

MUNICÍPIO: **SÃO FELIX DE MINAS – MG**

OBRA: **PAVIMENTAÇÃO EM TST NO TRECHO 3 DA ESTRADA DE SÃO FELIX DE MINAS À SÃO JOSÉ DO DIVINO/MG**

LOCAL: **ESTRADA SÃO FELIX DE MINAS/SÃO JOSÉ DO DIVINO - ZONA RURAL - SÃO FELIX DE MINAS/MG**

MEMÓRIA DE CÁLCULO COMPLEMENTAR

PAVIMENTAÇÃO EM TST NO TRECHO 3 DA ESTRADA DE SÃO FELIX DE MINAS A SÃO JOSÉ DO DIVINO/MG

Item 2.1 - Regularização do subleito - 100% Proctor intermediário

ETAPA 1

Lado direito

42,63+14,03+45,01+45,12+12,76+6,95+6,88+8,37+29,29+28,18+30,14+10,40+21,38+5
3,46+31,45+31,49+103,68+119,18+6,20+51,18+8,91+93,79+90,78+12,76+82,71+44,88
+23,27+15,38+20,53+7,58+24,12+20,17+7,02+9,16+4,71+26,22+57,98+10,70+13,16+3
3,37+55,00+107,51+61,22+52,75+18,23+15,99+60,07+101,02+44,06+33,53+109,00+19
,10+11,11+74,80+83,87+7,18+7,84+15,74+35,87= 2.218,87m

Lado esquerdo

37,58+8,25+11,24+45,99+45,03+11,71+5,26+6,87+8,32+28,85+26,90+30,24+11,60+22,
51+55,61+33,23+32,62+103,92+119,28+6,22+51,36+8,67+90,74+10,56+82,91+15,05+8
2,82+44,67+12,33+13,86+12,60+28,46+21,92+18,71+6,57+4,58+27,35+57,37+11,67+1
5,19+34,88+55,98+10,30+97,59+62,12+54,67+19,24+16,59+59,58+101,56+45,64+34,8
4+110,06+19,66+11,11+76,81+84,48+7,54+7,84+15,63+36,37= 2.233,05m

Total = $((2.218,87+2.231,11)/2)*8,46 \Rightarrow 18.823,42 \text{ m}^2$

Alteração de largura

$((11,91+12,59)/2)*((8,46+6,24)/2) + (((11,98+11,66)/2)*((6,11+8,46)/2)) +$
 $((7,54+7,45)/2)*((8,46+8,03)/2) + (((7,53+7,45)/2)*((8,03+7,60)/2)) +$
 $((37,30+36,79)/2)*((8,03+8,46)/2) + (((6,49+5,96)/2)*((8,46+5,32)/2)) = 644,80 \text{ m}^2$
Total $\Rightarrow 18.823,42 + 644,80 = 19.468,22 \text{ m}^2$

ETAPA 2

Lado direito

59,99+11,76+25,67+31,93+17,66+25,94+29,34+63,06+103,63+82,98+13,34+57,42+59,
70+100,29+14,09+20,74+57,69+32,84+26,72+26,80+79,04+54,36+45,91+21,30+9,67+2
0,46+100,39+83,79+35,67+70,76+13,79+62,60+27,78+72,62+26,85+73,61+52,99+42,0
9+47,98+92,28+29,33+100,90+70,80+96,97+48,34+25,52+65,65+12,82+23,93+26,56+3
0,30+123,28+136,39+35,48+37,72+26,78+153,10+104,57+42,45+65,51+55,55+24,46+2
6,87+26,86+36,03+58,18+56,23+97,45+229,78+44,56+156,07+105,64+31,61+12,01+30
,01+10,46+21,15+20,63+37,32+11,78+33,78+40,91+41,14+66,44+31,59=4.458,44 +

Lado esquerdo

61,35+13,54+27,35+34,00+20,06+27,71+29,63+62,81+104,94+82,90+10,52+55,96+59,
88+101,24+15,95+21,77+57,88+32,03+23,47+23,42+78,43+54,51+47,43+25,00+13,49+
22,92+101,07+81,81+32,76+68,37+11,27+61,71+28,25+72,69+27,63+74,38+53,32+43,
85+48,96+91,18+28,19+101,17+71,03+96,04+45,26+22,14+65,41+14,25+26,83+29,93+
32,62+123,50+134,81+34,70+38,46+27,73+153,14+104,43+43,15+65,45+56,18+25,81+
28,11+26,61+35,50+56,18+54,27+96,77+229,91+45,09+155,94+104,62+32,77+11,40+2

$7,85+10,40+22,89+21,36+37,58+10,67+32,26+41,01+41,00+66,28+30,89=4.465,03 \Rightarrow$
 $(4.458,44 + 4.465,03)/2 \Rightarrow 4.461,74 * 8,46 = 37.746,32 \text{ M}^2$

TOTAL: $19.468,22 + 37.746,32 = 57.214,54 \text{ M}^2$

Item 3.3 - Imprimação com emulsão asfáltica

ETAPA 1

Lado direito

$42,63+14,03+45,01+45,12+12,76+6,95+6,88+8,37+29,29+28,18+30,14+10,40+21,38+5$
 $3,46+31,45+31,49+103,68+119,18+6,20+51,18+8,91+93,79+90,78+12,76+82,71+44,88$
 $+23,27+15,38+20,53+7,58+24,12+20,17+7,02+9,16+4,71+26,22+57,98+10,70+13,16+3$
 $3,37+55,00+107,51+61,22+52,75+18,23+15,99+60,07+101,02+44,06+33,53+109,00+19$
 $,10+11,11+74,80+83,87+7,18+7,84+15,74+35,87= 2.218,87\text{m}$

Lado esquerdo

$37,58+8,25+11,24+45,99+45,03+11,71+5,26+6,87+8,32+28,85+26,90+30,24+11,60+22,$
 $51+55,61+33,23+32,62+103,92+119,28+6,22+51,36+8,67+90,74+10,56+82,91+15,05+8$
 $2,82+44,67+12,33+13,86+12,60+28,46+21,92+18,71+6,57+4,58+27,35+57,37+11,67+1$
 $5,19+34,88+55,98+10,30+97,59+62,12+54,67+19,24+16,59+59,58+101,56+45,64+34,8$
 $4+110,06+19,66+11,11+76,81+84,48+7,54+7,84+15,63+36,37= 2.233,05\text{m}$

Total = $((2.218,87+2.231,11)/2)*7,00 \Rightarrow 15.574,93 \text{ m}^2$

Alteração de largura

$((((11,91+12,59)/2)*((8,46+6,24)/2)) + (((11,98+11,66)/2)*((6,11+8,46)/2)) +$
 $((((7,54+7,45)/2)*((8,46+8,03)/2)) + (((7,53+7,45)/2)*((8,03+7,60)/2)) +$
 $((((37,30+36,79)/2)*((8,03+8,46)/2)) + (((6,49+5,96)/2)*((8,46+5,32)/2)) = 644,80 \text{ m}^2$
 Total $\Rightarrow 15.574,93 + 644,80 = 16.219,73 \text{ m}^2$

ETAPA 2

Lado direito

$59,99+11,76+25,67+31,93+17,66+25,94+29,34+63,06+103,63+82,98+13,34+57,42+59,$
 $70+100,29+14,09+20,74+57,69+32,84+26,72+26,80+79,04+54,36+45,91+21,30+9,67+2$
 $0,46+100,39+83,79+35,67+70,76+13,79+62,60+27,78+72,62+26,85+73,61+52,99+42,0$
 $9+47,98+92,28+29,33+100,90+70,80+96,97+48,34+25,52+65,65+12,82+23,93+26,56+3$
 $0,30+123,28+136,39+35,48+37,72+26,78+153,10+104,57+42,45+65,51+55,55+24,46+2$
 $6,87+26,86+36,03+58,18+56,23+97,45+229,78+44,56+156,07+105,64+31,61+12,01+30$
 $,01+10,46+21,15+20,63+37,32+11,78+33,78+40,91+41,14+66,44+31,59=4.458,44\text{M}$

Lado esquerdo

61,35+13,54+27,35+34,00+20,06+27,71+29,63+62,81+104,94+82,90+10,52+55,96+59,88+101,24+15,95+21,77+57,88+32,03+23,47+23,42+78,43+54,51+47,43+25,00+13,49+22,92+101,07+81,81+32,76+68,37+11,27+61,71+28,25+72,69+27,63+74,38+53,32+43,85+48,96+91,18+28,19+101,17+71,03+96,04+45,26+22,14+65,41+14,25+26,83+29,93+32,62+123,50+134,81+34,70+38,46+27,73+153,14+104,43+43,15+65,45+56,18+25,81+28,11+26,61+35,50+56,18+54,27+96,77+229,91+45,09+155,94+104,62+32,77+11,40+27,85+10,40+22,89+21,36+37,58+10,67+32,26+41,01+41,00+66,28+30,89=4.465,03 => $(4.458,44 + 4.465,03)/2 \Rightarrow 4.461,74 * 7,00 = 31.232,18 \text{ M}^2$

TOTAL: 16.219,73 + 31.232,18 = 47.451,91m²

Item 4.1 - Sarjeta triangular de concreto - STC 73-15 - escavação mecânica - areia e brita comerciais

ETAPA 1

Lado direito

42,63+14,03+45,01+45,12+12,76+6,95+6,88+8,37+29,29+28,18+30,14+10,40+21,38+53,46+31,45+31,49+103,68+119,18+6,20+51,18+8,91+93,79+90,78+12,76+82,71+44,88+23,27+15,38+20,53+7,58+57,98+10,70+13,16+33,37+55,00+107,51+61,22+52,75+18,23+15,99+60,07+101,02+44,06+33,53+109,00+19,10+11,11+74,80+83,87+7,18+7,84+15,74+35,87)= 2.127,47m

Lado esquerdo

37,58+8,25+11,24+45,99+45,03+11,71+5,26+6,87+8,32+28,85+26,90+30,24+11,60+22,51+55,61+33,23+32,62+103,92+119,28+6,22+51,36+8,67+90,74+10,56+82,91+15,05+82,82+44,67+12,33+13,86+12,60+28,46+57,37+11,67+15,19+34,88+55,98+10,30+97,59+62,12+54,67+19,24+16,59+59,58+101,56+45,64+34,84+110,06+19,66+11,11+76,81+84,48+7,54+7,84+15,63+36,37= 2.151,98m

Total = ((2.127,47+2.151,98) => 4.279,45 m

Alteração de largura

(11,91+12,59) + (11,98+11,66) + (37,30+36,79) + (6,49+5,96) = 134,68 m

Total => 4.279,45 + 134,68 = 4.414,13 m

ETAPA 2

Lado direito

59,99+11,76+25,67+31,93+17,66+25,94+29,34+63,06+103,63+82,98+13,34+57,42+59,70+100,29+14,09+20,74+57,69+32,84+26,72+26,80+79,04+54,36+45,91+21,30+9,67+20,46+100,39+83,79+35,67+70,76+13,79+62,60+27,78+72,62+26,85+73,61+52,99+42,09+47,98+92,28+29,33+100,90+70,80+96,97+48,34+25,52+65,65+12,82+23,93+26,56+30,30+123,28+136,39+35,48+37,72+26,78+153,10+104,57+42,45+65,51+55,55+24,46+26,87+26,86+36,03+58,18+56,23+97,45+229,78+44,56+156,07+105,64+31,61+12,01+30,01+10,46+21,15+20,63+37,32+11,78+33,78+40,91+41,14+66,44+31,59=4.458,44 +

Lado esquerdo

61,35+13,54+27,35+34,00+20,06+27,71+29,63+62,81+104,94+82,90+10,52+55,96+59,88+101,24+15,95+21,77+57,88+32,03+23,47+23,42+78,43+54,51+47,43+25,00+13,49+22,92+101,07+81,81+32,76+68,37+11,27+61,71+28,25+72,69+27,63+74,38+53,32+43,85+48,96+91,18+28,19+101,17+71,03+96,04+45,26+22,14+65,41+14,25+26,83+29,93+32,62+123,50+134,81+34,70+38,46+27,73+153,14+104,43+43,15+65,45+56,18+25,81+28,11+26,61+35,50+56,18+54,27+96,77+229,91+45,09+155,94+104,62+32,77+11,40+27,85+10,40+22,89+21,36+37,58+10,67+32,26+41,01+41,00+66,28+30,89=4.465,03 => (4.458,44 + 4.465,03) => 8.923,47 M

TOTAL: 4.414,13 + 8.923,47 = 13.337,60 m

Item 5.1 - Pintura de faixa com tinta acrílica - espessura de 0,6 mm

ETAPA 1

Lado direito = 2.218,87m

Lado esquerdo = 2.231,11m

Soma = 2.218,87+2.231,11 = 4.449,98m

(11,91+12,59)+(11,98+11,66)+ (7,54+7,45) + (7,53+7,45)+(37,30+36,79)+(6,49+5,96)= 164,65m

Total=> 4.449,98 + 164,65 = 4.614,63/2 => 2.307,32 * 4 = 9.229,26*0,10=922,93 m²

ETAPA 2

Lado direito = 4.458,44 m

Lado esquerdo = 4.465,03m

Soma = 4.458,44+4.465,03 = 8.923,47 4.461,74m

Total=> 8.923,47/2 => 4.461,74 * 4 = 17.846,96 * 0,10 = 1.784,70 M²

TOTAL: 922,93 + 1.784,70 = 2.707,63 M²

São Felix de Minas/MG, 27 de abril de 2026.

LUIZ PAULO DE
CARVALHO
LOPES:01627521640

Assinado de forma digital por LUIZ
PAULO DE CARVALHO
LOPES:01627521640
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Luiz Paulo de Carvalho Lopes
Eng. Civil
CREA-MG: 133.888/D

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Marcos Alexandre Gonçalves Sordine
Prefeito Municipal

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