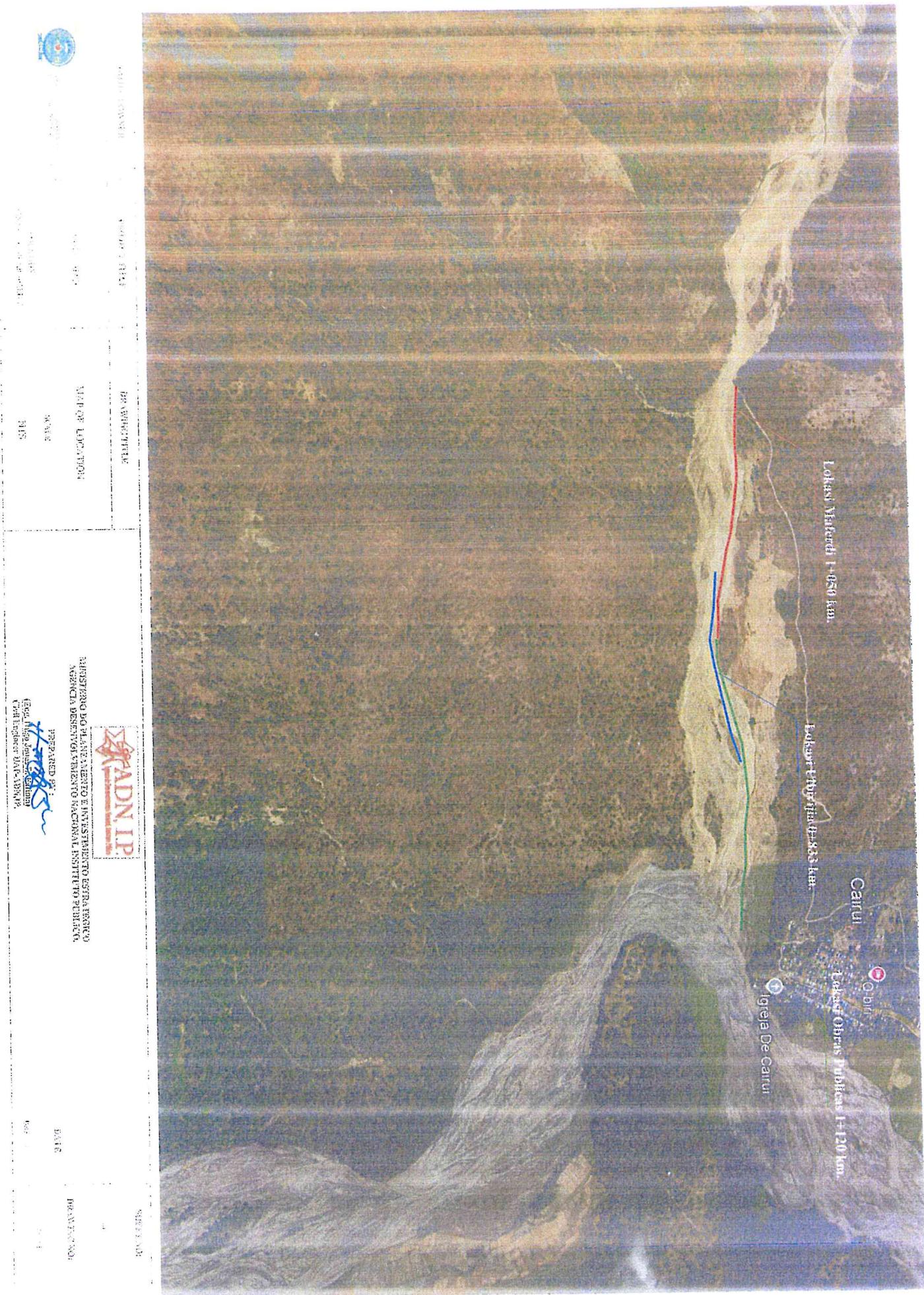


ASSOCIATION OF DEVELOPERS NATIONWIDE

Project : New Construction of Gabion Right Side.
Location : Cairnh Lufela, macata
Section : t 2.

OVERHEAD

NO	DESKRISIUN	UNIT	QUANTITY	UNIT PRICE	TOTAL
1 PROJECT TEAM					
	Project Manager	Ls	1.00	\$ -	\$ -
	Site Manager	Ls	1.00	\$ -	\$ -
	Site Engineer	Ls	1.00	\$ 6,000.00	\$ 6,000.00
	Quality Control	Ls	1.00	\$ 1,500.00	\$ 1,500.00
	Health, Safety and Environment	Ls	1.00	\$ -	\$ -
	Surveyor	Ls	1.00	\$ 1,500.00	\$ 1,500.00
	Logistics	Ls	1.00	\$ 750.00	\$ 750.00
	Administration	Ls	1.00	\$ 792.00	\$ 792.00
	Cleaning Staff	Ls	1.00	\$ -	\$ -
	Security	Ls	1.00	\$ 1,000.00	\$ 1,000.00
2 KUSTU OPERASIONAL					
	Stationery	Ls	1.00	\$ 240.00	\$ 240.00
	Communication	Ls	1.00	\$ 360.00	\$ 360.00
	Meetings	Ls	1.00	\$ 240.00	\$ 240.00
	Electricity	Ls	1.00	\$ 720.00	\$ 720.00
	Water	Ls	1.00	\$ 720.00	\$ 720.00
	Daily, weekly, monthly reports	Ls	1.00	\$ 240.00	\$ 240.00
	Shop drawings, as built drawings	Ls	1.00	\$ 200.00	\$ 200.00
3 KUSTU SERVISU APOIO NIAN					
	Material Sampling & Testing	Ls	1.00	\$ -	\$ -
	Personal protective equipment (PPE)	Ls	1.00	\$ 480.00	\$ 480.00
TOTAL OVERHEAD					
					\$ 15,542.00





RELATORIO OBSERVASAUN TERENO

Gabion protection in Laleia, Manatuto Municipality

1. INTRODUSAUN

Baseia ba despacho husi Ministro ho numero referencia/CG-GMPIE/V/202.. Data 18 de Marsu 202... ho despacho Verificar e relatar. Iha biban ida nee hakarak informa ba sua.ex. katak Ekipa verifikasiasaun hala'o ona visita ba tereno hodi halo observasaun. Hakarak mos atu informa ba iha visita ne'e ekipa hala'o observsaun hamutuk ho Autoridade local hanesan Chefe Aldeai no Komunidade. balun ne'ebé hela besik iha area refere Ho ida ne'e ami hakarak relata relatorio badak kona ba observasaun iha tereno.

Naran Mota : Mota Carui.
Suco : Cairui.
Posto Administrativo : Laleia.
Aldeia : Cairui.
Municipio : Manatuto.



Mota Cairui, Suco Cairui, Laleia, Manatuto 0+000 – 0+ 833 km.

2. INFORMASAUN AREA NEBE MAK ATU PROTEJE

a. Karakteristika komunidade nia bela satin

- Kondisaun Sosial dan Ekonomia.

Nivel Ekonomia Baixa.

- Maioria komunidade nia natar besik hotu iha mota ninin ho nia ninia kategoria komunidade ho nivel ekonomia baixa.
- Komunidade barak mak servico iha nu'udar vida agricultor no comersiante.

Densidade populasauan a'as.

- Kuaze komuidade barak mak nia natar afeita ba iha mota refere.
- Iha tinan 2024-2025 komunidade natar labele ona halo ona tamba hetan estragusu husi mota.
- Ho razaun hira tamba ne'e urjemente atu proteje no tau chek hodi nune sira bele foti be husi mota hodi nune natar tinan ida bele halo dala rua (*inforsaun husi komunide*).

• Area refere risiko ba inundasaun

- Iha Parte Upstrim nian bainhira akontese udan ho intesidade bo'ot sei fo amesa ba iha intake irigasaun nia tamba sobu halo luan husi nia win wall nian tamba ne'e presija atu proteje.
- Iha parte Upstrim nian baihira korente mota makas afeta direntamente ba komunidade sira nia natar no bee mos tama ba iha komunidade nia natar.

3. KONDISAUN MOTA

a. Korente Mota.

- Korente mota ne'ebé makas tamba ne'e presija proteje.
- Afeita sobu komunidade nia natar sira.

b. Be'e suli instavel

- Debitu be'e ne'ebe flutuante : marang iha tempu Baillorom to iha fulan Oktober no mota bo'ot iha tempu udan.
- Fungsaun Absorsaun Natural (resapan Alami) ne'ebe ki'ik liu tenba iha superficie impermeável (alkatraun no Betaun).

Imagen Mota.

➤ Foto Kondisaun mota atual.



➤ Foto kondisau m actual



4. Identifikasi saun problema

NO.	PROBLEMA	KAUSA
1	Sobu Comunidade nia natar tos	Debit bee aumenta makas wainhira tempo udan hedi tamia ba iha komunitade nia toos no nia natar.

5. OBSERVASAUN TEKNIK

1. Normalizasaun

Objetivo: Atu nune'e be'e mota labele transbordante (overflowing)./mantain kapasidade be'e mota suli labele overflowing

Teknika

- excavasaun sedimentasaun (dredging) atu haklean mota laran
- loke luan no endireitamento canal mota



Mota nakonu ho Sendimentasaun tamaba ne'e presija halo normalizasaun.

2. Konstrusauun Aterru (Levee) no Moru protesaun (Retaining Wall)

Objetivu: Prevene bee overflowing ba komunitade nia hela satin.

Teknika:

- Moru protesaun betaun iha mota ninin
- Moru protesaun iha kurva mota nian atu prevene erosaun.



3. Revitalizasaun no Restorasaun Mota

Objectivo: Restaura funsaun ekologia e equilibrio natural mota nian.

Tekniku:

- Kuda vegetasaun/ai iha mota ninin
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Tujuan: Kontrola erosaun no sedimentasaun iha mota ninin

Teknika:

- Konstruasaun Check dam
- Krib dan spurs iha mota
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Observasaun dokumentus proposta

1. Karta husi authoridade local faiha/seidauk assina
2. Dezenho prepara husi companha.
3. Boq prepara husi companha.

Konklusau.

Baseia ba observasaun iha tereno , Ekipa observasaun fundamento katak mota refere presija urjente atu kria kondisaun ba mota refere hodi bele fasilita be'e mota wainhira tempo udan be'e mota bele suli ho diak.

Nota informativu.

husu parte dono do projetu katak proposta refere mai ho kontactor rua ne'ebé iha fatin ne'ebé hanesan kontractor sira mak hanesa : Ulfavigio'07 Unipessoal Lda no Maferdi Unipessoal Lda no mos husi parte Obras Publicas nian. Kona inforsaun seluk bele hare iha anexo.

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