



Guaçuí-ES, 22 de junho de 2018.

OBRA: Construção do CEMEI Maria Margarida Rodolfo Silva
LOCAL: Rua Teodora Leal Valentim, Quincas Machado - Guaçuí-ES

MEMÓRIA DE CÁLCULO

1.0 – SERVIÇOS PRELIMINARES

1.1 – LIMPEZA MANUAL → 844,78 m² (ÁREA DO TERRENO)

1.2 – LOCAÇÃO DE OBRA → 640,17 m² (ÁREA CONSTRUÍDA)

2.0 – INSTALAÇÃO CANTEIRO DE OBRAS

2.1 – PLACA DE OBRA → 4,00m x 2,00m = 8,00 m²

2.2 – TAPUME → 36,15m + 5,39m + 37,56m = 79,10 m

2.3 – BARRACÃO ALMOXARIFADO → 10,90 m²

2.4 – RESERVATÓRIO ELEVADO 1000L → 1 und

2.5 – REDE ÁGUA COM PADRÃO → 5,00 m

2.6 – REDE LUZ COM PADRÃO → 3,00 m

3.0 – MOVIMENTO DE TERRA

3.1 – ESCAVAÇÃO MANUAL

SAPATAS → {[(1,10m x 1,20m) x 3und] + [(1,70m x 1,90m) x 1und] + [(1,70m x 1,80m) x 4und] + [(1,50m x 1,45m) x 1und] + [(2,30m x 2,50m) x 4und] + [(1,95m x 2,15m) x 3und] + [(1,05m x 1,15m) x 2und] + [(1,45m x 1,55m) x 2und] + [(1,35m x 1,50m) x 3und] + [(2,00m x 2,25m) x 1und] + [(1,85m x 2,05m) x 1und] + [(2,10m x 2,30m) x 1und] + [(1,95m x 2,15m) x 1und] + [(1,80m x 1,90m) x 4und] + [(1,90m x 1,90m) x 1und] + [(1,55m x 1,55m) x 1und] + [(2,05m x 2,05m) x 1und] + [(1,55m x 1,80m) x 1und] + [(1,65m x 1,75m) x 3und] + [(1,80m x 2,00m) x 2und] + [(1,25m x 1,35m) x 2und] + [(1,45m x 1,45m) x 4und] + [(2,20m x 2,40m) x 1und] + [(1,55m x 1,65m) x 2und] } x 2,00m_{Prof.} = 304,32 m³



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VIGA BALDRAME → [(2,79m + 0,40m + 4,34m + 0,27m + 4,09m + 3,28m + 4,27m + 4,17m + 4,22m + 1,80m + 1,37m + 1,20m + 1,50m + 3,95m + 0,87m + 3,82m + 1,88m + 3,35m + 2,80m + 3,78m + 1,42m + 1,80m + 4,42m + 1,30m + 4,42m + 2,23m + 2,50m) + (2,31m + 1,71m + 3,36m + 1,62m + 0,63m + 1,71m + 0,45m + 0,86m + 1,98m + 0,84m + 1,80m + 3,74m) + (1,03m + 2,40m + 5,72m + 1,97m + 3,12m + 2,28m + 1,90m + 0,34m + 2,40m + 3,93m + 2,22m + 1,67m) + (2,24m + 3,02m + 2,04m + 2,49m + 2,42m + 2,14m + 2,64m + 2,99m + 1,05m + 1,75m + 1,75m + 1,90m + 2,57m + 2,30m + 1,65m + 1,77m + 2,17m + 2,05m + 1,77m + 2,70m + 1,82m + 1,29m + 2,59m) + (2,70m + 3,03m + 2,70m + 3,03m)]Compr. x 0,50m_{Larg.} x 0,30m_{Alt.} = 27,42 m³

TOTAL = 331,74 m³

3.2 – REATERRO → 331,74m³_{Vol. Escavação} – 109,02m³_{Vol. Concreto Infra} = **222,72 m³**

3.3 – REMOÇÃO DE ENTULHO → 5,00m³_{Vol. Caçamba} x 5und = **25,00 m³**

4.0 – ESTRUTURAS

INFRA-ESTRUTURA

4.1 – FORMA → 260,11 m² (CONFORME PROJETO ESTRUTURAL)

4.2 – CONCRETO → 109,02 m³ (CONFORME PROJETO ESTRUTURAL)

4.3 – AÇO CA50 MÉDIA → 1.398,70 kg (CONFORME PROJETO ESTRUTURAL)

4.4 – AÇO CA50 GROSSA → 5350,30 kg (CONFORME PROJETO ESTRUTURAL)

4.5 – AÇO CA60 → 379,11 kg (CONFORME PROJETO ESTRUTURAL)

SUPER-ESTRUTURA

4.6 – CONCRETO → 127,57 m³ (CONFORME PROJETO ESTRUTURAL)

4.7 – AÇO CA50 MÉDIA → 6.482,7 kg (CONFORME PROJETO ESTRUTURAL)

4.8 – AÇO CA60 → 827,10 kg (CONFORME PROJETO ESTRUTURAL)

4.9 – FORMA → 557,40 m² (CONFORME PROJETO ESTRUTURAL)

5.0 – PAREDES E PAINÉIS



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5.1 – ALVENARIA

EXTERNO → $(22,91\text{m} + 4,15\text{m} + 7,16\text{m} + 13,03\text{m} + 1,23\text{m} + 1,23\text{m} + 1,23\text{m} + 6,47\text{m} + 5,25\text{m} + 4,96\text{m} + 12,50\text{m} + 24,00\text{m} + 4,00\text{m}) \times 3,20\text{m} = 345,98 \text{ m}^2$

INTERNO → $[(3,00\text{m} + 4,00\text{m} + 4,00\text{m} + 4,00\text{m} + 4,00\text{m} + 3,25\text{m} + 23,85\text{m} + 19,50\text{m}) + (6,00\text{m} + 6,00\text{m} + 6,00\text{m} + 6,00\text{m} + 3,35\text{m} + 3,35\text{m} + 25,16\text{m} + 3,35\text{m} + 2,80\text{m} + 3,37\text{m} + 3,37\text{m} + 3,30\text{m} + 3,30\text{m} + 3,30\text{m})] \times 3,20\text{m} = 461,60 \text{ m}^2$

COMPLEMENTO PLATIBANDA H 2,35M → $(4,10\text{m} + 6,40\text{m} + 4,10\text{m} + 4,16\text{m} + 4,10\text{m} + 4,10\text{m} + 5,43\text{m} + 3,20\text{m} + 5,43\text{m} + 3,63\text{m} + 6,87\text{m} + 3,63\text{m}) \times 1,00\text{m} = 55,15 \text{ m}^2$

MURETA GRADIL → $(29,63\text{m} + 5,14\text{m}) \times 0,60\text{m} = 20,86 \text{ m}^2$

TOTAL = 883,59 m²

5.2 – BLOCO CONCRETO (EMBASAMENTO ENTRADA PRINCIPAL) → $(3,96\text{m} + 7,24\text{m} + 3,69\text{m}) \times 0,40\text{m} = 5,95 \text{ m}^2$

5.3 – MURO ALVENARIA → $1,35\text{m} + 7,90\text{m} + 29,85\text{m} + 1,35\text{m} + 1,35\text{m} + 4,19\text{m} + 6,47\text{m} + 3,65\text{m} + 5,39\text{m} = 61,50 \text{ m}$

5.4 – COBOGÓ → $(1,65\text{m} + 1,55\text{m} + 8,05\text{m}) \times 0,40\text{m} = 4,50 \text{ m}^2$

5.5 – VERGA/CONTRAVERGA

PORTA 70 → $(0,70\text{m} + 0,20\text{m} + 0,20\text{m}) \times 6\text{und} = 6,60\text{m}$

PORTA 80 → $(0,80\text{m} + 0,20\text{m} + 0,20\text{m}) \times 11\text{und} = 13,20\text{m}$

PORTA 90 → $(0,90\text{m} + 0,20\text{m} + 0,20\text{m}) \times 4\text{und} = 5,20\text{m}$

PORTA 140 → $(1,40\text{m} + 0,20\text{m} + 0,20\text{m}) \times 1\text{und} = 1,80\text{m}$

JANELA 160 → $[(1,60\text{m} + 0,20\text{m} + 0,20\text{m}) \times 9\text{und}] \times 2\text{Lados} = 36,00\text{m}$

JANELA 150 → $[(1,50\text{m} + 0,20\text{m} + 0,20\text{m}) \times 5\text{und}] \times 2\text{Lados} = 19,00\text{m}$

JANELA 200 → $[(2,00\text{m} + 0,20\text{m} + 0,20\text{m}) \times 1\text{und}] \times 2\text{Lados} = 4,80\text{m}$

JANELA 180 → $[(1,80\text{m} + 0,20\text{m} + 0,20\text{m}) \times 1\text{und}] \times 2\text{Lados} = 4,40 \text{ m}$

BÁSCULA 60X60CM → $[(0,60\text{m} + 0,20\text{m} + 0,20\text{m}) \times 8\text{und}] \times 2\text{Lados} = 16,00\text{m}$

BÁSCULA 70X70CM → $[(0,70\text{m} + 0,20\text{m} + 0,20\text{m}) \times 2\text{und}] \times 2\text{Lados} = 4,40\text{m}$

BÁSCULA 100X70CM → $[(1,00\text{m} + 0,20\text{m} + 0,20\text{m}) \times 1\text{und}] \times 2\text{Lados} = 2,80\text{m}$



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BÁSCULA 100X80CM → [(1,00m + 0,20m + 0,20m) x 3und] x 2Lados = 8,40m
GUICHÊ → 2,00X1,50M = [(2,00m + 0,20m + 0,20m) x 1und] x 2Lados = 4,80m
TOTAL = 127,40 m

5.6 – DIVISÓRIA

BANHEIRO INFANTIL 1 → (1,10m + 1,10m + 0,46m) x 1,80m = 4,79 m²
BANHEIRO INFANTIL 2 → (1,10m + 1,10m + 0,46m) x 1,80m = 4,79 m²
BANHEIRO INFANTIL MASC. → (1,20m + 1,20m + 0,50m) x 1,80m = 5,22 m²
BANHEIRO INFANTIL FEM. → (1,20m + 1,20m + 0,50m) x 1,80m = 5,22 m²
TOTAL = 20,02 m²

5.7 – DIVISÓRIA EM VIDRO TEMPERADO 10MM

BERÇÁRIO → 3,00m x 1,70m = **5,10 m²**

6.0 – ESQUADRIAS

- 6.1 – MARCO 70CM → 6 und
6.2 – MARCO 80CM → 11 und
6.3 – MARCO 90CM → 4 und
6.4 – PORTA 70CM → 6 und
6.5 – PORTA 80CM PADRÃO SEDU → 9und (MATERNAL, SALA PROFº E SECRETARIA)
6.6 – PORTA 90CM → 4 und
6.7 – PORTA 80CM → 2 und
6.8 – PORTÃO FERRO ABRIR → [(0,80m x 2,10m) x 2und] + (1,00m x 2,10m) x 1und] + (2,00m x 2,50m) x 1und] = **10,46 m²**
6.9 – PORTÃO FERRO CORRER → [(2,00m x 2,50m) x 1und] + (3,00m x 2,50m) x 1und] = **12,50 m²**
6.10 – PORTA ALUMÍNIO → (0,60m x 1,70m) x 7und = **7,14 m²**
6.11 – PORTA VIDRO TEMPERADO 140 X 210CM → 1 und



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6.12 – JANELA ALUMÍNIO CORRER → $[(1,60\text{m} \times 1,60\text{m}) \times 9\text{und}] + [(1,50\text{m} \times 1,60\text{m}) \times 5\text{und}] + [(2,00\text{m} \times 1,50\text{m}) \times 1\text{und}] + [(1,80\text{m} \times 1,10\text{m}) \times 1\text{und}] = 40,02 \text{ m}^2$

6.13 – JANELA ALUMÍNIO MAXIMAR → $(2,00\text{m} \times 0,80\text{m}) \times 7\text{und} = 11,20 \text{ m}^2$

6.14 – BÁSCULA ALUMÍNIO → $[(0,60\text{m} \times 0,60\text{m}) \times 8\text{und}] + [(0,70\text{m} \times 0,70\text{m}) \times 2\text{und}] + [(1,00\text{m} \times 0,70\text{m}) \times 1\text{und}] + [(1,00\text{m} \times 0,80\text{m}) \times 3\text{und}] = 6,96 \text{ m}^2$

6.15 – GUICHÊ → $2,00\text{m} \times 1,50\text{m} = 3,00 \text{ m}^2$

6.16 – TELA MOSQUITEIRO → $[(0,70\text{m} \times 0,70\text{m}) \times 2\text{und}] + [(1,50\text{m} \times 1,60\text{m}) \times 2\text{und}] + [(1,80\text{m} \times 1,10\text{m}) \times 1\text{und}] = 8,25 \text{ m}^2$

6.17 – VIDRO LISO → $[(1,60\text{m} \times 1,60\text{m}) \times 9\text{und}] + [(1,50\text{m} \times 1,60\text{m}) \times 5\text{und}] + [(2,00\text{m} \times 1,50\text{m}) \times 1\text{und}] + [(1,80\text{m} \times 1,10\text{m}) \times 1\text{und}] + [(2,00\text{m} \times 0,80\text{m}) \times 7\text{und}] + (2,00\text{m} \times 1,50\text{m}) = 54,22 \text{ m}^2$

6.18 – VIDRO FANTASIA → $[(0,60\text{m} \times 0,60\text{m}) \times 8\text{und}] + [(0,70\text{m} \times 0,70\text{m}) \times 2\text{und}] + [(1,00\text{m} \times 0,70\text{m}) \times 1\text{und}] + [(1,00\text{m} \times 0,80\text{m}) \times 3\text{und}] = 6,96 \text{ m}^2$

6.19 – ESPELHOS → $(0,40\text{m} \times 0,60\text{m}) \times 8\text{und} = 1,92 \text{ m}^2$

7.0 – COBERTURA

7.1 – ESTRUTURA MADEIRA P/ TELHADO FIBROCIMENTO/METÁLICO → $(23,85\text{m} \times 7,60\text{m}) + (15,10\text{m} \times 3,60\text{m}) + (7,48\text{m} + 2,05\text{m}) + [(5,77\text{m} \times 2,05\text{m}) : 2] + [(5,30\text{m} \times 2,73\text{m}) : 2] + (13,60\text{m} \times 4,10\text{m}) + [(3,39\text{m} \times 3,39\text{m}) : 2] + [(7,59\text{m} \times 5,36\text{m}) : 2] + (4,85\text{m} \times 0,73\text{m}) + [(4,85\text{m} \times 4,65\text{m}) : 2] + (3,20\text{m} \times 1,16\text{m}) + [(3,41\text{m} \times 3,20\text{m}) : 2] + (7,88\text{m} \times 4,62\text{m}) + (5,87\text{m} \times 4,89\text{m}) + (5,83\text{m} \times 1,00\text{m}) = 440,83 \text{ m}^2$

7.2 – ESTRUTURA MADEIRA P/ TELHADO CERÂMICO → $5,00\text{m} \times 5,00\text{m} = 25,00 \text{ m}^2$

7.3 – TELHADO METÁLICO → $(23,85\text{m} \times 7,60\text{m}) + (15,10\text{m} \times 3,60\text{m}) + (7,48\text{m} + 2,05\text{m}) + [(5,77\text{m} \times 2,05\text{m}) : 2] + [(5,30\text{m} \times 2,73\text{m}) : 2] + (13,60\text{m} \times 4,10\text{m}) + [(3,39\text{m} \times 3,39\text{m}) : 2] + [(7,59\text{m} \times 5,36\text{m}) : 2] + (4,85\text{m} \times 0,73\text{m}) + [(4,85\text{m} \times 4,65\text{m}) : 2] + (3,20\text{m} \times 1,16\text{m}) + [(3,41\text{m} \times 3,20\text{m}) : 2] + (7,88\text{m} \times 4,62\text{m}) + (5,87\text{m} \times 4,89\text{m}) + (5,83\text{m} \times 1,00\text{m}) = 440,83 \text{ m}^2$



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7.4 – TELHADO CERÂMICO → (5,00m x 5,00m) – 20% = **20,00 m²**

7.5 – TELHADO COLONIAL TRANSLÚCIDO → (5,00m x 5,00m) x 20% = **5,00 m²**

7.6 – CUMEEIRA TELHADO CERÂMICO → 3,54m + 3,54m + 3,54m + 3,54m = **14,16 m**

7.7 – RUFO → 7,60m + 23,85m + 7,60m + 3,60m + 6,10m + 3,60m + 3,60m + 2,00m + 2,05m + 7,48m + 2,73m + 5,30m + 3,75m + 3,86m + 3,60m + 3,60m + 3,51m + 5,41m + 3,39m + 1,17m + 3,21m + 4,58m + 4,73m + 3,21m + 4,73m + 7,86m + 4,62m + 2,12m + 5,00m + 5,87m + 5,83m + 1,50m + 1,50m + 3,13m + 6,57m + 3,13m + 7,59m + 4,79m + 7,48m + 6,72m + 4,83m = **202,80 m**

7.8 – CALHA METÁLICA → 23,85m + 6,10m + 15,10m + 3,86m + 3,93m + 4,89m + 4,72m + 3,20m + 9,63m + 6,72m = **82,00 m**

7.9 – CHAPIM DE CONCRETO / PINGADEIRA → 8,40m + 24,10m + 4,40m + 25,66m + 4,40m + 7,17m + 3,50m + 1,50m + 3,65m + 1,50m + 6,13m + 1,50m + 6,72m + 3,93m + 4,83m + 8,30m + 4,25m + 4,25m + 5,28m + 3,93m + 8,00m = **141,40 m**

7.10 – PLATIBANDA → (8,40m + 23,85m + 15,10m + 1,75m + 9,78m + 1,35m + 1,35m + 4,83m + 8,20m + 1,85m + 2,05m + 7,48m + 5,30m + 4,58m)_{Platibanda H 1,35m} + (4,10m + 6,40m + 4,10m + 4,16m + 4,10m + 4,10m + 5,43m + 3,20m + 5,43m + 3,63m + 6,87m + 3,63m)_{Platibanda H 2,35m} = **151,01 m**

8.0 – IMPERMEABILIZAÇÃO

8.1 – IMPERMEABILIZAÇÃO PINTURA

VIGA BALDRAME → [(12,44m + 1,80m + 6,02m + 4,80m + 1,80m + 6,02m + 6,02m + 6,02m + 6,02m + 3,35m + 3,35m + 2,52m + 18,98m + 3,35m + 2,52m + 6,00m + 2,80m + 2,80m + 6,00m + 1,80m + 1,80m + 3,78m) + (28,44m + 4,02m + 4,00m + 4,00m + 4,00m + 4,00m + 1,48m + 1,48m + 3,10m + 2,50m + 1,37m + 4,02m + 4,02m + 4,02m + 4,02m + 3,02m + 4,02m + 8,15m) + (3,80m + 5,13m + 3,73m + 1,88m +



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$3,02\text{m} + 1,37\text{m} + 4,90\text{m} + 4,90\text{m} + 4,90\text{m} + 3,36\text{m} + 3,36\text{m} + 3,36\text{m}) + (20,00\text{m} + 1,90\text{m} + 20,00\text{m}) + (5,07\text{m} + 5,07\text{m} + 5,07\text{m} + 5,07\text{m}) + (1,50\text{m} + 30,00\text{m} + 37,53\text{m} + 5,39\text{m} + 6,67\text{m} + 3,65\text{m} + 6,47\text{m} + 4,19\text{m})] \times 0,30\text{m} \times 2\text{Lados} = 240,56 \text{ m}^2$

PAREDES $\rightarrow [(12,44\text{m} + 1,80\text{m} + 6,02\text{m} + 4,80\text{m} + 1,80\text{m} + 6,02\text{m} + 6,02\text{m} + 6,02\text{m} + 6,02\text{m} + 3,35\text{m} + 3,35\text{m} + 2,52\text{m} + 18,98\text{m} + 3,35\text{m} + 6,00\text{m} + 2,80\text{m} + 2,80\text{m} + 6,00\text{m} + 1,80\text{m} + 1,80\text{m} + 3,78\text{m}) + (23,92\text{m} + 4,02\text{m} + 4,00\text{m} + 4,00\text{m} + 4,00\text{m} + 4,00\text{m} + 1,48\text{m} + 1,48\text{m} + 3,10\text{m} + 2,50\text{m} + 1,37\text{m} + 4,02\text{m} + 4,02\text{m} + 4,02\text{m} + 4,02\text{m} + 3,02\text{m} + 4,02\text{m} + 8,15\text{m}) + (1,88\text{m} + 3,02\text{m} + 1,37\text{m} + 4,90\text{m} + 4,90\text{m} + 4,90\text{m} + 3,36\text{m} + 3,36\text{m} + 3,36\text{m}) + (20,00\text{m} + 1,90\text{m} + 20,00\text{m}) + (5,07\text{m} + 5,07\text{m} + 5,07\text{m} + 5,07\text{m}) + (1,50\text{m} + 30,00\text{m} + 37,53\text{m} + 5,39\text{m} + 6,67\text{m} + 3,65\text{m} + 6,47\text{m} + 4,19\text{m})] \times 0,30\text{m} \times 2\text{Lados} = 457,49 \text{ m}^2$

TOTAL = 698,05 m²

8.2 – IMPERMEABILIZAÇÃO ARGAMASSA

LAJE ENTRADA PRINCIPAL $\rightarrow 8,00 \text{ m}^2$

9.0 – TETOS E FORROS

9.1/9.2 – CHAPISCO/REBOCO

ENTRADA PRINCIPAL $\rightarrow 42,29 \text{ m}^2$

CIRCULAÇÃO/REFEITÓRIO $\rightarrow (3,76\text{m} \times 1,00\text{m}) + (8,00\text{m} \times 2,02\text{m}) + [(8,00\text{m} \times 7,69\text{m}) : 2] + (11,40\text{m} \times 2,91\text{m}) + [(3,74\text{m} \times 3,60\text{m}) : 2] + (5,00\text{m} \times 2,70\text{m}) + [(5,00\text{m} \times 5,00\text{m}) : 2] + (6,55\text{m} \times 6,86\text{m}) + (5,90\text{m} \times 0,36\text{m}) + [(6,19\text{m} \times 6,05\text{m}) : 2] + [(6,28\text{m} \times 6,02\text{m}) : 2] + [(1,93\text{m} \times 1,85\text{m}) : 2] + (6,40\text{m} \times 1,85\text{m}) + (1,80\text{m} \times 1,90\text{m}) + [(5,00\text{m} \times 5,00\text{m}) - (3,1415 \times 2,00\text{m} \times 2,00\text{m})_{\text{Grama Sintética}}] = 230,72 \text{ m}^2$

TOTAL = 273,01 m²

9.3 – GESSO

SECRETARIA $\rightarrow 4,85\text{m} \times 3,00\text{m} = 14,55 \text{ m}^2$

SALA PROF^o $\rightarrow 3,37\text{m} \times 3,85\text{m} = 12,97 \text{ m}^2$

BERÇÁRIO $\rightarrow 4,85\text{m} \times 5,63\text{m} = 27,30 \text{ m}^2$



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BANHº FEM. → 3,30m x 2,18m = 7,19 m²
BANHº ACESS. → 1,50m x 1,90m = 2,85 m²
BANHº MASC. → 3,30m x 2,18m = 7,19 m²
MATERNAL III 1 → 6,00m x 4,00m = 24,00 m²
MATERNAL III 2 → 6,00m x 4,00m = 24,00 m²
MATERNAL II 1 → 6,00m x 4,00m = 24,00 m²
MATERNAL II 2 → 6,00m x 4,00m = 24,00 m²
COZINHA → 6,00m x 4,00m = 24,00 m²
Á. SERVIÇO → 3,25m x 2,50m = 8,12 m²
DESPENSA → 3,35m x 1,48m = 4,95 m²
DEPÓSITO → 3,35m x 1,48m = 4,95 m²
LAVANDERIA → 2,50m x 3,35m = 8,37 m²
BANHº FUNC. → 3,35m x 1,35m = 4,52 m²
MATERNAL I 1 → 6,00m x 4,00m = 24,00 m²
BANHº INFANT. 1 → 2,80m x 1,93m = 5,40 m²
BANHº INFANT. 2 → 2,80m x 1,93m = 5,40 m²
MATERNAL I 2 → 6,00m x 4,00m = 24,00 m²
BANHº PÚBL. 1 → 3,00m x 1,80m = 5,40 m²
BANHº PÚBL. 2 → 3,00m x 1,80m = 5,40 m²
TOTAL = 292,56 m²

10.0 – REVESTIMENTOS

10.1 – CHAPISCO

EXTERNO → [(22,91m + 4,15m + 7,16m + 13,03m + 1,23m + 1,23m + 1,23m + 6,47m + 5,25m + 4,96m + 12,50m + 24,00m + 4,00m) x 3,20m] x 2Lados = 691,96 m²
INTERNO → {[(3,00m + 4,00m + 4,00m + 4,00m + 4,00m + 3,25m + 23,85m + 19,50m) + (6,00m + 6,00m + 6,00m + 6,00m + 3,35m + 3,35m + 25,16m + 3,35m + 2,80m + 3,37m + 3,37m + 3,30m + 3,30m + 3,30m)] x 3,20m} x 2Lados = 923,20 m²



Gusmão

ENGENHARIA

COMPLEMENTO PLATIBANDA H 2,35M $\rightarrow [(4,10m + 6,40m + 4,10m + 4,16m + 4,10m + 4,10m + 5,43m + 3,20m + 5,43m + 3,63m + 6,87m + 3,63m) \times 1,00m] \times 2Lados = 110,30 m^2$

MURO EXTERNO $\rightarrow [(1,35m + 7,90m + 29,85m + 1,35m + 1,35m + 4,19m + 6,47m + 3,65m + 5,39m) \times 2,50m] \times 2Lados = 307,50m^2$

MURETA GRADIL $\rightarrow [(29,63m + 5,14m) \times 0,60m] \times 2Lados = 41,72 m^2$

TOTAL = 2.074,68 m²

10.2 – EMBOÇO

EXTERNO $\rightarrow (22,90m + 4,40m + 7,16m + 26,49m + 1,33m + 3,65m + 1,33m + 3,65m + 1,38m + 6,47m + 0,58m + 4,19m + 4,30m + 2,80m + 8,08m + 4,10m + 24,10m + 1,85m + 2,75m + 0,45m + 3,40m + 3,20m + 5,50m + 0,55m + 0,55m + 24,05m + 1,35m) \times 1,20m = 204,67 m^2$

INTERNO

SECRETARIA $\rightarrow (4,85m + 3,00m + 4,85m + 2,20m) \times 1,20m = 17,88 m^2$

SALA PROF^o $\rightarrow (3,37m + 3,15m + 3,37m + 3,05m) \times 1,20m = 15,53 m^2$

BERÇÁRIO $\rightarrow [(4,85m + 5,63m + 4,83m) \times 1,20m] + (4,85m \times 1,80m) = 27,10 m^2$

BANH^o FEM. $\rightarrow (3,30m + 2,18m + 2,60m + 2,18m) \times 1,80m = 18,47 m^2$

BANH^o ACESS. $\rightarrow (1,50m + 1,90m + 1,50m + 1,00m) \times 1,80m = 10,62 m^2$

BANH^o MASC. $\rightarrow (3,30m + 2,18m + 2,60m + 2,18m) \times 1,80m = 18,47 m^2$

MATERNAL III 1 $\rightarrow (6,00m + 4,00m + 6,00m + 3,20m) \times 1,20m = 23,04 m^2$

MATERNAL III 2 $\rightarrow (6,00m + 4,00m + 6,00m + 3,20m) \times 1,20m = 23,04 m^2$

MATERNAL II 1 $\rightarrow (6,00m + 4,00m + 6,00m + 3,20m) \times 1,20m = 23,04 m^2$

MATERNAL II 2 $\rightarrow (6,00m + 4,00m + 6,00m + 3,20m) \times 1,20m = 23,04 m^2$

COZINHA $\rightarrow [(6,00m + 7,25m + 2,50m + 3,25m + 3,50m + 4,00m) \times 3,20m] - [(1,50m \times 1,60m) + (1,80m \times 1,10m) + (1,50m \times 1,60m)]_{Janelas} - [(0,80m \times 2,10m) + (0,70m \times 2,10m) + (0,70m \times 2,10m) + (0,90m \times 2,10m)]_{Portas} = 71,44 m^2$

DESPENSA $\rightarrow [(3,35m + 1,48m + 3,35m + 1,48m) \times 3,20m] - (0,70m \times 0,70m) - (0,70m \times 2,10m) = 28,95 m^2$



Gusmão

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DEPÓSITO → $[(3,35\text{m} + 1,48\text{m} + 3,35\text{m} + 1,48\text{m}) \times 3,20\text{m}] - (0,70\text{m} \times 0,70\text{m}) - (0,70\text{m} \times 2,10\text{m}) = 28,95 \text{ m}^2$

LAVANDERIA → $(2,50\text{m} + 3,35\text{m} + 1,70\text{m} + 3,35\text{m}) \times 1,80\text{m} = 19,62 \text{ m}^2$

BANHº FUNC. → $[(3,35\text{m} + 1,35\text{m} + 3,35\text{m} + 1,35\text{m}) \times 3,20\text{m}] - (0,60\text{m} \times 0,60\text{m}) - (0,70\text{m} \times 2,10\text{m}) = 28,25 \text{ m}^2$

MATERNAL I 1 → $(6,00\text{m} + 4,00\text{m} + 3,30\text{m} + 5,20\text{m}) \times 1,20\text{m} = 22,20 \text{ m}^2$

BANHº INFANT. 1 → $(2,80\text{m} + 1,93\text{m} + 2,80\text{m} + 1,23\text{m}) \times 1,80\text{m} = 15,77 \text{ m}^2$

BANHº INFANT. 2 → $(2,80\text{m} + 1,93\text{m} + 2,80\text{m} + 1,23\text{m}) \times 1,80\text{m} = 15,77 \text{ m}^2$

MATERNAL I 2 → $(6,00\text{m} + 4,00\text{m} + 3,30\text{m} + 5,20\text{m}) \times 1,20\text{m} = 22,20 \text{ m}^2$

BANHº PÚBL. 1 → $(3,00\text{m} + 1,80\text{m} + 3,00\text{m} + 0,90\text{m}) \times 1,80\text{m} = 15,66 \text{ m}^2$

BANHº PÚBL. 2 → $(3,00\text{m} + 1,80\text{m} + 3,00\text{m} + 0,90\text{m}) \times 1,80\text{m} = 15,66 \text{ m}^2$

CIRCULAÇÃO/REFEITÓRIO → $(12,87\text{m} + 1,10\text{m} + 1,00\text{m} + 1,10\text{m} + 2,24\text{m} + 3,19\text{m} + 8,33\text{m} + 1,85\text{m} + 19,85\text{m} + 13,65\text{m} + 1,00\text{m} + 1,96\text{m} + 1,00\text{m} + 0,62\text{m} + 0,94\text{m} + 0,94\text{m} + 0,94\text{m}) \times 1,20\text{m} = 88,22 \text{ m}^2$

MURETA GRADIL → $[(29,63\text{m} + 5,14\text{m}) \times 0,60\text{m}] \times 2\text{Lados} = 41,72 \text{ m}^2$

TOTAL = 819,31 m²

10.3 – REBOCO → $2.074,68 \text{ m}^2_{\text{A. Chapisco}} - 819,31 \text{ m}^2_{\text{A. Emboço}} = \mathbf{1.255,37 \text{ m}^2}$

10.4 – AZULEJO 15X15CM

BANHº FEM. → $(3,30\text{m} + 2,18\text{m} + 2,60\text{m} + 2,18\text{m}) \times 1,80\text{m} = 18,47 \text{ m}^2$

BANHº ACESS. → $(1,50\text{m} + 1,90\text{m} + 1,50\text{m} + 1,00\text{m}) \times 1,80\text{m} = 10,62 \text{ m}^2$

BANHº MASC. → $(3,30\text{m} + 2,18\text{m} + 2,60\text{m} + 2,18\text{m}) \times 1,80\text{m} = 18,47 \text{ m}^2$

COZINHA → $[(6,00\text{m} + 7,25\text{m} + 2,50\text{m} + 3,25\text{m} + 3,50\text{m} + 4,00\text{m}) \times 3,20\text{m}] - [(1,50\text{m} \times 1,60\text{m}) + (1,80\text{m} \times 1,10\text{m}) + (1,50\text{m} \times 1,60\text{m})]_{\text{Janelas}} - [(0,80\text{m} \times 2,10\text{m}) + (0,70\text{m} \times 2,10\text{m}) + (0,70\text{m} \times 2,10\text{m}) + (0,90\text{m} \times 2,10\text{m})]_{\text{Portas}} = 71,44 \text{ m}^2$

DESPENSA → $[(3,35\text{m} + 1,48\text{m} + 3,35\text{m} + 1,48\text{m}) \times 3,20\text{m}] - (0,70\text{m} \times 0,70\text{m}) - (0,70\text{m} \times 2,10\text{m}) = 28,95 \text{ m}^2$

DEPÓSITO → $[(3,35\text{m} + 1,48\text{m} + 3,35\text{m} + 1,48\text{m}) \times 3,20\text{m}] - (0,70\text{m} \times 0,70\text{m}) - (0,70\text{m} \times 2,10\text{m}) = 28,95 \text{ m}^2$

LAVANDERIA → $(2,50\text{m} + 3,35\text{m} + 1,70\text{m} + 3,35\text{m}) \times 1,80\text{m} = 19,62 \text{ m}^2$



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BANHº FUNC. → [(3,35m + 1,35m + 3,35m + 1,35m) x 3,20m] – (0,60m x 0,60m) – (0,70m x 2,10m) = 28,25 m²

BANHº INFANT. 1 → (2,80m + 1,93m + 2,80m + 1,23m) x 1,80m = 15,77 m²

BANHº INFANT. 2 → (2,80m + 1,93m + 2,80m + 1,23m) x 1,80m = 15,77 m²

BANHº PÚBL. 1 → (3,00m + 1,80m + 3,00m + 0,90m) x 1,80m = 15,66 m²

BANHº PÚBL. 2 → (3,00m + 1,80m + 3,00m + 0,90m) x 1,80m = 15,66 m²

TOTAL = 287,63 m²

10.5 – CERÂMICA 10X10CM → 819,31 m²Á. Emboço – 287,63 m²Á. Azulejo = 531,68 m²

10.6 – RODA PAREDE

EXTERNO → (22,90m + 4,40m + 7,16m + 26,49m + 1,33m + 3,65m + 1,33m + 3,65m + 1,38m + 6,47m + 0,58m + 4,19m + 4,30m + 2,80m + 8,08m + 4,10m + 24,10m + 1,85m + 2,75m + 0,45m + 3,40m + 3,20m + 5,50m + 0,55m + 0,55m + 24,05m + 1,35m) = 170,56 m

INTERNO

SECRETARIA → (4,85m + 3,00m + 4,85m + 2,20m) = 14,90 m

SALA PROFº → (3,37m + 3,15m + 3,37m + 3,05m) = 12,94 m

BERÇÁRIO → (4,85m + 5,63m + 4,83m + 4,85m) = 20,16 m

BANHº FEM. → (3,30m + 2,18m + 2,60m + 2,18m) = 10,26 m

BANHº ACESS. → (1,50m + 1,90m + 1,50m + 1,00m) = 5,90 m

BANHº MASC. → (3,30m + 2,18m + 2,60m + 2,18m) = 10,26 m

MATERNAL III 1 → (6,00m + 4,00m + 6,00m + 3,20m) = 12,80 m

MATERNAL III 2 → (6,00m + 4,00m + 6,00m + 3,20m) = 12,80 m

MATERNAL II 1 → (6,00m + 4,00m + 6,00m + 3,20m) = 12,80 m

MATERNAL II 2 → (6,00m + 4,00m + 6,00m + 3,20m) = 12,80 m

LAVANDERIA → (2,50m + 3,35m + 1,70m + 3,35m) = 10,90 m

MATERNAL I 1 → (6,00m + 4,00m + 3,30m + 5,20m) = 18,50 m

BANHº INFANT. 1 → (2,80m + 1,93m + 2,80m + 1,23m) = 8,76 m

BANHº INFANT. 2 → (2,80m + 1,93m + 2,80m + 1,23m) = 8,76 m



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MATERNAL I 2 → (6,00m + 4,00m + 3,30m + 5,20m) = 18,50 m

BANHº PÚBL. 1 → (3,00m + 1,80m + 3,00m + 0,90m) = 8,70 m

BANHº PÚBL. 2 → (3,00m + 1,80m + 3,00m + 0,90m) = 8,70 m

CIRCULAÇÃO/REFEITÓRIO → (12,87m + 1,10m + 1,00m + 1,10m + 2,24m + 3,19m + 8,33m + 1,85m + 19,85m + 13,65m + 1,00m + 1,96m + 1,00m + 0,62m + 0,94m + 0,94m + 0,94m) = 73,51 m

TOTAL = 452,51 m

11.0 – PISOS

11.1 – LASTRO

SECRETARIA → 4,85m x 3,00m = 14,55 m²

SALA PROFº → 3,37m x 3,85m = 12,97 m²

BERÇÁRIO → 4,85m x 5,63m = 27,30 m²

BANHº FEM. → 3,30m x 2,18m = 7,19 m²

BANHº ACESS. → 1,50m x 1,90m = 2,85 m²

BANHº MASC. → 3,30m x 2,18m = 7,19 m²

MATERNAL III 1 → 6,00m x 4,00m = 24,00 m²

MATERNAL III 2 → 6,00m x 4,00m = 24,00 m²

MATERNAL II 1 → 6,00m x 4,00m = 24,00 m²

MATERNAL II 2 → 6,00m x 4,00m = 24,00 m²

COZINHA → 6,00m x 4,00m = 24,00 m²

Á. SERVIÇO → 3,25m x 2,50m = 8,12 m²

DESPENSA → 3,35m x 1,48m = 4,95 m²

DEPÓSITO → 3,35m x 1,48m = 4,95 m²

LAVANDERIA → 2,50m x 3,35m = 8,37 m²

BANHº FUNC. → 3,35m x 1,35m = 4,52 m²

MATERNAL I 1 → 6,00m x 4,00m = 24,00 m²

BANHº INFANT. 1 → 2,80m x 1,93m = 5,40 m²

BANHº INFANT. 2 → 2,80m x 1,93m = 5,40 m²



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MATERNAL I 2 → 6,00m x 4,00m = 24,00 m²

BANHº PÚBL. 1 → 3,00m x 1,80m = 5,40 m²

BANHº PÚBL. 2 → 3,00m x 1,80m = 5,40 m²

ENTRADA PRINCIPAL → 42,29 m²

CIRCULAÇÃO/REFEITÓRIO → (3,76m x 1,00m) + (8,00m x 2,02m) + [(8,00m x 7,69m) : 2] + (11,40m x 2,91m) + [(3,74m x 3,60m) : 2] + (5,00m x 2,70m) + [(5,00m x 5,00m) : 2] + (6,55m x 6,86m) + (5,90m x 0,36m) + [(6,19m x 6,05m) : 2] + [(6,28m x 6,02m) : 2] + [(1,93m x 1,85m) : 2] + (6,40m x 1,85m) + (1,80m x 1,90m) + [(5,00m x 5,00m) - (3,1415 x 2,00m x 2,00m)_{Grama Sintética}] = 230,72 m²

ÁREA EXTERNA GLP → (6,25m x 1,35m) + (4,25m x 1,35m) = 14,17 m²

ENTRADA PRINCIPAL → (3,70m x 1,65m) + (3,60m x 1,20m) + (1,45m x 1,20m) = 12,16 m²

RAMPA SAÍDA EMERGÊNCIA → (5,11m + 3,56m) x 2,00m = 17,34 m²

TOTAL = 609,24 m²

11.2 – PISO CIMENTADO LISO

ÁREA EXTERNA GLP → (6,25m x 1,35m) + (4,25m x 1,35m) = 14,17 m²

ENTRADA PRINCIPAL → (3,70m x 1,65m) + (3,60m x 1,20m) + (1,45m x 1,20m) = 12,16 m²

RAMPA SAÍDA EMERGÊNCIA → (5,11m + 3,56m) x 2,00m = 17,34 m²

TOTAL = 43,67 m²

11.3 – GRANILITE

SECRETARIA → 4,85m x 3,00m = 14,55 m²

SALA PROFº → 3,37m x 3,85m = 12,97 m²

BERÇÁRIO → 4,85m x 5,63m = 27,30 m²

BANHº FEM. → 3,30m x 2,18m = 7,19 m²

BANHº ACESS. → 1,50m x 1,90m = 2,85 m²

BANHº MASC. → 3,30m x 2,18m = 7,19 m²

MATERNAL III 1 → 6,00m x 4,00m = 24,00 m²



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MATERNAL III 2 → 6,00m x 4,00m = 24,00 m²

MATERNAL II 1 → 6,00m x 4,00m = 24,00 m²

MATERNAL II 2 → 6,00m x 4,00m = 24,00 m²

COZINHA → 6,00m x 4,00m = 24,00 m²

Á. SERVIÇO → 3,25m x 2,50m = 8,12 m²

DESPENSA → 3,35m x 1,48m = 4,95 m²

DEPÓSITO → 3,35m x 1,48m = 4,95 m²

LAVANDERIA → 2,50m x 3,35m = 8,37 m²

BANHº FUNC. → 3,35m x 1,35m = 4,52 m²

MATERNAL I 1 → 6,00m x 4,00m = 24,00 m²

BANHº INFANT. 1 → 2,80m x 1,93m = 5,40 m²

BANHº INFANT. 2 → 2,80m x 1,93m = 5,40 m²

MATERNAL I 2 → 6,00m x 4,00m = 24,00 m²

BANHº PÚBL. 1 → 3,00m x 1,80m = 5,40 m²

BANHº PÚBL. 2 → 3,00m x 1,80m = 5,40 m²

ENTRADA PRINCIPAL → 42,29 m²

CIRCULAÇÃO/REFEITÓRIO → (3,76m x 1,00m) + (8,00m x 2,02m) + [(8,00m x 7,69m) : 2] + (11,40m x 2,91m) + [(3,74m x 3,60m) : 2] + (5,00m x 2,70m) + [(5,00m x 5,00m) : 2] + (6,55m x 6,86m) + (5,90m x 0,36m) + [(6,19m x 6,05m) : 2] + [(6,28m x 6,02m) : 2] + [(1,93m x 1,85m) : 2] + (6,40m x 1,85m) + (1,80m x 1,90m) + [(5,00m x 5,00m) - (3,1415 x 2,00m x 2,00m)_{Grama Sintética}] = 230,72 m²

TOTAL = 565,57 m²

11.4 – PASSEIO → (37,70m + 7,62m + 36,12m) x 2,00m = 162,88 m²

11.5 – RODAPÉ

ENTRADA PRINCIPAL → 4,40m + 3,36m = 7,76 m

ÁREA EXTERNA LAVANDERIA → 1,85m + 2,75m = 4,60 m

SECRETARIA → (4,85m + 3,00m + 4,85m + 2,20m) = 14,90 m

SALA PROFº → (3,37m + 3,15m + 3,37m + 3,05m) = 12,94 m



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BERÇÁRIO → (4,85m + 5,63m + 4,83m + 4,85m) = 20,16 m
BANHº FEM. → (3,30m + 2,18m + 2,60m + 2,18m) = 10,26 m
BANHº ACESS. → (1,50m + 1,90m + 1,50m + 1,00m) = 5,90 m
BANHº MASC. → (3,30m + 2,18m + 2,60m + 2,18m) = 10,26 m
MATERNAL III 1 → (6,00m + 4,00m + 6,00m + 3,20m) = 12,80 m
MATERNAL III 2 → (6,00m + 4,00m + 6,00m + 3,20m) = 12,80 m
MATERNAL II 1 → (6,00m + 4,00m + 6,00m + 3,20m) = 12,80 m
MATERNAL II 2 → (6,00m + 4,00m + 6,00m + 3,20m) = 12,80 m
COZINHA → (6,00m + 7,25m + 2,50m + 3,25m + 3,50m + 4,00m) – (0,80m + 0,70m + 0,70m + 0,90m)_{Portas} = 23,40 m
DESPENSA → (3,35m + 1,48m + 3,35m + 1,48m) – 0,70m = 8,96 m
DEPÓSITO → (3,35m + 1,48m + 3,35m + 1,48m) – 0,70m = 8,96 m
LAVANDERIA → (2,50m + 3,35m + 1,70m + 3,35m) = 10,90 m
BANHº FUNC. → (3,35m + 1,35m + 3,35m + 1,35m) – 0,70m = 8,70 m
MATERNAL I 1 → (6,00m + 4,00m + 3,30m + 5,20m) = 18,50 m
BANHº INFANT. 1 → (2,80m + 1,93m + 2,80m + 1,23m) = 8,76 m
BANHº INFANT. 2 → (2,80m + 1,93m + 2,80m + 1,23m) = 8,76 m
MATERNAL I 2 → (6,00m + 4,00m + 3,30m + 5,20m) = 18,50 m
BANHº PÚBL. 1 → (3,00m + 1,80m + 3,00m + 0,90m) = 8,70 m
BANHº PÚBL. 2 → (3,00m + 1,80m + 3,00m + 0,90m) = 8,70 m
CIRCULAÇÃO/REFEITÓRIO → (12,87m + 1,10m + 1,00m + 1,10m + 2,24m + 3,19m + 8,33m + 1,85m + 19,85m + 13,65m + 1,00m + 1,96m + 1,00m + 0,62m + 0,94m + 0,94m + 0,94m + 0,94m) = 73,51 m
TOTAL = 344,33 m

11.6 – SOLEIRA → (0,70m x 6und) + (0,80m x 11und) + (0,90m x 4und) + (1,40m x 1und) + (2,00m x 1und) = **20,00 m**



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11.6 – PEITORIL → (1,60m x 9und) + (1,50m x 5und) + (2,00m x 1und) + (1,80m x 1und) + (2,00m x 7und) + (0,60m x 8und) + (0,70m x 2und) + (1,00m x 1und) + (1,00m x 3und) + (2,00m x 1und) = **51,90 m**

11.7 – GRAMA → 3,1415 x 2,00m x 2,00m = **12,56 m²**

12.0 – INSTALAÇÕES HIDRO-SANITÁRIAS

12.1 – PADRÃO DE ENTRADA → 1 und

12.2 – PONTO ÁGUA FRIA → 16 und

12.3 – PONTO REGISTRO PRESSÃO → 1 und

12.4 – PONTO TORNEIRA JARDIM → 3 und

12.5 – PONTO VÁLVULA DESCARGA → 12 und

12.6 – PONTO ESGOTO PRIMÁRIO → 12 und

12.7 – PONTO ESGOTO SECUNDÁRIO → 19 und

12.8 – PONTO CAIXA SIFONADA 150x150x50mm → 13 und

12.9 – PONTO CAIXA SIFONADA 100x40mm → 14 und

12.10 – TUBO PARA REDE DE ESGOTO → 72,16 m

12.11 – TUBO PARA ÁGUA PLUVIAL → 81,65 m

12.12 – CAIXA INSPEÇÃO → 11 und

12.13 – CAIXA AREIA → 8 und

12.14 – CAIXA GORDURA → 1 und

12.15 – SIFÃO PIA/LAVATÓRIO → 20 und

12.16 – SIFÃO TANQUE → 4 und

12.17 – ENGATE FLEXÍVEL → 15 und

13.0 – INSTALAÇÕES ELÉTRICAS → (CONFORME PROJETO ELÉTRICO)

14.0 – OUTRAS INSTALAÇÕES → (CONFORME PROJETO ELÉTRICO/SPDA)

15.0 – APARELHOS HIDRO-SANITÁRIOS



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- 15.1 – SABONETEIRA → 16 und
15.2 – CABIDE → 2 und
15.3 – PAPELEIRA → 12 und
15.4 – BACIA SIFONADA INFANTIL → 8 und
15.5 – CUBA LOUÇA → 14 und
15.6 – VASO SANITÁRIO POPULAR → 1 und
15.7 – LAVATÓRIO DE CANTO → 1 und
15.8 – BACIA SIFONADA PNE → 3 und
15.9 – MICTÓRIO → 1 und
15.10 – BANCADA
BERÇÁRIO → $3,00\text{m} \times 0,70\text{m} = 2,10 \text{ m}^2$
BANHº FEM. → $1,60\text{m} \times 0,55\text{m} = 0,88 \text{ m}^2$
BANHº MASC. → $1,60\text{m} \times 0,55\text{m} = 0,88 \text{ m}^2$
COZINHA → $(1,80\text{m} + 3,50\text{m} + 0,60\text{m}) \times 0,60\text{m} = 3,54 \text{ m}^2$
Á. SERVIÇO → $1,40\text{m} \times 0,55\text{m} = 0,77 \text{ m}^2$
LAVANDERIA → $1,75\text{m} \times 0,60\text{m} = 1,05 \text{ m}^2$
BANHº FUNC. → $1,00\text{m} \times 0,55\text{m} = 0,55 \text{ m}^2$
BANHº INF. 1 → $1,15\text{m} \times 0,55\text{m} = 0,63 \text{ m}^2$
BANHº INF. 2 → $1,15\text{m} \times 0,55\text{m} = 0,63 \text{ m}^2$
BANHº PÚBL. FEM. → $1,20\text{m} \times 0,55\text{m} = 0,66 \text{ m}^2$
BANHº PÚBL. MASC. → $1,20\text{m} \times 0,55\text{m} = 0,66 \text{ m}^2$
TOTAL = 12,35 m²
- 15.11 – TORNEIRA P/ TANQUE → 4 und
15.12 – TORNEIRA P/ JARDIM → 3 und
15.13 – TORNEIRA P/ LAVATÓRIO → 15 und
15.14 – REGISTRO DE PRESSÃO → 1 und
15.15 – REGISTRO DE GAVETA → 15 und
15.16 – CHUVEIRO C/ DESVIADOR → 1 und (BERÇÁRIO)
15.17 – CUBA PANELÃO → 2 und



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15.18 – CUBA INOX Nº 2 → 2 und

15.19 – DUCHA MANUAL → 12 und

15.20 – TANQUE 2 BOJOS → 1 und

15.21 – TANQUE 1 BOJO → 2 und

15.22 – RESERVATÓRIO 2000L → 6 und

15.23 – BEBEDOURO → 2 und

16.0 – APARELHOS ELÉTRICOS → (CONFORME PROJETO ELÉTRICO)

17.0 – PINTURA

17.1 – EMASSAMENTO → (1.255,37 m² Reboco Parede + 565,57 m² Reboco Teto) – 690,85m² Reboco Externo = 1.130,09 m²

17.2 – EMASSAMENTO ACRÍLICO

EXTERNO → (22,90m + 4,40m + 7,16m + 26,49m + 1,33m + 3,65m + 1,33m + 3,65m + 1,38m + 6,47m + 0,58m + 4,19m + 4,30m + 2,80m + 8,08m + 4,10m + 24,10m + 1,85m + 2,75m + 0,45m + 3,40m + 3,20m + 5,50m + 0,55m + 0,55m + 24,05m + 1,35m) x 3,00m = 511,67 m²

PLATIBANDA → (29,95m + 7,24m + 3,69m + 1,80m + 3,35m + 1,80m + 3,65m + 1,50m + 6,13m + 1,50m + 6,72m + 3,71m + 4,83m + 8,30m + 8,40m + 28,50m) x 1,48m = 179,18 m²

TOTAL = 690,85 m²

17.3 – PINTURA TINTA ACRÍLICA

EXTERNO → 1.255,37 m² Reboco Parede + 565,57 m² Reboco Teto = 1.820,94 m²

17.4 – PINTURA COBOGÓ → [(1,65m + 1,55m + 8,05m) x 0,40m] x 2Lados = 9,00 m²

17.5 – PINTURA MADEIRA

PORTA 70CM → [(0,70m x 2,10m) x 3Lados] x 6und = 26,46 m²

PORTA 80CM → [(0,80m x 2,10m) x 3Lados] x 11und = 55,44 m²



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PORTA 90CM → [(0,90m x 2,10m) x 3Lados] x 4und = 22,68 m²

TOTAL = 104,58 m²

17.6 – PINTURA METAL

PORTÃO 80X210CM → [(0,80m x 2,10m) x 2Lados] x 2und = 6,72 m²

PORTÃO 100X210CM → [(1,00m x 2,10m) x 2Lados] x 1und = 4,20 m²

PORTÃO 200X250CM → [(2,00m x 2,50m) x 2Lados] x 1und = 10,00 m²

PORTÃO 300X250CM → [(3,00m x 2,50m) x 2Lados] x 1und = 15,00 m²

TOTAL = 35,92 m²

17.7 – PINTURA PISO → 565,57 m² (ÁREA PISO GRANILITE)

18.0 – SERVIÇOS COMPLEMENTARES

18.1 – GRADIL → 29,63m + 5,14m = 34,77 m

18.2 – LADRILHO PASTILHADO

PASSEIO → (37,70m + 7,62m + 36,12m) x 0,40m = 32,57 m²

INTERNO → [(4,80m + 3,00m + 1,08m + 1,08m + 0,60m) + (2,40m + 3,30m + 1,20m + 1,20m + 1,80m + 3,60m + 2,40m + 0,90m + 1,80m + 2,40m + 2,40m + 0,90m + 0,90m + 1,20m + 1,80m + 1,80m + 1,20m + 0,90m + 0,60m + 0,90m + 4,10m + 2,70m + 1,80m + 1,80m + 1,80m + 4,70m + 4,70m + 4,70m + 4,70m + 1,80m + 1,80m)] x 0,20m = 15,77 m²

TOTAL = 48,34 m²

18.3 – LADRILHO DIRECIONAL

INTERNO → [(3,10m + 4,15m + 0,60m + 0,90m + 0,40m + 1,00m + 0,90m + 11,40m + 1,20m + 3,90m + 1,93m + 5,98m + 0,30m + 2,70m + 0,30m + 6,33m + 2,23m + 3,75m + 3,30m + 7,80m)] x 0,20m = 12,43 m²

18.4 – GRAMA → (3,65m x 1,33m) + (6,47m + 1,38m) + (4,19m x 3,07m) + [(4,19m x 2,03m) : 2] + [(4,43m x 1,42m) : 2] + (8,18m x 1,40m) + [(2,99m x 2,86m) : 2] +



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$(24,05\text{m} \times 1,35\text{m}) + (29,63\text{m} \times 1,35\text{m}) + [(6,00\text{m} \times 2,72\text{m}) : 2] + [(6,00\text{m} \times 5,80\text{m}) : 2] = 147,76 \text{ m}^2$

18.5 – LIMPEZA OBRA → $565,57 \text{ m}^2$ Área Piso Granilite + $43,67 \text{ m}^2$ Área Piso Cimentado = **609,24 m²**

18.6 – ESCADA MARINHEIRO → 1 und


18.7 – BICICLETÁRIO → 3,00 m

18.8 – PLACA DE INAUGURAÇÃO → 1 und

18.9 – PRATELEIRA GRANITO → $[(3,35\text{m} \times 0,60\text{m}) \times 4\text{und}]_{\text{Despensa}} + [(3,35\text{m} \times 0,60\text{m}) \times 4\text{und}]_{\text{Depósito}} = 16,08 \text{ m}^2$

18.10 – BARRA DE APOIO INOX → 6 und

18.11 – GUARDA CORPO → $(3,60\text{m} + 3,60\text{m}) + (3,13\text{m} + 5,11\text{m} + 5,55\text{m} + 4,15\text{m}) = 25,14 \text{ m}$


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