

Memória de calculo

2ª Etapa Cemitério

A - Melhorias no Cemitério

Banheiros

1 – Serviços Preliminares

1.1 – Serviços Iniciais

1.1.0.1 – Placa de Obra = $2,0m \times 1,125m = 2,25m^2$

1.1.0.2 – Almojarifado = $6,0m \times 10,0m = 60m^2$

2 – Sanitários

2.1 – Serviços iniciais

2.1.0.1 – Locação de obra = $6,20 + 6,20 + 6,20 + 6,20 + 6,20 + 7,25 + 7,25 + 7,25 + 7,25 = 60,00m$

2.2 – Fundações

2.2.0.1 – Estaca Broca de concreto = $4,00m \times 20 \text{ und} = 80m$

2.2.0.2 – Escavação manual parte principal = $6,20 + 6,20 + 6,20 + 6,20 + 6,20 + 7,25 + 7,25 + 7,25 + 7,25 = 60,00m \times 0,30m \times 0,24m = 4,32m^3$

2.2.0.3 – Lastro de pedra = $60,00 m \times 0,15m \times 0,05m = 0,45m^3$

2.2.0.4 – Forma para vigas = $(0,30m + 0,30m) \times 47,60m = 28,56m^2$

2.2.0.5 – Armação de viga aço CA-50 de 10,0mm = $4 \text{ und} \times 47,60m = 190,40m \times 0,617Kg = 117,48 Kg$

2.2.0.6 – Armação de viga aço CA-60 de 5,0mm = $(47,60m / 0,12m) \times 0,76m = 301,47m \times 0,154Kg = 46,43 Kg$

2.2.0.7 – Volume de concreto para viga baldrame = $0,15m \times 0,30m \times 47,60m = 2,14m^3$

2.2.0.8 – Impermeabilização de viga = $(0,30m + 0,30m + 0,15m) \times 47,60m = 35,70m^2$

2.3 – Estrutura

2.3.0.1 – Forma para vigas = $(0,30m + 0,30m) \times 47,60m = 28,56m^2$

2.3.0.2 – Forma para pilares = $(0,30m + 0,30m) \times 3,0m \times 20 \text{ und} = 36,0m^2$

2.3.0.3 – Armação de pilar aço CA-50 de 10,0 mm = $3,0m \times 20 \text{ und} \times 4 \text{ ferros} = 240m \times 0,617 Kg = 148,08 Kg$

Armação de viga aço CA-50 de 10,0mm = $4 \text{ ferros} \times 47,60m = 190,40m \times 0,617 Kg = 117,48 Kg$

Total = 265,56 Kg

2.3.0.4 – Armação de pilar aço CA-60 de 5,0mm = $(3,0m \times 20 \text{ und}) / 0,12m \times 0,76m = 380,0 m \times 0,154 Kg = 58,52 Kg$

Armação de viga aço CA-60 de 5,0mm = $(47,60m / 0,12m) \times 0,76m = 301,47m \times 46,43 Kg$

Total = 58,52 Kg + 46,43 Kg = 104,95 Kg

2.3.0.5 – Volume de concreto para vigas = $0,15m \times 0,30m \times 47,60 = 2,14m^3$

Volume de concreto para pilares = $0,15m \times 0,30m \times 3,0m \times 20 \text{ und} = 2,70m^3$

Total = 4,84m³

2.3.0.6 - Laje pré-moldada = $(6,20m \times 7,25m) = 44,95m^2$ da estrutura + $(7,20m \times 8,25m - (6,20m \times 7,25m)) = 14,45m^2$ do beiral = 59,40m²

- 2.3.0.7 – Verga e contra-verga pré-moldada com acréscimo de 0,30m em cada lado para janelas e 0,10m em cada lado para portas exceto P02 = $(8 \times (0,80\text{m} + 0,60\text{m}) \times 2) + 2,00\text{m} + (1,80\text{m} + 0,20\text{m}) + (4 \times (0,80\text{m} + 0,20\text{m})) + (2 \times (0,90\text{m} + 0,20\text{m})) = 32,60\text{m}$
- 2.4 – Alvenaria
- 2.4.0.1 – Alvenaria de vedação = $47,60\text{m} \times 3,0\text{m} = 142,80\text{m}^2$
- 2.5 – Cobertura
- 2.5.0.1 – Tesoura = 3 und conforme projeto
- 2.5.0.2 – Trama de aço = $7,60\text{m} \times 5,90\text{m} = 44,84\text{m}^2$
- 2.5.0.3 – Telha de aço = $7,60\text{m} \times 5,90\text{m} = 44,84\text{m}^2$
- 2.5.0.4 – Rufo = $5,90\text{m} + 7,25\text{m} + 7,25\text{m} = 20,40\text{m}$
- 2.6 – Revestimentos
- 2.6.0 – Pisos internos e externos
- 2.6.0.1 – Lastro de pedra = $(44,95\text{m}^2 + 30,90\text{m}^2) \times 0,05\text{m} = 3,79\text{m}^3$
- 2.6.0.2 – Lastro de concreto magro = $44,95\text{m}^2 + 30,90\text{m}^2 = 75,85\text{m}^2$
- 2.6.0.3 – Contrapiso em argamassa = $44,95\text{m}^2 + 30,90\text{m}^2 = 75,85\text{m}^2$
- 2.6.0.4 – Revestimento cerâmico para piso = $44,95\text{m}^2 + 30,90\text{m}^2 = 75,85\text{m}^2$
- 2.6.0.5 – Soleira em granito = $(4 \text{ und} \times 0,80) + (2 \text{ und} \times 0,90\text{m}) + (2 \text{ und} \times 2,0\text{m}) = 9,0\text{m}$
- 2.6.1 – Paredes internas e externas
- 2.6.1.1 – Chapisco em alvenaria = $47,60\text{m} \times 3,0\text{m} \times 2 = 285,60\text{m}^2$
- 2.6.1.2 – Emboço = $47,60\text{m} \times 3,0\text{m} \times 2 = 285,60\text{m}^2$
- 2.6.1.3 – Massa acrílica = $(6,20+6,20+7,25+7,25)\text{m} \times 4,40\text{m} = 118,36\text{m}^2$
- 2.6.1.4 – Fundo selador = $(6,20+6,20+7,25+7,25)\text{m} \times 4,40\text{m} = 118,36\text{m}^2$
- 2.6.1.5 – Tinta látex = $(6,20+6,20+7,25+7,25)\text{m} \times 4,40\text{m} = 118,36\text{m}^2$
- 2.6.1.6 – Revestimento cerâmico = $((2,00+2,00+1,80+1,80) \times 2) + ((1,80+1,80+1,40+1,40) \times 4) + 5,90+1,70+1,70+1,95+1,95+5,40+5,40 = 64,80\text{m} \times 3,00\text{m} = 194,40\text{m}^2$
- 2.6.2 – Teto
- 2.6.2.1 – Chapisco = $7,20\text{m} \times 8,25\text{m} = 59,40\text{m}^2$
- 2.6.2.2 – Emboço = $7,20\text{m} \times 8,25\text{m} = 59,40\text{m}^2$
- 2.6.2.3 – Massa látex = $7,20\text{m} \times 8,25\text{m} = 59,40\text{m}^2$
- 2.6.2.4 – Tinta látex = $7,20\text{m} \times 8,25\text{m} = 59,40\text{m}^2$
- 2.7 – Esquadrias
- 2.7.0.1 – Portas $0,80\text{m} \times 2,10\text{m} = 4 \text{ und}$ conforme projeto
- 2.7.0.2 – Portas $0,90\text{m} \times 2,10\text{m} = 2 \text{ und}$ conforme projeto
- 2.7.0.3 – Gradil = $2,0\text{m} \times 2,50\text{m} = 5,0\text{m}^2$ conforme projeto
- 2.7.0.4 – Porta de correr em gradil = $2,0\text{m} \times 2,50\text{m} = 5,0\text{m}^2$
- 2.7.0.5 – Janela basculante = $0,80\text{m} \times 0,40\text{m} \times 8 = 2,56\text{m}^2$
- 2.7.0.6 – Vidro = $0,80\text{m} \times 0,40\text{m} \times 8 = 2,56\text{m}^2$
- 2.7.0.7 – Espelho cristal 4mm = $1,20\text{m} \times 1,25\text{m} = 1,50\text{m}^2 \times 6 \text{ und} = 9,00\text{m}^2$
- 2.8 – Instalação elétrica
- 2.8.0.1 – Entrada de energia = 1 und conforme projeto
- 2.8.0.2 – Quadro de distribuição = 1 und conforme projeto
- 2.8.0.3 – Disjuntor monopolar = 4 und conforme projeto
- 2.8.0.4 – Disjuntor tripolar = 1 und conforme projeto

- 2.8.0.5 – Caixa retangular média = 10 und conforme projeto
- 2.8.0.6 – Caixa retangular baixa = 1 und conforme projeto
- 2.8.0.7 – Caixa sextavada = 8 und conforme projeto
- 2.8.0.8 – Tomada média = 8 und conforme projeto
- 2.8.0.9 – Tomada baixa = 1 und conforme projeto
- 2.8.0.10 – Interruptor simples = 8 und conforme projeto
- 2.8.0.11 – Cabo de cobre 2,5mm² = 250 m conforme projeto
- 2.8.0.12 – Eletroduto corrugado = 58,02
- 2.8.0.13 – Luminária tipo plafon = 8 und conforme projeto
- 2.9 – Instalação Hidráulica
 - 2.9.0.1 – Caixa d'água = 1 und conforme projeto
 - 2.9.0.2 – Tubos de PVC 50mm = (1,099 + 2,10 + 3,11 + 3,11 + 2,45 + 2,28 + 1,44 + 0,43 + 1,67 + 0,32) = 18,92m conforme projeto
 - 2.9.0.3 – Tubos de PVC 40mm = (0,87 + 1,04 + 0,25 + 2,66 + 0,58 + 2,66 + 1,04) = 9,35m conforme projeto
 - 2.9.0.4 – Tubo de PVC 25mm = (1,38 + 0,43 + 0,34 + 0,61 + 0,22 + 0,71 + 0,43 + 2,11 + 2,21 + 1,23 + 0,74 + 2,40 + 2,24 + 0,43 + 0,43 + 1,15 + 0,38 + 0,63 + 3,79 + 0,94 + 2,67) = 26,83m conforme projeto
 - 2.9.0.5 – Registro de gaveta $\frac{3}{4}$ = 6 und conforme projeto
 - 2.9.0.6 – Registro de gaveta $\frac{1}{4}$ = 3 und conforme projeto
 - 2.9.0.7 – Registro de gaveta $1\frac{1}{2}$ = 2 und conforme projeto
 - 2.9.0.8 – Torneira cromada = 1 und conforme projeto
 - 2.9.0.9 – Bancada granito com cuba e torneira = 6 und conforme projeto
 - 2.9.0.10 – Bebedouro industrial = 2 und conforme projeto
- 2.10 – Instalações Sanitárias
 - 2.10.0.1 – Fossa séptica = 1 und conforme projeto
 - 2.10.0.2 – Sumidouro = 1 und conforme projeto
 - 2.10.0.3 – Caixa hidráulica = 6 und conforme projeto
 - 2.10.0.4 – Vaso sanitário PcD = 2 und conforme projeto
 - 2.10.0.5 – Vaso sanitário comum = 4 und conforme projeto
 - 2.10.0.6 – Assento sanitário = 6 und conforme projeto
 - 2.10.0.7 – Válvula de descarga = 6 und conforme projeto
 - 2.10.0.8 – Ralo sifonado = 6 und conforme projeto
 - 2.10.0.9 – Tubos de PVC 50mm = (2,15 + 0,65 + 2,24 + 1,00 + 1,34 + 0,65 + 1,29 + 1,37 + 0,65 + 1,31 + 1,37 + 1,31 + 0,86 + 0,65 + 2,15 + 0,65 + 2,24 + 1,00 + 1,34 + 0,65 + 1,31 + 1,37 + 0,65 + 1,31 + 0,86 + 0,65) = 31,02m
 - 2.10.0.10 – Tubos de PVC 100mm = (0,73 + 0,80 + 2,23 + 0,95 + 2,56 + 7,32 + 2,56 + 0,96 + 2,23 + 0,73 + 0,80) = 21,87m
 - 2.10.0.11 – Barra de apoio em aço = 2 und conforme projeto
 - 2.10.0.12 – Toalheiro = 6 und conforme projeto
 - 2.10.0.13 – Papeleira plástica = 6 und conforme projeto
 - 2.10.0.14 – Saboneteira plástica = 6 und conforme projeto
- 2.11 – Serviços finais
 - 2.11.0.1 – Limpeza final de obra = 6,20 x 7,25 = 44,95m²

3 – Salão depósito

3.1 – Serviços iniciais

3.1.0.1 – Locação convencional = $10,00 + 15,00 + 10,00 + 15,00 + 10,00 + 3,00 + 3,00 = 66,00\text{m}^2$

3.2 – Fundação

3.2.0.1 – Estaca broca 25cm = $(16 \text{ und} \times 4,00\text{m}) + (14 \text{ und} \times 4,00\text{m}) = 120\text{m}$

3.2.0.2 – Escavação manual = $15 + 9,70 + 15 + 10 + 10 + 3 + 3 = 65,70\text{m} \times 0,15 \times 0,30 = 2,96\text{m}^3$

Escavação dos blocos = $(1,50 \times 0,70 \times 0,60) \times 8 \text{ und} = 5,04$

Total = $8,00\text{m}^3$

3.2.0.3 – Lastro de pedra = $65,70\text{m} \times 0,15\text{m} \times 0,05\text{m} = 0,50\text{m}^3$

3.2.0.4 – Forma para viga baldrame = $(0,30 + 0,30) \times 65,70\text{m} = 39,42\text{m}^2$

Forma para blocos = $(1,50\text{m} + 1,50\text{m} + 0,70\text{m} + 0,70\text{m}) \times 0,60\text{m} = 2,64\text{m}^2 \times 8 \text{ und} = 21,12\text{m}^2$

Total = $60,54\text{m}^2$

3.2.0.5 – Armação de bloco aço CA-50 de 12,50mm = $(2,21\text{m} \times 5 \times 8 \text{ und}) = 88,40\text{m} \times 0,963 \text{ Kg} = 85,13 \text{ Kg}$

3.2.0.6 – Armação de viga baldrame aço CA-50 de 10,0mm = $4 \text{ ferros} \times 65,70\text{m} = 262,80\text{m} \times 0,617 \text{ Kg} = 162,15 \text{ Kg}$

3.2.0.7 – Armação de bloco aço CA-50 de 8,0mm = $4,28\text{m} \times 4 \times 8 \text{ und} = 136,96\text{m} \times 0,395 \text{ Kg} = 54,10 \text{ Kg}$

3.2.0.8 – Armação de bloco aço CA-50 de 6,3mm = $(1,56\text{m} \times 5) + (2,23\text{m} \times 8) = 25,64\text{m} \times 8 \times 0,245 \text{ Kg} = 50,25 \text{ Kg}$

3.2.0.9 – Armação de viga baldrame aço CA-60 de 5,0mm = $(65,70\text{m} / 0,12\text{m}) \times 0,76\text{m} = 416,10\text{m} \times 0,154 \text{ Kg} = 64,08 \text{ Kg}$

3.2.0.10 - Volume de concreto para viga baldrame = $0,15\text{m} \times 0,30\text{m} \times 65,70 = 2,96\text{m}^3$

Volume de concreto para bloco = $0,70\text{m} \times 0,60\text{m} \times 1,50\text{m} \times 8 = 5,04\text{m}^3$

Total = $8,00\text{m}^3$

3.2.0.11 – Impermeabilização de viga = $0,30\text{m} + 0,30\text{m} + 0,15\text{m} \times 65,70\text{m} = 49,28\text{m}^2$

3.3 – Estrutura

3.3.0.1 – Forma para vigas = $((0,30\text{m} + 0,30\text{m}) \times 65,70\text{m}) + ((0,30\text{m} + 0,30\text{m}) \times 50,00\text{m}) = 39,42\text{m}^2 + 30,00\text{m}^2 = 69,42\text{m}^2$

3.3.0.2 – Forma para pilares = $((0,30\text{m} + 0,30\text{m}) \times 5,00\text{m} \times 10 \text{ und}) + ((0,30\text{m} + 0,30\text{m}) \times 5,00\text{m} \times 8 \text{ und}) + ((0,30\text{m} + 0,30\text{m}) \times 3,00\text{m} \times 3 \text{ und}) = 30,00\text{m}^2 + 24,00\text{m}^2 + 5,40\text{m}^2 = 59,40\text{m}^2$

3.3.0.3 – Armação de viga intermediária aço CA-50 de 10,0mm = $4 \text{ ferros} \times 65,70\text{m} = 262,80\text{m} \times 0,617 \text{ Kg} = 162,15 \text{ Kg}$

Armação de viga de respaldo aço CA-50 de 10,0mm = $4 \text{ ferros} \times 50,00\text{m} =$

$200,00\text{m} \times 0,617 \text{ Kg} = 123,40 \text{ Kg}$

Armação de pilar P1 aço CA-50 de 10,0mm = $5,00\text{m} \times 10 \text{ und} \times 4 \text{ ferros} =$

$200,00\text{m} \times 0,617 \text{ Kg} = 123,40 \text{ Kg}$

Armação de pilar P2 aço CA-50 de 10,0mm = $5,00\text{m} \times 8 \text{ und} \times 8 \text{ ferros} = 320,00\text{m} \times 0,617 \text{ Kg} = 197,44 \text{ Kg}$

- Armação de pilar P3 aço CA-50 de 10,0mm = 3,00m x 3 und x 4 ferros = 36,00m x 0,617 Kg = 22,21 Kg
Total = 628,60 Kg
- 3.3.0.4 – Armação de viga intermediária aço CA-60 de 5,0mm = (65,70m / 0,12m) x 0,76m = 416,10m x 0,154 Kg = 64,08 Kg
Armação de viga de respaldo aço CA-60 de 5,0mm = (50,00m / 0,12m) x 0,76m = 316,67m x 0,154 Kg = 48,77 Kg
Armação de pilar P1 aço CA-60 de 5,0mm = ((5,00m x 10 und) / 0,12m) x 0,76m = 316,67m x 0,154 Kg = 48,77 Kg
Armação de pilar P2 aço CA-60 de 5,0mm = ((5,00m x 8 und) / 0,12m) x 0,86m = 286,67m x 0,154 Kg = 44,15 Kg
Armação de pilar P3 aço CA-60 de 5,0mm = ((3,00m x 3 und) / 0,12m) x 0,76m = 57,00m x 0,154 Kg = 8,78 Kg
Total = 214,55 Kg
- 3.3.0.5 - Volume de concreto para viga intermediária = 0,15m x 0,30m x 65,70m = 2,96m³
Volume de concreto para viga de respaldo = 0,15m x 0,30m x 50,00m = 2,25m³
Volume de concreto para pilar P1 = 0,15m x 0,30m x 5,00m x 10 und = 2,25m³
Volume de concreto para pilar P2 = 0,20m x 0,30m x 5,00 x 8 und = 2,40m³
Volume de concreto para pilar P3 = 0,15m x 0,30m x 3,00m x 3 und = 0,40m³
Total = 10,26m³
- 3.3.0.6 – Laje pré-moldada = (2,92m x 10,00m) da estrutura + ((15,00m x 0,80m) + (1,50m x 0,50m) + (1,50m x 0,50m) + (15,00m x 0,50m) + (1,50m x 0,50m) + (4,30m x 0,50m)) do beiral = 29,20m² + 23,90m² = 53,10m²
- 3.3.0.7 – Verga pré-moldada com acréscimo de 0,20m em cada lado para janelas e 0,10m em cada lado para portas exceto a entrada principal = (6 und x (1,50m + 0,40m) x 2) + ((0,80m + 0,40m) x 2) + 4,70m + (3 und x (0,80m + 0,20m)) + (0,90m + 0,20m) = 34,00m
- 3.4 – Alvenaria
- 3.4.0.1 – Alvenaria de vedação = (50,00m x 5,00m) + (15,70m x 3,00m) = 297,10m²
- 3.5 – Cobertura
- 3.5.0.1 – Tesoura = 4 und conforme projeto
- 3.5.0.2 - Trama de aço = 14,70m x 10,65m = 156,55m²
- 3.5.0.3 – Telhamento com telha metálica = 14,70m x 10,65m = 156,55m²
- 3.5.0.4 – Rufo em aço galvanizado = 9,90m + 9,90m + 15,00m = 34,80m
- 3.6 – Revestimentos
- 3.6.0 – Pisos internos e externos
- 3.6.1
- 3.6.1.1 – Lastro de pedra = (17,00m x 12,30m) = 209,10m² x 0,05m = 10,46m³
- 3.6.1.2 - Lastro de concreto magro = (3,30m x 10,00m) + (12,30m + 12,30m) x 1,00m + (17,00m x 1,30m) = 79,70m²
- 3.6.1.3 – Contrapiso em argamassa = ((17,00m x 12,30m) – (15,00m x 10,00m)) + (15,00m x 10,00m) = 59,10m² + 150,00m² = 209,10m²
- 3.6.1.4 – Revestimento cerâmico = (1,50m x 3,00m) + (2,85m x 3,00m) = 13,05m²
- 3.6.1.5 – Soleira em granito = 0,80m + 0,80m + 0,80m = 2,40m

- 3.6.1.6 – Acabamento polido para piso de concreto = $111,55\text{m}^2 + 15,10\text{m}^2 = 126,65\text{m}^2 + 64,20\text{m}^2 = 190,85\text{m}^2$
- 3.6.1.7 – Calçada de concreto = $(17,00\text{m} + 17,00\text{m}) \times 1,30\text{m} + (12,30\text{m} + 12,30\text{m}) \times 1,00\text{m} + (11,55\text{m} \times 9,70\text{m}) = 180,83\text{m}^2$
- 3.6.2 – Paredes internas e externas
- 3.6.2.1 – Chapisco = $(50,00\text{m} \times 5,00\text{m}) + (15,70\text{m} \times 3,00\text{m}) = 297,10\text{m}^2 \times 2 = 594,20\text{m}^2$
- 3.6.2.2 – Emboço = $(50,00\text{m} \times 5,00\text{m}) + (15,70\text{m} \times 3,00\text{m}) = 297,10\text{m}^2 \times 2 = 594,20\text{m}^2$
- 3.6.2.3 – Massa acrílica = $(10,00\text{m} + 10,00\text{m} + 11,55\text{m} + 11,55\text{m} + 3,00\text{m} + 3,00\text{m} + 5,05\text{m} + 5,05\text{m} + 3,00\text{m} + 3,00\text{m} + 2,85\text{m} + 2,85\text{m}) \times 5 = 354,50\text{m}^2 + (15,00\text{m} + 15,00\text{m} + 10,00\text{m} + 10,00\text{m}) \times 7,30 = 365,00\text{m}^2 = 719,50\text{m}^2$
- 3.6.2.4 – Fundo selador acrílico = $(10,00\text{m} + 10,00\text{m} + 11,55\text{m} + 11,55\text{m} + 3,00\text{m} + 3,00\text{m} + 5,05\text{m} + 5,05\text{m} + 3,00\text{m} + 3,00\text{m} + 2,85\text{m} + 2,85\text{m}) \times 5 = 354,50\text{m}^2 + (15,00\text{m} + 15,00\text{m} + 10,00\text{m} + 10,00\text{m}) \times 7,30 = 365,00\text{m}^2 = 719,50\text{m}^2$
- 3.6.2.5 – Pintura com tinta látex = $(10,00\text{m} + 10,00\text{m} + 11,55\text{m} + 11,55\text{m} + 3,00\text{m} + 3,00\text{m} + 5,05\text{m} + 5,05\text{m} + 3,00\text{m} + 3,00\text{m} + 2,85\text{m} + 2,85\text{m}) \times 5 = 354,50\text{m}^2 + (15,00\text{m} + 15,00\text{m} + 10,00\text{m} + 10,00\text{m}) \times 7,30 = 365,00\text{m}^2 = 719,50\text{m}^2$
- 3.6.2.6 – Revestimento cerâmico em paredes = $(3,00\text{m} + 1,50\text{m} + 3,00\text{m} + 1,50\text{m}) \times 3 = 27,00\text{m}^2$
- 3.6.3 – Teto
- 3.6.3.1 – Chapisco = $(2,92\text{m} \times 10,00\text{m})$ da estrutura + $((15,00\text{m} \times 0,80\text{m}) + (1,50\text{m} \times 0,50\text{m}) + (1,50\text{m} \times 0,50\text{m}) + (15,00\text{m} \times 0,50\text{m}) + (1,50\text{m} \times 0,50\text{m}) + (4,30\text{m} \times 0,50\text{m}))$ do beiral = $29,20\text{m}^2 + 23,90\text{m}^2 = 53,10\text{m}^2$
- 3.6.3.2 – Emboço = $(2,92\text{m} \times 10,00\text{m})$ da estrutura + $((15,00\text{m} \times 0,80\text{m}) + (1,50\text{m} \times 0,50\text{m}) + (1,50\text{m} \times 0,50\text{m}) + (15,00\text{m} \times 0,50\text{m}) + (1,50\text{m} \times 0,50\text{m}) + (4,30\text{m} \times 0,50\text{m}))$ do beiral = $29,20\text{m}^2 + 23,90\text{m}^2 = 53,10\text{m}^2$
- 3.6.3.3 – Massa látex em teto = $(2,92\text{m} \times 10,00\text{m})$ da estrutura + $((15,00\text{m} \times 0,80\text{m}) + (1,50\text{m} \times 0,50\text{m}) + (1,50\text{m} \times 0,50\text{m}) + (15,00\text{m} \times 0,50\text{m}) + (1,50\text{m} \times 0,50\text{m}) + (4,30\text{m} \times 0,50\text{m}))$ do beiral = $29,20\text{m}^2 + 23,90\text{m}^2 = 53,10\text{m}^2$
- 3.6.3.4 – Pintura com tinta látex = $(2,92\text{m} \times 10,00\text{m})$ da estrutura + $((15,00\text{m} \times 0,80\text{m}) + (1,50\text{m} \times 0,50\text{m}) + (1,50\text{m} \times 0,50\text{m}) + (15,00\text{m} \times 0,50\text{m}) + (1,50\text{m} \times 0,50\text{m}) + (4,30\text{m} \times 0,50\text{m}))$ do beiral = $29,20\text{m}^2 + 23,90\text{m}^2 = 53,10\text{m}^2$
- 3.6.3.5 – Revestimento cerâmico = $(3,00\text{m} + 3,00\text{m} + 1,50\text{m} + 1,50\text{m}) \times 3,00\text{m} = 27,00\text{m}^2 + ((4,80\text{m} + 1,50\text{m}) \times 0,30\text{m}) + (16,00\text{m} + 3,00\text{m}) \times 0,30\text{m} = 7,86\text{m}^2 = 34,86\text{m}^2$
- 3.6.3.6 – Forro de PVC = $9,70\text{m} \times 11,55\text{m} = 112,03\text{m}^2$
- 3.7 – Esquadrias
- 3.7.0.1 – Porta de madeira de 0,80m = 3 und conforme projeto
- 3.7.0.2 – Porta de madeira de 0,90m = 1 und conforme projeto
- 3.7.0.3 – Portão metálico basculante = 1 und conforme projeto
- 3.7.0.4 – Janela de aço basculante = $((1,50\text{m} \times 1,10\text{m}) \times 6 \text{ und}) + (0,80\text{m} \times 0,40) = 10,22\text{m}^2$
- 3.7.0.5 – Vidro liso 4mm = $((1,50\text{m} \times 1,10\text{m}) \times 6 \text{ und}) + (0,80\text{m} \times 0,40) = 10,22\text{m}^2$
- 3.7.0.6 – Espelho cristal 4mm = $1,20\text{m} \times 1,25\text{m} = 1,50\text{m}^2$
- 3.8 – Instalação elétrica
- 3.8.0.1 – Entrada de energia = 1 und conforme projeto
- 3.8.0.2 – Quadro de distribuição 18 disjuntores din 100A = 1 und conforme projeto
- 3.8.0.3 – Disjuntor monopolar 10A tipo DIN = 4 und conforme projeto

- 3.8.0.4 – Disjuntor bipolar 25A tipo DIN = 2 und conforme projeto
- 3.8.0.5 – Disjuntor tripolar 60A a 100A tipo NEMA = 1 und conforme projeto
- 3.8.0.6 – Caixa retangular alta = 2 und conforme projeto
- 3.8.0.7 – Caixa retangular media = 6 und conforme projeto
- 3.8.0.8 – Caixa retangular baixa = 8 und conforme projeto
- 3.8.0.9 – Caixa sextavada = 13 und conforme projeto
- 3.8.0.10 – Tomada alta = 2 und conforme projeto
- 3.8.0.11 – Tomada média = 6 und conforme projeto
- 3.8.0.12 – Tomada baixa = 8 und conforme projeto
- 3.8.0.13 – Interruptor simples = 4 und conforme projeto
- 3.8.0.14 – Cabo de cobre $2,5\text{mm}^2 = 3,80\text{m} + 6,04\text{m} + 3,38\text{m} + 3,80\text{m} + 3,76\text{m} + 11,36\text{m} + 2,61\text{m} + 4,70\text{m} + 3,26\text{m} + 4,70\text{m} + 11,15\text{m} + 5,00\text{m} + 2,74\text{m} + 3,80\text{m} + 3,66\text{m} + 3,69\text{m} + 4,70\text{m} + 2,75\text{m} + 4,70\text{m} + 3,41\text{m} + 4,70\text{m} + 3,70\text{m} + 3,80\text{m} + 7,81\text{m} + 7,64\text{m} + 7,24\text{m} + 7,00\text{m} + 1,80\text{m} + 3,00\text{m} + 1,84\text{m} + 1,80\text{m} + 0,20\text{m} + 1,49\text{m} + 2,70\text{m} + 1,53\text{m} + 1,80\text{m} + 2,31\text{m} + 1,55\text{m} + 1,80\text{m} + 0,20\text{m} + 3,43\text{m} + 2,00\text{m} + 1,80\text{m} + 1,45\text{m} + 2,70\text{m} + 2,85\text{m} + 2,70\text{m} + 3,06\text{m} + 1,80\text{m} = 182,90\text{m} \times 4 = 731,60\text{m}$
- 3.8.0.15 – Cabo de cobre $4,0\text{mm}^2 = 1,80\text{m} + 5,72\text{m} + 0,80\text{m} + 1,80\text{m} + 4,45\text{m} + 0,80\text{m} = 15,37\text{m} \times 2 = 30,74\text{m}$
- 3.8.0.16 – Eletroduto flexível 25mm = $3,00\text{m} + 4,45\text{m} + 0,80\text{m} + 1,49\text{m} + 2,70\text{m} + 1,53\text{m} + 1,80\text{m} + 1,84\text{m} + 1,80\text{m} + 0,20\text{m} + 5,72\text{m} + 0,80\text{m} + 2,31\text{m} + 1,55\text{m} + 1,80\text{m} + 0,20\text{m} + 3,43\text{m} + 2,00\text{m} + 1,80\text{m} + 1,45\text{m} + 2,70\text{m} + 2,85\text{m} + 2,70\text{m} + 3,07\text{m} + 1,80\text{m} + 7,24\text{m} + 7,00\text{m} + 7,34\text{m} + 7,16\text{m} + 3,80\text{m} + 4,70\text{m} + 4,70\text{m} + 3,80\text{m} + 4,70\text{m} + 4,70\text{m} + 3,80\text{m} + 4,70\text{m} = 117,43\text{m}$
- 3.8.0.17 – Eletroduto rígido 25mm = $3,38\text{m} + 6,04\text{m} + 3,76\text{m} + 11,36\text{m} + 2,61\text{m} + 3,26\text{m} + 11,15\text{m} + 5,00\text{m} + 3,79\text{m} + 3,41\text{m} + 2,75\text{m} + 2,74\text{m} + 3,66\text{m} + 3,69\text{m} = 66,61\text{m}$
- 3.8.0.18 – Luminária tipo plafon = 13 und conforme projeto
- 3.9 – Instalação hidráulica
 - 3.9.0.1 – Caixa d'água 1000L = 1 und conforme projeto
 - 3.9.0.2 – Tubos PVC 40mm = $1,10\text{m} + 2,10\text{m} + 1,27\text{m} + 0,20\text{m} + 0,80\text{m} + 1,10\text{m} + 2,70\text{m} + 0,57\text{m} + 0,37\text{m} = 10,21\text{m}$
 - 3.9.0.3 – Tubos PVC 25mm = $0,85\text{m} + 0,91\text{m} + 6,22\text{m} + 3,18\text{m} + 0,37\text{m} + 0,58\text{m} + 5,00\text{m} = 17,44\text{m}$
 - 3.9.0.4 – Registro de gaveta $\frac{3}{4} = 1$ und conforme projeto
 - 3.9.0.5 – Registro de gaveta $1\frac{1}{4} = 1$ und conforme projeto
 - 3.9.0.6 – Torneira cromada = 2 und conforme projeto
 - 3.9.0.7 – Bancada em granito 50 x 60cm = 1 und conforme projeto
 - 3.9.0.8 – Chuveiro = 1 und
- 3.10 – Instalação sanitária
 - 3.10.0.1 – Fossa séptica = 1 und conforme projeto
 - 3.10.0.2 – Sumidouro em alvenaria = 1 und conforme projeto
 - 3.10.0.3 – Caixa hidráulica em alvenaria = 1 und conforme projeto
 - 3.10.0.4 – Vaso sanitário convencional = 1 und conforme projeto
 - 3.10.0.5 – Assento sanitário = 1 und conforme projeto
 - 3.10.0.6 – Válvula de descarga = 1 und conforme projeto

- 3.10.0.7 – Ralo sifonado = 1 und conforme projeto
- 3.10.0.8 – Tubo PVC 50mm = 1,08m + 0,65m + 0,94m + 1,50m = 4,17m
- 3.10.0.9 – Tubo PVC 100mm = 1,06m + 2,86m + 1,17m + 0,69m + 1,50m = 7,28m
- 3.10.0.10 – Toalheiro plástico = 1 und conforme projeto
- 3.10.0.11 – Papeleira plástica = 1 und conforme projeto
- 3.10.0.12 – Saboneteira plástica = 1 und conforme projeto
- 3.11 – Serviços finais
 - 3.11.0.1 – Limpeza final de obra = 15,00m x 10,00m = 150,00m²
- 4 – Muro em alvenaria
 - 4.1 – Serviços iniciais
 - 4.1.0.1 – Locação de obra = 420,15m conforme projeto
 - 4.2 – Fundação
 - 4.2.0.1 – Estaca broca 25cm = (142 und x 3,00m) + (2 und x 3,00m) + (2 und x 4,00m) = 440m
 - 4.2.0.2 – Escavação manual = 420,15m x 0,15m x 0,30m = 18,91m³
 - 4.2.0.3 – Lastro de pedra = 420,15m x 0,15m x 0,05m = 3,15m³
 - 4.2.0.4 – Forma para viga baldrame = (0,30m + 0,30m) x 420,15m = 252,09m²
 - 4.2.0.5 – Armação de viga baldrame aço CA-50 de 8,0mm = 4 ferros x 420,15m = 1.680,60m x 0,395 Kg = 663,83 Kg
 Armação de estaca aço CA-50 de 8,0mm = 4 ferros x 2,50m x 142 und = 1.420m x 0,395 Kg = 560,90 Kg
 Armação de estaca B1 aço CA-50 de 8,0mm = 4 ferros x 3,50m x 2 und = 28,00m x 0,395 Kg = 11,06 Kg
 Armação de estaca B2 aço CA-50 de 8,0mm = 4 ferros x 2,50m x 2 und = 20,00m x 0,395 Kg = 7,90 Kg
 Total = 1.243,69 Kg
 - 4.2.0.6 – Armação de viga baldrame aço CA-60 de 5,0mm = (420,15m / 0,12m) x 0,76m = 2.660,95m x 0,154 Kg = 409,79 Kg
 - 4.2.0.7 – Volume de concreto para viga baldrame = 0,15m x 0,30m x 420,15m = 18,90m³
 - 4.2.0.8 – Impermeabilização de viga baldrame = (0,30m + 0,30m + 0,15m) x 420,15m = 315,11m²
 - 4.3 – Estrutura
 - 4.3.0.1 – Forma para viga intermediária = (0,30m + 0,30m) x 6,00m = 3,60m²
 Forma para vigas de respaldo = ((0,30m + 0,30m) x 398,21m) + ((0,30m + 0,30m) x 9,44m = 238,92m + 5,66m = 244,58m²
 Total = 248,18m²
 - 4.3.0.2 – Forma para pilares = ((0,30m + 0,30m + 0,25m + 0,25m) x 1,90m x 142 und = 296,78m²) + (0,30m + 0,50m) x 3,80m x 2 und = 6,08m²) + ((0,25m + 0,25m) x 2,80m x 2 und = 2,80m²) = 305,66m²
 - 4.3.0.3 - Armação para pilar aço CA-50 de 8,0mm = (1,90m x 142 und x 6 ferros) x 0,395 Kg = 639,43 Kg
 - 4.3.0.4 – Armação para pilar aço CA-50 de 5,0mm = ((1,90m x 142 und) / 0,12m x 0,96m) + ((3,80m x 2 und) / 0,12 x 1,12) + ((2,80m x 2 und) / 0,12 x 0,72) = 2.158,40m + 70,93m + 33,60m = 2.262,93m x 0,154 Kg = 348,49 Kg

- 4.3.0.5 – Armação de vigas aço CA-60 de 5,0mm = $((398,21\text{m} / 0,12\text{m}) \times 0,76\text{m}) + ((6,00\text{m} / 0,12\text{m}) \times 0,96\text{m}) + ((9,44\text{m} / 0,12\text{m}) \times 0,96\text{m}) = 2.645,52\text{m} \times 0,154\text{ Kg} = 407,41\text{ Kg}$
- 4.3.0.6 – Volume de concreto para vigas = $(0,15\text{m} \times 0,30\text{m} \times 398,21\text{m}) + (0,25\text{m} \times 0,30\text{m} \times 6,00\text{m}) + (0,25\text{m} \times 0,30\text{m} \times 9,44\text{m}) = 17,92\text{m}^3 + 0,45\text{m}^3 + 0,71\text{m}^3 = 19,08\text{m}^3$
 Volume de concreto para pilares = $(0,25\text{m} \times 0,30\text{m} \times 1,90\text{m} \times 142\text{ und}) + (0,30\text{m} \times 0,35\text{m} \times 3,80\text{m} \times 2\text{ und}) + (0,18\text{m} \times 0,25\text{m} \times 2,80\text{m} \times 2\text{ und}) = 20,23\text{m}^3 + 0,80\text{m}^3 + 0,25\text{m}^3 = 21,28\text{m}^3$
 Total = $40,36\text{m}^3$
- 4.3.0.7 – Armação de pilar aço CA-50 de 10,0mm = $3,80\text{m} \times 2\text{ und} \times 8\text{ ferros} = 60,80\text{m} \times 0,617\text{ Kg} = 37,51\text{ Kg}$
- 4.3.0.8 – Armação de pilar aço CA-50 de 12,5mm = $2,80\text{m} \times 2\text{ und} \times 4\text{ ferros} = 22,40\text{m} \times 0,963\text{ Kg} = 21,57\text{ Kg}$
- 4.4 – Alvenaria
- 4.4.0.1 – Alvenaria de vedação blocos 9x14x19cm = $398,21\text{m} \times 1,90\text{m} = 756,60\text{m}^2$
- 4.4.0.2 – Alvenaria de vedação bloco 19x19x39cm = $8,84\text{m} \times 3,80\text{m} = 33,59\text{m}^2 - (6,00\text{m} \times 2,80\text{m}) = 16,79\text{m}^2$
- 4.5 – Revestimentos de parede
- 4.5.0.1 – Chapisco = $756,60\text{m}^2 + 16,79\text{m}^2 = 773,39\text{m}^2 \times 2 = 1546,78\text{m}^2$
- 4.5.0.2 – Emboço = $756,60\text{m}^2 + 16,79\text{m}^2 = 773,39\text{m}^2 \times 2 = 1546,78\text{m}^2$
- 4.5.0.3 – Massa acrílica = $420,15\text{m} - (142\text{ und} \times (0,30\text{m} + 0,10\text{m} + 0,10\text{m})) = 349,15\text{m} \times 1,90\text{m} = 663,38\text{m}^2$
- 4.5.0.4 – Fundo selador = $420,15\text{m} - (142\text{ und} \times (0,30\text{m} + 0,10\text{m} + 0,10\text{m})) = 349,15\text{m} \times 1,90\text{m} = 663,38\text{m}^2 \times 2 = 1.326,77\text{m}^2$
- 4.5.0.5 – Pintura com tinta látex = $420,15\text{m} - (142\text{ und} \times (0,30\text{m} + 0,10\text{m} + 0,10\text{m})) = 349,15\text{m} \times 1,90\text{m} = 663,38\text{m}^2 \times 2 = 1.326,77\text{m}^2$
- 4.5.0.6 – Revestimento cerâmico = $(0,30\text{m} + 0,10\text{m} + 0,10\text{m}) \times 1,90\text{m} = 0,95\text{m}^2 \times 142\text{ und} = 134,90\text{m}^2$
- 4.5.0.7 – Textura acrílica = $420,15\text{m} \times 1,90\text{m} = 798,28\text{m}^2$
- 4.6 – Acabamentos
- 4.6.0.1 – Rufo em aço galvanizado = $420,15\text{m}$ conforme projeto
- 4.6.0.2 – Portão basculante em aço galvanizado = $6,00\text{m} \times 2,80\text{m} = 16,80\text{m}^2$
- 4.6.0.3 – Portão de correr tipo painel = $(4,00\text{m} \times 1,90\text{m}) + (4,00\text{m} \times 1,90\text{m}) + (4,50\text{m} \times 1,90\text{m}) = 23,75\text{m}^2$
- 5 – Muro pré-moldado
- 5.1 – Serviços iniciais
- 5.1.0.1 – Locação de obra = $215,95\text{m} + 116,92\text{m} = 332,87\text{m}$
- 5.2 – Fundação
- 5.2.0.1 – Estaca broca 25cm = $1,00\text{m} \times 202\text{ und} = 202,00\text{m}$
- 5.2.0.2 – Escavação manual de viga baldrame = $0,15\text{m} \times 0,30\text{m} \times 332,87\text{m} = 14,98\text{m}^3$
- 5.2.0.3 – Lastro de pedra = $14,98\text{m}^3 \times 0,05\text{m} = 0,75\text{m}^3$
- 5.2.0.4 – Forma para vigas = $(0,30\text{m} + 0,30\text{m}) \times 332,87\text{m} = 199,72\text{m}^2$
- 5.2.0.5 – Armação para viga baldrame aço CA-50 de 8,0mm = $4\text{ ferros} \times 332,87\text{m} = 1.331,48\text{m} \times 0,395\text{ Kg} = 525,93\text{ Kg}$

5.2.0.6 – Armação para viga baldrame aço CA-60 de 5,0mm = $(332,87\text{m} / 0,12\text{m}) \times 0,76\text{m}$
= $2.108,18\text{m} \times 0,154\text{ Kg} = 324,66\text{ Kg}$

5.2.0.7 – Volume de concreto = $0,15\text{m} \times 0,30\text{m} \times 332,87\text{m} = 14,98\text{m}^3$

5.3 – Muro

5.3.0.1 – Muro em placas pré-moldadas = $215,95\text{m} + 116,92\text{m} = 332,87\text{m}$

6 – Reforma e ampliação do escritório

6.1 – Demolições

6.1.0.1 – Remoção de telhas de fibrocimento = $(5,30\text{m} \times 6,12\text{m}) + (12,18\text{m} \times 6,12\text{m}) =$
 $106,98\text{m}^2$

6.1.0.2 – Remoção de trama metálica = $(5,30\text{m} \times 4,12\text{m}) + (12,18\text{m} \times 4,12\text{m}) = 71,91\text{m}^2$

6.1.0.3 – Remoção de forros = $(5,30\text{m} \times 4,12\text{m}) + (12,18\text{m} \times 4,12\text{m}) = 71,91\text{m}^2$

6.1.0.4 – Remoção de portas = $(0,80\text{m} \times 2,10\text{m}) \times 3\text{ und} = 5,04\text{m}^2$

6.1.0.5 – Remoção de janelas = $(1,50\text{m} \times 1,00\text{m}) \times 8\text{ und} = 12,00\text{m}^2$

6.1.0.6 – Remoção de interruptores e tomadas = 21 und

6.9.0.1 – Remoção de cabos elétricos = $(1,35\text{m} + 11,28\text{m} + 1,64\text{m} + 3,11\text{m} + 1,80\text{m} +$
 $13,19\text{m} + 2,70\text{m} + 1,24\text{m} + 1,80\text{m} + 0,73\text{m} + 1,40\text{m} + 2,59\text{m} + 2,47\text{m} + 1,35\text{m} +$
 $1,35\text{m} + 0,94\text{m} + 1,80\text{m} + 1,86\text{m} + 1,80\text{m} + 0,28\text{m} + 1,30\text{m} + 1,80\text{m} + 2,22\text{m} +$
 $1,80\text{m} + 0,49\text{m} + 1,40\text{m} + 1,23\text{m} + 2,70\text{m} + 0,45\text{m} + 0,61\text{m} + 1,80\text{m} + 0,73\text{m} +$
 $0,45\text{m} + 1,13\text{m} + 1,80\text{m} + 1,23\text{m} + 1,80\text{m} + 1,23\text{m} + 1,80\text{m} + 0,08\text{m} + 1,63\text{m} +$
 $1,08\text{m} + 1,80\text{m} + 0,90\text{m} + 1,80\text{m} + 1,04\text{m} + 1,80\text{m} + 0,40\text{m} + 0,14\text{m} + 1,80\text{m} +$
 $0,30\text{m} + 1,80\text{m} + 1,18\text{m} + 1,80\text{m} + 2,24\text{m} + 2,70\text{m} + 0,40\text{m} + 1,17\text{m} + 1,80\text{m} +$
 $0,18\text{m} + 1,80\text{m} + 1,22\text{m} + 1,80\text{m} + 1,00\text{m} + 1,00\text{m} + 1,17\text{m} + 1,80\text{m} + 0,65\text{m} +$
 $1,80\text{m} + 0,80\text{m} + 0,40\text{m} + 0,22\text{m} + 1,80\text{m} + 1,80\text{m} + 0,71\text{m} + 1,80\text{m} + 0,71\text{m} +$
 $1,80\text{m} + 0,30\text{m} + 1,27\text{m} + 1,80\text{m} + 1,36\text{m} + 0,62\text{m} + 1,80\text{m} + 11,89\text{m} + 5,32\text{m} +$
 $5,31\text{m} + 4,33\text{m} + 2,20\text{m} + 2,93\text{m} + 4,33\text{m} + 5,31\text{m} + 5,31\text{m} = 175,71\text{m} \times 4\text{ fios} =$
 $702,84\text{m}) + (6,93\text{m} + 0,80\text{m} + 2,73\text{m} + 0,80\text{m} = 11,26\text{m} \times 4\text{ fios} = 45,04\text{m}) +$
 $(11,27\text{m} + 0,80\text{m} + 5,58\text{m} + 0,80\text{m} = 18,45\text{m} \times 4\text{ fios} = 73,80\text{m}) = 821,68\text{m}$

6.1.0.7 – Remoção de louças = 8 und

6.1.0.8 – Remoção de acessórios = 8 und

6.1.0.9 – Remoção de luminárias = 11 und

6.1.0.10 – Remoção de metais sanitários = 8 und

6.1.0.11 – Demolição de alvenaria = $9,43\text{m} \times 3,00\text{m} \times 0,15\text{m} = 4,24\text{m}^3$

6.1.0.12 – Demolição de pilares e vigas = $(3,00\text{m} \times 0,30\text{m} \times 0,15\text{m} \times 4) + (8,53\text{m} \times 0,30\text{m}$
 $\times 0,15\text{m}) \times 2 = 1,31\text{m}^3$

6.1.0.13 – Demolição de revestimento = $(22,46\text{m} + 5,66\text{m} + 5,48\text{m}) \times 2,00\text{m} = 67,20\text{m}^2$

6.2 – Serviços iniciais

6.2.0.1 - Locação de obra = 25,64m

6.3 – Fundação

6.3.0.1 – Estaca broca = $3,00\text{m} \times 15\text{ und} = 45,00\text{m}$

6.3.0.2 – Escavação manual de viga baldrame = $25,64\text{m} \times 0,15\text{m} \times 0,30\text{m} = 1,15\text{m}^3$

6.3.0.3 – Lastro de pedra = $25,64\text{m} \times 0,15\text{m} \times 0,05\text{m} = 0,19\text{m}^3$

6.3.0.4 – Forma para viga baldrame = $(0,30\text{m} \times 0,30\text{m}) \times 25,64\text{m} = 15,38\text{m}^2$

6.3.0.5 – Armação de viga baldrame aço CA-50 de 8,0mm = $4\text{ ferros} \times 25,64\text{m} = 102,56\text{m} \times$
 $0,395\text{ Kg} = 40,51\text{ Kg}$

- 6.3.0.6 – Armação de viga baldrame aço CA-60 de 5,00mm = $(25,64\text{m} / 0,12\text{m}) \times 0,76\text{m} = 162,38\text{m} \times 0,154\text{ Kg} = 25,01\text{ Kg}$
- 6.3.0.7 – Volume de concreto = $0,15\text{m} \times 0,30\text{m} \times 25,64\text{m} = 1,15\text{m}^3$
- 6.3.0.8 – Impermeabilização de viga baldrame = $(0,30\text{m} + 0,30\text{m} + 0,15\text{m}) \times 25,64\text{m} = 19,23\text{m}^2$
- 6.4 – Estrutura
- 6.4.0.1 – Forma para vigas = $(0,30\text{m} + 0,30\text{m}) \times 74,20\text{m} = 44,52\text{m}^2$
- 6.4.0.2 – Forma para pilares = $(0,30\text{m} + 0,30\text{m}) \times 3,00\text{m} \times 15\text{ und} = 27,00\text{m}^3$
- 6.4.0.3 – Armação de pilar aço CA-50 de 8,0mm = $3,00\text{m} \times 15\text{ und} \times 4\text{ ferros} = 180\text{m} \times 0,395\text{ Kg} = 71,10\text{ Kg}$
- 6.4.0.4 – Armação de viga de respaldo aço CA-50 de 10,0mm = $4\text{ ferros} \times 74,20\text{m} = 296,80\text{m} \times 0,617\text{ Kg} = 183,13\text{ Kg}$
- 6.4.0.5 – Armação de viga de respaldo aço CA-60 de 5,0mm = $(74,20\text{m} / 0,12\text{m}) \times 0,76\text{m} = 469,93\text{m} \times 0,154\text{ Kg} = 72,37\text{ Kg}$
 Armação de pilar aço CA-60 de 5,0mm = $(3,00\text{m} \times 15\text{ und}) / 0,12\text{m} \times 0,76\text{m} = 285,00\text{m} \times 0,154\text{ Kg} = 43,89\text{ Kg}$
 Total = 116,26 Kg
- 6.4.0.6 – Volume de concreto para pilar = $(0,15\text{m} \times 0,30\text{m}) \times 3,00\text{m} \times 15\text{ und} = 2,02\text{m}^3$
 Volume de concreto para viga de respaldo = $(0,15\text{m} \times 0,30\text{m}) \times 74,20\text{m} = 3,34\text{m}^3$
 Total = $5,36\text{m}^3$
- 6.4.0.7 – Laje pré-moldada = $(23,43\text{m} \times 0,50\text{m}) + (5,12\text{m} \times 0,50\text{m}) + (23,43\text{m} \times 0,50\text{m}) = 25,99\text{m}^2$
- 6.4.0.8 – Verga pré-moldada = Verga pré-moldada com acréscimo de 0,20m em cada lado para janelas e 0,10m em cada lado para portas = $(6\text{ und} \times (1,50\text{m} + 0,40\text{m}) \times 2) + (5\text{ und} \times (0,80\text{m} + 0,40\text{m}) \times 2) + (2\text{ und} \times (2,80\text{m} + 0,20\text{m})) + (6\text{ und} \times (0,80\text{m} + 0,20\text{m})) + (2\text{ und} \times (0,90\text{m} + 0,20\text{m})) = 49,00\text{m}$
- 6.5 – Alvenaria de vedação
- 6.5.0.1 – Alvenaria = $(25,64\text{m} \times 3,00\text{m}) + ((4,32\text{m} + 22,93\text{m} + 0,50\text{m} + 3,82\text{m}) \times 1,00\text{m}) = 108,49\text{m}^2$
- 6.6 – Cobertura
- 6.6.0.1 – Tesoura em aço = 6 und
- 6.6.0.2 – Trama de aço = $23,93\text{m} \times 4,12\text{m} = 98,59\text{m}^2$
- 6.6.0.3 – Telhamento com telha metálica = $98,59\text{m}^2$
- 6.6.0.4 – Rufo externo = $4,17\text{m} + 8,30\text{m} + 0,50\text{m} + 14,48\text{m} + 3,82\text{m} = 31,27\text{m}$
- 6.7 – Revestimento
- 6.7.1 – Pisos internos e externos
- 6.7.1.1 – Lastro de pedra = $(25,64\text{m} \times 0,15\text{m}) + 24,17\text{m}^2 \times 0,05\text{m} = 1,40\text{m}^3$
- 6.7.1.2 – Lastro de concreto magro = $24,17\text{m}^2 + 13,59\text{m}^2 = 37,76\text{m}^2$
- 6.7.1.3 – Contrapiso em argamassa = $155,63\text{m}^2$
- 6.7.1.4 – Revestimento cerâmico para piso = $155,63\text{m}^2$
- 6.7.1.5 – Soleira em granito = $(6\text{ und} \times 0,80\text{m}) + (2\text{ und} \times 0,90\text{m}) + (2\text{ und} \times 2,80\text{m}) = 12,20\text{m}$
- 6.7.2 – Paredes internas e externas
- 6.7.2.1 - Chapisco = $(50,86\text{m} \times 3,00\text{m}) + (63,14\text{m} \times 1,00\text{m}) = 215,72\text{m}^2$
- 6.7.2.2 – Emboço = $(50,86\text{m} \times 3,00\text{m}) + (63,14\text{m} \times 1,00\text{m}) = 215,72\text{m}^2$

- 6.7.2.3 – Massa acrílica = $83,65\text{m} \times 3,00\text{m} = 250,95\text{m}^2 + (31,27\text{m} \times 1,00\text{m}) = 31,27\text{m}^2 = 282,22\text{m}^2$
- 6.7.2.4 – Fundo selador = $83,65\text{m} \times 3,00\text{m} = 250,95\text{m}^2 + (31,27\text{m} \times 1,00\text{m}) = 31,27\text{m}^2 = 282,22\text{m}^2$
- 6.7.2.5 – Pintura com tinta látex = $83,65\text{m} \times 3,00\text{m} = 250,95\text{m}^2 + (31,27\text{m} \times 1,00\text{m}) = 31,27\text{m}^2 = 282,22\text{m}^2$
- 6.7.2.6 Revestimento cerâmico para piso = $(4,20\text{m} \times 3,00\text{m}) + 6,08\text{m} + 2,08\text{m} + 16,32\text{m} + 12,36\text{m} + 8,63\text{m} + 10,31\text{m} + (3,60\text{m} \times 3,00\text{m}) + 3,15\text{m} + 4,00\text{m} + 6,76\text{m} + (2,79\text{m} \times 3,00\text{m}) + (2,90\text{m} \times 3,00\text{m}) + (4,12\text{m} \times 2 \times 3,00\text{m}) + (4,32\text{m} + 3,82\text{m} + 0,50\text{m}) + (22,93\text{m} \times 2 \times 3,00\text{m}) = 281,10\text{m}^2$

6.7.3 – Teto

- 6.7.3.1 – Chapisco = $(8,48\text{m} + 14,48\text{m} + 0,50\text{m}) \times 1,00\text{m} = 23,46\text{m}^2$
- 6.7.3.2 – Emboço = $(8,48\text{m} + 14,48\text{m} + 0,50\text{m}) \times 1,00\text{m} = 23,46\text{m}^2$
- 6.7.3.3 – Massa látex = $(8,48\text{m} + 14,48\text{m} + 0,50\text{m}) \times 1,00\text{m} = 23,46\text{m}^2$
- 6.7.3.4 – Pintura com tinta látex = $(8,48\text{m} + 14,48\text{m} + 0,50\text{m}) \times 1,00\text{m} = 23,46\text{m}^2$
- 6.7.3.5 – Forro de PVC = $4,20\text{m}^2 + 6,08\text{m}^2 + 2,08\text{m}^2 + 16,32\text{m}^2 + 12,36\text{m}^2 + 8,63\text{m}^2 + 10,31\text{m}^2 + 3,60\text{m}^2 + 3,15\text{m}^2 + 4,00\text{m}^2 + 6,76\text{m}^2 + 2,79\text{m}^2 + 2,90\text{m}^2 = 83,18\text{m}^2$

6.8 – Esquadrias

- 6.8.0.1 – Kit porta 80cm x 210cm = 6 und
- 6.8.0.2 – Kit porta 90cm x 210cm = 2 und
- 6.8.0.3 – Gradil em alumínio = $((1,50\text{m} \times 1,10\text{m}) \times 6 \text{ und}) + ((0,80\text{m} \times 0,40\text{m}) \times 4 \text{ und}) = 11,50\text{m}^2$
- 6.8.0.4 – Vidro temperado = $((1,50\text{m} \times 1,10\text{m}) \times 6 \text{ und}) + ((0,80\text{m} \times 0,40\text{m}) \times 4 \text{ und}) = 11,50\text{m}^2$
- 6.8.0.5 – Espelho cristal = $0,80\text{m} \times 0,40\text{m} \times 4 \text{ und} = 1,28\text{m}^2$
- 6.8.0.6 – Portão basculante = $2,80\text{m} \times 2,50\text{m} = 7,00\text{m}^2$
- 6.8.0.7 – Portão de correr = $(2,80\text{m} \times 2,50\text{m}) + (1,60\text{m} \times 2,50\text{m}) + (1,60\text{m} \times 2,50\text{m}) = 15,00\text{m}^2$
- 6.8.0.8 – Letra em aço inox = 20 und

6.10 – Instalação elétrica

- 6.10.0.1 – Entrada de energia 63A = 1 und
- 6.10.0.2 – Quadro de distribuição = 1 und
- 6.10.0.3 – Disjuntor monopolar 10A = 1 und
- 6.10.0.4 – Disjuntor monopolar 16A = 1 und
- 6.10.0.5 – Disjuntor bipolar 25A = 4 und
- 6.10.0.6 – Disjuntor tripolar 60 a 100A = 1 und
- 6.10.0.7 – Caixa retangular alta = 4 und
- 6.10.0.8 – Caixa retangular média = 16 und
- 6.10.0.9 – Caixa retangular baixa = 4 und
- 6.10.0.10 – Caixa sextavada baixa = 9 und
- 6.10.0.11 – Caixa sextavada metálica = 12 und
- 6.10.0.12 – Tomada alta = 4 und
- 6.10.0.13 – Tomada média = 16 und
- 6.10.0.14 – Tomada baixa = 4 und
- 6.10.0.15 – Interruptor 1 módulo = 11 und

- 6.10.0.16 – Interruptor 3 módulos = 1 und
- 6.10.0.17 – Cabo de cobre 2,5mm² = 1,35m + 11,28m + 1,64m + 3,11m + 1,80m + 13,19m + 2,70m + 1,24m + 1,80m + 0,73m + 1,40m + 2,59m + 2,47m + 1,35m + 1,35m + 0,94m + 1,80m + 1,86m + 1,80m + 0,28m + 1,30m + 1,80m + 2,22m + 1,80m + 0,49m + 1,40m + 1,23m + 2,70m + 0,45m + 0,61m + 1,80m + 0,73m + 0,45m + 1,13m + 1,80m + 1,23m + 1,80m + 1,23m + 1,80m + 0,08m + 1,63m + 1,08m + 1,80m + 0,90m + 1,80m + 1,04m + 1,80m + 0,40m + 0,14m + 1,80m + 0,30m + 1,80m + 1,18m + 1,80m + 2,24m + 2,70m + 0,40m + 1,17m + 1,80m + 0,18m + 1,80m + 1,22m + 1,80m + 1,00m + 1,00m + 1,17m + 1,80m + 0,65m + 1,80m + 0,80m + 0,40m + 0,22m + 1,80m + 1,80m + 0,71m + 1,80m + 0,71m + 1,80m + 0,30m + 1,27m + 1,80m + 1,36m + 0,62m + 1,80m + 11,89m + 5,32m + 5,31m + 4,33m + 2,20m + 2,93m + 4,33m + 5,31m + 5,31m = 175,71m x 4 fios = 702,84m
- 6.10.0.18 – Cabo de cobre 4,0mm² = 6,93m + 0,80m + 2,73m + 0,80m = 11,26m x 3 fios = 33,78m
- 6.10.0.19 – Cabo de cobre 6,0mm² = 11,27m + 0,80m + 5,58m + 0,80m = 18,45m x 3 fios = 55,35m
- 6.10.0.20 – Eletroduto flexível corrugado = 5,32m + 5,31m + 4,33m + 2,20m + 2,93m + 4,33m + 5,31m + 5,31m = 35,04m
- 6.10.0.21 – Eletroduto rígido = 1,35m + 11,28m + 1,64m + 3,11m + 1,80m + 13,19m + 2,70m + 1,24m + 1,80m + 0,73m + 1,40m + 2,59m + 2,47m + 1,35m + 1,35m + 0,94m + 1,80m + 1,86m + 1,80m + 0,28m + 1,30m + 1,80m + 2,22m + 1,80m + 0,49m + 1,40m + 1,23m + 2,70m + 0,45m + 0,61m + 1,80m + 0,73m + 0,45m + 1,13m + 1,80m + 1,23m + 1,80m + 1,23m + 1,80m + 0,08m + 1,63m + 1,08m + 1,80m + 0,90m + 1,80m + 1,04m + 1,80m + 0,40m + 0,14m + 1,80m + 0,30m + 1,80m + 1,18m + 1,80m + 2,24m + 2,70m + 0,40m + 1,17m + 1,80m + 0,18m + 1,80m + 1,22m + 1,80m + 1,00m + 1,00m + 1,17m + 1,80m + 0,65m + 1,80m + 0,80m + 0,40m + 0,22m + 1,80m + 1,80m + 0,71m + 1,80m + 0,71m + 1,80m + 0,30m + 1,27m + 1,80m + 1,36m + 0,62m + 1,80m + 11,89m = 140,67m
- 6.10.0.22 – Luminária tipo plafon = 21 und
- 6.11 – Instalações hidráulicas
- 6.11.0.1 – Caixa d'água = 1 und
- 6.11.0.2 – Tubo de PVC 40mm = 7,37m + 2,08m + 0,22m + 0,82m + 6,16m + 2,51m + 2,09m + 0,20m + 0,80m + 2,40m + 6,78m + 0,93m + 2,11m + 2,11m + 0,50m + 0,50m + 0,80m + 0,80m = 39,18m
- 6.11.0.3 – Tubos de PVC 25mm = 1,05m + 1,10m + 1,29m + 0,92m + 1,10m + 1,20m + 1,20m + 0,20m + 0,20m = 8,26m
- 6.11.0.4 – Registro de gaveta $\frac{3}{4}$ = 4 und
- 6.11.0.5 – Registro de gaveta $1\frac{1}{4}$ = 1 und
- 6.11.0.6 – Torneira cromada = 1 und
- 6.11.0.7 – Bancada de granito com cuba e torneira = 4 unidades
- 6.11.0.8 – Chuveiro = 2 und
- 6.12 – Instalações Sanitárias
- 6.12.0.1 – Caixa hidráulica = 3 und conforme projeto
- 6.12.0.2 – Vaso sanitário comum = 2 und conforme projeto
- 6.12.0.3 – Assento sanitário = 2 und conforme projeto

- 6.12.0.4 – Válvula de descarga = 2 und conforme projeto
- 6.12.0.5 – Ralo sifonado = 2 und conforme projeto
- 6.12.0.6 – Tubos de PVC 50mm = 2,13m + 1,95m + 2,40m + 0,65m + 4,66m + 0,65m + 1,11m + 1,40m + 0,65m + 2,10m = 17,70m
- 6.12.0.7 – Tubos de PVC 100mm = 23,85m + 1,43m = 25,28m
- 6.12.0.8 – Toalheiro = 2 und conforme projeto
- 6.12.0.9 – Papeleira plástica = 2 und conforme projeto
- 6.12.0.10 – Saboneteira plástica = 2 und conforme projeto
- 6.13 – Serviços finais
 - 6.13.0.1 – Limpeza final de obra = 23,43m x 4,12m = 96,53m²