



**GOVERNO DO
ESTADO DO CEARÁ**
Secretaria da Infraestrutura

Elaboração de Projetos de Engenharia

Rodovia: Vicinal

Trecho: Entr. CE-417 - Acesso a Av. Maria da
Conceição Pontes de Azevedo

Extensão: 1,01 km

VOLUME 2A - NOTAS DE SERVIÇO E CÁLCULO DE VOLUMES (Projeto Básico)

Fortaleza
Fevereiro/2022



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1 - APRESENTAÇÃO

1 - APRESENTAÇÃO

A **Secretaria da Infraestrutura - SEINFRA-CE**, vem através deste, apresentar o **Volume 2A - Notas de Serviço e Cálculo de Volumes**, referente à Elaboração do Projeto de Engenharia da Rodovia: Vicinal, **Trecho: Entr. CE-417 - Acesso a Av. Maria da Conceição Pontes de Azevedo**, com extensão de **1,01 km.**

O Projeto Básico é composto dos seguintes volumes:

- Volume 1 – Relatório do Projeto (tamanho A-4);
- Volume 2 – Projeto de Execução (tamanho A-3);
- Volume 2A – Notas de Serviço e Cálculo de Volumes (tamanho A-4);
- Volume 2B – Estudos Geotécnicos (tamanho A-4);
- Volume 4 – Orçamento e Memória de Cálculo (tamanho A-4);



2 - NOTAS DE SERVIÇO



2.1 - TRECHO



NOTA DE SERVIÇO DE TERRAPLENAGEM

PROJ ETO : TRAÇADO			RODOVIA : VICINAL TRECHO : ENTR. CE-417 - ACESSO AV. MARIA DA CONCEIÇÃO PONTES DE AZEVEDO																							
Estaca	Offset			Lado Esquerdo Pontos						Eixo			Lado Direito Pontos													
	Alt.	Cota	Dist.	Cota	Dist.	Cota	Dist.	Cota	Dist.	Dist.	Cota	Incl.(%)	Cota	Dist.	Dist.	Cota	Dist.	Cota	Dist.	Cota	Dist.	Offset				
0 + 13,717	3,445	44,410	-21,231							-16,063	47,855	0,00	48,193	47,855	-0,338									27,875	45,980	2,122
Norte	9593639,4076									9593643,8181			9593657,5268						9593678,6001			9593681,3166				
Este	353931,9802									353929,2867			353920,9146						353908,0448			353907,5525				
0 + 16,132	3,197	44,376	-18,563							-13,768	47,573	-1,43	48,056	47,770	-0,286	-0,91	47,605	18,070						21,682	45,197	2,408
Norte	9593640,4255									9593644,5180			9593656,2680			9593671,6897						9593674,7723				
Este	353928,5286									353926,0293			353918,8534						353909,4351			353907,5525				
0 + 18,772	2,916	44,411	-16,049							-11,676	47,327	-3,00	47,876	47,677	-0,199	-3,00	47,255	14,071						17,584	44,913	2,342
Norte	9593641,1956									9593644,9280			9593654,8923			9593666,9011						9593669,8995				
Este	353924,9656									353922,6862			353916,6008						353909,2668			353907,4357				
0 + 19,383	2,899	44,419	-15,593							-11,244	47,318	-3,00	47,829	47,656	-0,173	-2,83	47,279	13,341						16,860	44,932	2,347
Norte	9593641,2664									9593644,9781			9593654,5739			9593665,9592						9593668,9627				
Este	353924,2063									353921,9396			353916,0793						353909,1261			353907,2918				
1	2,882	44,427	-15,150							-10,825	47,309	-3,00	47,771	47,634	-0,137	-2,65	47,299	12,655						16,067	45,025	2,274
Norte	9593641,3227									9593645,0132			9593654,2518			9593665,0521						9593667,9638				
Este	353923,4480									353921,1942			353915,552						353908,9561			353907,1779				
1 + 9,267	2,618	44,536	-10,306							-6,378	47,154	-3,00	46,819	47,346	0,527	0,00	47,346	6,360						9,825	45,036	2,310
Norte	9593640,6262									9593643,9787			9593649,4220			9593654,8495						9593657,8068				
Este	353913,0153									353910,9679			353907,6436						353904,3290			353902,5228				
1 + 18,556	2,358	44,617	-8,196							-4,659	46,975	-3,00	46,087	47,115	1,028	1,57	47,187	4,600						8,047	44,889	2,298
Norte	9593637,5855									9593640,6041			9593644,5805			9593648,5063						9593651,4478				
Este	353903,9879									353902,1444			353899,7159						353897,3184			353895,5220				
2	2,379	44,567	-8,174							-4,606	46,946	-3,00	45,957	47,084	1,127	1,81	47,167	4,600						8,032	44,879	2,288
Norte	9593636,8519									9593639,8970			9593643,8278			9593647,7536						9593650,6824				
Este	353902,7436									353900,8839			353898,4834						353896,0858			353894,2971				
2 + 0,662	2,471	44,461	-8,306							-4,600	46,932	-3,00	45,886	47,070	1,184	1,92	47,158	4,600						8,012	44,884	2,274
Norte	9593636,3940									9593639,5572			9593643,4830			9593647,4088						9593650,3203				
Este	353902,2482									353900,3163			353897,9188						353895,5213			353893,7432				
2 + 2,067	2,376	44,526	-8,164							-4,600	46,902	-3,00	45,825	47,040	1,215	2,16	47,140	4,600						7,969	44,894	2,246
Norte	9593635,7832									9593638,8248			9593642,7506			9593646,6764						9593649,5514				
Este	353900,9747									353899,1172			353896,7196						353894,3221			353892,5663				
2 + 7,045	2,075	44,726	-7,713							-4,600	46,801	-3,00	45,617	46,939	1,322	3,00	47,077	4,600						7,821	44,930	2,147
Norte	9593633,6231									9593636,2387			9593640,1036			9593643,9685						9593646,6746				
Este	353896,6868									353894,9986			353892,5042						353890,0097			353888,2631				
3	1,591	44,868	-6,986							-4,600	46,459	-5,19	45,390	46,698	1,308	5,19	46,936	4,600						7,324	45,120	1,816
Norte	9593627,1185									9593629,0352			9593632,7305			9593636,4258						9593638,6140				
Este	353886,0143									353884,5934			353881,854						353879,1145			353877,4924				
3 + 1,267	1,554	44,873	-6,931							-4,600	46,427	-5,40	45,373	46,676	1,303	5,40	46,924	4,600						7,315	45,114	1,810
Norte	9593626,4313									9593628,2951			9593631,9730			9593635,6509						9593637,8220				
Este	353885,0016									353883,6016			353880,8389						353878,0761			353876,4452				
4	1,205	44,931	-6,408							-4,600	46,136	-5,40	44,957	46,385	1,428	5,40	46,633	4,600						6,673	45,251	1,382
Norte	9593615,2960									9593616,6337			9593620,0370			9593623,4404						9593624,9740				
Este	353870,7202									353869,5038			353866,4091						353863,3145			353861,9200				
4 + 4	1,208	44,873	-6,412							-4,600	46,081	-5,40	44,830	46,329	1,499	5,40	46,578	4,600						6,457	45,339	1,239
Norte	9593612,6597									9593613,9758			9593617,3166			9593620,6574						9593622,0063				
Este	353867,8846									353866,6389			353863,4768						353860,3147			353859,0379				
4 + 19,961	0,957	44,901	-6,036							-4,600	45,858	-5,40	44,985	46,107	1,122	5,40	46,355	4,600						6,618	45,010	1,345
Norte	9593601,8552									9593602,8161			9593605,8941			9593608,9722						9593610,3229				
Este	353856,8203									353855,7532			353852,3349						353848,9165			353847,4165				

NOTA DE SERVIÇO DE TERRAPLENAGEM

PROJETO : TRAÇADO																									RODOVIA : VICINAL					TRECHO : ENTR. CE-417 - ACESSO AV. MARIA DA CONCEIÇÃO PONTES DE AZEVEDO				
Estaca	Lado Esquerdo						Eixo						Lado Direito																					
	Offset			Pontos			Bordo			Cota Terreno	Cota Projeto	Cota Vermelha	Bordo			Pontos			Offset															
	Alt.	Cota	Dist.	Cota	Dist.	Cota	Dist.	Cota	Dist.				Incl.(%)	Incl.(%)	Cota	Dist.	Cota	Dist.	Cota	Dist.	Cota	Dist.	Cota	Dist.	Alt.									
5	0,957	44,901	-6,035							-4,600	45,858	-5,40	44,985	46,106	1,121	5,40	46,355	4,600							6,617	45,010	1,345							
Norte	9593601,8277						9593602,7877						9593605,8651						9593608,9425						9593610,2918									
Este	353856,7943						353855,7277						353852,3087						353848,8897						353847,3906									
6	0,629	44,950	-5,544							-4,600	45,579	-5,40	45,018	45,828	0,810	5,40	46,076	4,600							6,149	45,043	1,033							
Norte	9593587,0772						9593587,6355						9593590,3563						9593593,0770						9593593,9932									
Este	353844,1638						353843,4027						353839,6935						353835,9844						353834,7353									
6 + 18,656	0,286	45,033	-5,029							-4,600	45,319	-5,40	45,066	45,568	0,502	5,40	45,816	4,600							5,662	45,108	0,708							
Norte	9593572,2378						9593572,4581						9593574,8215						9593577,1849						9593577,7307									
Este	353833,6911						353833,3232						353829,3767						353825,4303						353824,5190									
7	0,278	45,032	-5,016							-4,600	45,310	-5,20	45,064	45,549	0,485	5,20	45,788	4,600							5,624	45,106	0,682							
Norte	9593571,1172						9593571,3286						9593573,6655						9593576,0023						9593576,5224									
Este	353833,0105						353832,6519						353828,6897						353824,7275						353823,8456									
7 + 17,856	0,190	45,010	-4,885							-4,600	45,200	-2,61	45,038	45,320	0,282	2,61	45,440	4,600							5,153	45,071	0,369							
Norte	9593555,8051						9593555,9274						9593557,9016						9593559,8759						9593560,1133									
Este	353824,7293						353824,4720						353820,3172						353816,1624						353815,6628									
8	0,173	45,018	-4,860							-4,600	45,191	-2,30	45,043	45,297	0,254	2,30	45,403	4,600							5,074	45,087	0,316							
Norte	9593553,8786						9593553,9902						9593555,9644						9593557,9387						9593558,1419									
Este	353823,7863						353823,5515						353819,3967						353815,2419						353814,8142									
9	0,198	44,969	-4,897							-4,600	45,167	0,61	44,997	45,139	0,142	-0,61	45,111	4,600							4,684	45,055	0,056							
Norte	9593535,7982						9593535,9259						9593537,9001						9593539,8744						9593539,9104									
Este	353815,2364						353814,9677						353810,813						353806,6582						353806,5823									
9 + 15,501	0,268	44,948	-5,003							-4,600	45,216	2,86	44,983	45,085	0,102	-2,86	44,953	4,600							4,648	45,025	-0,072							
Norte	9593521,7523						9593521,9253						9593523,8996						9593525,8738						9593525,8944									
Este	353808,6791						353808,3150						353804,1602						353800,0054						353799,9621									
10	0,289	44,952	-5,034							-4,600	45,241	3,51	44,994	45,080	0,086	-3,51	44,918	4,600							4,682	45,040	-0,122							
Norte	9593517,5168						9593517,7207						9593519,8809						9593522,0411						9593522,0795									
Este	353806,5824						353806,1991						353802,1379						353798,0767						353798,0045									
10 + 17,101	0,326	45,057	-5,089							-4,600	45,383	6,00	45,055	45,107	0,052	-6,00	44,831	4,600							4,766	45,078	-0,247							
Norte	9593502,4229						9593502,7229						9593505,5465						9593508,3700						9593508,4719									
Este	353796,8687						353796,4828						353792,8513						353789,2198						353789,0888									
11	0,321	45,073	-5,081							-4,600	45,394	6,00	45,073	45,118	0,045	-6,00	44,842	4,600							4,768	45,094	-0,252							
Norte	9593500,0495						9593500,3557						9593503,2839						9593506,2122						9593506,3194									
Este	353794,9572						353794,5862						353791,0386						353787,4910						353787,3611									
12	0,402	45,102	-5,203							-4,600	45,504	6,00	45,148	45,228	0,080	-6,00	44,952	4,600							4,803	45,254	-0,302							
Norte	9593485,1930						9593485,6617						9593489,2398						9593492,8179						9593492,9754									
Este	353780,1161						353779,7375						353776,8466						353773,9557						353773,8284									
12 + 3,295	0,427	45,096	-5,241							-4,600	45,523	6,00	45,160	45,247	0,087	-6,00	44,971	4,600							4,801	45,271	-0,300							
Norte	9593483,0286						9593483,5400						9593487,2119						9593490,8839						9593491,0445									
Este	353777,4064						353777,0205						353774,2498						353771,4790						353771,3578									
13	0,475	45,142	-5,314							-4,600	45,617	6,00	45,268	45,341	0,073	-6,00	45,065	4,600							4,813	45,383	-0,318							
Norte	9593473,5978						9593474,2314						9593478,3150						9593482,3986						9593482,5876									
Este	353762,5804						353762,2518						353760,1342						353758,0167						353757,9187									
13 + 9,49	0,515	45,156	-5,372							-4,600	45,671	6,00	45,280	45,395	0,115	-6,00	45,119	4,600							4,775	45,381	-0,262							
Norte	9593469,3721						9593470,0883						9593474,3552						9593478,6221						9593478,7847									
Este	353753,5220						353753,2335						353751,5148						353749,7961						353749,7306									
14	0,475	45,175	-5,313							-4,600	45,650	4,25	45,296	45,455	0,159	-4,25	45,259	4,600							4,698	45,405	-0,146							
Norte	9593465,8404						9593466,5259						9593470,9503						9593475,3747						9593475,4689									
Este	353743,0297						353742,8347						353741,5759						353740,3171						353740,2903									

NOTA DE SERVIÇO DE TERRAPLENAGEM

PROJETO : TRAÇADO		RODOVIA : VICINAL		TRECHO : ENTR. CE-417 - ACESSO AV. MARIA DA CONCEIÇÃO PONTES DE AZEVEDO																											
Estaca	Offset			Lado Esquerdo								Eixo						Lado Direito													
	Alt.	Cota	Dist.	Pontos				Bordo				Cota Terreno	Cota Projeto	Cota Vermelha	Bordo			Pontos				Offset									
				Cota	Dist.	Cota	Dist.	Dist.	Cota	Incl.(%)	Incl.(%)				Cota	Dist.	Dist.	Cota	Dist.	Cota	Dist.	Cota	Dist.								
14 + 7,49	0,476	45,159	-5,314								-4,600	45,635	3,00	45,285	45,497	0,212	-3,00	45,359	4,600										4,623	45,393	-0,034
Norte	9593463,9680											9593464,6674						9593469,1740													
Este	353735,3676											353735,2245						353734,3023													
14 + 11,09	0,472	45,156	-5,308								-4,600	45,628	2,40	45,291	45,517	0,226	-3,00	45,379	4,600									4,611	45,395	-0,016	
Norte	9593463,2810											9593463,9793						9593468,5163													
Este	353731,6383											353731,5215						353730,7631													
15	0,408	45,202	-5,212								-4,600	45,610	0,91	45,329	45,568	0,239	-3,00	45,430	4,600									4,611	45,423	0,007	
Norte	9593461,9069											9593462,5100						9593467,0471													
Este	353722,8334											353722,7326						353721,9741													
15 + 5,49	0,330	45,269	-5,095								-4,600	45,599	0,00	45,379	45,599	0,220	-3,00	45,461	4,600									4,610	45,476	-0,015	
Norte	9593461,1168											9593461,6050						9593466,1420													
Este	353717,4002											353717,3186						353716,5602													
16	0,214	45,356	-4,921								-4,600	45,570	-2,42	45,494	45,681	0,187	-3,00	45,543	4,600									4,659	45,631	-0,088	
Norte	9593458,8962											9593459,2124						9593463,7495													
Este	353703,0592											353703,0063						353702,2479													
16 + 3,49	0,264	45,299	-4,996								-4,600	45,563	-3,00	45,432	45,701	0,269	-3,00	45,563	4,600												
Norte	9593458,2470											9593458,6372						9593463,1742													
Este	353699,6302											353699,5650						353698,8065													
17	0,579	45,078	-5,468								-4,600	45,657	-3,00	45,219	45,795	0,576	-3,00	45,657	4,600									5,061	45,349	0,308	
Norte	9593455,0584											9593455,9149						9593460,4519													
Este	353683,4232											353683,2800						353682,5216													
18	0,634	45,136	-5,551								-4,600	45,770	-3,00	45,272	45,908	0,636	-3,00	45,770	4,600									5,147	45,405	0,365	
Norte	9593451,6788											9593452,6173						9593457,1543													
Este	353663,7106											353663,5538						353662,7953													
19	0,632	45,251	-5,549								-4,600	45,883	-3,00	45,404	46,021	0,617	-3,00	45,883	4,600									5,115	45,540	0,343	
Norte	9593448,3841											9593449,3197						9593453,8567													
Este	353643,9839											353643,8275						353643,069													
20	0,654	45,343	-5,580								-4,600	45,997	-3,00	45,477	46,135	0,658	-3,00	45,997	4,600									5,188	45,604	0,393	
Norte	9593445,0552											9593446,0221						9593450,5591													
Este	353624,2628											353624,1012						353623,3428													
21	0,964	45,146	-6,046								-4,600	46,110	-3,00	45,265	46,248	0,983	-3,00	46,110	4,600									5,712	45,368	0,742	
Norte	9593441,2981											9593442,7245						9593447,2616													
Este	353604,6134											353604,3749						353603,6165													
21 + 4,423	1,034	45,101	-6,151								-4,600	46,135	-3,00	45,182	46,273	1,091	-3,00	46,135	4,600									5,903	45,267	0,868	
Norte	9593440,4658											9593441,9953						9593446,5323													
Este	353600,2683											353600,0126						353599,2542													
22	1,307	44,916	-6,561								-4,600	46,223	-3,00	45,030	46,361	1,331	-0,38	46,344	4,600									6,416	45,133	1,211	
Norte	9593437,4930											9593439,4269						9593443,9640													
Este	353584,9719											353584,6487						353583,8902													
22 + 2,236	1,342	44,894	-6,613								-4,600	46,236	-3,00	45,024	46,374	1,350	0,00	46,374	4,600									6,424	45,158	1,216	
Norte	9593437,0731											9593439,0584						9593443,5954													
Este	353582,7758											353582,4439						353581,6854													
22 + 9,836	1,449	44,830	-6,773								-4,600	46,279	-3,00	45,005	46,417	1,412	1,28	46,476	4,600									6,533	45,187	1,289	
Norte	9593435,6620											9593437,8053						9593442,3423													
Este	353575,3062											353574,9479						353574,1895													
22 + 10	1,451	44,829	-6,776								-4,600	46,280	-3,00	45,004	46,418	1,414	1,31	46,478	4,600									6,536	45,187	1,291	
Norte	9593435,6323											9593437,7783						9593442,3152													
Este	353575,1461											353574,7868						353574,0271													

NOTA DE SERVIÇO DE TERRAPLENAGEM

PROJETO : TRAÇADO			RODOVIA : VICINAL	TRECHO : ENTR. CE-417 - ACESSO AV. MARIA DA CONCEIÇÃO PONTES DE AZEVEDO																						
Estaca	Offset			Lado Esquerdo						Eixo			Lado Direito													
	Alt.	Cota	Dist.	Cota	Dist.	Pontos		Bordo		Cota Terreno	Cota Projeto	Cota Vermelha	Bordo		Pontos		Offset									
						Cota	Dist.	Cota	Dist.				Incl.(%)	Cota	Dist.	Dist.	Cota	Dist.	Cota	Dist.	Cota	Dist.	Cota	Alt.		
23	1,555	44,782	-6,931							-4,600	46,337	-3,00	45,009	46,475	1,466	2,99	46,612	4,600						6,700	45,212	1,400
Norte	9593433,7653									9593436,0580			9593440,5815			9593445,1051						9593447,1698				
Este	353565,4371									353565,0138			353564,1786			353563,3434						353562,9622				
23 + 0,048	1,555	44,782	-6,932							-4,600	46,337	-3,00	45,009	46,475	1,466	3,00	46,613	4,600						6,700	45,213	1,400
Norte	9593433,7562									9593436,0494			9593440,5729			9593445,0963						9593447,1615				
Este	353565,3907									353564,9671			353564,1315			353563,2960						353562,9145				
23 + 1,236	1,554	44,780	-6,932							-4,600	46,334	-3,20	45,012	46,482	1,470	3,20	46,629	4,600						6,713	45,220	1,409
Norte	9593433,5418									9593435,8342			9593440,3560			9593444,8778						9593446,9551				
Este	353564,2367									353563,8085			353562,964			353562,1195						353561,7316				
24	1,685	44,756	-7,128							-4,600	46,441	-3,20	45,064	46,588	1,524	3,20	46,735	4,600						6,714	45,325	1,410
Norte	9593429,6612									9593432,1300			9593436,6232			9593441,1164						9593443,1816				
Este	353546,1022									353545,5607			353544,5752			353543,5897						353543,1367				
24 + 12,764	1,784	44,729	-7,276							-4,600	46,513	-3,20	45,068	46,660	1,592	3,20	46,807	4,600						6,710	45,400	1,407
Norte	9593426,6840									9593429,2852			9593433,7564			9593438,2277						9593440,2789				
Este	353533,8480									353533,2192			353532,1383			353531,0575						353530,5616				
25	1,735	44,819	-7,202							-4,600	46,554	-3,20	45,163	46,701	1,538	3,20	46,848	4,600						6,679	45,462	1,386
Norte	9593425,0342									9593427,5558			9593432,0137			9593436,4715						9593438,4861				
Este	353526,8911									353526,2493			353525,1146			353523,9799						353523,4671				
26	1,028	45,639	-6,142							-4,600	46,667	-3,20	45,721	46,814	1,093	3,20	46,962	4,600						6,267	45,851	1,111
Norte	9593420,8596									9593422,3406			9593426,7582			9593431,1757						9593432,7763				
Este	353507,5310									353507,1010			353505,8184			353504,5358						353504,0711				
26 + 4,292	0,868	45,823	-5,903							-4,600	46,691	-3,20	45,851	46,839	0,988	3,20	46,986	4,600						6,111	45,978	1,008
Norte	9593419,8898									9593421,1387			9593425,5470			9593429,9552						9593431,4034				
Este	353503,3883									353503,0160			353501,7018			353500,3876						353499,9559				
26 + 5,479	0,833	45,874	-5,850							-4,600	46,707	-3,00	45,887	46,845	0,958	3,00	46,983	4,600						6,055	46,013	0,970
Norte	9593419,6038									9593420,8009			9593425,2066			9593429,6122						9593431,0054				
Este	353502,2465									353501,8870			353500,5641			353499,2412						353498,8229				
26 + 15,692	0,442	46,314	-5,264							-4,600	46,756	-3,00	46,225	46,894	0,669	1,28	46,953	4,600						5,740	46,193	0,760
Norte	9593417,1716									9593417,8040			9593422,1865			9593426,5690						9593427,6555				
Este	353492,4079									353492,2062			353490,8085			353489,4108						353489,0643				
27	0,294	46,480	-5,041							-4,600	46,774	-3,00	46,391	46,912	0,521	0,55	46,937	4,600						5,576	46,287	0,650
Norte	9593416,0748									9593416,4947			9593420,8772			9593425,2597						9593426,1895				
Este	353488,2350									353488,1010			353486,7033			353485,3056						353485,0091				
27 + 3,292	0,189	46,597	-4,883							-4,600	46,786	-3,00	46,506	46,924	0,418	0,00	46,924	4,600						5,416	46,379	0,545
Norte	9593415,2249									9593415,4947			9593419,8772			9593424,2597						9593425,0374				
Este	353485,0516									353484,9656			353483,5679			353482,1702						353481,9221				
27 + 14,983	-0,195	47,013	-4,730							-4,600	46,818	-3,00	46,917	46,956	0,039	-1,97	46,865	4,600						4,930	46,645	0,220
Norte	9593411,8179									9593411,9423			9593416,3248			9593420,7073						9593421,0219				
Este	353473,8664									353473,8268			353472,4291			353471,0314						353470,9310				
28	-0,453	47,280	-10,406			46,077	-9,600			-4,600	46,827	-3,00	47,014	46,965	-0,049	-2,81	46,836	4,600						4,721	46,755	0,081
Norte	9593404,8866									9593405,6542			9593410,4178			9593414,8003			9593419,1828						9593419,2978	
Este	353470,8107									353469,0466			353467,6489			353466,2512						353466,2146				
28 + 1,104	-0,479	47,308	-10,424			46,079	-9,600			-4,600	46,829	-3,00	47,029	46,967	-0,062	-3,00	46,829	4,600						4,677	46,777	0,052
Norte	9593404,5339									9593405,3188			9593410,0824			9593414,4649			9593418,8475						9593418,9212	
Este	353469,7648									353469,5145			353467,9952			353466,5975			353465,1998						353465,1763	
29	-0,831	47,667	-10,659			46,086	-9,600			-4,600	46,836	-3,00	47,308	46,974	-0,334	-3,00	46,836	4,600						4,734	47,036	-0,200
Norte	9593398,5681									9593399,5772			9593404,3408			9593408,7233			9593413,1058						9593413,2334	
Este	353451,8333									353449,9922			353448,5945			353447,1968						353447,1561				

NOTA DE SERVIÇO DE TERRAPLENAGEM

PROJETO : TRAÇADO			RODOVIA : VICINAL		TRECHO : ENTR. CE-417 - ACESSO AV. MARIA DA CONCEIÇÃO PONTES DE AZEVEDO																											
Estaca	Offset			Lado Esquerdo						Eixo			Lado Direito																			
	Alt.	Cota	Dist.	Pontos		Bordo		Cota Terreno	Cota Projeto	Cota Vermelha	Bordo		Pontos		Offset																	
				Cota	Dist.	Cota	Dist.				Incl.(%)	Cota	Dist.	Cota	Dist.	Cota	Dist.	Cota	Dist.	Cota	Dist.	Cota	Dist.	Cota	Dist.	Alt.						
30	-0,678	47,479	-10,557					46,051	-9,600	-4,600	46,801	-3,00	47,142	46,939	-0,203	-3,00	46,801	4,600									4,642	46,864	-0,063			
Norte	9593392,5889									9593398,2639			9593402,6464						9593407,0289		9593407,0689											
Este	353432,7477									353432,4570			353430,9378						353429,5401						353428,1424		353428,1296					
31	-0,390	47,111	-10,363					45,971	-9,600	-4,600	46,721	-3,00	46,868	46,859	-0,009	-3,00	46,721	4,600									4,818	46,576	0,145			
Norte	9593386,6959									9593387,4233			9593392,1869						9593396,5694						9593400,9519		9593401,1598					
Este	353413,6346									353411,8834			353410,4857						353409,0880						353409,0217							
31 + 7,247	-0,215	46,896	-4,744							-4,600	46,681	-3,00	46,816	46,819	0,003	-3,00	46,681	4,600									4,879	46,495	0,186			
Norte	9593389,8482									9593389,9851			9593394,3676						9593398,7501						9593399,0157							
Este	353405,0231									353404,9795			353403,5818						353402,1841						353402,0994							
32	-0,054	46,651	-4,636							-4,600	46,597	-3,00	46,623	46,735	0,112	-3,00	46,597	4,600									4,956	46,360	0,237			
Norte	9593386,0758									9593386,1100			9593390,4925						9593394,8750						9593395,2141							
Este	353392,8399									353392,8290			353391,4313						353390,0336						353389,9254							
33	0,118	46,362	-4,777							-4,600	46,480	-3,00	46,406	46,618	0,212	-3,00	46,480	4,600									5,385	45,956	0,524			
Norte	9593379,8642									9593380,0330			9593384,4155						9593388,7980						9593389,5463							
Este	353373,8284									353373,7746			353372,3769						353370,9792						353370,7405							
34	0,068	46,465	-4,702							-4,600	46,533	-3,00	46,367	46,671	0,304	-3,00	46,533	4,600									5,451	45,965	0,568			
Norte	9593373,8586									9593373,9561			9593378,3386						9593382,7211						9593383,5318							
Este	353354,7512									353354,7202			353353,3225						353351,9248						353351,6662							
35	-0,010	46,779	-4,607							-4,600	46,769	-3,00	46,697	46,907	0,210	-3,00	46,769	4,600									5,224	46,352	0,417			
Norte	9593367,8724									9593367,8791			9593372,2616						9593376,6441						9593377,2388							
Este	353335,6679									353335,6657			353334,268						353332,8703						353332,6807							
36	-0,340	47,492	-4,828							-4,600	47,152	-3,00	47,290	47,290	0,000	-3,00	47,152	4,600									4,657	47,114	0,038			
Norte	9593361,5850									9593361,8021			9593366,1847						9593370,5672						9593370,6213							
Este	353316,6806									353316,6113			353315,2136						353313,8159						353313,7987							
37	-0,436	47,915	-4,892							-4,600	47,479	-3,00	47,739	47,617	-0,122	-3,00	47,479	4,600									4,764	47,724	-0,245			
Norte	9593355,4467									9593355,7252			9593360,1077						9593364,4902						9593364,6466							
Este	353297,6457									353297,5569			353296,1592						353294,7615						353294,7117							
38	-0,099	47,601	-4,666							-4,600	47,502	-3,00	47,489	47,640	0,151	-3,00	47,502	4,600									4,664	47,460	0,042			
Norte	9593349,5849									9593349,6482			9593354,0308						9593358,4133						9593358,4738							
Este	353278,5227									353278,5025			353277,1048						353275,7071						353275,6878							
38 + 4,606	0,031	47,450	-4,646							-4,600	47,481	-3,00	47,338	47,619	0,281	-3,00	47,481	4,600									4,767	47,370	0,111			
Norte	9593348,2052									9593348,2488			9593352,6313						9593357,0138						9593357,1728							
Este	353274,1284									353274,1145			353272,7168						353271,3191						353271,2684							
39	0,368	47,098	-5,151							-4,600	47,466	-0,43	47,114	47,486	0,372	-3,00	47,348	4,600									4,878	47,162	0,186			
Norte	9593343,0464									9593343,5713			9593347,9538						9593352,3363						9593352,6013							
Este	353259,6155									353259,4481			353258,0504						353256,6527						353256,5682							
39 + 2,606	0,336	47,121	-5,105							-4,600	47,457	0,00	47,129	47,457	0,328	-3,00	47,319	4,600									4,834	47,163	0,156			
Norte	9593342,2989									9593342,7795			9593347,1821						9593351,5446						9593351,7678							
Este	353257,1189									353256,9655			353255,5678						353254,1701						353254,0989							
39 + 11,017	0,237	47,193	-4,955							-4,600	47,430	1,40	47,187	47,365	0,178	-3,00	47,227	4,600									4,611	47,220	0,007			
Norte	9593339,8859									9593340,2240			9593344,6065						9593348,9891						9593348,9996							
Este	353249,0605									353248,9527			353247,555						353246,1573						353246,1539							
40	0,176	47,224	-4,865							-4,600	47,400	2,90	47,234	47,267	0,033	-3,00	47,129	4,600	9,600	46,379							10,387	47,554	-0,425			
Norte	9593337,2660									9593337,5201			9593341,9311						9593346,3421						9593351,1367		9593351,8916					
Este	353240,3593									353240,2841			353238,9791						353237,6740						353236,2555		353236,0321					
40 + 0,606	0,170	47,228	-4,856							-4,600	47,398	3,00	47,239	47,260	0,021	-3,00	47,122	4,600	9,600	46,372							10,408	47,578	-0,456			
Norte	9593337,1000									9593337,3459			9593341,7600						9593346,1740						9593350,9719		9593351,7472					
Este	353239,7648									353239,6927			353238,398						353237,1034						353235,6962						353235,4688	

NOTA DE SERVIÇO DE TERRAPLENAGEM

PROJETO : TRAÇADO				RODOVIA : VICINAL				TRECHO : ENTR. CE-417 - ACESSO AV. MARIA DA CONCEIÇÃO PONTES DE AZEVEDO																		
Estaca	Offset			Lado Esquerdo								Eixo			Lado Direito											
	Alt.	Cota	Dist.	Cota	Dist.	Pontos		Bordo		Incl.(%)	Cota	Cota Projeto	Cota Vermelha	Bordo		Pontos		Offset		Alt.						
						Cota	Dist.	Cota	Dist.					Incl.(%)	Cota	Dist.	Dist.	Cota	Dist.	Cota	Dist.	Cota	Dist.	Cota	Dist.	Alt.
40 + 12,606	0,034	47,325	-4,652																							
Norte	9593334,1334											9593334,1839														
Este	353227,9068											353227,8945														
41	0,098	47,180	-4,748																							
Norte	9593332,3672											9593332,5121														
Este	353220,5865											353220,5557														
41 + 4,088	0,126	47,108	-4,789																							
Norte	9593331,4937											9593331,6791														
Este	353216,5153											353216,4790														
41 + 15,57	-0,064	47,173	-4,643																							
Norte	9593329,6463											9593329,6886														
Este	353204,9689											353204,9626														
42	-0,023	47,040	-4,615																							
Norte	9593329,0437											9593329,0589														
Este	353200,4986											353200,4966														
42 + 13,57	-0,233	46,986	-4,756																							
Norte	9593327,4568											9593327,6124														
Este	353186,7732											353186,7610														
43	-0,259	46,896	-4,773																							
Norte	9593326,9362											9593327,1087														
Este	353180,3637											353180,3501														
43 + 11,003	-0,112	46,566	-10,177																							
Norte	9593320,4473											9593321,0186														
Este	353170,5022											353170,4200														
44	-0,267	46,585	-10,281																							
Norte	9593318,9028											9593319,5702														
Este	353162,2599											353162,1227														
44 + 2,885	-0,315	46,592	-10,313																							
Norte	9593318,3054											9593319,0013														
Este	353159,6399											353159,4830														
44 + 19,545	-0,045	46,285	-10,132																							
Norte	9593314,2323											9593314,7356														
Este	353144,6614											353144,4876														
45	0,025	46,215	-10,086																							
Norte	9593314,1370											9593314,5958														
Este	353144,2446											353144,0847														
45 + 16,205	-0,408	46,640	-10,376																							
Norte	9593308,1394											9593308,8405														
Este	353130,3876											353130,0549														
46	-0,473	46,710	-10,419																							
Norte	9593306,5456											9593307,2767														
Este	353127,2339											353126,8641														
46 + 17,805	-0,588	46,865	-10,497																							
Norte	9593298,1451											9593298,8920														
Este	353112,9642											353112,4679														
47	-0,590	46,874	-10,498																							
Norte	9593296,9288											9593297,6770														
Este	353111,1365											353110,6394														



NOTA DE SERVIÇO DE TERRAPLENAGEM

PROJ ETO : TRAÇADO			RODOVIA : VICINAL			TRECHO : ENTR. CE-417 - ACESSO AV. MARIA DA CONCEIÇÃO PONTES DE AZEVEDO																			
Estaca	Offset			Lado Esquerdo								Eixo			Lado Direito										
	Alt.	Cota	Dist.	Cota	Dist.	Pontos		Bordo		Incl.(%)	Cota Terreno	Cota Projeto	Cota Vermelha	Incl.(%)	Cota	Dist.	Pontos		Offset		Alt.				
48	-0,727	47,094	-10,589					45,617	-9,600	-4,600	46,367	-5,27	46,930	46,610	-0,320	5,27	46,852	4,600					4,619	46,880	-0,028
Norte	9593285,7840											9593290,7723			9593294,6035										
Este	353094,5293											353093,9818			353088,6686										
48 + 19,465	-0,790	47,269	-10,632					45,729	-9,600	-4,600	46,479	-4,94	47,015	46,706	-0,309	4,94	46,933	4,600					4,807	47,244	-0,311
Norte	9593274,9756											9593275,8354			9593279,9998										
Este	353078,3418											353077,7705			353075,0032										
48 + 19,467	-0,790	47,269	-10,632					45,729	-9,600	-4,600	46,479	-4,94	47,015	46,706	-0,309	4,94	46,933	4,600					4,807	47,242	-0,309
Norte	9593274,9741											9593275,8339			9593279,9983										
Este	353078,3396											353077,7682			353075,0010										
49	-0,796	47,274	-10,719					45,728	-9,683	-4,683	46,478	-4,93	47,015	46,709	-0,306	4,93	46,940	4,681					4,809	47,131	-0,191
Norte	9593274,6171											9593275,4793			9593279,6386										
Este	353077,9601											353074,6101			353072,0113										
49 + 12,823	-0,686	47,156	-6,794							-6,335	46,470	-4,80	46,952	46,774	-0,178	4,80	47,109	6,966					7,197	46,955	0,154
Norte	9593270,7005											9593271,0700			9593276,1659										
Este	353065,5550											353065,2821			353061,5187										
49 + 16,912	-0,680	47,152	-7,187							-6,732	46,472	-4,80	47,063	46,795	-0,268	4,80	47,171	7,836					8,042	47,034	0,137
Norte	9593267,9961											9593268,3582			9593273,7119										
Este	353062,6058											353062,3297			353058,2484										
49 + 18,956	-0,552	47,151	-7,278							-6,907	46,599	-3,00	47,118	46,806	-0,312	3,00	47,055	8,297					8,328	47,034	0,021
Norte	9593266,7124											9593267,0052			9593272,4662										
Este	353061,0833											353060,8566			353056,6272										
50	-0,561	47,162	-7,366							-6,991	46,601	-3,00	47,140	46,811	-0,329	2,83	47,053	8,540					8,591	47,018	0,035
Norte	9593266,0187											9593266,3147			9593271,8252										
Este	353060,3359											353060,1048			353055,8028										
50 + 11,313	-0,515	47,153	-8,056							-7,711	46,638	-3,00	47,219	46,869	-0,350	-3,00	46,529	11,340					11,743	47,130	-0,601
Norte	9593258,4788											9593258,7465			9593264,7264										
Este	353052,0807											353051,8628			353046,9945										



2.2 - INTERSEÇÃO

NOTA DE SERVIÇO DE TERRAPLENAGEM

PROJETO : INTERSEÇÃO				RODOVIA : VICINAL				TRECHO : ENTR. CE-417 - ACESSO AV. MARIA DA CONCEIÇÃO PONTES DE AZEVEDO																											
Estaca	Offset			Lado Esquerdo				Bordo				Eixo				Lado Direito																			
	Alt.	Cota	Dist.	Cota	Dist.	Pontos		Dist.	Cota	Incl.(%)	Cota Terreno	Cota Projeto	Cota Vermelha	Incl.(%)	Cota	Dist.	Dist.	Cota	Dist.	Cota	Dist.	Offset	Alt.												
0	0,366	48,156	-6,000			48,114	-5,971	48,172	-4,035	-4,000	48,522	-3,00	48,642	48,642	0,000	-3,00	48,522	4,000	4,035	48,172	6,373	48,102			6,521	48,004	0,518								
Norte	9593745,9819			9593745,9639				9593744,7349				9593744,7127				9593742,1740				9593739,6353				9593739,6131				9593738,1290				9593738,0354			
Este	353874,1825			353874,1606				353872,6642				353872,6371				353869,546				353866,4549				353866,4278				353864,6208				353864,5068			
1	2,954	45,663	-11,184			48,165	-7,432	48,267	-4,035	-4,000	48,617	-3,00	48,728	48,737	0,009	-3,00	48,617	4,000	4,035	48,267	8,975	48,119			12,399	45,836	2,781								
Norte	9593733,8167			9593731,4352				9593729,2793				9593729,2571				9593726,7184				9593724,1797				9593724,1575				9593721,0221				9593718,8489			
Este	353890,8824			353887,9827				353885,3576				353885,3306				353882,2395				353879,1484				353879,1213				353875,3036				353872,6575			
1 + 5,262	2,242	46,399	-10,484			48,178	-7,816	48,291	-4,035	-4,000	48,641	-3,00	48,757	48,761	0,004	-3,00	48,641	4,000	4,035	48,291	9,660	48,122			13,431	45,608	3,033								
Norte	9593729,3068			9593727,6134				9593725,2136				9593725,1914				9593722,6527				9593720,1140				9593720,0917				9593716,5219				9593714,1282			
Este	353893,6807			353891,6188				353888,6968				353888,6697				353885,5786				353882,4875				353882,4605				353878,1138				353875,1993			
1 + 19,389	2,484	46,198	-11,832			48,187	-8,848	48,332	-4,035	-4,000	48,682	-3,00	48,828	48,802	-0,026	-3,00	48,682	4,000	4,035	48,332	9,649	48,163			12,764	46,087	2,595								
Norte	9593719,2446			9593717,3509				9593714,2964				9593714,2742				9593711,7355				9593709,1968				9593709,1746				9593705,6117				9593703,6345			
Este	353903,6880			353901,3822				353897,6629				353897,6359				353894,5448				353891,4536				353891,4266				353887,0885				353884,6810			
2	2,468	46,215	-11,808			48,188	-8,848	48,333	-4,035	-4,000	48,683	-3,00	48,826	48,803	-0,023	-3,00	48,683	4,000	4,035	48,333	9,648	48,164			13,453	45,628	3,055								
Norte	9593718,7571			9593716,8786				9593713,8237				9593713,8015				9593711,2628				9593708,7241				9593708,7019				9593705,1393				9593702,7245			
Este	353904,0581			353901,7707				353898,0241				353894,933				353891,8418				353891,8148				353887,4770				353884,5367							
3	2,826	45,849	-12,360			48,180	-8,864	48,325	-4,035	-4,000	48,675	-3,00	48,769	48,795	0,026	-3,00	48,675	4,000	4,035	48,325	9,633	48,157			13,206	45,775	2,900								
Norte	9593703,6520			9593701,4328				9593698,3681				9593698,3459				9593695,8072				9593693,2685				9593693,2463				9593689,6936				9593687,4258			
Este	353917,1783			353914,4762				353910,7446				353910,7176				353907,6264				353904,5353				353904,5083				353900,1825				353897,4213			
3 + 5,215	2,981	45,688	-12,597			48,174	-8,868	48,319	-4,035	-4,000	48,669	-3,00	48,765	48,789	0,024	-3,00	48,669	4,000	4,035	48,319	9,629	48,151			13,491	45,576	3,093								
Norte	9593699,7729			9593697,4060				9593694,3387				9593694,3165				9593691,7778				9593689,2391				9593689,2169				9593685,6667				9593683,2155			
Este	353920,6706			353917,7887				353914,0539				353914,0269				353910,9358				353907,8446				353907,8176				353903,4950				353900,5104			
3 + 13,891	2,868	45,790	-12,434			48,163	-8,875	48,308	-4,035	-4,000	48,658	-3,00	48,757	48,778	0,021	-3,00	48,658	4,000	4,035	48,308	10,644	47,216			13,587	45,254	3,404								
Norte	9593692,9644			9593690,7051				9593687,6335				9593687,6113				9593685,0726				9593682,5339				9593682,5117				9593678,3173				9593676,4495			
Este	353926,0518			353923,3008				353919,5608				353919,5338				353916,4427				353913,3515				353913,3245				353908,2175				353905,9432			
4	2,281	46,370	-11,558			48,156	-8,879	48,301	-4,035	-4,000	48,651	-3,00	48,751	48,771	0,020	-3,00	48,651	4,000	4,035	48,301	11,500	47,378			15,484	44,722	3,929								
Norte	9593687,6872			9593685,9871				9593682,9125				9593682,8903				9593680,3516				9593677,8129				9593677,7907				9593673,0527				9593670,5243			
Este	353929,2518			353927,1817				353923,4381				353923,4110				353920,3199				353917,2288				353917,2018				353911,4327				353908,3542			
4 + 18,016	0,247	48,382	-9,060			48,133	-8,893	48,279	-4,035	-4,000	48,629	-3,00	48,709	48,749	0,040	-3,00	48,629	4,000	4,035	48,279	14,245	47,855			14,245	48,181	0,448								
Norte	9593672,1792			9593672,0736				9593668,9902				9593668,9679				9593666,4292				9593663,8906				9593663,8683				9593657,5268				9593653,8883			
Este	353938,7553			353936,6268				353934,8723				353934,8453				353931,7542				353928,6631				353928,6360				353920,9146				353920,7459			
5	0,255	48,372	-9,056			48,131	-8,895	48,277	-4,035	-4,000	48,627	-3,00	48,704	48,747	0,043	-3,00	48,627	4,000	4,035	48,277	14,305	47,795			14,570	48,191	0,436								
Norte	9593670,6438			9593670,5414				9593667,4569				9593667,4347				9593664,8960				9593662,3573				9593662,3351				9593655,8170				9593653,6489			
Este	353940,0120			353939,8872				353936,1316				353936,1045				353933,0134				353929,9223				353929,8952				353921,9588				353921,7541			
5 + 13,76	1,991	46,620	-11,147			48,115	-8,906	48,261	-4,035	-4,000	48,611	-3,00	48,697	48,731	0,034	-3,00	48,611	4,000	4,035	48,261	16,235	47,378			20,698	44,403	4,208								
Norte	9593661,3375			9593659,9149				9593656,8236				9593656,8014				9593654,2627				9593651,7240				9593651,7018				9593643,9590				9593641,1262			
Este	353950,3607			353948,6285				353944,8646				353944,8375				353941,7464				353938,6553				353938,6282				353929,2006				353925,7514			
5 + 19,797	4,147	44,457	-14,386			48,108	-8,910	48,254	-4,035	-4,000	48,604	-3,00	48,705	48,724	0,019	-3,00	48,604	4,000	4,035	48,254	13,022	47,984			18,449	44,367	4,237								
Norte	9593658,7286			9593655,2530				9593652,1588				9593652,1365				9593649,5978				9593647,0591				9593647,0369				9593641,3329				9593637,8889			
Este	353956,6952			353952,4633				353948,6958				353948,6687				353945,5776				353942,4865				353942,4594				353935,5141				353931,3208			
6	4,196	44,408	-14,459			48,108	-8,910	48,254	-4,035	-4,000	48,604	-3,00	48,705	48,724	0,019	-3,00	48,604	4,000	4,035	48,254	12,928	47,987			18,357	44,368	4,236								
Norte	9593658,6173			9593655,0957				9593652,0013				9593651,9791				9593649,4404				9593646,9017				9593646,8795				9593641,2352				9593637,7898			
Este	353956,8807			353952,5927				353948,8251				353948,7980				353945,7069				353942,6158				353942,5887				353935,7162				353931,5211			
6 + 2,975	4,365	44,236	-14,716			48,104	-8,913	48,251	-4,035	-4,000	48,601	-3,00	48,704	48,721	0,017	-3,00	48,601	4,000	4,035	48,251	11,719	48,020			17,139	44,406	4,195								
Norte	9593656,4814			9593652,7984				9593649,7026				9593649,6804				9593647,1417				9593644,6030				9593644,5808				9593639,7040				9593636,2637			
Este	353958,9669			353954,4824				353950,7130				353950,6859				353947,5948				353944,5037				353944,4766				353938,5387				353934,3497			
6 + 3,2	4,349	44,251	-14,693			48,104	-8,913	48,250	-4,035	-4,000	48,600	-3,00	48,703	48,720	0,017	-3,00	48,600	4,000	4,035	48,250	11,639	48,022			17,070	44,402	4,198								
Norte	9593656,2928			9593652,6243				9593649,5284				9593649,5062				9593646,9675				9593644,4288				9593644,4066				9593639,5803				9593636,1334			
Este	353959,0923			353954,6256				353950,8560				353950,8290				353947,7378				353944,6467				353944,6197				353938,7432				353934,5463			

NOTA DE SERVIÇO DE TERRAPLENAGEM

PROJETO : INTERSEÇÃO				RODOVIA : VICINAL				TRECHO : ENTR. CE-417 - ACESSO AV. MARIA DA CONCEIÇÃO PONTES DE AZEVEDO																			
Estaca	Offset			Lado Esquerdo								Eixo			Lado Direito												
	Alt.	Cota	Dist.	Pontos				Bordo				Cota Terreno	Cota Projeto	Cota Vermelha	Pontos				Offset								
				Cota	Dist.	Cota	Dist.	Dist.	Cota	Incl.(%)	Incl.(%)				Cota	Dist.	Dist.	Cota	Dist.	Cota	Dist.	Cota	Dist.	Alt.			
6 + 15,344	4,380	44,208	-14,747			48,091	-8,922	48,238	-4,035	-4,000	48,588	-3,00	48,694	48,708	0,014	-3,00	48,588	4,000	4,035	48,238	9,574	48,072			15,099	44,389	4,199
Norte	9593646,9434			9593643,2464				9593640,1445				9593637,5836			9593635,0449				9593631,5072				9593628,0008				
Este	353966,8413			353962,3398				353958,5629				353955,4447			353952,3536				353948,0461				353943,7767				
7	4,441	44,142	-14,843			48,087	-8,926	48,233	-4,035	-4,000	48,583	-3,00	48,691	48,703	0,012	-3,00	48,583	4,000	4,035	48,233	9,570	48,067			15,091	44,387	4,196
Norte	9593643,4055			9593639,6499				9593636,5457				9593633,9848			9593631,4461				9593627,9107				9593624,4067				
Este	353969,8710			353965,2982				353961,5185				353958,4004			353955,3092				353951,0045				353946,7381				
7 + 19,452	4,131	44,435	-14,392			48,069	-8,941	48,216	-4,035	-4,000	48,566	-3,00	48,690	48,686	-0,004	-3,00	48,566	4,000	4,035	48,216	9,555	48,050			14,882	44,499	4,067
Norte	9593628,0873			9593624,6277				9593621,5139				9593618,9530			9593616,4143				9593612,8885				9593609,5077				
Este	353981,8676			353977,6553				353973,8369				353970,7458			353967,6547				353963,3616				353959,2451				
8	4,118	44,447	-14,351			48,069	-8,918	48,215	-4,035	-4,000	48,565	-3,00	48,690	48,685	-0,005	-3,00	48,565	4,000	4,035	48,215	9,555	48,050			14,872	44,505	4,060
Norte	9593627,6377			9593624,1893				9593621,0901				9593618,5292			9593615,9905				9593612,4650				9593609,0901				
Este	353982,1843			353977,9856				353974,2120				353971,0938			353968,0027				353967,9757				353963,7100				
9	2,933	45,617	-11,769			48,079	-8,077	48,200	-4,035	-4,000	48,550	-3,00	48,668	48,670	0,002	-3,00	48,550	4,000	4,035	48,200	9,539	48,035			14,264	44,885	3,665
Norte	9593610,5428			9593608,1996				9593605,6345				9593603,0736			9593600,5349				9593597,0192				9593594,0207				
Este	353992,8818			353990,0287				353986,9055				353983,8785			353980,6962				353980,6692				353976,4155				
10	1,404	47,132	-8,672			48,090	-7,235	48,186	-4,035	-4,000	48,536	-3,00	48,663	48,656	-0,007	-3,00	48,536	4,000	4,035	48,186	9,524	48,021			13,240	45,543	2,993
Norte	9593593,1220			9593592,2098				9593590,1789				9593587,6180			9593585,0793				9593585,0571				9593581,5735				
Este	354003,1825			353999,5990				353999,5719				353996,4808			353993,3897				353993,3626				353989,1210				
11	0,380	48,142	-6,421			48,101	-6,393	48,172	-4,035	-4,000	48,522	-3,00	48,655	48,642	-0,013	-3,00	48,522	4,000	4,035	48,172	9,508	48,007			11,291	46,819	1,703
Norte	9593576,2377			9593576,2201				9593574,7233				9593574,7011			9593572,1624				9593569,6237				9593569,6015				
Este	354014,1363			354014,1150				354012,2925				354012,2654			354009,1743				354006,0832				354006,0561				
11 + 8,679	0,266	48,250	-6,125			48,106	-6,028	48,166	-4,035	-4,000	48,516	-3,00	48,646	48,636	-0,010	-3,00	48,516	4,000	4,035	48,166	9,501	48,002			10,341	47,442	1,074
Norte	9593569,3427			9593569,2814				9593568,0163				9593567,9941			9593565,4554				9593562,9167				9593559,4251				
Este	354019,4158			354019,3411				354017,8008				354017,7738			354014,6827				354011,5915				354011,5645				
11 + 14,388										-4,000	48,511	-3,00	48,638	48,631	-0,007	-3,00	48,511	4,000	4,035	48,161	9,497	47,998			9,652	47,894	0,617
Norte												9593563,5830			9593561,0443				9593558,5056				9593558,4834				
Este												354021,3966			354018,3054				354015,2143				354015,1873				
12	-0,008	48,516	-4,005							-4,000	48,508	-3,00	48,631	48,628	-0,003	-3,00	48,508	4,000	4,035	48,158	9,493	47,994			9,721	47,841	0,667
Norte	9593559,2490											9593559,2455			9593556,7068				9593554,1681				9593554,1459				
Este	354024,9631											354024,9589			354021,8678				354018,7767				354018,7496				
12 + 5,371	-0,008	48,512	-4,006							-4,000	48,504	-3,00	48,626	48,624	-0,002	-3,00	48,504	4,000	4,035	48,154	9,488	47,990			9,753	47,814	0,690
Norte	9593555,0988											9593555,0953			9593552,5566				9593550,0179				9593549,9957				
Este	354028,3717											354028,3674			354025,2763				354022,1852				354022,1582				
13										-4,000	48,493	-3,00	48,613	48,613	0,000	-3,00	48,493	4,000	4,035	48,143	8,745	48,002			8,865	47,922	0,571
Norte												9593543,7899			9593541,2512				9593538,7125				9593538,6903				
Este												354037,6524			354034,5613				354031,4701				354031,4431				
14	0,005	48,474	-4,008							-4,000	48,479	-3,00	48,570	48,599	0,029	-3,00	48,479	4,000	4,035	48,129	7,729	48,018			8,094	47,775	0,704
Norte	9593528,3397											9593528,3343			9593525,7956				9593523,2569				9593523,2347				
Este	354050,3524											354050,3459			354047,2547				354044,1366				354044,1366				
15	0,020	48,445	-4,030							-4,000	48,465	-3,00	48,583	48,585	0,002	-3,00	48,465	4,000	4,035	48,115	6,713	48,035			7,223	47,695	0,770
Norte	9593512,8977											9593512,8787			9593510,3400				9593507,8013				9593507,7791				
Este	354063,0625											354063,0393			354059,9482				354056,8571				354056,8301				



3 - CÁLCULO DE VOLUMES



3.1 - TRECHO



Volume: TRAÇADO

TRECHO : ENTR. CE-417 - ACESSO MARIA DA CONCEIÇÃO PONTES DE AZEVEDO

Cálculo de Volume por Comparação de Perfis : Terreno x Medição											
								BRUCKNER - FATOR = 1.20			
Estaca	Área Corte	Área Aterro	Semi-Dis.	Vol.Corte	V.C.Acum.	Vol.Aterro	V.A.acum.	Corte	V.C.acum.	Aterro	V.A.acum.
0+13,716	2,92	77,03									
			1,208	6,330	6,330	159,190	159,190	6,330	6,330	191,028	191,028
0+16,132	2,32	54,75									
			1,320	5,318	11,648	127,794	286,984	5,318	11,648	153,352	344,381
0+18,771	1,71	42,10									
			0,306	0,968	12,616	25,271	312,255	0,968	12,616	30,325	374,706
0+19,382	1,46	40,62									
			0,309	0,810	13,426	24,599	336,854	0,810	13,426	29,519	404,225
1	1,16	38,99									
			4,634	5,375	18,800	272,172	609,026	5,375	18,800	326,606	730,831
1+9,267	0,00	19,75									
			4,645	0,000	18,800	170,500	779,526	0,000	0,000	204,600	935,431
1+18,556	0,00	16,96									
			0,722	0,000	18,800	24,649	804,175	0,000	0,000	29,579	965,010
2	0,00	17,18									
			0,331	0,000	18,800	11,426	815,601	0,000	0,000	13,711	978,721
2+0,662	0,00	17,34									
			0,703	0,000	18,800	24,377	839,978	0,000	0,000	29,252	1007,973
2+2,067	0,00	17,36									
			2,489	0,000	18,800	86,699	926,677	0,000	0,000	104,039	1112,012
2+7,044	0,00	17,48									
			6,478	0,000	18,800	225,370	1152,047	0,000	0,000	270,444	1382,456
3	0,00	17,31									
			0,634	0,000	18,800	21,837	1173,883	0,000	0,000	26,204	1408,660
3+1,267	0,00	17,16									
			9,367	0,000	18,800	299,447	1473,330	0,000	0,000	359,336	1767,996
4	0,00	14,81									
			2,000	0,000	18,800	59,320	1532,650	0,000	0,000	71,184	1839,180
4+4	0,00	14,85									
			7,981	0,000	18,800	217,389	1750,039	0,000	0,000	260,867	2100,047
4+19,961	0,00	12,39									
			0,020	0,000	18,800	0,483	1750,522	0,000	0,000	0,580	2100,627
5	0,00	12,38									
			10,000	0,000	18,800	209,300	1959,822	0,000	0,000	251,160	2351,787
6	0,00	8,55									
			9,328	0,000	18,800	126,947	2086,769	0,000	0,000	152,337	2504,123
6+18,655	0,00	5,06									
			0,673	0,000	18,800	6,678	2093,447	0,000	0,000	8,014	2512,137
7	0,00	4,87									
			8,928	0,000	18,800	67,760	2161,207	0,000	0,000	81,312	2593,448
7+17,855	0,00	2,72									
			1,073	0,000	18,800	5,502	2166,709	0,000	0,000	6,602	2600,051
8	0,00	2,41									
			10,000	0,000	18,800	36,700	2203,409	0,000	0,000	44,040	2644,091
9	0,00	1,26									
			7,751	0,543	19,343	17,671	2221,080	0,543	0,543	21,205	2665,296
9+15,501	0,07	1,02									
			2,250	0,540	19,883	4,521	2225,602	0,540	1,082	5,426	2670,722
10	0,17	0,99									
			8,551	5,387	25,270	16,673	2242,275	5,387	6,469	20,008	2690,730
10+17,101	0,46	0,96									
			1,450	1,363	26,632	2,725	2245,000	1,363	7,832	3,270	2694,000
11	0,48	0,92									
			10,000	10,500	37,132	21,700	2266,700	10,500	18,332	26,040	2720,040
12	0,57	1,25									
			1,648	1,862	38,994	4,316	2271,017	1,862	20,193	5,180	2725,220
12+3,295	0,56	1,37									
			8,353	9,856	48,850	23,303	2294,320	9,856	30,049	27,964	2753,184
13	0,62	1,42									
			4,745	4,982	53,831	14,755	2309,075	4,982	35,031	17,706	2770,891
13+9,489	0,43	1,69									
			5,256	3,101	56,932	18,237	2327,312	3,101	38,132	21,884	2792,774
14	0,16	1,78									
			3,745	0,637	57,569	14,641	2341,953	0,637	38,768	17,569	2810,344
14+7,489	0,01	2,13									
			1,800	0,018	57,587	7,812	2349,765	0,018	38,786	9,374	2819,718



Volume: TRAÇADO

TRECHO : ENTR. CE-417 - ACESSO MARIA DA CONCEIÇÃO PONTES DE AZEVEDO

Cálculo de Volume por Comparação de Perfis : Terreno x Medição											
								BRUCKNER - FATOR = 1.20			
Estaca	Área Corte	Área Aterro	Semi-Dis.	Vol.Corte	V.C.Acum.	Vol.Aterro	V.A.acum.	Corte	V.C.acum.	Aterro	V.A.acum.
14+11,089	0,00	2,21									
			4,456	0,000	57,587	19,337	2369,102	0,000	0,000	23,204	2842,922
15	0,00	2,13									
			2,745	0,000	57,587	10,731	2379,833	0,000	0,000	12,877	2855,800
15+5,489	0,00	1,78									
			7,256	0,508	58,095	21,839	2401,672	0,508	0,508	26,207	2882,006
16	0,07	1,23									
			1,745	0,122	58,217	5,391	2407,062	0,122	0,630	6,469	2888,475
16+3,489	0,00	1,86									
			8,256	0,000	58,217	56,385	2463,448	0,000	0,000	67,662	2956,137
17	0,00	4,97									
			10,000	0,000	58,217	105,800	2569,248	0,000	0,000	126,960	3083,097
18	0,00	5,61									
			10,000	0,000	58,217	110,300	2679,548	0,000	0,000	132,360	3215,457
19	0,00	5,42									
			10,000	0,000	58,217	112,600	2792,148	0,000	0,000	135,120	3350,577
20	0,00	5,84									
			10,000	0,000	58,217	153,300	2945,448	0,000	0,000	183,960	3534,537
21	0,00	9,49									
			2,212	0,000	58,217	44,717	2990,164	0,000	0,000	53,660	3588,197
21+4,423	0,00	10,73									
			7,789	0,000	58,217	194,713	3184,877	0,000	0,000	233,655	3821,852
22	0,00	14,27									
			1,118	0,000	58,217	32,218	3217,094	0,000	0,000	38,661	3860,513
22+2,235	0,00	14,56									
			3,800	0,000	58,217	114,494	3331,588	0,000	0,000	137,393	3997,906
22+9,835	0,00	15,57									
			0,083	0,000	58,217	2,571	3334,159	0,000	0,000	3,085	4000,991
22+10	0,00	15,59									
			5,000	0,000	58,217	161,850	3496,009	0,000	0,000	194,220	4195,211
23	0,00	16,78									
			0,024	0,000	58,217	0,805	3496,814	0,000	0,000	0,967	4196,177
23+0,048	0,00	16,78									
			0,594	0,000	58,217	19,959	3516,774	0,000	0,000	23,951	4220,128
23+1,235	0,00	16,85									
			9,383	0,000	58,217	322,946	3839,719	0,000	0,000	387,535	4607,663
24	0,00	17,57									
			6,382	0,000	58,217	229,925	4069,645	0,000	0,000	275,911	4883,574
24+12,763	0,00	18,46									
			3,619	0,000	58,217	131,026	4200,671	0,000	0,000	157,231	5040,805
25	0,00	17,75									
			10,000	0,000	58,217	295,700	4496,371	0,000	0,000	354,840	5395,645
26	0,00	11,82									
			2,146	0,000	58,217	47,737	4544,108	0,000	0,000	57,285	5452,930
26+4,291	0,00	10,43									
			0,594	0,000	58,217	12,153	4556,261	0,000	0,000	14,584	5467,514
26+5,479	0,00	10,03									
			5,106	0,000	58,217	83,892	4640,153	0,000	0,000	100,670	5568,183
26+15,691	0,00	6,40									
			2,155	0,000	58,217	24,389	4664,542	0,000	0,000	29,267	5597,450
27	0,00	4,92									
			1,646	0,000	58,217	14,283	4678,825	0,000	0,000	17,140	5614,590
27+3,291	0,00	3,76									
			5,846	2,163	60,380	25,430	4704,255	2,163	2,163	30,516	5645,106
27+14,983	0,37	0,59									
			2,509	14,198	74,578	1,856	4706,111	14,198	16,361	2,228	5647,333
28	5,29	0,15									
			0,552	6,006	80,584	0,132	4706,244	6,006	22,367	0,159	5647,492
28+1,104	5,59	0,09									
			9,448	147,389	227,972	0,850	4707,094	147,389	169,756	1,020	5648,513
29	10,01	0,00									
			10,000	178,900	406,872	0,000	4707,094	178,900	348,656	0,000	0,000
30	7,88	0,00									
			10,000	128,300	535,172	2,900	4709,994	128,300	476,956	3,480	3,480
31	4,95	0,29									
			3,624	20,002	555,174	2,392	4712,385	20,002	496,957	2,870	6,350



Volume: TRAÇADO

TRECHO : ENTR. CE-417 - ACESSO MARIA DA CONCEIÇÃO PONTES DE AZEVEDO

Cálculo de Volume por Comparação de Perfis : Terreno x Medição

BRUCKNER - FATOR = 1.20

Estaca	Área Corte	Área Aterro	Semi-Dis.	Vol.Corte	V.C.Acum.	Vol.Aterro	V.A.acum.	Corte	V.C.acum.	Aterro	V.A.acum.
31+7,247	0,57	0,37									
			6,377	3,890	559,064	7,205	4719,591	3,890	500,847	8,647	14,996
32	0,04	0,76									
			10,000	0,400	559,464	29,300	4748,891	0,400	501,247	35,160	50,156
33	0,00	2,17									
			10,000	0,000	559,464	52,800	4801,691	0,000	0,000	63,360	113,516
34	0,00	3,11									
			10,000	0,500	559,964	50,000	4851,691	0,500	0,500	60,000	173,516
35	0,05	1,89									
			10,000	8,900	568,864	20,700	4872,391	8,900	9,400	24,840	198,356
36	0,84	0,18									
			10,000	27,600	596,464	1,800	4874,191	27,600	37,000	2,160	200,516
37	1,92	0,00									
			10,000	20,100	616,564	7,400	4881,591	20,100	57,100	8,880	209,396
38	0,09	0,74									
			2,303	0,207	616,771	5,458	4887,049	0,207	57,307	6,550	215,946
38+4,606	0,00	1,63									
			7,697	0,000	616,771	36,946	4923,995	0,000	0,000	44,335	260,281
39	0,00	3,17									
			1,303	0,000	616,771	7,753	4931,747	0,000	0,000	9,303	269,584
39+2,606	0,00	2,78									
			4,205	0,000	616,771	17,745	4949,493	0,000	0,000	21,294	290,878
39+11,016	0,00	1,44									
			4,492	16,800	633,571	8,939	4958,432	16,800	16,800	10,727	301,605
40	3,74	0,55									
			0,303	2,330	635,901	0,318	4958,750	2,330	19,130	0,382	301,987
40+0,606	3,95	0,50									
			6,000	67,620	703,521	3,000	4961,750	67,620	86,750	3,600	305,587
40+12,606	7,32	0,00									
			3,697	50,131	753,653	0,518	4962,267	50,131	136,881	0,621	306,208
41	6,24	0,14									
			2,044	25,284	778,937	0,613	4962,881	25,284	162,166	0,736	306,944
41+4,088	6,13	0,16									
			5,741	70,379	849,315	1,091	4963,971	70,379	232,544	1,309	308,253
41+15,569	6,13	0,03									
			2,216	24,636	873,952	0,089	4964,060	24,636	257,181	0,106	308,359
42	4,99	0,01									
			6,785	58,415	932,366	0,204	4964,263	58,415	315,595	0,244	308,603
42+13,569	3,62	0,02									
			3,216	21,608	953,974	0,096	4964,360	21,608	337,203	0,116	308,719
43	3,10	0,01									
			5,501	42,303	996,277	0,275	4964,635	42,303	379,506	0,330	309,049
43+11,002	4,59	0,04									
			4,499	45,485	1041,762	1,170	4965,805	45,485	424,991	1,404	310,453
44	5,52	0,22									
			1,442	15,949	1057,711	0,692	4966,497	15,949	440,939	0,831	311,283
44+2,884	5,54	0,26									
			8,330	74,554	1132,264	2,582	4969,079	74,554	515,493	3,099	314,382
44+19,544	3,41	0,05									
			0,228	1,320	1133,584	0,144	4969,223	1,320	516,813	0,172	314,555
45	2,38	0,58									
			8,103	51,208	1184,792	4,943	4974,165	51,208	568,021	5,931	320,486
45+16,205	3,94	0,03									
			1,898	21,632	1206,424	0,057	4974,222	21,632	589,652	0,068	320,554
46	7,46	0,00									
			8,903	126,416	1332,839	0,979	4975,201	126,416	716,068	1,175	321,729
46+17,805	6,74	0,11									
			1,098	14,838	1347,677	0,220	4975,421	14,838	730,906	0,263	321,992
47	6,78	0,09									
			10,000	157,300	1504,977	0,900	4976,321	157,300	888,206	1,080	323,072
48	8,95	0,00									
			9,732	185,200	1690,177	0,000	4976,321	185,200	1073,406	0,000	0,000
48+19,464	10,08	0,00									
			0,002	0,030	1690,207	0,000	4976,321	0,030	1073,436	0,000	0,000
48+19,467	10,08	0,00									
			0,267	5,365	1695,572	0,000	4976,321	5,365	1078,801	0,000	0,000



Volume: TRAÇADO

TRECHO : ENTR. CE-417 - ACESSO MARIA DA CONCEIÇÃO PONTES DE AZEVEDO

Cálculo de Volume por Comparação de Perfis : Terreno x Medição

BRUCKNER - FATOR = 1.20

Estaca	Área Corte	Área Aterro	Semi-Dis.	Vol.Corte	V.C.Acum.	Vol.Aterro	V.A.acum.	Corte	V.C.acum.	Aterro	V.A.acum.
49	10,05	0,00									
			6,412	83,414	1778,986	1,603	4977,924	83,414	1162,215	1,923	1,923
49+12,823	2,96	0,25									
			2,044	13,572	1792,558	1,063	4978,987	13,572	1175,787	1,275	3,199
49+16,911	3,68	0,27									
			1,023	8,088	1800,646	0,276	4979,263	8,088	1183,875	0,331	3,530
49+18,956	4,23	0,00									
			0,522	4,568	1805,213	0,000	4979,263	4,568	1188,442	0,000	0,000
50	4,52	0,00									
			5,657	76,080	1881,293	0,000	4979,263	76,080	1264,522	0,000	0,000
50+11,313	8,93	0,00									




3.2 - INTERSEÇÃO

Volume: INTERSEÇÃO

TRECHO : ENTR. CE-417 - ACESSO MARIA DA CONCEIÇÃO PONTES DE AZEVEDO

Cálculo de Volume por Comparação de Perfis : Terreno x Medição											
								BRUCKNER - FATOR = 1.20			
Estaca	Área Corte	Área Aterro	Semi-Dis.	Vol.Corte	V.C.Acum.	Vol.Aterro	V.A.acum.	Corte	V.C.acum.	Aterro	V.A.acum.
0	1,34	0,00									
			10,000	26,500	26,500	79,300	79,300	26,500	26,500	95,160	95,160
1	1,31	7,93									
			2,631	6,629	33,129	46,665	125,965	6,629	33,129	55,998	151,158
1+5,261	1,21	9,81									
			7,064	16,740	49,869	146,073	272,038	16,740	49,869	175,288	326,446
1+19,388	1,16	10,87									
			0,306	0,689	50,558	6,738	278,776	0,689	50,558	8,086	334,532
2	1,09	11,15									
			10,000	23,200	73,758	228,300	507,076	23,200	73,758	273,960	608,492
3	1,23	11,68									
			2,607	6,335	80,093	62,359	569,436	6,335	80,093	74,831	683,323
3+5,214	1,20	12,24									
			4,339	12,018	92,111	91,412	660,848	12,018	92,111	109,695	793,018
3+13,891	1,57	8,83									
			3,055	8,797	100,907	67,932	728,780	8,797	100,907	81,518	874,536
4	1,31	13,41									
			9,008	56,210	157,117	120,797	849,577	56,210	157,117	144,957	1019,493
4+18,016	4,93	0,00									
			0,992	10,208	167,325	0,000	849,577	10,208	167,325	0,000	0,000
5	5,36	0,00									
			6,880	48,091	215,416	187,411	1036,989	48,091	215,416	224,893	224,893
5+13,76	1,63	27,24									
			3,018	7,756	223,173	160,467	1197,456	7,756	223,173	192,560	417,454
5+19,796	0,94	25,93									
			0,102	0,193	223,365	5,275	1202,731	0,193	223,365	6,331	423,784
6	0,95	25,79									
			1,488	3,020	226,385	86,379	1289,110	3,020	226,385	103,655	527,439
6+2,975	1,08	32,28									
			0,113	0,243	226,628	7,209	1296,319	0,243	226,628	8,651	536,090
6+3,2	1,08	31,80									
			6,072	13,722	240,350	277,225	1573,544	13,722	240,350	332,670	868,760
6+15,343	1,18	13,86									
			2,329	5,565	245,915	65,757	1639,301	5,565	245,915	78,908	947,668
7	1,21	14,38									
			9,726	21,203	267,117	322,514	1961,815	21,203	267,117	387,017	1334,685
7+19,452	0,97	18,78									
			0,274	0,529	267,646	10,283	1972,098	0,529	267,646	12,340	1347,025
8	0,96	18,75									
			10,000	20,500	288,146	322,600	2294,698	20,500	288,146	387,120	1734,145
9	1,09	13,51									
			10,000	24,200	312,346	201,900	2496,598	24,200	312,346	242,280	1976,425
10	1,33	6,68									
			10,000	24,500	336,846	103,500	2600,098	24,500	336,846	124,200	2100,625
11	1,12	3,67									
			4,340	8,549	345,395	20,569	2620,667	8,549	345,395	24,683	2125,308
11+8,679	0,85	1,07									
			2,854	4,766	350,161	3,225	2623,892	4,766	350,161	3,870	2129,178
11+14,387	0,82	0,06									
			2,807	4,069	354,231	0,674	2624,566	4,069	354,231	0,808	2129,986
12	0,63	0,18									
			2,686	3,142	357,373	1,450	2626,016	3,142	357,373	1,740	2131,726
12+5,371	0,54	0,36									
			7,315	7,900	365,272	3,145	2629,161	7,900	365,272	3,774	2135,501
13	0,54	0,07									
			10,000	11,000	376,272	3,600	2632,761	11,000	376,272	4,320	2139,821
14	0,56	0,29									
			10,000	11,700	387,972	3,600	2636,361	11,700	387,972	4,320	2144,141
15	0,61	0,07									
			0,496	0,615	388,587	0,060	2636,421	0,615	388,587	0,071	2144,212
15+0,992	0,63	0,05									

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 CLEVIO GOMES VASCONCELOS
 MENDES
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