

BAB 9

PERENCANAAN ANGGARAN BIAYA

9.1. Perhitungan Volume Pekerjaan

9.1.1 Pekerjaan Persiapan

a. Pembersihan lokasi

$$= \text{panjang} \times \text{lebar bangunan}$$

$$= 17.00 \times 40.00$$

$$= 680.00 \text{ m}^2$$

b. Pagar pengaman

$$= 2 \times (\text{panjang} + \text{lebar}) \text{ bangunan}$$

$$= (17.00 + 40.00) \times 2.00$$

$$= 114.00 \text{ m}$$

c. Pengukuran dan bouwplank

$$= 2 \times (\text{panjang bangunan} + 4 \text{ m} + \text{lebar bangunan} + 4 \text{ m})$$

$$= 18.00 + 40.70 \times 2.00$$

$$= 117.40 \text{ m}$$

9.1.2 Pekerjaan Tanah

a. Tanah galian

Galian Tanah Pondasi Footplat

Volume Galian sedalam 1 m (V1)

$$= \{1/2 \times (\text{lebar galian atas} + \text{lebar galian bawah})\} \times \text{panjang} \times \text{tinggi galian}$$

$$= (3.5000 + 3.30) \times 0.50 \times 120.60 \times 1.00$$

$$= 410.04 \text{ m}^3$$

Volume Galian sedalam 2 m

$$= \{ 1/2 \times (\text{lebar galian atas} + \text{lebar galian bawah}) \} \times \text{panjang} \times \text{tinggi galian}$$

$$= (3.3000 + 3.15 \times 0.50) \times 120.60 \times 1.00$$

$$= 388.94 \text{ m}^3$$

Volume Galian sedalam 3 m

$$= \{ 1/2 \times (\text{lebar atas} + \text{lebar bawah}) \} \times \text{panjang} \times \text{tinggi galian}$$

$$= (3.1500 + 2.70) \times 0.50 \times 120.60 \times 1.00$$

$$= 352.76 \text{ m}^3$$

Galian Tanah Pondasi batu kali menerus V2)

$$= \text{panjang galian} \times \text{lebar galian} \times \text{tinggi galian}$$

$$= 323.10 \times 0.80 \times 1.20$$

$$= 310.18 \text{ m}^3$$

Volume Total = V1 + V2

$$= 410.04 + 310.18$$

$$= 720.22 \text{ m}^3$$

b. Urugan tanah

Volume Urugan Tanah dengan sirtu Peninggian Lantai

$$= \text{luas Lantai} \times \text{Tinggi Urugan}$$

$$= 14.00 \times 36.70 \times 0.76$$

$$= 390.49 \text{ m}^3$$

Volume Urugan Tanah Kembali

$$\begin{aligned}
 &= 1/3 \text{ volume galian total} \\
 &= 0.333 \times 1,383.15 \\
 &= 461.05 \text{ m}^3
 \end{aligned}$$

c. Urusan pasir

volume urugan pasir di bawah pondasi batu kali (V1)

$$\begin{aligned}
 &= \text{panjang} \times \text{lebar pondasi} \times \text{tebal urugan} \\
 &= 323.10 \times 0.80 \times 0.10 \\
 &= 25.85 \text{ m}^3
 \end{aligned}$$

Volume Urugan Pasir di bawah Footplat (V2)

$$\begin{aligned}
 &= \text{Luas lantai Kerja} \times \text{tebal pasir urug} \times \text{jumlah pondasi} \\
 &= (2.70 \times 2.70) \times 0.10 \times 40.00 \\
 &= 29.16 \text{ m}^3
 \end{aligned}$$

Volume Urugan Pasir di bawah Footplat (V3)

$$\begin{aligned}
 &= \text{luas lantai} \times \text{tinggi urugan} \\
 &= 14.00 \times 36.70 \times 0.15 \\
 &= 77.07 \text{ m}^3
 \end{aligned}$$

volume total = V1 + V2 + V3

$$\begin{aligned}
 &= 25.85 + 29.16 + 77.07 \\
 &= 132.08 \text{ m}^3
 \end{aligned}$$

9.1.3. Pekerjaan Pondasi

a. Pasangan batu kosong (Aanstampeng)

$$= \text{Panjang} \times \text{lebar} \times \text{tebal pasangan batu kosong}$$

$$= 323.10 \times 0.80 \times 0.20$$

$$= 51.70 \text{ m}^3$$

b. Pasangan Pondasi batu kali

$$= \frac{1}{2} (\text{lebar bawah} + \text{lebar atas}) \times \text{Tinggi} \times \text{Panjang Pondasi}$$

$$= 0.50 \times 0.60 + 0.30 \times 0.60 \times 323.10$$

$$= 87.24 \text{ m}^3$$

9.1.4 Pekerjaan Beton

a. Pekerjaan Beton Rabat

Lantai Kerja di bawah Pondasi Footplat 2,5 m x 2,5 m (V1)

$$= \text{Luas Lantai Kerja} \times \text{tebal beton} \times \text{jumlah pondasi}$$

$$= 2.70 \times 2.70 \times 0.10 \times 36.00$$

$$= 26.24 \text{ m}^3$$

Lantai Kerja di bawah Pondasi Footplat 1.5 m x 1.5 m (V1)

$$= 1.70 \times 1.70 \times 0.10 \times 8.00$$

$$= 2.31 \text{ m}^3$$

Volume lantai kerja bawah Pondasi Footplat (V1)

$$= 26.24 + 2.31$$

$$= 28.56 \text{ m}^3$$

Rabat beton dibawah lantai keramik (V2)

$$= \text{Luas Lantai} \times \text{Tebal Rabat}$$

$$= 14.00 \times 36.70 \times 0.05$$

$$= 25.69 \text{ m}^3$$

Jumlah Volume Rabat Beton

$$= V1 + V2$$

$$\begin{aligned}
 &= 28.56 + 25.69 \\
 &= 54.25 \text{ m}^3
 \end{aligned}$$

b. Pondasi Beton Bertulang

Beton Bertulang Pondasi Footplat 2,5 m x 2,5 m(V1)

$$\begin{aligned}
 &= \text{Luas Lantai Kerja} \times \text{tebal beton} \times \text{jumlah pondasi} \\
 &= 2.50 \times 2.50 \times 0.33 \times 36.00 \\
 &= 73.13 \text{ m}^3
 \end{aligned}$$

Beton Bertulang Pondasi Footplat 1,5 m x 1,5 m(V2)

$$\begin{aligned}
 &= 1.50 \times 1.50 \times 0.30 \times 8.00 \\
 &= 5.40 \text{ m}^3
 \end{aligned}$$

Volume Beton Bertulang Pondasi Footplat (V1 + V2)

$$\begin{aligned}
 &= 73.13 + 5.40 \\
 &= 78.53 \text{ m}^3
 \end{aligned}$$

c. Sloof Beton Bertulang

$$\begin{aligned}
 &= \text{Luas Penampang Sloof} \times \text{Panjang sloof} \\
 &= 0.30 \times 0.40 \times 323.10 \\
 &= 38.77 \text{ m}^3
 \end{aligned}$$

A. Perhitungan Volume Beton Lantai 1

a. Beton Bertulang Kolom

$$= \text{Luas Penampang} \times \text{Tinggi Kolom} \times \text{jumlah kolom}$$

Kolom dibawah lantai V1

$$= 0.30 \times 0.50 \times 3.00 \times 24.00 = 10.80 \text{ m}^3$$

$$= 0.30 \times 0.45 \times 3.00 \times 12.00 = 4.86 \text{ m}^3$$

$$= 0.30 \times 0.30 \times 3.00 \times 8.00 = 2.16 \text{ m}^3$$

Kolom lantai 1 (V2)

$$\begin{aligned}
 &= 0.30 \times 0.50 \times 4.20 \times 24.00 = 15.12 \text{ m}^3 \\
 &= 0.30 \times 0.45 \times 4.20 \times 12.00 = 6.80 \text{ m}^3 \\
 &= 0.30 \times 0.30 \times 4.20 \times 8.00 = 3.02 \text{ m}^3 \\
 &\text{Total Volume Kolom lantai I (V1 + V2)} = \mathbf{42.77 \text{ m}^3}
 \end{aligned}$$

b. Balok Beton Bertulang

$$= \text{Luas Penampang Balok} \times \text{panjang bersih balok} \times \text{Jumlah}$$

Balok Memanjang 25/30

$$\begin{aligned}
 &= 0.25 \times 0.30 \times 2.25 \times 6.00 = 1.01 \text{ m}^3 \\
 &= 0.25 \times 0.30 \times 3.25 \times 33.00 = 8.04 \text{ m}^3 \\
 &= 0.25 \times 0.30 \times 28.00 \times 1.00 = 2.10 \text{ m}^3 \\
 &= \mathbf{11.16 \text{ m}^3}
 \end{aligned}$$

Balok Melintang 25/50 dan 25/70

$$\begin{aligned}
 &= 0.25 \times 0.50 \times 5.75 \times 12.00 = 8.63 \text{ m}^3 \\
 &= 0.25 \times 0.70 \times 7.75 \times 12.00 = 16.28 \text{ m}^3 \\
 &= \mathbf{24.90 \text{ m}^3}
 \end{aligned}$$

c. Plat Beton Bertulang Lantai I

$$= \text{Luas Lantai} \times \text{tebal lantai} \times \text{jumlah modul}$$

$$\begin{aligned}
 &= 3.25 \times 5.75 \times 0.12 \times 8.00 = 17.94 \text{ m}^3 \\
 &= 2.25 \times 7.75 \times 0.12 \times 2.00 = 4.19 \text{ m}^3 \\
 &= 3.25 \times 7.75 \times 0.12 \times 9.00 = 27.20 \text{ m}^3 \\
 &= \mathbf{49.33 \text{ m}^3}
 \end{aligned}$$

d. Plat Beton bertulang, Balok dan Lisplank sunsrean Lantai I

luas penampang x panjang x jumlah

Balok sunsrean 10/20

$$= 0.10 \times 0.20 \times 13.36 \times 2.00 = 0.53 \text{ m}^3$$

$$\begin{aligned}
 &= 0.10 \times 0.20 \times 9.49 \times 2.00 = 0.38 \text{ m}^3 \\
 &= 0.10 \times 0.20 \times 6.00 \times 2.00 = 0.24 \text{ m}^3 \\
 &= 0.10 \times 0.20 \times 2.00 \times 2.00 = 0.08 \text{ m}^3 \\
 &= 0.20 \times 0.25 \times 0.70 \times 24.00 = 0.84 \text{ m}^3
 \end{aligned}$$

Plat Sunscreen lebar 70 cm

$$\begin{aligned}
 &= 0.70 \times 0.12 \times 13.36 \times 2.00 = 2.24 \text{ m}^3 \\
 &= 0.70 \times 0.12 \times 9.49 \times 2.00 = 1.59 \text{ m}^3 \\
 &= 0.70 \times 0.12 \times 6.00 \times 2.00 = 1.01 \text{ m}^3 \\
 &= 0.70 \times 0.12 \times 2.00 \times 2.00 = 0.34 \text{ m}^3
 \end{aligned}$$

Listplank Sunscreen lebar 40 cm

$$\begin{aligned}
 &= 0.40 \times 0.08 \times 13.36 \times 2.00 = 0.86 \text{ m}^3 \\
 &= 0.40 \times 0.08 \times 9.49 \times 2.00 = 0.61 \text{ m}^3 \\
 &= 0.40 \times 0.08 \times 6.00 \times 2.00 = 0.38 \text{ m}^3 \\
 &= 0.40 \times 0.08 \times 2.00 \times 2.00 = 0.13 \text{ m}^3 \\
 &= 9.23 \text{ m}^3
 \end{aligned}$$

e. Tangga lantai 1

$$= \text{Lebar Tangga} \times \text{tebal tangga} \times \text{panjang} \times \text{jumlah}$$

Tangga Utama

$$\begin{aligned}
 &= 1.75 \times 0.24 \times 1.20 \times 1.00 = 0.50 \text{ m}^3 \\
 &= 1.75 \times 0.20 \times 1.60 \times 1.00 = 0.56 \text{ m}^3 \\
 &= 1.75 \times 0.24 \times 4.10 \times 2.00 = 3.44 \text{ m}^3 \\
 &= 3.50 \times 0.24 \times 1.65 \times 1.00 = 1.39 \text{ m}^3 \\
 &= 0.20 \times 0.30 \times 3.50 \times 1.00 = 0.21 \text{ m}^3
 \end{aligned}$$

Tangga Pinggir

$$\begin{aligned}
 &= 1.15 \times 0.24 \times 1.20 \times 2.00 = 0.66 \text{ m}^3 \\
 &= 1.15 \times 0.20 \times 1.60 \times 2.00 = 0.74 \text{ m}^3
 \end{aligned}$$

$$\begin{aligned}
 &= 1.15 \times 0.24 \times 4.10 \times 5.00 = 5.66 \text{ m}^3 \\
 &= 2.30 \times 0.24 \times 1.65 \times 2.00 = 1.82 \text{ m}^3 \\
 &= 0.20 \times 0.30 \times 2.30 \times 2.00 = 0.28 \text{ m}^3 \\
 &= 15.26 \text{ m}^3
 \end{aligned}$$

B. Perhitungan Volume Beton Lantai 2

a. Beton Bertulang Kolom

$$\begin{aligned}
 &= \text{Luas Penampang} \times \text{Tinggi Kolom} \times \text{jumlah kolom} \\
 &= 0.30 \times 0.50 \times 4.20 \times 24.00 = 15.12 \text{ m}^3 \\
 &= 0.30 \times 0.45 \times 4.20 \times 12.00 = 6.80 \text{ m}^3 \\
 &= 0.30 \times 0.30 \times 4.20 \times 4.00 = 1.51 \text{ m}^3 \\
 &\textbf{Total Volume Kolom lantai 2} = \textbf{23.44 m}^3
 \end{aligned}$$

b. Balok Beton Bertulang

$$\begin{aligned}
 &= \text{Luas Penampang Balok} \times \text{panjang bersih balok} \times \text{Jumlah Balok Memanjang 25/30} \\
 &= 0.25 \times 0.30 \times 2.25 \times 6.00 = 1.01 \text{ m}^3 \\
 &= 0.25 \times 0.30 \times 3.25 \times 33.00 = 8.04 \text{ m}^3 \\
 &= 0.25 \times 0.30 \times 28.00 \times 1.00 = 2.10 \text{ m}^3 \\
 &= \textbf{11.16 m}^3
 \end{aligned}$$

Balok Melintang 25/50 dan 25/70

$$\begin{aligned}
 &= 0.25 \times 0.50 \times 5.75 \times 12.00 = 8.63 \text{ m}^3 \\
 &= 0.25 \times 0.70 \times 7.75 \times 12.00 = 16.28 \text{ m}^3 \\
 &= \textbf{24.90 m}^3
 \end{aligned}$$

c. Plat Beton Bertulang Lantai I

Luas Lantai x tebal lantai x jumlah modul

$$\begin{aligned}
 &= 3.25 \times 5.75 \times 0.12 \times 8.00 = 17.94 \text{ m}^3 \\
 &= 2.25 \times 7.75 \times 0.12 \times 2.00 = 4.19 \text{ m}^3
 \end{aligned}$$

$$= 3.25 \times 7.75 \times 0.12 \times 9.00 = 27.20 \text{ m}^3$$

$$= \mathbf{49.33 \text{ m}^3}$$

d. Plat Beton bertulang, Balok dan Lisplank sunsrean Lantai 2

luas penampang x panjang x jumlah

Balok sunsrean 10/20

$$= 0.10 \times 0.20 \times 13.36 \times 2.00 = 0.53 \text{ m}^3$$

$$= 0.10 \times 0.20 \times 9.49 \times 2.00 = 0.38 \text{ m}^3$$

$$= 0.10 \times 0.20 \times 6.00 \times 2.00 = 0.24 \text{ m}^3$$

$$= 0.10 \times 0.20 \times 2.00 \times 2.00 = 0.08 \text{ m}^3$$

$$= 0.20 \times 0.25 \times 0.70 \times 24.00 = 0.84 \text{ m}^3$$

Plat Sunscreen lebar 70 cm

$$= 0.70 \times 0.12 \times 13.36 \times 2.00 = 2.24 \text{ m}^3$$

$$= 0.70 \times 0.12 \times 9.49 \times 2.00 = 1.59 \text{ m}^3$$

$$= 0.70 \times 0.12 \times 6.00 \times 2.00 = 1.01 \text{ m}^3$$

$$= 0.70 \times 0.12 \times 2.00 \times 2.00 = 0.34 \text{ m}^3$$

Listplank Sunscreen lebar 40 cm

$$= 0.40 \times 0.08 \times 13.36 \times 2.00 = 0.86 \text{ m}^3$$

$$= 0.40 \times 0.08 \times 9.49 \times 2.00 = 0.61 \text{ m}^3$$

$$= 0.40 \times 0.08 \times 6.00 \times 2.00 = 0.38 \text{ m}^3$$

$$= 0.40 \times 0.08 \times 2.00 \times 2.00 = 0.13 \text{ m}^3$$

$$= \mathbf{9.23 \text{ m}^3}$$

e. Tangga lantai 2

= Lebar Tangga x tebal tangga x panjang x jumlah

Tangga Utama

$$= 1.75 \times 0.24 \times 4.10 \times 2.00 = 3.44 \text{ m}^3 \Rightarrow \text{Miring}$$

$$\begin{aligned}
 &= 3.50 \times 0.24 \times 1.65 \times 1.00 = 1.39 \text{ m}^3 \Rightarrow \text{Bordes} \\
 &= 0.20 \times 0.30 \times 3.50 \times 1.00 = 0.21 \text{ m}^3 \\
 &\text{Tangga Pinggir} \\
 &= 1.15 \times 0.24 \times 4.10 \times 5.00 = 5.66 \text{ m}^3 \Rightarrow \text{Miring} \\
 &= 2.30 \times 0.24 \times 1.65 \times 2.00 = 1.82 \text{ m}^3 \Rightarrow \text{Bordes} \\
 &= 0.20 \times 0.30 \times 2.30 \times 2.00 = 0.28 \text{ m}^3 \\
 &= 12.80 \text{ m}^3
 \end{aligned}$$

C. Perhitungan Volume Beton Lantai 3

a. Beton Bertulang Kolom

$$\begin{aligned}
 &= \text{Luas Penampang} \times \text{Tinggi Kolom} \times \text{jumlah kolom} \\
 &= 0.30 \times 0.30 \times 4.20 \times 24.00 = 9.07 \text{ m}^3 \\
 &= 0.30 \times 0.30 \times 4.20 \times 4.00 = 1.51 \text{ m}^3 \\
 &\text{Total Volume Kolom lantai 3} = 10.58 \text{ m}^3
 \end{aligned}$$

b. Balok Beton Bertulang

$$\begin{aligned}
 &= \text{Luas Penampang Balok} \times \text{panjang bersih balok} \times \text{Jumlah} \\
 &\text{Ring Balok Memanjang 20/40} \\
 &= 0.20 \times 0.40 \times 2.25 \times 4.00 = 0.72 \text{ m}^3 \\
 &= 0.20 \times 0.40 \times 3.25 \times 18.00 = 4.68 \text{ m}^3 \\
 &= 0.15 \times 0.20 \times 24.00 \times 1.00 = 0.72 \text{ m}^3 \\
 &= 6.12 \text{ m}^3
 \end{aligned}$$

Ring Balok Melintang 20/40

$$\begin{aligned}
 &= 0.20 \times 0.40 \times 5.75 \times 2.00 = 0.92 \text{ m}^3 \\
 &= 0.20 \times 0.40 \times 7.75 \times 2.00 = 1.24 \text{ m}^3 \\
 &= 2.16 \text{ m}^3
 \end{aligned}$$

d. Plat Beton bertulang, Balok dan Lisplank sunsrean Lantai 2

luas penampang x panjang x jumlah

Balok sunsrean 10/20

$$\begin{aligned}
 &= 0.10 \times 0.20 \times 13.36 \times 2.00 = 0.53 \text{ m}^3 \\
 &= 0.10 \times 0.20 \times 9.49 \times 2.00 = 0.38 \text{ m}^3 \\
 &= 0.10 \times 0.20 \times 14.00 \times 2.00 = 0.56 \text{ m}^3 \\
 &= 0.10 \times 0.20 \times 2.00 \times 2.00 = 0.08 \text{ m}^3 \\
 &= 0.20 \times 0.25 \times 0.70 \times 24.00 = 0.84 \text{ m}^3
 \end{aligned}$$

Plat Sunscreen lebar 70 cm

$$\begin{aligned}
 &= 0.70 \times 0.12 \times 13.36 \times 2.00 = 2.24 \text{ m}^3 \\
 &= 0.70 \times 0.12 \times 9.49 \times 2.00 = 1.59 \text{ m}^3 \\
 &= 0.70 \times 0.12 \times 6.00 \times 2.00 = 1.01 \text{ m}^3 \\
 &= 0.70 \times 0.12 \times 2.00 \times 2.00 = 0.34 \text{ m}^3
 \end{aligned}$$

Listplank Sunscreen lebar 40 cm

$$\begin{aligned}
 &= 0.40 \times 0.08 \times 37.00 \times 2.00 = 2.37 \text{ m}^3 \\
 &= 0.40 \times 0.08 \times 17.00 \times 2.00 = 1.09 \text{ m}^3 \\
 &= 11.03 \text{ m}^3
 \end{aligned}$$

9.1.5 Pekerjaan Pasangan Dan Plesteran Dinding**a. Pasangan bata trasram 1PC:3PP**

= Tebal pasangan x tinggi pasangan

Pasangan Bata Tasram 1 PC : 3Ps lantai I

$$\begin{aligned}
 &= 0.80 \times 0.10 \times 278.10 = 22.25 \text{ m}^3 \\
 &= 0.40 \times 0.10 \times 180.10 = 7.20 \text{ m}^3 \\
 &= 3.40 \times 0.10 \times 36.00 = 12.24 \text{ m}^3 \\
 &= 41.69 \text{ m}^3
 \end{aligned}$$

Pasangan Bata Tasram 1 PC : 3 Ps lantai II

$$\begin{aligned}
 &= 0.40 \times 0.10 \times 194.10 = 7.76 \text{ m}^3 \\
 &= 3.40 \times 0.10 \times 36.00 = 12.24 \text{ m}^3
 \end{aligned}$$

$$= 20.00 \quad \text{m}^3$$

Pasangan Bata Tasram 1 PC : 3 Ps lantai III

$$= 0.40 \quad \times \quad 0.10 \quad \times \quad 152.10 = 6.08 \quad \text{m}^3$$

$$= 3.40 \quad \times \quad 0.10 \quad \times \quad 36.00 = 12.24 \quad \text{m}^3$$

$$= 18.32 \quad \text{m}^3$$

b. Pasangan Bata 1 PC : 5 PS lantai I

$$= 3.40 \quad \times \quad 0.10 \quad \times \quad 250.10 = 85.03 \quad \text{m}^3$$

Pasangan Bata 1 PC : 5 PS lantai I

$$= 3.40 \quad \times \quad 0.10 \quad \times \quad 236.10 = 80.27 \quad \text{m}^3$$

Pasangan Bata 1 PC : 5 PS lantai I

$$= 5.00 \quad \times \quad 0.10 \quad \times \quad 166.10 = 83.05 \quad \text{m}^3$$

$$= 248.36 \quad \text{m}^3$$

c. Plesteran

= Volume pasangan kali 10 x 2

Plesteran Tasram 1 PC : 3 Ps

$$= 80.02 \quad \times \quad 10.00 \quad \times \quad 2.00 = 1,600.40 \quad \text{m}^2$$

Plesteran 1 PC : 5 Ps

$$= 248.36 \quad \times \quad 10.00 \quad \times \quad 2.00 = 4,967.16 \quad \text{m}^2$$

9.1.6 PEKERJAAN LANGIT-LANGIT (PLAFOND)

Pasang langit-langit

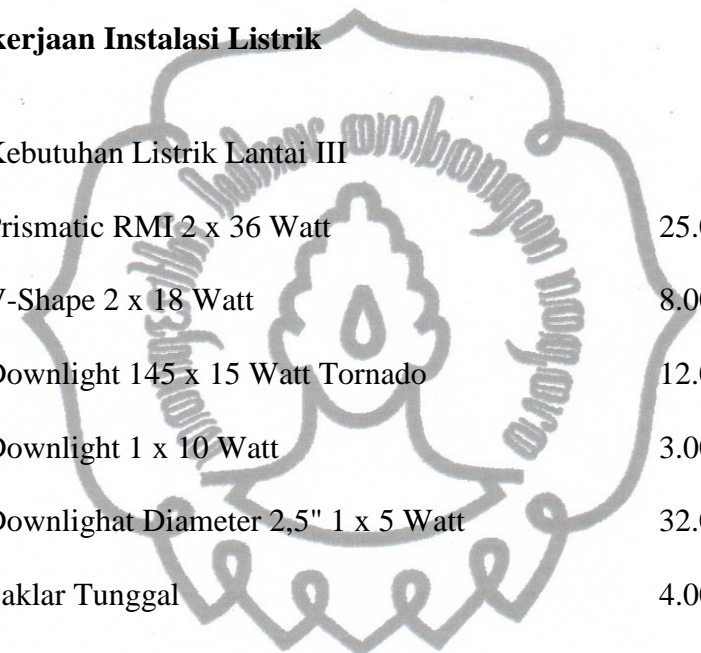
$$= 36.70 \quad \times \quad 14.00 \quad \times \quad 3.00 = 1,541.40 \quad \text{m}^2$$

9.1.7 Pekerjaan Kunci dan Kaca

- a. Kunci tanam = 328 buah
- b. Kunci kamar mandi = 12 buah
- c. Engsel angin = 556 buah
- d. Kait angin = 556 buah
- e. *Door closer* = 50 buah
- h. Kaca Polos 5 mm = 82,80 m²

9.1.8 Pekerjaan Instalasi Listrik

a. Kebutuhan Listrik Lantai III



Prismatic RMI 2 x 36 Watt	25.00	bh
V-Shape 2 x 18 Watt	8.00	bh
Downlight 145 x 15 Watt Tornado	12.00	bh
Downlight 1 x 10 Watt	3.00	bh
Downlight Diameter 2,5" 1 x 5 Watt	32.00	bh
Saklar Tunggal	4.00	bh
Saklar Ganda	12.00	bh
Stop Kontak	33.00	bh

b. Kebutuhan Listrik Lantai II

Prismatic RMI 2 x 36 Watt	23.00	bh
V-Shape 2 x 18 Watt	5.00	bh
Downlight 145 x 15 Watt Tornado	16.00	bh
Downlight 1 x 10 Watt	7.00	bh
Downlight Diameter 2,5" 1 x 5 Watt	44.00	bh
Saklar Tunggal	15.00	bh
Saklar Ganda	13.00	bh

Stop Kontak	30.00	bh
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c. Kebutuhan Listrik Lantai I

Prismatic RMI 2 x 36 Watt	30.00	bh
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V-Shape 2 x 18 Watt	5.00	bh
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Downlight 145 x 15 Watt Tornado	19.00	bh
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Downlight 1 x 10 Watt	10.00	bh
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Downlight Diameter 2,5" 1 x 5 Watt	18.00	bh
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Saklar Tunggal	17.00	bh
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Saklar Ganda	15.00	bh
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Stop Kontak	37.00	bh
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d. Unit Sekring

Volume = jumlah Sekring
= **3 buah**

9.1.9. Pekerjaan Sanitasi

a. Pasang kloset duduk

Volume = jumlah kloset per kamar mandi
= 1 x 12 KM
= **12 unit**

b. Pasang urinator

Volume = jumlah kloset per kamar mandi
= 1 x 8 KM
= **8 unit**

c. Pasang floor drain

Volume = jumlah floordrain tiap kamar mandi
= 1 x 15 KM
= **15 buah**

d. Wastafel

Volume = jumlah wastafel
= **6 buah**

e. Kran air

Volume = Jumlah seluruh titik kran
= **18 buah**

- f. Saluran air bersih
Volume = **140,50 m**
- g. Saluran air kotor
Volume = **118,50 m**
- h. Saluran air tinja
Volume = **110 m**
- i. Pompa air
Volume = **3 buah**



9.2 Rencana Anggaran Biaya (RAB)

Berikut ini adalah tabel hasil perhitungan RAB pada perencanaan gedung kantor 3 lantai.

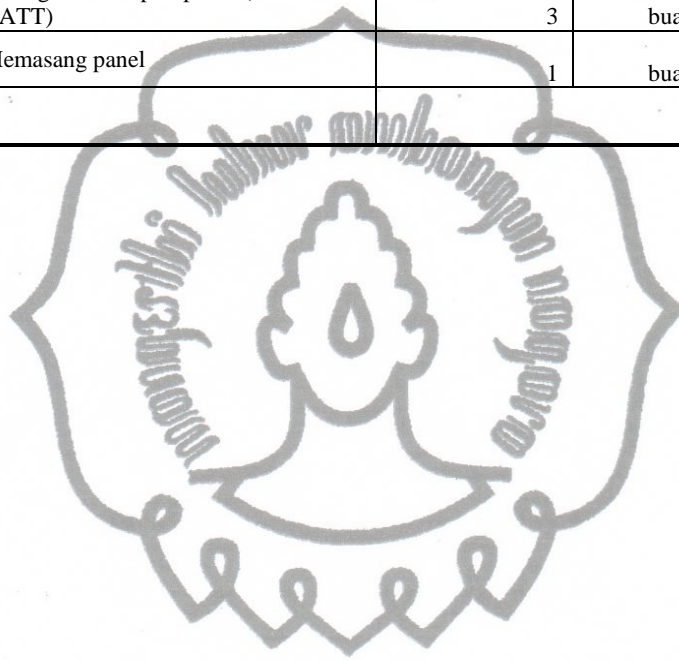
Tabel 9.1 Rencana Anggaran Biaya (RAB)

NO	URAIAN PEKERJAAN	VOLUME	SAT.	HARGA SAT.	JUMLAH HARGA
				(Rp)	(Rp)
I	PEKERJAAN PERSIAPAN				
1	1 m ² pagar sementara dari seng 2m	114.00	m	98,090.85	11,182,356.90
2	1 m' pemasangan bouwplank	117.40	m	105,858.50	12,427,787.90
3	1 m ² pembersihan lahan	680.00	m ²	2,788.50	1,896,180.00
II	PEKERJAAN TANAH				
1	Galian tanah 1 m ³ sedalam 1 m	720.22	m ³	43,917.50	31,630,086.18
2	Galian tanah 1 m ³ sedalam 2 m	388.94	m ³	53,806.50	20,927,231.08
3	Galian tanah 1 m ³ sedalam 3 m	352.76	m ³	63,842.90	22,520,902.19
4	Urugan tanah kembali	369.72	m ³	31,735.00	11,732,969.00
5	Urugan sirtu peninggian lantai	390.49	m ³	215,567.00	84,176,326.70
5	Urugan pasir urug	132.08	m ³	215,567.00	28,471,658.23
III	PEKERJAAN PONDASI				
1	1 m ³ batu belah campuran 1 SP:5PP	87.24	m ³	789,442.50	68,868,595.37
2	Pasang aanstampeng	51.70	m ³	437,913.30	22,638,365.96
IV	PEKERJAAN BETON				
	BETON LANTAI-I				
1	1 m ³ lantai kerja K175	54.25	m ³	910,987.22	49,417,412.74
2	1 m ³ pondasi beton bertulang (150 kg besi+bekisting)	78.53	m ³	4,068,127.25	319,449,692.31
3	1 m ³ sloof beton bertulang (200 kg besi+bekisting)	38.77	m ³	5,059,046.85	196,149,364.47
4	1 m ³ kolom beton bertulang (300 kg besi+bekisting)	42.77	m ³	8,744,486.85	373,984,213.60
5	1 m ³ balok beton bertulang (200 kg besi+bekisting)	36.06	m ³	6,735,177.35	242,845,238.33
6	1 m ³ plat lantai (150 kg besi+bekisting)	49.33	m ³	5,974,751.75	294,719,566.95
7	1 m ³ plat tangga (200 kg besi+bekisting)	15.26	m ³	6,225,486.85	94,988,478.36
7	1 m ³ plat Konsol Sunscreen dan Liplank	9.23	m ³	6,225,486.85	57,468,714.21
	BETON LANTAI-II				
1	1 m ³ kolom beton bertulang (300 kg besi+bekisting)	23.44	m ³	8,744,486.85	204,935,793.82

2	1 m3 balok beton bertulang (200 kg besi+bekisting)	36.06	m ³	6,735,177.35	242,845,238.33
3	1 m3 plat lantai (150 kg besi+bekisting)	49.33	m ³	5,974,751.75	294,719,566.95
4	1 m3 plat tangga (200 kg besi+bekisting)	12.80	m ³	6,225,486.85	79,658,839.54
5	1 m3 Beton Srean plat Konsol dan Lisplank	9.23	m ³	6,225,486.85	57,468,714.21
	BETON LANTAI-III				
1	1 m3 kolom beton bertulang (300 kg besi+bekisting)	10.58	m ³	8,744,486.85	92,551,648.82
2	1 m3 balok beton bertulang (200 kg besi+bekisting)	6.12	m ³	6,735,177.35	41,219,285.38
3	1 m3 Ring balok beton bertulang (200 kg besi+bekisting)	2.16	m ³	5,974,751.75	12,905,463.78
4	1 m3 Beton Srean plat Konsol dan Lisplank	11.03	m ³	6,225,486.85	68,684,551.32
V	PEKERJAAN BESI DAN ALUMINIUM				
1	Baja profil	11,868.76	kg	25,598.10	303,817,665.63
2	Besi cloos/kupingan gording	201.47	kg	25,598.10	5,157,351.60
3	Pek.pengelasan dgn las listrik	7,526.00	cm	2,000.00	15,052,000.00
4	Angker bautmur Ø 22mm - P.40cm	120.00	bh	15,000.00	1,800,000.00
5	Bautmur Ø 19 mm	1,560.00	bh	4,000.00	6,240,000.00
6	Bautmur Ø 12 mm	2,153.00	bh	2,000.00	4,306,000.00
6	Jarum keras /Kontramur trekstank	56.00	bh	20,000.00	1,120,000.00
7	Cat meny besi anti karat	759.54	m ²	16,000.00	12,152,617.60
8	Pek. Trekstang Besi beton polos Ø 10mm	172.62	kg	25,598.10	4,418,744.02
9	Baja canal C. 150.65.20.2,3	3,424.83	kg	25,598.10	87,669,166.42
10	Baja ringan/galvalume C 75.75	7,250.00	m'	5,365.20	38,897,700.00
11	1 m' kusen pintu jendela	543.00	m	109,301.72	59,350,833.96
12	Paemasangan mur-baut 12.7 mm	1,828.00	buah	18,000.00	32,904,000.00
VI	PEKERJAAN DINDING				
1	1 m2 dinding trasram 1PC:3PP	800.20	m ²	108,953.90	87,184,910.78
2	1 m2 dinding 1PC:5PP	2483.58	m ²	104,083.10	258,498,705.50
VII	PEKERJAAN PLESTERAN				
1	1 m2 plesteran trasram 1SP:3PP	1,600.40	m ²	45,656.82	73,069,174.73
2	1 m2 plesteran 1SP:5PP	4,967.16	m ²	43,893.30	218,025,044.03
3	1 m2 acian	6,567.56	m ²	23,837.00	156,550,927.72
VIII	PEKERJAAN PENUTUP LANTAI & DINDING				
1	1 m2 lantai keramik 30 cm x 30 cm	1,616.40	m ²	175,351.00	283,437,356.40

2	1 m2 lantai keramik 20 cm x 20 cm	174.23	m ²	179,602.50	31,291,245.56
3	1 m2 dinding keramik 20 cm x 20 cm	231.50	m ²	195,497.50	45,257,671.25
IX	PEKERJAAN PLAFOND				
1	1 m2 langit-langit akustik + rangka baja	1,541.40	m ²	193,077.50	297,609,658.50
X	PEKERJAAN PENUTUP ATAP				
1	Pekerjaan Usuk/reng	796.70	m ²	197,957.50	157,713,532.08
2	Atap Genteng Beton	796.70	m ²	127,957.50	101,944,252.08
3	Bubungan Genteng Beton	77.05	m ¹	137,551.50	10,598,343.08
XI	PEKERJAAN KUNCI DAN KACA				
1	Pemasangan kunci tanam	328	buah	127,704.50	41,887,076.00
2	Pemasangan kunci kamar mandi	12	buah	112,976.60	1,355,719.20
3	Pemasangan engsel angin	556	buah	43,156.85	23,995,208.60
4	Pemasangan kait angin	556	buah	30,663.60	17,048,961.60
5	Pemasangan <i>door closer</i>	50	buah	217,801.10	10,890,055.00
6	Pemasangan <i>door holder</i>	62	buah	179,301.10	11,116,668.20
7	Pemasangan kaca tebal 5 mm	82.8	m ²	155,807.96	12,900,899.09
XII	PEKERJAAN KAYU				
1	Pemasangan pintu Plywood	103.6	m ²	569,959.50	59,047,804.20
XIII	PEKERJAAN CAT				
1	Pengecatan tembok baru	6567.56	m ²	23,240.80	152,635,348.45
XIV	PEKERJAAN SANITASI GEDUNG				
1	Pemasangan closet duduk	12	buah	3,141,622.00	37,699,464.00
2	Pemasangan urinoir	8	buah	2,720,245.00	21,761,960.00
3	Pemasangan wastafel	6	buah	1,523,274.50	9,139,647.00
4	Pemasangan <i>floor drain</i>	15	buah	52,519.50	787,792.50
5	Pemasangan kran air	18	buah	108,537.00	1,953,666.00
6	1 m pipa pvc 3/4" (saluran air bersih)	140.5	m	19,506.85	2,740,712.43
7	1 m pipa pvc 2" (saluran air buangan)	118.5	m	48,617.25	5,761,144.13
8	1 m pipa pvc 3" (saluran tinja)	110	m	90,864.95	9,995,144.50
9	Pemasangan bak kontrol pasangan bata 30 cm x 30 cm	6	buah	341,238.70	2,047,432.20
10	Septictank dan Peresapan	1	Unit	12,500,000.00	12,500,000.00
XV	PEKERJAAN INSTALASI LISTRIK				
1	V-Shape 2 x 18 Watt	78.00	buah	190,000.00	14,820,000.00

2	Downlight 145 x 15 Watt Tornado	18.00	buah	150,000.00	2,700,000.00
3	Downlight 1 x 10 Watt	47.00	buah	95,000.00	4,465,000.00
4	Downlight Diameter 2,5" 1 x 5 Watt	94.00	buah	75,000.00	7,050,000.00
5	Pasang instalasi + stop kontak	100.00	buah	150,000.00	15,000,000.00
6	Pasang sakelar ganda	40.00	buah	12,500.00	500,000.00
7	Pasang sakelar tunggal	36.00	buah	8,000.00	288,000.00
8	Pasang unit sekering	3	buah	125,000.00	375,000.00
9	Pasang instalasi pompa air (125 WATT)	3	buah	575,000.00	1,725,000.00
10	Memasang panel	1	buah	850,000.00	850,000.00
				JUMLAH	5,817,588,846.60



Tabel 9.2 Rekapitulasi Perhitungan RAB

NO	JENIS PEKERJAAN	TOTAL BIAYA (Rp)
I	PEKERJAAN PERSIAPAN	25,506,324.80
II	PEKERJAAN TANAH	199,459,173.36
III	PEKERJAAN PONDASI	91,506,961.33
IV	PEKERJAAN BETON	2,724,011,783.09
V	PEKERJAAN BESI DAN ALUMUNIUM	572,886,079.23
VI	PEKERJAAN DINDING	345,683,616.28
VII	PEKERJAAN PLESTERAN	447,645,146.48
VIII	PEKERJAAN PENUTUP LANTAI DAN DINDING	359,986,273.21
IX	PEKERJAAN PLAFOND	297,609,658.50
X	PEKERJAAN PENUTUP ATAP	270,256,127.24
XI	PEKERJAAN KUNCI DAN KACA	119,194,587.69
XII	PEKERJAAN KAYU	59,047,804.20
XIII	PEKERJAAN CAT	152,635,348.45
XIV	PEKERJAAN SANITASI GEDUNG	104,386,962.75
XV	PEKERJAAN INSTALASI LISTRIK	47,773,000.00
JUMLAH		5,817,588,846.60
TOTAL + PPN 10%		6,399,347,731.26
JUMLAH PER m2		3,615,352.65