



**Lampiran A**  
**Penyelidikan Tanah**

## A.1 Hasil Uji CPT di Jl. H. Subeno, BSB

**FAKULTAS TEKNIK**  
**PROGRAM STUDI TEKNIK SIPIL**  
**LABORATORIUM MEKANIKA TANAH**  
 Jl. Pawiyatan Luhur IV/1 Bendan Duwur Semarang 50234  
 Telp. (024) 8441555,8505003 (hunting) Fax. (024) 8415429 - 8445265  
 e-mail:unika@unika.ac.id http://www.unika.ac.id



CPT V.2.0

Cone Penetration Test

Project : KAMPUS UNIKA II

Location : BSB - .SEMARANG

Job No : 1

Point : 1

Test No : 1

Test By : Andi

Test Date : 10 APRIL 2018

No.	Depth (m)	R1	R2	LF	LFF	TF	FR
0	0.0	0.00	0.00	0.00	0.00	0.00	0.00
1	0.2	0.00	0.00	0.00	0.00	0.00	0.00
2	0.4	10.00	17.00	0.70	14.00	14.00	7.00
3	0.6	15.00	23.00	0.80	16.00	30.00	5.33
4	0.8	17.00	25.00	0.80	16.00	46.00	4.71
5	1.0	20.00	27.00	0.70	14.00	60.00	3.50
6	1.2	25.00	25.00	0.00	0.00	60.00	0.00
7	1.4	25.00	35.00	1.00	20.00	80.00	4.00
8	1.6	25.00	35.00	1.00	20.00	100.00	4.00
9	1.8	25.00	35.00	1.00	20.00	120.00	4.00
10	2.0	20.00	30.00	1.00	20.00	140.00	5.00
11	2.2	20.00	30.00	1.00	20.00	160.00	5.00
12	2.4	20.00	30.00	1.00	20.00	180.00	5.00
13	2.6	20.00	30.00	1.00	20.00	200.00	5.00
14	2.8	19.00	30.00	1.10	22.00	222.00	5.79
15	3.0	19.00	30.00	1.10	22.00	244.00	5.79
16	3.2	20.00	30.00	1.00	20.00	264.00	5.00
17	3.4	22.00	30.00	0.80	16.00	280.00	3.64
18	3.6	22.00	30.00	0.80	16.00	296.00	3.64
19	3.8	20.00	30.00	1.00	20.00	316.00	5.00
20	4.0	20.00	30.00	1.00	20.00	336.00	5.00
21	4.2	25.00	35.00	1.00	20.00	356.00	4.00
22	4.4	27.00	35.00	0.80	16.00	372.00	2.96
23	4.6	27.00	35.00	0.80	16.00	388.00	2.96
24	4.8	27.00	35.00	0.80	16.00	404.00	2.96
25	5.0	27.00	35.00	0.80	16.00	420.00	2.96
26	5.2	25.00	35.00	1.00	20.00	440.00	4.00
27	5.4	20.00	30.00	1.00	20.00	460.00	5.00
28	5.6	20.00	30.00	1.00	20.00	480.00	5.00
29	5.8	20.00	30.00	1.00	20.00	500.00	5.00
30	6.0	30.00	30.00	0.00	0.00	500.00	0.00
31	6.2	30.00	40.00	1.00	20.00	520.00	3.33
32	6.4	25.00	35.00	1.00	20.00	540.00	4.00
33	6.6	25.00	35.00	1.00	20.00	560.00	4.00
34	6.8	20.00	30.00	1.00	20.00	580.00	5.00
35	7.0	20.00	30.00	1.00	20.00	600.00	5.00
36	7.2	15.00	23.00	0.80	16.00	616.00	5.33
37	7.4	15.00	23.00	0.80	16.00	632.00	5.33
38	7.6	15.00	23.00	0.80	16.00	648.00	5.33
39	7.8	15.00	23.00	0.80	16.00	664.00	5.33

## A.1 Hasil Uji CPT di Jl. H. Subeno, BSB (Lanjutan)

**FAKULTAS TEKNIK  
PROGRAM STUDI TEKNIK SIPIL  
LABORATORIUM MEKANIKA TANAH**

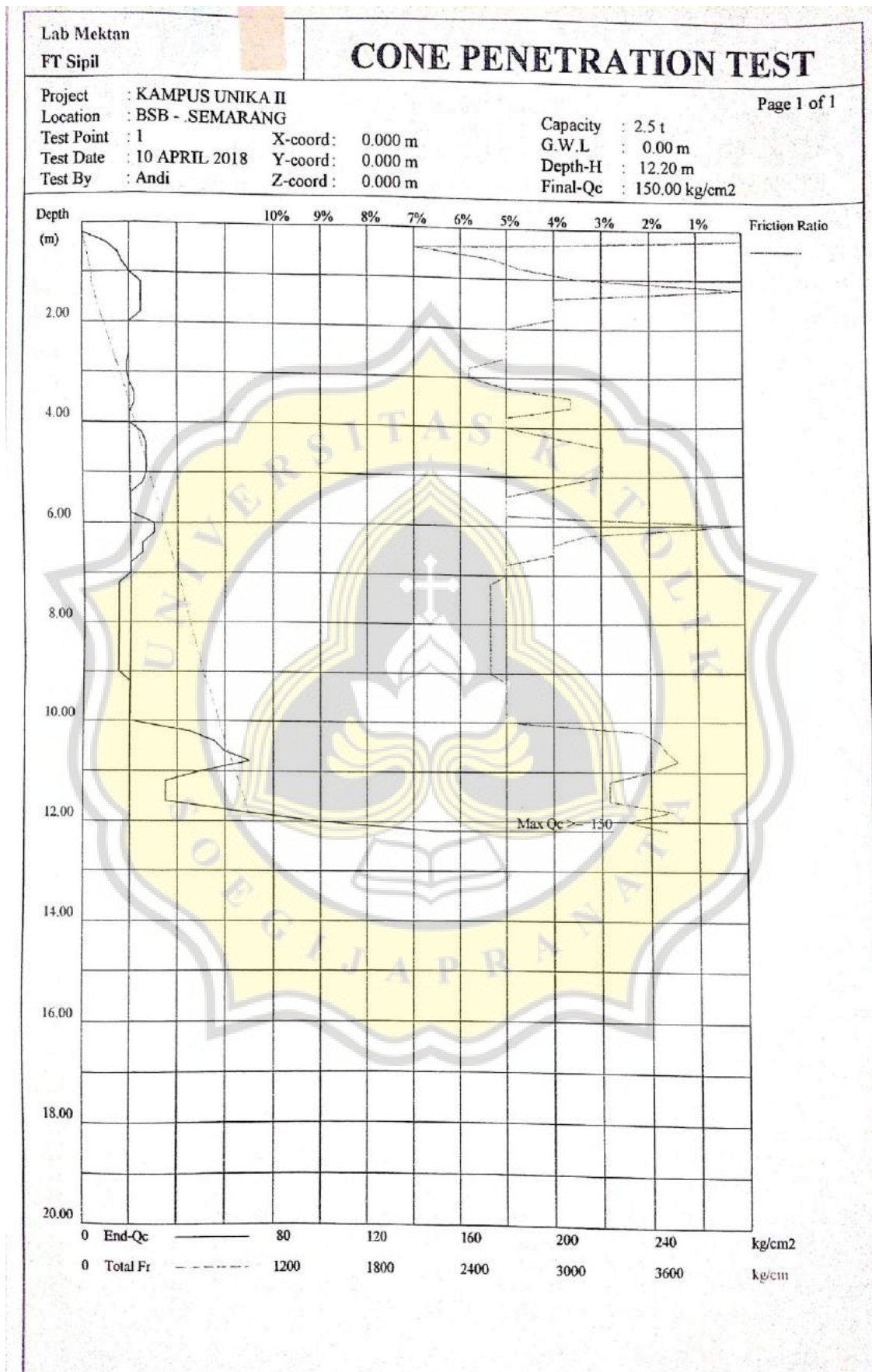
Jl. Pawiyatan Luhur IV/1 Bendan Duwur Semarang 50234  
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e-mail: unika@unika.ac.id http://www.unika.ac.id



40	8.0	15.00	23.00	0.80	16.00	680.00	5.33
41	8.2	15.00	23.00	0.80	16.00	696.00	5.33
42	8.4	15.00	23.00	0.80	16.00	712.00	5.33
43	8.6	15.00	23.00	0.80	16.00	728.00	5.33
44	8.8	15.00	23.00	0.80	16.00	744.00	5.33
45	9.0	15.00	23.00	0.80	16.00	760.00	5.33
46	9.2	20.00	30.00	1.00	20.00	780.00	5.00
47	9.4	20.00	30.00	1.00	20.00	800.00	5.00
48	9.6	20.00	30.00	1.00	20.00	820.00	5.00
49	9.8	20.00	30.00	1.00	20.00	840.00	5.00
50	10.0	20.00	30.00	1.00	20.00	860.00	5.00
51	10.2	45.00	55.00	1.00	20.00	880.00	2.22
52	10.4	55.00	65.00	1.00	20.00	900.00	1.82
53	10.6	60.00	70.00	1.00	20.00	920.00	1.67
54	10.8	70.00	80.00	1.00	20.00	940.00	1.43
55	11.0	50.00	60.00	1.00	20.00	960.00	2.00
56	11.2	35.00	45.00	1.00	20.00	980.00	2.86
57	11.4	35.00	45.00	1.00	20.00	1000.00	2.86
58	11.6	35.00	45.00	1.00	20.00	1020.00	2.86
59	11.8	65.00	75.00	1.00	20.00	1040.00	1.54
60	12.0	100.00	125.00	2.50	50.00	1090.00	2.50
61	12.2	150.00	175.00	2.50	50.00	1140.00	1.67

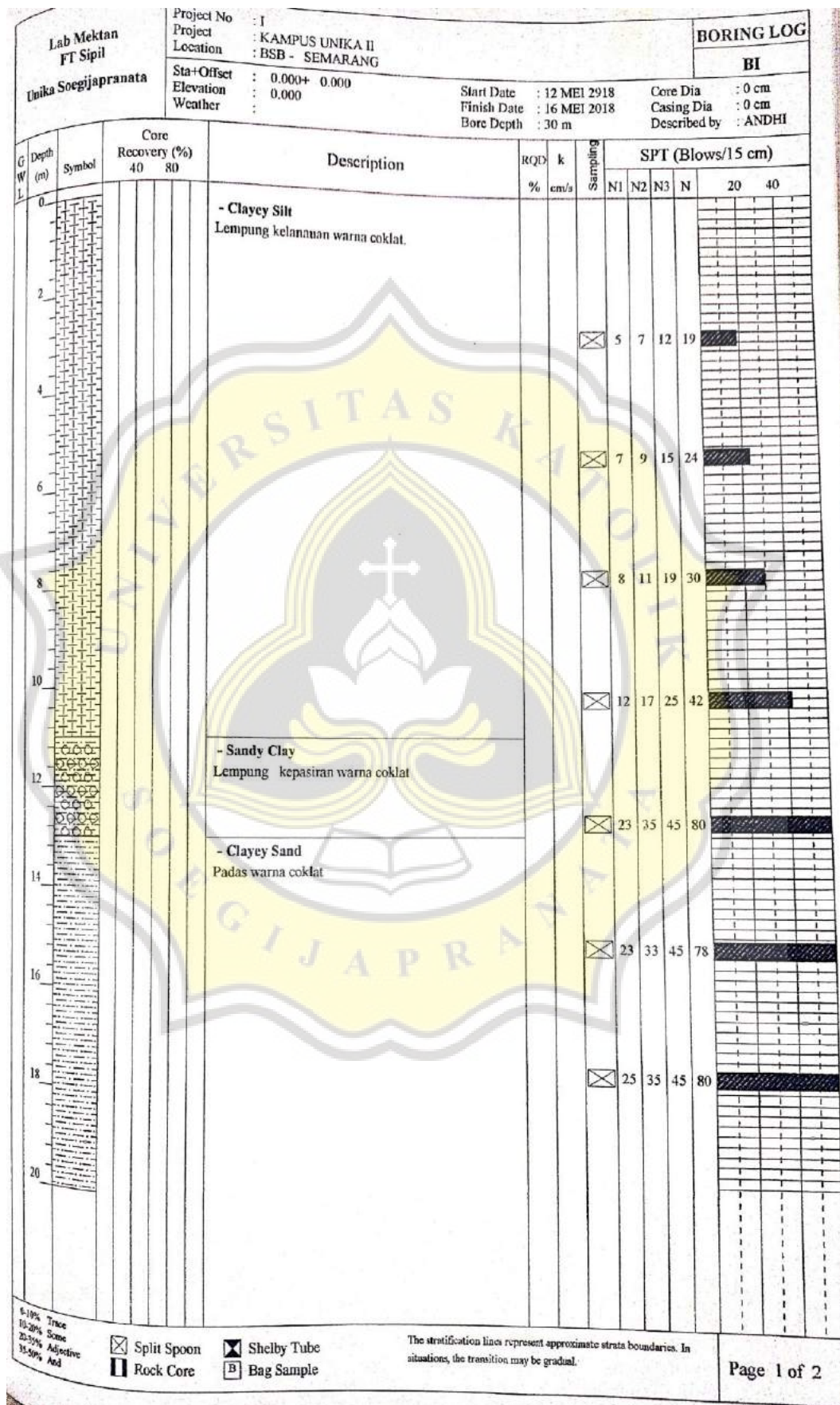


## A.1 Hasil Uji CPT di Jl. H. Subeno, BSB (Lanjutan)





## A.2 Hasil Uji SPT di Jl. H. Subeno, BSB Semarang



Keterangan: Muka air tanah tidak ditemukan.

## A.2 Hasil Uji SPT di Jl. H. Subeno, BSB Semarang (Lanjutan)

Lab Mektan FT Sipil Unika Soegijapranata		Project No : I Project : KAMPUS UNIKA II Location : BSB - SEMARANG		BORING LOG BI									
Sta+Offset : 0.000+ 0.000 Elevation : 0.000 Weather :		Start Date : 12 MEI 2018 Finish Date : 16 MEI 2018 Bore Depth : 30 m		Core Dia : 0 cm Casing Dia : 0 cm Described by : ANDHI									
G W L	Depth (m)	Symbol	Core Recovery (%) 40 80	Description	RQD %	k cm/s	Sampling	SPT (Blows/15 cm)					
								N1	N2	N3	N	20	40
	20			- Clayey Sand Padas warna coklat			⊗	14	21	34	55		
	22												
	24						⊗	15	22	35	57		
	26			- Gravelly Sand Padas warna coklat			⊗	14	21	35	56		
	28						⊗	20	31	35	66		
	30						⊗	20	36	40	76		
	32												
	34												
	36												
	38												
	40												

Split Spoon     Shelby Tube  
 Rock Core     Bag Sample

The stratification lines represent approximate strata boundaries. In situations, the transition may be gradual.

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Keterangan: Muka air tanah tidak ditemukan.



### A.3 Data Tanah IPC Unika Soegijapranata

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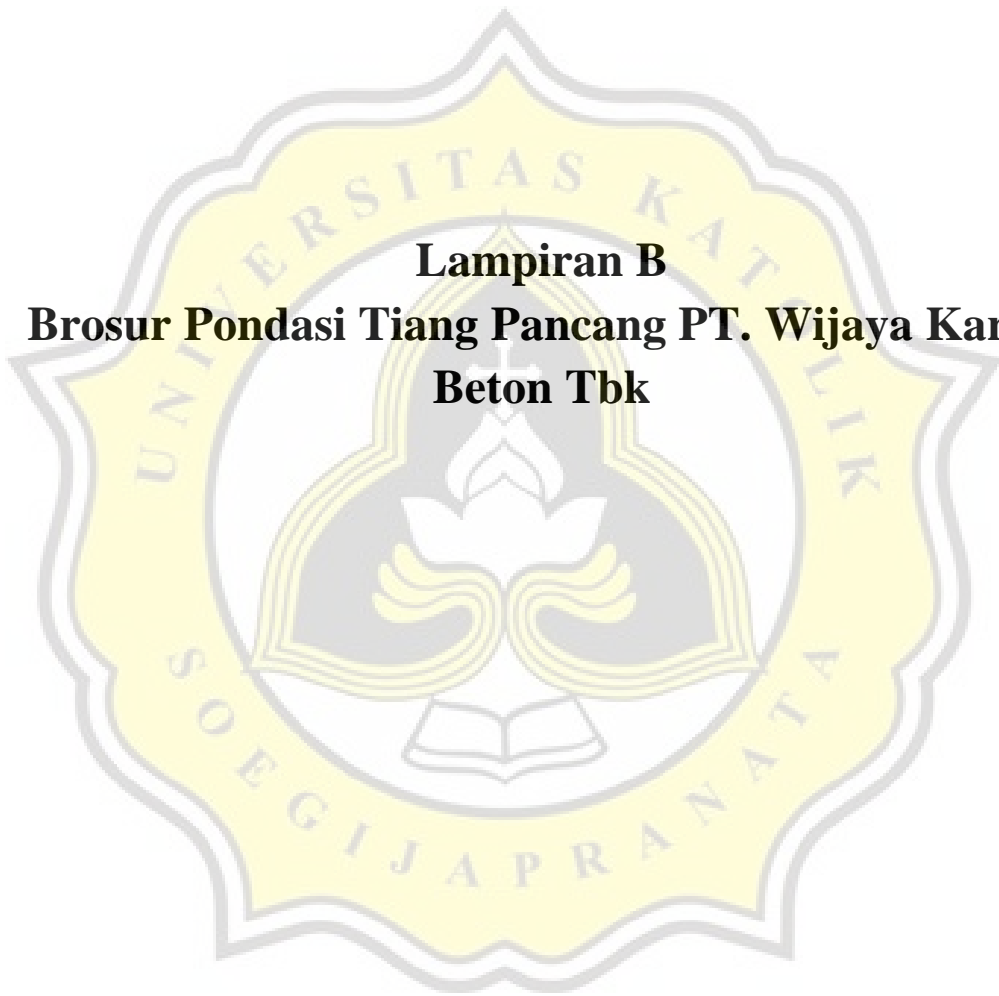
**Resume Hasil Test Laboratorium**  
**KAMPUS UNIKA II**  
**BSB**  
**SEMARANG**

BOR	B1 - 5	B1 - 10	B1 - 15	B1 - 20	B1 - 25	B1 - 30
	<b>Test Laboratorium</b>					
<b>Index Properties</b>						
Water content, $w_n$ (%)	45,078	39,938	39,639	44,461	41,281	35,991
Specific Gravity, $G_s$	2,350	2,520	2,550	2,610	2,400	2,380
$\gamma_b$ ( $t/m^3$ )	1,656	1,758	1,771	1,745	1,703	1,743
$\gamma_{dry}$ ( $t/m^3$ )	1,141	1,256	1,268	1,208	1,206	1,282
Porosity, $n$	0,514	0,502	0,503	0,537	0,498	0,461
Void ratio, $e$	1,059	1,006	1,011	1,160	0,991	0,857
<b>DIRECT SHEAR</b>						
$c$ kg/cm <sup>2</sup>	0,360	0,234	0,252	0,252	0,243	0,468
$\phi^\circ$	34,378	43,744	50,132	27,165	56,993	27,165
<b>ATTERBERG LIMIT</b>						
LL	50,929	72,468	60,691		79,831	80,445
PL	28,680	37,205	37,200		53,260	53,210
PI	22,249	35,263	23,491		26,571	27,235
Pasticity chart	MH	MH	MH		MH	MH
<b>GRAIN SIZE</b>						
D60	0,005	0,061	0,086	0,179	0,022	0,022
$C_u$	3,647	47,154	66,016	148,906	18,175	16,776
Gravel	0,000	0,000	0,000	0,000	0,000	0,000
Sand	17,18	37,98	40,96	50,25	23,30	23,39
Clay	47,94	24,61	24,69	24,56	26,67	28,16
Silt	34,88	37,41	34,35	25,20	50,03	48,46

HASIL UJI LABORATORIUM



**Lampiran B**  
**Brosur Pondasi Tiang Pancang PT. Wijaya Karya**  
**Beton Tbk**



## B.1 Pile Materials and Pile Specification

PC PILES

PC PILES

PC PILES

DESCRIPTION

Type of Piles	Prestressed Concrete Pretension Spun Piles Prestressed Concrete Post Tension Spun Piles (Cylinder Piles) Prestressed Concrete Square Piles Prestressed Concrete Triangular Piles Prestressed Concrete Spun Square Piles
System of Joints	Welded at steel joint plate
Type of Shoe	Concrete Pencil Shoe (Standard) for PC Spun Piles, Spun Square Pile & Square Piles Mamira Shoe (Special Order) for PC Spun Pile
Method of Driving	Dynamic Pile Driving : Diesel Hammer and Hydraulic Hammer Static Pile Driving : Hydraulic Static Pile Driver (Jacking Pile) Inner Boring System

DESIGN & MANUFACTURING REFERENCE

Design	ACI 543R	Design, Manufacture and Installation of Concrete Piles Chapter-4 Structural design requirement for piles with no seismic loading (In case pile is consider to seismic loading, piles detail should re-design refer to ACI 543R Chapter-5)
Manufacturing	SNI 2847 - 2013 WB - PCP - PS - 05 WB - PCP - PS - 16	Indonesian Standard Code for Concrete Production Manufacturing Procedure Production Manufacturing Procedure

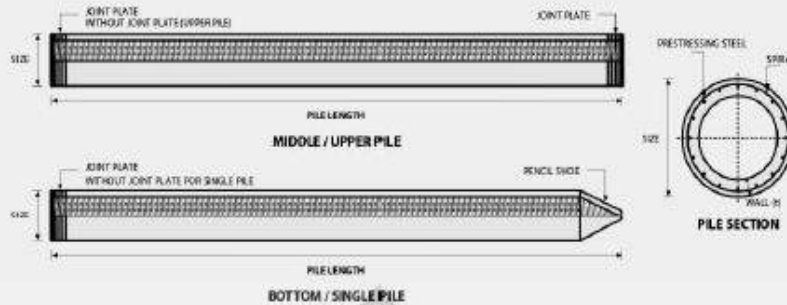
MATERIAL SPECIFICATION

ITEM	REFERENCE	DESCRIPTION	SPECIFICATION
Aggregate	ASTM C 33 / C 33M-11a	Standard Specification for Concrete Aggregates	
Cement	SNI 2049 - 2015	Portland Cement	Standard Product Type I Special Order : Type II or V
Admixture	ASTM C 494 / C 494M - 99a	Standard Specification for Chemical Admixture for Concrete	Type F : High Range Water Reducing Admixture
Concrete	SNI 2834 - 2000 SNI 2493 - 2011	Concrete Mix Design Making and Curing Concrete Sample	
PC Strand	ASTM A 416 / A 416M - 99	Standard Specification for Steel Strand, Uncoated Seven-Wire for Prestressed Concrete	Grade 270 (Low Relaxation Type)
PC Wire	JIS G 3536 - 2014	Uncoated Stress-Relieved Steel Wires and Strands for Prestressed Concrete	SWPD1 (Deformed Wire Type)
PC Bar	JIS G 3137 - 2008	Small Size-Deformed Steel Bars for Prestressed Concrete	Grade D - Class 1 - SBPD 1275/1420
Rebar	SNI 2052 - 2014	Reinforcement Steel for Concrete	Steel Class : BJTS 40 (Deformed) Steel Class : BJTP 24 (Round)
Spiral Wire	JIS G 3532 - 2011	Low Carbon Steel Wires	SWM-P (Round Type) Cold-reduced steel wire for the reinforcement of concrete and the manufacture of welded fabric.
Joint Plate	JIS G 3101 - 2004	Rolled Steels for General Structure	S5400 (Tensile Strength 400 N/mm <sup>2</sup> ) Applicable steel product for steel plates and sheets, steel strip in coil, sections, flats and bars.
Welding	ANSI / AWS D1.1 - 900	Structural Welding Code-Steel	AWS A5.1/E6013 NIKKO STEEL RB 26 / RD 260, LION 26, or equivalent.

November - 2017

## B.1 Pile Materials and Pile Specification (Lanjutan)

### PILE SHAPE & SPECIFICATION | PRESTRESSED CONCRETE PRETENSION SPUN PILES



### PRESTRESSED CONCRETE PRETENSION SPUN PILES SPECIFICATION

Concrete Compressive Strength  $f_c' = 52 \text{ MPa}$  (Cube  $600 \text{ kg/cm}^2$ )

Size (mm)	Thickness Wall (t)	Cross Section (cm <sup>2</sup> )	Section Inertia (cm <sup>4</sup> )	Unit Weight (kg/m)	Class	Bending Moment		Allowable Compression (ton)	Decompression Tension (ton)	Length of Pile ** (m)
						Crack * (ton.m)	Break (ton.m)			
300	60	452.39	34,607.78	113	A2	2.50	3.75	72.60	23.11	6 - 12
					A3	3.00	4.50	70.75	29.86	6 - 13
					B	3.50	6.30	67.50	41.96	6 - 14
					C	4.00	8.00	65.40	49.66	6 - 15
350	65	581.98	62,162.74	145	A1	3.50	5.25	93.10	30.74	6 - 13
					A3	4.20	6.30	89.50	37.50	6 - 14
					B	5.00	9.00	86.40	49.93	6 - 15
					C	6.00	12.00	85.00	60.87	6 - 16
400	75	765.76	106,488.95	191	A2	5.50	8.25	121.10	38.62	6 - 14
					A3	6.50	9.75	117.60	45.51	6 - 15
					B	7.50	13.50	114.40	70.27	6 - 16
					C	9.00	18.00	111.50	80.94	6 - 17
450	80	929.91	166,570.38	232	A1	7.50	11.25	149.50	39.28	6 - 14
					A2	8.50	12.75	145.80	53.39	6 - 15
					A3	10.00	15.00	143.80	66.57	6 - 16
					B	11.00	19.80	139.10	78.84	6 - 17
					C	12.50	25.00	134.90	100.45	6 - 18
500	90	1,159.25	255,324.30	290	A1	10.50	15.75	185.30	54.56	6 - 15
					A2	12.50	18.75	181.70	68.49	6 - 16
					A3	14.00	21.00	178.20	88.00	6 - 17
					B	15.00	27.00	174.90	94.13	6 - 18
					C	17.00	34.00	169.00	122.04	6 - 19
600	100	1,570.80	510,508.81	393	A1	17.00	25.50	252.70	70.52	6 - 16
					A2	19.00	28.50	249.00	77.68	6 - 17
					A3	22.00	33.00	243.20	104.94	6 - 18
					B	25.00	45.00	238.30	131.10	6 - 19
					C	29.00	58.00	229.50	163.67	6 - 20
800	120	2,563.54	1,527,869.60	641	A1	40.00	60.00	415.00	119.34	6 - 20
					A2	46.00	69.00	406.10	151.02	6 - 21
					A3	51.00	76.50	399.17	171.18	6 - 22
					B	55.00	99.00	388.61	215.80	6 - 23
					C	65.00	130.00	368.17	290.82	6 - 24
1000***	140	3,782.48	3,589,571.20	946	A1	75.00	112.50	613.52	169.81	6 - 22
					A2	82.00	123.00	601.27	215.16	6 - 23
					A3	93.00	139.50	589.66	258.19	6 - 24
					B	105.00	189.00	575.33	311.26	6 - 24
					C	120.00	240.00	555.23	385.70	6 - 24
1200***	150	4,948.01	6,958,136.85	1,237	A1	120.00	180.00	802.80	221.30	6 - 24
					A2	130.00	195.00	794.50	252.10	6 - 24
					A3	145.00	217.50	778.60	311.00	6 - 24
					B	170.00	306.00	751.90	409.60	6 - 24
					C	200.00	400.00	721.50	522.20	6 - 24

Note : \*) Crack Moment Based on JIS A 5335-1987 (Prestressed Spun Concrete Piles)

\*\*) Length of pile may exceed usual standard whenever lifted in certain position

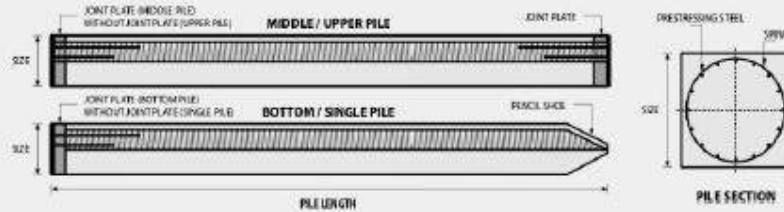
\*\*) Type of Shoe for Bottom Pile is Mamira Shoe

Unit Conversion : 1 ton = 9.8060 kN



## B.1 Pile Materials and Pile Specification (Lanjutan)

### PILE SHAPE & SPECIFICATION | PRESTRESSED CONCRETE SQUARE PILES



### PRESTRESSED CONCRETE SQUARE PILES SPECIFICATION

Concrete Compressive Strength  $f_c' = 42 \text{ MPa}$  (Cube  $500 \text{ kg/cm}^2$ )

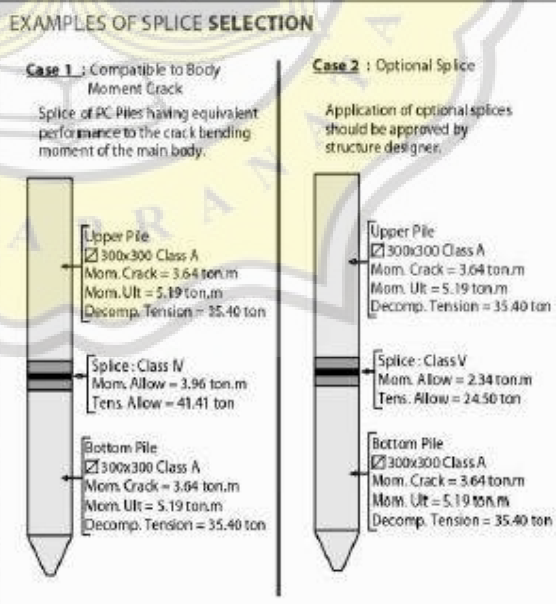
Unit Conversion : 1 ton = 9.8060 kN

Size (mm)	Cross Section (cm <sup>2</sup> )	Section Inertia (cm <sup>4</sup> )	Unit Weight (kg/m)	Class	Bending Moment		Allowable Compression (ton)	Decompression Tension (ton)	Length of Pile * (m)	Splice Class	
					Crack (ton.m)	Ultimate (ton.m)				Compatible to Body $M_{crack}$	Optional
200 x 200	400	13,333	100	A	1.55	2.65	49.08	27.47	6-9	I	II
					2.29	3.46	81.40	28.10	6-10	III	IV
250 x 250	625	32,552	156	A	2.52	4.33	79.62	34.80	6-11	II	-
					2.78	5.19	77.92	41.30	6-11	I	II
					3.64	5.19	118.59	35.40	6-11	IV	V
300 x 300	900	67,500	225	A	3.98	6.23	116.76	42.20	6-11	II	IV/V
					4.48	7.47	114.66	50.20	6-12	II	-
					4.92	9.34	111.60	61.90	6-12	I	III/IV/V
					5.33	8.57	163.98	38.60	6-11	III	IV
350 x 350	1,225	125,052	306	A	6.07	8.72	160.68	50.90	6-12	II	-
					6.63	10.90	157.45	63.10	6-12	I	IV
					7.30	13.08	154.32	75.00	6-13	I	III/IV
					7.89	9.96	213.96	51.40	6-12	IV	V
400 x 400	1,600	213,333	400	A	8.71	12.45	210.60	63.80	6-12	II	IV/V
					9.51	14.95	207.32	76.00	6-13	II	III/IV/V
					11.82	22.42	198.01	111.60	6-14	I	II/III/IV/V
					11.17	14.01	270.98	64.30	6-12	III	IV
450 x 450	2,025	341,719	506	A	12.10	16.81	267.61	76.80	6-13	III	IV
					13.01	19.62	264.30	89.10	6-13	II	III/IV
					14.78	25.22	257.88	113.30	6-14	I	II/III/IV
					15.16	18.68	335.12	77.30	6-13	III	IV
500 x 500	2,500	520,833	625	A	16.19	21.79	331.72	89.90	6-13	II	III/IV
					17.21	24.91	328.38	102.20	6-14	I	II/III/IV
					18.22	28.02	325.09	114.50	6-14	I	II/III/IV
					18.22	28.02	325.09	114.50	6-14	I	II/III/IV

Note : \* Length of pile may exceed usual standard whenever lifted in certain position

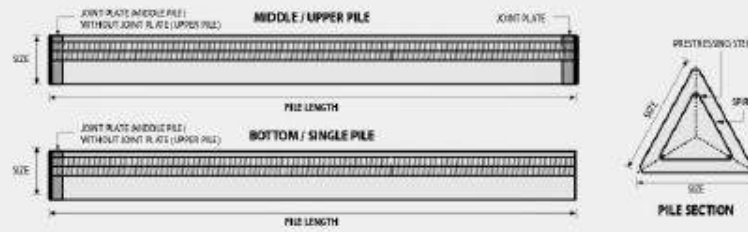
### TYPICAL SPLICE SPECIFICATION

Size (mm)	Class	Bending Moment		Tension		EXAMPLES OF SPLICE SELECTION
		Allowable (ton.m)	Ultimate (ton.m)	Allowable (ton)	Ultimate (ton)	
200 x 200	I	1.56	2.11	41.82	47.05	<p><b>Case 1 : Compatible to Body Moment Crack</b></p> <p>Splice of PC Piles having equivalent performance to the crack bending moment of the main body.</p> <p><b>Case 2 : Optional Splice</b></p> <p>Application of optional splices should be approved by structure designer.</p>
	II	0.76	1.02	16.34	18.38	
250 x 250	I	3.17	4.28	55.22	62.12	
	II	2.99	4.03	41.41	46.59	
300 x 300	III	2.34	3.17	41.41	46.59	
	IV	1.29	1.74	24.50	27.57	
	I	5.96	8.05	83.64	94.10	
	II	4.53	6.12	62.73	70.57	
350 x 350	III	4.28	5.78	55.22	62.12	
	IV	3.96	5.35	41.41	46.59	
	V	2.34	3.16	24.50	27.57	
	I	7.67	10.35	83.64	94.10	
400 x 400	II	6.81	9.19	83.64	94.10	
	III	5.71	7.71	55.22	62.12	
	IV	3.30	4.45	27.61	31.06	
450 x 450	I	12.20	16.47	117.95	132.69	
	II	11.28	15.23	88.46	99.52	
	III	9.41	12.71	83.64	94.10	
	IV	8.58	11.58	62.73	70.57	
	V	3.97	5.36	27.61	31.06	
500 x 500	I	15.80	21.33	147.43	165.86	
	II	14.07	19.00	117.95	132.69	
	III	13.02	17.57	88.46	99.52	
	IV	6.55	8.84	41.82	47.05	



## B.1 Pile Materials and Pile Specification (Lanjutan)

### PILE SHAPE & SPECIFICATION | PRESTRESSED CONCRETE TRIANGULAR PILES



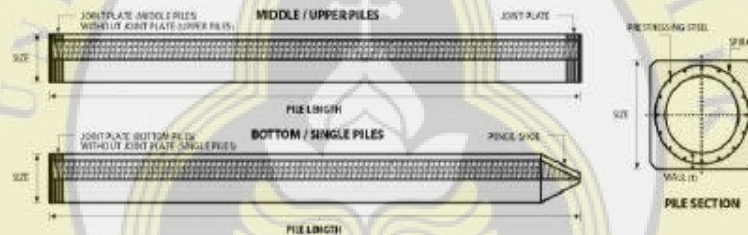
### PRESTRESSED CONCRETE TRIANGULAR PILES SPECIFICATION

Concrete Compressive Strength  $f_c' = 42 \text{ MPa}$  (Cube  $500 \text{ kg/cm}^2$ )

Size (mm)	Cross Section (cm <sup>2</sup> )	Section Inertia (cm <sup>4</sup> )	Unit Weight (kg/m)	Class	Bending Moment		Allowable Compression (ton)	Length of Pile* (m)
					Crack (ton.m)	Ultimate (ton.m)		
280	318.7	9,080.50	79.7	A	0.66	0.92	42.26	6 - 8
				B	0.90	1.77	39.50	6 - 9
320	422.6	16,188.90	105.7	A	0.89	1.11	57.02	6 - 8
				B	1.20	2.15	54.10	6 - 9

Unit Conversion : 1 ton = 9.8060 kN

### PILE SHAPE & SPECIFICATION | PRESTRESSED CONCRETE SPUN SQUARE PILES



### PRESTRESSED CONCRETE SPUN SQUARE PILES SPECIFICATION

Concrete Compressive Strength  $f_c' = 52 \text{ MPa}$  (Cube  $600 \text{ kg/cm}^2$ )

Size (mm)	Thickness Wall (t)	Cross Section (cm <sup>2</sup> )	Section Inertia (cm <sup>4</sup> )	Unit Weight (kg/m)	Class	Bending Moment		Allowable Compression (ton)	Decompression Tension (ton)	Length of Pile* (m)
						Crack (ton.m)	Ultimate (ton.m)			
400 X 400	75	1109.13	194,159	277	A2	6.50	10.00	182.63	38.00	6 - 13
					A3	8.00	12.00	180.62	45.30	6 - 14
					B	10.00	18.00	173.15	73.10	6 - 15
					C	11.00	22.00	169.49	91.70	6 - 16
450 X 450	80	1364.48	307,000	341	A1	8.50	12.50	227.01	38.20	6 - 13
					A2	11.00	17.00	222.95	52.90	6 - 15
					A3	13.00	20.90	219.05	67.10	6 - 16
					B	13.50	24.00	215.32	80.90	6 - 16
C	15.50	31.00	208.10	114.00	6 - 16					

Note : \*) Length of pile may exceed usual standard whenever lifted in certain position

Unit Conversion : 1 ton = 9.8060 kN

### PRODUCT APPLICATION



Piles foundation for Power Plant or Industrial Factory



Piles for Marine Structure



Piles Foundation for Building



Piles Foundation for Bridges

**Lampiran C**  
**Gambar *For Construction* IPC Unika**  
**Soegijapranata**







**UNIKA SOEGIJAPRANATA**

Jl. Pawiyatan Luhur IV/1 Bendan Dhuwur  
Telp. 024-8441555, Semarang 50234

JUDUL PEKERJAAN

PROYEK PEMBANGUNAN  
GEDUNG *INNOVATIVE PROGRAM CLUSTER*  
UNIKA SOEGIJAPRANATA  
BSB, Kota Semarang

JUDUL GAMBAR

SKALA

C.1 DENAH KOLOM

1 : 200

DIGAMBAR OLEH :

PT. ADHI PERSADA GEDUNG

SUMBER

PT. ADHI PERSADA GEDUNG

DIIZINKAN OLEH:

PT. ADHI PERSADA GEDUNG

DOSEN PEMBIMBING 1

Daniel Hartanto, ST., MT.

DOSEN PEMBIMBING 2

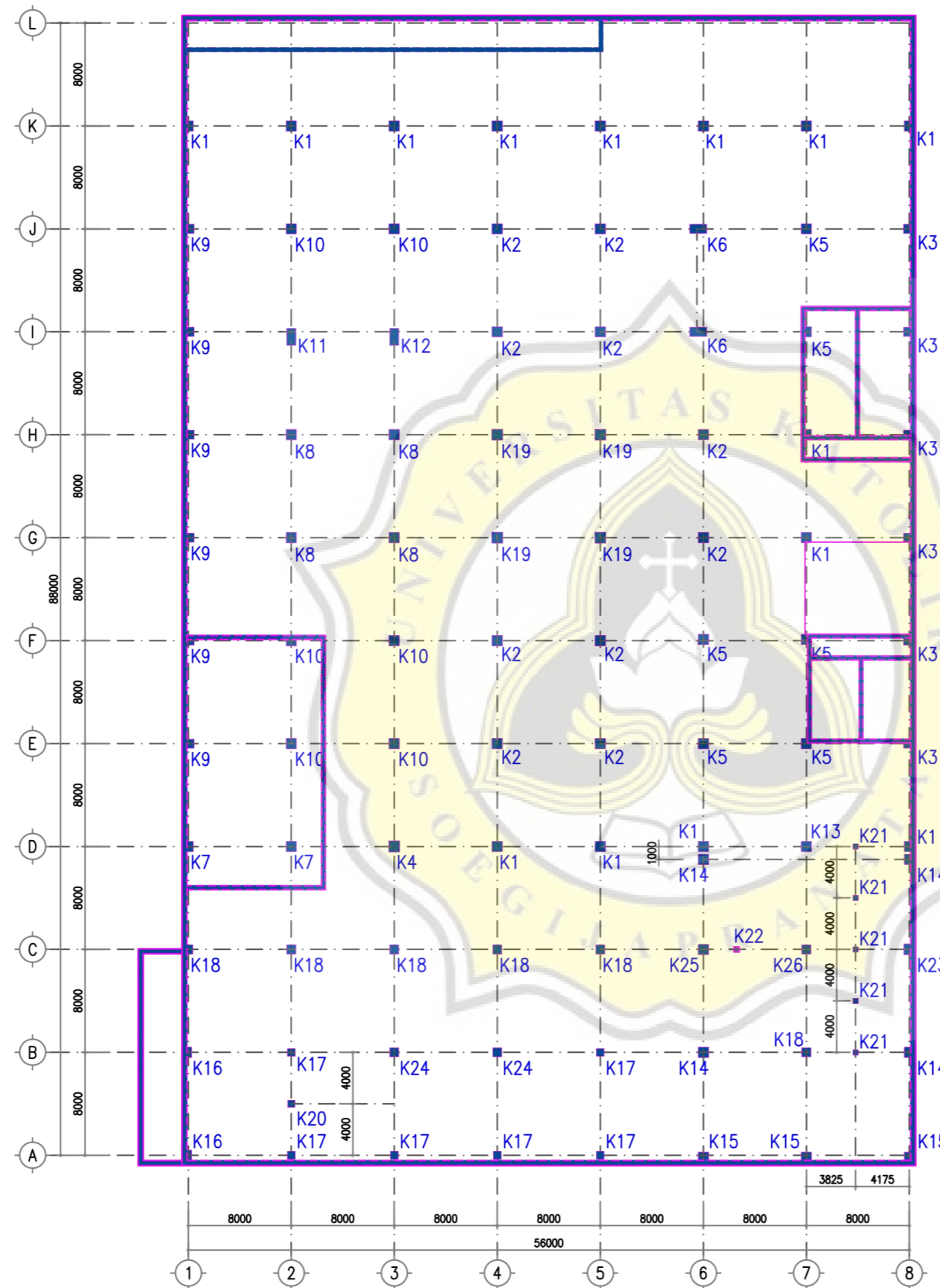
Ir. Budi Santosa, MT.

NAMA

LEMBAR

Christian Widiatmo 16.B1.0004  
Aldo Febriyan W 16.B1.0026

L-11



**DENAH KOLOM**  
SKALA 1 : 200



UNIKA SOEGIJAPRANATA

Jl. Pawiyatan Luhur IV/1 Bendan Dhuwur  
Telp. 024-8441555, Semarang 50234

JUDUL PEKERJAAN

PROYEK PEMBANGUNAN  
GEDUNG *INNOVATIVE PROGRAM CLUSTER*  
UNIKA SOEGIJAPRANATA  
BSB, Kota Semarang

JUDUL GAMBAR

SKALA

C.2 DENAH PONDASI

1 : 200

DIGAMBAR OLEH :

PT. ADHI PERSADA GEDUNG

SUMBER

PT. ADHI PERSADA GEDUNG

DIIZINKAN OLEH:

PT. ADHI PERSADA GEDUNG

DOSEN PEMBIMBING 1

Daniel Hartanto, ST., MT.

DOSEN PEMBIMBING 2

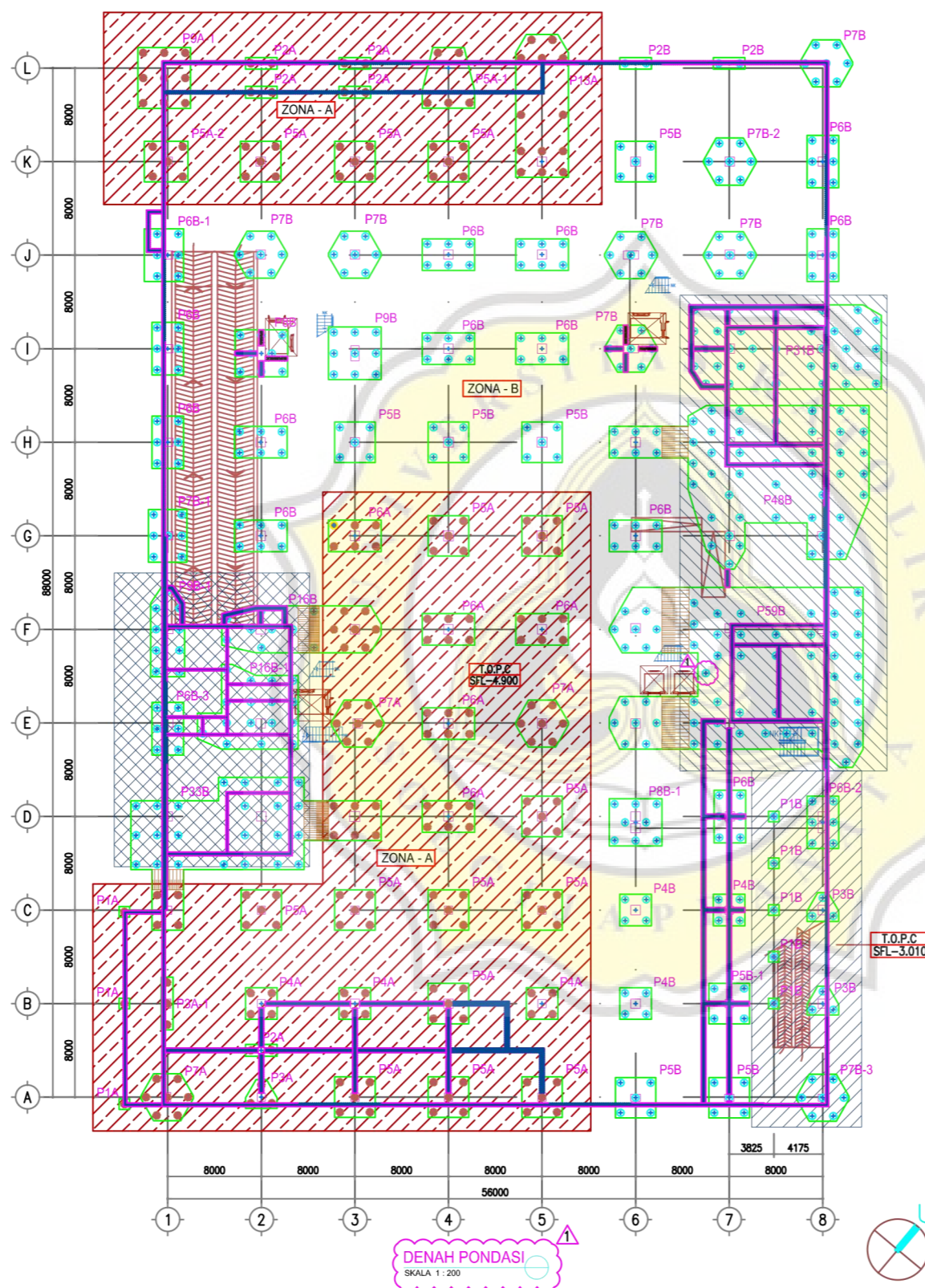
Ir. Budi Santosa, MT.

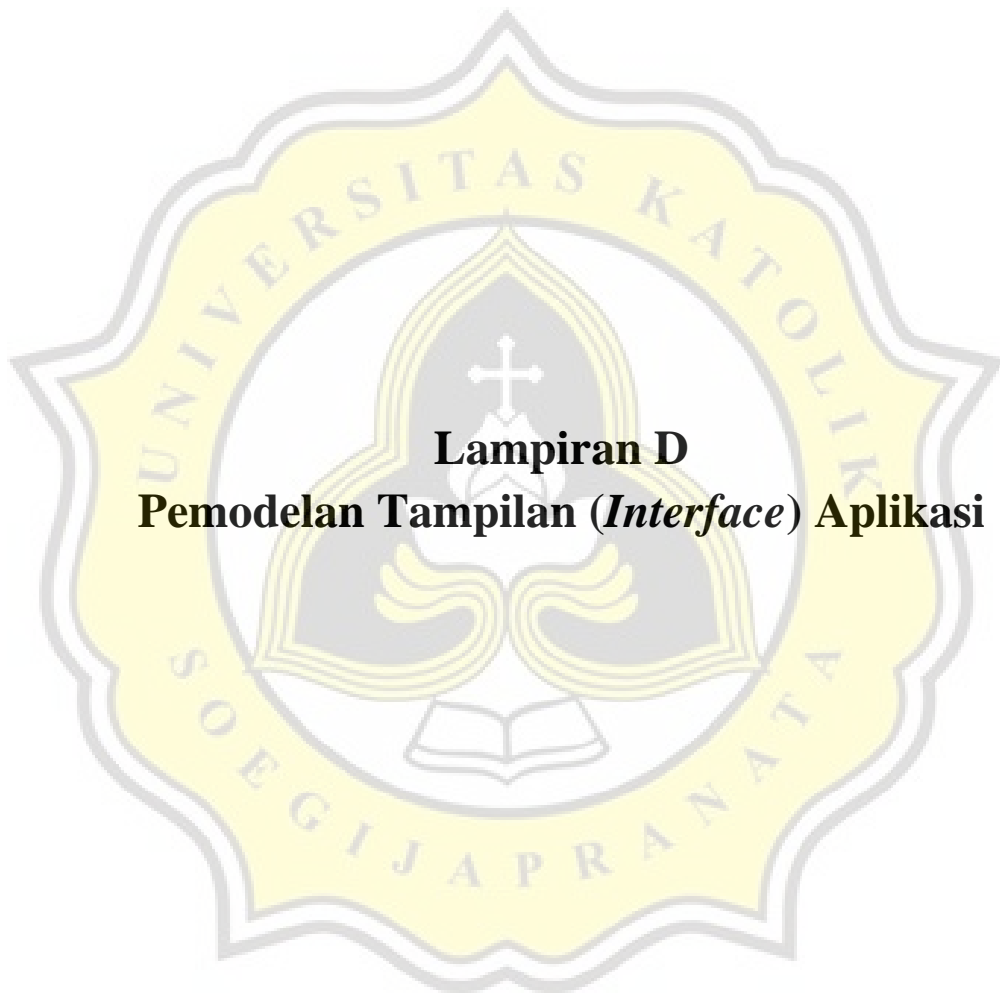
NAMA

LEMBAR

Christian Widiatmo 16.B1.0004  
Aldo Febriyan W 16.B1.0026

L-12

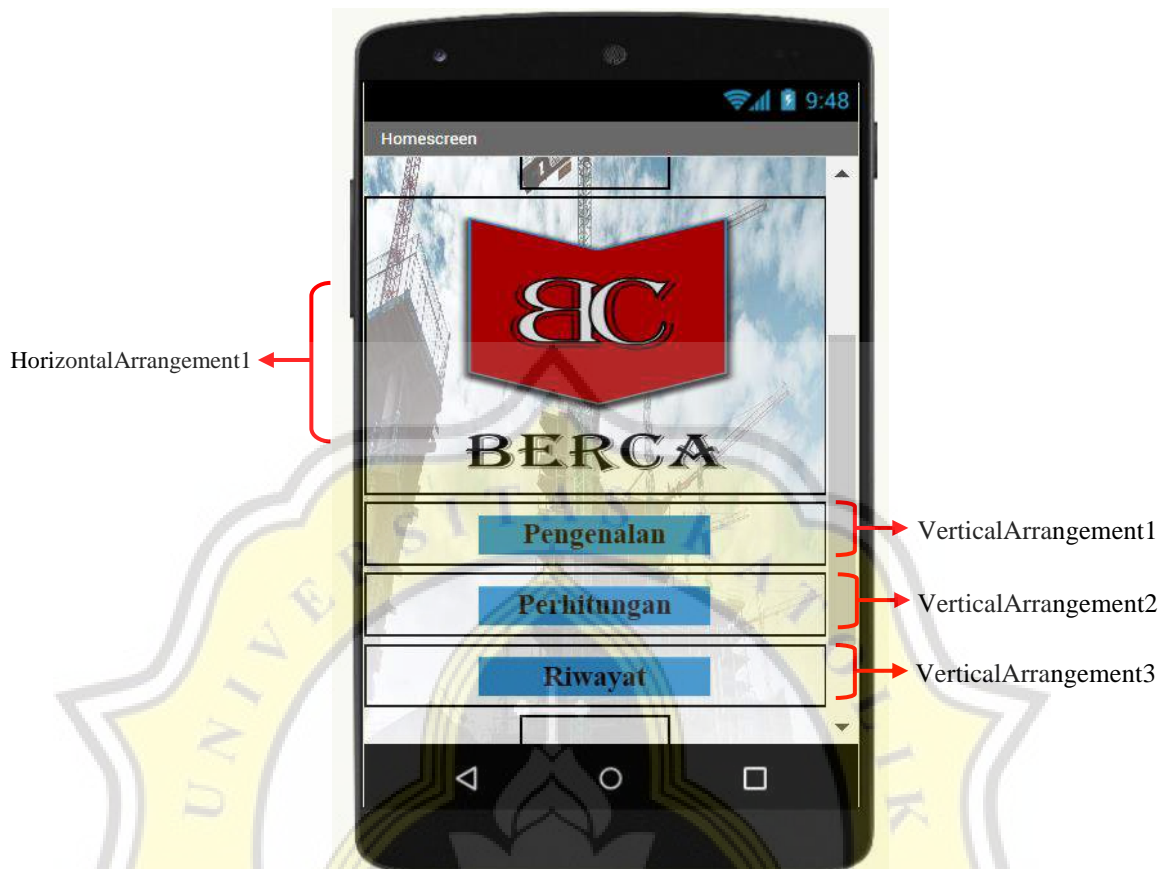




**Lampiran D**  
**Pemodelan Tampilan (*Interface*) Aplikasi**



## D.1 Pengaturan Tampilan Halaman Utama



Gambar LD.1 Pemodelan Tampilan *Screen1*

Tabel LD.1 Pengaturan Properti dan Isi Komponen *Screen1*

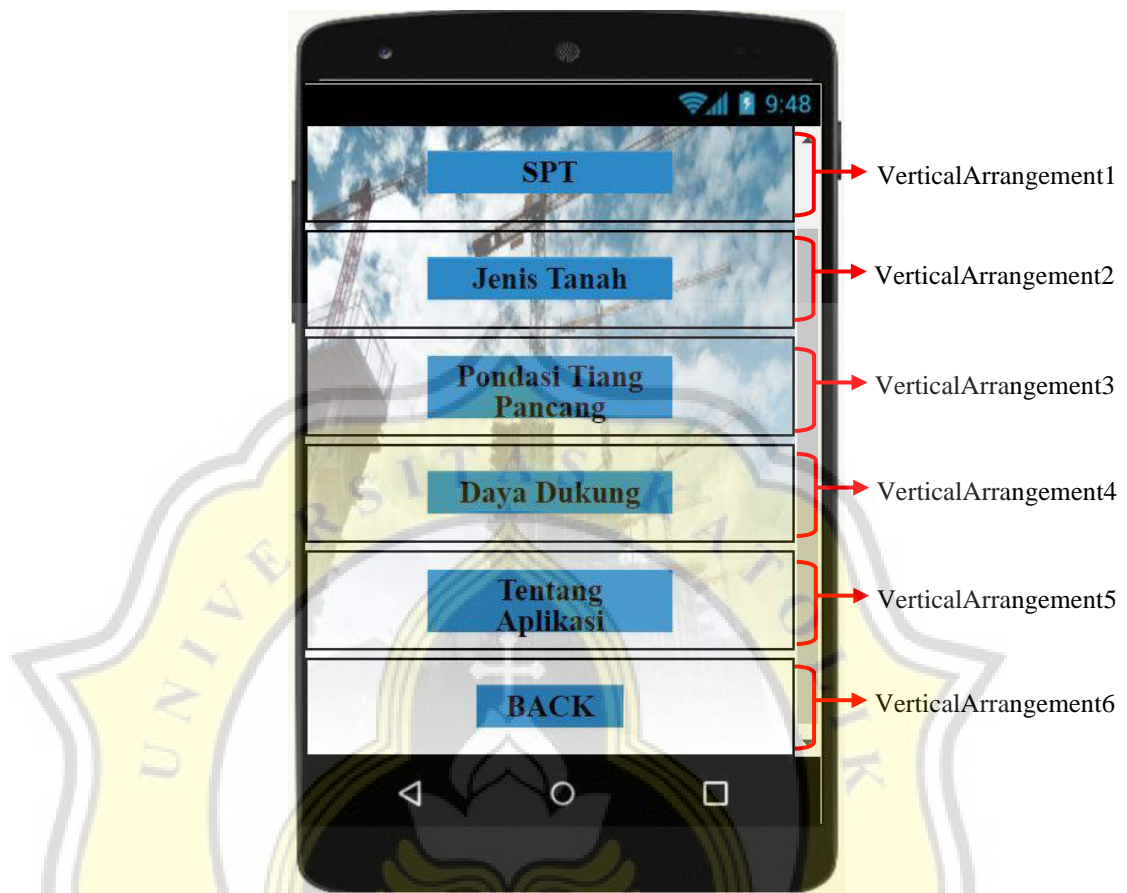
Komponen	Properti	Isi
Screen1	Alig Horizontal	Center : 3
	AlignVertical	Top : 1
	BackgroundImage	backgroundapp.png
	Title	Homescreen
HorizontalArrangement1	AlignHorizontal	Center : 3
	AlignVertical	Top : 1
	Height	50 percent
	Width	Fill Parent
VerticalArrangement1	AlignHorizontal	Center : 3
	AlignVertical	Center : 2
	Height	10 percent
	Width	Fill Parent

## D.1 Pengaturan Tampilan Halaman Utama (Lanjutan)

Tabel LD.1 Pengaturan Properti dan Isi Komponen *Screen1*

Komponen	Properti	Isi
VerticalArrangement2	AlignHorizontal	Center : 3
	AlignVertical	Center : 2
	Height	10 percent
	Width	Fill Parent
VerticalArrangement3	AlignHorizontal	Center : 3
	AlignVertical	Center : 2
	Height	10 percent
	Width	Fill Parent
Button_Pengenalan	FontSize	23
	FontTypeface	Serif
	Height	7 percent
	Width	50 percent
	Image	WARNATOMBOL.png
	Text	Pengenalan
	TextAlignment	center : 1
Button_Perhitungan	FontSize	23
	FontTypeface	Serif
	Height	7 percent
	Width	50 percent
	Image	WARNATOMBOL.png
	Text	Perhitungan
	TextAlignment	center : 1
Button_Riwayat	FontSize	23
	FontTypeface	Serif
	Height	7 percent
	Width	50 percent
	Image	WARNATOMBOL.png
	Text	Riwayat
	TextAlignment	center : 1

## D.2 Pengaturan Tampilan Halaman Pengenalan



Gambar LD.2 Pemodelan Tampilan *Screen2*

Tabel LD.2 Pengaturan Properti dan Isi Komponen *Screen2*

Komponen	Properti	Isi
Screen2	Align Horizontal	Center : 3
	AlignVertical	Center : 2
	BackgroundImage	backgroundapp.png
	Title	Pengenalan
VerticalArrangement1 – VerticalArrangement6	AlignHorizontal	Center : 3
	AlignVertical	Center : 2
	Height	15 percent
	Width	Fill Parent



## D.2 Pengaturan Tampilan Halaman Pengenalan (Lanjutan)

Tabel LD.2 Pengaturan Properti dan Isi Komponen *Screen2*

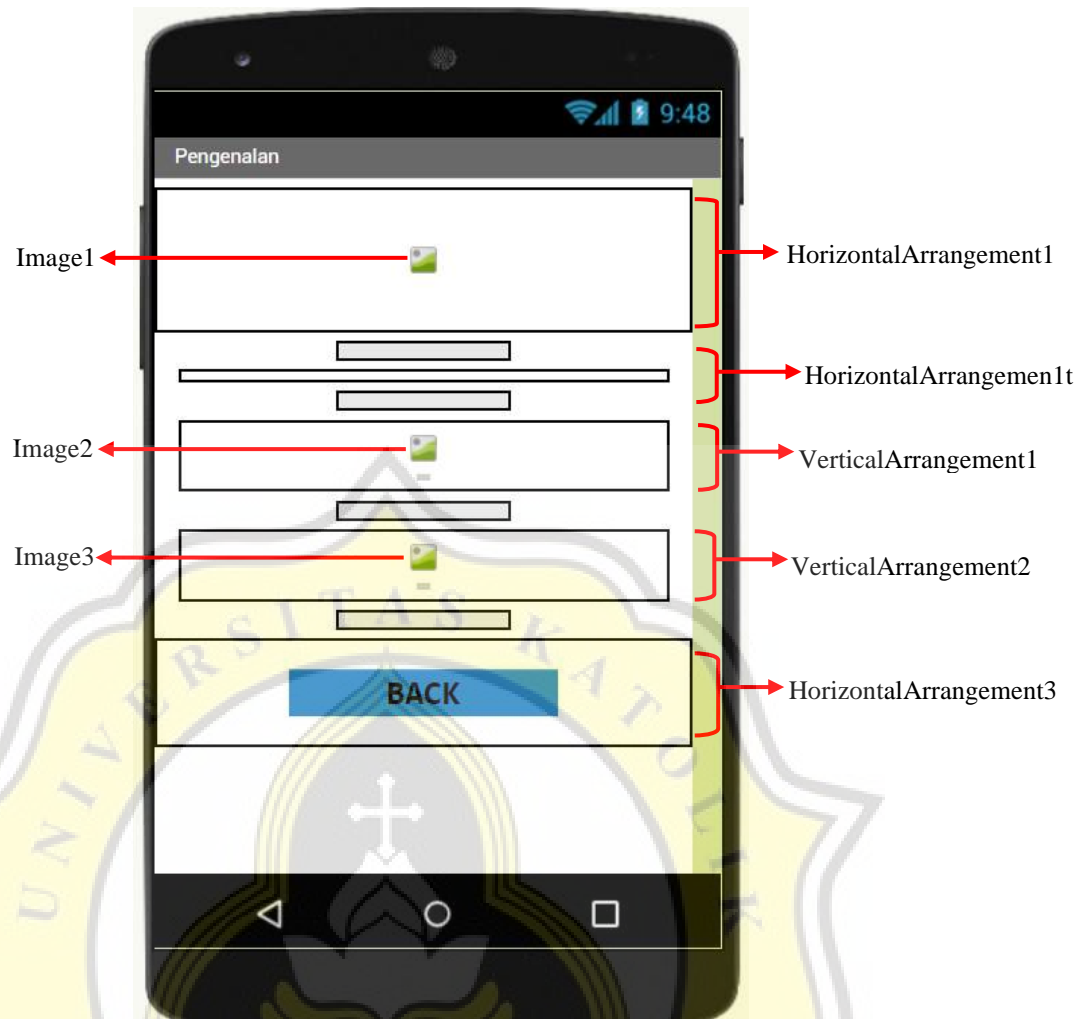
Komponen	Properti	Isi
Button_spt	FontSize	23
	FontTypeface	Serif
	Height	7 percent
	Width	50 percent
	Image	WARNATOMBOL.png
	Shape	rectangular
	Text	SPT
	TextAlignment	center : 1
	TextColor	Black
Button_jenis_tanah	FontSize	23
	FontTypeface	Serif
	Height	7 percent
	Width	50 percent
	Image	WARNATOMBOL.png
	Shape	rectangular
	Text	Jenis Tanah
	TextAlignment	center : 1
Button_pondasi_tiang_pancang	FontSize	23
	FontTypeface	Serif
	Height	10 percent
	Width	50 percent
	Image	WARNATOMBOL.png
	Shape	rectangular
	Text	Pondasi Tiang Pancang
	TextAlignment	center : 1
Button_daya_dukung	FontSize	23
	FontTypeface	Serif
	Height	7 percent
	Width	50 percent
	Image	WARNATOMBOL.png
	Shape	rectangular
	Text	Daya Dukung
	TextAlignment	center : 1

## D.2 Pengaturan Tampilan Halaman Pengenalan (Lanjutan)

Tabel LD.2 Pengaturan Properti dan Isi Komponen *Screen2*

Komponen	Properti	Isi
Button_tentang_aplikasi	FontSize	23
	FontTypeface	Serif
	Height	10 percent
	Width	50 percent
	Image	WARNATOMBOL.png
	Shape	rectangular
	Text	Tentang Aplikasi
	TextAlignment	center : 1
	TextColor	Black
Button_kembali	FontSize	23
	FontTypeface	Serif
	Height	10 percent
	Width	50 percent
	Image	WARNATOMBOL.png
	Shape	rectangular
	Text	BACK
	TextAlignment	center : 1

## D.2 Pengaturan Tampilan Halaman Pengenalan (Lanjutan)



Gambar LD.3 Pemodelan Tampilan *Screen3*

Tabel LD.3 Pengaturan Properti dan Isi Komponen *Screen3*

Komponen	Properti	Isi
Screen3	Align Horizontal	Center : 3
	AlignVertical	Top : 1
	Title	Pengenalan
HorizontalArrangement1	AlignHorizontal	Center : 3
	AlignVertical	Center : 2
	Height	20 percent
	Width	Fill Parent
HorizontalArrangement2	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	<i>Automatic</i>
	Width	90 percent



## D.2 Pengaturan Tampilan Halaman Pengenalan (Lanjutan)

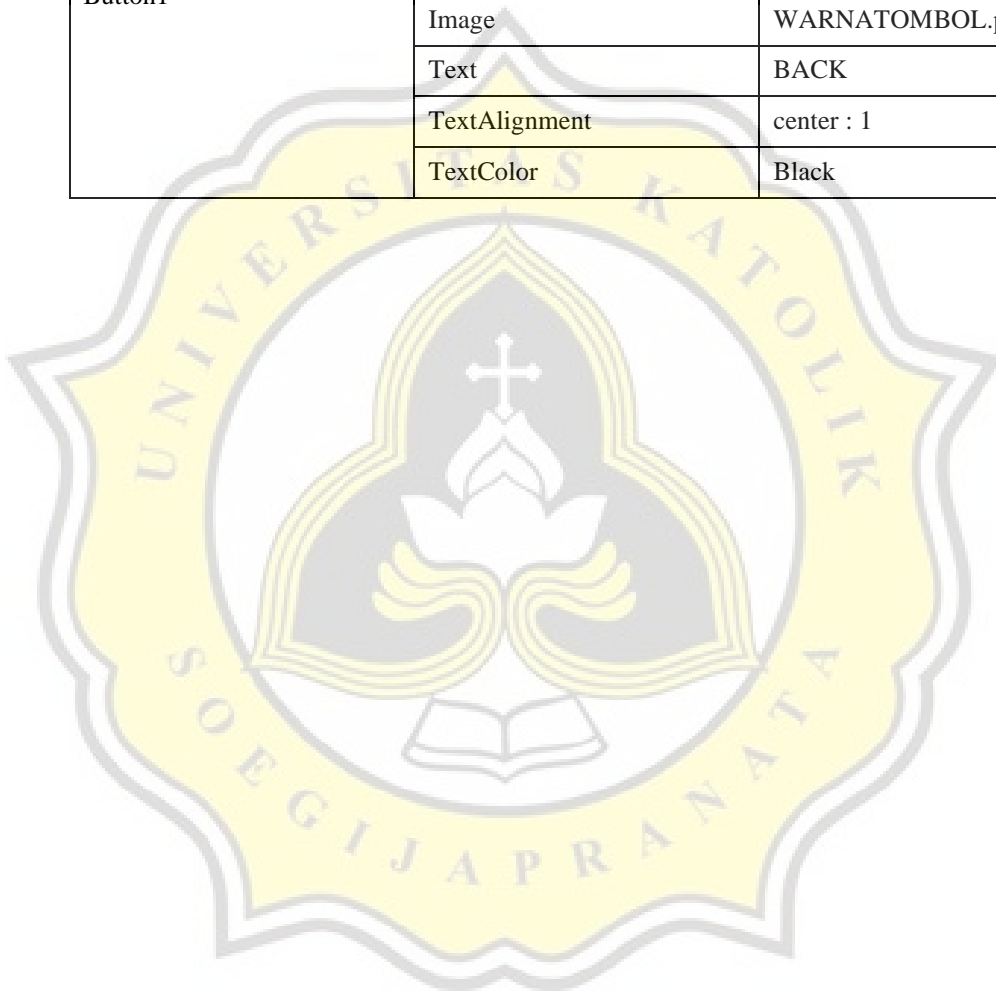
Tabel LD.3 Pengaturan Properti dan Isi Komponen *Screen3*

Komponen	Properti	Isi
HorizontalArrangement3	AlignHorizontal	Center : 3
	AlignVertical	Center : 2
	Height	15 percent
	Width	Fill Parent
VerticalArrangement1	AlignHorizontal	Center : 3
	AlignVertical	Center : 2
	Height	<i>Automatic</i>
	Width	90 percent
VerticalArrangement2	AlignHorizontal	Center : 3
	AlignVertical	Center : 2
	Height	<i>Automatic</i>
	Width	90 percent
Label_Materi	FontSize	14.0
	FontTypeface	Sans serif
	Height	60 percent
	Width	90 percent
	Text	(seperti dalam gambar)
	TextAlignment	Left : 0
	TextColor	Black
Label_Image1 – Label_Image2	FontSize	14.0
	FontTypeface	Sans serif
	Height	60 percent
	Width	90 percent
	Text	(seperti dalam gambar)
	TextAlignment	Left : 0
	TextColor	Black
Image_Judul	Picture	
	Height	20 percent
	Width	Fill Parent
Image_1	Picture	
	Height	Automatic
	Width	Fill Parent

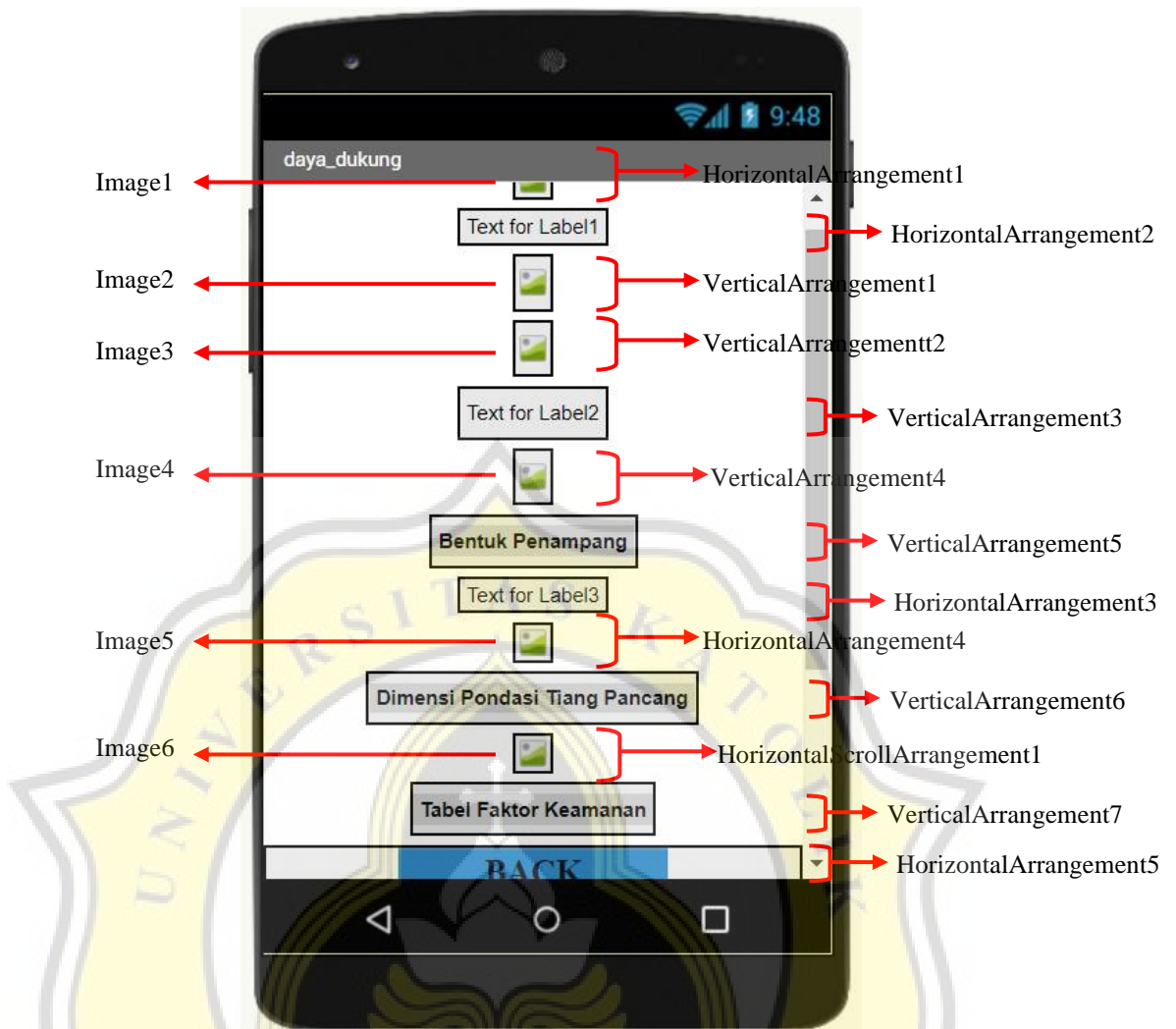
## D.2 Pengaturan Tampilan Halaman Pengenalan (Lanjutan)

Tabel LD.3 Pengaturan Properti dan Isi Komponen *Screen3*

Komponen	Properti	Isi
Image_2	Picture	
	Height	Automatic
	Width	Fill Parent
Button1	FontSize	23
	FontTypeface	Serif
	Height	50 pixels
	Width	125 pixels
	Image	WARNATOMBOL.png
	Text	BACK
	TextAlignment	center : 1
	TextColor	Black



## D.2 Pengaturan Tampilan Halaman Pengenalan (Lanjutan)



Gambar LD.4 Pemodelan Tampilan Screen daya\_dukung.

Tabel LD.4 Pengaturan Properti dan Isi Komponen Screen daya\_dukung.

Komponen	Properti	Isi
Screen daya_dukung	Align Horizontal	Center : 3
	AlignVertical	Top : 1
	Title	Daya Dukung
HorizontalArrangement1- HorizontalArrangement4	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
HorizontalArrangement5	AlignHorizontal	Center : 3
	AlignVertical	Center : 2
	Height	50 pixels
	Width	125 pixels



## D.2 Pengaturan Tampilan Halaman Pengenalan (Lanjutan)

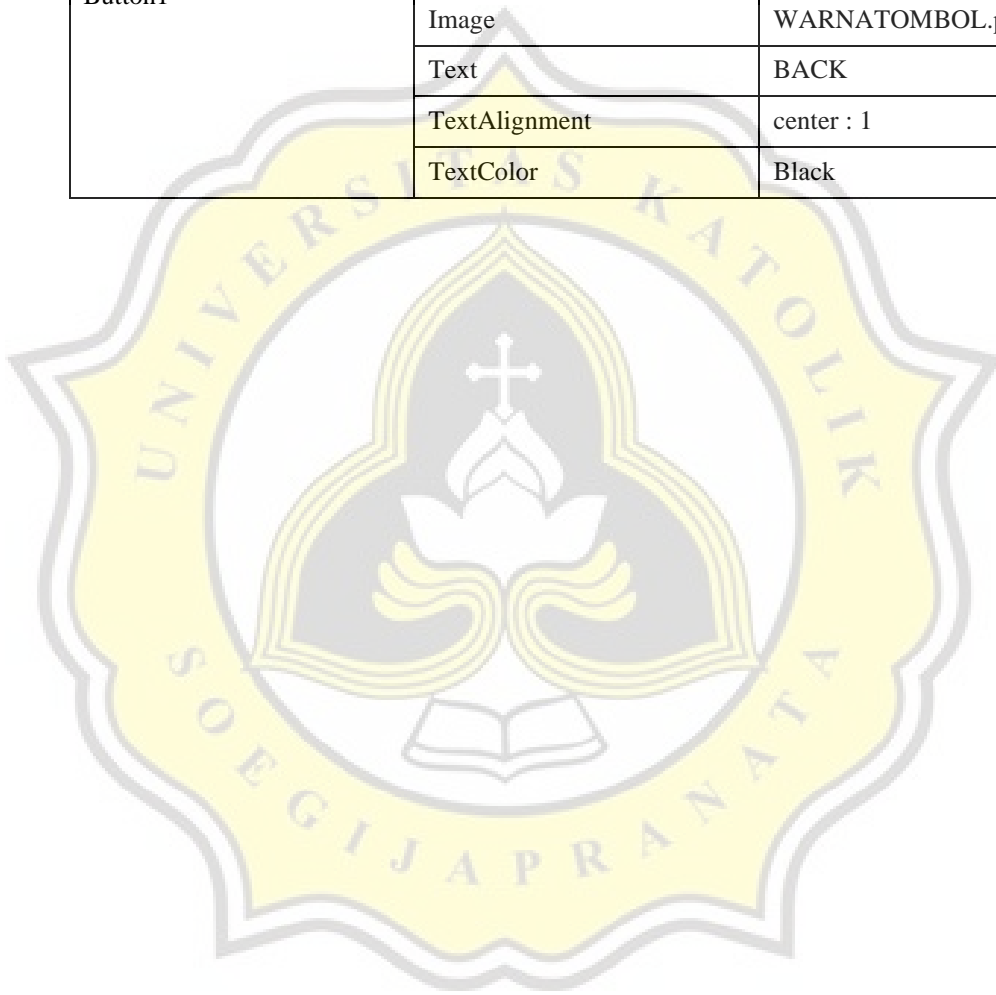
Tabel LD.4 Pengaturan Properti dan Isi Komponen *Screen* daya\_dukung.

Komponen	Properti	Isi
VerticalArrangement1 – VerticalArrangement7	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
HorizontalScrollArrangement1	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
Label1 – Label3	FontSize	14.0
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Text	(seperti dalam gambar)
	TextAlignment	Center : 1
	TextColor	Black
Label bentuk_penampang	FontSize	14.0
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Text	Bentuk Penampang
	TextAlignment	Center : 1
	TextColor	Black
Label dimensi_tiang_pancang	FontSize	14.0
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Text	Dimensi Pondasi Tiang Pancang
	TextAlignment	Center : 1
	TextColor	Black
Label tabel_fk	FontSize	14.0
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Text	Tabel Faktor Keamanan
	TextAlignment	Center : 1
	TextColor	Black

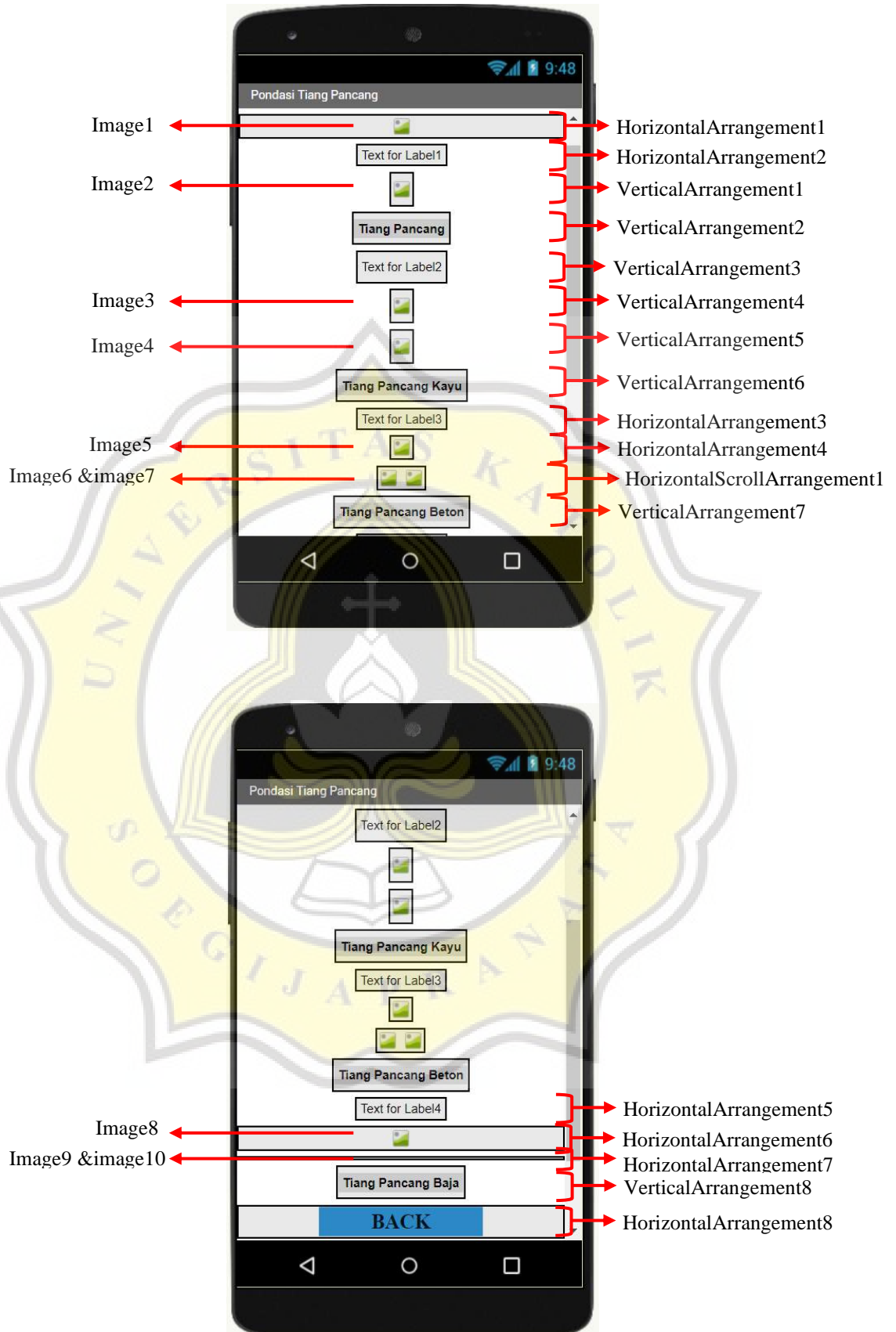
## D.2 Pengaturan Tampilan Halaman Pengenalan (Lanjutan)

Tabel LD.4 Pengaturan Properti dan Isi Komponen *Screen* daya\_dukung.

Komponen	Properti	Isi
Image1 – Image6	Picture	
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
Button1	FontSize	23
	FontTypeface	Serif
	Height	50 pixels
	Width	125 pixels
	Image	WARNATOMBOL.png
	Text	BACK
	TextAlignment	center : 1
TextColor	Black	



## D.2 Pengaturan Tampilan Halaman Pengenalan (Lanjutan)



Gambar LD.5 Pemodelan Tampilan *Screen* Pondasi Tiang Pancang

## D.2 Pengaturan Tampilan Halaman Pengenalan (Lanjutan)

Tabel LD.5 Pengaturan Properti dan Isi Komponen *Screen* pondasi\_tiang\_pancang.

Komponen	Properti	Isi
Screen pondasi_tiang_pancang	Align Horizontal	Center : 3
	AlignVertical	Top : 1
	Title	Pondasi Tiang Pancang
HorizontalArrangement1- HorizontalArrangement4	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
HorizontalArrangement5 – HorizontalArrangement7	AlignHorizontal	Center : 3
	AlignVertical	Top : 1
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
HorizontalArrangement8	AlignHorizontal	Center : 3
	AlignVertical	Center :2
	Height	7 percent
	Width	<i>Fill Parent</i>
VerticalArrangement1 – VerticalArrangement7	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
VerticalArrangement8	AlignHorizontal	Center : 1
	AlignVertical	Top : 1
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
Label1 – Label4	FontSize	14.0
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Text	(seperti dalam gambar)
	TextAlignment	Center : 1
	TextColor	Black
Label tiang_pancang	FontSize	14.0
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Text	Tiang Pancang
	TextAlignment	Center : 1
	TextColor	Black



## D.2 Pengaturan Tampilan Halaman Pengenalan (Lanjutan)

Tabel LD.5 Pengaturan Properti dan Isi Komponen *Screen* pondasi\_tiang\_pancang.

Label tiang_pancang_kayu	FontSize	14.0
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Text	Tiang Pancang Kayu
	TextAlignment	Center : 1
	TextColor	Black
Label tiang_pancang_beton	FontSize	14.0
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Text	Tiang Pancang Beton
	TextAlignment	Center : 1
	TextColor	Black
Label tiang_pancang_baja	FontSize	14.0
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Text	Tiang Pancang Baja
	TextAlignment	Center : 1
	TextColor	Black
Image1 – Image8	Picture	
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
Image9 – Image10	Picture	
	Height	23 percent
	Width	<i>Automatic</i>
Button1	FontSize	23
	FontTypeface	Serif
	Height	50 pixels
	Width	125 pixels
	Image	WARNATOMBOL.png
	Text	BACK
	TextAlignment	center : 1
	TextColor	Black

### D.3 Pengaturan Tampilan Halaman Perhitungan



Gambar LD.6 Pemodelan Tampilan *Screen* perhitungan.

Tabel LD.6 Pengaturan Properti dan Isi Komponen *Screen* perhitungan.

Komponen	Properti	Isi
Screen perhitungan	Align Horizontal	Center : 3
	AlignVertical	Top : 1
	BackgroundImage	Backgroundapp.png
	Title	Perhitungan
Horizontal Arrangement1 – HorizontalArrangement7	AlignHorizontal	Left : 1
	AlignVertical	Center : 2
	Height	5 percent
	Width	<i>Fill Parent</i>
HorizontalArrangement8	AlignHorizontal	Left : 1
	AlignVertical	Center : 2
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>

### D.3 Pengaturan Tampilan Halaman Perhitungan (Lanjutan)

Tabel LD.6 Pengaturan Properti dan Isi Komponen *Screen* perhitungan.

Komponen	Properti	Isi
HorizontalArrangement9	AlignHorizontal	Center : 3
	AlignVertical	Center : 2
	Height	50 pixels
	Width	125 pixels
HorizontalArrangement10	AlignHorizontal	Center : 3
	AlignVertical	Center : 2
	Height	50 pixels
	Width	<i>Fill Parent</i>
Label1	FontSize	16
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	45 percent
	Text	IDENTITAS PROYEK
	TextAlignment	Left : 0
	TextColor	Black
Label2	FontSize	16
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	45 percent
	Text	LEBAR PONDASI, B
	TextAlignment	Left : 0
	TextColor	Black
Label3	FontSize	16
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	45 percent
	Text	KEDALAMAN MUKA AIR TANAH, Dw
	TextAlignment	Left : 0
	TextColor	Black

### D.3 Pengaturan Tampilan Halaman Perhitungan (Lanjutan)

Tabel LD.6 Pengaturan Properti dan Isi Komponen *Screen* perhitungan.

Label4	FontSize	16
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	45 percent
	Text	KEDALAMAN PONDASI, Df
	TextAlignment	Left : 0
	TextColor	Black
Label5	FontSize	16
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	45 percent
	Text	LEBAR PONDASI, B
	TextAlignment	Left : 0
	TextColor	Black
Label6	FontSize	16
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	45 percent
	Text	FAKTOR KEAMANAN UJUNG, FK1
	TextAlignment	Left : 0
	TextColor	Black
Label7	FontSize	16
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	45 percent
	Text	FAKTOR KEAMANAN SELIMUT, FK2
	TextAlignment	Left : 0
	TextColor	Black
TextBox IDENTITAS_PROYEK	FontSize	14
	FontTypeface	<i>Default</i>
	Height	6 percent
	Width	40 percent
	TextAlignment	Left : 0



### D.3 Pengaturan Tampilan Halaman Perhitungan (Lanjutan)

Tabel LD.6 Pengaturan Properti dan Isi Komponen *Screen* perhitungan.

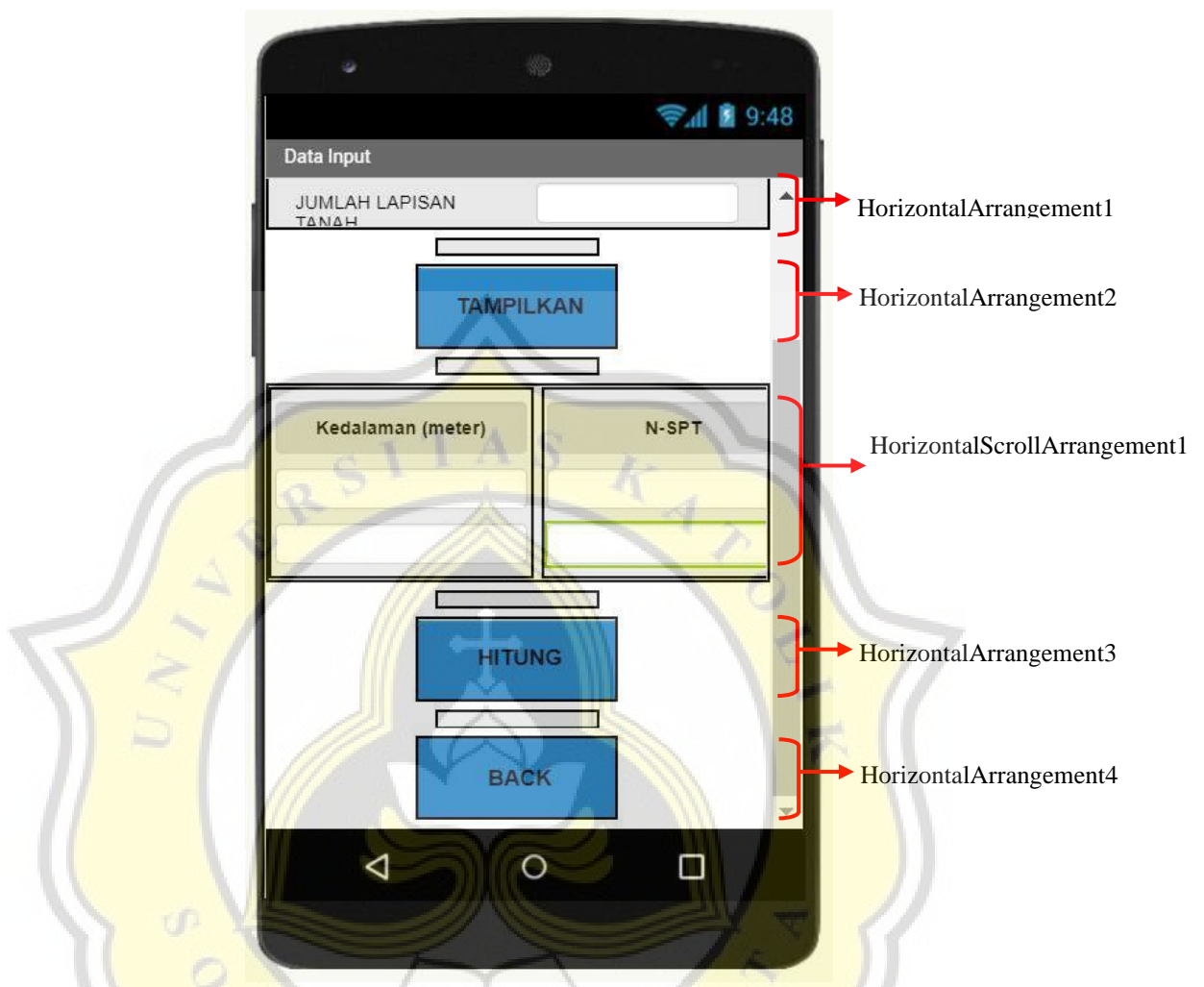
TextBox LEBAR_PONDASI	FontSize	14
	FontTypeface	<i>Default</i>
	Height	6 percent
	Width	40 percent
	TextAlignment	Left : 0
TextBox KEDALAMAN_MAT	FontSize	14
	FontTypeface	Default
	Height	6 percent
	Width	40 percent
	TextAlignment	Left : 0
TextBox KEDALAMAN_PONDASI	FontSize	14
	FontTypeface	Default
	Height	6 percent
	Width	40 percent
	TextAlignment	Left : 0
TextBox BEBAN_KOLOM	FontSize	14
	FontTypeface	Default
	Height	6 percent
	Width	40 percent
	TextAlignment	Left : 0
ListPicker_FK1	ElementFromString	1.4, 2, 2.3, 2.5, 2.8, 3, 3.4, 3.5, 4
	FontSize	14
	FontTypeface	Default
	Height	Automatic
	Text	FAKTOR KEAMANAN UJUNG
	TextAlignment	Center : 1
ListPicker_FK2	ElementFromString	1.4, 2, 2.3, 2.5, 2.8, 3, 3.4, 3.5, 4
	FontSize	14
	FontTypeface	Default
	Height	Automatic
	Text	FAKTOR KEAMANAN SELIMUT
	TextAlignment	Center : 1

### D.3 Pengaturan Tampilan Halaman Perhitungan (Lanjutan)

Tabel LD.6 Pengaturan Properti dan Isi Komponen *Screen* perhitungan.

Button_CLEAR	FontSize	16
	Height	50 pixels
	Width	125 pixels
	Image	WARNATOMBOL.png
	Text	CLEAR
	TextAlignment	center : 1
	TextColor	Black
Button_Click	FontSize	16
	Height	50 pixels
	Width	125 pixels
	Image	WARNATOMBOL.png
	Text	Click, untuk melihat faktor keamanan
	TextAlignment	center : 1
	TextColor	Black
Button_BACK	FontSize	16
	Height	50 pixels
	Width	125 pixels
	Image	WARNATOMBOL.png
	Text	BACK
	TextAlignment	center : 1
	TextColor	Black
Button_NEXT	FontSize	16
	Height	50 pixels
	Width	125 pixels
	Image	WARNATOMBOL.png
	Text	NEXT
	TextAlignment	center : 1
	TextColor	Black

## D.4 Pengaturan Tampilan Halaman *Input Data*



Gambar LD.7 Pemodelan Tampilan *Screen DATA\_INPUT*.

Tabel LD.7 Pengaturan Properti dan Isi Komponen *Screen DATA\_INPUT*.

Komponen	Properti	Isi
Screen DATA_INPUT	Align Horizontal	Center : 3
	AlignVertical	Top : 1
	ScreenOrientation	Potrait
	Title	Data Input
HorizontalArrangement1	AlignHorizontal	Center : 3
	AlignVertical	Center : 2
	Height	Automatic
	Width	Fill Parent

## D.4 Pengaturan Tampilan Halaman *Input Data* (Lanjutan)

Tabel LD.7 Pengaturan Properti dan Isi Komponen *Screen DATA\_INPUT*.

Komponen	Properti	Isi
HorizontalArrangement2 – HorizontalArrangement4	AlignHorizontal	Center : 3
	AlignVertical	Center : 2
	Height	50 pixels
	Width	125 pixels
HorizontalScrollArrangement1	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	<i>Automatic</i>
	Width	Fill Parent
Layout h	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
Layout NSPT	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
Layout Jenis Tanah	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
Layout Gamma_Dry	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
Layout w	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
Layout Gamma_Sat	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>



## D.4 Pengaturan Tampilan Halaman *Input Data* (Lanjutan)

Tabel LD.7 Pengaturan Properti dan Isi Komponen *Screen DATA\_INPUT*.

Komponen	Properti	Isi
Label1	FontSize	14
	FontTypeface	monospace
	Height	Automatic
	Width	45 percent
	Text	JUMLAH LAPISAN TANAH
	TextAlignment	Left : 0
Label Judul_1	FontSize	14
	FontTypeface	default
	Height	34 pixels
	Width	<i>Automatic</i>
	Text	Kedalaman (meter)
	TextAlignment	Center : 1
Label Judul_2	FontSize	14
	FontTypeface	default
	Height	34 pixels
	Width	<i>Automatic</i>
	Text	N-SPT
	TextAlignment	Center : 1
Label Judul_3	FontSize	14
	FontTypeface	default
	Height	34 pixels
	Width	<i>Automatic</i>
	Text	Jenis Tanah / Daya Dukung
	TextAlignment	Center : 1
Label Judul_4	FontSize	14
	FontTypeface	default
	Height	34 pixels
	Width	<i>Automatic</i>
	Text	Gamma Dry (ton/m3)
	TextAlignment	Center : 1

## D.4 Pengaturan Tampilan Halaman *Input* Data (Lanjutan)

Tabel LD.7 Pengaturan Properti dan Isi Komponen *Screen* DATA\_INPUT.

Komponen	Properti	Isi
Label Judul_5	FontSize	14
	FontTypeface	default
	Height	34 pixels
	Width	<i>Automatic</i>
	Text	Kadar Air (%)
	TextAlignment	Center : 1
Label Judul_6	FontSize	14
	FontTypeface	default
	Height	34 pixels
	Width	<i>Automatic</i>
	Text	Gamma Saturated (ton/m3)
	TextAlignment	Center : 1
Label h1 – Label h15	FontSize	14
	FontTypeface	monospace
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	TextAlignment	Left : 0
	TextColor	Black
Label n1- Label n15	FontSize	14
	FontTypeface	monospace
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	TextAlignment	Left : 0
	TextColor	Black
Label d1 – Label d15	FontSize	14
	FontTypeface	monospace
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	TextAlignment	Left : 0
	TextColor	Black

## D.4 Pengaturan Tampilan Halaman *Input Data* (Lanjutan)

Tabel LD.7 Pengaturan Properti dan Isi Komponen *Screen DATA\_INPUT*.

Komponen	Properti	Isi
Label w1 – Label w15	FontSize	14
	FontTypeface	monospace
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	TextAlignment	Left : 0
	TextColor	Black
Label gs1 – Label gs15	FontSize	14
	FontTypeface	monospace
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	TextAlignment	Left : 0
	TextColor	Black
ListPicker JT 1 – ListPickerJT 15	ElementFromString	Silt / Selimut, Clay / Selimut, Gravel / Selimut, Silt / Selimut - Ujung, Clay / Selimut - Ujung, Gravel / Selimut - Ujung
	FontSize	14
	FontTypeface	Default
	Height	Automatic
TextBox DATA_Jumlah_Lapisan_Tanah	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	40 percent
	TextAlignment	Left : 0
Button TAMPILKAN	FontSize	16
	FontTypeface	Default
	Height	50 pixels
	Width	125 pixels
	Image	WARNATOMBOL.png
	Shape	Default
	Text	TAMPILKAN
	TextAlignment	center : 1
TextColor	Black	

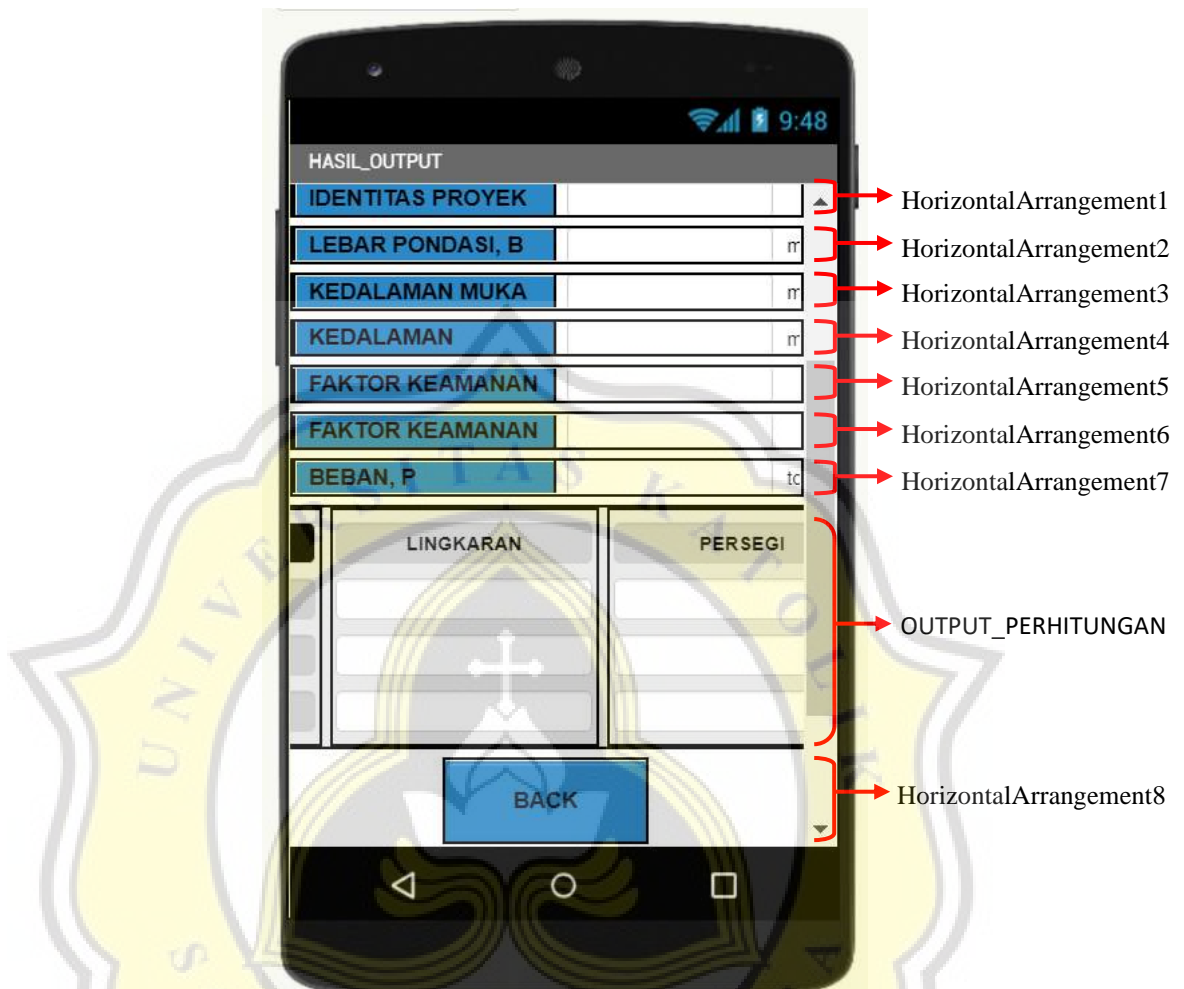
## D.4 Pengaturan Tampilan Halaman *Input* Data (Lanjutan)

Tabel LD.7 Pengaturan Properti dan Isi Komponen *Screen* DATA\_INPUT.

Button HITUNG	FontSize	16
	FontTypeface	Default
	Height	50 pixels
	Width	125 pixels
	Image	WARNATOMBOL.png
	Shape	Default
	Text	HITUNG
	TextAlignment	center : 1
	TextColor	Black
Button BACK	FontSize	16
	FontTypeface	Default
	Height	50 pixels
	Width	125 pixels
	Image	WARNATOMBOL.png
	Shape	Default
	Text	BACK
	TextAlignment	center : 1
	TextColor	Black



## D.5 Pengaturan Tampilan Halaman Hasil *Output*



Gambar LD.8 Pemodelan Tampilan *Screen* HASIL\_OUTPUT.

Tabel LD.8 Pengaturan Properti dan Isi Komponen *Screen* HASIL\_OUTPUT.

Komponen	Properti	Isi
Screen HASIL_OUTPUT	Align Horizontal	Center : 3
	AlignVertical	Top : 1
	ScreenOrientation	Potrait
	Title	HASIL OUTPUT
HorizontalArrangement1 – HorizontalArrangement7	AlignHorizontal	Left : 1
	AlignVertical	Center : 2
	Height	5 percent
	Width	Fill Parent

## D.5 Pengaturan Tampilan Halaman Hasil *Output* (Lanjutan)

Tabel LD.8 Pengaturan Properti dan Isi Komponen *Screen* HASIL\_OUTPUT.

Komponen	Properti	Isi
HorizontalArrangement8	AlignHorizontal	Center : 3
	AlignVertical	Center : 2
	Height	50 pixels
	Width	125 pixels
Layout OUTPUT_PERHITUNGAN	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	Automatic
	Width	Automatic
Layout HASIL	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	Automatic
	Width	Automatic
Layout Bentuk_1 – Layout Bentuk_2	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	Automatic
	Width	Automatic
Label1	FontSize	16
	FontTypeface	Default
	Height	Automatic
	Width	45 percent
	Text	IDENTITAS PROYEK
	TextAlignment	Left : 0
	TextColor	Black
Label2	FontSize	16
	FontTypeface	Default
	Height	Automatic
	Width	45 percent
	Text	LEBAR PONDASI, B
	TextAlignment	Left : 0
	TextColor	Black

## D.5 Pengaturan Tampilan Halaman Hasil *Output* (Lanjutan)

Tabel LD.8 Pengaturan Properti dan Isi Komponen *Screen* HASIL\_OUTPUT.

Label3	FontSize	16
	FontTypeface	Default
	Height	Automatic
	Width	45 percent
	Text	KEDALAMAN MUKA AIR TANAH, Dw
	TextAlignment	Left : 0
	TextColor	Black
Label4	FontSize	16
	FontTypeface	Default
	Height	Automatic
	Width	45 percent
	Text	KEDALAMAN PONDASI, Df
	TextAlignment	Left : 0
	TextColor	Black
Label5	FontSize	16
	FontTypeface	Default
	Height	Automatic
	Width	45 percent
	Text	FAKTOR KEAMANAN UJUNG
	TextAlignment	Left : 0
	TextColor	Black
Label6	FontSize	16
	FontTypeface	Default
	Height	Automatic
	Width	45 percent
	Text	FAKTOR KEAMANAN SELIMUT
	TextAlignment	Left : 0
	TextColor	Black

## D.5 Pengaturan Tampilan Halaman Hasil *Output* (Lanjutan)

Tabel LD.8 Pengaturan Properti dan Isi Komponen *Screen* HASIL\_OUTPUT.

Label7	FontSize	16
	FontTypeface	Default
	Height	Automatic
	Width	45 percent
	Text	BEBAN, P
	TextAlignment	Left : 0
	TextColor	Black
Label8	FontSize	14
	FontTypeface	Default
	Height	Automatic
	Width	10 pixels
	TextAlignment	Left : 0
	TextColor	Black
Label9 – Label11	FontSize	14
	FontTypeface	Default
	Height	Automatic
	Width	15 pixels
	Text	m
	TextAlignment	Left : 0
	TextColor	Black
Label 12 – Label 13	FontSize	14
	FontTypeface	Default
	Height	Automatic
	Width	10 pixels
	TextAlignment	Left : 0
	TextColor	Black
Label14	FontSize	14
	FontTypeface	Default
	Height	Automatic
	Width	30 pixels
	Text	ton
	TextAlignment	Left : 0
	TextColor	Black

## D.5 Pengaturan Tampilan Halaman Hasil *Output* (Lanjutan)

Tabel LD.8 Pengaturan Properti dan Isi Komponen *Screen* HASIL\_OUTPUT.

Textbox OUTPUT_IDENTITAS_PROYEK	FontSize	16
	FontTypeface	<i>Default</i>
	Height	6 percent
	Width	40 percent
	TextAlignment	Left : 0
Textbox OUTPUT_LEBAR_PONDASI	FontSize	16
	FontTypeface	<i>Default</i>
	Height	6 percent
	Width	40 percent
	TextAlignment	Left : 0
Textbox OUTPUT_KEDALAMAN_MAT	FontSize	16
	FontTypeface	<i>Default</i>
	Height	6 percent
	Width	40 percent
	TextAlignment	Left : 0
Textbox OUTPUT_KEDALAMAN_PONDASI	FontSize	16
	FontTypeface	<i>Default</i>
	Height	6 percent
	Width	40 percent
	TextAlignment	Left : 0
Textbox OUTPUT_LEBAR_PONDASI	FontSize	16
	FontTypeface	<i>Default</i>
	Height	6 percent
	Width	40 percent
	TextAlignment	Left : 0
Textbox OUTPUT_FK1	FontSize	16
	FontTypeface	<i>Default</i>
	Height	6 percent
	Width	40 percent
	TextAlignment	Left : 0



## D.5 Pengaturan Tampilan Halaman Hasil *Output* (Lanjutan)

Tabel LD.8 Pengaturan Properti dan Isi Komponen *Screen* HASIL\_OUTPUT.

Textbox OUTPUT_FK2	FontSize	16
	FontTypeface	<i>Default</i>
	Height	6 percent
	Width	40 percent
	TextAlignment	Left : 0
Textbox OUTPUT_BEBAN_KOLOM	FontSize	16
	FontTypeface	<i>Default</i>
	Height	6 percent
	Width	40 percent
	TextAlignment	Left : 0
Textbox cop	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	40 percent
	TextAlignment	Left : 0
Textbox Qu	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	230 pixels
	Text	DAYA DUKUNG ULTIMIT, Qu (ton)
	TextAlignment	Left : 0
Textbox Qa	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	230 pixels
	Text	DAYA DUKUNG IJIN, Qa (ton)
	TextAlignment	Left : 0

## D.5 Pengaturan Tampilan Halaman Hasil *Output* (Lanjutan)

Tabel LD.8 Pengaturan Properti dan Isi Komponen *Screen* HASIL\_OUTPUT.

Textbox JUMLAH_GROUP_PILE	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	230 pixels
	Text	JUMLAH PONDASI (GROUP PILE)
	TextAlignment	Left : 0
Textbox Judul_27	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Text	LINGKARAN
	TextAlignment	Center : 1
Textbox Qu_LINGKARAN	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Numbersonly	On
	TextAlignment	Center : 1
Textbox Qa_LINGKARAN	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Numbersonly	On
	TextAlignment	Center : 1
Textbox JUMLAH_PONDASI_LINGKARAN	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Numbersonly	On
	TextAlignment	Center : 1

## D.5 Pengaturan Tampilan Halaman Hasil *Output* (Lanjutan)

Tabel LD.8 Pengaturan Properti dan Isi Komponen *Screen* HASIL\_OUTPUT.

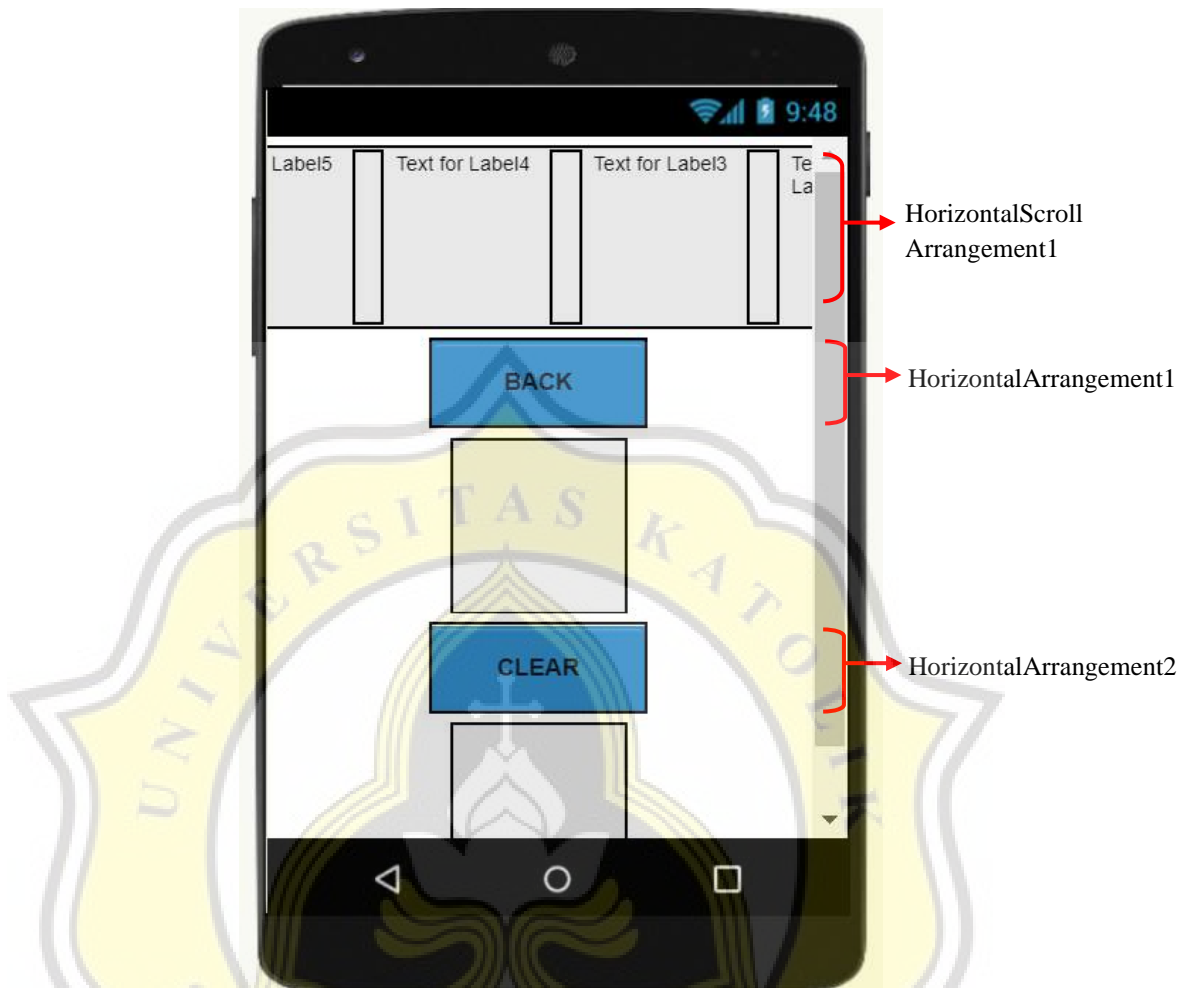
Textbox Judul_28	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Text	PERSEGI
	TextAlignment	Center : 1
Textbox Qu_PERSEGI	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Numbersonly	On
	TextAlignment	Center : 1
Textbox Qa_PERSEGI	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Numbersonly	On
	TextAlignment	Center : 1
Textbox JUMLAH_PONDASI _PERSEGI	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Numbersonly	On
	TextAlignment	Center : 1
Textbox Judul_29	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Text	SEGITIGA
	TextAlignment	Center : 1

## D.5 Pengaturan Tampilan Halaman Hasil *Output* (Lanjutan)

Tabel LD.8 Pengaturan Properti dan Isi Komponen *Screen* HASIL\_OUTPUT.

Textbox Qu_SEGITIGA	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Numbersonly	On
	TextAlignment	Center : 1
Textbox Qa_SEGITIGA	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Numbersonly	On
	TextAlignment	Center : 1
Textbox JUMLAH_PONDASI _SEGITIGA	FontSize	14
	FontTypeface	<i>Default</i>
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
	Numbersonly	On
	TextAlignment	Center : 1
Button BACK	FontSize	16.0
	FontTypeface	monospace
	Height	50 pixels
	Width	125 pixels
	Image	WARNATOMBOL.png
	Text	BACK
	TextAlignment	center : 1
	TextColor	Black

## D.6 Pengaturan Tampilan Riwayat



Gambar LD.9 Pemodelan Tampilan *Screen* TAMPILKAN.

Tabel LD.9 Pengaturan Properti dan Isi Komponen *Screen* TAMPILKAN.

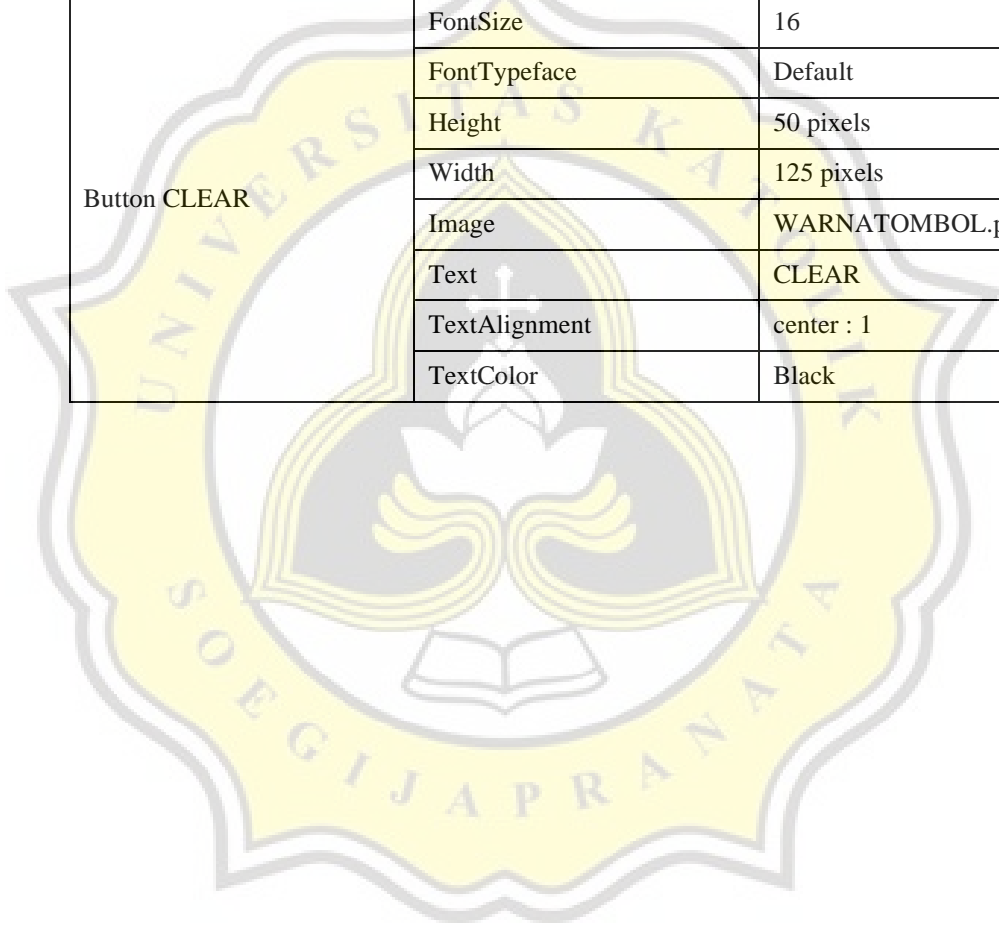
Komponen	Properti	Isi
Screen TAMPILKAN	Align Horizontal	Center : 3
	AlignVertical	Top : 1
	Title	RIWAYAT
HorizontalScrollArrangement1	AlignHorizontal	Left : 1
	AlignVertical	Top : 1
	Height	<i>Automatic</i>
	Width	<i>Automatic</i>
HorizontalArrangement1 – HorizontalArrangement2	AlignHorizontal	Center : 3
	AlignVertical	Center : 2
	Height	50 pixels
	Width	125 pixels



## D.6 Pengaturan Tampilan Riwayat (Lanjutan)

Tabel LD.9 Pengaturan Properti dan Isi Komponen *Screen* TAMPILKAN.

Komponen	Properti	Isi
Button BACK	FontSize	16
	FontTypeface	Default
	Height	50 pixels
	Width	125 pixels
	Image	WARNATOMBOL.png
	Text	BACK
	TextAlignment	center : 1
	TextColor	Black
Button CLEAR	FontSize	16
	FontTypeface	Default
	Height	50 pixels
	Width	125 pixels
	Image	WARNATOMBOL.png
	Text	CLEAR
	TextAlignment	center : 1
	TextColor	Black





**Lampiran E**  
**Blok Program Aplikasi**

## E.1 Blok Program Halaman Utama

```
when Button_Pengenalan .Click  
do open another screen screenName "Screen2"
```

Gambar LE.1 Blok Program Untuk Tombol Pengenalan.

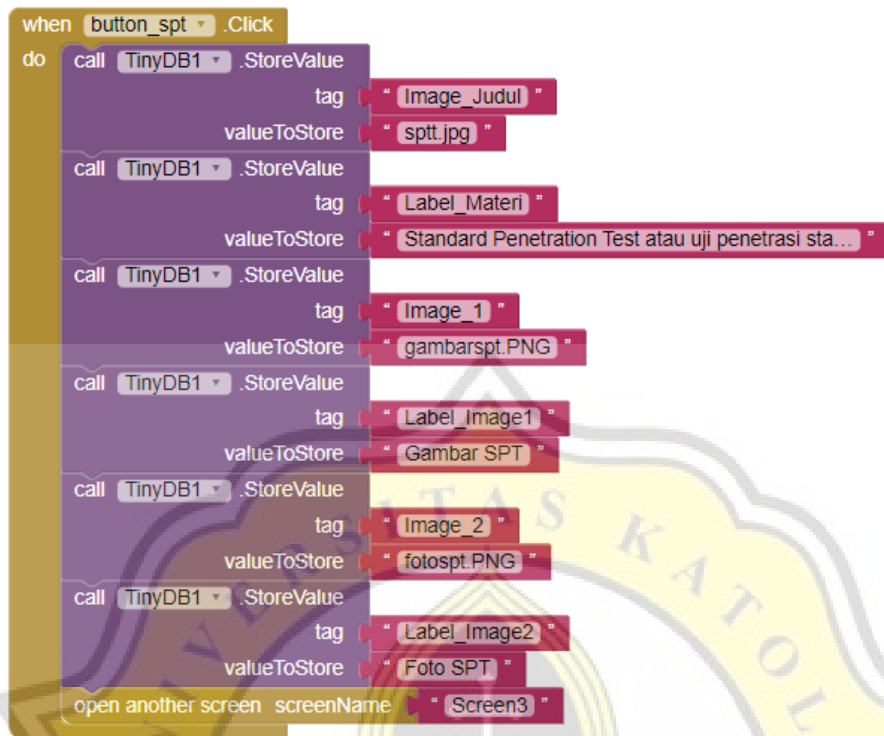
```
when Button_Perhitungan .Click  
do open another screen screenName "perhitungan"
```

Gambar LE.2 Blok Program Untuk Tombol Perhitungan.

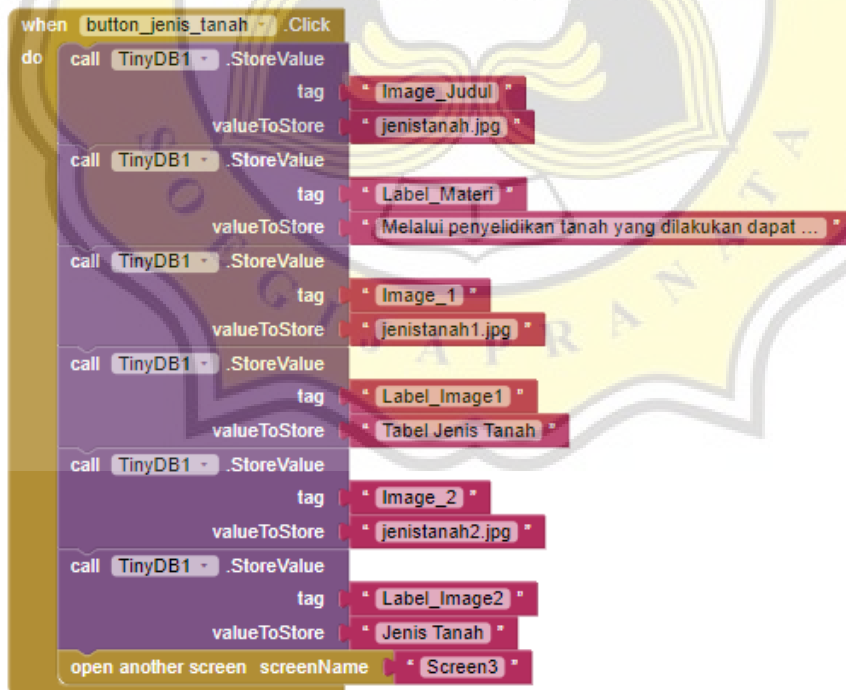
```
when Button_Riwayat .Click  
do open another screen screenName "TAMPILKAN"
```

Gambar LE.3 Blok Program Untuk Tombol Riwayat.

## E.2 Blok Program Halaman Pengenalan



Gambar LE.4 Blok Untuk Tombol SPT.



Gambar LE.5 Blok Untuk Tombol Jenis Tanah.

## E.2 Blok Program Halaman Pengenalan (Lanjutan)

```
when button_pondasi_tiang_pancang .Click
do
  call TinyDB1 .StoreValue
    tag image1
    valueToStore pondasi_tiang_pancang.jpg
  call TinyDB1 .StoreValue
    tag label1
    valueToStore Pondasi tiang pancang digunakan untuk menyalurka...
  call TinyDB1 .StoreValue
    tag Image2
    valueToStore pondasi1.PNG
  call TinyDB1 .StoreValue
    tag Label2
    valueToStore Pondasi tiang pancang kayu biasanya tiang diberi...
  call TinyDB1 .StoreValue
    tag image3
    valueToStore pondasi2.PNG
  call TinyDB1 .StoreValue
    tag image4
    valueToStore pondasi3.PNG
  call TinyDB1 .StoreValue
    tag label3
    valueToStore Pondasi tiang pancang beton biasanya dicetak, di...
  call TinyDB1 .StoreValue
    tag image5
    valueToStore pondasi4.PNG
  call TinyDB1 .StoreValue
    tag image6
    valueToStore pondasi5.PNG
  call TinyDB1 .StoreValue
    tag image7
    valueToStore pondasi6.PNG
  call TinyDB1 .StoreValue
    tag label4
    valueToStore Pondasi tiang pancang baja biasanya digunakan pr...
  call TinyDB1 .StoreValue
    tag image8
    valueToStore pondasi7.PNG
  call TinyDB1 .StoreValue
    tag image9
    valueToStore pondasi8.PNG
  call TinyDB1 .StoreValue
    tag image10
    valueToStore pondasi9.PNG
  open another screen screenName pondasi_tiang_pancang
```

Gambar LE.6 Blok Untuk Tombol Pondasi Tiang Pancang.



## E.2 Blok Program Halaman Pengenalan (Lanjutan)

```
when button_daya_dukung .Click
do
  call TinyDB1 .StoreValue
    tag "image1"
    valueToStore "dayadukung.jpg"
  call TinyDB1 .StoreValue
    tag "label1"
    valueToStore "Daya dukung dapat didefinisikan dengan kemampuan..."
  call TinyDB1 .StoreValue
    tag "image2"
    valueToStore "dd1.PNG"
  call TinyDB1 .StoreValue
    tag "image3"
    valueToStore "dd2.PNG"
  call TinyDB1 .StoreValue
    tag "label2"
    valueToStore "Bentuk penampang pondasi tiang pancang yaitu lin..."
  call TinyDB1 .StoreValue
    tag "image4"
    valueToStore "dd3.PNG"
  call TinyDB1 .StoreValue
    tag "label3"
    valueToStore "Data yang diperlukan untuk menghitung daya dukun..."
  call TinyDB1 .StoreValue
    tag "image5"
    valueToStore "dd4.PNG"
  call TinyDB1 .StoreValue
    tag "image6"
    valueToStore "dd5.PNG"
  open another screen screenName "daya_dukung"
```

Gambar LE.7 Blok Untuk Tombol Daya Dukung.

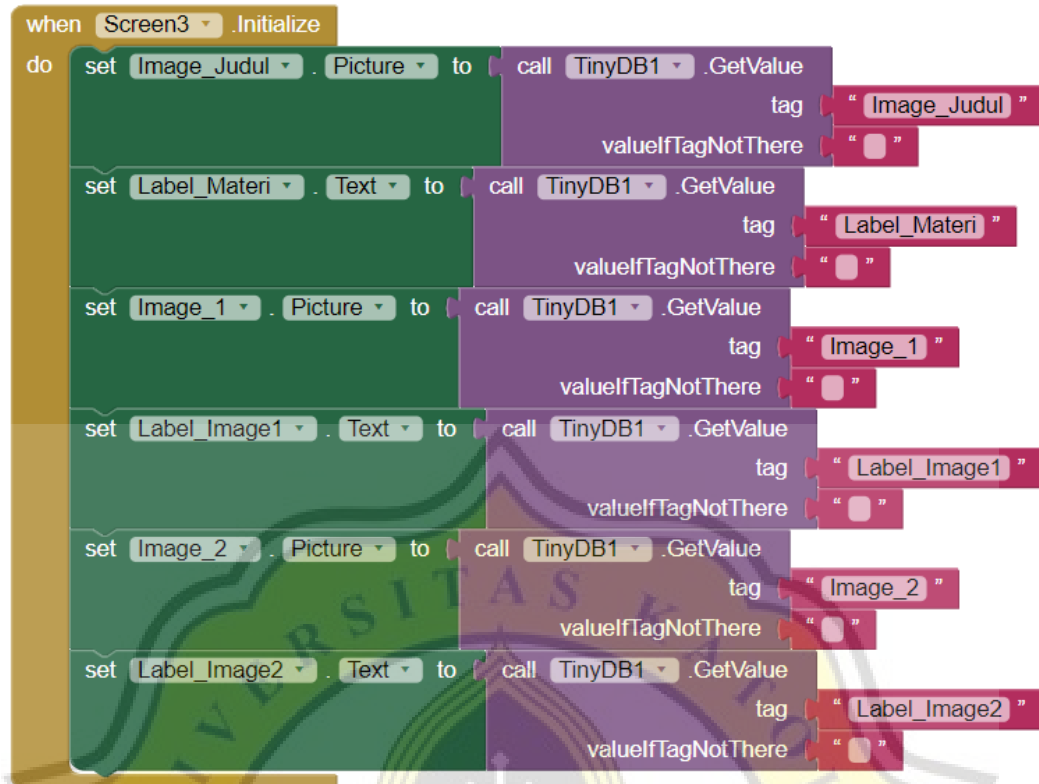
```
when button_ttg_apk .Click
do
  call TinyDB1 .StoreValue
    tag "Image_Judul"
    valueToStore "tentangaplikasi.jpg"
  call TinyDB1 .StoreValue
    tag "Label_Materi"
    valueToStore "Seiring berjalannya waktu, cara dan metode perhi..."
  open another screen screenName "Screen3"
```

Gambar LE.8 Blok Untuk Tombol Tentang Aplikasi.

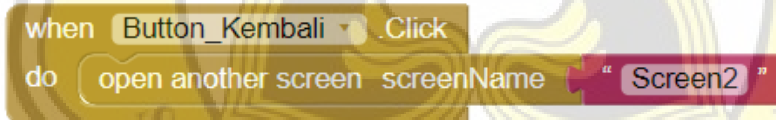
```
when Button_Kembali .Click
do
  open another screen screenName "Screen1"
```

Gambar LE.9 Blok Untuk Tombol Kembali.

## E.2 Blok Program Halaman Pengenalan (Lanjutan)



Gambar LE.10 Blok Untuk *Screen3* Atau Halaman Teori.

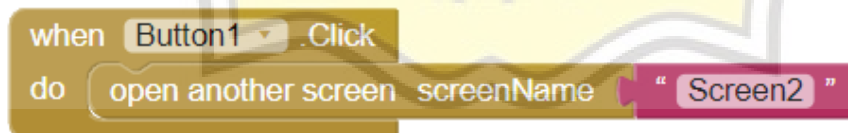


Gambar LE.11 Blok Untuk Tombol Kembali.

## E.2 Blok Program Halaman Pengenalan (Lanjutan)

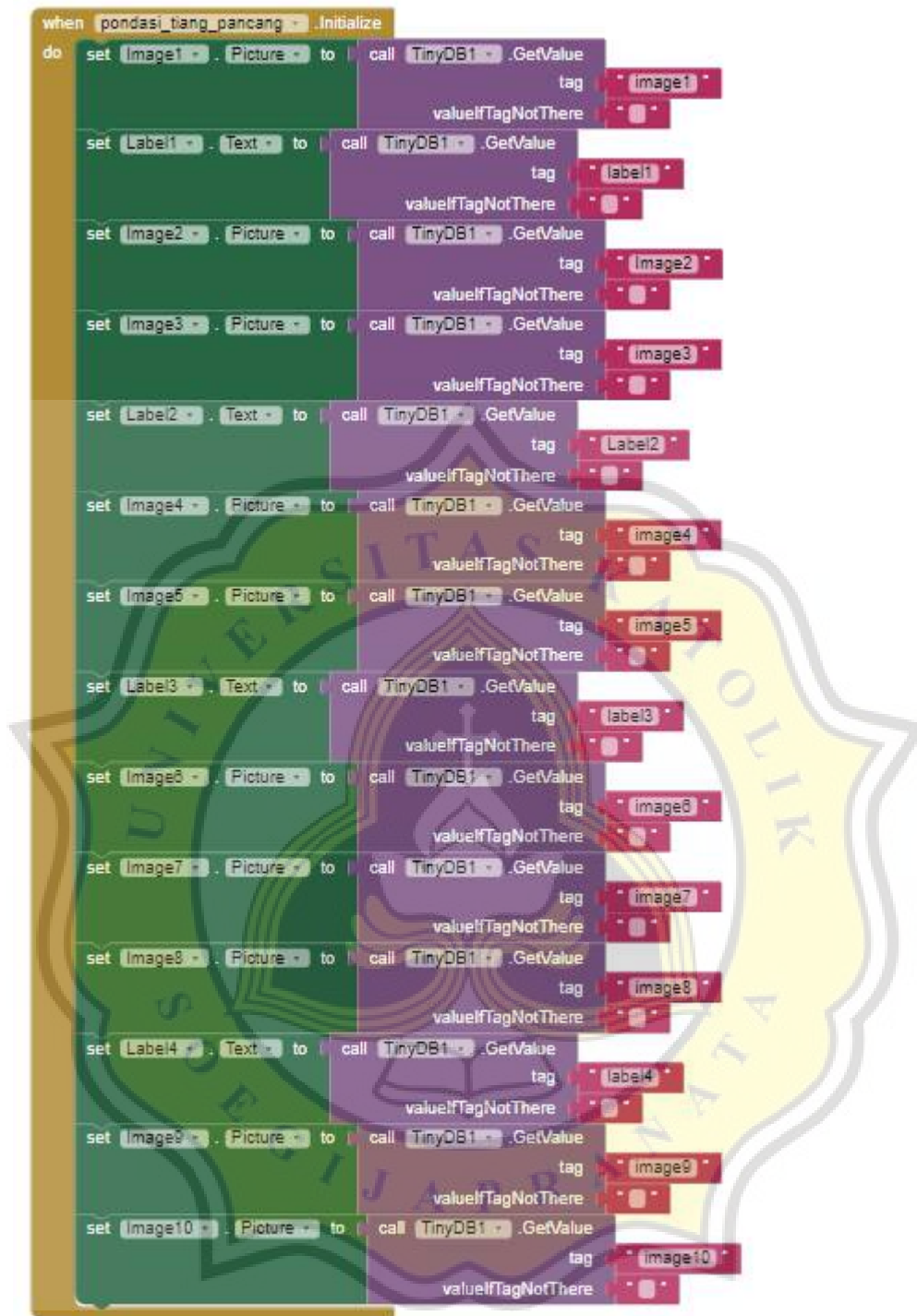


Gambar LE.12 Blok Untuk *Screen* Daya Dukung.

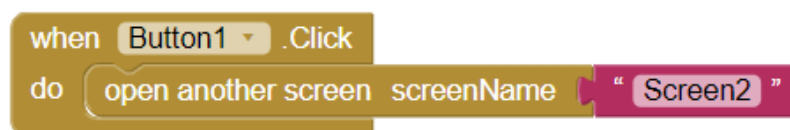


Gambar LE.13 Blok Untuk Tombol Kembali.

## E.2 Blok Program Halaman Pengenalan (Lanjutan)



Gambar LE.14 Blok Untuk *Screen* Pondasi Tiang Pancang.



Gambar LE.15 Blok Untuk Tombol Kembali.

### E.3 Blok Program Halaman Perhitungan

```
initialize global IDENTITAS_PROYEK to ""
initialize global KEDALAMAN_PONDASI to 0
initialize global LEBAR_PONDASI to 0
initialize global KEDALAMAN_MAT to 0
initialize global FK_ujung to ""
initialize global FK_selimut to ""
initialize global BEBAN_KOLOM to 0
initialize global VALID to true
```

Gambar LE.16 Blok Untuk Membuat Variabel.

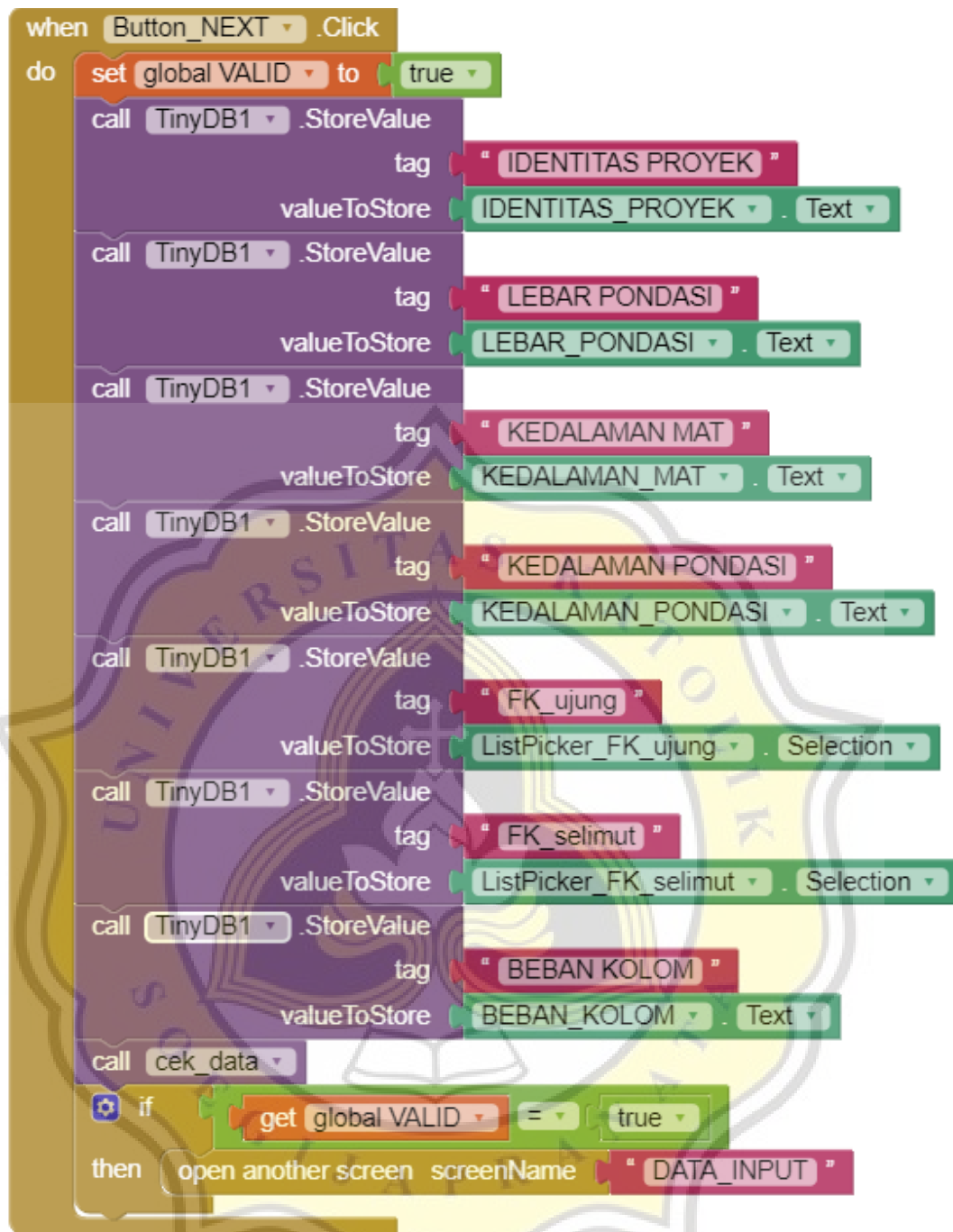
```
when ListPicker_FK_ujung .AfterPicking
do
  set global FK_ujung to ListPicker_FK_ujung . Selection
  set ListPicker_FK_ujung . Text to get global FK_ujung

when ListPicker_FK_selimut .AfterPicking
do
  set global FK_selimut to ListPicker_FK_selimut . Selection
  set ListPicker_FK_selimut . Text to get global FK_selimut
```

Gambar LE.17 Blok Untuk Pengaturan *Listpicker*.



### E.3 Blok Program Halaman Perhitungan (Lanjutan)



Gambar LE.18 Blok Untuk Tombol *Next*.

### E.3 Blok Program Halaman Perhitungan (Lanjutan)

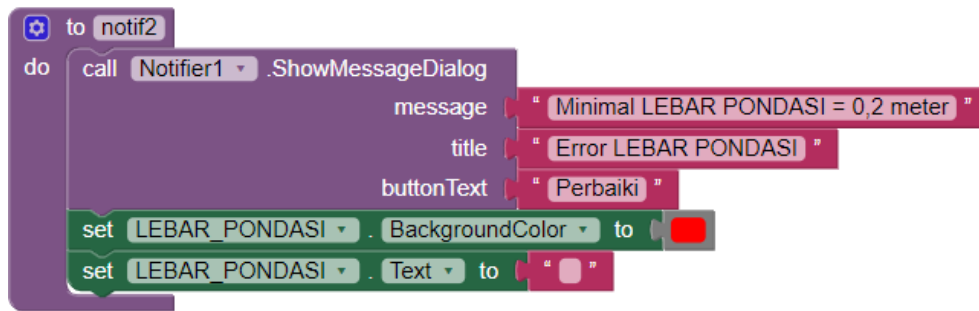
```
to cek_data
do
  if IDENTITAS_PROYEK . Text == ""
  then
    call notif1
    set global VALID to false
  else if is number? LEBAR_PONDASI . Text and LEBAR_PONDASI . Text < 0.2
  then
    call notif2
    set global VALID to false
  else if is number? LEBAR_PONDASI . Text and LEBAR_PONDASI . Text > 1.4
  then
    call notif3
    set global VALID to false
  else if LEBAR_PONDASI . Text == ""
  then
    call notif4
    set global VALID to false
  else if is number? KEDALAMAN_MAT . Text and KEDALAMAN_MAT . Text < 0
  then
    call notif5
    set global VALID to false
  else if KEDALAMAN_MAT . Text == ""
  then
    call notif6
    set global VALID to false
  else if is number? KEDALAMAN_PONDASI . Text and KEDALAMAN_PONDASI . Text < 4
  then
    call notif7
    set global VALID to false
  else if is number? KEDALAMAN_PONDASI . Text and KEDALAMAN_PONDASI . Text > 80
  then
    call notif8
    set global VALID to false
  else if KEDALAMAN_PONDASI . Text == ""
  then
    call notif9
    set global VALID to false
  else if ListPicker FK_ujung . Selection == ""
  then
    call notif10
    set global VALID to false
  else if ListPicker FK_sallmul . Selection == ""
  then
    call notif11
    set global VALID to false
  else if BEBAN_KOLOM . Text == ""
  then
    call notif12
    set global VALID to false
  end if
end do
```

Gambar LE.19 Susunan Blok *Procedure* : Cek Data.

```
to notif1
do
  call Notifier1.ShowDialog
  message "IDENTITAS PROYEK wajib diisi"
  title "Error IDENTITAS PROYEK"
  buttonText "Perbaiki"
  set IDENTITAS_PROYEK . BackgroundColor to red
  set IDENTITAS_PROYEK . Text to ""
end do
```

Gambar LE.20 Notif1.

### E.3 Blok Program Halaman Perhitungan (Lanjutan)



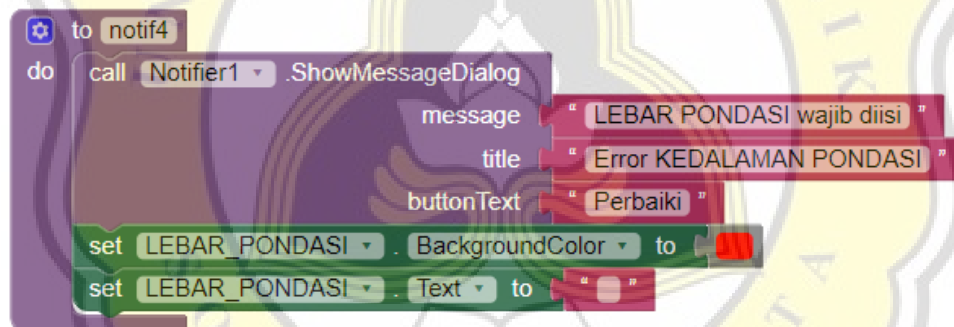
```
to notif2
do
  call Notifier1 .ShowMessageDialog
    message "Minimal LEBAR PONDASI = 0,2 meter "
    title "Error LEBAR PONDASI "
    buttonText "Perbaiki "
  set LEBAR_PONDASI .BackgroundColor to 
  set LEBAR_PONDASI .Text to " "
```

Gambar LE.21 Notif2.



```
to notif3
do
  call Notifier1 .ShowMessageDialog
    message "Maksimal LEBAR PONDASI = 1,4 meter "
    title "Error LEBAR PONDASI "
    buttonText "Perbaiki "
  set LEBAR_PONDASI .BackgroundColor to 
  set LEBAR_PONDASI .Text to " "
```

Gambar LE.22 Notif3.



```
to notif4
do
  call Notifier1 .ShowMessageDialog
    message "LEBAR PONDASI wajib diisi "
    title "Error KEDALAMAN PONDASI "
    buttonText "Perbaiki "
  set LEBAR_PONDASI .BackgroundColor to 
  set LEBAR_PONDASI .Text to " "
```

Gambar LE.23 Notif4.



```
to notif5
do
  call Notifier1 .ShowMessageDialog
    message "KEDALAMAN MUKA AIR TANAH diisi dengan nilai posi..."
    title "Error KEDALAMAN MUKA AIR TANAH "
    buttonText "Perbaiki "
  set KEDALAMAN_MAT .BackgroundColor to 
  set KEDALAMAN_MAT .Text to " "
```

Gambar LE.24 Notif5.

### E.3 Blok Program Halaman Perhitungan (Lanjutan)

```
to notif6
do
  call Notifier1 .ShowMessageDialog
    message " KEDALAMAN MUKA AIR TANAH wajib diisi "
    title " Error KEDALAMAN MUKA AIR TANAH "
    buttonText " Perbaiki "
  set KEDALAMAN_MAT . BackgroundColor to 
  set KEDALAMAN_MAT . Text to " 0 "
```

Gambar LE.25 Notif6.

```
to notif7
do
  call Notifier1 .ShowMessageDialog
    message " Minimal KEDALAMAN PONDASI = 4 meter "
    title " Error KEDALAMAN PONDASI "
    buttonText " Perbaiki "
  set KEDALAMAN_PONDASI . BackgroundColor to 
  set KEDALAMAN_PONDASI . Text to " 0 "
```

Gambar LE.26 Notif7.

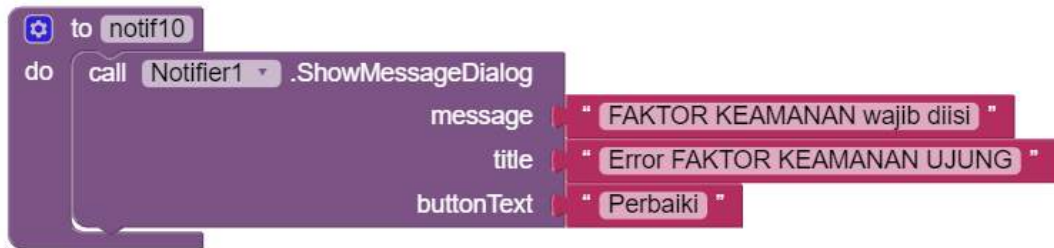
```
to notif8
do
  call Notifier1 .ShowMessageDialog
    message " Maksimal KEDALAMAN PONDASI = 60 meter "
    title " Error KEDALAMAN PONDASI "
    buttonText " Perbaiki "
  set KEDALAMAN_PONDASI . BackgroundColor to 
  set KEDALAMAN_PONDASI . Text to " 0 "
```

Gambar LE.27 Notif8.

```
to notif9
do
  call Notifier1 .ShowMessageDialog
    message " KEDALAMAN PONDASI wajib diisi "
    title " Error KEDALAMAN PONDASI "
    buttonText " Perbaiki "
  set KEDALAMAN_PONDASI . BackgroundColor to 
  set KEDALAMAN_PONDASI . Text to " 0 "
```

Gambar LE.28 Notif9.

### E.3 Blok Program Halaman Perhitungan (Lanjutan)



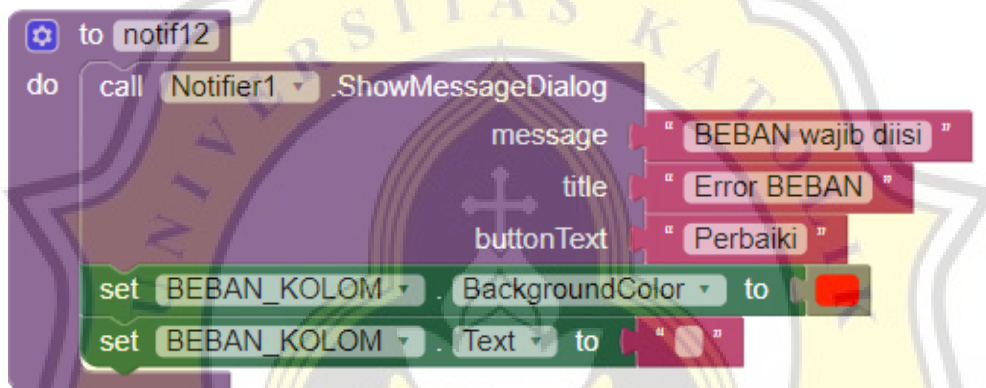
```
to notif10
do
  call Notifier1 .ShowMessageDialog
    message " FAKTOR KEAMANAN wajib diisi "
    title " Error FAKTOR KEAMANAN UJUNG "
    buttonText " Perbaiki "
```

Gambar LE.29 Notif10.



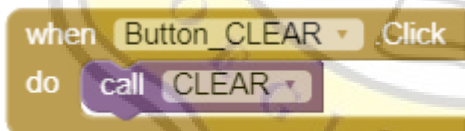
```
to notif11
do
  call Notifier1 .ShowMessageDialog
    message " FAKTOR KEAMANAN wajib diisi "
    title " Error FAKTOR KEAMANAN SELIMUT "
    buttonText " Perbaiki "
```

Gambar LE.30 Notif11.



```
to notif12
do
  call Notifier1 .ShowMessageDialog
    message " BEBAN wajib diisi "
    title " Error BEBAN "
    buttonText " Perbaiki "
  set BEBAN_KOLOM .BackgroundColor to 
  set BEBAN_KOLOM .Text to " "
```

Gambar LE.31 Notif12.



```
when Button_CLEAR .Click
do
  call CLEAR
```

Gambar LE.32 Blok Untuk Tombol *CLEAR*.



### E.3 Blok Program Halaman Perhitungan (Lanjutan)

```
to CLEAR
do
  call hapus_input
  set global VALID to true
  set IDENTITAS_PROYEK . Text to ""
  set IDENTITAS_PROYEK . BackgroundColor to 
  set KEDALAMAN_MAT . Text to ""
  set KEDALAMAN_MAT . BackgroundColor to 
  set KEDALAMAN_PONDASI . Text to ""
  set KEDALAMAN_PONDASI . BackgroundColor to 
  set LEBAR_PONDASI . Text to ""
  set LEBAR_PONDASI . BackgroundColor to 
  set ListPicker_FK_ujung . Selection to ""
  set ListPicker_FK_ujung . Text to "FAKTOR KEAMANAN UJUNG"
  set ListPicker_FK_selimut . Selection to ""
  set ListPicker_FK_selimut . Text to "FAKTOR KEAMANAN SELIMUT"
  set BEBAN_KOLOM . Text to ""
  set BEBAN_KOLOM . BackgroundColor to 
```

Gambar LE.33 Susunan Blok *Procedure* : CLEAR.

```
to hapus_input
do
  set IDENTITAS_PROYEK . Text to false
  set LEBAR_PONDASI . Text to false
  set KEDALAMAN_MAT . Text to false
  set KEDALAMAN_PONDASI . Text to false
  set ListPicker_FK_ujung . Selection to false
  set ListPicker_FK_selimut . Selection to false
  set BEBAN_KOLOM . Text to false
```

Gambar LE.34 Susunan Blok *Procedure* : hapus\_input.

```
when Button_BACK .Click
do
  open another screen screenName "Screen1"
```

Gambar LE.35 Blok Untuk Tombol *Back*.



## E.4 Blok Program Halaman Input Data

```
when DATA_INPUT.Initialize
do
  set global LEBAR_PONDASI to call TinyDB1.GetValue
  tag "LEBAR PONDASI"
  valueIfTagNotThere "0"
  set global KEDALAMAN_MAT to call TinyDB1.GetValue
  tag "KEDALAMAN MAT"
  valueIfTagNotThere "0"
  set global KEDALAMAN_PONDASI to call TinyDB1.GetValue
  tag "KEDALAMAN PONDASI"
  valueIfTagNotThere "0"
  set global FK_ujung to call TinyDB1.GetValue
  tag "FK_ujung"
  valueIfTagNotThere "0"
  set global FK_selimut to call TinyDB1.GetValue
  tag "FK_selimut"
  valueIfTagNotThere "0"
  set global BEBAN_KOLOM to call TinyDB1.GetValue
  tag "BEBAN KOLOM"
  valueIfTagNotThere "0"
```

Gambar LE.36 Blok Screen Data Input.

```
when TAMPILKAN.Click
do
  call Cek_Jumlah_Lapisan_Tanah
  if get global VALID = true
  then call SHOW_TABEL
```

Gambar LE.37 Blok Untuk Tombol Tampilkan

```
to Cek Jumlah Lapisan Tanah
do
  call hapus_baris
  set global VALID to true
  if DATA_Jumlah_Lapisan_Tanah.Text = ''
  then
    call notif12
    set global VALID to false
  else if is number? DATA_Jumlah_Lapisan_Tanah.Text and DATA_Jumlah_Lapisan_Tanah.Text < 2
  then
    call notif13
    set global VALID to false
  else if is number? DATA_Jumlah_Lapisan_Tanah.Text and DATA_Jumlah_Lapisan_Tanah.Text > 15
  then
    call notif14
    set global VALID to false
```

Gambar LE.38 Blok Procedure : Cek\_Jumlah\_Lapisan\_Tanah.

## E.4 Blok Program Halaman Input Data (Lanjutan)

```
to hapus_baris
do
  set Judul_1 . Visible to false
  set Judul_2 . Visible to false
  set Judul_3 . Visible to false
  set Judul_4 . Visible to false
  set Judul_5 . Visible to false
  set Judul_6 . Visible to false
  set h1 . Visible to false
  set h2 . Visible to false
  set h3 . Visible to false
  set h4 . Visible to false
  set h5 . Visible to false
  set h6 . Visible to false
  set h7 . Visible to false
  set h8 . Visible to false
  set h9 . Visible to false
  set h10 . Visible to false
  set h11 . Visible to false
  set h12 . Visible to false
  set h13 . Visible to false
  set h14 . Visible to false
  set h15 . Visible to false
  set n1 . Visible to false
  set n2 . Visible to false
  set n3 . Visible to false
  set n4 . Visible to false
  set n5 . Visible to false
  set n6 . Visible to false
  set n7 . Visible to false
  set n8 . Visible to false
  set n9 . Visible to false
  set n10 . Visible to false
  set n11 . Visible to false
  set n12 . Visible to false
  set n13 . Visible to false
  set n14 . Visible to false
  set n15 . Visible to false
  set JT1 . Visible to false
  set JT2 . Visible to false
  set JT3 . Visible to false
  set JT4 . Visible to false
  set JT5 . Visible to false
  set JT6 . Visible to false
  set JT7 . Visible to false
  set JT8 . Visible to false
  set JT9 . Visible to false
  set JT10 . Visible to false
  set JT11 . Visible to false
  set JT12 . Visible to false
  set JT13 . Visible to false
  set JT14 . Visible to false
  set JT15 . Visible to false
  set d1 . Visible to false
  set d2 . Visible to false
  set d3 . Visible to false
  set d4 . Visible to false
  set d5 . Visible to false
  set d6 . Visible to false
  set d7 . Visible to false
  set d8 . Visible to false
  set d9 . Visible to false
  set d10 . Visible to false
  set d11 . Visible to false
  set d12 . Visible to false
  set d13 . Visible to false
  set d14 . Visible to false
  set d15 . Visible to false
  set w1 . Visible to false
  set w2 . Visible to false
  set w3 . Visible to false
  set w4 . Visible to false
  set w5 . Visible to false
  set w6 . Visible to false
  set w7 . Visible to false
  set w8 . Visible to false
  set w9 . Visible to false
  set w10 . Visible to false
  set w11 . Visible to false
  set w12 . Visible to false
  set w13 . Visible to false
  set w14 . Visible to false
  set w15 . Visible to false
  set qs1 . Visible to false
  set qs2 . Visible to false
  set qs3 . Visible to false
  set qs4 . Visible to false
  set qs5 . Visible to false
  set qs6 . Visible to false
  set qs7 . Visible to false
  set qs8 . Visible to false
  set qs9 . Visible to false
  set qs10 . Visible to false
  set qs11 . Visible to false
  set qs12 . Visible to false
  set qs13 . Visible to false
  set qs14 . Visible to false
  set qs15 . Visible to false
end
```

Gambar LE.39 Blok *Procedure* : hapus\_baris.

## E.4 Blok Program Halaman Input Data (Lanjutan)

```
to notif12
do
  call Notifier1 .ShowMessageDialog
    message "DATA Jumlah Lapisan Tanah wajib diisi "
    title "Error DATA Jumlah Lapisan Tanah "
    buttonText "Perbaiki "
  set DATA_Jumlah_Lapisan_Tanah . BackgroundColor to 
  set DATA_Jumlah_Lapisan_Tanah . Text to " "
```

Gambar LE.40 Blok Notif12

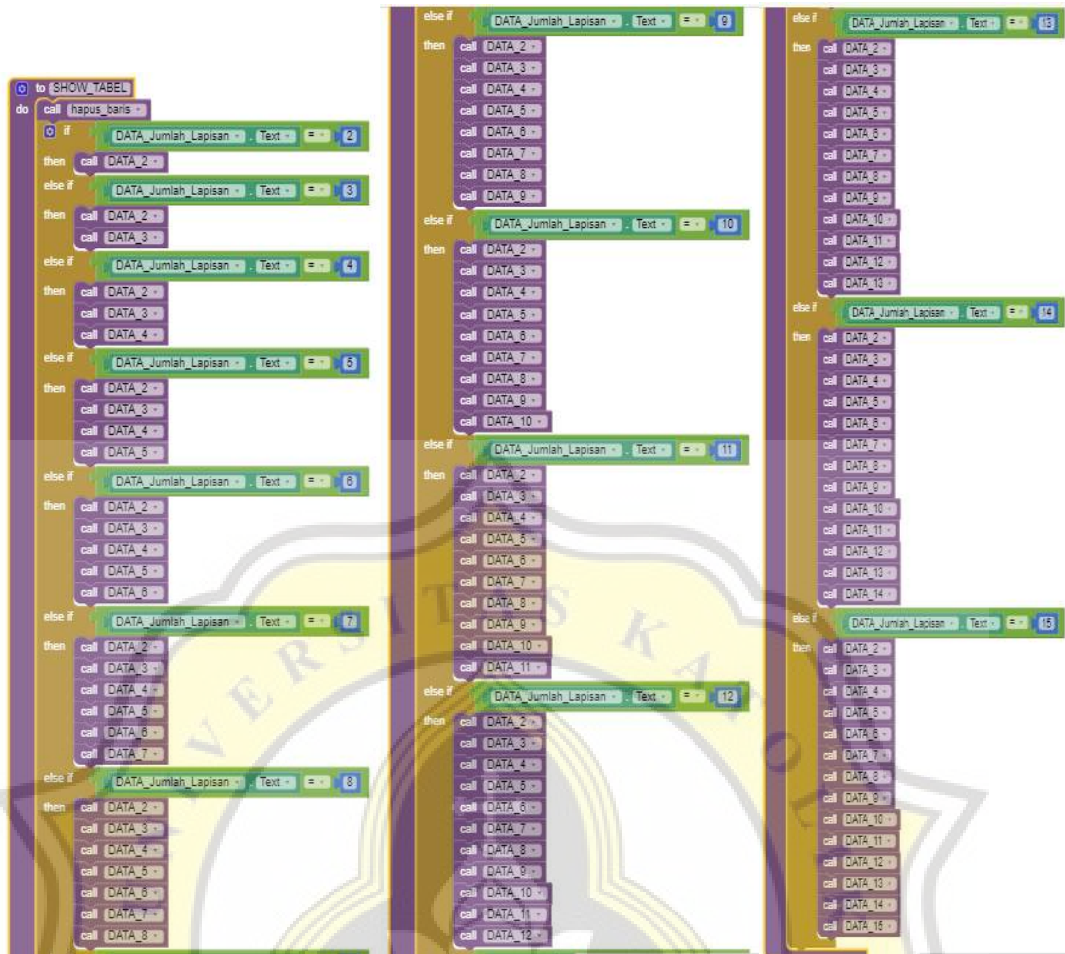
```
to notif13
do
  call Notifier1 .ShowMessageDialog
    message "Minimal DATA Jumlah Lapisan Tanah sebanyak 2 data "
    title "Error DATA Jumlah Lapisan Tanah "
    buttonText "Perbaiki "
  set DATA_Jumlah_Lapisan_Tanah . BackgroundColor to 
  set DATA_Jumlah_Lapisan_Tanah . Text to " "
```

Gambar LE.41 Blok Notif13

```
to notif14
do
  call Notifier1 .ShowMessageDialog
    message "Maksimal DATA Jumlah Lapisan Tanah sebanyak 15 d..."
    title "Error DATA Jumlah Lapisan Tanah "
    buttonText "Perbaiki "
  set DATA_Jumlah_Lapisan_Tanah . BackgroundColor to 
  set DATA_Jumlah_Lapisan_Tanah . Text to " "
```

Gambar LE.42 Blok Notif14

## E.4 Blok Program Halaman Input Data (Lanjutan)



Gambar LE.43 Blok *Procedure* : SHOW\_TABEL.



## E.4 Blok Program Halaman Input Data (Lanjutan)

```
to DATA_2
do
  set Judul_1 . Visible to true
  set Judul_2 . Visible to true
  set Judul_3 . Visible to true
  set Judul_4 . Visible to true
  set Judul_5 . Visible to true
  set Judul_6 . Visible to true
  set h1 . Visible to true
  set h2 . Visible to true
  set n1 . Visible to true
  set n2 . Visible to true
  set JT1 . Visible to true
  set JT2 . Visible to true
  set d1 . Visible to true
  set d2 . Visible to true
  set w1 . Visible to true
  set w2 . Visible to true
  set gs1 . Visible to true
  set gs2 . Visible to true
```

Gambar LE.44 Blok Procedure : DATA\_2.

```
to DATA_3
do
  set h3 . Visible to true
  set n3 . Visible to true
  set JT3 . Visible to true
  set d3 . Visible to true
  set w3 . Visible to true
  set gs3 . Visible to true
```

Gambar LE.45 Blok Procedure : DATA\_3.

```
to DATA_4
do
  set h4 . Visible to true
  set n4 . Visible to true
  set JT4 . Visible to true
  set d4 . Visible to true
  set w4 . Visible to true
  set gs4 . Visible to true
```

Gambar LE.46 Blok Procedure : DATA\_4.

```
to DATA_5
do
  set h5 . Visible to true
  set n5 . Visible to true
  set JT5 . Visible to true
  set d5 . Visible to true
  set w5 . Visible to true
  set gs5 . Visible to true
```

Gambar LE.47 Blok Procedure : DATA\_5.

## E.4 Blok Program Halaman Input Data (Lanjutan)

```
to DATA_6
do
  set h6 . Visible to true
  set n6 . Visible to true
  set JT6 . Visible to true
  set d6 . Visible to true
  set w6 . Visible to true
  set gs6 . Visible to true
```

Gambar LE.48 Blok *Procedure* : DATA\_6.

```
to DATA_7
do
  set h7 . Visible to true
  set n7 . Visible to true
  set JT7 . Visible to true
  set d7 . Visible to true
  set w7 . Visible to true
  set gs7 . Visible to true
```

Gambar LE.49 Blok *Procedure* : DATA\_7.

```
to DATA_8
do
  set h8 . Visible to true
  set n8 . Visible to true
  set JT8 . Visible to true
  set d8 . Visible to true
  set w8 . Visible to true
  set gs8 . Visible to true
```

Gambar LE.50 Blok *Procedure* : DATA\_8.

```
to DATA_9
do
  set h9 . Visible to true
  set n9 . Visible to true
  set JT9 . Visible to true
  set d9 . Visible to true
  set w9 . Visible to true
  set gs9 . Visible to true
```

Gambar LE.51 Blok *Procedure* : DATA\_9.

```
to DATA_10
do
  set h10 . Visible to true
  set n10 . Visible to true
  set JT10 . Visible to true
  set d10 . Visible to true
  set w10 . Visible to true
  set gs10 . Visible to true
```

Gambar LE.52 Blok *Procedure* : DATA\_10.



## E.4 Blok Program Halaman Input Data (Lanjutan)

```
to DATA_11
do
  set h11 . Visible to true
  set n11 . Visible to true
  set JT11 . Visible to true
  set d11 . Visible to true
  set w11 . Visible to true
  set gs11 . Visible to true
```

Gambar LE.53 Blok *Procedure* : DATA\_11.

```
to DATA_12
do
  set h12 . Visible to true
  set n12 . Visible to true
  set JT12 . Visible to true
  set d12 . Visible to true
  set w12 . Visible to true
  set gs12 . Visible to true
```

Gambar LE.54 Blok *Procedure* : DATA\_12.

```
to DATA_13
do
  set h13 . Visible to true
  set n13 . Visible to true
  set JT13 . Visible to true
  set d13 . Visible to true
  set w13 . Visible to true
  set gs13 . Visible to true
```

Gambar LE.55 Blok *Procedure* : DATA\_13.

```
to DATA_14
do
  set h14 . Visible to true
  set n14 . Visible to true
  set JT14 . Visible to true
  set d14 . Visible to true
  set w14 . Visible to true
  set gs14 . Visible to true
```

Gambar LE.56 Blok *Procedure* : DATA\_14.

```
to DATA_15
do
  set h15 . Visible to true
  set n15 . Visible to true
  set JT15 . Visible to true
  set d15 . Visible to true
  set w15 . Visible to true
  set gs15 . Visible to true
```

Gambar LE.57 Blok *Procedure* : DATA\_15.

#### E.4 Blok Program Halaman Input Data (Lanjutan)



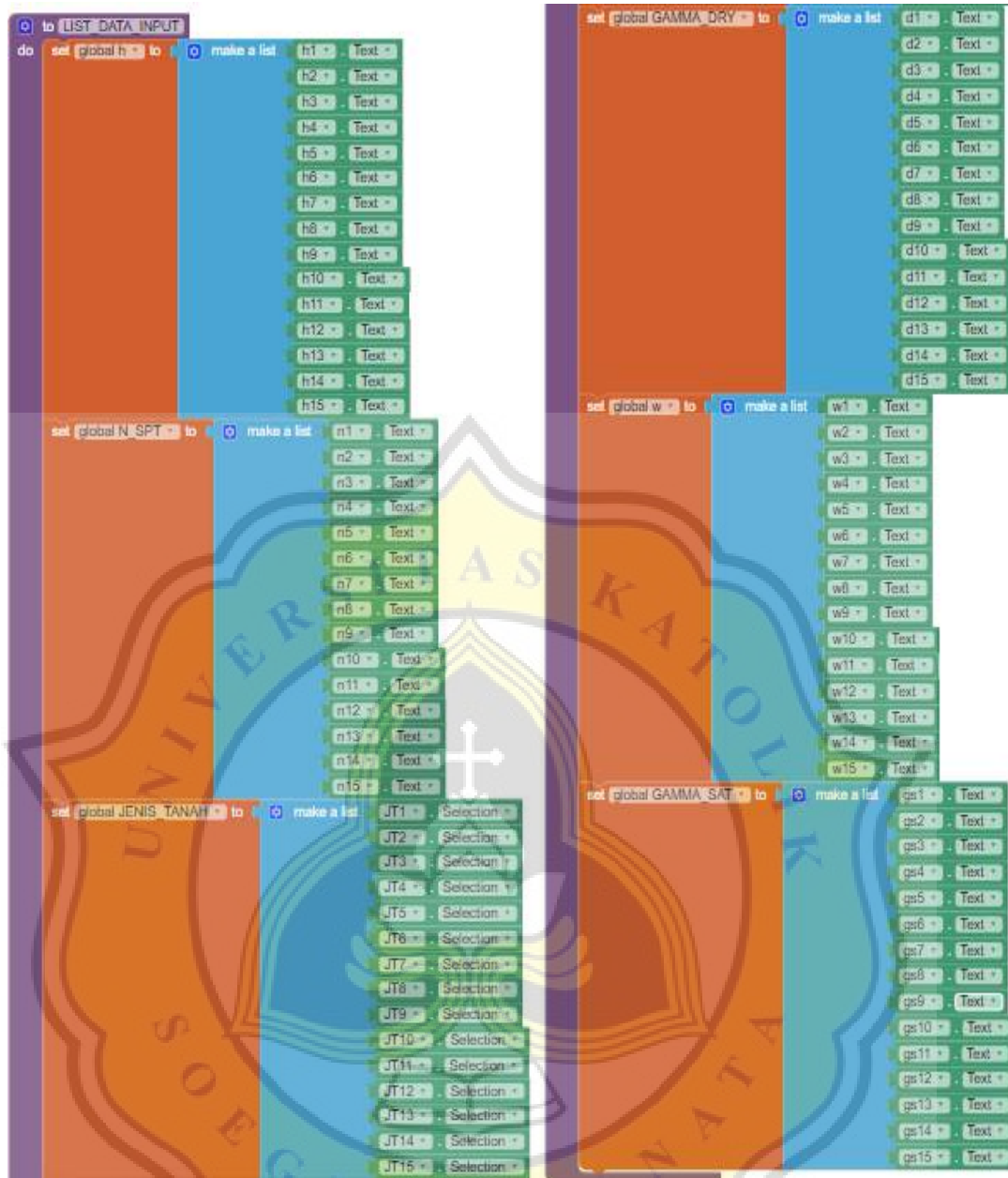
Gambar LE.58 Blok Untuk Membuat Variabel.

#### E.4 Blok Program Halaman Input Data (Lanjutan)

```
when HITUNG .Click
do
  call LIST_DATA_INPUT
  call gamma_b
  call gamma_j
  call zw
  call u
  call teg_vertikal
  call teg_vertikal_kum
  call teg_vertikal_efektif
  call n60_terkoreksi
  call su
  call alfa
  call fs
  call qp
  call as_lingkaran
  call ap_lingkaran
  call Qs_lingkaran
  call Qp_lingkaran
  call Qu_lingkaran
  call Qu_tot_lingkaran
  call as_persegi
  call ap_persegi
  call Qs_persegi
  call Qp_persegi
  call Qu_persegi
  call Qu_tot_persegi
  call as_segitiga
  call ap_segitiga
  call Qs_segitiga
  call Qp_segitiga
  call Qu_segitiga
  call Qu_tot_segitiga
  call Qa_lingkaran
  call Qa_persegi
  call Qa_segitiga
  call n_lingkaran
  call n_persegi
  call n_segitiga
  open another screen screenName "HASIL_OUTPUT"
```

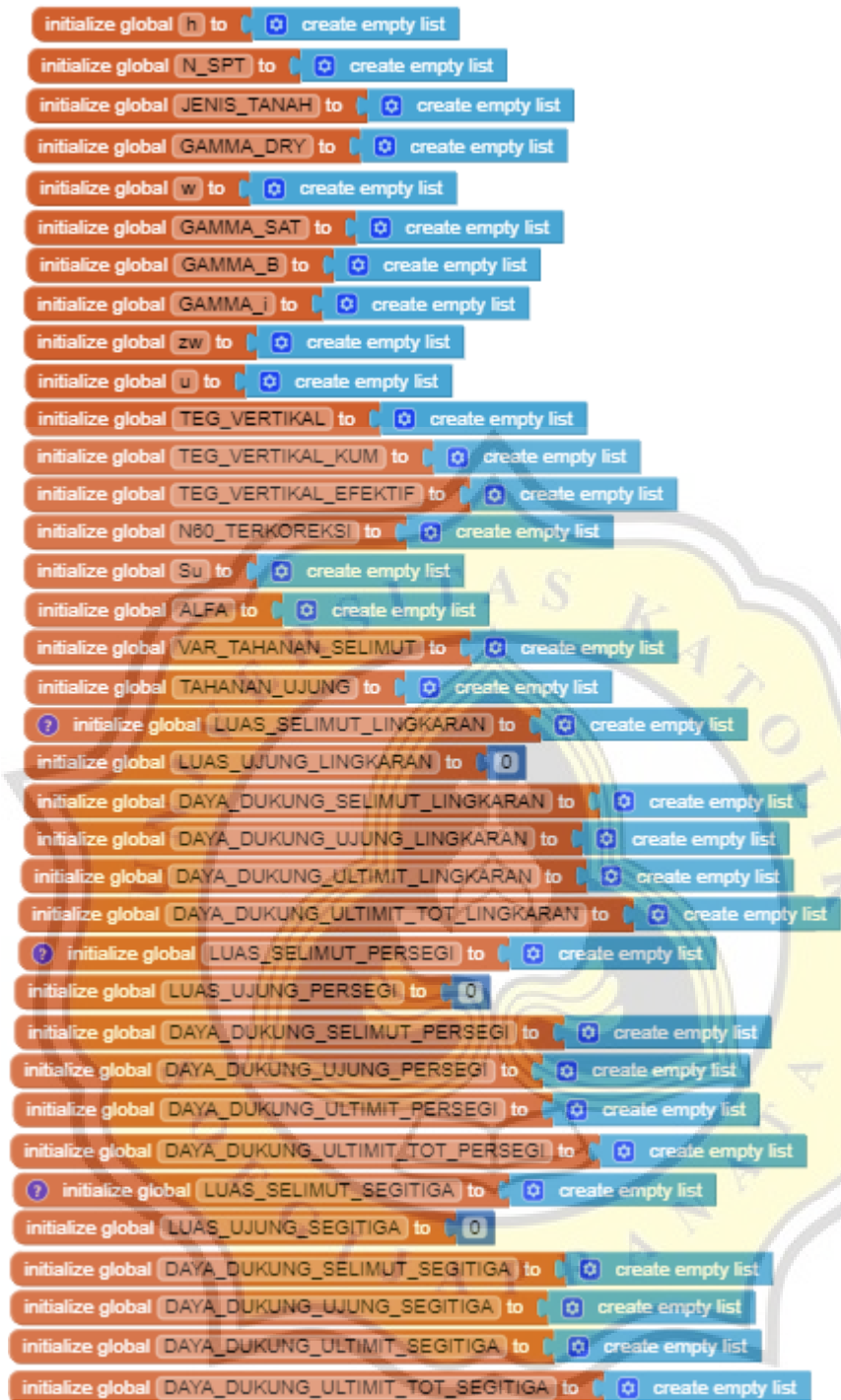
Gambar LE.59 Blok Untuk Tombol Hitung.

## E.4 Blok Program Halaman Input Data (Lanjutan)

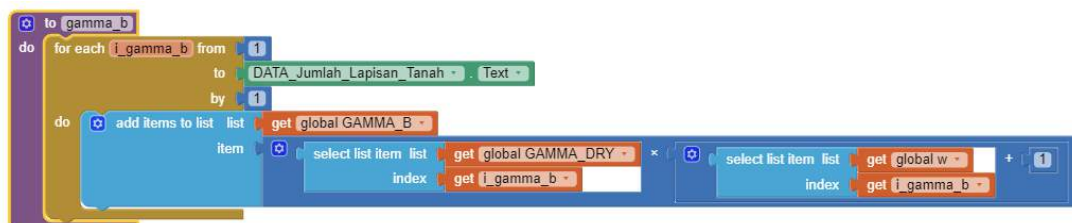


Gambar LE.60 Blok *Procedure* : List\_Data\_Input

## E.4 Blok Program Halaman Input Data (Lanjutan)



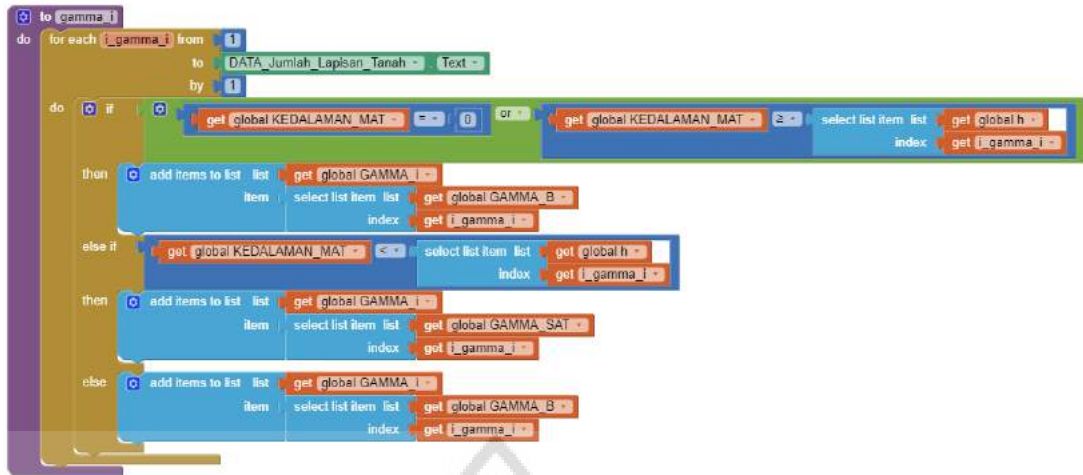
Gambar LE.61 Blok Untuk Membuat Variabel.



Gambar LE.62 Blok *Procedure* : Gamma b.

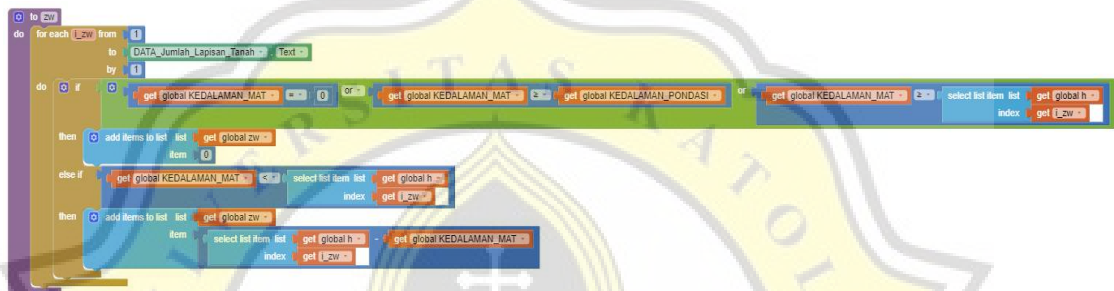


## E.4 Blok Program Halaman Input Data (Lanjutan)



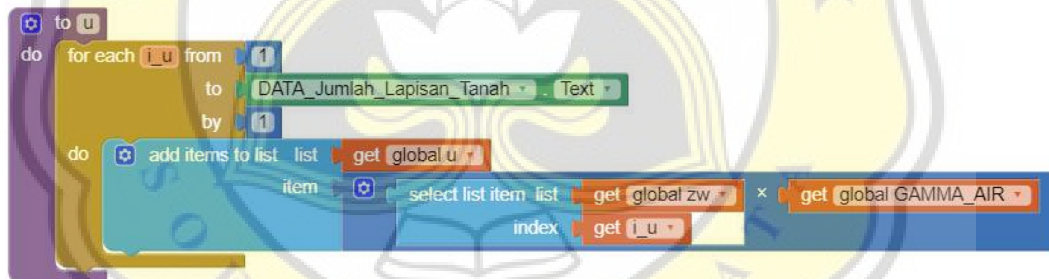
```
to gamma_i
do
  for each i_gamma_i from 1
  to DATA_Jumlah_Lapisan_Tanah . Text .
  by 1
  do
    if
      get global KEDALAMAN_MAT = 0 or
      get global KEDALAMAN_MAT <= 2
      select list item list
      index get i_gamma_i
    then
      add items to list list
      item select list item list
      index get global GAMMA
      get i_gamma_i
    else if
      get global KEDALAMAN_MAT <= 2
      select list item list
      index get i_gamma_i
    then
      add items to list list
      item select list item list
      index get global GAMMA_SAT
      get i_gamma_i
    else
      add items to list list
      item select list item list
      index get global GAMMA_B
      get i_gamma_i
```

Gambar LE.63 Blok *Procedure* : Gamma\_i.



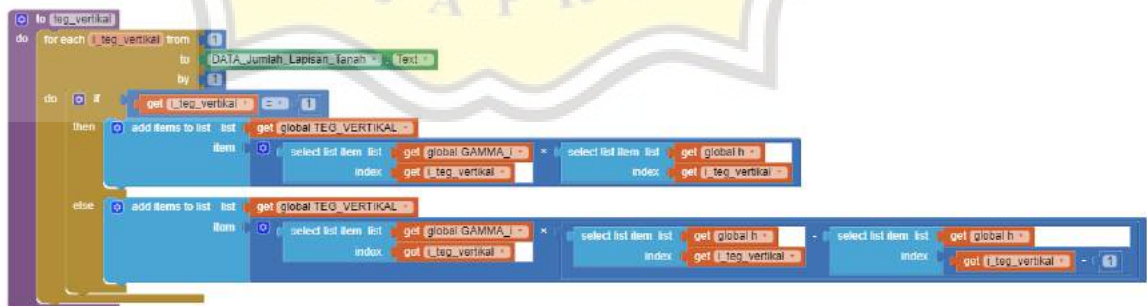
```
to zw
do
  for each i_zw from 1
  to DATA_Jumlah_Lapisan_Tanah . Text .
  by 1
  do
    if
      get global KEDALAMAN_MAT = 0 or
      get global KEDALAMAN_MAT <= 2
      get global KEDALAMAN_PONDASI or
      get global KEDALAMAN_MAT <= 2
      select list item list
      index get i_zw
    then
      add items to list list
      item 0
      get global zw
    else if
      get global KEDALAMAN_MAT <= 2
      select list item list
      index get i_zw
    then
      add items to list list
      item select list item list
      index get global KEDALAMAN_MAT
      get i_zw
```

Gambar LE.64 Blok *Procedure* : zw.



```
to u
do
  for each i_u from 1
  to DATA_Jumlah_Lapisan_Tanah . Text .
  by 1
  do
    add items to list list
    item select list item list
    index get global zw
    get global GAMMA_AIR
```

Gambar LE.65 Blok *Procedure* : u.



```
to teg_vertikal
do
  for each i_teg_vertikal from 1
  to DATA_Jumlah_Lapisan_Tanah . Text .
  by 1
  do
    if
      get i_teg_vertikal <= 1
    then
      add items to list list
      item select list item list
      index get global TEG_VERTIKAL
      get global GAMMA_i
      get global h
      get i_teg_vertikal
    else
      add items to list list
      item select list item list
      index get global TEG_VERTIKAL
      get global GAMMA_i
      get global h
      get i_teg_vertikal
      get global h
      get i_teg_vertikal
```

Gambar LE.66 Blok *Procedure* : Tegangan Vertikal.



## E.4 Blok Program Halaman Input Data (Lanjutan)

```
to teg_vertikal_kum
do
  for each i_teg_vert_kum from 1
    to DATA_Jumlah_Lapisan_Tanah . Text
    by 1
  do
    if get i_teg_vert_kum = 1
    then
      add items to list list
      item select list item list get global TEG_VERTIKAL_KUM
      index get i_teg_vert_kum
    else
      add items to list list
      item get global TEG_VERTIKAL_KUM + select list item list get global TEG_VERTIKAL
      index get i_teg_vert_kum - 1
    end if
  end do
end do
```

Gambar LE.67 Blok *Procedure* : Tegangan Vertikal Kumulatif.

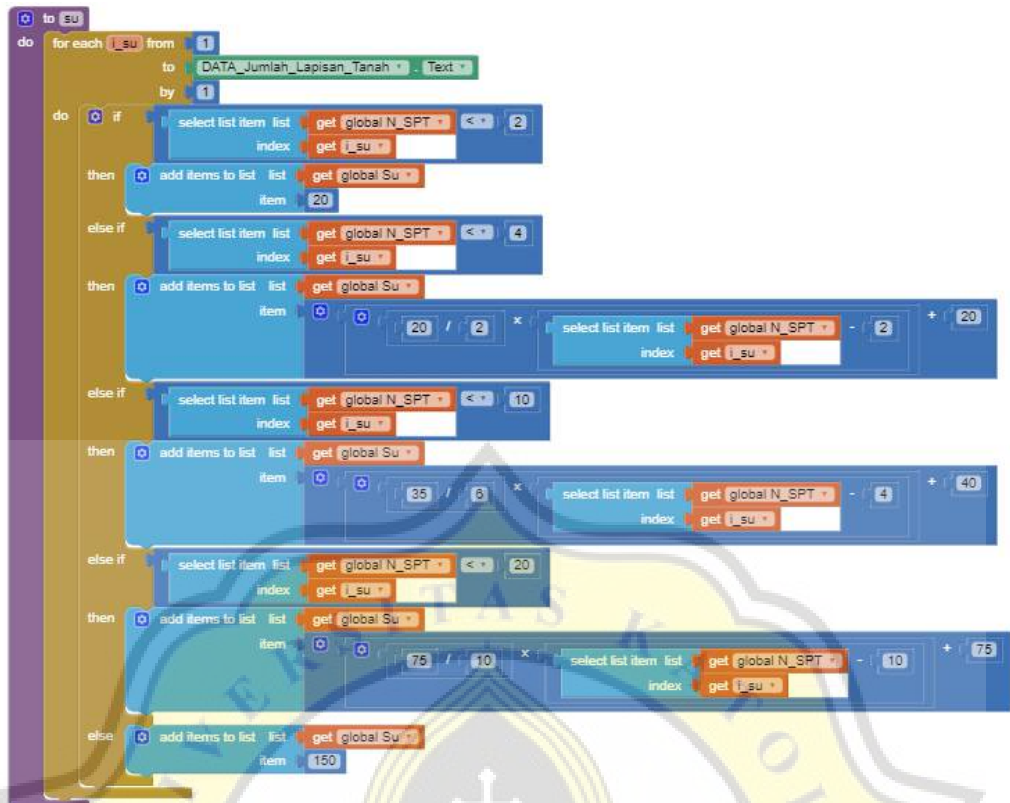
```
to teg_vertikal_efektif
do
  for each i_teg_vertikal_efektif from 1
    to DATA_Jumlah_Lapisan_Tanah . Text
    by 1
  do
    add items to list list
    item get global TEG_VERTIKAL_EFEKTIF
    index select list item list get global TEG_VERTIKAL_KUM - select list item list get global u
  end do
end do
```

Gambar LE.68 Blok *Procedure* : Tegangan Vertikal Efektif.

```
to n60_terkoreksi
do
  for each i_n60_terkoreksi from 1
    to DATA_Jumlah_Lapisan_Tanah . Text
    by 1
  do
    add items to list list
    item get global N60_TERKOREKSI
    index select list item list get global TEG_VERTIKAL_EFEKTIF / get global TC - select list item list get global N_SPI
  end do
end do
```

Gambar LE.69 Blok *Procedure* : n60 Terkoreksi.

## E.4 Blok Program Halaman Input Data (Lanjutan)



Gambar LE.70 Blok *Procedure* : su.



Gambar LE.71 Blok *Procedure* : Alfa.

## E.4 Blok Program Halaman Input Data (Lanjutan)

The screenshot shows a procedure block for 'fs'. It starts with a 'do' block containing a 'for each' loop over 'DATA\_Jumlah\_Lapisan\_Tanah' with index 'i'. Inside the loop, there are several conditional blocks:
 

- if** block: Checks if 'global JENIS\_TANAH' is 'Silt / Selimut' or 'Gravel / Selimut'. If true, it adds items to a list 'global VAR\_TAHANAN\_SELMUT' with item name 'global Tr' and value  $\frac{global N\_SPT}{50}$ .
- else if** block: Checks if 'global JENIS\_TANAH' is 'Clay / Selimut'. If true, it adds items to the same list with item name 'global ALFA' and value  $\frac{global Su}{10}$ .
- else if** block: Checks if 'global JENIS\_TANAH' is 'Silt / Selimut Ujung' or 'Gravel / Selimut Ujung'. If true, it adds items to the list with item name 'global Tr' and value  $\frac{global N\_SPT}{50}$ .
- else if** block: Checks if 'global JENIS\_TANAH' is 'Clay / Selimut Ujung'. If true, it adds items to the list with item name 'global ALFA' and value  $\frac{global Su}{10}$ .
- else** block: Adds items to the list with item name 'global VAR\_TAHANAN\_SELMUT' and value 0.

Gambar LE.72 Blok Procedure : fs.

The screenshot shows a procedure block for 'qp'. It starts with a 'do' block containing a 'for each' loop over 'DATA\_Jumlah\_Lapisan\_Tanah' with index 'i'. Inside the loop, there are several conditional blocks:
 

- if** block: Checks if 'global JENIS\_TANAH' is 'Silt / Selimut Ujung'. If true, it adds items to a list 'global TAHANAN\_ULUNG' with item name 'global NOD\_TERKOREKSI' and value  $\frac{global NOD\_TERKOREKSI}{0.4}$ .
- else if** block: Checks if 'global JENIS\_TANAH' is 'Clay / Selimut Ujung'. If true, it adds items to the same list with item name 'global NOD' and value  $\frac{global NOD\_TERKOREKSI}{0.4}$ .
- else if** block: Checks if 'global JENIS\_TANAH' is 'Gravel / Selimut Ujung'. If true, it adds items to the list with item name 'global NOD\_TERKOREKSI' and value  $\frac{global NOD\_TERKOREKSI}{0.4}$ .
- else** block: Adds items to the list with item name 'global TAHANAN\_ULUNG' and value 0.

Gambar LE.73 Blok Procedure : qp.

The screenshot shows a procedure block for 'Luas Selimut Lingkaran'. It starts with a 'do' block containing a 'for each' loop over 'as\_lingkaran' with index 'i'. Inside the loop, there are two conditional blocks:
 

- if** block: Checks if 'i\_as\_lingkaran' is 1. If true, it adds items to a list 'global LUAS\_SELMUT\_LINGKARAN' with item name 'global h' and value  $3.14 \times \frac{global LEBAR\_PONDASI}{2} \times i$ .
- else** block: Adds items to the same list with item name 'global h' and value  $3.14 \times \frac{global LEBAR\_PONDASI}{2} \times i$ .

Gambar LE.74 Blok Procedure : Luas Selimut Lingkaran.

## E.4 Blok Program Halaman Input Data (Lanjutan)

```
to as_persegi
do
  for each l_as_persegi from 1
  to DATA_Jumlah_Lapisan_Tanah - Text -
  by 1
  do
    if l_as_persegi = 1
    then
      add items to list list
      get global LUAS_SELIMUT_PERSEGI
      item
      4 × get global LEBAR_PONDASI × select list item list
      get global h
      index
      get l_as_persegi
    else
      add items to list list
      get global LUAS_SELIMUT_PERSEGI
      item
      4 × get global LEBAR_PONDASI × select list item list
      get global h
      index
      get l_as_persegi - 1
      select list item list
      get global h
      index
      get l_as_persegi
    end
  end
end
```

Gambar LE.75 Blok *Procedure* : Luas Selimut Persegi.

```
to as_segitiga
do
  for each l_as_segitiga from 1
  to DATA_Jumlah_Lapisan_Tanah - Text -
  by 1
  do
    if l_as_segitiga = 1
    then
      add items to list list
      get global LUAS_SELIMUT_SEGITIGA
      item
      3 × get global LEBAR_PONDASI × select list item list
      get global h
      index
      get l_as_segitiga
    else
      add items to list list
      get global LUAS_SELIMUT_SEGITIGA
      item
      3 × get global LEBAR_PONDASI × select list item list
      get global h
      index
      get l_as_segitiga - 1
      select list item list
      get global h
      index
      get l_as_segitiga
    end
  end
end
```

Gambar LE.76 Blok *Procedure* : Luas Selimut Segitiga.

```
to ap_lingkaran
do
  set global LUAS_UJUNG_LINGKARAN to 0.25 × 3.14 × get global LEBAR_PONDASI ^ 2
```

Gambar LE.77 Blok *Procedure* : Luas Ujung Lingkaran.

```
to ap_persegi
do
  set global LUAS_UJUNG_PERSEGI to get global LEBAR_PONDASI ^ 2
```

Gambar LE.78 Blok *Procedure* : Luas Ujung Persegi.

```
to ap_segitiga
do
  set global LUAS_UJUNG_SEGITIGA to 0.5 × get global LEBAR_PONDASI × square root -
  get global LEBAR_PONDASI ^ 2
  0.5 × get global LEBAR_PONDASI ^ 2
```

Gambar LE.79 Blok *Procedure* : Luas Ujung Segitiga.

```
to Os_lingkaran
do
  for each l_Os_lingkaran from 1
  to DATA_Jumlah_Lapisan_Tanah - Text -
  by 1
  do
    add items to list list
    get global DAYA_DUKUNG_SELIMUT_LINGKARAN
    item
    select list item list
    get global VAR_TAHANAN_SELIMUT × select list item list
    get global LUAS_SELIMUT_LINGKARAN
    index
    get l_Os_lingkaran
    index
    get l_Os_lingkaran
  end
end
```

Gambar LE.80 Blok *Procedure* : Daya dukung Selimut Lingkaran.



## E.4 Blok Program Halaman Input Data (Lanjutan)



```
to Qs_persegi
do
  for each i_Qs_persegi from 1
  to DATA_Jumlah_Lapisan_Tanah . Text .
  by 1
  do
    add items to list list get global DAYA_DUKUNG_SELIMUT_PERSEGI .
    item
    select list item list get global VAR_TAHANAN_SELIMUT . × select list item list get global LUAS_SELIMUT_PERSEGI .
    index get i_Qs_persegi .
    index get i_Qs_persegi .
```

Gambar LE.81 Blok *Procedure* : Daya dukung Selimut Persegi.



```
to Qs_segitiga
do
  for each i_Qs_segitiga from 1
  to DATA_Jumlah_Lapisan_Tanah . Text .
  by 1
  do
    add items to list list get global DAYA_DUKUNG_SELIMUT_SEGITIGA .
    item
    select list item list get global VAR_TAHANAN_SELIMUT . × select list item list get global LUAS_SELIMUT_SEGITIGA .
    index get i_Qs_segitiga .
    index get i_Qs_segitiga .
```

Gambar LE.82 Blok *Procedure* : Daya dukung Selimut Segitiga.



```
to Qp_lingkaran
do
  for each i_Qp_lingkaran from 1
  to DATA_Jumlah_Lapisan_Tanah . Text .
  by 1
  do
    if get i_Qp_lingkaran = DATA_Jumlah_Lapisan_Tanah . Text .
    then
      add items to list list get global DAYA_DUKUNG_UJUNG_LINGKARAN .
      item
      select list item list get global TAHANAN_UJUNG . × get global LUAS_UJUNG_LINGKARAN .
      index get i_Qp_lingkaran .
    else
      add items to list list get global DAYA_DUKUNG_UJUNG_LINGKARAN .
      item 0
```

Gambar LE.83 Blok *Procedure* : Daya Dukung Ujung Lingkaran.



```
to Qp_persegi
do
  for each i_Qp_persegi from 1
  to DATA_Jumlah_Lapisan_Tanah . Text .
  by 1
  do
    if get i_Qp_persegi = DATA_Jumlah_Lapisan_Tanah . Text .
    then
      add items to list list get global DAYA_DUKUNG_UJUNG_PERSEGI .
      item
      select list item list get global TAHANAN_UJUNG . × get global LUAS_UJUNG_PERSEGI .
      index get i_Qp_persegi .
    else
      add items to list list get global DAYA_DUKUNG_UJUNG_PERSEGI .
      item 0
```

Gambar LE.84 Blok *Procedure* : Daya Dukung Ujung Persegi.



```
to Qp_segitiga
do
  for each i_Qp_segitiga from 1
  to DATA_Jumlah_Lapisan_Tanah . Text .
  by 1
  do
    if get i_Qp_segitiga = DATA_Jumlah_Lapisan_Tanah . Text .
    then
      add items to list list get global DAYA_DUKUNG_UJUNG_SEGITIGA .
      item
      select list item list get global TAHANAN_UJUNG . × get global LUAS_UJUNG_SEGITIGA .
      index get i_Qp_segitiga .
    else
      add items to list list get global DAYA_DUKUNG_UJUNG_SEGITIGA .
      item 0
```

Gambar LE.85 Blok *Procedure* : Daya Dukung Ujung Segitiga.

## E.4 Blok Program Halaman Input Data (Lanjutan)

```

do
  to Qu_lingkaran
  do
    for each I_Qu_lingkaran from 1
    to DATA_Jumlah_Lapisan_Tanah - Text -
    by 1
    do
      add items to list list
      item
      get global DAYA_DUKUNG_ULTIMIT_LINGKARAN -
      +
      select list item list
      index
      get I_Qu_lingkaran -
      +
      select list item list
      index
      get global DAYA_DUKUNG_UJUNG_LINGKARAN -
      index
      get I_Qu_lingkaran -
    
```

Gambar LE.86 Blok *Procedure* : Daya Dukung Ultimit Lingkaran.

```

do
  to Qu_persegi
  do
    for each I_Qu_persegi from 1
    to DATA_Jumlah_Lapisan_Tanah - Text -
    by 1
    do
      add items to list list
      item
      get global DAYA_DUKUNG_ULTIMIT_PERSEGI -
      +
      select list item list
      index
      get I_Qu_persegi -
      +
      select list item list
      index
      get global DAYA_DUKUNG_UJUNG_PERSEGI -
      index
      get I_Qu_persegi -
    
```

Gambar LE.87 Blok *Procedure* : Daya Dukung Ultimit Persegi.

```

do
  to Qu_segitiga
  do
    for each I_Qu_segitiga from 1
    to DATA_Jumlah_Lapisan_Tanah - Text -
    by 1
    do
      add items to list list
      item
      get global DAYA_DUKUNG_ULTIMIT_SEGITIGA -
      +
      select list item list
      index
      get I_Qu_segitiga -
      +
      select list item list
      index
      get global DAYA_DUKUNG_UJUNG_SEGITIGA -
      index
      get I_Qu_segitiga -
    
```

Gambar LE.88 Blok *Procedure* : Daya Dukung Ultimit Segitiga.

```

do
  to Qu_tot_lingkaran
  do
    set global DAYA_DUKUNG_ULTIMIT_TOT_LINGKARAN to 0
    for each I_Qu_tot_lingkaran from 1
    to DATA_Jumlah_Lapisan_Tanah - Text -
    by 1
    do
      set global DAYA_DUKUNG_ULTIMIT_TOT_LINGKARAN to
      format as decimal number
      get global DAYA_DUKUNG_ULTIMIT_TOT_LINGKARAN -
      +
      select list item list
      index
      get I_Qu_tot_lingkaran -
      places 4
    
```

call TinyDB1 - StoreValue  
tag Qu\_TOT\_LINGKARAN  
valueToStore get global DAYA\_DUKUNG\_ULTIMIT\_TOT\_LINGKARAN

Gambar LE.89 Blok *Procedure* : Daya Dukung Total Ultimit Lingkaran.

```

do
  to Qu_tot_persegi
  do
    set global DAYA_DUKUNG_ULTIMIT_TOT_PERSEGI to 0
    for each I_Qu_tot_persegi from 1
    to DATA_Jumlah_Lapisan_Tanah - Text -
    by 1
    do
      set global DAYA_DUKUNG_ULTIMIT_TOT_PERSEGI to
      format as decimal number
      get global DAYA_DUKUNG_ULTIMIT_TOT_PERSEGI -
      +
      select list item list
      index
      get I_Qu_tot_persegi -
      places 4
    
```

call TinyDB1 - StoreValue  
tag Qu\_TOT\_PERSEGI  
valueToStore get global DAYA\_DUKUNG\_ULTIMIT\_TOT\_PERSEGI

Gambar LE.90 Blok *Procedure* : Daya Dukung Total Ultimit Persegi.

```

do
  to Qu_tot_segitiga
  do
    set global DAYA_DUKUNG_ULTIMIT_TOT_SEGITIGA to 0
    for each I_Qu_tot_segitiga from 1
    to DATA_Jumlah_Lapisan_Tanah - Text -
    by 1
    do
      set global DAYA_DUKUNG_ULTIMIT_TOT_SEGITIGA to
      format as decimal number
      get global DAYA_DUKUNG_ULTIMIT_TOT_SEGITIGA -
      +
      select list item list
      index
      get I_Qu_tot_segitiga -
      places 4
    
```

call TinyDB1 - StoreValue  
tag Qu\_TOT\_SEGITIGA  
valueToStore get global DAYA\_DUKUNG\_ULTIMIT\_TOT\_SEGITIGA

Gambar LE.91 Blok *Procedure* : Daya Dukung Total Ultimit Segitiga.



## E.4 Blok Program Halaman Input Data (Lanjutan)

```

to Qa_lingkaran
do
  set global SUM_OP_lingkaran to 0
  for each L_Qa_tot_lingkaran from 1
  to DATA_Jumlah_Lapisan_Tanah - 1 text
  by 1
  do
    set global SUM_OP_lingkaran to
    get global SUM_OP_lingkaran +
    select list item list
    get global DATA_DUKUNG_ULUNG_LINGKARAN -
    index
    get L_Qa_tot_lingkaran -
    index

  set global SUM_OS_lingkaran to 0
  for each L_Qs_tot1 from 1
  to DATA_Jumlah_Lapisan_Tanah - 1 text
  by 1
  do
    set global SUM_OS_lingkaran to
    get global SUM_OS_lingkaran +
    select list item list
    get global DATA_DUKUNG_SELIMUT_LINGKARAN -
    index
    get L_Qs_tot1 -
    index

  set global Qa_lingkaran to
  format as decimal number
  get global SUM_OP_lingkaran /
  get global FK_ulung +
  get global SUM_OS_lingkaran /
  get global FK_selimut -
  places 4

  call TinyDB1 - StoreValue
  tag Qa_lingkaran
  valueToStore get global Qa_lingkaran -
  
```

Gambar LE.92 Blok *Procedure* : Daya Dukung Ijin Lingkaran.

```

to Qa_persegi
do
  set global SUM_OP_persegi to 0
  for each L_Qp_tot_persegi from 1
  to DATA_Jumlah_Lapisan_Tanah - 1 text
  by 1
  do
    set global SUM_OP_persegi to
    get global SUM_OP_persegi +
    select list item list
    get global DATA_DUKUNG_ULUNG_PERSEGI -
    index
    get L_Qp_tot_persegi -
    index

  set global SUM_OS_persegi to 0
  for each L_Qs_tot1 from 1
  to DATA_Jumlah_Lapisan_Tanah - 1 text
  by 1
  do
    set global SUM_OS_persegi to
    get global SUM_OS_persegi +
    select list item list
    get global DATA_DUKUNG_SELIMUT_PERSEGI -
    index
    get L_Qs_tot1 -
    index

  set global Qa_persegi to
  format as decimal number
  get global SUM_OP_persegi /
  get global FK_ulung +
  get global SUM_OS_persegi /
  get global FK_selimut -
  places 4

  call TinyDB1 - StoreValue
  tag Qa_persegi
  valueToStore get global Qa_persegi -
  
```

Gambar LE.93 Blok *Procedure* : Daya Dukung Ijin Persegi.

```

to Qa_segitiga
do
  set global SUM_OP_segitiga to 0
  for each L_Qs_tot_segitiga from 1
  to DATA_Jumlah_Lapisan_Tanah - 1 text
  by 1
  do
    set global SUM_OP_segitiga to
    get global SUM_OP_segitiga +
    select list item list
    get global DATA_DUKUNG_ULUNG_SEGITIGA -
    index
    get L_Qs_tot_segitiga -
    index

  set global SUM_OS_segitiga to 0
  for each L_Qs_tot1 from 1
  to DATA_Jumlah_Lapisan_Tanah - 1 text
  by 1
  do
    set global SUM_OS_segitiga to
    get global SUM_OS_segitiga +
    select list item list
    get global DATA_DUKUNG_SELIMUT_SEGITIGA -
    index
    get L_Qs_tot1 -
    index

  set global Qa_segitiga to
  format as decimal number
  get global SUM_OP_segitiga /
  get global FK_ulung +
  get global SUM_OS_segitiga /
  get global FK_selimut -
  places 4

  call TinyDB1 - StoreValue
  tag Qa_segitiga
  valueToStore get global Qa_segitiga -
  
```

Gambar LE.94 Blok *Procedure* : Daya Dukung Ijin Segitiga.

```

to n_lingkaran
do
  set global JUMLAH_TIANG_lingkaran to
  ceiling
  get global BEBAN_KOLOM /
  get global Qa_lingkaran -

  call TinyDB1 - StoreValue
  tag JUMLAH TIANG LINGKARAN
  valueToStore get global JUMLAH_TIANG_lingkaran -
  
```

Gambar LE.95 Blok *Procedure* : Jumlah Tiang Lingkaran.

## E.4 Blok Program Halaman Input Data (Lanjutan)

```
to n_persegi
do
  set global JUMLAH_TIANG_persegi to ceiling ( get global BEBAN_KOLOM / get global Qa_persegi )
  call TinyDB1 .StoreValue
    tag "JUMLAH TIANG PERSEGI"
    valueToStore get global JUMLAH_TIANG_persegi
```

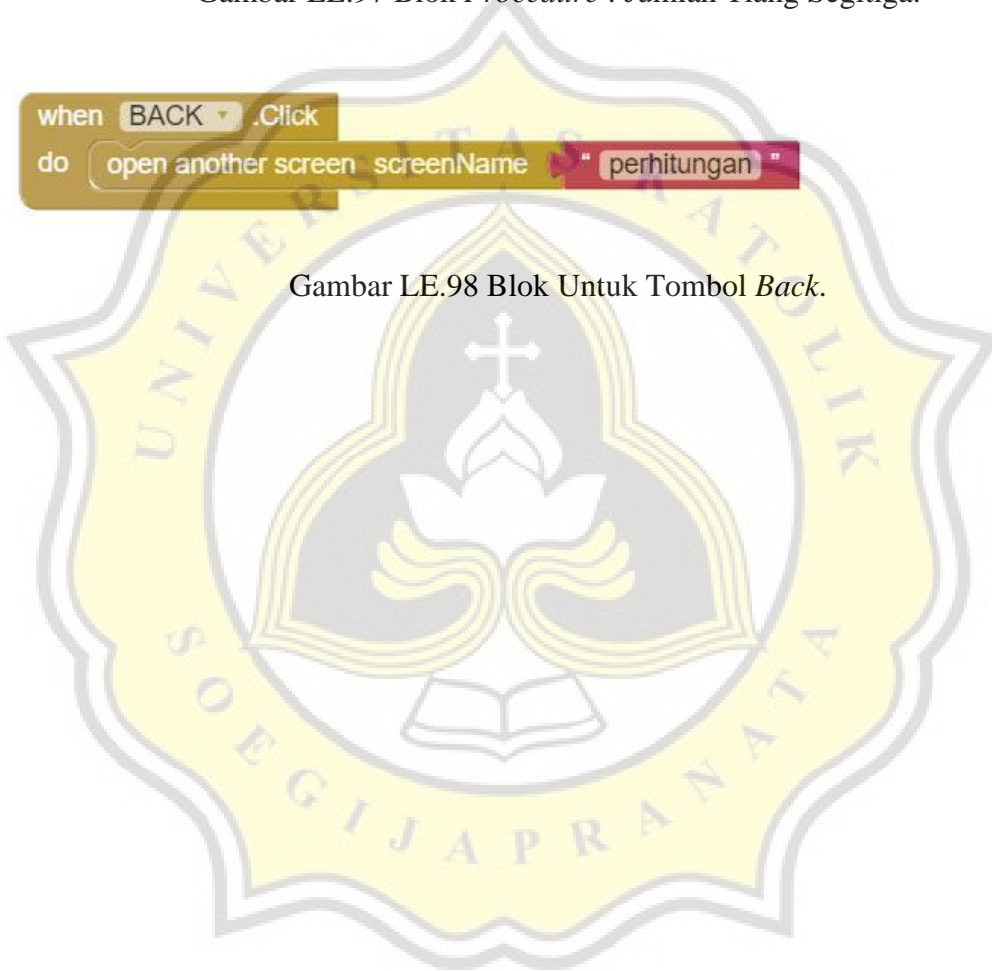
Gambar LE.96 Blok *Procedure* : Jumlah Tiang Persegi.

```
to n_segitiga
do
  set global JUMLAH_TIANG_segitiga to ceiling ( get global BEBAN_KOLOM / get global Qa_segitiga )
  call TinyDB1 .StoreValue
    tag "JUMLAH TIANG SEGITIGA"
    valueToStore get global JUMLAH_TIANG_segitiga
```

Gambar LE.97 Blok *Procedure* : Jumlah Tiang Segitiga.

```
when BACK .Click
do
  open another screen screenName "perhitungan"
```

Gambar LE.98 Blok Untuk Tombol *Back*.



## E.5 Blok Program Halaman Hasil Output



Gambar LE.99 Blok Untuk Membuat Variabel.



Gambar LE.100 Blok Untuk Membuat Variabel Save.



Gambar LE.101 Blok Untuk Tombol *Back*.

## E.5 Blok Program Halaman Hasil Output (Lanjutan)

The image displays a complex programming block, likely in a visual programming language like LabVIEW, used for data processing and output generation. The block is structured as follows:

- Initialization:** Starts with a 'when' block labeled 'HASIL\_OUTPUT' and an 'Initialize' sub-block.
- Global Variable Setup:** A series of 'set' blocks define global variables for various parameters, such as 'IDENTITAS\_PROYEK', 'LEBAR\_PONDASI', 'KEDALAMAN\_MAT', 'KEDALAMAN\_PONDASI', 'FK\_ujung', 'FK\_selimut', 'BEBAN\_KOLOM', 'DAYA\_DUKUNG\_ULTIMIT\_TOTAL\_LINGKARAN', 'DAYA\_DUKUNG\_ULTIMIT\_TOTAL\_PERSEGI', and 'DAYA\_DUKUNG\_ULTIMIT\_TOTAL\_SEGITIGA'. Each 'set' block is followed by a 'call' block to 'TinyDB1' to retrieve the value and a 'valueIfTagNotThere' block to handle missing data.
- Output Generation:** A series of 'set' blocks with a '.Text' property generate output strings for each parameter, such as 'OUTPUT\_IDENTITAS\_PROYEK', 'OUTPUT\_LEBAR\_PONDASI', etc.
- Summary Calculations:** A series of 'set' blocks calculate summary values like 'JUMLAH\_TIANG\_LINGKARAN', 'JUMLAH\_PONDASI\_LINGKARAN', 'JUMLAH\_TIANG\_PERSEGI', 'JUMLAH\_PONDASI\_PERSEGI', 'JUMLAH\_TIANG\_SEGITIGA', and 'JUMLAH\_PONDASI\_SEGITIGA'.
- Final Output:** A series of 'call' blocks at the bottom output the final values for each parameter, such as 'identitas\_proyek', 'lebar\_pondasi', etc.
- Warnings:** A 'Show Warnings' dialog box is visible in the middle of the block, indicating a warning or error during execution.

Gambar LE.102 Blok Untuk *Screen* Hasil Output.



## E.5 Blok Program Halaman Hasil Output (Lanjutan)

```
to identitas_proyek
do
  set global save_identitas to call TinyDB1 .GetValue
  tag "SAVE IDENTITAS"
  valueIfTagNotThere 0
  set global save_identitas to + get global save_identitas + 1
  call TinyDB1 .StoreValue
  tag join "SAVE IDENTITAS"
  valueToStore get global IDENTITAS_PROYEK
  call TinyDB1 .StoreValue
  tag "SAVE IDENTITAS"
  valueToStore get global save_identitas
```

Gambar LE.103 Blok *Procedure* : Identitas Proyek.

```
to lebar_pondasi
do
  set global save_lebar_pondasi to call TinyDB1 .GetValue
  tag "SAVE LEBAR PONDASI"
  valueIfTagNotThere 0
  set global save_lebar_pondasi to + get global save_lebar_pondasi + 1
  call TinyDB1 .StoreValue
  tag join "SAVE LEBAR PONDASI"
  valueToStore get global LEBAR_PONDASI
  call TinyDB1 .StoreValue
  tag "SAVE LEBAR PONDASI"
  valueToStore get global save_lebar_pondasi
```

Gambar LE.104 Blok *Procedure* : Lebar Pondasi.

```
to kedalaman_mat
do
  set global save_kedalaman_mat to call TinyDB1 .GetValue
  tag "SAVE KEDALAMAN MAT"
  valueIfTagNotThere 0
  set global save_kedalaman_mat to + get global save_kedalaman_mat + 1
  call TinyDB1 .StoreValue
  tag join "SAVE KEDALAMAN MAT"
  valueToStore get global KEDALAMAN_MAT
  call TinyDB1 .StoreValue
  tag "SAVE KEDALAMAN MAT"
  valueToStore get global save_kedalaman_mat
```

Gambar LE.105 Blok *Procedure* : Kedalaman Muka Air Tanah.



## E.5 Blok Program Halaman Hasil Output (Lanjutan)

```
to kedalaman_pondasi
do
  set global save_kedalaman_pondasi to call TinyDB1 .GetValue
  tag "SAVE KEDALAMAN PONDASI"
  valueIfTagNotThere 0
  set global save_kedalaman_pondasi to get global save_kedalaman_pondasi + 1
  call TinyDB1 .StoreValue
  tag join "SAVE KEDALAMAN PONDASI"
  get global save_kedalaman_pondasi
  valueToStore get global KEDALAMAN_PONDASI
  call TinyDB1 .StoreValue
  tag "SAVE KEDALAMAN PONDASI"
  valueToStore get global save_kedalaman_pondasi
```

Gambar LE.106 Blok *Procedure* : Kedalaman Pondasi.

```
to FK_ujung
do
  set global save_FK_ujung to call TinyDB1 .GetValue
  tag "SAVE FAKTOR KEAMANAN 1"
  valueIfTagNotThere 0
  set global save_FK_ujung to get global save_FK_ujung + 1
  call TinyDB1 .StoreValue
  tag join "SAVE FAKTOR KEAMANAN 1"
  get global save_FK_ujung
  valueToStore get global FK_ujung
  call TinyDB1 .StoreValue
  tag "SAVE FAKTOR KEAMANAN 1"
  valueToStore get global save_FK_ujung
```

Gambar LE.107 Blok *Procedure* : Faktor Keamanan Ujung.

```
to FK_selimut
do
  set global save_FK_selimut to call TinyDB1 .GetValue
  tag "SAVE FAKTOR KEAMANAN 2"
  valueIfTagNotThere 0
  set global save_FK_selimut to get global save_FK_selimut + 1
  call TinyDB1 .StoreValue
  tag join "SAVE FAKTOR KEAMANAN 2"
  get global save_FK_selimut
  valueToStore get global FK_Selimut
  call TinyDB1 .StoreValue
  tag "SAVE FAKTOR KEAMANAN 2"
  valueToStore get global save_FK_selimut
```

Gambar LE.108 Blok *Procedure* : Faktor Keamanan Selimut.

## E.5 Blok Program Halaman Hasil Output (Lanjutan)

```
to Qu_tot_ling
do
  set global save_daya_dukung_ultimit_total_lingkaran to call TinyDB1 .GetValue
  tag "SAVE Qu TOT LING"
  valueIfTagNotThere 0
  set global save_daya_dukung_ultimit_total_lingkaran to get global save_daya_dukung_ultimit_total_lingkaran + 1
  call TinyDB1 .StoreValue
  tag join "SAVE Qu TOT LING"
  valueToStore get global save_daya_dukung_ultimit_total_lingkaran
  valueToStore get global DAYA_DUKUNG_ULTIMIT_TOTAL_LINGKARAN
  call TinyDB1 .StoreValue
  tag "SAVE Qu TOT LING"
  valueToStore get global save_daya_dukung_ultimit_total_lingkaran
```

Gambar LE.109 Blok *Procedure* : Daya Dukung Ultimit Lingkaran.

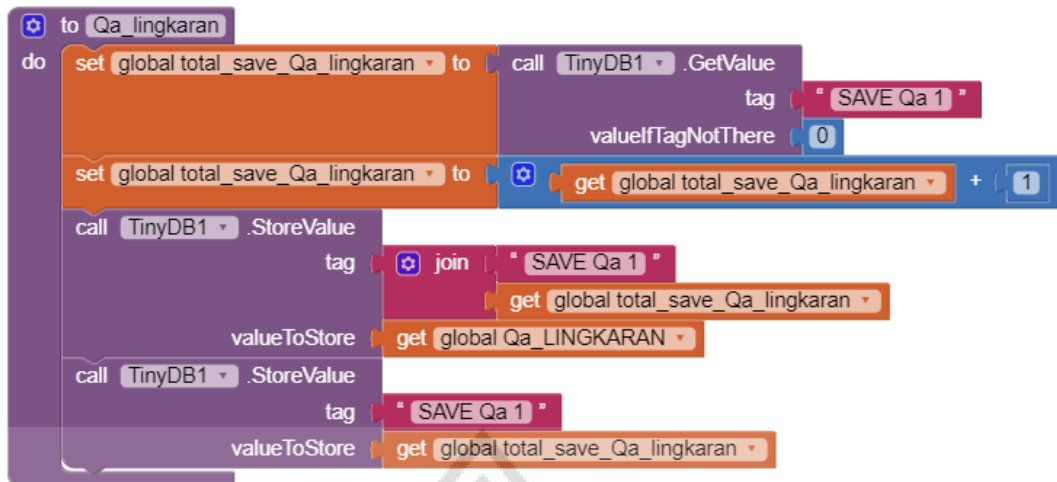
```
to Qu_tot_persegi
do
  set global save_daya_dukung_ultimit_total_persegi to call TinyDB1 .GetValue
  tag "SAVE Qu TOT PERSEGI"
  valueIfTagNotThere 0
  set global save_daya_dukung_ultimit_total_persegi to get global save_daya_dukung_ultimit_total_persegi + 1
  call TinyDB1 .StoreValue
  tag join "SAVE Qu TOT PERSEGI"
  valueToStore get global save_daya_dukung_ultimit_total_persegi
  valueToStore get global DAYA_DUKUNG_ULTIMIT_TOTAL_PERSEGI
  call TinyDB1 .StoreValue
  tag "SAVE Qu TOT PERSEGI"
  valueToStore get global save_daya_dukung_ultimit_total_persegi
```

Gambar LE.110 Blok *Procedure* : Daya Dukung Ultimit Persegi.

```
to Qu_tot_segitiga
do
  set global save_daya_dukung_ultimit_total_segitiga to call TinyDB1 .GetValue
  tag "SAVE Qu TOT SEGITIGA"
  valueIfTagNotThere 0
  set global save_daya_dukung_ultimit_total_segitiga to get global save_daya_dukung_ultimit_total_segitiga + 1
  call TinyDB1 .StoreValue
  tag join "SAVE Qu TOT SEGITIGA"
  valueToStore get global save_daya_dukung_ultimit_total_segitiga
  valueToStore get global DAYA_DUKUNG_ULTIMIT_TOTAL_SEGITIGA
  call TinyDB1 .StoreValue
  tag "SAVE Qu TOT SEGITIGA"
  valueToStore get global save_daya_dukung_ultimit_total_segitiga
```

Gambar LE.111 Blok *Procedure* : Daya Dukung Ultimit Segitiga.

## E.5 Blok Program Halaman Hasil Output (Lanjutan)



```
to Qa_lingkaran
do
  set global total_save_Qa_lingkaran to call TinyDB1 .GetValue
  tag "SAVE Qa 1"
  valueIfTagNotThere 0
  set global total_save_Qa_lingkaran to get global total_save_Qa_lingkaran + 1
  call TinyDB1 .StoreValue
  tag join "SAVE Qa 1"
  valueToStore get global total_save_Qa_lingkaran
  call TinyDB1 .StoreValue
  tag "SAVE Qa 1"
  valueToStore get global Qa_LINGKARAN
```

Gambar LE.112 Blok *Procedure* : Daya Dukung Ijin Lingkaran.



```
to Qa_persegi
do
  set global total_save_Qa_persegi to call TinyDB1 .GetValue
  tag "SAVE Qa 2"
  valueIfTagNotThere 0
  set global total_save_Qa_persegi to get global total_save_Qa_persegi + 1
  call TinyDB1 .StoreValue
  tag join "SAVE Qa 2"
  valueToStore get global total_save_Qa_persegi
  call TinyDB1 .StoreValue
  tag "SAVE Qa 2"
  valueToStore get global Qa_PERSEGI
```

Gambar LE.113 Blok *Procedure* : Daya Dukung Ijin Persegi.



```
to Qa_segitiga
do
  set global save_Qa_segitiga to call TinyDB1 .GetValue
  tag "SAVE Qa 3"
  valueIfTagNotThere 0
  set global save_Qa_segitiga to get global save_Qa_segitiga + 1
  call TinyDB1 .StoreValue
  tag join "SAVE Qa 3"
  valueToStore get global save_Qa_segitiga
  call TinyDB1 .StoreValue
  tag "SAVE Qa 3"
  valueToStore get global Qa_SEGITIGA
```

Gambar LE.114 Blok *Procedure* : Daya Dukung Ijin Segitiga.

## E.5 Blok Program Halaman Hasil Output (Lanjutan)



Gambar LE.115 Blok *Procedure* : Jumlah Tiang Lingkaran.

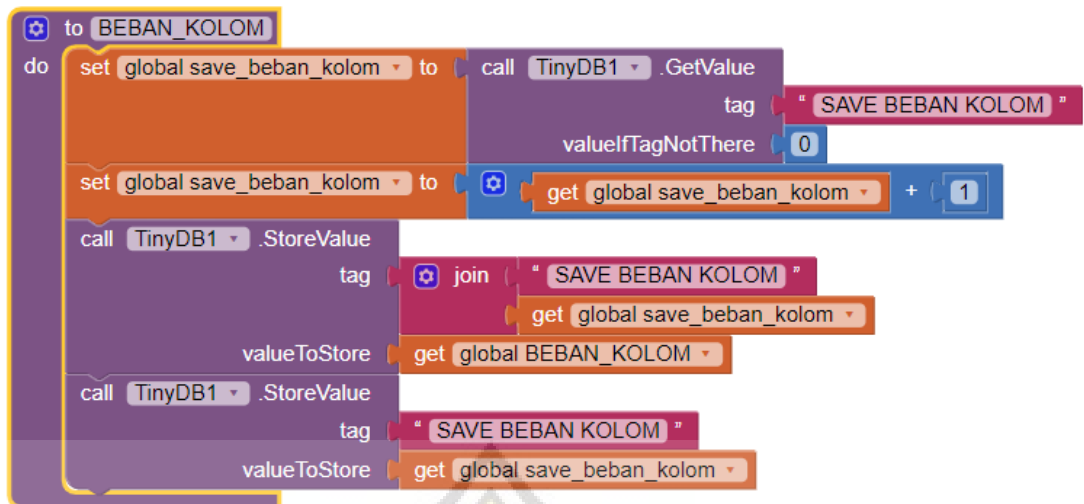


Gambar LE.116 Blok *Procedure* : Jumlah Tiang Persegi.

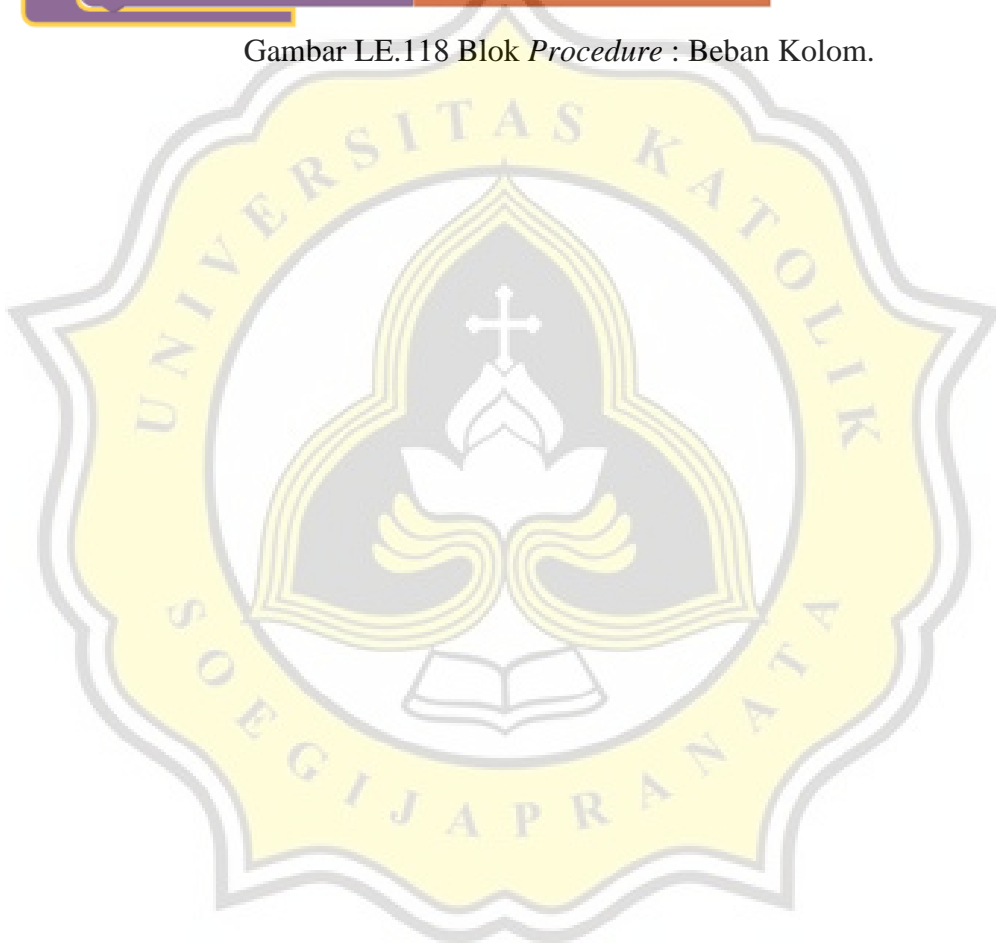


Gambar LE.117 Blok *Procedure* : Jumlah Tiang Segitiga.

## E.5 Blok Program Halaman Hasil Output (Lanjutan)



Gambar LE.118 Blok *Procedure* : Beban Kolom.



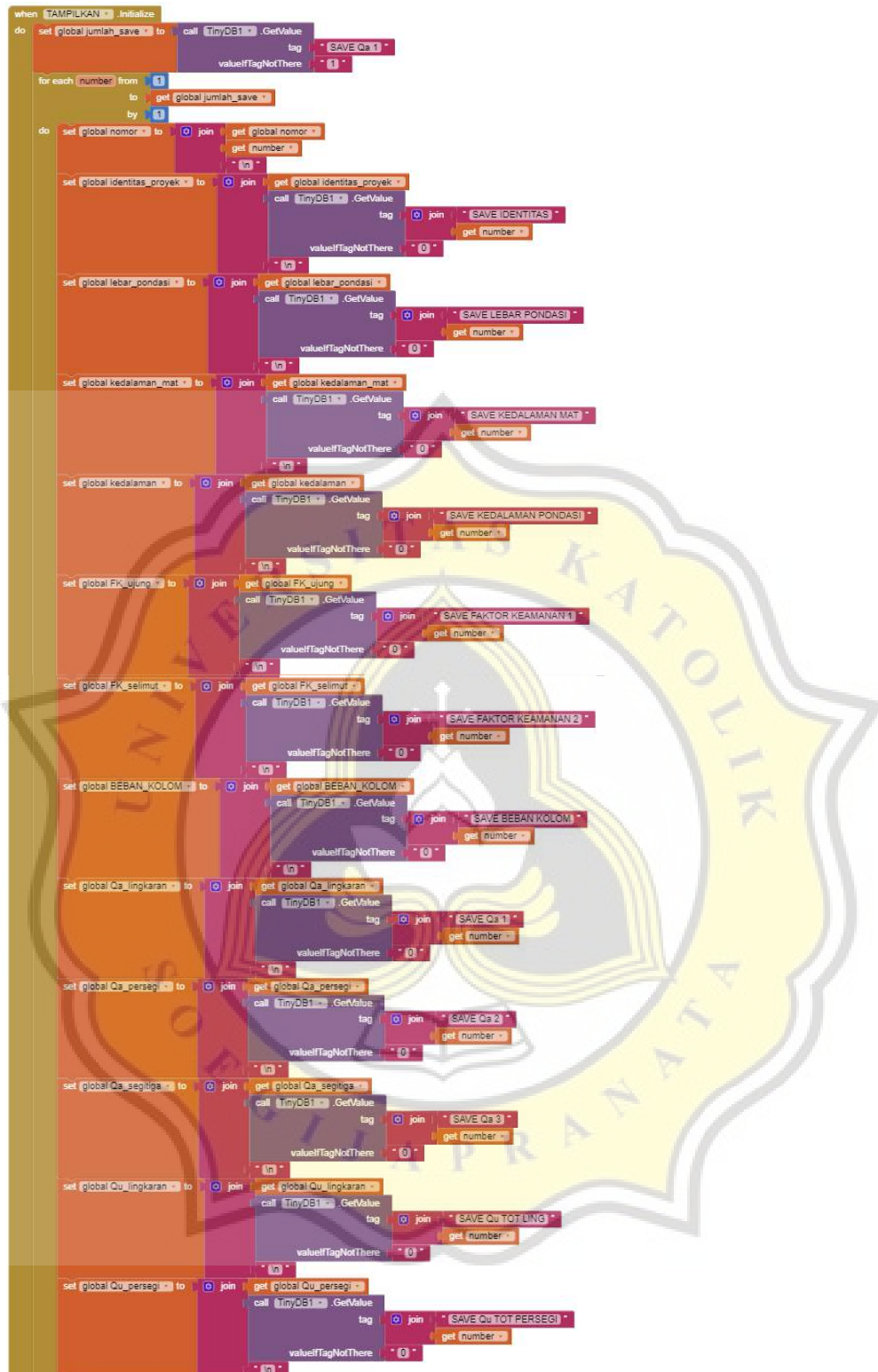


## E.6 Blok Program Halaman Riwayat

```
initialize global jumlah_save to 0
initialize global nomor to "No.\n"
initialize global identitas_proyek to "Identitas Proyek\n"
initialize global lebar_pondasi to "Lebar Pondasi\n"
initialize global kedalaman_mat to "Kedalaman MAT\n"
initialize global kedalaman to "Kedalaman Pondasi\n"
initialize global FK_ujung to "Fk_ujung\n"
initialize global FK_selimut to "Fk_selimut\n"
initialize global BEBAN_KOLOM to "Beban\n"
initialize global Qa_lingkaran to "Qa lingkaran\n"
initialize global Qa_persegi to "Qa Persegi\n"
initialize global Qa_segitiga to "Qa Segitiga\n"
initialize global Qu_lingkaran to "Qu Lingkaran\n"
initialize global Qu_persegi to "Qu Persegi\n"
initialize global Qu_segitiga to "Qu Segitiga\n"
initialize global jumlah_pondasi_lingkaran to "Jumlah Pondasi Lingkaran\n"
initialize global jumlah_pondasi_persegi to "Jumlah Pondasi Persegi\n"
initialize global jumlah_pondasi_segitiga to "Jumlah Pondasi Segitiga\n"
```

Gambar LE.119 Susunan Blok Untuk Membuat Variabel.

## E.6 Blok Program Halaman Riwayat (Lanjutan)



Gambar LE.120 Blok Untuk *Screen* Tampilkan.

## E.6 Blok Program Halaman Riwayat (Lanjutan)

```
set global Qu_segitiga to join get global Qu_segitiga
call TinyDB1 .GetValue
tag join SAVE Qu TOT SEGITIGA
valueIfTagNotThere 0

set global jumlah_pondasi_lingkaran to join get global jumlah_pondasi_lingkaran
call TinyDB1 .GetValue
tag join SAVE JUMLAH TIANG 1
valueIfTagNotThere 0

set global jumlah_pondasi_persegi to join get global jumlah_pondasi_persegi
call TinyDB1 .GetValue
tag join SAVE JUMLAH TIANG 2
valueIfTagNotThere 0

set global jumlah_pondasi_segitiga to join get global jumlah_pondasi_segitiga
call TinyDB1 .GetValue
tag join SAVE JUMLAH TIANG 3
valueIfTagNotThere 0

set nomor .Text to get global nomor
set identitas_proyek .Text to get global identitas_proyek
set lebar_pondasi .Text to get global lebar_pondasi
set kedalaman_mat .Text to get global kedalaman_mat
set kedalaman .Text to get global kedalaman
set FK_1 .Text to get global FK_ujung
set FK_2 .Text to get global FK_selimat
set P_1 .Text to get global SEBAN_KOLOM
set Qa_lingkaran .Text to get global Qa_lingkaran
set Qa_persegi .Text to get global Qa_persegi
set Qa_segitiga .Text to get global Qa_segitiga
set Qu_lingkaran .Text to get global Qu_lingkaran
set Qu_persegi .Text to get global Qu_persegi
set Qu_segitiga .Text to get global Qu_segitiga
set jumlah_pondasi_ling .Text to get global jumlah_pondasi_lingkaran
set jumlah_pondasi_persegi .Text to get global jumlah_pondasi_persegi
set jumlah_pondasi_segitiga .Text to get global jumlah_pondasi_segitiga
```

Gambar LE.120 Blok Untuk *Screen* Tampilkan (Lanjutan).

## E.6 Blok Program Halaman Riwayat (Lanjutan)

```
when BACK .Click
do open another screen screenName "Screen1"
```

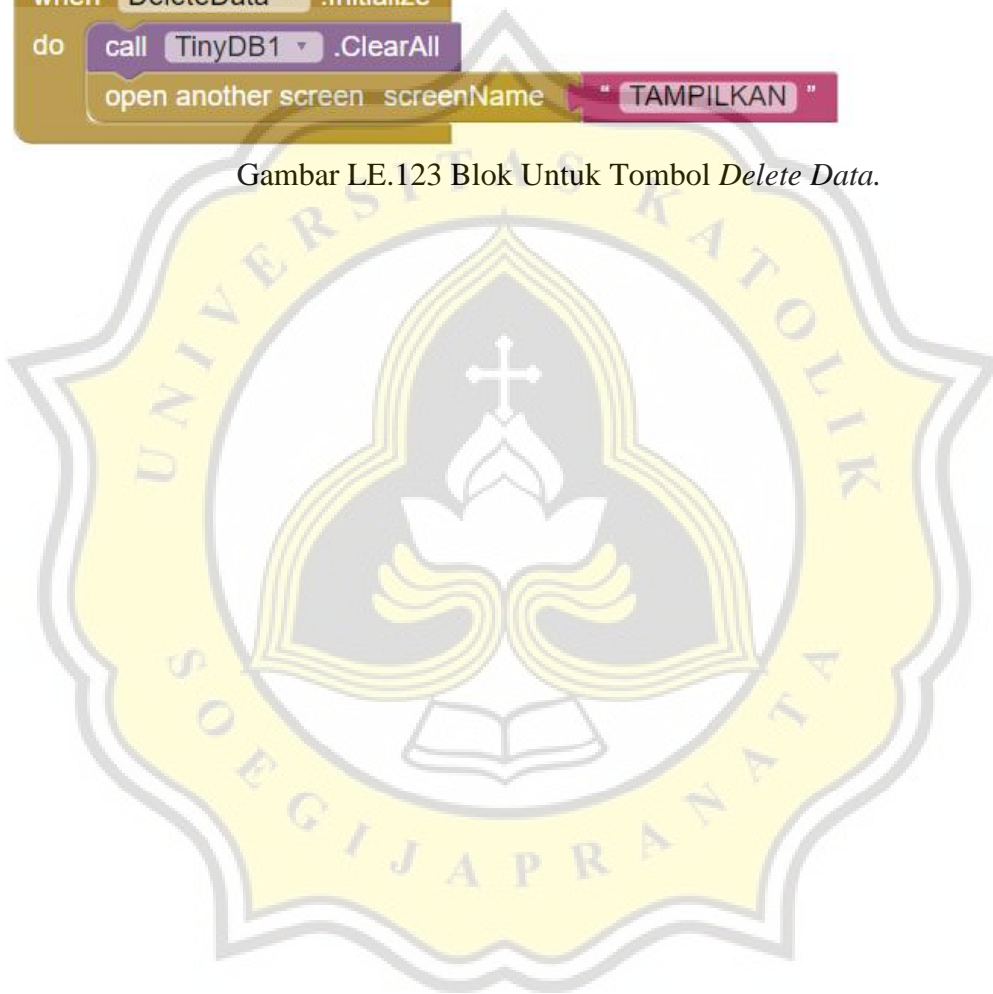
Gambar LE.121 Blok Untuk Tombol *Back*.

```
when CLEAR .Click
do open another screen screenName "DeleteData"
```

Gambar LE.122 Blok Untuk Tombol *Clear*.

```
when DeleteData .Initialize
do call TinyDB1 .ClearAll
  open another screen screenName "TAMPILKAN"
```

Gambar LE.123 Blok Untuk Tombol *Delete Data*.





**Lampiran F**  
**Tampilan Perhitungan Aplikasi “BERCA”**



## F.1 Perhitungan 1 (Penampang Lingkaran, $B = 0,3 \text{ m}$ )

perhitungan

IDENTITAS PROYEK: IPC UNIKA

LEBAR PONDASI, B: 0.3 m

KEDALAMAN MUKA AIR TANAH,  $D_w$ : 0 m

KEDALAMAN PONDASI,  $D_f$ : 15 m

FAKTOR KEAMANAN UJUNG,  $FK_U$ : 2.5

FAKTOR KEAMANAN SELIMUT,  $FK_S$ : 2.5

Click, untuk melihat faktor keamanan

BEBAN, P: 896 ton

CLEAR

BACK

NEXT

Gambar LF.1 Halaman Perhitungan IPC Unika (Tiang Pancang Lingkaran)

Data Input

JUMLAH LAPISAN TANAH: 6

TAMPILKAN

Kedalaman (meter)	N-SPT	Jenis Tanah
3	19	Silt / Selimut
5	24	Silt / Selimut
7	30	Silt / Selimut
10	42	Silt / Selimut
13	60	Clay / Selimut
15	60	Gravel / Selimut

HITUNG

BACK

Data Input

JUMLAH LAPISAN TANAH: 6

TAMPILKAN

Jenis Tanah / Days Dukung	Gamma Dry (ton/m <sup>3</sup> )
Silt / Selimut	1.141
Silt / Selimut	1.141
Silt / Selimut	1.256
Silt / Selimut	1.256
Clay / Selimut	1.268
Gravel / Selimut-U.	1.268

HITUNG

BACK

Data Input

JUMLAH LAPISAN TANAH: 6

TAMPILKAN

(ton/m <sup>3</sup> )	Kadar Air (%)	Gamma Saturated (ton/m <sup>3</sup> )
0.45078		1.656
0.45078		1.656
0.39938		1.758
0.39938		1.758
0.39639		1.771
0.39639		1.771

HITUNG

BACK

(a)

(b)

(c)

Gambar LF.2 Halaman Data *Input* IPC Unika (Tiang Pancang Lingkaran)

## F.1 Perhitungan 1 (Penampang Lingkaran, B = 0,3 m) (Lanjutan)

HASIL OUTPUT	
IDENTITAS PROYEK	IPC UNIKA
LEBAR PONDASI, B	0.3 m
KEDALAMAN MUKA AIR TANAH, $D_w$	0 m
KEDALAMAN PONDASI, $D_f$	15 m
FAKTOR KEAMANAN UJUNG, FKU	2.5
FAKTOR KEAMANAN SELIMUT, FKS	2.5
BEBAN, P	896 ton
<b>LINGKARAN</b>	
DAYA DUKUNG ULTIMIT, $Q_u$ ( ton )	186.6842
DAYA DUKUNG IJIN, $Q_a$ ( ton )	74.6737
JUMLAH PONDASI (GROUP PILE)	12
<b>BACK</b>	

Gambar LF.3 Halaman Hasil *Output* IPC Unika (Tiang Pancang Lingkaran)

## F.2 Perhitungan 2 (Penampang Persegi, B = 0,3 m)

perhitungan

IDENTITAS PROYEK: IPC UNIKA

LEBAR PONDASI, B: 0.3 m

KEDALAMAN MUKA AIR TANAH, Dw: 0 m

KEDALAMAN PONDASI, Df: 15 m

FAKTOR KEAMANAN UJUNG, FKU: 2.5

FAKTOR KEAMANAN SELIMUT, FKS: 2.5

Click, untuk melihat faktor keamanan

BEBAN, P: 896 ton

CLEAR

BACK

NEXT

Gambar LF.4 Halaman Perhitungan IPC Unika (Tiang Pancang Persegi)

Data Input

JUMLAH LAPISAN TANAH: 6

TAMPILKAN

Kedalaman (meter)	N-SPT	Jenis Tanah
3	19	Silt / Selimut
5	24	Silt / Selimut
7	30	Silt / Selimut
10	42	Silt / Selimut
13	60	Clay / Selimut
15	60	Gravel / Selimut-U.

HITUNG

BACK

Data Input

JUMLAH LAPISAN TANAH: 6

TAMPILKAN

Jenis Tanah / Days Dukung	Gamma Dry (ton/m3)
Silt / Selimut	1.141
Silt / Selimut	1.141
Silt / Selimut	1.256
Silt / Selimut	1.256
Clay / Selimut	1.268
Gravel / Selimut-U.	1.268

HITUNG

BACK

Data Input

JUMLAH LAPISAN TANAH: 6

TAMPILKAN

(ton/m3)	Kadar Air (%)	Gamma Saturated (ton/m3)
0.45078	1.656	
0.45078	1.656	
0.39938	1.758	
0.39938	1.758	
0.39639	1.771	
0.39639	1.771	

HITUNG

BACK

(a)

(b)

(c)

Gambar LF.5 Halaman Data Input IPC Unika (Tiang Pancang Persegi)

## F.2 Perhitungan 2 (Penampang Persegi, B = 0,3 m) (Lanjutan)

HASIL OUTPUT

IDENTITAS PROYEK	IPC UNIKA
LEBAR PONDASI, B	0.3 m
KEDALAMAN MUKA AIR TANAH, $D_w$	0 m
KEDALAMAN PONDASI, $D_f$	15 m
FAKTOR KEAMANAN UJUNG, FKU	2.5
FAKTOR KEAMANAN SELIMUT, FKS	2.5
BEBAN, P	896 ton

	LINGKARAN	PERSEGI
IT, $Q_u$ ( ton )	186.6842	237.8142
ta ( ton )	74.6737	95.1257
ROUP PILE)	12	10

BACK

Gambar LF.6 Halaman Hasil *Output* IPC Unika (Tiang Pancang Persegi)

### F.3 Perhitungan 3 (Penampang Segitiga, B = 0,32 m)

perhitungan

IDENTITAS PROYEK: IPC UNIKA

LEBAR PONDASI, B: 0.32 m

KEDALAMAN MUKA AIR TANAH,  $D_w$ : 0 m

KEDALAMAN PONDASI,  $D_f$ : 15 m

FAKTOR KEAMANAN UJUNG,  $F_{KU}$ : 2.5

FAKTOR KEAMANAN SELIMUT,  $F_{KS}$ : 2.5

Click, untuk melihat faktor keamanan

BEBAN, P: 896 ton

CLEAR

BACK NEXT

Gambar LF.7 Halaman Perhitungan IPC Unika (Tiang Pancang Segitiga)

Data Input

JUMLAH LAPISAN TANAH: 6

TAMPILKAN

Kedalaman (meter)	N-SPT	Jenis Tanah
3	19	Silt / Selimut
5	24	Silt / Selimut
7	30	Silt / Selimut
10	42	Silt / Selimut
13	60	Clay / Selimut
15	60	Gravel / Selimut-U.

HITUNG

BACK

Data Input

JUMLAH LAPISAN TANAH: 6

TAMPILKAN

Jenis Tanah / Daya Dukung	Gamma Dry (ton/m <sup>3</sup> )
Silt / Selimut	1.141
Silt / Selimut	1.141
Silt / Selimut	1.256
Silt / Selimut	1.256
Clay / Selimut	1.268
Gravel / Selimut-U.	1.268

HITUNG

BACK

Data Input

JUMLAH LAPISAN TANAH: 6

TAMPILKAN

(ton/m <sup>3</sup> )	Kadar Air (%)	Gamma Saturated (ton/m <sup>3</sup> )
0.45078	1.656	0.45078
0.45078	1.656	0.39938
0.39938	1.758	0.39938
0.39938	1.758	0.39639
0.39639	1.771	0.39639
0.39639	1.771	1.771

HITUNG

BACK

(a) (b) (c)

Gambar LF.8 Halaman Data *Input* IPC Unika (Tiang Pancang Segitiga)



### F.3 Perhitungan 3 (Penampang Segitiga, $B = 0,32$ m) (Lanjutan)

HASIL OUTPUT

IDENTITAS PROYEK	IPC UNIKA
LEBAR PONDASI, B	0.32 m
KEDALAMAN MUKA AIR TANAH, $D_w$	0 m
KEDALAMAN PONDASI, $D_f$	15 m
FAKTOR KEAMANAN UJUNG, FKU	2.5
FAKTOR KEAMANAN SELIMUT, FKS	2.5
BEBAN, P	896 ton

BENTUK	PERSEGI	SEGITIGA
1	262.2213	153.2878
2	104.8885	61.3151
3	9	15

BACK

Gambar LF.9 Halaman Hasil *Output* IPC Unika (Tiang Pancang Segitiga)

## F.4 Riwayat

No.	Identitas Proyek	Lebar Pondasi	Kedalaman MAT	Kedalaman Pondasi	Fk_ujung	Fk_selimut	Beban
1	IPC UNIKA	0.3	0	15	2.5	2.5	896
2	IPC UNIKA	0.32	0	15	2.5	2.5	896

**BACK**

**CLEAR**

(a)


Qu Lingkaran	Qu Persegi	Qu Segitiga	Qa lingkaran	Qa Persegi	Qa Segitiga	Jumlah Pondasi Lingkaran	Jumlah Pondasi Persegi	Jumlah Pondasi Segitiga
186.6842	237.8142	140.2353	74.6737	95.1257	56.0941	12	10	16
205.8438	262.2213	153.2878	82.3375	104.8885	61.3151	11	9	15

**BACK**

**CLEAR**

(b)

Gambar LF.10 Halaman Riwayat

The logo of Universitas Katolik Soegijapranata is a yellow shield-shaped emblem with a scalloped border. Inside the shield, there is a central figure of a white dove with its wings spread, perched on an open book. Above the dove's head is a cross. The text "UNIVERSITAS KATOLIK" is written in a semi-circle at the top, and "SOEGIJAPRANATA" is written in a semi-circle at the bottom, both in a light grey font.

**Lampiran G**  
**Efisiensi *Group Pile* & Penulangan Tiang Pancang**

## G.1 Efisiensi *Group Pile*

### 1. Data proyek

Lebar pondasi ( $B$ )	= 0,3 m (tiang pancang lingkaran)
Kedalaman penanaman pondasi ( $D_f$ )	= 15 m
Beban yang bekerja ( $P$ )	= 896 ton
Jumlah tiang ( $n$ )	= 12 ( $m = 3, n' = 4$ )
Tebal <i>pile cap</i> ( $t$ )	= 1 m
Daya dukung ijin ( $Q_a$ )	= 74,6737 ton

### 2. Perhitungan efisiensi kelompok tiang (Metode *Converse – Labbarre*)

Menghitung jarak antar tiang ( $s_1$ )

$$\begin{aligned}s_1 &= 3B \\ &= 3 \times 0,3 \\ &= 0,9 \text{ m}\end{aligned}$$

Menghitung jarak tiang ke tepi ( $s_2$ )

$$\begin{aligned}s_2 &= 2B \\ &= 2 \times 0,3 \\ &= 0,6 \text{ m}\end{aligned}$$

Menghitung efisiensi kelompok tiang ( $\eta$ )

$$\begin{aligned}\theta &= \text{arc tg } (B/s_1) \\ &= \text{arc tg } (0,3/0,9) \\ &= 18,435^\circ\end{aligned}$$

$$\begin{aligned}\eta &= 1 - \theta \frac{m \times (n' - 1) + n' \times (m - 1)}{90 \times m \times n'} \\ &= 1 - 18,435 \frac{3 \times (4 - 1) + 4 \times (3 - 1)}{90 \times 3 \times 4} \\ &= 0,7098\end{aligned}$$

Menghitung daya dukung vertikal kelompok tiang ( $Q_g$ )

$$\begin{aligned}Q_g &= \eta \times n \times Q_a \\ &= 0,7098 \times 12 \times 74,6737 \\ &= 636,0407 \text{ ton} < P = 896 \text{ ton} \quad \text{(TIDAK OK)}\end{aligned}$$

Jumlah tiang ( $n$ ) diperbanyak. Gunakan jumlah tiang ( $n$ ) sebanyak 20.

## G.1 Efisiensi *Group Pile* (Lanjutan)

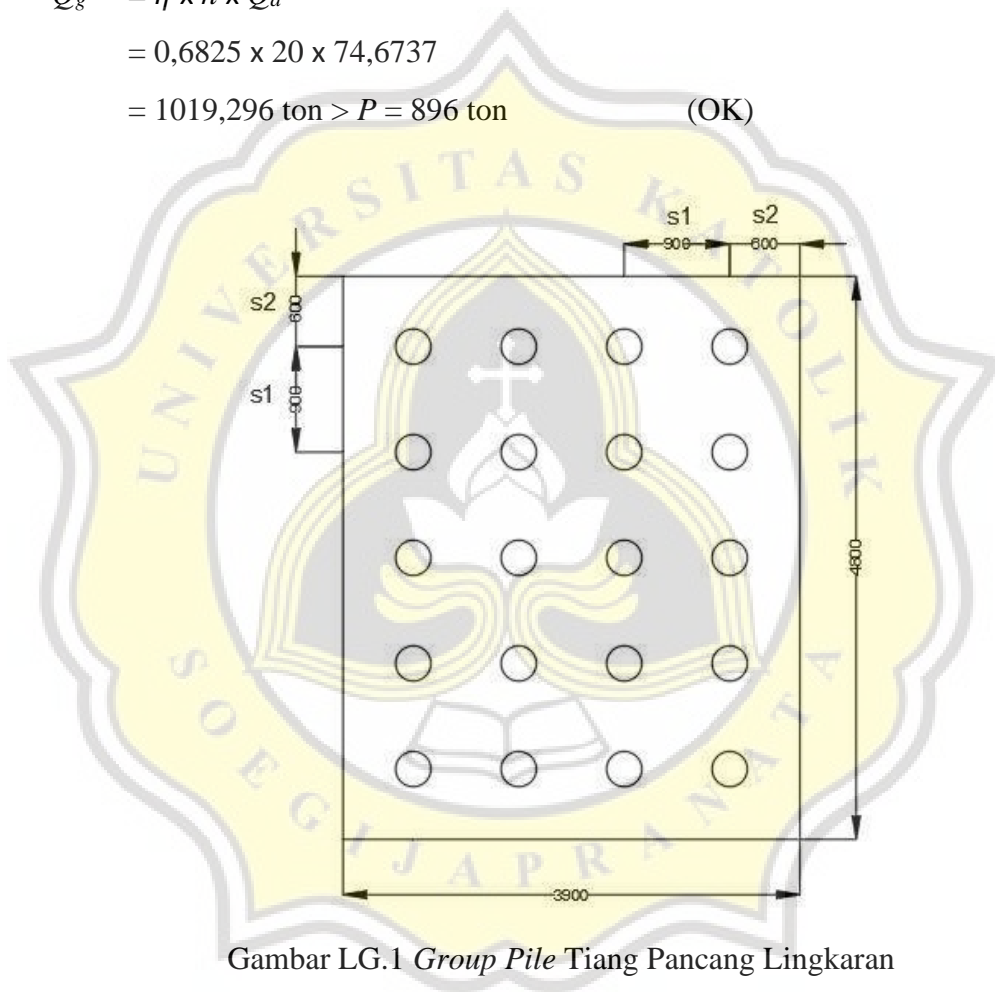
Jumlah tiang ( $n$ ) = 20 ( $m = 5, n' = 4$ )

Menghitung efisiensi kelompok tiang ( $\eta$ )

$$\begin{aligned}\eta &= 1 - \theta \frac{m \times (n' - 1) + n' \times (m - 1)}{90 \times m \times n'} \\ &= 1 - 18,435 \frac{5 \times (4 - 1) + 4 \times (5 - 1)}{90 \times 5 \times 4} \\ &= 0,6825\end{aligned}$$

Menghitung daya dukung vertikal kelompok tiang ( $Q_g$ )

$$\begin{aligned}Q_g &= \eta \times n \times Q_a \\ &= 0,6825 \times 20 \times 74,6737 \\ &= 1019,296 \text{ ton} > P = 896 \text{ ton} \quad (\text{OK})\end{aligned}$$



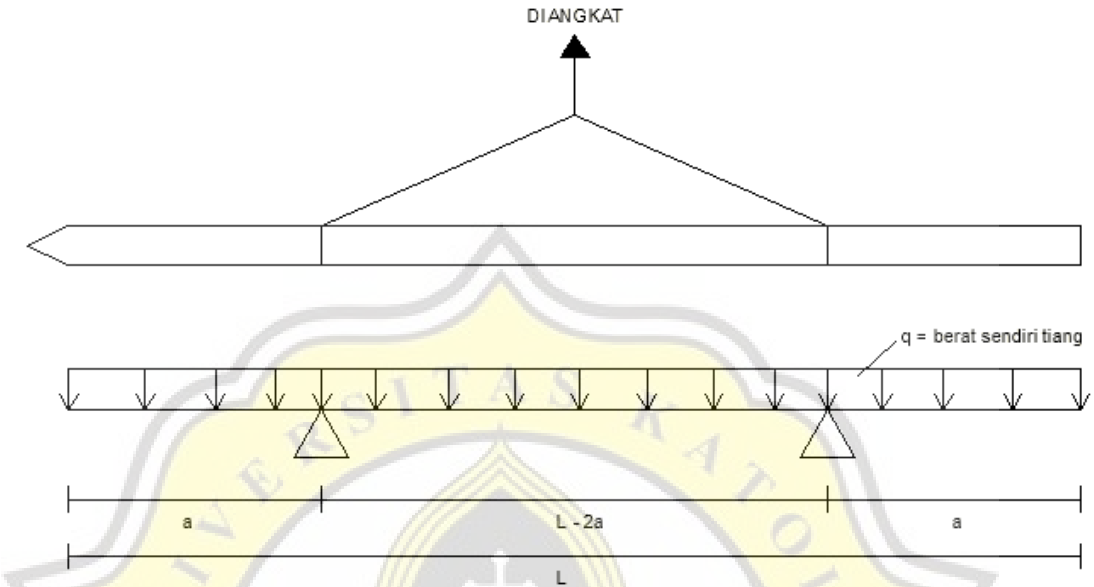
Gambar LG.1 *Group Pile* Tiang Pancang Lingkaran



## G.2 Desain Penulangan Tiang Pancang

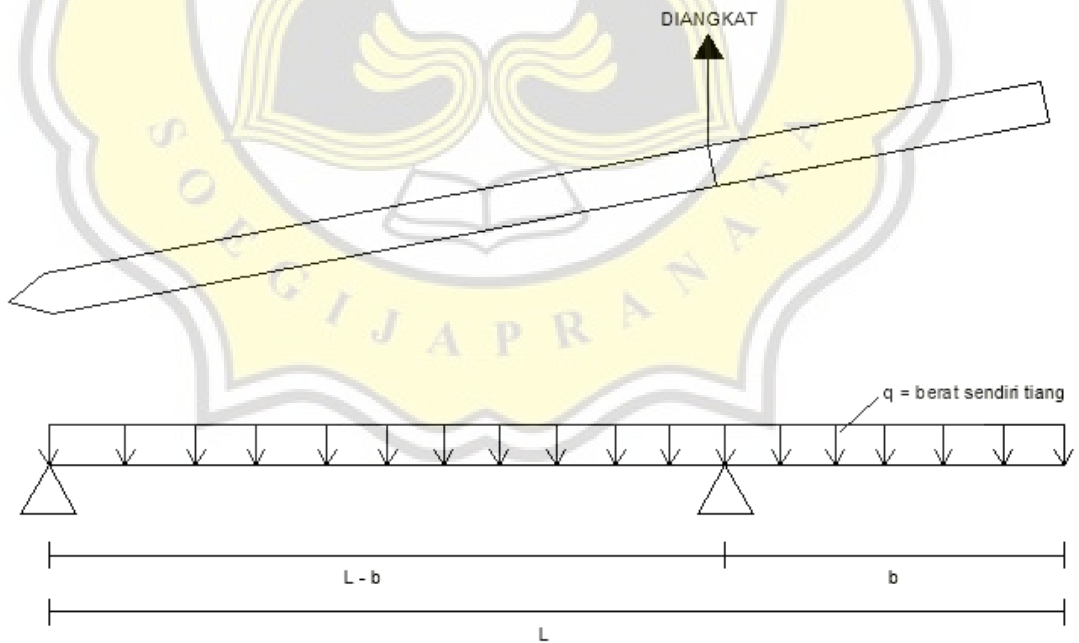
### 1. Pengangkatan Tiang Pancang

#### 1. Pengangkatan tiang pancang cara ke – 1



Gambar LG.2 Pengangkatan Tiang Pancang Cara Ke - 1

#### 2. Pengangkatan tiang pancang cara ke – 2



Gambar LG.3 Pengangkatan Tiang Pancang Cara Ke – 2

## G.2 Desain Penulangan Tiang Pancang (Lanjutan)

### 2. Momen Pengangkatan Tiang Pancang Cara Ke – 1

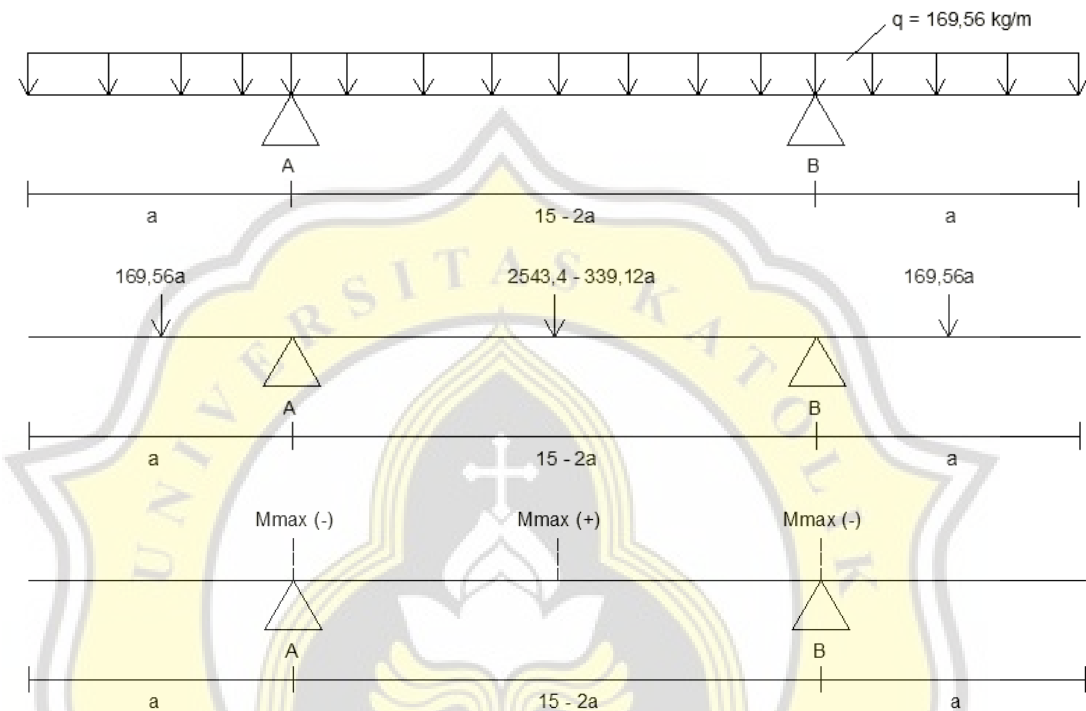
Lebar tiang pancang = 0,3 m

Berat jenis beton = 2400 kg/m<sup>3</sup>

$q$  tiang pancang =  $\frac{1}{4} \times \pi \times d^2 \times$  berat jenis beton

$$= \frac{1}{4} \times 3,14 \times 0,3^2 \times 2400$$

$$= 169,56 \text{ kg/m}$$



Gambar LG.4 Beban dan Momen Pada Pengangkatan Tiang Pancang Cara Ke – 1

Menghitung  $M_{\max}^-$  dan  $M_{\max}^+$

$$M_{\max}^- = -169,56a \times \frac{1}{2}a$$

$$= -84,78 a^2$$

$$M_{\max}^+ = (-169,56a (\frac{1}{2}a + \frac{1}{2}(15 - 2a))) + \frac{1}{2}(15 - 2a) R_A - (169,56 \times \frac{1}{2}(15 - 2a) \times \frac{1}{4}(15 - 2a))$$

$$= (-169,56a (-0,5a + 7,5)) + (7,5 - a) R_A - (21,195 (225 - 60a + 4a^2))$$

$$= 84,78a^2 - 1271,7a + (7,5 - a) R_A - 4768,875 + 1271,7a - 84,78a^2$$

$$= (7,5 - a) R_A - 4768,875$$

Menghitung  $R_A$

$$\Sigma M_B = 0$$

## G.2 Desain Penulangan Tiang Pancang (Lanjutan)

$$\begin{aligned}
 &= (-169,56a (\frac{1}{2}a + 15 - 2a)) + (15 - 2a) R_A - ((2543,4 - 339,12a) (\frac{1}{2} (15 - 2a))) \\
 &+ 169,56a \times \frac{1}{2}a \\
 &= (-169,56a (-1,5a + 15)) + (15 - 2a) R_A - ((2543,4 - 339,12a) (7,5 - a)) + \\
 &84,78 a^2 \\
 &= 254,34a^2 - 2543,4a + (15 - 2a) R_A - 19075,5 + 2543,4a + 2543,4a - 339,12a^2 \\
 &+ 84,78 a^2
 \end{aligned}$$

$$R_A = \frac{-2543,4a + 19075,5}{15 - 2a}$$

Menghitung  $M_{max}^- = M_{max}^+$

$$\begin{aligned}
 M_{max}^- &= M_{max}^+ \\
 84,78 a^2 &= (7,5 - a) R_A - 4768,875 \\
 84,78 a^2 &= (7,5 - a) \left( \frac{-2543,4a + 19075,5}{15 - 2a} \right) - 4768,875 \\
 84,78 a^2 &= -1271,7a + 9537,75 - 4768,875 \\
 0 &= -84,78 a^2 - 1271,7a + 4768,875
 \end{aligned}$$

Diperoleh nilai  $a_1 = 3,1066$  m dan  $a_2 = -18,1066$  m

Digunakan  $a = 3,1066$  m ( $a = \frac{1}{5}L$ )

Menghitung  $M_{max}^-$  dan  $M_{max}^+$

$$\begin{aligned}
 M_{max}^- &= -84,78 a^2 \\
 &= -84,78 \times 3,1066^2 \\
 &= -818,2087 \text{ kg.m} \\
 M_{max}^+ &= (7,5 - a) R_A - 4768,875 \\
 &= (7,5 - a) \left( \frac{-2543,4a + 19075,5}{15 - 2a} \right) - 4768,875 \\
 &= (7,5 - 3,1066) \left( \frac{-2543,4a + 19075,5}{15 - 2a} \right) - 4768,875 \\
 &= 818,212 \text{ kg.m}
 \end{aligned}$$

## G.2 Desain Penulangan Tiang Pancang (Lanjutan)

### 3. Momen Pengangkatan Tiang Pancang Cara Ke – 2

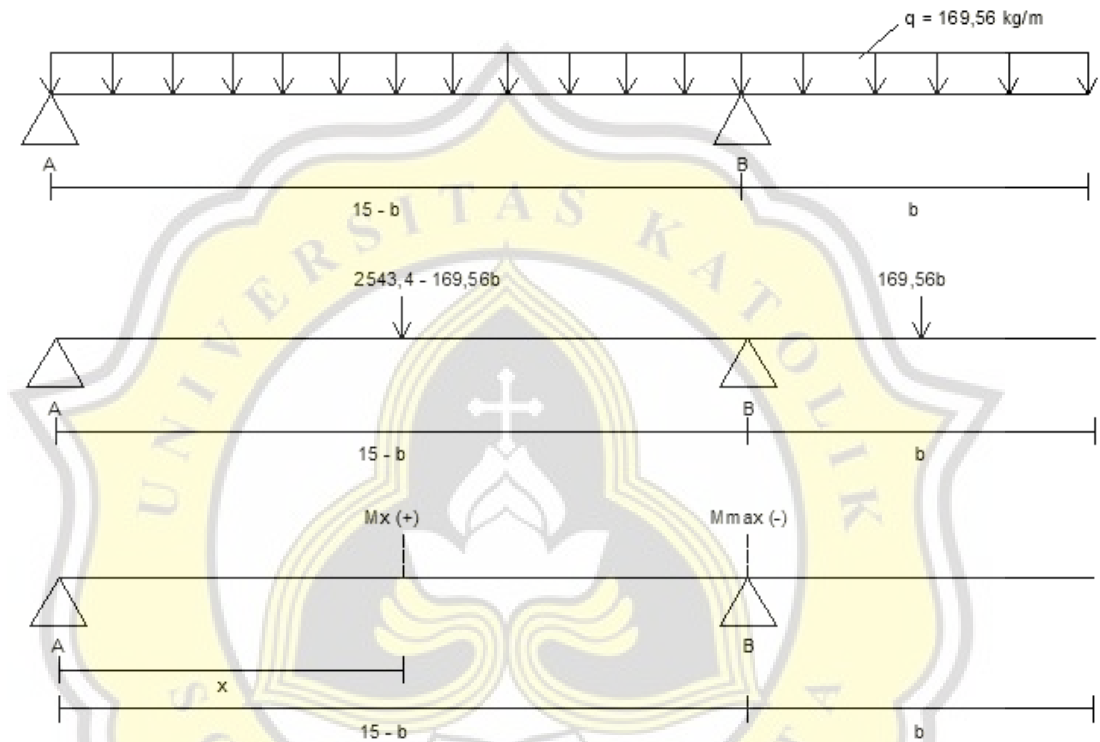
Lebar tiang pancang = 0,3 m

Berat jenis beton = 2400 kg/m<sup>3</sup>

$q$  tiang pancang =  $\frac{1}{4} \times \pi \times d^2 \times$  berat jenis beton

$$= \frac{1}{4} \times 3,14 \times 0,3^2 \times 2400$$

$$= 169,56 \text{ kg/m}$$



Gambar LG.5 Beban dan Momen Pada Pengangkatan Tiang Pancang Cara Ke – 2

Menghitung  $R_A$  dan  $R_B$

$$\Sigma M_A = 0$$

$$= (2543,4 - 169,56b) \left( \frac{1}{2} (15 - b) \right) - R_B (15 - b) + (169,56b (15 - b + \frac{1}{2}b))$$

$$= (2543,4 - 169,56b) (7,5 - 0,5b) - R_B (15 - b) + (169,56b (15 - 0,5b))$$

$$= 19075,5 - 1271,7b - 1271,7b + 84,78 b^2 - R_B (15 - b) + 2543,4b - 84,78 b^2$$

$$R_B = \frac{19075,5}{15 - b}$$

$$R_A = q \times L - R_B$$

$$= 169,56 \times 15 - \frac{19075,5}{15 - b}$$

## G.2 Desain Penulangan Tiang Pancang (Lanjutan)

$$= 2543,4 - \frac{19075,5}{15 - b}$$

Menghitung  $M_{max}^-$  dan  $M_{max}^+$

$$\begin{aligned} M_{max}^- &= -169,56b \times \frac{1}{2}b \\ &= -84,78 b^2 \end{aligned}$$

$$M_{max}^+ = M_x^+$$

$$\begin{aligned} M_x^+ &= (R_A \times X) - (q \times X \left(\frac{1}{2}X\right)) \\ &= R_A X - \frac{1}{2} q X^2 \end{aligned}$$

$$\frac{dmx}{dx} = 0$$

$$= R_A - q X$$

$$= \left(2543,4 - \frac{19075,5}{15 - b}\right) - 169,56X$$

$$169,56X = 2543,4 - \frac{19075,5}{15 - b}$$

$$X = 15 - \frac{112,5}{15 - b}$$

$$M_x^+ = R_A X - \frac{1}{2} q X^2$$

$$= \left(2543,4 - \frac{19075,5}{15 - b}\right) \left(15 - \frac{112,5}{15 - b}\right) - \left(\frac{1}{2} 169,56 \left(15 - \frac{112,5}{15 - b}\right) \left(15 - \frac{112,5}{15 - b}\right)\right)$$

$$= \left(38151 - \frac{286132,5}{15 - b} - \frac{286132,5}{15 - b} + \frac{2145993,75}{225 - 30b + b^2}\right) - 84,78 \left(225 - \frac{1687,5}{15 - b} - \frac{1687,5}{15 - b}\right) +$$

$$\frac{12656,25}{225 - 30b + b^2}$$

$$= 38151 - \frac{572265}{15 - b} + \frac{2145993,75}{225 - 30b + b^2} - 19075,5 + \frac{286132,5}{15 - b} - \frac{1072996,875}{225 - 30b + b^2}$$

$$= 19075,5 - \frac{286132,5}{15 - b} + \frac{1072996,875}{225 - 30b + b^2}$$

$$= 19074,5 \frac{225 - 30b + b^2}{225 - 30b + b^2} - \frac{286132,5 (15 - b)}{225 - 30b + b^2} + \frac{1072996,875}{225 - 30b + b^2}$$

$$= \frac{4291762,5 - 572235b + 19074,5b^2 + 225 - 30b + b^2}{225 - 30b + b^2} - \frac{(4291987,5 - 286132,5b)}{225 - 30b + b^2} +$$

$$\frac{1072996,875}{225 - 30b + b^2}$$



## G.2 Desain Penulangan Tiang Pancang (Lanjutan)

$$= \frac{4291987,5 - 572265b + 19075,5b^2 - 4291987,5 + 286132,5b + 1072996,875}{225 - 30b + b^2}$$

$$= \frac{19075,5b^2 - 286132,5b + 1072996,875}{225 - 30b + b^2}$$

Menghitung  $M_{max}^- = M_x^+$

$$M_{max}^- = M_x^+$$

$$84,78 b^2 = \frac{19075,5b^2 - 286132,5b + 1072996,875}{225 - 30b + b^2}$$

$$19075,5 b^2 - 2543,4 b^3 + 84,78 b^4 = 190075,5 b^2 - 286132,5b + 1072996,875$$

$$84,78 b^4 - 2543,4 b^3 + 286132,5b - 1072996,875 = 0$$

Diperoleh nilai  $b = 4,3934 \text{ m}$  ( $b = 0,3L$ )

Menghitung  $X, M_x^+, M_{max}^-$

$$X = 15 - \frac{112,5}{15 - b}$$

$$= 15 - \frac{112,5}{15 - 4,3934}$$

$$= 4,3934 \text{ m} \quad (X = 0,3L)$$

$$M_x^+ = R_A X - \frac{1}{2} q X^2$$

$$= (2543,4 - \frac{19075,5}{15 - b}) (4,3934) - \frac{1}{2} 169,56 (4,3934)^2$$

$$= (2543,4 - \frac{19075,5}{15 - 4,3934}) (4,3934) - \frac{1}{2} 169,56 (4,3934)^2$$

$$= 1636,4179 \text{ kg.m}$$

$$M_{max}^- = -169,56b \times \frac{1}{2}b$$

$$= -84,78 b^2$$

$$= -84,78 (4,3934)^2$$

$$= -1636,42 \text{ kg.m}$$

## G.2 Desain Penulangan Tiang Pancang (Lanjutan)

### 4. Perhitungan Tulangan Tiang Pancang

#### 1. Data perhitungan:

$$\begin{aligned}M_u &= 1636,42 \text{ kg.m} = 16,3642 \text{ kN.m} \\ \text{Lebar pondasi } (B) &= 0,3 \text{ m} \\ \text{Mutu beton } (f_c') &= 49,8 \text{ MPa (K-600)} \\ \text{Mutu baja } (f_y) &= 400 \text{ MPa (U-40)} \\ \text{Tinggi pondasi } (h) &= 0,3 \text{ m} \\ \text{Selimut beton } (d_s) &= 0,075 \text{ m} \\ \text{Diameter tulangan } (\phi_{tul}) &= 16 \text{ mm} = 0,016 \text{ m } (A_s = 199 \text{ mm}^2) \\ \text{Diameter sengkang } (\phi_{sengkang}) &= 8 \text{ mm} = 0,008 \text{ m}\end{aligned}$$

#### 2. Perhitungan tulangan tiang pancang

$$\begin{aligned}M_u &= 1,6 \times 16,3642 \\ &= 26,1827 \text{ kN.m} \\ d &= h - d_s - \phi_{sengkang} - \frac{1}{2} \phi_{tul} \\ &= 0,3 - 0,075 - 0,008 - (1/2 \times 0,016) \\ &= 0,209 \text{ m} \\ &= 209 \text{ mm}\end{aligned}$$

$$\begin{aligned}\frac{M_u}{b \times d^2} &= \frac{26,1827}{0,3 \times 0,209^2} \\ &= 1998,0236 \text{ kN/m}^2 \\ &= 1,998 \text{ N/mm}^2\end{aligned}$$

$$\frac{M_u}{b \times d^2} = \rho \times \Phi \times f_y \left(1 - 0,588\rho \times \frac{f_y}{f_c'}\right)$$

$$1,998 = \rho \times 0,8 \times 400 \left(1 - 0,588\rho \times \frac{400}{49,8}\right)$$

$$1,998 = 320\rho(1 - 4,7229\rho)$$

$$0 = 1511,328\rho^2 - 320\rho + 1,998$$

$$\rho_1 = 0,2053$$

$$\rho_2 = 0,0063$$

$$\rho_{min} = \frac{1,4}{f_y}$$

$$= \frac{1,4}{400}$$

$$= 0,0035$$

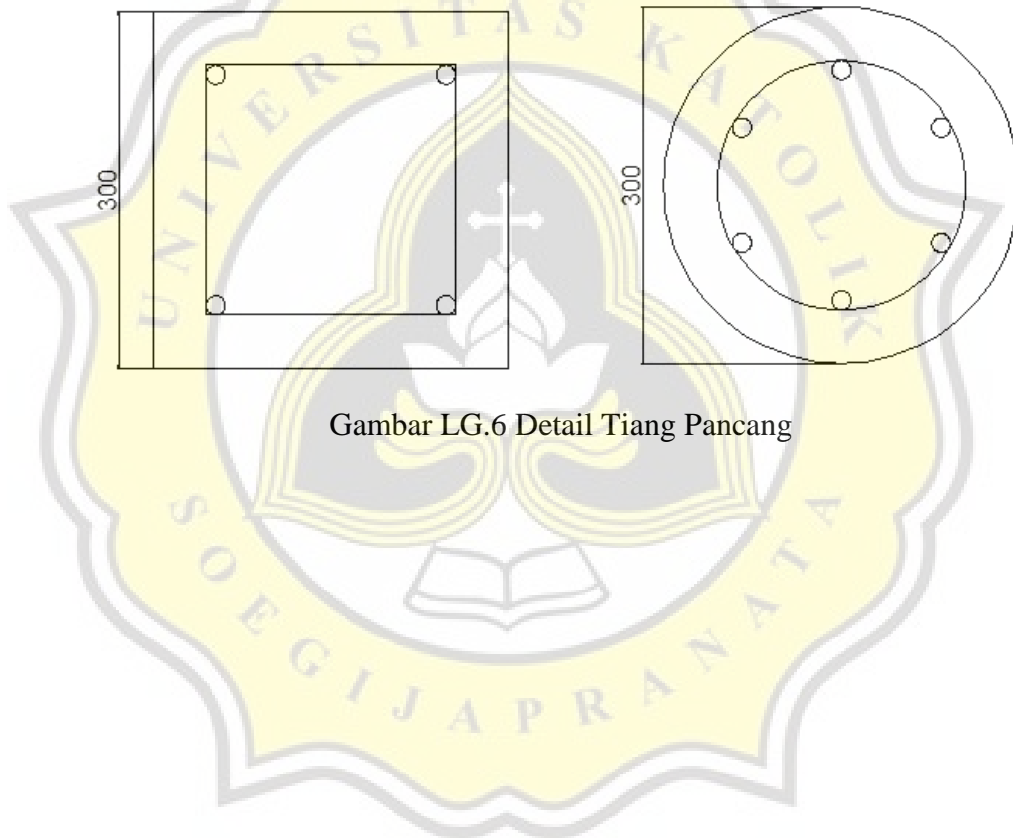
## G.2 Desain Penulangan Tiang Pancang (Lanjutan)

$$\begin{aligned}\rho_{max} &= \frac{\beta \times 450}{600 + f_y} \times \frac{0,85 \times f_c'}{400} \\ &= \frac{0,85 \times 450}{600 + 400} \times \frac{0,85 \times 49,8}{400} \\ &= 0,0405\end{aligned}$$

Gunakan  $\rho = 0,0063$

$$\begin{aligned}A_s &= \rho \times b \times d \\ &= 0,0063 \times 0,3 \times 0,209 \\ &= 3,9501 \times 10^{-4} \text{ m}^2 \\ &= 395,01 \text{ mm}^2 \quad (A_s \text{ D16} = 199 \text{ mm}^2)\end{aligned}$$

Gunakan tulangan tiang pancang 2D16.

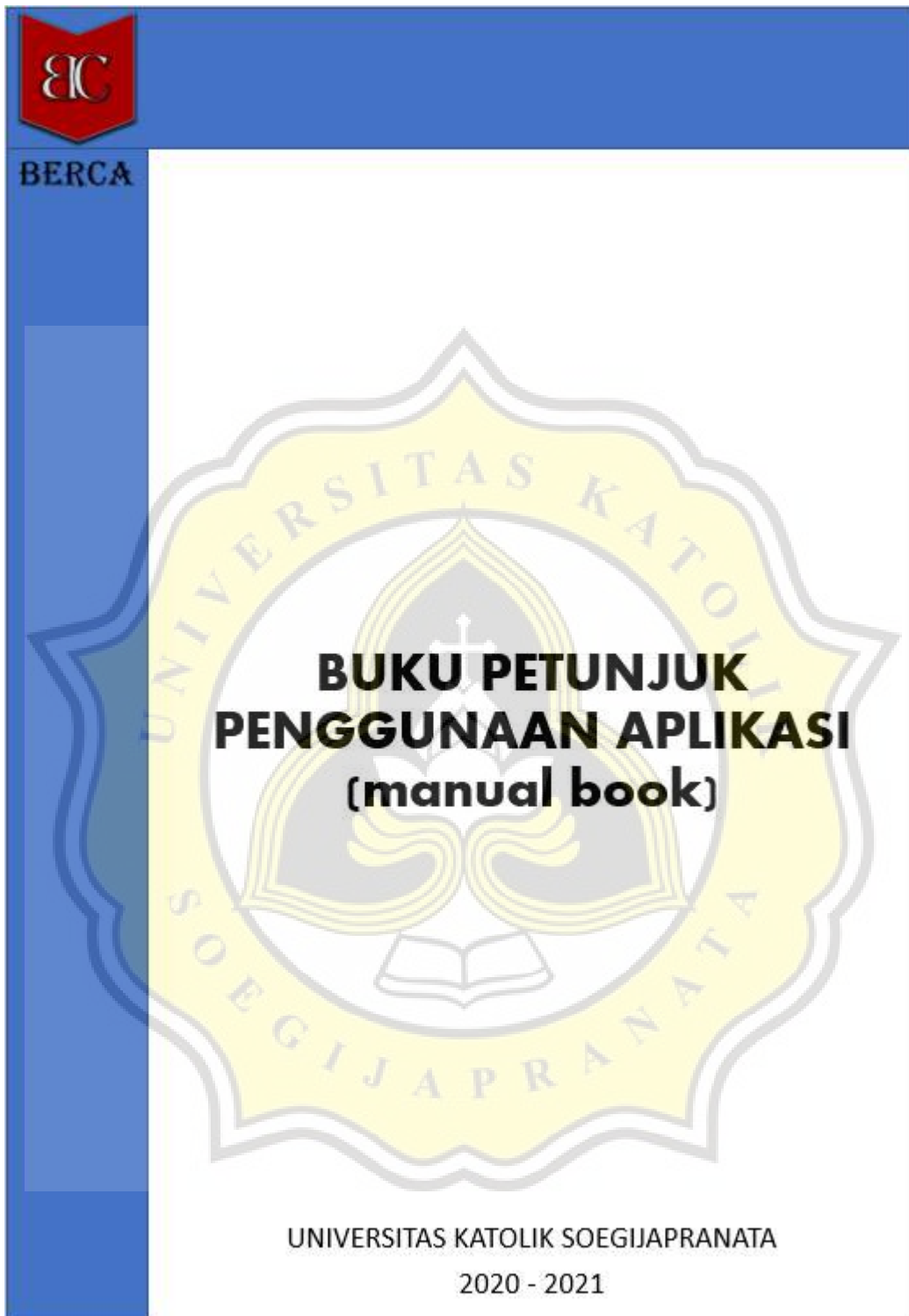


Gambar LG.6 Detail Tiang Pancang



**Lampiran H**  
***Manual Book Penggunaan Aplikasi***

## H.1 Cara Penggunaan Aplikasi BERCA





## H.1 Cara Penggunaan Aplikasi BERCA

**BERCA**

### **1. Memulai Aplikasi**

Aplikasi BERCA ini dapat digunakan *offline* atau tanpa internet. Setelah aplikasi BERCA terunduh di ponsel dan dijalankann, akan muncul tampilan awal aplikasi.



### **2. Pengenalan**

Pada halaman pengenalan ini berguna untuk mempelajari teori – teori mengenai tiang pancang berupa penjelasan dan gambar. User yang belum paham ataupun lupa dapat mengingat Kembali materi tiang pancang sebelum melanjutkan ke tahap perhitungan.



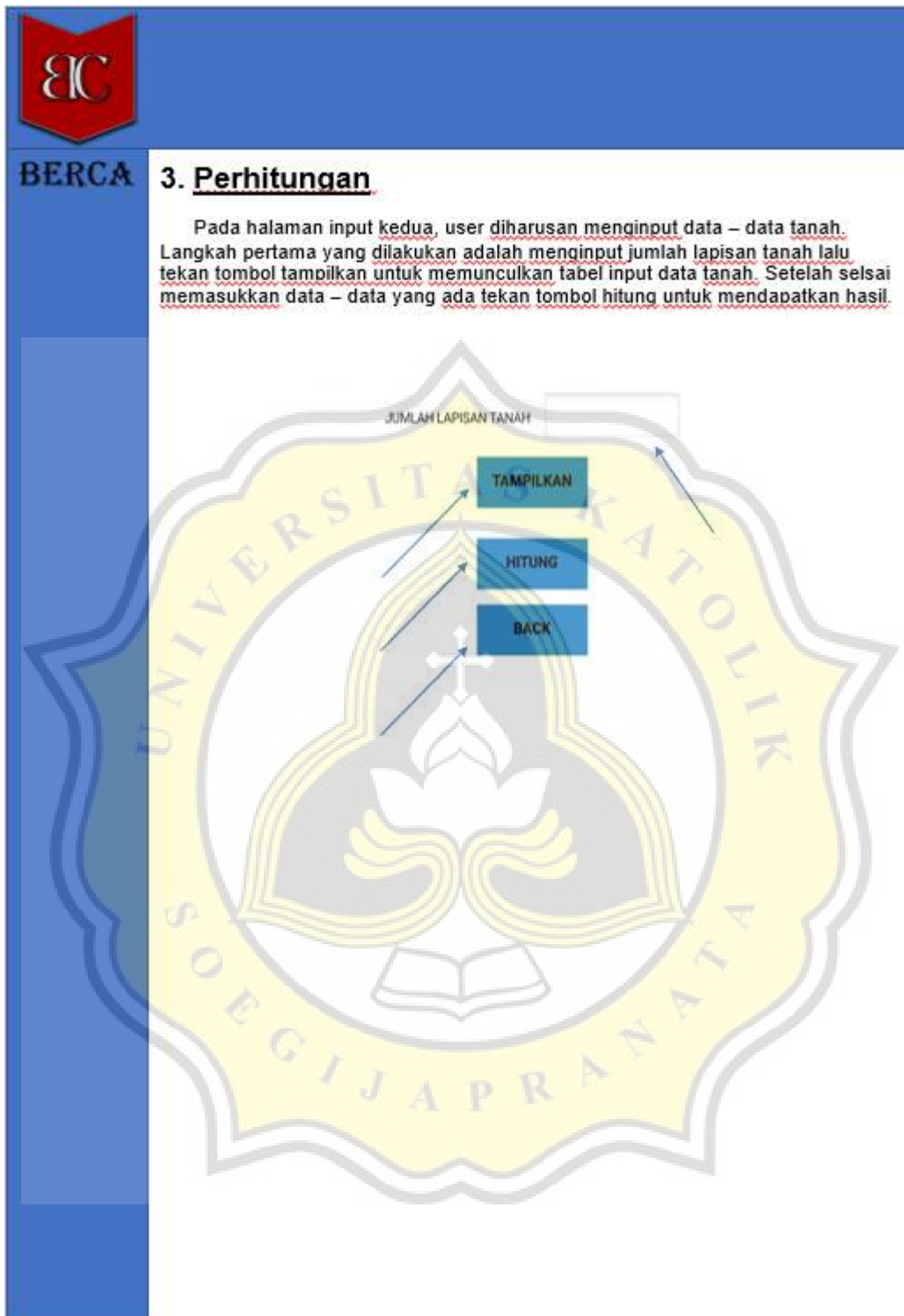
## H.1 Cara Penggunaan Aplikasi BERCA

**BERCA**

### 3. Perhitungan

Pada halaman input pertama, *user* diharuskan mengisi dan memilih data dari identitas proyek sampai beban. Pada halaman input ini terdapat shortcut untuk melihat teori tentang faktor keamanan untuk memudahkan *user* memilih kategori faktor keamanan yang ada. Untuk melanjutkan ke halaman perhitungan selanjutnya dapat menekan tombol *next*.

## H.1 Cara Penggunaan Aplikasi BERCA



The screenshot shows the BERCA application interface. At the top left, there is a red shield logo with the letters 'BC' in white. Below the logo, the word 'BERCA' is written in white on a blue background. To the right of 'BERCA', the section title '3. Perhitungan' is displayed in bold black text. Below the title, there is a paragraph of text: 'Pada halaman input kedua, user diharuskan menginput data – data tanah. Langkah pertama yang dilakukan adalah menginput jumlah lapisan tanah lalu tekan tombol tampilkan untuk memunculkan tabel input data tanah. Setelah selesai memasukkan data – data yang ada tekan tombol hitung untuk mendapatkan hasil.' Below the text, there is a large, semi-transparent watermark of the logo of Universitas Katolik Soegijapranata. The logo is a yellow shield with a white cross and a white book, surrounded by the text 'UNIVERSITAS KATOLIK SOEGIJAPRANATA'. Overlaid on the watermark is a white input field labeled 'JUMLAH LAPISAN TANAH'. Below the input field are three blue buttons: 'TAMPILKAN', 'HITUNG', and 'BACK'. Arrows point from the text in the paragraph to these buttons and the input field.

**BERCA** **3. Perhitungan**

Pada halaman input kedua, user diharuskan menginput data – data tanah. Langkah pertama yang dilakukan adalah menginput jumlah lapisan tanah lalu tekan tombol tampilkan untuk memunculkan tabel input data tanah. Setelah selesai memasukkan data – data yang ada tekan tombol hitung untuk mendapatkan hasil.

JUMLAH LAPISAN TANAH

TAMPILKAN

HITUNG

BACK


UNIVERSITAS KATOLIK SOEGIJAPRANATA

## H.1 Cara Penggunaan Aplikasi BERCA

**BERCA**

### 4. Hasil

Pada halaman hasil atau output, menampilkan data input pertama dan hasil berupa daya dukung ultimit, daya dukung ijin, dan jumlah pondasi.

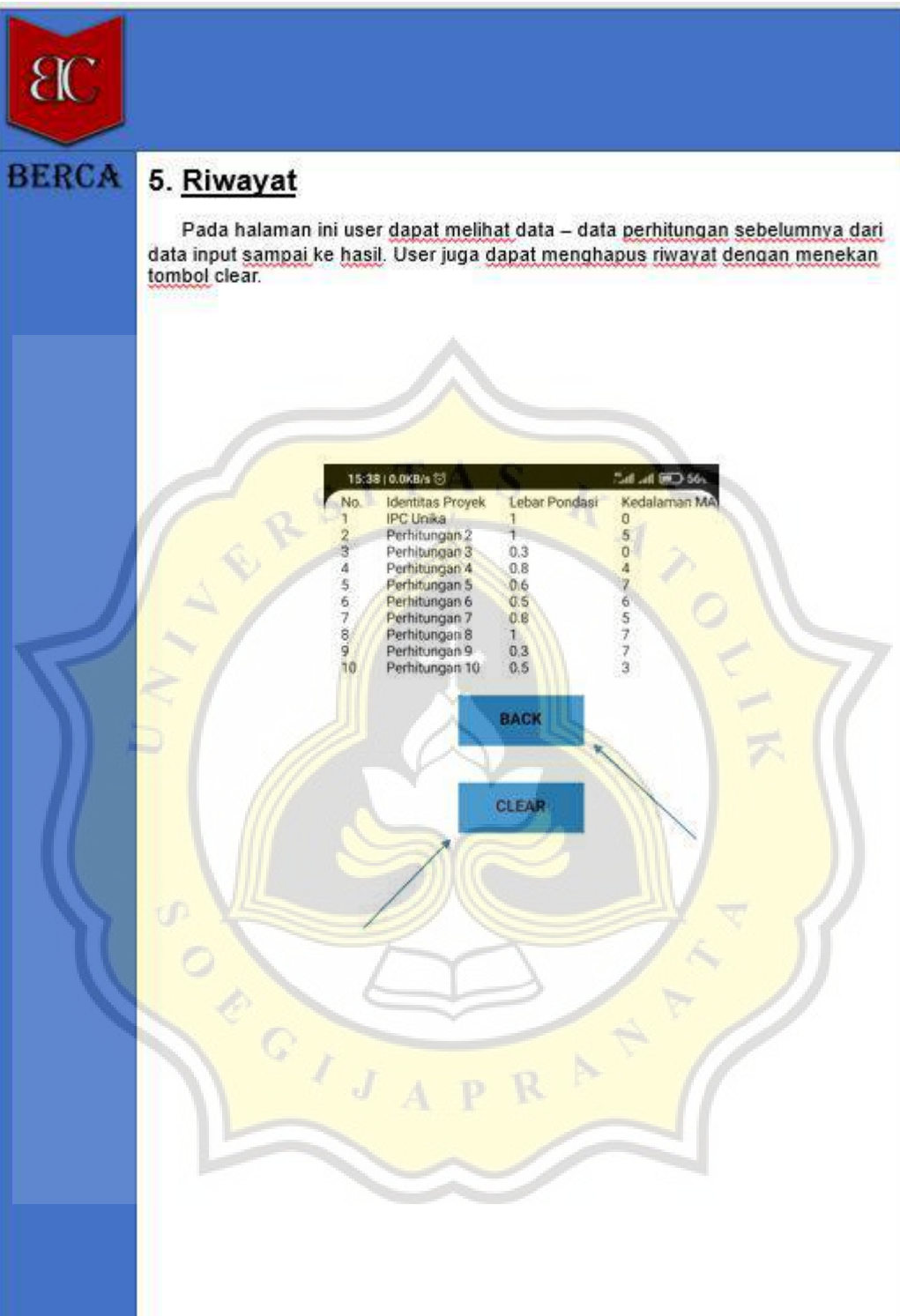


The screenshot displays the 'HASIL OUTPUT' screen of the BERCA application. It lists the project identity and various input parameters. The results section, highlighted with a red box, shows the ultimate bearing capacity, allowable bearing capacity, and the number of piles.

HASIL OUTPUT	
IDENTITAS PROYEK	IPC UNIKA
LEBAR PONDASI, B	0.3 m
KEDALAMAN MUKA AIR TANAH, D <sub>w</sub>	0 m
KEDALAMAN PONDASI, D <sub>f</sub>	1.5 m
FAKTOR KEAMANAN GUNUNG, F <sub>KG</sub>	2.5
FAKTOR KEAMANAN SELIMUT, F <sub>MS</sub>	2.5
HEBAN, P	896 ton
<b>LINGKARAN</b>	
DAYA DUKUNG ULTIMIT, Q <sub>u</sub> (ton)	136.6542
DAYA DUKUNG IJIN, Q <sub>a</sub> (ton)	74.6737
JUMLAH PONDASI (GROUP/PILE)	12

BACK

## H.1 Cara Penggunaan Aplikasi BERCA



**BERCA** **5. Riwayat**

Pada halaman ini user dapat melihat data – data perhitungan sebelumnya dari data input sampai ke hasil. User juga dapat menghapus riwayat dengan menekan tombol clear.

No.	Identitas Proyek	Lebar Pondasi	Kedalaman MA
1	IPC Unika	1	0
2	Perhitungan 2	1	5
3	Perhitungan 3	0.3	0
4	Perhitungan 4	0.8	4
5	Perhitungan 5	0.6	7
6	Perhitungan 6	0.5	6
7	Perhitungan 7	0.8	5
8	Perhitungan 8	1	7
9	Perhitungan 9	0.3	7
10	Perhitungan 10	0.5	3

BACK

CLEAR

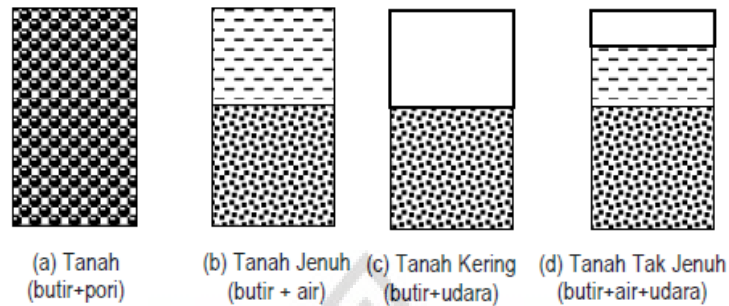


**Lampiran I**  
**Komposisi Tanah**



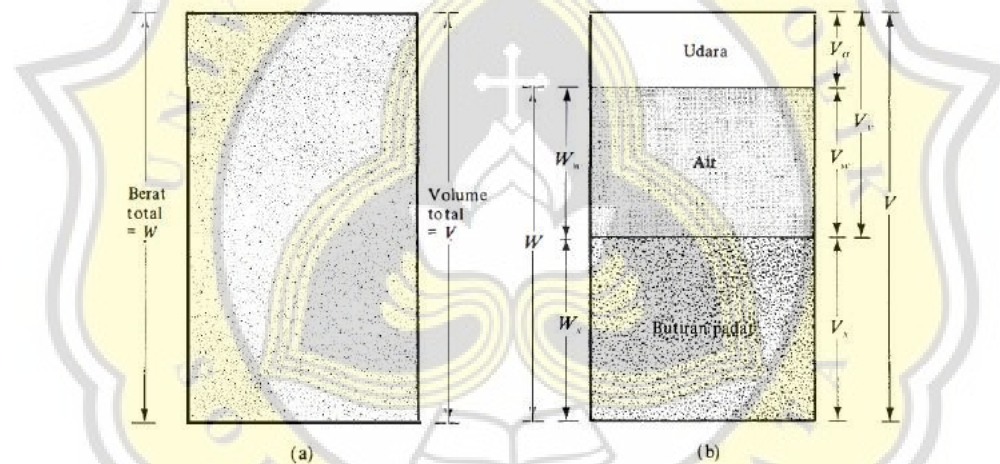
## I.1 Berat Volume atau Berat Isi Tanah

Material tanah terdiri dari 2 atau 3 unsur, yaitu butiran padat, udara, dan air.



Gambar I.1 Komposisi Tanah

Terdapat 3 fase yang menunjukkan perbandingan volume dengan berat agregat, yaitu butiran agregat, udara, dan air yang dipisahkan seperti pada gambar I.1.



Gambar I.2 (a) Tanah asli (b) Tiga fase elemen tanah

Menghitung volume total tanah dapat dirumuskan sebagai berikut:

$$\begin{aligned} V &= V_s + V_v \\ &= V_s + V_w + V_a \end{aligned} \tag{i.1}$$

Di mana :

$V_s$  = volume butiran

$V_v$  = volume pori

$V_w$  = volume air dalam pori

$V_a$  = volume udara dalam pori

## I.1 Berat Volume atau Berat Isi Tanah

Menghitung berat total tanah tidak memperhitungkan berat udara di dalam pori. Udara dianggap tidak memiliki berat ( $W$ ). Persamaan berat total tanah dapat dinyatakan sebagai berikut:

$$W = W_s + W_w \quad (i.2)$$

Di mana :

$W_s$  = berat butiran

$W_w$  = berat air

Hubungan volume yang umum dipakai untuk suatu elemen tanah adalah angka pori, porositas, dan derajat kejenuhan. Persamaan untuk angka pori ( $e$ ), porositas ( $n$ ), dan derajat kejenuhan ( $Sr$ ) dapat dinyatakan sebagai berikut:

$$e = \frac{V_v}{V_s} \quad (i.3)$$

$$n = \frac{V_v}{V} \times 100\% \quad (i.4)$$

$$Sr = \frac{V_w}{V_v} \times 100\% \quad (i.5)$$

Di mana :

$e$  = angka pori

$n$  = porositas

$Sr$  = derajat kejenuhan

Hubungan angka pori ( $e$ ) dan porositas ( $n$ ) dapat dinyatakan sebagai berikut:

$$e = \frac{V_v}{V_s} = \frac{V_v}{V - V_v} = \frac{\frac{V_v}{V}}{1 - \frac{V_v}{V}} = \frac{n}{1 - n} \quad (i.6)$$

$$n = \frac{e}{1 + e} \quad (i.7)$$

## I.1 Berat Volume atau Berat Isi Tanah

Dari Persamaan (i.5) derajat kejenuhan ( $S_r$ ) dapat dituliskan rumus sebagai berikut:

$$V_w = \frac{W_w}{\gamma_w} = \frac{W_{wet} - W_{dry}}{\gamma_w} \quad (i.8)$$

$$V_v = V - V_s = V - \frac{W_s}{G_s \times \gamma_w} \quad (i.9)$$

$$S_r = \frac{V_w}{V_v} \times 100\% = \frac{\left(\frac{W_{wet} - W_{dry}}{\gamma_w}\right)}{\left(V - \frac{W_s}{G_s \times \gamma_w}\right)} \times 100\% \quad (i.10)$$

Istilah yang umum dipakai untuk hubungan berat dan volume ini adalah kadar air (*moisure content*) dan berat volume (*unit weight*). Kadar air ( $w$ ) adalah perbandingan antara berat air dengan butiran padat dalam volume yang telah ditentukan. Persamaan kadar air dapat dinyatakan sebagai berikut:

$$w = \frac{W_w}{W_s} \times 100\% \quad (i.11)$$

Di mana :

$W_w$  = Berat air

$W_s$  = Berat butiran

Berat volume tanah atau *unit weight* ( $\gamma$ ) adalah berat tanah per satuan volume. Persamaan adalah berat volume tanah asli atau biasa disebut berat volume basah (*moist unit weight*,  $\gamma_b$ ). Persamaan dapat dinyatakan sebagai berikut:

$$\gamma_b = \frac{W}{V} \quad (i.12)$$

Dari persamaan di atas dapat dinyatakan dalam berat butiran, berat air, dan volume total sebagai berikut:

$$\gamma_b = \frac{W}{V} = \frac{W_s + W_w}{V} = \frac{W_s \left[1 + \left(\frac{W_w}{W_s}\right)\right]}{V} = \frac{W_s(1+w)}{V} \quad (i.13)$$

## I.1 Berat Volume atau Berat Isi Tanah

Untuk keperluan tertentu diperlukan untuk mengetahui berat kering per satuan volume tanah atau biasa disebut dengan istilah berat volume kering (*dry unit weight*,  $\gamma_d$ ). Persamaan berat volume kering dapat dinyatakan sebagai berikut:

$$\gamma_d = \frac{W_s}{V} \quad (i.14)$$

Dari persamaan hubungan antara berat volume, berat volume kering, dan kadar air dapat dituliskan sebagai berikut:

$$\gamma_d = \frac{\gamma_b}{1+w} \quad (i.15)$$

Untuk mendapatkan hubungan antara berat volume, angka pori, dan kadar air, maka perhatikan suatu elemen tanah di mana volume butiran padat ( $V_s$ ) = 1 dan volume pori ( $V_v$ ) sama dengan angka pori ( $e$ ), seperti terlihat pada Gambar I.3. Lalu untuk mendapatkan berat butiran padat dan berat air dapat dinyatakan sebagai berikut:

$$W_s = G_s \gamma_w \quad (i.16)$$

$$W_w = w W_s = w G_s \gamma_w \quad (i.17)$$

Di mana:

$G_s$  = berat spesifik butiran padat

$w$  = kadar air

$\gamma_w$  = berat volume air

Dengan menggunakan berat volume dan berat volume kering per satuan volume dapat dinyatakan sebagai berikut:

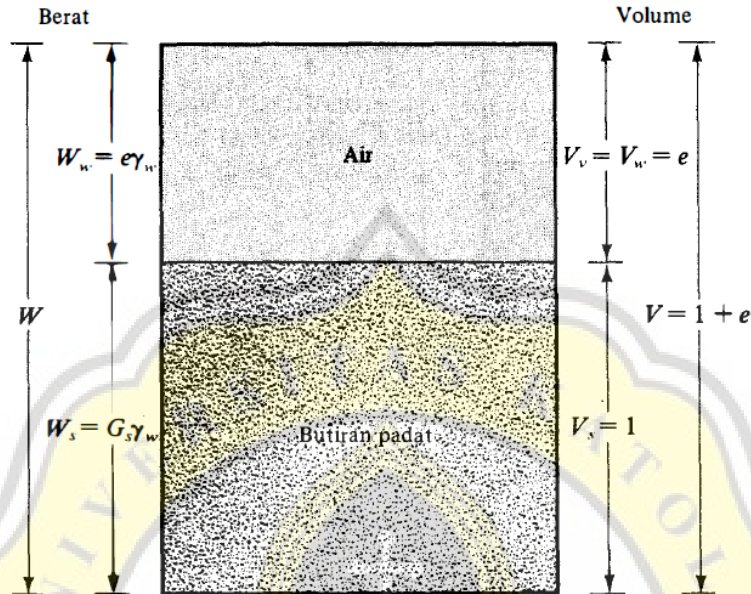
$$\gamma_b = \frac{W}{V} = \frac{W_s + W_w}{V} = \frac{G_s \gamma_w + w G_s \gamma_w}{1+e} = \frac{(1+w)G_s \gamma_w}{1+e} \quad (i.18)$$

dan

$$\gamma_d = \frac{W_s}{V} = \frac{G_s \gamma_w}{1+e} \quad (i.19)$$

## I.1 Berat Volume atau Berat Isi Tanah

Lalu diperlukan untuk mengetahui berat volume pada tanah dengan kondisi jenuh air (*saturated*). Jenuh air dapat diartikan ruang pori terisi dengan air (Gambar I.3).



Gambar I.3 Elemen tanah jenuh air dengan volume butiran padat sama dengan 1

Berat volume tanah jenuh air dapat dinyatakan dengan persamaan sebagai berikut:

$$\gamma_{\text{sat}} = \frac{W}{V} = \frac{W_s + W_w}{V} = \frac{G_s\gamma_w + e\gamma_w}{1+e} = \frac{(G_s + e)\gamma_w}{1+e} \quad (\text{i.20})$$

di mana:

$e$  = angka pori

$G_s$  = berat spesifik butiran

$\gamma_w$  = berat volume air



**Lampiran J**  
***Scan Plagiasi***



## J.1 Hasil Plagiarism Check



**5.47%** PLAGIARISM APPROXIMATELY

### Report #13721853

**47** BAB 1 PENDAHULUAN Latar Belakang Setiap bangunan pasti menggunakan pondasi agar dapat menopang beban di atasnya agar bangunan lebih kokoh dan kuat. **42** Pondasi adalah bagian dari struktur bawah sebuah konstruksi yang berfungsi untuk menyalurkan semua beban di atasnya ke lapisan tanah dibawahnya yang memiliki daya dukung cukup kuat. Untuk menentukan jenis pondasi dan panjang pondasi yang akan digunakan, diperlukan perencanaan perhitungan letak tanah keras dan daya dukung tanah serta faktor lain yang mendukung. Pada umumnya pada proyek dengan letak kedalaman tanah keras yang dalam menggunakan jenis pondasi tiang pancang. Pada perencanaan diperlukan analisis tanah atau penyelidikan tanah. Penyelidikan tanah dilakukan untuk mengetahui kemampuan tanah untuk mendukung struktur di atasnya ataupun untuk mendapatkan hasil atau data seperti kedalaman tanah keras, daya dukung tanah, dan daya kelengketan tanah. **5 7 13 14 15 16 17 18 19 20 21 22 46 53 55 56 58 59**  
**63 64 66 67 68** Penyelidikan tanah yang dilakukan adalah Cone

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AUTHOR ANDRE KURNIAWAN

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